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Annual Work Programme and Budget 2024



**Circular
Bio-based
Europe**

Joint Undertaking



ANNEX to GB decision no 10 /2023

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

The work programme is made publicly available after its adoption by the Governing Board.

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LIST OF ACRONYMS, DEFINITIONS 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

Dear Reader,

I am delighted to present to you the 2024 Annual Work Programme for the Circular Bio-based Europe Joint Undertaking (CBE JU). This document is the result of a strong collaboration of the European Commission, the Bio-based Industries Consortium (BIC) and the CBE JU Programme Office. It presents the 2024 call for project proposals and a robust set of support activities that allow for the efficient and effective running of the organisation.

CBE JU will continue to support the scaling up of technologies leading to industrial deployment, thus boosting investment and job creation, while aiming at achieving the goals outlined in the Strategic Research and Innovation Agenda (SRIA) 2030. In addition, the partnership will involve a wider range of stakeholders including the primary sector, regional authorities, and investors to support the deployment of bio-based solutions. To deliver on its objectives, the partnership will fund projects that respect the principles of circularity, sustainability, and planetary boundaries. Consequently, CBE JU will significantly contribute to the EU's climate targets for 2030, paving the way for climate neutrality by 2050, and advancing circular and sustainable production in line with the European Green Deal while increasing Europe's strategic autonomy and industrial competitiveness.

The Annual Work Programme includes the 2024 call for proposals with an anticipated overall indicative budget of EUR 211 million, which will support the strategic orientations defined in the SRIA. The call will fund Research and Innovation Actions (RIAs), Coordination and Support Actions (CSAs), and will devote a stronger focus to Innovation Actions (IAs) which include Flagships.

CBE JU will continue to build on the achievements of its predecessor, the Bio-based Industries Joint Undertaking (BBI JU), by ensuring the continuation of running projects. The successful conclusion of the BBI JU legacy projects is also providing for excellent examples of deployment of bio-based and circular solutions in Europe. A new reporting tool will be offered to CBE JU beneficiaries to provide a safe and modern platform where information about projects' outcomes can be stored and elaborated, helping to report on the actual achievement of the CBE JU community and the CBE JU initiative.

CBE JU will continue its communication activities to promote the added value of the bioeconomy in Europe. In 2024, the Programme Office intends to showcase the outcome of the CBE JU Stakeholder Forum, will further promote CBE JU among the European Institutions, and will contribute to the implementation of the bioeconomy strategy as a key sector in the realisation of the European Green Deal goals, in a sustainable and inclusive way.

The strengthening of the CBE JU community will be an important aspect of the work for the year ahead. In particular, I would like to mention the implementation of the widening participation strategy and the establishment of the deployment groups on finance and investment and on primary producers. I am sure that these actions will further reinforce the role of the JU in the deployment of the bioeconomy, by involving a larger number of new stakeholders and ensuring concrete outcomes.

In 2024, a new Executive Director will take up duties; over the last year and a half the Programme Office team and myself have ensured a smooth running of CBE JU activities along the lines of our high professional standards. I would like to thank all colleagues for their commitment and their

support during this period, it is a pleasure to work in such a dynamic and stimulating working environment.

We look forward to the next challenges for CBE JU and for the bioeconomy inviting you to join us in '*Building a greener, safer and better Europe*'.

Nicoló Giacomuzzi-Moore

CBE JU acting 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 Communication⁴ and the Farm to Fork⁵, 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 fosters the development of new technologies and processes to use all available sources of sustainable biomass and turn it into sustainable and circular bio-based products. 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.

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.

Its 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/PDF/?uri=CELEX:52019DC0640&from=EN>

² <https://op.europa.eu/en/publication-detail/-/publication/edace3e3-e189-11e8-b690-01aa75ed71a1/language-en/format-PDF/source-149755478>

³ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0380&from=EN>

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0098&from=EN>

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0381&from=EN>

The general and specific objectives of CBE JU, as per Article 46 of the Council Regulation (EU) 2021/2085⁶ of 19 November 2021 (hereinafter the Council Regulation) establishing the Joint Undertakings under Horizon Europe⁷, are reported below in Figure 1.

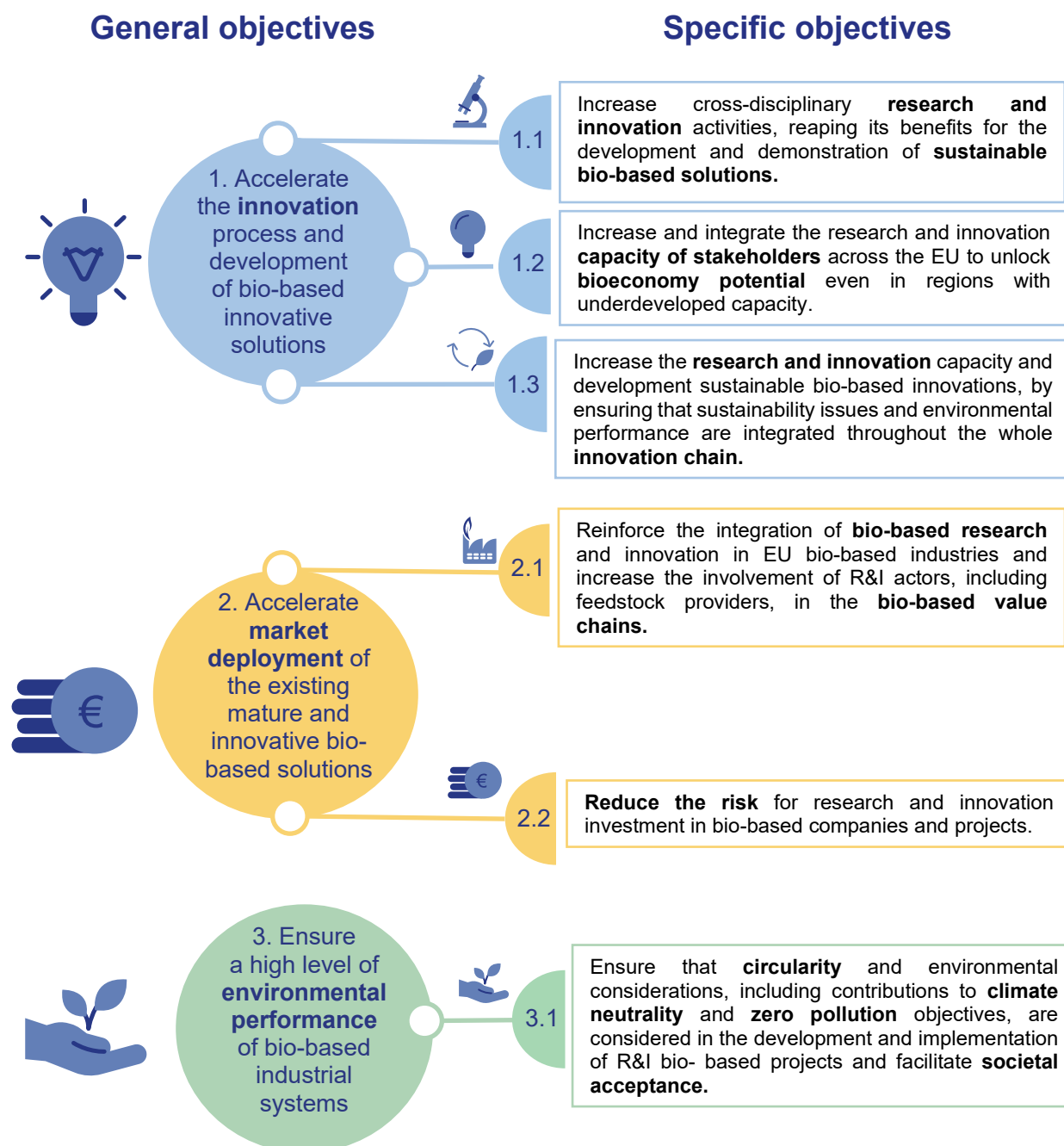


Figure 1 CBE JU general and specific objectives.

⁶ 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

⁷ 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

1.2. BACKGROUND AND LINK WITH THE SRIA

To achieve the objectives set out in the Council Regulation, 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 actions to scale up innovative bio-based processes, products, and applications starting from at least TRL 5 and ending at TRL 7-8, including Flagships, 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 identified in the Strategic Research and Innovation Agenda (SRIA)⁸ for each CBE 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.

⁸ cbeju-sria.pdf

1.3. STRATEGY FOR THE IMPLEMENTATION OF THE PROGRAMME

CBE JU programming

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

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 Offices. The CBE JU Scientific Committee and states' representatives group will be also 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.

Flagships⁹ 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. In addition, financial support to third parties may be included in specific call topics and funded as part of the received grants from CBE JU via financial support to third parties. This could be the case for training and mobility of researchers, or prizes.

⁹ 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.

Technological Readiness Level (TRL)

The technological readiness level scale, defined in the General Annex B of the Horizon Europe Main Work Programme¹⁰, will be used as reference in the CBE JU call 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 end TRL will be specified in each RIAs and IAs topic.

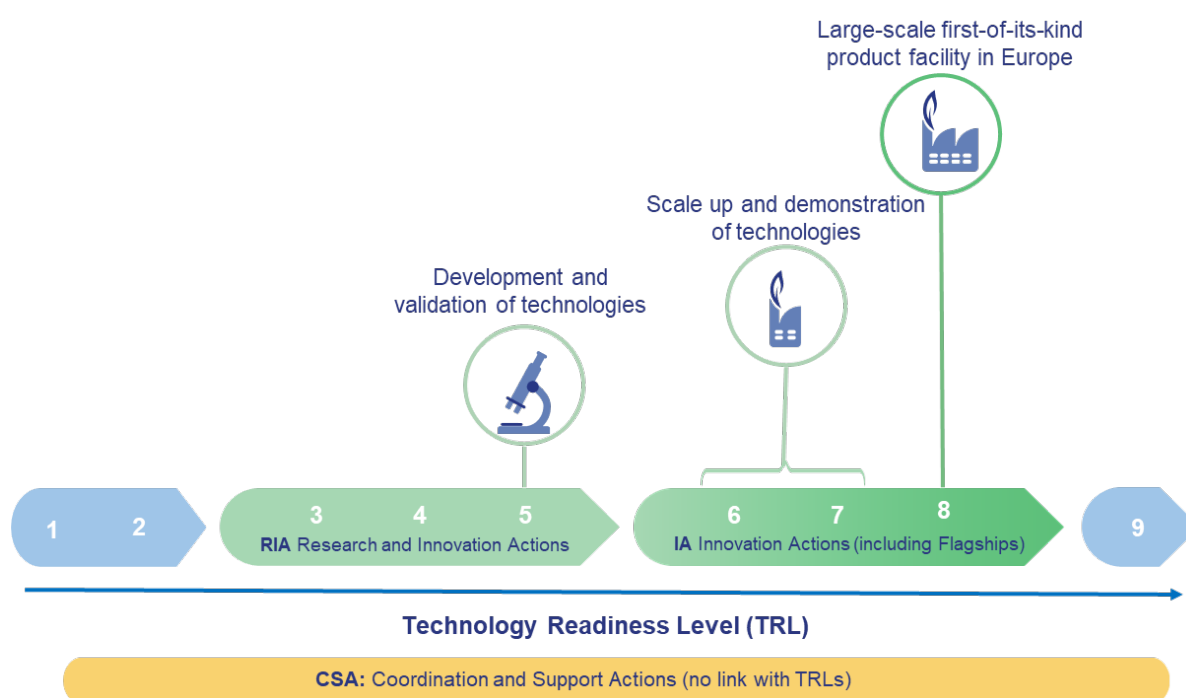


Figure 3 CBE JU types of actions along the TRL scale.

¹⁰ wp-13-general-annexes_horizon-2023-2024_en.pdf

2. WORK PROGRAMME 2024

2.1. EXECUTIVE SUMMARY 2024

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 the 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.

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, and taking into account 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). The monitoring and reporting of CBE activities, including KPIs, will be undertaken on an annual basis and reflected in the Annual Activity Report (AAR).

During the CBE JU Governing Board meeting of October 2023, the acting Executive Director presented the following priorities for 2024 focussing on four areas:

1. Governance:

- Ensure the transition to new Executive Director maintaining efficiency in CBE daily operations.
- Establish the Deployment Group on finance and investments, taking stock of the conclusion of the study launched by EIB.
- Propose to the Governing Board the scope and objectives of the Deployment group on Primary Producers and launch its establishment.
- Ensure follow up of the conclusions of the Strategic Governing Board meeting.

- Approve the monitoring method for the financial contributions to CBE JU.
- Implement the CBE JU widening strategy action plan 2023-2024 with the support of the founding partners and the SRG.

2. Programme implementation

- Finalise the CBE JU grant agreements preparation and kick-off of the CBE projects from calls 2023.
- Promotion of the CBE JU call 2024 and its evaluation.
- Coordinate the AWP 2025 preparation and the Multi-annual programming document revision.
- Launch of the new web-based KPIs reporting tool and integrate it in the CBE JU website.
- Coordinate the AWP 2025 preparation according to the established CBE JU programming procedure and the Multi annual programming.

3. Communication and stakeholders' management

- Promote the CBE JU flagship through the new project exhibition and by participation to their inauguration events.
- Focus the communication on specific stakeholders' groups, e.g. primary producers.
- Promote the impact of the bioeconomy and CBE JU projects on the local communities.
- Promote the launch of the CBE JU deployment groups.
- Follow up on the conclusion of the CBE JU Stakeholder forum.

4. Administration and finance

- Lead the implementation of the back-office arrangement - HR support.
- Contribute to the back-office arrangement in other key areas (IT, logistics, procurement).
- Finalise the office set-up in line with the new ways of working in collaboration with the other JUs.
- Phase out the BBI JU budget in an efficient way.

2.2. OPERATIONAL ACTIVITIES 2024

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'¹¹.

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. For example, the production of food is excluded from the scope but processes producing food may have co-products that are within the scope 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 scope. There are many other such examples.

The guiding principles for evaluating if an industrial activity falls within the scope of the 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 feedstock¹².

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 scope if the focus of the project is on materials; while 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.

The feedstock for bio-based operations should respect local ecological limits and protect and enhance biodiversity and ecosystems services and should come from short supply chains as much as possible. Additional requirements are included in the dedicated section.

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.

¹¹ [cbeju-sria.pdf](#)

¹² A non-exhaustive list of bio-based feedstock in the scope of CBE is included in Annex V of SRIA ([cbeju-sria.pdf](#))

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 level¹³,
- Horizon Europe partnerships level¹⁴,
- Specific CBE JU level with the KPIs defined in the SRIA Annex IV and described in the CBE JU KPI Handbook¹⁵.

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.

¹³ Horizon Europe programme analysis ([europa.eu](https://europea.eu))

¹⁴ A robust and harmonised framework for reporting and monitoring European Partnerships in Horizon Europe - Publications Office of the EU ([europa.eu](https://europea.eu))

¹⁵ CBE JU KPIs-Handbook.pdf ([europa.eu](https://europea.eu))

CBE KPIs: Objectives and Units of measurement		CBE JU AWP 2024 topics															
		2024. IA-Flag01	2024. IA-Flag02	2024. IA-Flag03	2024. IA-01	2024. IA-02	2024. IA-03	2024. IA-04	2024. IA-05	2024. IA-06	2024. IA-07	2024. R-01	2024. R-02	2024. R-03	2024. R-04	2024. R-05	2024. 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	X								X			X
1.2	N of bio- waste management actors, involved as project beneficiaries and/or engaged in value chains at project level																
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	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	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	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	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	
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	
4.3	N of projects developing innovative & sustainable processes enabling to address zero pollution		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					
4.5	N of products with improved life cycle environmental performance	X	X	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							
5.2	N projects developing circular production practises (incl. industrial & industrial urban symbiosis)											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								
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	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																
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
10.2	N of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects																X
10.3	N of projects with synergies with other funding programmes at EU, national or regional level	X		X													X

Table 1 CBE KPIs - Call 2024 Topics

Risk management

The CBE JU conducted a risk assessment exercise over the achievement of objectives described in this work programme for the year 2024. The assessment evaluated the root causes of each identified risk and their potential consequences, taking into account the existing controls as well as the convergences and inter-dependencies between risks. This process is documented in the internal risk register of the organisation, which incorporates a description of the responsive action plans, detailing the action owners and individual deadlines.

As a result, a total of five risks have been identified and described in the risk register with different degrees of importance, convergence and inter-dependency. For one additional threat the conditions and data for assessment were not mature enough to conclude on both likelihood and impact of their potential realisation. The risk register remains an internal living document and the management of identified risks will be ensured through appropriate mitigating actions, wherever possible, and continuously monitored by CBE JU throughout the year.

The CBE JU did not identify for 2024 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 risk assessment exercise confirmed the trend of previous years and some additional risks have been absorbed or reduced by an increased effectiveness of the Internal Control Framework of the organisation as well as by a consolidated internal experience in managing its core activities. In these areas, the CBE JU Programme Office demonstrates that it is operating to high quality operational standards and efficiency of operations is continuously being tested, while workload patterns and the stability of external services are closely monitored.

Still, a high and significant level of concern is maintained for 2024 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. Following what already observed in 2022, also in the course of 2023 the CBE JU project portfolio continued to report implementation delays, mainly due to disruption of feedstock supply, increase of energy prices and inflation. 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.

Finally, the likelihood of occurrence of a risk that is present in the register of the organisation since 2018 has been increased for 2024 because of the actual realisation of the risk in the course of 2023 and the same potential impact level is retained for 2024. Two CBE JU internal objectives on allocation of human resources – specifically: a) to keep CBE JU operations at the highest quality and efficiency standards and b) to ensure that the necessary and competent human resources are timely available and working in safely conditions – are challenged by structural constraints that currently insist on the resources made available to the Financial and Administration Unit. The allocation of human resources and their management exposed the overall organisation to different treats since its early set up and incremental controls have been put in place as a result of yearly action plans. Additional mitigating actions are planned for 2024 and the residual threats to the

achievement of yearly objectives are not assessed as critical at the moment of drafting this work programme.

2.2.2. Scientific priorities, challenges and expected impacts

The topics of this AWP are 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](#)¹⁶ and will support the commitments set under the [UN Sustainable Development Goals](#)¹⁷ (SDGs) and the [COP 21 Paris Climate Agreement](#)¹⁸.

The scientific priorities of this AWP are aligned with the CBE JU specific objectives and the strategic priorities, as identified in the SRIA¹⁹. As shown in Table 3, the topics of this AWP 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 AWP2024																	
		2024,IA-Flag01	2024,IA-Flag02	2024,IA-Flag03	2024,IA-01	2024,IA-02	2024,IA-03	2024,IA-04	2024,IA-05	2024,IA-06	2024,IA-07	2024,R-01	2024,R-02	2024,R-03	2024,R-04	2024,R-05	2024,S-01	2024,S-02	2024,S-03
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	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	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				
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	x		x				x	x	x
	2.2- Reduce the risk for research and innovation investment in bio-based companies and projects.								x										
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 2024 topics links to the CBE JU Specific Objectives

¹⁶ <https://op.europa.eu/en/publication-detail/-/publication/775a2dc7-2a8b-11e9-8d04-01aa75ed71a1>

¹⁷ <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

¹⁸ https://ec.europa.eu/clima/eu-action/international-action-climate-change/climate-negotiations/paris-agreement_en

¹⁹ <https://www.cbe.europa.eu/system/files/2022-06/cbeju-sria.pdf>

SRIA Strategic priorities	CBE JU TOPICS AWP2024																	
	2024,IA-Flag01	2024,IA-Flag02	2024,IA-Flag03	2024,IA-01	2024,IA-02	2024,IA-03	2024,IA-04	2024,IA-05	2024,IA-06	2024,IA-07	2024,R-01	2024,R-02	2024,R-03	2024,R-04	2024,R-05	2024,S-01	2024,S-02	2024,S-03
1.1.1 - Ensure the availability and quality of sustainable bio-based feedstock	x		x													x		x
1.3.1 - Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems	x		x										x			x		x
2.1.1 - Demonstrate the sustainable supply of bio-based feedstock	x	x	x		x	x		x		x						x		x
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	x	x	x			
2.1.2 - Deploy innovative production technologies		x		x	x	x	x	x	x	x	x							
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	x		x							
1.2.1 - Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems	x															x	x	x
1.2.2 – Increase the awareness and capacity of national and regional research support agencies for industrial bio-based systems																	x	
1.2.3 - Facilitate the development of expertise in bio-based fields by improving higher education and skills development in the private sector																		
2.1.4 - Build policy makers' awareness and acceptance of bio-based solutions																	x	
3.1.3 – Facilitate social acceptance of bio-based applications					x						x	x	x	x				
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																		
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		x

Table 3 AWP 2024 topics links to the SRIA strategic priorities

2.2.3. Calls for proposals

2.2.3.1 Specific requirements for the CBE JU Call 2024

In this chapter, the topics identified for the CBE JU call 2024 are presented together with their expected outcomes, their scope and specific topics' requirements. In addition, the 'Specific CBE JU requirements' are presented at the beginning of this chapter together with the general 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 with an * in the topic text.

