Annual Activity Report 2022

Circular Bio-based Europe Joint Undertaking

Bio-based Industries Consortium

EUROPEAN PARTNERSHIP

Co-funded by the European Union

ANNEX to the CBE JU Governing Board decision no 5/2023

Circular Bio-based Europe Joint Undertaking

CONSOLIDATED

ANNUAL ACTIVITY REPORT 2022

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FACTSHEET

Name of the JU	Circular Bio-based Europe Joint Undertaking (CBE JU). The CBE JU is the legal and universal successor the Bio-based Industries Joint Undertaking (BBI JU), which it shall replace and succeed.
Objectives	The CBE JU contributes to the implementation of the Horizon Europe Framework Programme. In this last framework, its main general objectives are to: • accelerate the innovation process and development of bio-based innovative solutions • accelerate market deployment of the existing mature and innovative bio-based solutions • ensure a high level of environmental performance of bio-based industrial systems Wider set of objectives are detailed in the art.4, 5 and 46 of the Council Regulation establishing CBE JU, hereafter mentioned as the Single Basic Act (SBA).
Legal basis	Article 187 of the Treaty on the Functioning of the European Union and 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.
Executive Director	Nicoló Giacomuzzi-Moore, Executive Director ad interim, since September 2022.
Governing Board	Chair: John Bell Vice-chair: Rob Beekers Full list of Governing Board members provided in section 4.2
Other bodies	States' representatives group Scientific Committee Deployment Groups
Staff number	26
Total available budget 2022[1]	Commitment appropriations: EUR 264,216,550 Payment appropriations: EUR 80,333,780
Budget implementation/execution	Commitment appropriations: EUR 124,983,688 (47% execution) Title 1 – EUR 2,863,114 (63% execution) Title 2 – EUR 1,649,749 (60%execution) Title 3 – EUR 120,470,825 (48% execution) Payment appropriations: EUR 52,052,409 (65% execution) Title 1 – EUR 2,761,346 (55% execution)

[1] Total budget includes operational budget (used for funding selected projects) & administrative (used for funding Programme Office activities)

	Title 2 – EUR 1,860,336 (68% execution) Title 3 – EUR 47,430,727 (65% execution)
Grants/Tenders/Prizes	No grants signed yet under the mandate of CBE JU 142 signed grants signed under the mandate of BBI JU for a total value of EUR 822 million
Strategic Research & Innovation Agenda	Strategic Research and Innovation Agenda (SRIA)
Call implementation	Number of calls launched in 2022: 1 Number of proposals submitted: 125 Number of eligible proposals: 124 Number of proposals granted: 21 proposals selected for funding, Grant Agreements to be signed in 2023
Participation, including SMEs	For CBE JU: statistics will be available in 2023 after the signature of the Grant Agreements from Call 2022. For BBI JU: total number of participations in funded projects: 1,887 of which: 40% are SME beneficiaries receiving 37% of funding budgeted in Grant Agreements 61% are private-for-profit companies

FOREWORD

Dear reader,

It is with great pleasure that I present to you the Annual Activity Report of the Circular Bio-based Europe Joint Undertaking (CBE JU). For CBE JU, 2022 marked the transition to the new partnership under the Horizon Europe mandate and the consolidation of the organisation entering the new programming cycles. On top of this, the Programme Office continued to deliver on its core tasks, that of supporting CBE JU beneficiaries in achieving impressive results and in turn strengthening the bio-based industries and the bioeconomy in Europe.

Last year, CBE JU was able to finalise its new institutional setting by establishing the State Representatives Group and the Scientific Committee. This was fundamental to ensure the consultation of all relevant stakeholders regarding the CBE JU Strategic Research and Innovation agenda (SRIA) and the topics of the CBE JU Calls 2022 and 2023. Thanks to the efforts of the European Commission, the Bio-based Industries Consortium and the CBE JU team, these milestones allowed for a timely publication of the first CBE JU Call and its subsequent successful evaluation, resulting in the first grant agreements under the new mandate. At the same time, the partners consolidated an agreed programming procedure and the multi-annual planning that will set the basis for the establishment of future CBE JU calls, marking a change of speed in the implementation of the programme and providing a strong support to the deployment of bio-based solutions in Europe.

CBE JU and its projects continue to deliver on the side of key performance indicators, both at the level of Horizon Europe corporate indicators, but also on the specific indicators of the initiative. The BBI JU portfolio is in fact showing exceptional progress, surpassing the majority of results anticipated at the beginning of the initiative. This achievement lies with the beneficiaries, committed to delivering their vision, and with the support given by the CBE JU partnership in setting the right conditions for the entire sector to bloom.

Based on successful project outcomes, CBE JU promoted extensively success stories and communicated about scientific advances and achievements by companies – large and small – joining forces with the research community. CBE JU funded biorefineries are going into production, illustrating impressive socio-economic impacts and remarkable environmental sustainability, new technologies are demonstrated helping companies to scale-up innovation towards the market, showing the enormous potential of the circular and bio-based industries as an enabler of the European Green Deal.

On the side of the CBE JU Programme Office, new staff enforced the team to prepare for the future challenges; their integration and the work of all colleagues was fundamental to complete the evaluations, to deliver in terms of project management, contribute to the preparation of the deployment groups and of the common back-office arrangements, joining forces and achieving efficiency gains together with other Joint Undertakings.

I would like to close on a personal note, thanking all colleagues for their professionalism and dedication, and for supporting me in the role of Executive Director ad interim. CBE JU would not fulfil its mission without your effort, your team spirit, and your passion.

Nicoló Giacomuzzi-Moore,

CBE JU Executive Director ad interim

EXECUTIVE SUMMARY

Introduction

Looking back on the year, 2022 witnessed the full establishment of the new partnership, the Circular Bio-based Europe Joint Undertaking (CBE JU). Core processes and governing bodies were established, two work programmes were adopted, the first call for project proposals was launched and initiatives taken to raise awareness and promote the new partnership among the stakeholder community. In parallel the ongoing Bio-based Industries Joint Undertaking (BBI JU) projects also continued to be managed efficiently.

Transition to the Circular Bio-based Europe Joint Undertaking

One of the principal objectives for the first half of the year was to ensure the timely and smooth transition to the new partnership. This included the establishment of the governing bodies, the states' representatives group (SRG) and the Scientific Committee (SC), which successfully kicked off their activities by adopting their respective rules of procedure and electing a Chair and Vice-Chair. The advisory bodies were consulted and provided feedback on the amended Annual Work Plan 2022 and the draft Annual Work Plan 2023, as well as providing strategic feedback to the multi-annual programming (MAP) progress. While the SRG members are nominated by the Member States, membership of the SC followed an open call for expression of interest. Following an assessment of eligibility criteria, the CBE JU Governing Board appointed 15 independent experts, achieving gender balance and equitable geographical representation from the worlds of academia, industry, SMEs, non-governmental organisations as well as regulatory bodies. Members of both the SRG and SC played pivotal roles as active ambassadors of the CBE JU by participating in activities at national and regional levels and promoting the funding programme, disseminating information, and mobilising key stakeholders.

A fundamental pillar of the partnership was achieved by the founding partners, the European Commission and the Bio-based Industries Consortium (BIC), when in June 2022, the Governing Board adopted the partnership's strategic priorities in the CBE JU Strategic Research and Innovation Agenda (SRIA) for the 2022-2030 period. Through a process of co-creation and by aligning the public and private interests, the delivery of innovative bio-based solutions will be the key priority of the partnership, along with a strong focus on the EU's environmental goals and support to local economies. The SRIA will form the basis for the founding partners and the Programme Office to develop annual work programmes and launch calls for project proposals.

Work began in earnest on establishing the first Deployment Group under the partnership, that of Finance and Investments. A novelty of the Single Basic Act, Deployment Groups are a new type of advisory body, which play a role in the creation of favourable conditions for the deployment of bio-based solutions in their thematic area. They will advise the Governing Board and will actively participate in the strategic discussions on issues critical to market uptake of bio-based innovation. The Deployment Group on Finance and Investments was identified by the Governing Board as a top priority thematic area for which an overall agreement on the scope and area of intervention was reached. The founding partners, together with the CBE JU Programme Office, will continue work to ensure its full establishment in the first half of 2023.

A key milestone for the new partnership was the launch of its first call for project proposals on 22 June 2022. Covering 12 topics, and having a budgetary envelope of EUR 120 million, the call received 124 eligible applications, requesting over EUR 600 million in CBE JU funding and involving over 1,500 proposal participants. The statistics bear witness to the large interest in the CBE JU funding programming, and the opening of the call (the first in two years) was eagerly awaited by the stakeholder community. An important trend, which commenced under BBI JU, and continues under CBE JU, is the high participation rate by SMEs accounting for 37% of applications - nearly double the overall target set for SME funding under Horizon Europe. 77% of SME applicants participated in the frame of Research and Innovation Actions (RIA) proposals, proof that SMEs are important contributors to high-risk, collaborative R&D projects within the European bio-based industries. Furthermore, six out of nine Flagship consortia were led by an SME coordinator, compared to 27% SME coordinator-ship overall, indicating that SMEs are particularly committed, not only to be part of, but also to lead the deployment of first of their kind biorefineries in Europe. 35% of the 994 applicants were newcomers, a significant share, which is proof of the openness of the programme and its overall success to attract new interest. Following an independent evaluation process, with 110 experts representing a wide geographical balance and professional experience, 21 projects were selected for funding which at the time of writing were in the process of preparing the grant agreements.