In addition to the requirements set at topic level, all proposals should 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, see below)	RIA and IA, incl. FLAG	Part B – Structured question (Y/N) in the introduction
Feedstock sustainability requirements	RIA and IA, incl. FLAG	Part B – Structured question (Y/N) in the introduction
Description of feedstock	RIA and IA, incl. FLAG	Part B – 1.2 Methodology
Environmental performance - Ex-ante assessment • identification of environmental issues • estimation of environmental sustainability performance, • estimation of carbon removal potential	RIA and IA, incl. FLAG	Part B – 1.2 Methodology
Environmental sustainability and circularity - Ex-post assessment • Dedicated task for RIA • Dedicated task or WP (LCA) for IA non-FLAG • Dedicated task or WP (LCSA) for FLAG	RIA IA FLAG	Part B – 3.1 Workplan and resources
Multi-actor approach (MAA)	IA, incl. FLAG RIA and CSA, when specified	Part B – 1.2 Methodology
Economic aspects: • Economic viability • Business case and business model • Business plan	RIA IA, incl. FLAG FLAG	Part B – 2.2 Measures to maximise impact Dissemination, exploitation and communication FLAG: Annex (Business plan)
Digital technologies	RIA and IA, incl. FLAG	Part B – 1.2 Methodology
Cross-disciplinary aspects and Social Sciences and Humanities (SSH)	RIA and IA, incl. FLAG	Part B – 1.2 Methodology
Recommendations to stakeholders	IA, incl. FLAG	Part B – 3.1 Workplan and resources

Table 2 CBE JU Specific Requirements for Call 2024

Feedstock sourcing (eligibility condition)

RIAs and IAs, including Flagships

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 neighbouring²⁰ 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.

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

Feedstock sustainability requirements

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. As much as possible, the feedstock should come from short supply chains.

To ensure the environmental sustainability of feedstock, the consortium should confirm in the Part B via a structured question (Y/N) that, if funded, it will comply with the following:

- a) Climate change mitigation:
 - i. will not impact 'Land with high carbon stock'²¹
 - ii. will have low/zero ILUC risk and promote carbon sequestration, when applicable²²
 - iii. will aim at reducing GHG emissions from the extraction and/or cultivation²³
- b) Biodiversity protection:
 - i. when applicable, will implement Integrated Pest Management (IPM) for a reduced use of plant protection products and not apply those identified as 'candidate for substitution'²⁴,
 - ii. will contribute to biodiversity-friendly sustainable forest management practices²⁵, when applicable
 - iii. will not have an impact on protected species and habitats²⁶

²⁰ In view of establishing sustainable short biomass logistics.

²¹ https://knowledge4policy.ec.europa.eu/glossary-item/land-high-carbon-stock_en

²² 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.

²³ 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.

²⁴ Commission Directive (EU) 2019/782 on products containing active substances of Group 3

²⁵ According to the [Biodiversity strategy for 2030 and action plan](#) and the [Forest strategy for 2030](#)

²⁶ According to [Natura 2000 framework](#) and to the [Staff Working Document 'Criteria and guidance for protected areas designations'](#) (SWD(2022) 23)

- iv. will not introduce invasive species²⁷ and/or high-risk plants²⁸
 - v. will not impact protected areas (terrestrial or marine) with high biodiversity value, including highly biodiverse grasslands²⁹
- c) Zero pollution ambition (air/water/soil):
- i. will avoid open air burning of stubble/crop residues
 - ii. will contribute to the reduction of chemical pesticides and more hazardous pesticides use³⁰, when applicable
 - iii. will contribute to the reduction of nutrient losses by at least 50% and of the overall use of fertilisers³¹, when applicable
- d) Water resources protection:
- i. will not deplete surface or groundwater resources beyond replenishment capacities³².

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)³³;
- 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)

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 climate neutrality, resource efficiency, zero pollution (addressing the 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

²⁷ 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.

²⁸ 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.

²⁹ See RED II, Article 29, point 3, letter d)

³⁰ According to [Farm to Fork Strategy and action plan](#) and the Biodiversity strategy for 2030 and action plan.

³¹ Communication 'Ensuring availability and affordability of fertilisers'

³² See also the definition of quantitative status in the Water Framework Directive (DIRECTIVE 2000/60/EC)

³³ 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.

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 removal³⁴ potential** (i.e., CCU* and/or CCS*).

In addition, proposals should include as part of the **project** an **ex-post assessment** of the **environmental 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. 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 assessment (LCA) 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 approaches³⁵. They should use Commission recommendations and the European norms³⁶, technical reports and technical specifications. In particular, LCAs should use the standards developed by CEN/TC 411 for bio-based products³⁷. Applicants should consider the cradle-to-grave or cradle-to- cradle designs, justifying the choice and describing the methodology.

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 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 1.2 Methodology and performed e.g., through the publication of peer-review scientific papers, and/or the uploading of data of the life cycle inventory

³⁴ 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'

³⁵ See 'Life cycle thinking and the use of LCA in policies around the world', 2017

³⁶ E.g. the Product and Organisation Environmental Footprint methods as defined in the EU Recommendation 2279/2021

³⁷ [European Committee for Standardisation Technical Committee 411 on bio-based products](#)

(LCI) to the EOSC database, and/or sharing the data and the outputs with the European Knowledge Centre for Bioeconomy³⁸.

Multi-actor approach

IAs, including Flagships and those RIAs/CSAs when explicitly mentioned in the topic text

Applicants should include the multi-actual 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, ix) consumer associations, x) local communities, xi) citizens, xii) civil society organisations including NGOs, and xiii) government representatives. Which key actors are relevant to participate depends on the objective of the proposal. The genuine and sufficient involvement of such actors should take place all 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.

Building blocks for the project proposal are expected to come from science as well as from practice: it is a 'co-creation' process to develop solutions and create 'co-ownership' of results for (end-) users and practitioners. 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 should demonstrate**

- how the proposed objectives and planning are targeting the needs/problems/challenges of and opportunities for all actors involved;
- 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;

³⁸ https://knowledge4policy.ec.europa.eu/bioeconomy_en

- 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 concerned actors.

In addition, to ensure EU-wide communication in all areas related to the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI) and the common agricultural policy (CAP) specific objectives, in particular agriculture, forestry and rural development, this knowledge should also be summarised in an appropriate number of 'practice abstracts' in the common EIP-AGRI format.

For areas falling outside the remit of EIP-AGRI and CAP specific objectives, other similarly effective solutions ensuring dissemination at EU level should be sought. Where applicable, it is strongly recommended that interactive innovation groups, such as EIP-AGRI Operational Groups funded under Rural Development Programmes, become involved.

Economic aspects

RIAs: should include in Part B - Section 2.2. Measures to maximise impact - Dissemination, exploitation and communication an assessment of the economic viability of the products and processes to be developed, including:

- considerations on the potential market and quantitative information on the market size and trends;
- an analysis of key value chain(s);
- projections and estimates of costs of production/revenues of products or technologies, when possible.

IAs, incl. Flagships: should be based on a sound business case. the consortium should present in Part B - Section 2.2. Measures to maximise impact - Dissemination, exploitation and communication of their business case together with the specifications of an inclusive business model, covering all actors of the value chain (from feedstock providers through to the final sellers).

A business case is a justification for investing in a project to generate a profitable business, typically related to pursuing an opportunity or solving a problem. It may include:

- technical, economic, market, social, environmental and regulatory aspects, even if only at a qualitative level;
- an evaluation of risks, costs and benefits of the proposed project versus alternatives, though it may involve a relatively high level of uncertainty.

A business model is a description of the way in which a commercial activity generates revenues and value for its customers/ involved stakeholders. It includes:

- the actors involved and the relationships among them;

- a description and quantification of the costs and revenues, but no time dimensions or specific actions.

Flagships: should additionally include a detailed preliminary business plan in a separate Annex together with their business case and business model. **A business plan** is a detailed description of how the business will be developed. It includes:

- a quantification of the cost structure, financing thereof, and foreseen revenues,
- a description of the actions to be performed, their timing and the actors involved;
- technical, economic, market, social, environmental and regulatory aspects and
- a description of risks and possible contingencies.

The business plan is based on data, as much as possible, and/or assumptions (to cover areas where data are not available). The level of uncertainty is lower than in the business case.

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 among the following areas: i) chemicals, materials, catalysts and process design & modelling (including bioinformatics) ii) process monitoring, control and optimisation iii) tracking and tracing, and 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 concerned fields.

2.2.3.2 Topics 2024

HORIZON-JU-CBE-2024-IAFlag-01 Bio-based value chains for valorisation of sustainable oil crops

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	1.1: Increase the intensity of cross-disciplinary research and innovation activities 2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry 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 1.2.1: 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 2.1.1: Demonstrate the sustainable supply of bio-based feedstock 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 3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity 3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption 3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation 4.2 Number of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste

	4.5 Number of products with improved life cycle environmental performance
	10.3 Number of projects with synergies with other funding programmes at EU, national or regional level

Expected outcomes

The successful proposals will facilitate the large-scale deployment of oil crops for biorefining applications in line with the EU Bioeconomy Strategy³⁹ the Long-term vision for the EU rural areas⁴⁰, and the updated EU Industrial Strategy⁴¹ and will allow reaching the objectives of the Circular Economy⁴² and Zero Pollution Action Plan⁴³, the Biodiversity Strategy⁴⁴, and the objectives of R&I Mission 'A Soil Deal for Europe'.

Project results should contribute to the following expected outcomes:

- Establishment of oil crop production systems at large scale not interfering with (and where applicable establishing synergies with) food value chains through sustainable cultivation practices⁴⁵ compatible with the objectives of biodiversity protection and restoration.
- Preservation or enhancement of soil health, soil carbon sequestration potential, soil regeneration, contributing to environmental benefits⁴⁶.
- Oil yield, quality and purity meeting biorefinery processing requirements (if a benchmark is available: significant increase in oil yield, quality and purity), while maximising land use efficiency, and minimising ILUC, and ensuring - at the minimum - no negative impact on the environment.
- Availability of bio-based products from targeted oil crops meeting market requirements, including via application testing.
- Significantly improved sustainability, strategic autonomy, resilience and competitiveness of the European bio-based industry while reducing the dependence on imported feedstock.
- Contribution to revitalization of European rural areas across the whole value chain through cooperation between primary producers and biorefinery operators.
- Creation of 'green', fair and skilled jobs and new and local business opportunities Social acceptance of circular bio-based solutions and products.

Scope

Developing and deploying climate-positive industrial crop feedstock in Europe compatible with the objectives of biodiversity protection is essential for the EU's strategic autonomy and industrial competitiveness. Oil crops are key feedstock for numerous bio-based chemicals and materials; their large variety could enable the enhancement of existing bio-based value chains and the creation of new ones.

³⁶European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>

⁴⁰ Brussels, 30.6.2021, COM/2021/345 final

⁴¹ Brussels, 5.5.2021 COM(2021) 350 final

⁴² Brussels, 11.3.2020 COM(2020) 98 final

⁴³ Brussels, 12.05.2021, COM(2021) 400 final

⁴⁴ Brussels, 20.5.2020, COM(2020) 380 final

⁴⁵ Sustainable cultivation practices include enhanced focus on biodiversity and ecosystem services (including pollinator-friendliness), improved soil health, carbon storage, water efficiency

⁴⁶ Considering the local specificities

The scope covers the industrial use of plant oil crops including cascading use of their side-streams/residues. Algae are out of scope of this topic, as well as biofuel applications. Respecting the 'food first' principle, multipurpose oil crops are in scope.

Proposals under this topic should:

- Demonstrate large scale cultivation of low-ILUC-risk oil crops, providing environmental gains and enhanced ecosystem services⁴⁷ at local scale, to:
 - i. validate sustainable agronomic practices and cultivation schemes (including where applicable cultivation on marginal⁴⁸ and/or contaminated soils) in view of further integration of the crops in scope into current practices; implement measures to ensure avoidance of potential negative effects of large-scale cultivation systems (e.g. impact of monocultures/risk of habitat destruction, introduction of invasive species etc);
 - ii. prove high yield/productivity maximising land use efficiency, taking into account where applicable any trade-offs between lower yield with additional social and environmental benefits (including long-term effects), and break-even costs.

The feedstock in scope can include established oil crops as well as promising ones (already proven at least at TRL 6). Proposals may also include a limited amount of activities at lower final TRL, e.g. small field trials, on crop breeding approaches adapted to local pedo-climatic conditions, including via gene editing, to speed up the crop and trait optimisation⁴⁹, in view of further upscale beyond the project duration.

- Demonstrate innovative biorefinery processes at large scale to convert oils from the targeted crops into bio-based SSbD⁵⁰ chemicals and materials. The demonstration should include aspects related to optimisation of oil extraction and treatment, conversion of oil into intermediates and products, process(es) yield and selectivity as well as resource efficiency. Chemical, biotech and physical-chemical approaches are in scope.
- Address downstream processing (separation and purification) to ensure that biorefinery products meet final application requirements. The scope should also include cascading valorisation of co-products, residual biomass and side streams considering all steps of the value chain, to benefit the overall business case.
- Assess the replication potential of the demonstrated value chain(s) across Europe, taking into consideration different environmental and cultivation conditions.
- Perform an assessment of environmental impacts⁵¹ including aspects related to land use, required inputs, CO₂ footprint from cultivation and harvesting and further processing of targeted crops, biodiversity impacts⁵².
- Moreover, include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework⁵³, developed by the European Commission, for assessing the safety and sustainability of demonstrated bio-based chemicals and bio-based materials.

⁴⁷ Examples include: i. Catch cropping ii. Relay cropping iii. Intercropping. Developments and optimisation of the growing schemes can come from: i) Mechanisation ii) Crop growth cycle (precocity) of main and catch crop iii) Agronomics, including species rotation/association etc.

⁴⁸ See glossary.

⁴⁹ The traits may be related to promising but not yet optimised oil crops and the demonstration of their final application e.g. primarily to ensure the high yield, but also covering for such traits as seed shattering, or asynchronous flowering, causing losses and inefficient harvesting, or reduced toxicity, or other aspects affecting oil quality and performance, as relevant, and may also include the environmental optimisation e.g. improved water stress or water scarcity tolerance, better adaptation to various aspects of the soil marginality, increased carbon sequestration etc.

⁵⁰ Safe-and-Sustainable-by-Design, see glossary.

⁵¹ Ongoing initiatives on Natural Capital accounting concepts for sustainable industrial oil crops can be potentially taken into account (in case data is available).

⁵² Biodiversity assessment should include in particular impacts on the pollinators, other invertebrates, small mammals, birds, soil organisms and plant agrobiodiversity, surrounding habitats, potential invasiveness of selected oilseed crops.

⁵³ See glossary.

Under this context, projects are expected to contribute to and develop recommendations that can advance further the application of the SSbD framework.

- Depending on the selected type of soils, measures for ensuring the safety for the operators and end-users as well as the environment should be ensured (in particular but not exclusively in case of contaminated soils).
- Develop guidelines for recommendations to farmers, biorefinery operators and policy makers (in particular local and regional authorities) to ensure mutual benefits.
- Address any regulatory bottlenecks or related issues relevant to the targeted end market(s), ensuring compatibility in the perspective of potential future scale-up.
- Maximise the socio-economic impact, by identifying strategies for engaging local communities and stakeholders and providing support training, and proposing incentives and/or other schemes for adopting sustainable oilseed crops for biorefineries in a value chain approach, for example (but not exclusively) in case of areas facing environmental pressures such as drought, biodiversity decline, etc or socio-economic difficulties such as depopulation, disadvantaged communities and others.

Proposals should implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system, including primary biomass producers (farmers) and other rural and civil society actors (including SMEs and NGOs) bio-based industries, end-users, local communities, local and regional authorities, education and research sectors, including on social innovation practices based on effective cooperation models.

Proposals may consider making existing/new industrial assets (e.g., labs, test rigs, etc.) accessible to researchers, SMEs, etc., for visiting, or training and testing bio-based processes.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU ⁵⁴ as well as with other instruments ⁵⁵.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.2.

⁵⁴ e.g. MIDAS and MARGINUP! under call HORIZON-CL6-2022-CIRCBIO-01-02 'Marginal lands and climate-resilient and biodiversity-friendly crops for sustainable industrial feedstocks and related value chains'. H2020 (COSMOS), BBI JU (FIRST2RUN, LIBBIO), HE Cluster 6 (CARINA, MIDAS). Include a task to cooperate with CBE JU ongoing and parallel projects related to agricultural business models (e.g. BRILIAN, ROBOCOOP-EU), HORIZON-CBE-2024-XX CSA: New forms of cooperation in agriculture and the forest-based sector. This also applies to the cooperation with projects funded under the parallel topics in the present call, which is encouraged, as relevant.

⁵⁵ In particular the topic HORIZON-MISS-2022-SOIL-01-04 Remediation strategies, methods and financial models for decontamination and reuse of land in urban and rural area.

HORIZON-JU-CBE-2024-IAFlag-02 Bio-based dedicated 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 in the Union bio-based industry 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 3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity 3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption 3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation 4.1 Number of projects with innovative & sustainable processes that contribute to GHG emission reduction 4.2 Number of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.4 Number of projects with innovative & sustainable processes with improved energy efficiency 4.5 Number of products with improved life cycle environmental performance 6 Increase innovative bio-based outputs and products

	7 Improve the market uptake of bio-based products
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Expected outcomes

Projects are overall expected to address the EU Bioeconomy Strategy⁵⁶ and its action plan, the EU Zero pollution ambition for a toxic-free environment under the Chemicals Strategy for Sustainability⁵⁷ and the Zero Pollution Action Plan, the EU Industrial strategy,⁵⁸ the EU Biodiversity strategy 2030,⁵⁹ as well as and the co-implementation of the Transition Pathway⁶⁰ for the chemicals industry.

Project results should contribute to the following expected outcomes:

- Sustainable, large-scale production of bio-based platform chemicals with dedicated* chemical structures and availability of a broader range of bio-based chemicals meeting market and technical performance requirements, hence also facilitating the market uptake of bio-based solutions.
- Improved circularity and resource efficiency of bio-based value chains via practical application of circular bioeconomy, encompassing the resource- and energy-efficient, cascading use of sustainably-sourced biomass.
- Significantly improved sustainability, strategic autonomy, resilience and competitiveness of the European chemical industry and with cascading impact in other downstream sectors.
- Reduce the fossil feedstock dependence of chemicals production and/or minimising biomass imports dependencies of the bio-based industries.
- Significant improvement of environmental and safety performance across the value chain against specified fossil and/or bio-based benchmarks.
- New skilled job opportunities and investments in the bio-based sectors.
- Societal relevance and social acceptance of circular bio-based solutions and products.

Scope

Overall, bio-based platform chemicals, according to their chemical structure, can be classified as dedicated*, drop-ins* or smart drop-ins*. There is often medium/high TRL maturity when it comes to the production of bio-based dedicated chemicals. However, cost competitiveness and the sustainability of production can often be hindering factors for further upscaling and uptake of dedicated bio-based platform chemicals.

Proposals under this topic should:

- Demonstrate cost-effective, sustainable and resource-efficient large scale production processes for obtaining one or more bio-based dedicated platform chemicals. Both upstream and downstream process aspects are in scope. The overall objective should target improving process efficiency, lowering CAPEX/OPEX, lowering the E-factor (process waste) and improving process safety. Enabling process technologies in scope include chemical, physicochemical, biotech or hybrid technologies, as well as process intensification and symbiosis concepts, if applicable to attain improvements in resource efficiency and sustainability performance.

⁵⁶ Updated Bioeconomy Strategy 2018.

⁵⁷ The EU's chemicals strategy for sustainability towards a toxic-free environment.

⁵⁸ Brussels, 5.5.2021 COM(2021) 350 final.

⁵⁹ Biodiversity strategy for 2030.

⁶⁰ Transition pathway.

- Indicate clearly the targeted feedstock(s), including availability and process flexibility aspects in relation to feedstock composition, if relevant. The cascading valorisation of secondary biomass and residual streams is also in scope.
- Validate (end TRL: 5 and above) the further conversion and integration of produced chemicals into final products. The chosen bio-based chemical(s) should be validated in market-relevant application(s).
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.⁶¹ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.⁶²

Proposals should implement the multi-actor approach (MAA) and ensure adequate involvement of all key actors in the value chains relevant for this topic and across the sustainable circular bio-based system, including B2B end-users and feedstock providers.

Proposals may consider making existing/new industrial assets (e.g., labs, test rigs, etc.) accessible to researchers, SMEs, etc., for visiting, or training and testing bio-based processes.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU⁶³.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

⁶¹ See document defining the framework and criteria: [Safe and sustainable by design](#).

⁶² 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.

⁶³ Examples from the BBI JU/CBE JU portfolio include, without the list being exclusive: LUCRA (IA), COUNTLESS (IA), PULP2VALUE (IA-DEMO), BIOFOREVER (IA-DEMO), AFTERBIOCHEM (FLAGSHIP), PREFERENCE (FLAGSHIP), WASTE2FUNC (IA-DEMO) and others.

HORIZON-JU-CBE-2024-IAFlag-03 Bio-based value chains for valorisation of sustainable natural fibre feedstock

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	1.1: Increase the intensity of cross-disciplinary research and innovation activities 2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry 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 1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems 2.1.1: Demonstrate the sustainable supply of bio-based feedstock 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 3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity 3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption 3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation 4.2 Number of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste 4.5 Number of products with improved life cycle environmental performance 10.3 Number of projects with synergies with other funding programmes at EU, national or regional level

Expected outcomes

The successful proposals will facilitate the large-scale deployment of fibre crops and wood fibres for biorefining applications in line with the EU Bioeconomy Strategy⁶⁴ and the updated EU Industrial Strategy⁶⁵ and will allow reaching the objectives of the Circular Economy⁶⁶ and Zero Pollution Action Plan⁶⁷, the Biodiversity Strategy⁶⁸, the Long-term vision for the EU rural areas⁶⁹, and the objectives of the R&I Mission ‘A Soil Deal for Europe’ (in particular, contribution to its objective to reduce soil pollution and enhance restoration and improve soil structure to enhance soil biodiversity), as well as the upcoming European partnership on Agroecology. Contribution to the Mission Restore our Oceans and Waters’ in regards to reduction of microplastics pollution.

Project results should contribute to the following expected outcomes:

- Implementation of (environmentally and economically) sound value chains for biorefinery applications based on sustainable bio-based fibre feedstock, enabling diversification of business opportunities and income sources for all actors in the bio-based sectors via cooperation between primary producers and bio-based industries.
- Availability of bio-based products (based on fibres) meeting market requirements including via application testing.
- Improved circularity and resource efficiency of bio-based value chains via practical application of circular bioeconomy, encompassing the resource- and energy-efficient, cascading use of sustainably sourced biomass.
- Significantly improved sustainability, strategic autonomy, resilience and competitiveness of the European bio-based industry while reducing the dependence on imported feedstock.
- Contribution to revitalization of European rural areas across the whole value chain through cooperation between primary producers and biorefinery operators.
- Creation of ‘green’, fair and skilled jobs and new and local business opportunities
- Social acceptance of circular bio-based solutions and products.

Scope

Developing and deploying sustainable climate-positive natural fibre feedstock is essential for supporting numerous existing bio-based value chains as well as for potentially creating new ones. Sustainable agricultural and forestry practices can deliver feedstock meeting industry requirements (such as fibre yield, quality) while ensuring all aspects of sustainability, thus offering significant opportunities not only for industrial competitiveness, but also for climate change mitigation, rural development, and transition to low carbon bioeconomy.

The scope covers the establishment of industrial fibre crop production systems, compatible with the biodiversity protection and enhancement, and soil health, not interfering with (and where applicable taking advantage of synergies with) with food value chains through sustainable

⁶⁴ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

⁶⁵ Brussels, 5.5.2021 COM(2021) 350 final.

⁶⁶ Brussels, 11.3.2020 COM(2020) 98 final.

⁶⁷ Brussels, 12.05.2021, COM(2021) 400 final.

⁶⁸ Brussels, 20.5.2020, COM(2020) 380 final.

⁶⁹ Brussels, 30.6.2021, COM/2021/345 final.

cultivation practices⁷⁰ as well as maintenance or enhancement of soil health, soil carbon sequestration potential, soil regeneration, contributing to environmental benefits⁷¹.

The scope includes fibres from primary non-woody crops and/or wood-based fibres, as well as fibres from the respective residues and side streams. The scope excludes algae, while higher aquatic plants are included proven they have a starting TRL at least 6. Both long and short fibre applications are in scope. Natural fibres (including modified fibres) are in scope, while synthetic bio-based fibres are excluded. The scope also includes tackling bottlenecks in trait optimization⁷² and cultivation practice⁷³ where applicable.

Proposals under this topic should:

- When targeting non-woody fibre crops⁷⁴ and their residues:
 - Demonstrate large scale cultivation of fibre crops, aiming at high land use efficiency, low-ILUC-risk and high yield (or increase in crop yield with respect to a specific benchmark), providing environmental gains and enhanced ecosystem services⁷⁵ at local scale, to:
 - i. validate sustainable agronomic practices and cultivation schemes or growing systems through sustainable practices⁷⁶ (including where applicable cultivation on marginal⁷⁷ and/or contaminated soils) in view of further integration of the crops in scope into current practices; implement measures to ensure avoidance of potential negative effects of large-scale cultivation systems (e.g., impact of monocultures/risk of habitat destruction, introduction of invasive species etc);
 - ii. prove high yield/productivity maximising land use efficiency, taking into account where applicable any trade-offs between lower yield with additional social and environmental benefits (including long-term effects), and break-even costs.
- The feedstock in scope can include established fibre crops as well as promising ones (already proven at least at TRL 6). Proposals may also include activities at lower final TRL, e.g., small field trials, on crop breeding approaches adapted to local pedo-climatic conditions, including via gene editing, in view of further upscaling beyond the project duration.
- When targeting wood-based fibres⁷⁸ and their residues:
 - Demonstrate sustainable, transparent and traceable wood raw material supply chain, providing environmental gains and enhanced ecosystem services at local

⁷⁰ Sustainable cultivation practices include enhanced focus on biodiversity and ecosystem services (including pollinator-friendliness), improved soil health, carbon storage, water efficiency.

⁷¹ Considering the local specificities.

⁷² The traits may be related to promising but not yet optimized fibre crops feedstock and the demonstration of their optimised final application (e.g., primarily to ensure the high yield or other aspects affecting fibre quality and performance, as relevant), and may also include the environmental optimization (e.g., improved water stress or water scarcity tolerance, better adaptation to various aspects of the soil marginality, increased carbon sequestration etc).

⁷³ The cultivation approaches should also integrate elements that provide environmental gains and enhanced ecosystem services (examples include: i. catch cropping ii. Relay cropping iii. Intercropping b. Developments and optimisation of the growing schemes can come from: i) Mechanisation ii) Crops' growth cycle (precocity) of main and catch crop iii) Agronomics, including species rotation/association etc) at local scale

⁷⁴ Including short rotation coppice.

⁷⁵ Examples include: i. Catch cropping ii. Relay cropping iii. Intercropping. Developments and optimisation of the growing schemes can come from: i) Mechanisation ii) Crop growth cycle (precocity) of main and catch crop iii) Agronomics, including species rotation/association etc.

⁷⁶ Sustainable cultivation practices include enhanced focus on biodiversity and ecosystem services (including pollinator-friendliness), improved soil health, carbon storage, water efficiency.

⁷⁷ See glossary.

⁷⁸ Excluding short rotation coppice, which is already covered under the first point.

scale, and covering high yield (or increase in fibre yield with respect to a specific benchmark), aiming at high land use efficiency.

- Sustainable, traceable and transparent wood raw material supply chain including avoidance of deforestation aiming at improving biodiversity and carbon sinks.

Proposals may also include activities (at lower final TRL) on wood species breeding approaches adapted to local pedo-climatic conditions, including by specific techniques such as precision breeding and somatic embryogenesis.

- Demonstrate innovative biorefinery processes to convert fibre feedstock into SSbD bio-based materials and products. The scope includes garment applications, technical textiles, composites, nonwovens, fibre-based packaging among others. The demonstration should include aspects related to optimisation of fibre extraction yield, mechanical physical-chemical properties, fibre fineness, resource efficiency. Chemical, biotech and physical-chemical approaches may be considered.
- The scope also covers cascading valorisation of co-products, residual biomass and side streams from all steps in the value chain, to benefit the overall business case.
- Assess the replication potential of the demonstrated value chain(s) across EU/EEA/AC taking into consideration different environmental and cultivation/growth conditions.
- Perform an assessment of environmental impacts⁷⁹ including aspects related to land use, required inputs, CO₂ footprint from cultivation, harvesting and processing of targeted crops/feedstock, biodiversity impacts⁸⁰.
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of demonstrated biochemicals and biomaterials. Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.
- Develop guidelines or recommendations for farmers, forest owners and biorefinery operators and policy makers (in particular, local and regional authorities), to ensure mutual benefits.
- Address any regulatory bottlenecks or related issues relevant to the targeted end market(s), ensuring compatibility in the perspective of potential future scale-up.
- Maximise the socio-economic impact at territorial level, by identifying strategies for engaging local communities and providing support, for example (but not exclusively) in case of areas facing environmental pressures such as drought, biodiversity decline, etc or socio-economic difficulties such as depopulation, disadvantaged communities and others.

Proposals should implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system, including primary biomass producers (farmers and forest owners) and other rural and civil society actors (including SMEs and NGOs), bio-based industries, end-users/consumers, local communities, local and regional authorities, education and research sectors, including on social innovation based on effective cooperation models.

Proposals may consider making existing/new industrial assets (e.g., labs, test rigs, etc.) accessible to researchers, SMEs, etc., for visiting, or training and testing bio-based processes.

⁷⁹ The LCA data may be used to create a Natural Capital account for nature positive industrial fibre crops to be potentially fed into the business case for such changes in practice.

⁸⁰ Biodiversity assessment should include in particular impacts on the pollinators, other invertebrates, small mammals, birds, soil organisms and plant agrobiodiversity, surrounding habitats, potential invasiveness of selected fibre crops.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU ⁸¹.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

It is encouraged to assess a possibility of engaging in international cooperation, taking care of safeguarding the European industrial competitiveness.

⁸¹ E.g., project FIBSUN. Include a task to cooperate with CBE JU ongoing and parallel projects related to agricultural business models (e.g. BRILIAN, ROBOCOOP-EU), HORIZON-CBE-2024-01 CSA: New forms of cooperation in agriculture and the forest-based sector.

HORIZON-JU-CBE-2024-IA-01 Bio-based materials and products for biodegradable in-soil applications

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 7-8 at the end of the project.
Link to CBE JU Specific Objectives	2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems 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 Ensuring the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of biobased 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.
CBE JU KPIs	1.1. Number of primary producers, involved as project beneficiaries and/or engaged in value chains at project level 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.5 Number of products with improved life cycle environmental performance 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 Improve the market uptake of bio-based products

Expected outcomes

In line with the objectives of the Circular Economy⁸² and Zero Pollution Action Plan⁸³, and the EU Plastics Strategy⁸⁴ and the recommendation in the Communication – EU policy framework on bio-

⁸² Brussels, 11.3.2020 COM(2020) 98 final

⁸³ Brussels, 12.05.2021, COM(2021) 400 final

⁸⁴ https://environment.ec.europa.eu/strategy/plastics-strategy_en

based, biodegradable and compostable plastics⁸⁵ the successful proposals will facilitate the deployment of sustainable bio-based biodegradable materials and products for applications in soil.

Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy⁸⁶ and the updated EU Industrial Strategy⁸⁷. Moreover, successful proposals will deliver significant contribution to the objectives of the R&I Missions 'A Soil Deal for Europe', in particular objectives 'Reduce soil pollution and enhance restoration' and 'Prevent erosion', as well as Mission 'Restore our Oceans and Waters by 2030' in particular 'Make the blue economy carbon-neutral and circular' and 'Prevent and eliminate pollution of our oceans, seas and waters'.

Project results should contribute to the following expected outcomes:

- Availability of safe and sustainable by design bio-based solutions aiming at zero waste and zero pollution, with decreased environmental on soil, biodiversity and climate.
- Contribution to industrial competitiveness and resource independence of bio-based value chains in EU/EEA/EFTA countries and ACs.
- Improved circularity and resource efficiency via practical application of circular bioeconomy.
- Social acceptance of circular bio-based solutions and products.
- Innovative manufacturing processes to enable the safe biodegradation of bio-based materials and products according with the environmental conditions and time frame for specific applications.

Scope

Some plastics applications such as those in agriculture, infrastructure or landscaping are intended to be used in the open environment. Plastic mulch films, for example, are used extensively within a range of arable and horticultural cropping settings to prevent evaporation of water from the soil, avoid fluctuations in soil temperature, protect the crops and increase their yield. Geotextiles and geomembranes find widespread application in landscaping, construction and roadworks to stabilise and improve mechanical properties of soil, collect and transport groundwater and prevent contamination between different kinds of soil. Additional plastics applications in agriculture include greenhouses, pheromones dispensers, clips, pots, etc. The improper or unintentional disposal of plastic products and their degradation may result in soil pollution and environmental contamination. While in some cases recovery from the environment for reuse or recycling would be feasible, for some applications it is either impossible or disproportionately expensive and biodegradable (in soil) alternatives may be preferable, provided that the products are able to meet technical performance requirements throughout their use.

Proposals under this topic should:

- Demonstrate and deploy innovative production processes for SSbD bio-based products for biodegradable⁸⁸ -in- soil applications, addressing the problem of (micro)plastics release in soil and their further dispersion in runoff water. This topic focuses on products used in soil, for example mulch films, tarpaulins, geonets, geotextiles, geomembranes, etc. and plastics applications in agriculture, for example, greenhouses, pheromones dispensers, clips, pots etc; select one or more product categories, providing a justification of the selection based on the relevance of products in the actual market and/or on environmental considerations

⁸⁵https://environment.ec.europa.eu/publications/communication-eu-policy-framework-biobased-biodegradable-and-compostable-plastics_en.

⁸⁶ Updated Bioeconomy Strategy 2018.

⁸⁷ Brussels, 5.5.2021 COM(2021) 350 final.

⁸⁸ For biodegradability in soil refer to existing standards, when applicable, e.g., EN 17033:2018 for biodegradable mulch films. Also, taking into account the progress of the upcoming revision of the Regulation on fertilising product.

(e.g., the threats posed by the conventional non-biodegradable solutions for the same applications).

- The topic does not cover marine and aquatic applications as a main focus. However, spill over of the developed product streams towards other replication sectors (including marine/aquatic) can be considered, in order to widen market applications.
- Design the products for biodegradation in soil according to the environmental conditions and application timeframe, while ensuring technical performances meeting market requirements throughout the useful life of the product. Moreover, the topic also addresses eco-design and testing of reusability and/or recyclability depending on the final application(s) and use conditions.
- Demonstrate safe biodegradability of bio-based products designed for specific applications in open environments (soil) under ranges of physical/chemical environmental conditions, including extreme conditions (e.g., temperature, pH) where applicable. Safe biodegradability entails avoiding eco-toxicity, microplastic dispersion and any environmental impacts - from bio-based products including their additives and other components- on natural ecosystems and their services, including on the soil fertility, during and after degradation. All these aspects should be monitored and assessed, also in the phase of dispersion in runoff water.
- Perform validation trials of the developed bio-based products with the involvement of end users (for example, in case of applications for agriculture are selected, primary sector should be involved).
- Develop a proposal for appropriate labelling of products when applicable and provide clear instructions on their use and on disposal options after use. This task should include the consultation of targeted stakeholders, e.g., end users. Training of end users should also be envisaged.
- Contribute with recommendations related to standards for biodegradability in soil.
- Include a task for projects funded under this topic to collaborate and align the proposals for appropriate labelling, and the recommendations related to standards.
- Include a task to integrate assessment of the demonstrated bio-based products based on the safe and sustainable by design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.⁸⁹ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.⁹⁰

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU⁹¹, the BBI JU and CBE JU⁹², and the Missions 'A Soil Deal for Europe' and 'Restore our oceans and water'. Collaboration among projects from the same topic are encouraged.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

⁸⁹ See document defining the framework and criteria: [Safe and sustainable by design](#).

⁹⁰ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based plastics. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

⁹¹ Such as FIRST2RUN (H2020-BBI-JTI-2014), GRACE (H2020-BBI-JTI-2016), UNLOCK (H2020-BBI-JTI-2020), REBIOLUTION (HORIZON-CL6-2022-CIRCBIO-02-two-stage), MINAGRIS (H2020-SFS-2020-2), PAPILLON (H2020-SFS-2020-2), ELLIPSE (HORIZON-JU-CBE-2022).

⁹² For example, 'HORIZON-JU-CBE-2023-R-05 Pre-normative research to develop standards for biodegradability of bio-based products in controlled and in open environments'

HORIZON-JU-CBE-2024-IA-02 Sustainable micro-algae as feedstock for innovative, added-value applications

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 6-7 at the end of the project.
Link to CBE JU Specific Objectives	2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems 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 Ensuring the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of biobased 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 bio-based 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	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 4.5 Number of products with improved life cycle environmental performance 7 Improve the market uptake of bio-based products

Expected outcomes

In line with the objectives of the Bioeconomy Strategy⁹³ and the Zero Pollution Action Plan⁹⁴, successful proposals will facilitate the deployment of industrial systems based on sustainable bio-based feedstock. These systems will also contribute to new EU strategy for a Sustainable Blue Economy implementation and address the EC Communication Towards a Strong and Sustainable EU Algae Sector,⁹⁵ by demonstrating improved environmental performances, maximum resource- and energy-efficiency, and optimal cascading use of bio-based feedstock, aiming for 'zero waste'

⁹³ Updated Bioeconomy Strategy 2018.

⁹⁴ Brussels, 12.05.2021, COM(2021) 400 final.

⁹⁵ COM(2022) 592 final 'Towards a Strong and Sustainable EU Algae Sector'.

and 'zero-pollution' operations. Contribution to the objectives of the R&I Mission 'Restore our Oceans and Waters by 2030, in particular objective 3 'Make the blue economy carbon- neutral and circular'.

Project results should contribute to the following expected outcomes:

- Implementation of (environmentally and economically) sustainable micro-algae-based biorefinery processes.
- Availability of a broader range of micro-algae-based products meeting market requirements.
- Social acceptance of circular bio-based solutions and products.
- Decreased energy, water, nutrients and in general resource requirements for micro-algae production and processing with respect to state-of-art.
- Improved environmental impact with respect to fossil- and/or bio-based state-of-the-art counterparts (if existing).

Scope

The valorisation of micro-algae and cyanobacteria into bio-based products is increasing but still relatively limited. Past R&I activities related to strain, process and technology developments have brought significant progress for high-value/low-volume specialties based on micro-algae, produced in bioreactors. At the other end of the spectrum, low-value/higher volume products are produced at large scale in open ponds. There is a range of products for which production technologies are available, but not cost competitive. Presently there is a need to upscale production technologies, including downstream separation and purification, which would allow to cover the mid-price range of products in a cost-effective way, thereby contributing to increasing the market penetration of micro-algae derived chemicals and products.

Proposals under this topic should:

- Demonstrate optimised production, harvesting, and product extraction from micro-algae⁹⁶, cyanobacteria and/or other phototrophic bacteria, including aspects related to automation and control when applicable, including a specific focus on downstream separation and purification (quality and purity) of end products depending on final application requirements. Products in scope are those ingredients and intermediates in the medium price range, for which process technologies exist but are currently not cost-competitive enough to meet market demands. The objective is broadening the range of viable products beyond the high-end products for niche markets whose high value presently justifies the use of high-cost technologies.
- Reduce OPEX and CAPEX with respect to state-of-art, demonstrate the downstream conversion of the produced feedstock into added value products with clear market applications. Cascading and circular use of by-products and side streams is also fully in scope.
- Ensure that production and conversion of the feedstock are cost-competitive, resources efficient and sustainable (in terms of land use, water use, energy use including RES when it provides added value to the overall business case, nutrients intake, CO₂ and effluents). Regarding the optimized production, consider strain selection, optimization, accumulation (intracellular storage) and extraction of desired products, their yield, stability, toxicity, and quality, including purity.
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and

⁹⁶ Phototrophic, heterotrophic and mixed micro-algae strains are in scope

sustainability of chemicals and materials⁹⁷. Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.⁹⁸

Proposals must apply the concept of the 'multi-actor approach' and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system, including end users and consumers (when targeting B2C products).

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU⁹⁹, and should ensure a link and synergy with the 'Restore our Oceans and Waters' Mission¹⁰⁰ and parallel activities supporting the EU Algae initiative. Collaboration among projects from the same topic are encouraged.

⁹⁷ See document defining the framework and criteria: [Safe and sustainable by design](#).

⁹⁸ 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.

⁹⁹ Previous BBI JU projects: SpiralG (H2020-BBI-JTI-2017), MULTI-STR3AM (H2020-BBI-JTI-2019), SCALE (H2020-BBI-JTI-2020), MAGNIFICENT (H2020-BBI-JTI-2016), ABACUS (H2020-BBI-JTI-2016), VALUEMAG (H2020-BBI-JTI-2016), REDWine (H2020-BBI-JTI-2020). Previous Horizon2020 projects: SABANA, BIOSEA, ASTRAL, NOMORFILM, INCOVER, SATGAE, VOLATILE, NENU2PHAR, PRODIGIO, ProFuture, NewTecAqua, NextGenProteins, WATER2RETURN. HORIZON projects: CIRCALGAE, REALM. Mission Ocean projects: LOCALITY, AlgaePro BANOS.

¹⁰⁰ In particular to Objective 3: Make the blue economy carbon-neutral and circular.

HORIZON-JU-CBE-2024-IA-03 Enlarging the portfolio of commercially produced bio-based SSbD solvents

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 6-7 at the end of the project.
Link to CBE JU Specific Objectives	2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors. 3.1 Ensuring 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 bio-based products. 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	2 Unlock sustainable and circular bio-based feedstock for the industry 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 7 Improve the market uptake of bio-based products

Expected outcomes

Projects are expected to address the EU Bioeconomy Strategy¹⁰¹ and its action plan, the zero pollution ambition for a toxic free environment under the Chemicals Strategy for Sustainability and the Zero Pollution Action Plan,¹⁰² the EU Industrial strategy,¹⁰³ the EU Biodiversity strategy

¹⁰¹ Updated Bioeconomy Strategy 2018.

¹⁰² The EU's chemicals strategy for sustainability towards a toxic-free environment

¹⁰³ Brussels, 5.5.2021 COM(2021) 350 final

2030,¹⁰⁴ as well as and the co-implementation of the Transition Pathway for the Chemical Industry.¹⁰⁵

Project results should contribute to the following expected outcomes:

- Availability of a broader range of bio-based safe and sustainable by design (SSbD) solvents meeting market and technical performance requirements while delivering environmental and safety performance benefits, further facilitating of the market uptake of scalable bio-based solutions across the value chain.
- Significant improvement of environmental and safety performance across the value chain against specified fossil and/or bio-based benchmarks.
- Significantly improved sustainability, safety, strategic autonomy, resilience and competitiveness of the European chemical industry and with cascading impact in other downstream sectors.
- Reduce the fossil feedstock dependence of chemicals production and/or minimising biomass imports dependencies of the bio-based industries.
- Improved circularity and resource efficiency via practical application of circular bioeconomy, encompassing the resource- and energy-efficient, cascading use of sustainably sourced biomass¹⁰⁶.
- Societal relevance and social acceptance of circular bio-based solutions and products.

Scope

Solvents play an essential role in many applications, from production processes (both upstream and downstream steps), including recycling processes, to being essential components in final products. The EU bio-based production share is 1.5% (1% CAGR*), indicating a 'young' market.¹⁰⁷ The safety of solvents (conventional or not) is a concern; hence there is growing interest in safe and sustainable alternatives.

Proposals under this topic should:

- Demonstrate sustainable and efficient production process(es)¹⁰⁸ for obtaining bio-based solvents which can be then applicable as SSbD alternatives in one or more of the following applications: i) production processes and/or ii) recycling, decontamination or pollution control processes; and/or iii) formulation ingredients/additives. The focus should be to address safety and sustainability challenges of market-relevant solvents, including the ones under the SVHC* and SoCs* categories.
- Clarify the relevant feedstock in scope including availability and process flexibility aspects in relation to feedstock composition if relevant. The cascading valorisation of secondary biomass and residual streams is also in scope.
- Demonstrate that the targeted bio-based solvents are applicable in the most relevant final processes and/or products with critical market volumes or processing applications. This includes testing and validating (end TRL: 5 and above) the novel solvents in final products

¹⁰⁴ Biodiversity strategy for 2030

¹⁰⁵ Transition pathway (europa.eu)

¹⁰⁶ Feedstock chosen should ensure that there is no competition with food/feed, as well as adhere to environmental sustainability requirements (including biodiversity, etc.) – further described under 'specific requirements' section of the CBE AWP.

¹⁰⁷ Spekrijse, J., Lammens, T., Parisi, C., Ronzon, T. and Vis, M., Insights into the European market for bio-based chemicals, EUR 29581 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-01500-0, doi:10.2760/739561, JRC112989 and 'Road2Bio' BBI JU project.

¹⁰⁸ Enabling process technologies may include chemical, physicochemical, biotech or hybrid technologies while symbiosis concepts are welcomed, if applicable to attain resource efficiency and sustainability with regards to attaining the targeted bio-based solvents.

and/or processes to assess the impact on end-product and process design, overall impact, and performances.

- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹⁰⁹ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.¹¹⁰ The safety and environmental performance assessment must account for the full value chain and the most relevant final application(s) and end-of-life , ensuring safety for workers, end users / consumers as well as the environment.
- Assess the social sustainability performance of the bio-based solutions via S-LCA.

Proposals must apply the concept of ‘multi-actor approach’ and ensure adequate involvement of all key actors in the value chains relevant for this topic and across the sustainable circular bio-based system including end users, such as B2B stakeholders and brand owners.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU.¹¹¹ Collaboration among projects from the same topic are encouraged.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹⁰⁹ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹¹⁰ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based surfactants. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

¹¹¹ For example from the BBI JU portfolio, without the list being exclusive: RESOLUTE (FLAGSHIP; end: 2023), RESOLVE (RIA; end: 2020) and GREENSOLRES (IA, end:2021).

HORIZON-JU-CBE-2024-IA-04 Circular and SSbD bio-based construction & building materials with functional properties

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 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 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
Link to CBE JU SRIA	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 Unlock sustainable and circular bio-based feedstock for the industry 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 7 Improve the market uptake of bio-based products

Expected outcomes

In line with the objectives of the Circular Economy and Zero Pollution Action Plan, the revision of the Construction Products Regulation¹¹² the Waste Framework Directive⁸⁷, but also the EU Construction transition pathway¹¹³ the successful proposals will facilitate the demonstration and deployment of sustainable bio-based construction materials. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy and the updated EU Industrial Strategy.

Project results should contribute to the following expected outcomes:

- Uptake of circular bio-based solutions in construction and renovation of buildings, with possible spillovers to other large volume markets (e.g., transport and furniture).

¹¹² Brussels, 30.3.2022 COM(2022) 144 final.

¹¹³ [Construction transition pathway](#).

- Bio-based materials performance meeting market and regulatory requirements.
- Improved environmental and health & safety profile compared to current equivalent, conventional products.
- Contribution to improved air quality (including indoor air quality) by preventing air pollution.
- Increased end user/consumer awareness and acceptance of SSbD bio-based solutions.

Scope

Buildings produce about 40% of the world's CO₂ emissions, throughout the phases of material production, construction, useful life of the construction facility and end-of-life of its components, contributing to environmental pollution. To meet the increasing demand for sustainable, circular, energy efficient buildings and construction materials, there is a need to adopt cost effective, environmentally appropriate technologies and upgrade traditional techniques to increase circularity. Bio-based materials and products can often provide more sustainable and circular solutions and at the same time confer useful functional properties. At the same time, their scalability and environmental sustainability needs to be clearly demonstrated compared to conventional building materials.

Proposals under this topic should:

- Demonstrate bio-based products with tailored functional properties for large-scale applications in construction and renovation of buildings. Products in scope are functional elements such as (but not limited to) acoustic and thermal insulation panels, façade elements, interior fittings, foams, membranes, door structures, window frames. Examples of target functionalities include durability; fire retardancy; water barrier, moisture transfer, antimicrobial, antifungal/mould prevention, corrosion prevention among others. While the primary focus should be on construction and building products, proposals can also consider replication of the developed solutions in other large market sectors such as transport and furniture among others.
- Assess the compatibility of the innovative solutions developed with the built environment in terms of materials and of planning, construction, maintenance, renovation and/or demolition practices. Assess the compliance of products with the relevant regulatory framework and provide recommendations to overcome any identified bottleneck. Perform field trials of the newly developed materials and products involving end users (assessment, training and awareness raising). When applicable, test the compatibility with other components relevant to the final application.
- Ensure health and safety requirements of workers and end users/consumers are met, including indoor air quality benefits when applicable.
- Demonstrate improved environmental profiles compared to conventional (fossil or bio-based) materials in the production, use phase and end of life (including disassembly for easier recycling where applicable, reduction of waste and sustainable waste management).
- Demonstrate sustainable and resource efficient production routes.
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials. Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE

JU ¹¹⁴. Synergies with projects from Processes4Planet and the New European Bauhaus Academy initiative are encouraged. Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹¹⁴ BARBARA (H2020-BBI-JTI-2016), ReInvent (H2020-BBI-JTI-2017), ECOXY (H2020-BBI-JTI-2016), FIBSUN (HORIZON-JU-CBE-2022), CBE JU project funded under topic HORIZON-JU-CBE-2023-2-S-01 (CBE JU supporting activities for the New European Bauhaus Academy, a network for re-skilling and upskilling towards a sustainable construction ecosystem), HORIZON-CL6-2021-ZEROPOLLUTION-01-06, HORIZON-CL6-2021-CIRCBIO-01-01, HORIZON-CL6-2022-CIRCBIO-02-01, HORIZON-CL6-2023-CIRCBIO-01-08, HORIZON-CL6-2024-CIRCBIO-01-03, HORIZON-CL6-2024-CIRCBIO-02-5, HORIZON-CL6-2024-CLIMATE-01-05

HORIZON-JU-CBE-2024-IA-05 Selective and sustainable (co)-production of lignin-derived aromatics

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 6-7 at the end of the project.
Link to CBE JU Specific Objectives	2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors. 3.1 Ensuring 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 bio-based products. 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	2 Unlock sustainable and circular bio-based feedstock for the industry 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

Projects are overall expected to address the EU Bioeconomy Strategy¹¹⁵ and its action plan, the Chemicals Strategy for Sustainability¹¹⁶ (under the EU Zero pollution ambition for a toxic free environment), the EU Industrial strategy,¹¹⁷ the EU Biodiversity strategy 2030,¹¹⁸ as well as and the co-implementation of the Transition Pathway for the chemicals industry¹¹⁹.

¹¹⁵ Updated Bioeconomy Strategy 2018.

¹¹⁶ The EU's chemicals strategy for sustainability towards a toxic-free environment.

¹¹⁷ European Industrial Strategy.

¹¹⁸ Biodiversity strategy for 2030.

¹¹⁹ https://single-market-economy.ec.europa.eu/sectors/chemicals/transition-pathway_en.

Project results should contribute to the following expected outcomes:

- Scaling-up the cascading use of lignocellulosic biomass with improved atom economy, upcycling lignin. Significantly contributing to divesting from fossil resources, also considering the aromatics platform.
- Improved sustainability, strategic autonomy, resilience and competitiveness of the European chemical industry while reducing the fossil feedstock dependence in other downstream sectors.
- Significant improvement of environmental and safety performance across the value chain against specified fossil and/or bio-based benchmarks.
- Availability of broader range of bio-based chemicals meeting market and technical performance requirements, facilitating the market uptake of scalable bio-based solutions.
- Societal relevance and social acceptance of circular bio-based solutions and products.

Scope

Aromatics production is a billion € market and the share of EU is around 25 %. Aromatics have impact on applications such as solvents, agrochemicals, dietary supplements, while also being important in plastics production and other materials (e.g. resins, polyurethanes). The demand for chemicals from renewable sources is rapidly increasing and there is an urgent need for alternative feedstock and sustainable technologies to produce aromatics in bio-based industry. Lignin is available at large volumes and currently mostly downcycled because of the lower feasibility to obtain scaled up, selective aromatic streams, of which there are very few alternatives to fossil-based aromatics. Approximately, only 1-2% of the lignin annual production is used in chemicals production.

Proposals under this topic should:

- Demonstrate the efficient, cost-competitive and sustainable production of aromatic bio-based chemicals from lignin, including phenols, alkylphenols, BTX (Benzene, toluene and xylenes) and/or other aromatics.
- Address the upstream processing of lignocellulosic biomass and the downstream processing of lignin to obtain targeted aromatics, demonstrating high yield and selectivity for the targeted aromatics. Under this context, consider the integration of advanced analytical characterisation capabilities of lignin and lignin-derived aromatics if applicable.
- Describe reaction mechanisms and pathways leading to the production of the targeted bio-based aromatics in the context of further advancing process scale-up during or beyond the project duration.
- Clarify the relevant feedstock in scope including availability and process flexibility aspects in relation to feedstock composition if relevant. The cascading valorisation of secondary biomass and residual streams is also in scope.
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹²⁰ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.¹²¹ The safety and environmental performance assessment must

¹²⁰ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹²¹ 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.

account for the full value chain and the most relevant final application(s) and end-of-life , ensuring safety for workers, end users / consumers as well as the environment.

- Test and validate (end TRL: 5 and above) the bio-based aromatics for their further conversion or integration further down the value chain.

Proposals must implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system, including B2B actors, end users as well as feedstock providers.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU.¹²² Collaboration among projects from the same topic are encouraged.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹²² For example, from the BBI JU/CBE JU portfolio, without the list being exclusive: *WOODZYMES* (RIA), *SWEETWOODS* (FLAGSHIP), and *COUNTLESS* (IA).

HORIZON-JU-CBE-2024-IA-06 Innovative bio-based adhesives and binders for circular products meeting market requirements

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 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 including feedstock providers in the bio-based value chains 2.2: Reduce the risk for research and innovation investments in bio-based companies and projects 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 4.1 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 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.5 Number of products with improved life cycle environmental performance 5.1 Number of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular by design) 6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

Expected outcomes

In line with the objectives of the Circular Economy¹²³ and Zero Pollution Action Plan¹²⁴, the EU Chemicals Strategy for Sustainability and the Transition Pathway for the Chemical Industry and its co-implementation, the successful proposals will facilitate the deployment of sustainable bio-based adhesives. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹²⁵ and the updated EU Industrial Strategy¹²⁶.

Project results should contribute to the following expected outcomes:

- Diversification of the bio-based adhesives and binders product portfolio and increase of their range of application.
- Product performance meeting market and regulatory requirements.
- Proof-of-concept demonstration of new bio-based adhesive and binder applications under representative conditions.
- Improved sustainability and circularity compared to existing market counterparts.
- Improved health and safety profile compared to existing market products.
- Increased end user/consumer awareness and acceptance of SSbD bio-based solutions.

Scope

Adhesives and binders are used in several sectors; their strength, ease of application and stability are of significant help in the manufacture and service of products. However, certain conventional fossil-based products can present significant health and safety and environmental issues at production, use and end of life phases. The chemical composition of and volatile substances released from conventional synthetic adhesives and binders raise health and safety concerns; moreover they are often based on formaldehyde or epoxy resins, some of which are under scrutiny as candidate substances of concern. Bio-based solutions could represent safer alternatives, provided they match application requirements in terms of cost, performance and end of life.

Proposals under this topic should:

- Demonstrate the cost-competitive and resource efficient production of SSbD bio-based adhesives and/or binders, as alternatives to conventional fossil-based chemicals posing environmental and health & safety concerns.
- Demonstrate that the developed adhesives and/or binders meet target application requirements in terms of technical performances, such as shelf life and durability, load-bearing, fire resistance, resistance to chemicals and temperature, mechanical strength etc. Besides the technical properties of the adhesives and binders, proposals should also consider their application to the final product(s), targeting solutions allowing easy assembly/installation and debonding, as well as compatibility with recycling streams, for improved circularity of the product.

¹²³ Brussels, 11.3.2020 COM(2020) 98 final.

¹²⁴ Brussels, 12.05.2021, COM(2021) 400 final.

¹²⁵ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹²⁶ Brussels, 5.5.2021 COM(2021) 350 final.

- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹²⁷ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.¹²⁸ Where applicable, a comparison with the fossil-based and/or bio-based state-of-the-art counterparts should be added.

Proposals must implement the multi-actor approach and demonstrate the involvement of all concerned key actors in the bio-based systems, such as researchers and technology providers, bio-based processing industries, waste management operators, end-users and consumers.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU.¹²⁹ Collaboration among projects from the same topic are encouraged.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹²⁷ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹²⁸ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based adhesives. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

¹²⁹ For example from the BBI JU/CBE JU portfolio, CHAMPION (H2020-BBI-JTI-2019), VIOBOND (H2020-BBI-JTI-2020), VIPRISCAR (H2020-BBI-JTI-2017), SusBind (H2020-BBI-JTI-2017), SuperBark (HORIZON-JU-CBE-2022).

HORIZON-JU-CBE-2024-IA-07 Innovative conversion of biogenic gaseous carbon into bio-based chemicals, ingredients, materials

Type of action	Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 15 million
Expected EU contribution per project	It is estimated that a contribution of EUR 7.5 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 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. 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
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
CBE JU KPIs	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

Expected outcomes

In line with the objectives of the Circular Economy¹³⁰ and Zero Pollution Action Plan¹³¹, as well as the 2021 Communication on Sustainable Carbon Cycles targets¹³², the successful proposals will facilitate the deployment of sustainable products based on conversion of biogenic gaseous carbon from renewable resources. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹³³ and the updated EU Industrial Strategy¹³⁴.

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

- Industrial symbiosis in the bio-based sector to reduce GHGs emissions.
- Improved environmental performances and resource efficiency of bio-based processes.

¹³⁰ Brussels, 11.3.2020 COM(2020) 98 final.

¹³¹ Brussels, 12.05.2021, COM(2021) 400 final.

¹³² 'At least 20% of the carbon used in the chemical and plastic products should be from sustainable non-fossil sources (i.e. waste, sustainable biomass and atmosphere) by 2030, in full consideration of the EU's biodiversity and circular economy objectives and of the upcoming policy framework for bio-based, biodegradable and compostable plastics' COM(2021) 800 Communication on Sustainable Carbon Cycles.

¹³³ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹³⁴ Brussels, 5.5.2021 COM(2021) 350 final.

- Improved and upscaled CCU technologies in the bio-based systems¹³⁵.
- Enhanced carbon removal potential of bio-based systems as storage of carbon from biogenic gaseous emissions into circular and/or long-lasting bio-based chemicals and/or ingredients and/or materials¹³⁶.

Scope

Biogenic gaseous carbon¹³⁷ from bio-based systems and biorefineries can be used as a sustainable feedstock to replace fossil carbon to obtain chemicals (including polymers), ingredients and materials while further contributing to reducing CO₂ emissions and to increasing carbon sequestration in circular and/or long-lasting bio-based products and materials. The resulting innovative value chains have the potential to turn a problem (related to carbon gaseous emissions in the atmosphere) into an opportunity for EU socio-economic growth and global strategic autonomy for raw materials, while mitigating negative impacts to climate change and biodiversity preservation. Bio-based industry can lead the way to such untapped potential providing examples which could be in the future adapted and replicated also by big emitters of CO₂, including those out of the scope of this topic.

Proposals under this topic should focus on carbon in gaseous emissions from biomass-based systems and industrial biorefineries or any other bio-based operation (including emissions from primary sectors) as main feedstock for further conversion. Biogenic gaseous carbon emissions from plants dedicated to the production of bioenergy from biomass combustion and from syngas are not in scope.

Proposals under this topic should:

- Demonstrate the efficient capture and further conversion of biogenic gaseous carbon from selected source(s) into ingredients, chemicals and polymers and/or materials within the scope of the CBE. Different conversion routes are in scope.
- Demonstration should address the implementation of necessary measures to maximize productivity of targeted output.
- The demonstration should also address: i) flexible and economically viable systems for capture and/or potential purification of selected biobased gaseous stream based on the specific characteristics of the selected feedstock and targeted use ii) efficient recovery and purification of obtained ingredients/chemicals/materials proving the fulfilment of requirements for targeted applications.
- Assess the replication/adaptation potential of the proposed technological approach(es) to other sources of biogenic carbon through the analysis of the range of current/potential sources of biogenic carbon emissions from biorefineries/bio-based industrial activities.
- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials. Under this context, projects are expected to

¹³⁵ ‘...we need to recycle carbon from waste streams, from sustainable sources of biomass or directly from the atmosphere, to use it in place of fossil carbon in the sectors of the economy that will inevitably remain carbon dependent. The circular economy and the sustainable bioeconomy sectors can address this objective and should promote technological solutions for carbon capture and use (CCU) and the production of sustainable synthetic fuels or other non-fossil based carbon products.’ COM(2021) 800 Communication on Sustainable Carbon Cycles.

¹³⁶ The ‘carbon storage products’ is one of the carbon removal activities defined in the proposal for a Regulation establishing a Union certification framework for carbon removals COM (2022) 672, together with permanent removal and carbon farming. In the same proposed regulation, the concept of long-lasting is mentioned (although not fully defined) in: Article 2 - Definitions ‘...For the purposes of this Regulation, the following definitions apply: (a) ‘carbon removal’ means either the storage of atmospheric or biogenic carbon within geological carbon pools, biogenic carbon pools, long-lasting products and materials, and the marine environment, or the reduction of carbon release from a biogenic carbon pool to the atmosphere...’, Article 6 Long-term storage ‘...An operator or group of operators shall demonstrate that a carbon removal activity aims at ensuring the long-term storage of carbon’

¹³⁷ CBE SRIA 2022, glossary: biogenic gaseous carbon = Carbon in gaseous emissions from biomass-based industrial ecosystems and biorefineries or any other bio-based operation.

contribute with and develop recommendations that can advance further the application of the SSbD framework. Where applicable, a comparison with the fossil-based counterparts of the same chemicals/ingredients/materials should be added.

- Assess the carbon removal* potential of the developed technologies, and apply monitoring systems to allow for reporting and verification to be recognised as contributing to EU climate and environmental objectives (following the upcoming European certification framework¹³⁸).

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU¹³⁹, Horizon 2020 and Horizon Europe¹⁴⁰ and Processes4Planet PPP¹⁴¹. Collaboration among projects from the same topic are encouraged.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹³⁸ [Proposal_for_a_Regulation_establishing_a_Union_certification_framework_for_carbon_removals.pdf](#).

¹³⁹ REDwine, HICCUPS and SynoProtein.

¹⁴⁰ For example, BioRECO2VER, ENGICOIN, BIOCONCO2, CELBICON, VIVALDI, CO2SMOS.

¹⁴¹ HORIZON-CL4-2024-TWIN-TRANSITION.

HORIZON-JU-CBE-2024-RIA-01 Valorisation of polluted/contaminated wood from industrial and post-consumer waste streams

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	2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors. 3.1 Ensuring 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 bio-based products. 3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems
CBE JU KPIs	4.2 N of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste 4.4 N of projects with innovative & sustainable processes with improved energy efficiency 5.2 N of projects developing circular production practises (incl. industrial & industrial urban symbiosis)

Expected outcomes

In line with the objectives of the Circular Economy¹⁴² and Zero Pollution Action Plan¹⁴³, the EU Forest Strategy¹⁴⁴ and the Waste Framework Directive¹⁴⁵, the successful proposals will facilitate the deployment of sustainable bio-based solutions based on recovery and recycling of post-

¹⁴² Brussels, 11.3.2020 COM(2020) 98 final.

¹⁴³ Brussels, 12.05.2021, COM(2021) 400 final.

¹⁴⁴ Brussels, 16.7.2021 COM(2021) 572 final.

¹⁴⁵ https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en.

consumer wood streams. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁴⁶ and the updated EU Industrial Strategy¹⁴⁷.

Project results should contribute to the following expected outcomes:

- New systems combining sorting, cleaning and valorisation of post-consumer and post-industrial wood waste into eco-designed sustainable bio-based products.
- New cross-sectoral and multidisciplinary approach fostering the development of innovative circular business models through the cooperation among different actors.
- Decreased wood waste to landfill, incineration and all unsustainable practices, and associated environmental impacts.
- Decontaminated wood waste validated as suitable feedstock for products in at least two application sectors.
- Social acceptance of circular bio-based solutions and products.

Scope

Post-consumer and post-industrial wood waste is an abundant secondary feedstock mainly coming from construction and furniture, but also secondary packaging. Policies around Europe are prompting separate collection and recycling of wood waste. Despite the great potential of urban and industrial wood waste to be exploited through a circular bioeconomy approach, this complex waste stream is difficult to be recycled/reprocessed, as it often features contaminants in the form of additives (glues, varnishes, paints, additives, etc.), pollutants (wood treatment products and heavy metals), and contaminating materials (glass, plastics, metals, etc.).

Proposals under this topic should:

- Develop innovative, adaptive/flexible, sustainable and efficient technologies for separating wood content derived from industrial and post-consumer wood waste streams¹⁴⁸ from impurities, pollutants and contaminants¹⁴⁹. Examples of such wood waste streams include wood from furniture; construction and demolition waste; pallets; boxes and crates and many others. Develop sustainable valorisation/conversion/recycling routes for decontaminated wood waste into bio-based intermediates/chemicals/materials/products.
- Assess the reduced environmental impacts and the increased circularity in the developed treatment of the selected wood waste streams, also in comparison with the current treatments, if possible.
- Target at least two different applications/sectors considering economic viability and environmental sustainability.
- Describe how contaminants will be safely and sustainably isolated and treated. When applicable, assess and develop processes for treatment and potential valorisation of organic and/or inorganic contaminants.
- Consider health and safety (H&S) aspects including safety of end-users and operators;
- Perform a survey of the current regulatory framework ruling the management and valorisation of wood waste at EU level and provide recommendations to address potential bottlenecks.

¹⁴⁶ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁴⁷ Brussels, 5.5.2021 COM(2021) 350 final.

¹⁴⁸ Side-streams or by-products of the forest primary sector and pulp and paper industries are not in the scope of this topic.

¹⁴⁹ For a classification of wood waste, see also the document 'Waste Wood Assessment Guidance for the UK Waste Wood Industry' and other guidance provided by the Wood Recyclers Association (WRA) <https://woodrecyclers.org/>.

- Include a task to integrate assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹⁵⁰ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework¹⁵¹.

Proposals must apply the concept of ‘multi-actor approach’ and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system, including local communities, municipalities, waste management companies and consumers (when targeting B2C products).

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU¹⁵². Moreover, projects should consider liaising with P4P and NEB initiative.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹⁵⁰ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹⁵¹ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with the targeted bio-based products. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

¹⁵² Example of previous or ongoing projects: EcoReFibre (HORIZON-CL4-2021-RESILIENCE-01), WOODCIRCUS (HORIZON 2020-SC5-2018-1), BioREG (H2020-BB-2016-2017). Projects from the call HORIZON-JU-CBE-2023-2-S-01

HORIZON-JU-CBE-2024-RIA-02 Biotech routes to obtain bio-based chemicals/ materials replacing animal-derived ones

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 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
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 1.1.3 – Develop innovative bio-based products 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 4.1 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 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.5 Number of products with improved life cycle environmental performance 6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

Expected outcomes

In line with the objectives of the Circular Economy¹⁵³ and Zero Pollution Action Plan¹⁵⁴, as well as the Farm to Fork Strategy¹⁵⁵, the successful proposals will contribute to the development of sustainable bio-based products. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁵⁶ and the updated EU Industrial Strategy¹⁵⁷.

Project results should contribute to the following expected outcomes:

- Novel, scalable and more sustainable biotech production routes for bio-based and non-animal-derived chemicals and/or materials replacing animal-derived ones.
- Performance(s) of bio-based chemicals and/or materials meeting end users' requirements for final products.
- Availability of safe and sustainable by design bio-based products.
- Positive socio-economic impacts along the value chain, from feedstock suppliers to chemicals and materials producers to end users.
- Social acceptance of circular bio-based solutions and products.

Scope

Several industries (examples being in, cosmetics ingredients, but also in textile, leather, chemical and material production) utilise animal-derived raw materials as a basis to produce a wide range of products. Examples include hormones, amino acids/peptides, animal oils and fats, fibres, casein, collagen, bone, blood, feathers, leather, etc. Animal derivatives are often characterised by a variable composition and pose sustainability issues due to land use for feed and animal breeding and related environmental footprint but also the animal welfare concerns. There is a growing consumer awareness and drive to move away from animal-derived products in mass-market products. Moreover, the possible presence of pathogens is a critical issue which impacts safety and requires costly downstream purification. Plant-based, fungi-, algae or microbial streams and related side-streams can provide a safer, more sustainable and consistent alternative.

Proposals under this topic should:

- Develop biotech routes for sustainable bio-based alternatives to (a set of) animal-derived product(s). Define, develop and test the related biotech routes and subsequent downstream (separation, purification) up to pilot scale (TRL 5). While the focus of this action is on bio-based materials and/or chemicals, co-production of other bio-based ingredients (including for food and feed) is in scope, fulfilling the cascading approach for maximum valorisation of the feedstock. Any non animal-based biomass feedstock in the scope of the CBE JU is considered in scope for this topic.
- Characterise the properties of the resulting bio-based material(s)/chemical(s); address validation into final product(s) to test compatibility with market requirements.
- Assess the compatibility with relevant norms and regulations, including Health&Safety aspects when considering consumer applications.

¹⁵³ Brussels, 11.3.2020, COM(2020) 98 final.

¹⁵⁴ Brussels, 12.05.2021, COM(2021) 400 final.

¹⁵⁵ With reference to the Farm to Fork target of 'reducing climate and environmental impact of animal breeding' Brussels, 20.5.2020, COM(2020) 381 final.

¹⁵⁶ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁵⁷ Brussels, 5.5.2021 COM(2021) 350 final.

- Include a task to integrate a prospective assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹⁵⁸ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework¹⁵⁹.
- Perform a socio-economic impact assessment identifying challenges and opportunities across new and existing value chains.
- Involve end users starting from the early stages of development to assess market acceptance of the newly developed bio-based materials/products. When addressing consumer products, involve consumers in the testing and validation phase.

Proposals must implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system. In particular, involve end users (e.g., consumers and brand owners) or other stakeholders such as NGOs and regulatory actors.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU. Collaboration among projects from the same topic are encouraged.

¹⁵⁸ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹⁵⁹ 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 and materials. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

HORIZON-JU-CBE-2024-RIA-03 Sustainable, bio-based alternatives for crop protection

Type of action	Research and Innovation Action
Indicative budget	The total indicative budget for the topic is EUR 10 million
Expected EU contribution per project	It is estimated that a contribution of EUR 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 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 2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry and increase the involvement of R&I actors including feedstock providers in the bio-based value chains
Link to CBE JU SRIA	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 1.3.2 - Improve environmental performances of bio-based processes 1.1.3 – Develop innovative bio-based products 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 4.1 Number of projects with innovative & sustainable processes that contribute to GHG emissions reduction 4.5 Number of products with improved life cycle environmental performance 6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

Expected outcomes

In line with the objectives of the Circular Economy¹⁶⁰ and Zero Pollution Action Plan¹⁶¹, as well as the Farm to Fork Strategy¹⁶² and the Biodiversity Strategy¹⁶³, notably to the targets to reduce by 50% the overall use and risk of chemical pesticides and reduce the use by 50% of the more hazardous pesticides by 2030, the successful proposals will contribute to the transition to an sustainable and environmental friendly agriculture through the development of sustainable bio-based products for crop protection. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁶⁴, the updated EU Industrial Strategy¹⁶⁵ and to the objectives of the EU R&I Mission 'A Soil Deal for Europe'.

Project results should contribute to the following expected outcomes:

- Increased availability of widely accessible and cost-efficient alternatives for prevention and (bio)control of plant pest with improved environmental performance (e.g., reduced effects on non-target organisms, natural resources, humans and the environment).
- Reduced reliance on hazardous plant protection products and favour low risk plant protection solutions, to sustain crop productivity and food security while contributing to sustainable agriculture and/or forestry.
- Minimised pesticides impact on human and animal health, terrestrial and aquatic ecosystems, drinking water, soils and the food chain.

Scope

FAO estimates that up to 40 % of food crops are lost due to plant pests and diseases globally every year. Plant protection products (PPPs) are used to protect crops and other plants from pests and diseases. Biopesticides are a promising alternative to chemical synthetic pesticides and tend to have lower health and environmental risks.

The development of sustainable bio-based alternatives to chemical synthetic pesticides in the EU remains challenging, as each feedstock source requires specific considerations on logistics, processing and transformation technologies, as well as final product development and validation. In addition, food and feed safety as well as human health aspects need to be fully elaborated to enable a placing on the market of the end-products.

Moreover, the lack of alternatives to deal with some pests and diseases affect agricultural sustainability and poses a challenge for food security. Further efforts will be needed to support farmers in the transition to achieve the ambitious targets of the Farm to Fork Strategy. In addition, climate change is altering pests' behaviour and geographical distribution, which may further increase the risk of introducing pests to new areas and the severity of the impact.

Proposals under this topic should:

- Develop and test innovative processes for obtaining safe and sustainable bio-based alternatives for crop protection. Development of fertilisers (including biostimulants) is not

¹⁶⁰ Brussels, 11.3.2020, COM(2020) 98 final.

¹⁶¹ Brussels, 12.05.2021, COM(2021) 400 final.

¹⁶² With reference to the Farm to Fork target of '*reducing the use of, and dependency on, chemical pesticides in general, and the use of more hazardous pesticides in particular*' Brussels, 20.5.2020, COM(2020) 381 final.

¹⁶³ Brussels, 20.5.2020, COM(2020) 380 final.

¹⁶⁴ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁶⁵ Brussels, 5.5.2021 COM(2021) 350 final.

in scope but proposals can explore synergistic strategies employing crop protection products and fertilisers.

- Assess the potential risks and benefits of the chosen alternative in view of safety and sustainability in accordance with established scientific risk assessment methodologies and relevant EU regulatory frameworks related to their manufacturing and placing on the market. In addition, include a task to integrate a prospective assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹⁶⁶ Under this context, projects are expected to contribute with and develop recommendations that can advance further the application of the SSbD framework¹⁶⁷. Where applicable, a comparison with the fossil-based state-of-the-art counterparts should be added.
- Develop and test the effectiveness of alternatives to chemical synthetic pesticides for selected crops covering a variety of climatic and soil conditions. Address innovative solutions for product delivery on field, including precision farming approaches through enabling digital technologies and/or formulation and optimisation aspects to ensure controlled release at an optimal dosage.
- Implement a participatory approach fostering the cooperating among farmers and bio-based industries in Europe including the exchange of knowledge and best practices, capacity building, training and education activities enabling farmers/growers to adopt the proposed solution reducing the use and risk of chemical synthetic products for crop protection.

Proposals must implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, across the sustainable circular bio-based system in particular primary biomass producers, academic community and the bio-based industry.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU¹⁶⁸, Horizon 2020¹⁶⁹ and Horizon Europe¹⁷⁰. Collaboration among projects from the same topic are encouraged. Proposals should liaise also with relevant initiatives in EU including the Mission 'A Soil Deal for Europe', in particular with activities concerning the objectives 'reduce soil pollution and enhance restoration' and 'improve soil structure to enhance soil biodiversity.'

¹⁶⁶ See document defining the framework and criteria: [Safe and sustainable by design](#).

¹⁶⁷ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based crop protection products. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

¹⁶⁸ B-Ferst (H2020-BBI-JTI-2018), SUSFERT (H2020-BBI-JTI-2017), BIOVEXO (H2020-BBI-JTI-2019), PHERA (H2020-BBI-JTI-2019), BIOBESTicide (H2020-BBI-JTI-2019).

¹⁶⁹ LEX4BIO (H2020-RUR-2018-2), SEA2LAND (H2020-RUR-2020-1), Nutri2Cycle (H2020-SFS-2017-2).

¹⁷⁰ HORIZON-CL6-2023-FARM2FORK-01-7- Innovations in plant protection: alternatives to reduce the use of pesticides focusing on candidates for substitution and Horizon Europe project RATION (<https://cordis.europa.eu/project/id/101084163>).

HORIZON-JU-CBE-2024-RIA-04 SSbD bio-based coating materials for applications under demanding and/or extreme conditions

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 3.5million 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
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 1.1.3: Develop innovative bio-based products 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 4.1 Number of projects with innovative & sustainable processes that contribute to GHG emissions reduction 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.5 Number of products with improved life cycle environmental performance 6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

Expected outcomes

In line with the objectives of the Circular Economy¹⁷¹ and Zero Pollution Action Plan¹⁷², the EU Chemicals Strategy for Sustainability and the Chemicals Transition Pathway and its co-implementation, the successful proposals will facilitate the deployment of sustainable bio-based coatings. Successful proposals will also contribute to the implementation of the EU Bioeconomy

¹⁷¹ Brussels, 11.3.2020 COM(2020) 98 final.

¹⁷² Brussels, 12.05.2021, COM(2021) 400 final.

Strategy¹⁷³, the updated EU Industrial Strategy¹⁷⁴ and the Biodiversity Strategy¹⁷⁵. Moreover, successful proposals, depending on application, will potentially deliver significant contribution to the objectives of the R&I Mission ‘Restore our Ocean and Waters by 2030’ in particular to Objective 3: ‘Make the blue economy carbon-neutral and circular’ and indirectly to Objective 2: ‘Prevent and eliminate pollution of our oceans, seas and waters’.

Project results should contribute to the following expected outcomes:

- Diversified portfolio of bio-based coatings with high technical performances.
- Increased range of applications of bio-based coatings into final products used under demanding and/or extreme conditions.
- Improved sustainability and circularity compared to existing (fossil-based) counterparts.
- Improved health and safety profile compared to existing (fossil-based) counterparts.

Scope

Coating materials are used in a wide range of industries (such as transport, construction, processing industry, textiles, energy, electronics, telecommunications, water and waste management). They protect the product, communicate information to the user, increase its lifetime, and confer performance and functionality (e.g. anticorrosion, antimicrobial, antifouling). At present, coatings are mostly fossil-based or of mineral origin. Some paints and synthetic coatings are under scrutiny or have been banned altogether for their health & safety and environmental impacts. Safer and more environmentally friendly alternatives are needed. The main technical challenges in developing bio-based coatings are obtaining stable and homogenous formulations meeting market requirements in term of performance while showing potential cost-effectiveness in the perspective of further scale-up.

Proposals under this topic should:

- Develop innovative and efficient processes to obtain SSbD bio-based alternative(s) to (a set of) conventional coating(s) for applications under demanding and/or extreme conditions where e.g. high durability; resistance to fire, extremes temperatures, chemical agents, weather, fouling and mould, corrosion; hydrophobicity are needed. One or more relevant end-use sectors could be targeted, without limitation.
- Assess the functional properties of the developed coatings against application-driven parameters, including new systems to apply the coatings where relevant. Involve end users in the testing and validation activities. Moreover, address the end-of-life of the targeted final product(s), ensuring that the bio-based coating is not hindering the circularity of the final product(s).
- Include a task to integrate a prospective assessment based on the safe-and-sustainable-by-design (SSbD) framework, developed by the European Commission, for assessing the safety and sustainability of chemicals and materials.¹⁷⁶ Under this context, projects are

¹⁷³ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁷⁴ Brussels, 5.5.2021 COM(2021) 350 final.

¹⁷⁵ Brussels, 20.5.2020, COM(2020) 380 final.

¹⁷⁶ See document defining the framework and criteria: [Safe and sustainable by design](#).

expected to contribute with and develop recommendations that can advance further the application of the SSbD framework.¹⁷⁷

- Perform a preliminary techno-economic feasibility analysis of the subsequent scale-up phase, including market considerations (demand; target price; competing products; estimated lead time).

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU¹⁷⁸. Collaboration among projects from the same topic are encouraged.

¹⁷⁷ More specifically, provide thresholds that can support the criteria definition and improvements for the assessment SSbD methodologies, including any specificities related with bio-based coatings. Recommendations should also include identification of data gaps, especially safety, environmental, but also socio-economic factors, as well as priorities for data collection.

¹⁷⁸ PERFECOAT (H2020-BBI-JTI-2020), LIGNICOAT (H2020-BBI-JTI-2020), ECOFUNCO (H2020-BBI-JTI-2018), REFUCOAT (H2020-BBI-JTI-2016), Glaukos (H2020-BBI-JTI-2019), BIONtop (H2020-BBI-JTI-2018), BioBarr (H2020-BBI-JTI-2016), BIORING (HORIZON-JU-CBE-2022), SuperBark (HORIZON-JU-CBE-2022).

HORIZON-JU-CBE-2024-RIA-05 Innovative bio-based food/feed ingredients

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 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
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 1.1.3: Develop innovative bio-based products
CBE JU KPIs	2 Number of innovative bio-based value chains created or enabled based on sustainably sourced biomass 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 4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution 4.5 Number of products with improved life cycle environmental performance 6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

Expected outcomes

In line with the objectives of the Circular Economy¹⁷⁹ and Zero Pollution Action Plan¹⁸⁰, as well as the Farm to Fork Strategy¹⁸¹, the new regulation on the assessment and authorisation of feed

¹⁷⁹ Brussels, 11.3.2020, COM(2020) 98 final.

¹⁸⁰ Brussels, 12.05.2021, COM(2021) 400 final.

¹⁸¹ With reference to the Farm to Fork target of 'reducing climate and environmental impact of animal breeding' Brussels, 20.5.2020, COM(2020) 381 final.

additives¹⁸², food additives, food enzymes and food flavourings¹⁸³ as well as the regulation for the re-evaluation of programme of approved food additives¹⁸⁴, the successful proposals will contribute to the development of sustainable and healthy bio-based food and feed ingredients other than proteins. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁸⁵, to the updated EU Industrial Strategy¹⁸⁶ and to Europe's food security and Farm2Fork strategy ambition.

Project results should contribute to the following expected outcomes:

- Increased availability of affordable bio-based functional ingredients for food and feed with high nutritional and health properties.
- Increased safety and sustainability of food and feed value chains.
- Reduction of use of food and feed ingredients from unsustainable sources.
- New and better organoleptic and nutritional properties for healthy food and feed ingredients, increasing consumer acceptance.

Scope

Human and animal nutrition are two key areas where the bio-based industries can play an important role in addressing the present societal and climate challenges. Considerable attention is given to the mobilisation of alternative sources of proteins, fibres and carbohydrates, due to the increasing world population and the current unsustainable animal protein production systems. In addition to proteins, fibres and carbohydrates where significant advancements are under way, there is still the need to develop and validate at pilot scale breakthrough innovations in other food and feed ingredients which play an important role in human and animal health such as prebiotics, postbiotics, vitamins, peptides, oligosaccharides, fats, emulsifiers, enhancers of digestibility. In addition to those having a direct role in nutrition, other ingredients have an indirect, but nonetheless key, role in promoting healthier food and feed systems by enhancing organoleptic properties, texture, colour, palatability, digestibility etc. Unlocking this opportunity alongside with the current push to healthier and sustainable food chains makes the market of sustainable food and feed ingredients extremely promising for high tech bio-based applications.

Proposals under this topic should:

- Develop innovative food and/or feed ingredients from sustainably sourced bio-based feedstock. The innovation in scope can be related to i) breakthrough processes to obtain known food/feed ingredients, and/or ii) novel food/feed ingredients. Ingredients in scope include bioactive compounds, antioxidants, prebiotics, postbiotics, vitamins, peptides, oligosaccharides; fats; emulsifiers; taste, texture, palatability and digestibility enhancers; colourants, functional/'precision proteins' (i.e. proteins obtained, for example but not only, from precision fermentation process) among others. Besides the technical properties of the targeted ingredients (organoleptic, nutritional, prevention of intolerances/allergies), proposals should also consider their affordability. The production of bulk proteins, fibres and carbohydrates used as main nutritional component is not in scope per se; however the

¹⁸² Commission Implementing Regulation (EU) 2020/1773 of 26 November 2020.

¹⁸³ Commission Implementing Regulation (EU) 2020/1823 of 2 December 2020.

¹⁸⁴ Commission Implementing Regulation (EU) 2021/148 of 8 February 2021.

¹⁸⁵ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁸⁶ Brussels, 5.5.2021 COM(2021) 350 final.

development of complex food and feed formulations involving the application of innovative functional ingredients working in synergy with them is in scope.

- Any production technique is in scope; proposals are required to pay particular attention to environmental, social and economic sustainability of the chosen pathway (including ingredients' sources and availability/supply and the use of natural resources such as land, water, energy). In addition to production processes, proposals should consider downstream separation and purification processes to meet the targeted quality for final application aligned with food and safety legal requirements. Circular solutions, e.g. exploiting residual streams, are also in scope and could provide additional socio-environmental benefits. In this case proposals need to take particular care and adopt monitoring solutions to ensure that neither pathogens nor contaminants from the starting residual stream is injected back in the loop.
- Test the properties of the functional ingredients developed, alone and/or in combination and, if applicable, their effect on product formulations according to established testing procedures. Moreover, proposals should test the safety of developed ingredients through in vitro toxicological tests.
- Address the regulatory aspects relevant to the targeted end market(s), ensuring compatibility in the perspective of potential future scale-up.
- Involve end users starting from the early stages of development to assess market acceptance of the new ingredients. When addressing consumer products, involve consumers to gain insight of their perception and future chances of market uptake.

Proposals must implement the multi-actor approach and ensure adequate involvement of all key actors in the value chains relevant for this topic, in particular involving farmers, feedstock providers, bio-based industry, end users (e.g. consumers and brand owners) and regulatory actors.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU ¹⁸⁷. Collaboration among projects from the same topic is encouraged.

¹⁸⁷ Agrimax (H2020-BBI-PPP-2015-2-1), BIOSEA (H2020-BBI-JTI-2016), MAGNIFICENT (H2020-BBI-JTI-2016), EXCornsEED (H2020-BBI-JTI-2017), INGREEN (H2020-BBI-JTI-2018), SUSTAINEXT (HORIZON-JU-CBE-2022), RoboCOOP-EU (HORIZON-JU-CBE-2022).

HORIZON-JU-CBE-2024-CSA-01 New forms of cooperation in agriculture and the forest-based sector

Type of action	Coordination and Support Action
Indicative budget	The total indicative budget for the topic is EUR 4 million
Expected EU contribution per project	It is estimated that a contribution of EUR 4 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
Legal and Financial Set up of the Grant Agreements	The rules are described in General Annex G and section 2.3.3.3 of this Work Programme. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose
TRL	Non-technological action
Link to CBE JU Specific Objectives	1.1 Increase the intensity of cross-disciplinary research and innovation activities 2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors. 3.1 Ensuring 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 1.2.1 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 2.1.1 Demonstrate the sustainable supply of bio-based feedstock 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 3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity

	3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption 3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation
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Expected outcomes

In line with the objectives of the Circular Economy¹⁸⁸ and Zero Pollution Action Plan¹⁸⁹, the Long-term vision for the EU rural areas¹⁹⁰, as well as the Biodiversity Strategy¹⁹¹, the successful proposals will facilitate creation and uptake of innovative forms of cooperation among primary producers and bio-based industries. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁹² and the updated EU Industrial Strategy¹⁹³. Enhanced synergies and complementarities with actions under the R&I mission 'A soil deal for Europe'.

Project results should contribute to the following expected outcomes:

- Identification of new forms of cooperation among primary producers and other rural actors, and between them and bio-based industries, in circular bio-based businesses.
- Increased potential of innovative cooperative and circular bio-based business models for primary producers and other rural actors in different regions and pedo-climatic zones in Europe.
- Better awareness on the added-value bio-based products (including e.g. food ingredients or food supplements) and products with improved sustainability characteristics (e.g. resource efficiency, environmental impact, circularity, social sustainability, etc.) and their scaling up potential.
- Creation of 'green', fair and skilled jobs and new and local business opportunities with potential for replication across the EU.
- Identification of new forms of cooperation of primary producers and other rural actors in circular, biobased businesses.
- Improved circularity and resource efficiency of bio-based value chains via practical application of circular bioeconomy, encompassing the resource- and energy-efficient, cascading use of sustainably sourced biomass.
- Significantly improved sustainability, strategic autonomy, resilience and competitiveness of the European primary sectors while reducing the fossil feedstock dependence.

Scope

The circular use of waste, by-products and residues from agriculture, forestry, and the agri-food industry can lead to the creation of new economic opportunities in rural areas. However, primary producers are often not fully integrated in bio-based value chains, and thus, benefits are not

¹⁸⁸ Brussels, 11.3.2020 COM(2020) 98 final.

¹⁸⁹ Brussels, 12.05.2021, COM(2021) 400 final.

¹⁹⁰ Brussels, 30.6.2021, COM/2021/345 final.

¹⁹¹ Brussels, 20.5.2020, COM(2020) 380 final.

¹⁹² European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

¹⁹³ Brussels, 5.5.2021 COM(2021) 350 final.

sufficiently distributed among value chain actors. In addition, actors in the bio-based economy need a specific understanding on processes optimisation and high degree of investments in innovation and technologies.

This topic addresses diverse forms of cooperation among primary producers and beyond in wider value networks as well as suitable business models to create high-value bio-based products in vertically integrated value chains via advanced biorefineries. A more efficient collaboration poses several opportunities for primary producers: a significant bargaining power as a consequence of higher production volumes, economies of scales, stronger competitiveness and better access to market, portfolio diversification in production while reducing risks and creating new economic benefits, better investment capacity due to pooling resources and control over the whole production, facilitated access to information and to new knowledge.

Proposals under this topic should:

- Assess the feasibility and suitability of new forms of cooperation among primary producers (e.g. cooperatives) to optimise harvesting, logistics and processing of particularly secondary or underutilised biomass for the manufacturing of innovative products in the scope of the CBE JU (including the management and recycling of waste produced during the transformation process).
- Develop wider value networks, clusters, and other forms of collaboration in the bio-based sectors and stimulate the interactions between the key actors to reduce the limiting factors such as seasonality of biomass, initial costs or high market competition.
- Use of technologies and logistics in a symbiotic and resource-efficient way to further accelerate the deployment of a circular and sustainable bioeconomy.
- Identify and develop solutions to overcome the barriers for the valorisation of underutilised biomass, taking into account the regional conditions as well as the perspective of primary producers and the industry.
- Demonstrate the economic and sustainable feasibility of the production of high added-value bio-based products with tangible market applications, thereby following the food first and the cascading use principles.
- Develop economic viable long-term business plans and marketing strategies as well as other non-financial benefits (e.g. education training, technical assistance, access to new technologies and innovations, market information, etc.). Identify new skilled job opportunities in primary production and investments in underrepresented rural areas
- Develop environmental impacts assessment models as well as social benefits to constantly optimising the production along the entire value chain.
- Identify bottlenecks and opportunities in existing EU level policy frameworks in order to facilitate creation and uptake of innovative forms of cooperation among primary producers and bio-based industries. On this basis, provide recommendations for a cross-sectoral EU level policy framework and suggestions for concrete actions supporting the development of the European bio-based economy.
- Support the piloting and scaling up of the production of new high-added-value products including under the innovative regional clusters. Proposals may involve financial support to third parties to provide direct support (e.g., in the form of cascading grants) to actions related to teaming supporting the development of local value chains). Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose.
- Develop suitable governance models to ensure the practical feasibility of implementing such cooperations in specific and varying institutional contexts across European countries. Such models need to consider existing regulatory environments, governance structures as well as stakeholder views and preferences.

Proposals must implement the multi-actor approach and demonstrate the involvement of all concerned key actors, such as primary producers, landowners, researchers, regional authorities, environmental organisations, and consumers).

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects¹⁹⁴, including those funded under H2020, HEU and the BBI JU.

Proposals should also describe their contribution to the Specific CBE JU requirements, presented in section 2.2.3.1.

¹⁹⁴ i.e HORIZON-CL6-2024-CircBio-02-6-two-stage.

HORIZON-JU-CBE-2024-CSA-02 Mobilize inclusive participation in bio-based systems and supporting the CBE JU widening strategy and its action plan

Type of action	Coordination and Support Action
Indicative budget	The total indicative budget for the topic is EUR 3 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.
Legal and Financial Set up of the Grant Agreements	The rules are described in General Annex G and section 2.3.3.3 of this Work Programme. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose
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 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
Link to CBE JU SRIA	1.2.1: Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems 1.2.2: Increase awareness and capacity of national and regional research support agencies for industrial bio-based systems 2.1.4: Build policy makers' awareness and acceptance of bio-based solutions
CBE JU KPIs	10.1 Number of participants from the underrepresented EU countries and regions 10.2 Number of regional hubs, established and operated to process bio-based feedstock, and other cooperation aspects 10.3 Number of projects with synergies with other funding programmes at EU, national or regional level

Expected outcomes

In line with the objectives of the Circular Economy¹⁹⁵ and Zero Pollution Action Plan¹⁹⁶, the Long-term vision for the EU rural areas¹⁹⁷, as well as the Biodiversity Strategy¹⁹⁸, the successful proposals will enhance cooperation and participation of stakeholders from underrepresented countries and regions in the European bio-based economy landscape. Successful proposals will also contribute to the implementation of the EU Bioeconomy Strategy¹⁹⁹ and the updated EU Industrial Strategy²⁰⁰. Enhanced synergies and complementarities with actions under the R&I missions 'A soil deal for Europe' and 'Restore our Ocean and Waters'.

Project results should contribute to the following expected outcomes:

- Increased innovation capacity of regional bio-based stakeholders in countries and regions with less mature bio-based ecosystems, especially from the areas covered by the CBE JU Widening Participation Strategy.
- Greater participation of less represented countries and regions in the CBE JU programme and in all actions of the CBE JU; and inclusive engagement of newcomers from the industrial sector, market operators, civil society and policy makers.
- Identified and improved connections among actors within local innovation ecosystems (e.g., industry-governance and research-governance), promoting teaming and exchange of best practice across the EU.
- Full implementation of the CBE JU widening strategy at national and/or regional level through the engagement of relevant national and regional R&I clusters and industrial associations.
- Synergies with other funding programmes at EU, national or regional level.

Scope

Stimulating research activities in countries and regions with underdeveloped R&I capacity for bio-based systems is a stated priority of the CBE JU Strategic Research and Innovation Agenda (SRIA) and is monitored by a specific KPI 10 'Improving the participation of regions and countries with high unexploited potential and strategic interest to develop it'.

In this context, a dedicated Widening Participation strategy²⁰¹ for the CBE JU was endorsed by the CBE JU Governing Board together with its first Action Plan for the period 2023-2024²⁰², which includes a list of concrete actions to step up the participation of under-represented countries in the CBE JU programme.

This CSA is one of the measures aiming at supporting the practical implementation of the CBE JU Widening Participation and its action plans.

¹⁹⁵ Brussels, 11.3.2020 COM(2020) 98 final.

¹⁹⁶ Brussels, 12.05.2021, COM(2021) 400 final

¹⁹⁷ Brussels, 30.6.2021, COM/2021/345 final.

¹⁹⁸ Brussels, 20.5.2020, COM(2020) 380 final.

¹⁹⁹ European Commission, Directorate-General for Research and Innovation, Review of the 2012 European Bioeconomy Strategy, Publications Office, 2018, <https://data.europa.eu/doi/10.2777/086770>.

²⁰⁰ Brussels, 5.5.2021 COM(2021) 350 final.

²⁰¹ <https://www.cbe.europa.eu/system/files?file=2023-09/CBE-JU-widening-strategy.pdf>.

²⁰² <https://www.cbe.europa.eu/system/files?file=2023-09/CBE-JU-widening-action-plan-2023-2024.pdf>.

Proposals under this topic should:

A. Foster stakeholder engagement and collaboration:

- Target stakeholders from countries²⁰³ and regions²⁰⁴ covered by the CBE JU Widening Participation strategy. The participation in the consortia of stakeholders from other countries and regions is encouraged, if aimed at the exchange of best practice and mutual learning and at fostering capacity building.
- The development of joint projects could be promoted, facilitating the exchange of knowledge and collaboration between bio-based clusters in different regions.

B. Develop capacity building and raise awareness

- Provide a support/knowledge transfer platform for all stakeholders in the bio-based economy, especially focussing on attracting newcomers, with a particular attention to industrial representatives. This may cover the creation of an online platform with information resources, webinars or training courses, aiming at the exchange of best practices.
- Incorporate actions on increasing awareness about CBE JU, via a co-creation/participatory/ trust building approach, including in local languages as appropriate. The proposed activities shall leverage on relevant existing national and regional programmes in the bioeconomy sector, to empower the local biobased sectors.
- Provide recommendations for the growth of the bio-based sector and for an increased engagement of all stakeholders in the targeted countries and regions, aimed at policy makers and replicators. Recommendations can also cover any newly identified bottleneck preventing the participation of local stakeholders in bio-based activities²⁰⁵ to increase their engagement, including information and exchange sharing in local languages, as relevant.

C. Promote synergies

- Synergies with relevant (macro-)regional networks such as the BIOEAST Initiative²⁰⁶ are encouraged.
- Analyse the possibility of establishing collaborations with relevant bio-based funding programmes at EU, national or regional level with a particular focus on European Structural and Investment Funds (ERDF, ESF+, CF, EAFRD, EMFF), the implementation of Recovery and Resilience Facility and the Just Transition Fund, to maximise the impact of complementary funding in the bio-based sector.
- Synergies with relevant EC funded projects is also expected. An inventory of relevant EC funded projects is included in the CBE JU Widening strategy. This list represent the state of the art and should be considered by the applicants when proposing new measures.
- Proposals may involve financial support to third parties to provide direct support (e.g., in the form of cascading grants) to actions related to teaming. Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the

²⁰³ EU countries that are included in the list of Horizon Europe Widening Countries and that were underrepresented through the BBI JU programme implementation: Bulgaria, Croatia, Cyprus, Czechia, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Slovenia, as defined in Art. 349 TFEU.

²⁰⁴ Regions that are classified as 'less developed' or 'transition' by cohesion policy, and that were underrepresented through the BBI JU programme implementation. Considering the high number of relevant regions, macro-regional areas (e.g. Central-Eastern European, Mediterranean, Baltic, Atlantic, etc.) could be considered in the development of targeted actions, upon common identified bottlenecks or characteristics (e.g. feedstock availability).

²⁰⁵ The CBE JU Widening Participation action plan 2023-2024 includes in annex the list of identified bottlenecks, resulting from an ad hoc survey and a workshop involving national representatives and national contact points from EU widening countries.

²⁰⁶ www.bioeast.eu

form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose.

Proposals should seek for links and complementarities and avoid overlaps with past, ongoing and upcoming EU funded projects, including those funded under H2020, HEU and the BBI JU and CBE JU.

HORIZON-JU-CBE-2024-CSA-03 Supporting the CBE JU Deployment Group on Primary Producers

Type of action	Coordination and Support Action
Indicative budget	The total indicative budget for the topic is EUR 3 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.
Legal and Financial Set up of the Grant Agreements	The rules are described in General Annex G and section 2.3.3.3 of this Work Programme. The following exceptions apply: Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose
TRL	Non-technological action
Link to CBE JU Specific Objectives	1.1 Increase the intensity of cross-disciplinary research and innovation activities 2.1 Reinforcing the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors. 3.1 Ensuring 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 1.2.1 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 2.1.1 Demonstrate the sustainable supply of bio-based feedstock 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 3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity 3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption

	3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation 10.1 Number of participants from the underrepresented EU countries and region 10.2 Number of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects 10.3 Number of projects with synergies with other funding programmes at EU, national or regional level
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Expected outcomes

Successful proposals will contribute to the EU Bioeconomy Strategy, the Common Agriculture Policy, the Common Fisheries Policy, the EU Forest Strategy for 2030 and the Long-Term Vision for Rural Areas by supporting the CBE Deployment Group on primary producers and contributing to the uptake of economically viable and environmentally sustainable solutions in agriculture, forestry and aquaculture & fisheries primary sectors.

Project results should contribute to the following expected outcomes:

- Support services to the CBE JU Deployment Group of primary producers to successfully meet their expected objectives and carry out the proposed tasks²⁰⁷.
- An efficient, active, engaged, and well-coordinated Deployment Group on primary producers maintained and at least for a period of three years.
- Enhanced impact of the CBE JU Deployment Group of primary producers by means of implementing high-quality actions and delivering outstanding outcomes.
- Improved overall facilitation, organisation, communication and dissemination of activities stemming from the CBE JU Deployment Group of primary producers and their results at European and national level.
- Enhanced cooperation with existing initiatives, networks and projects relevant for the activities of the CBE JU Deployment Group of primary producers.

Scope

Primary producers are at the beginning of the circular bio-based value chains as biomass suppliers²⁰⁸. They also play an important role as producers and end-users of bio-based products and innovations. As such, they have a critical role in the deployment of circular and bio-based innovations. However, do not always fully benefit from the opportunities that this can offer to them and are often not entirely integrated into the bio-based value chains together with other actors. The long-term economic viability of novel bio-based business models, from which the primary producers can benefit, is sometimes uncertain and affected by associated technical barriers but also by policy, regulatory & legal barriers as well as for other unpredictable climatic or global circumstances.

²⁰⁷ CBE Governing Decision adopting the concept note which defines among others, the scope, objectives and tasks of the deployment group on primary producers.

²⁰⁸ SRIA Annex V. Table V.1: Potential feedstock for the bio-based industry.

The CBE JU Deployment Groups are established in accordance with articles 22 and 56 of the Council regulation establishing the Joint Undertakings²⁰⁹, taking also into consideration the CBE Impact Assessment²¹⁰ and the CBE JU Strategic Research and Innovation Agenda²¹¹.

Under this framework, a specific Deployment Group of primary producers will be established to provide advice to CBE JU on critical issues encountered by primary producers with an impact on the deployment of circular bio-based solutions and innovations. In particular, the Deployment Group on primary producers will address opportunities and challenges faced by the primary sector which constitutes critical issues for the deployment of circular bio-based solutions and innovations and to ensure that primary producers benefit from their involvement in new and innovative circular and bio-based value chains.

The Deployment Group will be composed by a flexible and balanced group of stakeholders representing the primary sector, including the agricultural; forestry; and fisheries & aquaculture primary sectors²¹². The proposal should engage primary producers from different regions and pedo-climatic zones in Europe.

Proposals under this topic should:

- Put in place the working modalities and tools to maintain a robust, active, engaged, and well-coordinated as well as effective CBE JU Deployment Group on Primary Producers for at least three years.
- Support the CBE JU Deployment Group on Primary Producers in developing and updating of an action plan to meet its objectives²¹³, while taking into consideration the particularities and specificities of each one of the identified primary sectors. Provide the means and mechanisms to implement the above-mentioned action plan.
- Facilitate the organisation of regular CBE JU Deployment Group on Primary Producers meetings (in-person and virtual), assist in the dialogue among the different stakeholders and sectors and prepare the reports and conclusions arising from the meetings.
- Organise ad-hoc technical working groups to discuss specific topics, as needed, and thereby ensure that the relevant expertise is well covered to achieve tangible results.
- In the case of face-to-face meetings of the CBE JU Deployment Group on Primary Producers, if requested, reimburse the travel and accommodation costs of the experts.
- Assist the Deployment Group on Primary Producers in the preparation of tangible outputs, such as policy reports, analyses, or recommendations targeted for the CBE JU Governing Board, but, also if needed, translated into other languages.
- Identify, and set-up efficient mechanisms to follow-up on the challenges faced by the primary sector with impact on the deployment of circular bio-based solutions and innovations and other critical issues identified by the CBE JU Deployment Group on Primary Producers, as well as opportunities (e.g., successful business models, success stories with replicability potential, etc.).

²⁰⁹ Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R2085&from=EN>.

²¹⁰ SWD(2021) 37 final PART 17/19 <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC0621&from=EN>.

²¹¹ CBE JU Strategic Research and Innovation Agenda.

²¹² For the purpose of the DEG and in line with the definition comprised in the CBE key performance indicators' handbook, primary producers are defined as entities operating in the agriculture, forestry, fisheries and aquaculture primary sectors performing activities related to the production, harvest, handling, and storage of biological resources before being moved to either processing or distribution. The production of biological resources is a key part of the activities of the entity.

²¹³ CBE Governing Decision adopting the concept note which defines among others, the scope, objectives and tasks of the deployment group on primary producers.

- Develop collaboration structures and methods between primary producers and the industry, involving Bio-based Industries Consortium, for the creation of bio-based value chains offering them mutual benefits.
- Perform other additional activities to support the activities of the CBE JU Deployment Group on Primary Producers, maximising its impact, and multiplying its effect, including dissemination and communication activities in different languages, as needed (e.g., promotional material, digital dissemination tools, networking and stakeholder management tools, events, seminars, etc.) and activities to enhance cooperation with the rest of stakeholders that are part of the value chains.
- Connect and build on the work already done through 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, as well as other relevant initiatives and networks for the fishery and aquaculture sectors; and propose and implement actions to ensure synergies with them for enhanced deployment (e.g. in terms of capacity building, knowledge exchange, exchange of good practices, development of skills, promotion, etc.).
- Identify, in close cooperation with the CBE JU Deployment Group on Primary Producers, areas for which analysis of past and ongoing R&I projects is needed according to the needs and priorities of the group.

Prepare a final report at the end of the CSA aimed at ensuring continuity of actions in the future and build-up upon on the results of the CSA:

- Proposals may involve financial support to third parties to provide direct support (e.g., in the form of cascading grants) to actions related to teaming). Beneficiaries may provide financial support to third parties. The support to third parties can only be provided in the form of grants. The maximum amount to be granted to each third party is EUR 60 000. A maximum EUR 300 000 of the EU funding can be allocated to this purpose.

Collaboration with the project that will be selected under the topics HORIZON-JU-CBE-2024 CSA-01 and HORIZON-JU-CBE-2024 CSA-02 is strongly encouraged.

A Steering Board comprised of representatives from both the European Commission and the Bio-based Industries Consortium will be established to guide the project toward achieving the envisioned impacts outlined in the topic description.

The CSA should consider further specifications and requirements stemming from the Deployment Group final scope and setting.

Indicative budget per topic - call HORIZON-JU-CBE-2024

Topic	Million EUR
Innovation actions – flagship	
Horizon-JU-CBE-2024-IAFlag-01 Bio-based value chains for valorisation of sustainable oil crops	20
Horizon-JU-CBE-2024-IAFlag-02 Bio-based dedicated platform chemicals via cost-effective, sustainable and resource-efficient conversion of biomass	20
Horizon-JU-CBE-2024-IAFlag-03 Bio-based value chains for valorisation of sustainable natural fibre feedstock	20
Innovation actions	
Horizon-JU-CBE-2024-IA-01 Bio-based materials and products for biodegradable in soil applications	15
Horizon-JU-CBE-2024-IA-02 Sustainable microalgae as feedstock for innovative, added-value applications	15
Horizon-JU-CBE-2024-IA-03 Enlarging the portfolio of commercially produced SSbD solvents	15
Horizon-JU-CBE-2024-IA-04 Circular and SSbD bio-based construction & building materials with functional properties	15
Horizon-JU-CBE-2024-IA-05 Selective and sustainable (co)-production of lignin-derived aromatics	15
Horizon-JU-CBE-2024-IA-06 Innovative bio-based adhesives and binders for circular products meeting market requirements	15
Horizon-JU-CBE-2024-IA-07 Innovative conversion of biogenic gaseous carbon into bio-based chemicals, ingredients, materials	15
Research and innovation actions	
Horizon-JU-CBE-2024-RIA-01 Valorisation of polluted/contaminated wood from industrial and post-consumer waste streams	7
Horizon-JU-CBE-2024-RIA-02 Biotech routes to obtain bio-based chemicals/ materials replacing animal-derived ones	7
Horizon-JU-CBE-2024-RIA-01 Sustainable, bio-based alternatives for crop protection	10
Horizon-JU-CBE-2024-RIA-03 SSbD bio-based coating materials for applications under demanding and/or extreme conditions	7
Horizon-JU-CBE-2024-RIA-04 Innovative bio-based food/feed ingredients	7
Coordination and support actions	
Horizon-JU-CBE-2024-CSA-01 New forms of cooperation in agriculture and the forest-based sector	4
Horizon-JU-CBE-2024-CSA-01 Mobilize inclusive participation in bio-based systems and supporting the CBE JU widening strategy and its action plan	3
Horizon-JU-CBE-2024-CSA-01 Supporting the CBE JU Deployment Group on Primary Producers	3
Total	213

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-2024
Call opening:	24 April 2024 ²¹⁴
Call deadline:	18 September 2024 17:00:00 (Brussels local time) - (single stage call)
Indicative budget:	EUR 213 million

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 2023-2024 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 2023–2024 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–

²¹⁴ The Executive Director may decide to open the call up to one month prior to or after the envisaged date of publication.

2024 which 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 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 2023–2024 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:** In bold, it is highlighted the additional aspects that will be used for Innovation Actions, including Flagships.

	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.
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.		- Capacity and role of each participant, and the extent to which the consortium as a whole brings together the necessary expertise.
Innovation actions (IA), including Flagships		- Ability to ensure the level of in-kind contribution to operational activities (IKOP)²¹⁵ defined in the call/topic as % of total projects eligible costs (IAs 15% and IA-Flagship 20%)²¹⁶.	

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.

²¹⁵ 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.

²¹⁶ Please refer to the Annexes to be included in the proposal described below.

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 E 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:

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 proposal²¹⁷.
- **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 2023–2024 which shall apply mutatis mutandis to the actions covered in this Work Programme, taking into consideration the following:

Hearings

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

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 2023–2024 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).

In addition to the standard provisions, the following specific provisions in the model grant agreement will apply:

²¹⁷ Each entity participating in the proposal with a PIC number has to provide a separate certificate.

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.

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 JU. 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

The Council Regulation (EU) 2021/2085 and the CBE JU SRIA establish strong grounds for synergies and cooperation, in particular with Horizon Europe and other Union's initiatives, as well as with programmes at National and Regional level that have an inherent potential for the bio-based sector. To maximise the synergies and cooperation, the CBE JU is foreseen to implement specific actions in 2024 with the following programmes and mechanisms.

a) Horizon Europe programme:

- **HE missions:** CBE JU will continue ensuring synergies at both programming and projects' level with [Restore our Ocean and Waters](#), [A Soil Deal for Europe](#) and the [New European Bauhaus](#) missions.
- **HE partnerships:** CBE JU will continue to cooperate to ensure strategic alignment with co-programme partnership such as [Processes4Planet](#). CBE JU will also pose particular attention in collaborating with the co-funded partnerships that falls within the scope of Horizon Europe Cluster 6 - Food, bioeconomy, natural resources, agriculture and environment, such as the [Sustainable Blue Economy Partnership](#) and the [Safe and Sustainable Food Systems](#) as well as relevant EIT Knowledge and Innovation Communities (KICs), such as [EIT Food](#).
- In Pilar I and III, other interesting synergies will be explored with the:
 - o **Marie Skłodowska-Curie Staff Exchange action** to fund short-term inter-sectoral exchanges of staff members involved in CBE JU actions.
 - o **European Innovation Council Accelerator** to support the upscale of the bio-based solutions developed by highly innovative SMEs in Europe.

b) EU programme and funding instruments: cooperation and synergies with the following funding programmes will be pursued:

- **InvestEU Fund (2021-2027)** as this is an important part of the Green Deal Investment Plan and could support the mobilization of further investments in the bio-based sector.
- **Innovation Fund** as 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.
- **LIFE programme** as this is an EU's funding instrument for environment and climate actions.

c) 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.

2.3. SUPPORT TO OPERATIONS

2.3.1. Communication, dissemination and exploitation

CBE JU communication: a strategic approach

The annual communication work programme is based on the multi-annual CBE JU communication strategy, which sets three objectives:

- Promote CBE JU funding opportunities
- Demonstrate the CBE JU achievements
- Highlight the CBE JU impacts

This document defines the 2024 communication priorities under each objective, along with the communication channels and budget.

Communication priorities in 2024

- **Promoting CBE JU funding opportunities**

Promoting the third CBE JU call will be at the heart of the 2023 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 and will pay attention to good geographical and sectoral distribution, in line with the CBE JU widening participation strategy. As a pilot, CBE JU will launch communication campaigns in a few widening countries and target specific stakeholder groups, such as primary producers. Communication material will be adapted to the local language to reach a higher impact.

Funding opportunities will be promoted at every high-level event with CBE JU's participation.

Results of the 2023 call will be highlighted in a dedicated campaign in the second quarter of 2024, with a focus on the new projects.

- **Demonstrating the CBE JU achievements**

In 2024, several CBE JU-funded flagship projects will reach important milestones (e.g. inauguration of the plant, launch of the production, successful completion of the project), which the partnership will support via dedicated communication actions, in collaboration with the projects' teams.

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.

CBE JU will also work on a visual representation of the project portfolio and KPIs on the website, to create a better overview of the achievements.

The partnership will bring the travelling exhibition of bio-based products made by CBE JU-funded projects to EU institutions and will target in particular the Committee of Regions, the European Parliament, as well as the Council.

Communication activities will support developments in the CBE JU governance (e.g. establishment of a deployment group and appointment of a new Executive Director).

At the end of November, CBE JU will celebrate its third anniversary and take stock of what has been achieved so far. An integrated communication campaign will support this milestone.

- **Highlighting the CBE JU impacts**

The impacts communication will focus on the local communities, in terms of creating new kinds of jobs and alternative income sources in rural and coastal areas. Various application areas of bio-based solutions for everyday use will be on the spotlight when addressing larger audiences.

CBE JU will continue highlighting other socio-economic, as well as environmental impacts of the initiative based the annual activity report and in the context of relevant EU policies.

As for promoting funding opportunities, communication activities related to highlighting impacts will support the widening participation strategy. Material in local language will be prepared to this effect.

Communication tools and channels

The **CBE JU website** will remain its main information hub. All communication activities will link to the web content. CBE JU will keep on updating and improving information on the web, in particular, for a better visualisation of achievements.

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. Increasing the follower base and reaching higher engagement rate on these channels will remain a priority action in 2024.

CBE JU will embrace the opportunity to connect with its community, reach out to new audiences and showcase the partnership at national, European and international in-person **events**. The events organised by CBE JU will however provide a remote participation option for those who cannot attend in person.

Public relations and advocacy will target CBE JU's stakeholders in support to the communication priorities. Strengthening **media relations** with relevant bioeconomy outlets and building new media partnerships will continue to be a priority in this field.

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 budget

Title	Description	Amount, €
Events and campaigns	Organisation of CBE JU Info Day, participation in at least 15 key events, organisation of awareness raising and networking activities, campaigns	142,500
Communication material	Publications, videos, promotional material	128,000
Communication tools	Website, digital dissemination tools, networking and stakeholder management tools, communication equipment	78,000
Public relations	Media relations and partnerships, prizes, sponsorship, branding	75,000
Total		423,500

2.3.3. Indicative list of events

Event	Date(s)	Place	CBE JU role
EU Bioeconomy conference	14-15 March	Brussels, Belgium	Speaker, exhibitor
BIOKET	19-21 March	Reims, France	Speaker
CBE JU Info Day	23 April	Brussels, Belgium & online	Organiser
World Bio Markets	15 May	The Hague, Netherlands	Speaker, exhibitor
EUBCE	24-27 June	Marseille, France	Speaker, session organiser, exhibitor
Plant-based Summit	TBC	TBC	TBC
IFIB 2024	TBC	TBC	TBC
EFIB 2024	TBC	TBC	TBC
EUCYS award ceremony	September	TBC	Sponsor of the bio-based economy award

2.3.4. Procurement and contracts

For the year 2024 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 rules²¹⁸. 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, this will cover in 2024 among others: data protection, building management and IT.

The table below provides a summary of tenders planned for 2024 under administrative budget and the related procurement procedure expected to be used on the basis of the information currently available. It may be subject to modifications.

Subject	Indicative/Maximum amount, €	Type of procedure	Indicative timeline
Studies	50 000	Middle valued Negotiated procedure	Q1-Q4
Policy support in the implementation of the programme	50 000	Middle valued Negotiated procedure	Q1-Q4
Media Relations	50 000	Middle valued Negotiated procedure	Q1-Q4

²¹⁸ https://www.bbi.europa.eu/sites/default/files/BBI_GB_12_19_revised_Financial_Rules.pdf.

2.3.5. Other support operations

2.3.5.1. IT and logistics

ICT security

The new Cybersecurity Regulation and Information Security Regulation required a close cooperation between European Union Institutions and bodies (EUIBAs), CERT-EU services and DIGIT for a correct implementation of the new information security rules. The CBE JU will further improve its framework for governance, risk management and control in the area of cybersecurity and implement a baseline of cybersecurity measures in compliance with CERT-EU best practices and EC methodologies like ITSRM2. Moreover, the programme office will have to conduct regular maturity assessments and put in place a plan of activities, including dedicated internal training, to increase awareness and skills on cybersecurity matters. The work started in 2023 to improve security and compliance with mobile devices accessing CBE IT resources will continue in 2024.

CBE JU KPI reporting tool - phase 2: implementation

The deliverables of the study project conducted in 2022 under the DIGIT-XM framework contract (FWC) were used for a main development project started in 2023 under the DIMOS VI framework contract, with the objective to develop a secure and user-friendly electronic platform that supports the data gathering of both BBI and CBE projects. In 2024 this process will continue with a fine-tuning of the data collection workflow and the processing of data collected from project coordinators with Power BI technologies, to deliver meaningful and effective visualisation of KPI reporting for CBE and BBI projects.

Meeting rooms 2-3-4

After the final confirmation of the permanence in the White Atrium building of JUs, CBE JU will proceed with the upgrade of the common meeting rooms 2-3-4 located in the common meeting area on the first floor, that will be equipped with optimised technology for hybrid meetings following the successful experience with meeting room 1. The implementation of such upgrade will follow the outcomes of a study project started in 2023 to assess functional requirements and produce high-level budget estimations along with technical drawings that could be used in the implementation phase.

Transition to New Managed ICT Services FWC

After the last specific contract under the current framework contract (FWC) expired at end of April 2023, a new contract will be in place in 2024 under a new FWC to provide continuity of managed ICT services.

Transition from EFSA FWC. To CLOUD II DPS

After the framework contract (FWC) used to procure the non-SaaS cloud services (EFSA Cloud broker FWC) expired at the end of 2023, some requirement to host infrastructure-as-a-service (IaaS) workloads should be fulfilled while most of the workloads are being transferred to SaaS providers. After the expiration of the CLOUD II FWC in Q3 2023, the CLOUD III. Direct Purchasing System (DPS) of the European Commission's Directorate for Informatics will be used as the new procurement channel, with DIGIT acting as a broker for software procurement.

Introduction of AGM platform for meetings

After the initial deployment, configuration and test phase started in 2023, CBE JU will be able to rely on the AGM platform (an online service offered by PMO) for the organisation of CBE JU advisory bodies (SRG, SC and DEG) meetings and reimbursement of experts. AGM offers a reliable and paperless electronic workflow for the invitations, organisation, and reimbursement processes of meetings.

Ethical AI for data-driven empowerment

European Union is leading responsible innovation and regulation around the emerging technology of the so-called 'artificial intelligence', which is the usage of big quantities of data (like the ones generated from the activities of EU bodies, institutions and agencies) to feed algorithms able to extract meaning, information and knowledge from such data. The use of Artificial Intelligence tools is already supported and financed by the EC in many fields like agriculture, transport, health, public administration and manufacturing.

CBE JU wants to explore this technological development, and during 2024 will follow a process like the one already adopted for example by DG SANTE in identifying opportunities to 'maximise the benefits from the huge amount of data it available in the organisation'. In a similar way, CBE JU will start to identify internal use cases for AI open-source tools, based on the in-house processing of corporate data with no exposition over the internet, which may be used to empower the work of programme unit and communication officers with an automated treatment, organization, classification and visualization of data to support human-based decisions linked to operational activities.

The framework for the evaluation and introduction of AI tools in the CBE IT environment will be the 'Open Source Strategy' adopted by the European Commission, the Ethics guidelines for trustworthy AI, developed by the High-level expert group on artificial intelligence appointed by the European Commission, the risk-based approach that is shaping the regulatory framework on Artificial Intelligence still under discussion.

2.3.5.2. Building management

The current contract to rent the office space in the building White Atrium the 'Convention d'Usufruit of 16 November 2010' expires at the end of 2024. The management of the tender procedure for the JUs' premise falls under the back-office arrangement for public procurement and will be dealt with in 2023. As soon as the procedure is finalised, a new contract will be signed jointly with the other JUs and some adaptation work will be needed to adjust the office setup to the increased staff of CBE JU.

2.3.5.3. 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 aims to achieve its goals through a solid HR Strategy covering effective recruitment procedures, proper allocation and administration of resources and in developing, motivating and retaining valuable/high qualified staff while maintaining an optimal and efficient working environment.

After concluding the recruitment of all staff, on the HR side the priorities are to provide colleagues with the best conditions to perform and deal with the growing workload. The office structure will be slightly adapted to fully take advantage of the New Ways of Working. Staff is provided with reliable IT infrastructure, IT equipment and IT tools for shared remote working, lending ergonomic furniture and materials, they are in condition to enjoy full flexibility for what concern the remote work and the presence in office. CBE JU staff will continue to be provided with clear guidelines and framework to continue enjoying the new work experience in the New Ways of Working.

This objective will be implemented in four main HR areas:

Staff implementation and recruitment

In 2024, the CBE JU will reach its full staff establishment plan. Therefore, no additional recruitments are foreseen.

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. With these traineeships, 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 2024, 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 develop in 2024 internal guidelines. The Programme Office will also organise an annual appraisal and reclassification exercise.

New staff implementing rules are expected to be adopted in 2024 in consultation with DG HR and the Standing Working Party²¹⁹.

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 changing world. Learning and development is also a tool to engage staff, ensuring their professional growth. 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. Therefore, in 2024 the HR function will continue to develop a learning and development framework focusing on the following priorities:

- **Collaborative working and knowledge-sharing** in order 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** in order 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 return to the office. 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 in order to foster and promote team spirit and strengthen the collaboration among staff members. In addition, several common learning events will be organised in house in order 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 (e.g.: ARES, SYSPER, SYSTAL...).

The HR function will also continue to improve the CBE JU Intranet to improve the communication within the team and facilitate the access to key documents for staff. In addition, the HR function will continue to build on the CBE JU agreed corporate values and these values will be integrated in the staff assessment process. A Staff Engagement Survey will be organised to gain insight into job satisfaction, employee commitment, engagement and motivation. The aim of our annual staff engagement survey is to use the insight gained, to address possible issues and to make targeted improvements where necessary.

Digitalisation of the HR processes and transition to the New Ways of Working in 2024, the HR function will continue to implement the digitalisation of the CBE JU HR processes in the context of the Back Office HR.

²¹⁹ 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.

In 2024 a new Executive Director will be appointed and the HR function will ensure an effective phase in by providing the mandatory training and the key information in the HR domain.

2.3.5.4. Strategy for achieving efficiency gains, synergies through back office arrangements

The Single Basic Act (SBA) of the Joint Undertakings establishes that the Joint Undertakings shall achieve synergies via the establishment of back-office arrangements (BOA), operating in some identified areas. Article 13 of the SBA 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 and IHI JU the 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 that are under the Single Basic Act²²⁰ will contribute to BOA HR Support, together with EuroHPC and SESARJU that will participate on specific initiatives in line with their internal priorities and according to their own specificities²²¹.

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.

This SLA is expected to be signed by each participating JU in Q4 2023 and the actual implementation of the BOA HR to start in 2024 focusing on the three predefined areas of HR support:

Recruitment

- **Alignment and harmonisation of the JUs' recruitment processes:** the JU's will valorise 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.

²²⁰ Circular Biobased Europe, Clean Aviation, Clean Hydrogen, Europe's Rail, EDCTP3 Global Health, Smart Networks and services, Key Digital Technologies (and in the future Chips JU), Innovative Health Initiative,

²²¹ SESAR JU despite being part of the SBA, is exempted by the provisions related to the Back-office arrangements

- **Organisation of joint selection procedures:** in order to increase efficiency gains the JU's will organise as much as possible joint selection procedures for common profiles with same grades. This practice is already in place but will be further strengthened in 2024.
- **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 2024 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.

In 2024, this initiative will be extended to a larger number of JUs most notably the newly established JUs that will have the possibility to join the inter-JU network of Confidential Counsellors and benefit from the resources of this network.

- **Collaboration with the EU agencies network (EUAN) and the European Commission:** 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.
- **Establish a common HR strategy** in well identified areas where the JU's have strong interest in speaking with one voice towards staff and towards other EU institutions (e.g., learning and development, staff motivation and mobility, new ways of working, employee health and wellbeing, work life balance, recruitment and selections).
- **Inter JU's HR Officers network:** the JUs HR Officers will continue to meet bi-weekly to share best practices and also provide support to the newly established JUs. To this purpose, a common collaborative platform will be created (Teams) to facilitate the interactions between HR Officers, the exchange of information and documents.

HR digitalisation

In 2024, 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 newly established JU's will receive support in the onboarding of HR tools already used by the other JU's (e.g. SYSPER, SYSTAL) and good practices will be shared among HR Officers in the use of their IT systems.

In the same context, the JU's will also take part in the HR Transformation programme led by the European Commission and will participate to the meetings and contribute to the projects of the first wave (2023-2024).

In 2024, the JU's will concretely implement the actions defined in the 2024 BOA HR Annual Work Plan expected to be agreed by all participating JUs in Q4 2023. This action plan will include actions such as the organisation of training of common interest for all JUs staff (e.g., info session on harassment prevention), the reinforcement of sharing of existing reserve lists, the onboarding of new JU's using SYSTAL (e-recruitment tool), best practices on selection and recruitment etc.

2.3.5.5. Staff establishment plan

Function group and grade	2023				2024	
	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
AD 13						1
AD 12		1		1		1
AD 11		1		1		
AD 10						2
AD 9		3		2		3
AD 8		4		4		2
AD 7				1		
AD 6						
AD 5						
TOTAL AD		10		9		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
AST 2		1		1		
AST 1						
TOTAL AST						
AST/SC 6						
AST/SC 5						
AST/SC 4						
AST/SC 3						
AST/SC 2						
AST/SC 1						
TOTAL AST/SC		3		3		3
TOTAL AD+AST+ AST/SC						
GRAND TOTAL	13		12		13	

Contract Agents	FTE corresponding to the authorised budget 2023	Executed FTE as of 31/12/2023	Headcount as of 31/12/2023	FTE corresponding to the authorised budget 2023
Function Group IV	10	10	10	10
Function Group III	6	6	6	6
Function Group III				
Function Group I				
TOTAL	16	16	16	16

Seconded National Experts	FTE corresponding to the authorised budget 2021	Executed FTE as of 31/12/2021	Headcount as of 31/12/2021	FTE corresponding to the authorised budget 2022	FTE corresponding to the authorised budget 2023
TOTAL					

Recruitment forecast 2024 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 ²²²	Internal (brackets)	External (brackets)	

²²² As included in the legal and financial statement of the Council Regulation (EU) 2021/2085, of 19 November.

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2.4. GOVERNANCE ACTIVITIES

2.4.1. Governing Board

CBE JU's Governing Board (GB) has 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 the Council Regulation (EU) 2021/2085.

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

The indicative key decisions of the GB in the year 2024 are listed below:

Key decisions in 2024 – timetable	Quarter (Q1, Q2, Q3, Q4)
Appointment of the new Executive Director	Q1
Approval of the evaluation outcome for Call 2023	Q1
Assessment of the Annual Activity Report 2023	Q2
Adoption of the AWP 2025	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.

The Governing Board appointed Nicolás Giacomuzzi-Moore as the CBE JU Executive Director ad interim as from 1 September 2022, until the appointment of the new Executive Director, to perform the tasks defined in Article 19 of the Council Regulation (EU) No 2021/2085. The mandate of the CBE JU Executive Director ad interim finished on 31 August 2023.

In order to maintain business continuity, the Governing Board approved deputising rules and since 1 September 2023 Nicolás Giacomuzzi-Moore is the acting Executive Director until the conclusion of the recruitment procedure.

2.4.3. States' representatives group

The States' representatives group (SRG) is one of the advisory bodies of CBE JU. In line with Article 20 of the of the 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 2024, at least two SRG meetings are planned: one in Q1 and the second in Q3. Additional meetings could take place, if needed. In all the meetings, the SRG members will be invited to report information about national and regional activities and initiatives linked to CBE JU with a view to ensure complementarities and identify areas of cooperation with the CBE JU.

SRG Timetable for 2024

5th SRG meeting will focus on: discussing SRG's comments to the 1 st draft of the CBE JU Annual Work Programme 2025; presenting the results from the Call 2023 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.	Q1
6th SRG meeting will focus on: discussing the final draft of the CBE JU Annual Work Programme 2025; presenting the Call 2023 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.	Q3

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 the 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 feedbacks 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 by 15 independent experts with a balanced representation of world-wide recognised experts from academia, industry, SMEs, non-governmental organisations and regulatory bodies. During 2024, at least two SC meetings are planned: one in Q1 and the second in Q3. Additional meetings could take place, if needed.

SC Timetable for 2024

5th SC meeting will focus on: discussing SC's comments to the 1 st draft of the CBE JU Annual Work Programme 2025, presenting the results from the Call 2023, presenting the progress of the CBE JU programme progress achievements and discussing EC and BIC initiatives and activities relevant to CBE JU	Q1
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6th SC meeting will focus on: discussing the final draft CBE JU Annual Work Programme 2025, presenting the Call 2024 submission statistics, presenting the CBE JU programme progress and discussing EC and BIC initiatives and activities relevant to CBE JU	Q3
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2.4.5. Deployment Groups

In accordance with Article 22 and 56 of the 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 following Deployment Groups are planned to be established in 2024:

- The **Deployment Group on finance & investment** will be established in two phases: during the first phase, the European Investment Bank (EIB) will carry out a study to analyse the challenges of the biobased sector, the current investment instruments, to identify gaps and proposed recommendations as well as key stakeholders/actors who should be involved in the DEG F&I. In parallel, the core group of the DEG F&I will be established and will prepare the Action plan to be presented to the GB.
- The **Deployment Group on the primary sector** will build on the work already initiated in BBI to support the participation of primary producers & enhance their role in the bio-based value chains, including the Action Plan²²³ agreed by the members of the Task Force on 8 October 2021. 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. A note for the GB will present the scope, objectives, tasks and composition of this Deployment Group including the procedure and conditions for its establishment and functioning of this DEG.

²²³ Following the publication of the Study *Participation of the agricultural sector in the BBI JU: business models, challenges and recommendations to enhance the impact on rural development*, a Task Force was created with representatives from the EC (DG AGRI and DG RTD), BIC and CBE JU to analyse the feasibility and the impact of the proposed recommendations and set up an Action Plan to prioritize, in an effective and in a coherent way, its implementation.

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 expressed in the CBE JU Financial Rules and in the EU Financial Regulation²²⁴, 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 the 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 2024 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.

²²⁴ 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 2024, 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 the majority of transactions will continue to be 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 or EMI). Staff will continue to be trained adequately to ensure maximum competence in the use of the IT tools as well as the various different transactions which can arise (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 in order 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

There is a full set of processes and procedures which regular application in 2024 will continue to provide reasonable assurance that the principles of sound financial management have been applied to each transaction. In particular, 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 can 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 2024, 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 Programme Office staff has 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 during the project implementation, the grant management tools launches automatically a double funding and plagiarism check during GAP and the Programme Office implements any appropriate measure in accordance.

Ex post controls

In 2024, *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 European Commission developed these audit strategies in cooperation with all its clients (i.e. the entities that implemented the Horizon 2020 budget: Services of the European Commission, 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 2024, 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 2024, 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 2024

The 2024 budget covers all administrative needs for 2024 as well as H2020 and H Europe operational activities. It is noted that 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 only potential updates to the budget relate to any change in EFTA rate for 2024. The EFTA rates in use for 2024 are 2.11% for all BBI JU remaining budget ('frontloaded' by the EC from the previous MFF), and for CBE JU, 2.89% (the rate used for 2023).

The 2024 budget covers all administrative needs for 2024 as well as H2020 and H Europe operational activities. It is noted that 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 2.11% for 2023 for all BBI JU remaining C1 budget ('frontloaded' by the EC from the previous MFF), and 3.54% for CBE JU for 2024.

STATEMENT OF REVENUE (EUR)

Heading	Item	Budget 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA	Executed budget 2022 PA
EU contribution (excl. third countries contribution/EFTA)		144,173,389	153,717,118	149,712,288	98,131,007	250,079,489	41,725,553
of which Administrative (BBI)	1001	0	0	1,912,288	1,912,288	2,174,051	2,174,051
of which Administrative (CBE)	1007	1,691,126	1,691,126	800,000	800,000	812,045	812,045
of which Operational (BBI)	1002	0	0	0	10,885,723	0	38,739,457
of which Operational (CBE) (no EFTA)		0	0	0	0	0	0
of which Operational (CBE) ²²⁵	1007	142,482,263	152,025,992	147,000,000	84,532,996	247,093,393	0
Third countries contribution (including EFTA) ²²⁶		5,103,738	5,441,586	4,311,769	2,736,162	6,169,137	883,333
of which Administrative EFTA (BBI)	1001	0	0	40,349	40,349	45,872	65,930
of which Administrative EFTA (CBE)	1007	59,866	59,866	23,120	23,120	20,058	20,058
of which Operational EFTA (BBI)	1002	0	0	0	229,689	0	0
of which Operational EFTA (CBE)	1008	5,043,872	5,381,720	4,248,300	2,443,004	6,103,207	817,403
Industry (financial) contribution		1,750,991	1,750,991	2,775,757	2,775,757	3,052,026	3,052,026

²²⁵ For 2024 amended operational payment appropriations (including EFTA) include EUR 1 million for the budget of the expert evaluators for the CBE Call 2023 (managed by REA on behalf of CBE) – moved from Title 2 under BBI JU to Title 3 under CBE JU

²²⁶ The amended budget figure takes into account an EFTA rate of 2.11% used for BBI JU remaining budget for 2023 (calculated annually up to the end of the BBI JU programme), as well as a rate of 3.54% for the 2024 EU administrative and operational contribution to the CBE JU.

Heading	Item	Budget 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA	Executed budget 2022 PA
of which Administrative (BBI)	1003	0	0	1,952,637	1,952,637	2,219,923	2,219,923
of which Administrative (CBE)	1009	1,750,991	1,750,991	823,120	823,120	832,103	832,103
Other		0	0	0	0	0	0
SUB-TOTAL revenues		151,028,118	160,909,694	156,799,815	103,642,926	259,300,651	45,660,911
C2 reactivation of unused appropriations from administrative expenditure 227		2,186,852	2,199,997	2,201,480	2,589,376	1,135,769	1,566,182
<i>of which from 2019 (BBI)</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>35,769</i>	<i>266,182</i>
<i>of which from 2020 (BBI)</i>		<i>0</i>	<i>0</i>	<i>38,010</i>	<i>446,848</i>	<i>1,100,000</i>	<i>1,300,000</i>
<i>of which from 2021 (BBI)</i>		<i>78,155</i>	<i>269,769</i>	<i>1,013,470</i>	<i>813,694</i>	<i>0</i>	<i>0</i>
<i>of which from 2022 (BBI)</i>		<i>729,860</i>	<i>1,148,627</i>	<i>150,000</i>	<i>328,834</i>	<i>0</i>	<i>0</i>
<i>of which from 2022 (BBI)</i>		<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>of which from 2022 (CBE)</i>		<i>0</i>	<i>0</i>	<i>387,896</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>of which from 2022 (CBE)</i>		<i>922,832</i>	<i>312,452</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>
<i>of which from 2022 (CBE)</i>		<i>56,005</i>	<i>69,149</i>	<i>612,104</i>	<i>1,000,000</i>	<i>0</i>	<i>0</i>

²²⁷ 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. Amounts in italics are included at chapter level in the expenditure statement.

Heading	Item	Budget 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA	Executed budget 2022 PA
of which from 2023 (CBE)		400,000	400,000	0	0	0	0
C2 reactivation of unused appropriations from operational expenditure ²²⁸		68,683,112	27,118,677	67,581,955	30,000,000	476,647	28,803,205
of which from 2018 (voted)	2031	0	0	0	0	0	0
of which from 2019 (voted)	2031	0	0	0	0	476,647	0
of which from 2020 (voted) (BBI)	2033	0	0	281,955	0	0	28,803,205
of which from 2021 (voted) (BBI)	2033	18,679,114	18,589,502	0	30,000,000	0	0
of which from 2022 (voted) (CBE)	2033	0	0	66,300,000	0	0	0
of which from 2022 (voted) (BBI)	2033	3,703,998	8,000,000	0	0	0	0
of which from 2022 (voted) (CBE)	2033	43,700,000	529,175	1,000,000	0	0	0
of which from 2023 (voted) BBI	2033	763,799	0	0	0	0	0
of which from 2023 (voted) CBE	2033	1,863,201	0	0	0	0	0
SUB-TOTAL reactivations		70,869,964	29,318,674	69,783,435	32,589,376	1,612,416	30,369,387
TOTAL REVENUES		221,898,082	190,228,368	226,583,249	136,232,302	260,913,067	76,030,298

²²⁸ 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 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA ²²⁹	Executed budget 2022 PA	% Ratio 2022 CA to 2024	% Ratio 2022 PA to 2024
1	Staff Expenditure	3,270,300	3,270,300	3,231,044	3,231,044	2,863,114	2,761,346	87.55%	85.46%
11	Staff in active employment	2,860,400	2,860,400	2,791,144	2,791,144	2,560,681	2,583,931	89.52%	90.96%
12	Staff recruitment / Miscellaneous expenditure	75,000	75,000	76,000	76,000	18,500	9,514	24.67%	12.52%
13	Mission and duty travels	60,000	60,000	60,000	60,000	35,000	17,606	58.33%	29.34%
14	Other staff costs (socio-medical structure)	264,900	264,900	293,900	293,900	238,933	185,316	90.20%	63.05%
15	Entertainment and representation expenses	10,000	10,000	10,000	10,000	10,000	9,979	100.00%	99.79%
2	Other administrative expenditure	1,940,547	1,940,547	2,320,470	2,320,470	1,649,749	1,860,336	85.01%	80.17%
20	Rental of buildings and associated costs	365,000	365,000	408,628	408,628	301,915	301,241	82.72%	73.72%

²²⁹ Only BBI JU budget was executed in 2022. Around EUR 1.6 million of administrative budget for CBE JU was carried over to be reactivated in 2023 and 2024 budgets. The reactivated (C2) appropriations in 2022 were included at budget chapter level, so the execution shown at this level is of total C1 and C2 appropriations. The total C2-only execution, administrative and operational, is also indicated in italics towards the end of the table. For CA this reached 66% (admin) and for PA 94% (admin) and 100% (operational).

Title/ Chapter	Heading	Budget 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA ²²⁹	Executed budget 2022 PA	% Ratio 2022 CA to 2024	% Ratio 2022 PA to 2024
21	Administrative information technology)	428,000	428,000	407,719	407,719	353,941	427,606	82.70%	104.88%
22	Movable property and associated costs	5,000	5,000	4,000	4,000	0	5,440	0.00%	136.00%
23	Current administrative expenditure	35,000	35,000	33,000	33,000	44,057	39,951	125.88%	121.06%
24	Telecommunications and postal charges	26,000	26,000	24,000	24,000	8,733	12,460	33.59%	51.92%
25	Expenditure on formal meetings	49,800	49,800	78,400	78,400	11,400	7,614	22.89%	9.71%
26	External communication, information, publicity	423,500	423,500	664,000	664,000	281,859	421,027	66.55%	63.41%
27	Service contracts	408,247	408,247	450,723	450,723	320,203	343,126	78.43%	76.13%
28	<i>Experts' contracts and evaluations (in T3 under H Europe)</i>	0	0	0	0	0	0	0.00%	0.00%
29	Expert reviewers	200,000	200,000	250,000	250,000	327,642	301,872	163.82%	120.75%
	Reactivations of prior year unused administrative budget²³⁰	2,186,852	2,199,997	2,201,480	2,589,376	752,561	1,477,388	N/A	N/A
	<i>of which from 2019 (BBI)(included at chapter level)</i>	0	0	0	0	35,769	266,182	N/A	N/A
	<i>of which from 2020 (BBI)(included at chapter level)</i>	0	0	38,010	446,848	716,795	1,211,206	N/A	N/A

²³⁰ 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.

Title/ Chapter	Heading	Budget 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA ²²⁹	Executed budget 2022 PA	% Ratio 2022 CA to 2024	% Ratio 2022 PA to 2024
	<i>of which from 2021 (BBI)(included at chapter level)</i>	78,155	269,769	1,013,470	813,694	0	0	N/A	N/A
	<i>of which from 2022 (BBI) (included at chapter level)</i>	729,860	1,148,627	150,000	328,834	0	0	N/A	N/A
	<i>of which from 2022 (CBE) (included at chapter level)</i>	922,832	312,452	0	0	0	0	N/A	N/A
	<i>of which from 2022 (CBE) (included at chapter level)</i>	0	0	387,896	0	0	0	N/A	N/A
	<i>of which from 2022 (CBE)</i>	56,005	69,149	612,104	1,000,000	0	0	N/A	N/A
	<i>of which from 2023 (CBE)</i>	400,000	400,000	0	0	0	0	N/A	N/A
3	Operational expenditure	146,526,135	156,407,712	151,248,300	98,091,411	120,470,825	47,430,727	82.18%	79.88%
32	Expert evaluators	1,000,000	1,000,000	1,667,783	1,667,783	1,000,000	470,825	59.96%	28.23%
30	Previous years' calls BBI	0	0	0	11,115,412	0	17,146,350	N/A	N/A
	Previous years' calls CBE		140,000,000	0	85,308,217	0	0	0	0
31	Current year's call (s)	144,932,217	0	149,580,517	0	119,470,825	29,813,552	N/A	N/A
	Reactivations of prior year unused operational budget²³¹	68,683,112	27,118,677	67,581,955	30,000,000	0	28,803,205	N/A	N/A
	<i>of which from 2019</i>	0	0	0	0	0	0	N/A	N/A
	<i>of which from 2020</i>	0	0	0	0	0	28,803,205	N/A	N/A

²³¹ 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 2024 CA	Budget 2024 PA	Amended budget 2023 CA	Amended budget 2023 PA	Executed budget 2022 CA ²²⁹	Executed budget 2022 PA	% Ratio 2022 CA to 2024	% Ratio 2022 PA to 2024
	of which from 2021 (BBI)	18,679,114	18,589,502	281,955	30,000,000	0	0	N/A	N/A
	of which from 2021 (CBE)	0	0	66,300,000	0	0	0	N/A	N/A
	of which from 2022 (BBI)	3,703,998	8,000,000	0	0	0	0	N/A	N/A
	of which from 2022 (CBE)	43,700,000	529,175	1,000,000	0	0	0	N/A	N/A
	of which from 2023 (BBI)	763,799	0	0	0	0	0	N/A	N/A
	of which from 2023 (CBE)	1,836,201	0	0	0	0	0	N/A	N/A
	SUB-TOTAL reactivations	70,869,964	29,318,674	69,783,435	32,589,376	752,561	29,451,258	N/A	N/A
	TOTAL EXPENDITURE	221,898,082	190,228,368	226,583,249	136,232,302	124,983,688	52,052,409	57.24%	25.43%

4. ANNEXES

4.1. IKAA PLAN

As stated in the 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 Joint Undertaking) may be taken into account.

The exact nature of the activities and amount planned will be known only when the Governing Board will approve the results of the call (selection of projects).

The following IKAA plan is based on data made available in grants awarded under the CBE JU Call 2022, it will be updated once the grant agreement from CBE JU Call 2023 are signed.

IKAA scope	IKAA linked to projects	IKAA linked to programme	TOTAL VALUE estimated IKAA	2023 estimated value	2024 estimated value	2025 estimated value	2026 estimated value	2027 estimated value	2028 estimated value	2029 estimated value	2030 estimated value	2031 estimated value
(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;	Y	N	€ 22,142,475	€ 133,333	€ 3,222,702	€ 3,167,702	€ 2,462,702	€ 3,167,702	€ 1,775,000	€ 2,658,333	€ 3,500,000	€ 2,055,000
(b) investments in a new innovative and sustainable production plant or flagship;	Y	N	€246,965,380	€ 8,510,813	€ 26,845,142	€ 27,770,277	€ 21,021,678	€ 21,727,670	€ 68,882,800	€ 43,882,800	€ 18,882,800	€ 9,441,400
(c) investments in new research and innovation and justified infrastructure, including facilities, tools, durable equipment or pilot plants (research centres);	Y	N	€117,142,703	€ 52,856,237	€ 14,811,592	€ 15,791,874	€ 6,054,300	€ 12,139,300	€ 5,422,400	€ 5,997,000	€ 1,990,000	€ 2,080,000
(d) standardisation activities (not falling in previous scope of investments)	Y	N	€ 530,000	€ -	€ -	€ 40,000	€ 115,000	€ 42,000	€ 43,000	€ 93,000	€ 93,000	€ 104,000
(e) communication, dissemination and awareness-raising activities (not falling in previous scope of investments)	Y	N	€ 1,303,848	€ 38,700	€ 96,300	€ 121,300	€ 124,300	€ 88,400	€ 202,848	€ 207,000	€ 212,000	€ 213,000
TOTALS			€ 388,084,406	€ 61,539,083	€ 44,975,736	€ 46,891,153	€ 29,777,980	€ 37,165,072	€ 76,326,048	€ 52,838,133	€ 24,677,800	€ 13,893,400

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 European Commission will put forward a proposal for legally binding EU nature restoration targets²³² 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 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) 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

²³²The EU #NatureRestoration Law (europa.eu)

(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

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 cycles²³³ 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 CO₂ 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'*

CAGR = Compound Annual Growth Rate

²³³ 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'

CCS = Carbon dioxide capture and storage. The geological storage is ruled by Directive 2009/31/EC²³⁴. Other storage are mentioned in the Communication on sustainable carbon cycles [Error! Bookmark not defined.](#). See the European Commission framework for carbon capture, use and storage²³⁵

CCU = Carbon dioxide capture and use. See the European Commission framework for carbon capture, use and storage⁵⁷

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)

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

²³⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32009L0031>

²³⁵ https://ec.europa.eu/clima/eu-action/carbon-capture-use-and-storage_en

Fossil-based = made from fossil resources

GHG emissions = GHGs comprise carbon dioxide (CO₂), nitrous oxide (N₂O), methane (CH₄) 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 CO₂. By converting these land types to cropland, negative environmental effects may occur, including increase of atmospheric CO₂ 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 = solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience. Such solutions bring more, and more diverse, nature and natural features and processes into cities, landscapes and seascapes, through locally adapted, resource-efficient and systemic interventions

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 chemical = intermediate molecules which can be converted to a wide 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 that can be recycled in a circular economy and is injected back into the economy as secondary raw materials. In this context, secondary bio-based feedstock is any waste that can be used in bio-based processes

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.