BBI JU legacy

While CBE JU was launched in November 2021, work has continued on ongoing BBI JU projects and 2022 saw the successful finalisation of 21 projects as well as important milestones achieved by many other projects. These included the project inauguration of AFTER-BIOCHEM, the completion of the construction phase of the PLENITUDE project, and the successful scaling-up of technologies in UNRAVEL, to name but a few.

In addition, the calculation of the leverage effect continues to be monitored on a yearly basis, the aim of which is to measure the ability of the initiative to attract additional financing from beneficiaries and multiply the EU funding budget resources. In 2022 the expected leverage effect of the initiative climbed to EUR 2.8, in line with the expected target to be reached by end 2024.

The annual Key Performance Indicators (KPIs) and Impacts Survey continues to highlight the environmental and socio-economic impacts of funded projects. Positive contributions have been reported in relation to the revitalisation of regional economies through: the participation of primary producers and the diversification of income; the consolidation of sustainable, local bio-based value chains with inclusive business models that incentivise the modernisation of the primary sector; the successful demonstration of renewable bio-based feedstock to replace fossil based raw materials in the production of innovative materials and solutions with improved environmental and climate impacts; increased competitiveness of European bio-based companies, along with the creation of new markets; contributing to reducing the EU's external dependency on fossil and other non-renewable resources; as well as contributing towards closing the gaps in value chains by testing and validating innovative processing technologies that can be upscaled, demonstrated and integrated in industrial facilities. The objectives of funded projects are also well aligned with global sustainability goals and report important contributions to the United Nations Sustainable Development Goals (SDGs) 9, 12 and 13.

In concrete terms, results reported by funded projects confirm the achievement for all KPIs linked to project outputs and even significantly surpass them. For example, by 2022 year end, 142 new cross- sector interconnections had been achieved versus the SIRA target of 36 (KPI 1), BBI JU projects had created 111 new bio-based value chains compared to the target of 10 (KPI 2), 83 new bio-based building blocks reported versus a target of 5 (KPI 4) and in terms of new bio-based materials 157 compared to the target of 50 (KPI 5). The expected results of ongoing projects will only continue to build on these great results.

Dissemination and communication activities

While the Covid-19 pandemic resulted in a significantly reduced number of physical events over the last years, September 2022 saw the organisation of the first in-person CBE JU event to celebrate the full establishment of the new partnership. 100 high-level stakeholders, representing all sectors of the bio-based community, came together physically for the first time in a long while to reconnect and exchange, take stock of achievements and look forward to new opportunities for the European bioeconomy.

Interest in the partnership and its funding programme via social media channels continues to grow. LinkedIn followership increased by 39% to 12,000, while the number of subscribers to the newsletter grew by 17% compared to 2021. The CBE JU Info Day, while remaining online in 2022, attracted 1,200 live views from 47 countries (2,500 views in total) with an average satisfaction rate among participants reaching 94%. The platform for the event also supported 480 one-to-one online meetings allowing participants to network with other potential applicants, pitch project ideas, as well as identify potential project partners.

Operational highlights

The Programme Office continued to maintain a high level of operational excellence throughout the year and was supported with the recruitment of eight new colleagues. A hybrid way of working continued to be the norm throughout 2022, and despite a challenging year, the annual staff survey revealed a very high job satisfaction rate. The survey, with a 100% participation rate, highlighted staff's contentment in terms of the working culture within the organisation, assigned responsibilities and learning and development opportunities, the flow of communication within the organisation, and interaction with the management.

In terms of operational expenditure, the Programme Office is pleased to report that the efficiency indicators as regards payments to funded projects, i.e., time-to-pay (TTP), time-to-inform (TTI) and time-to-grant (TTG), all reported positive on-time results. Similarly, the established internal control processes have, during the course of 2022, proven to be effective with an error rate of 1.15% (well below the materiality tolerance of 2%).

Significant progress was also made on the Back Office Arrangements (BOA) as required under the Single Basic Act. While an independent study concluded modest efficiency gains, it did however highlight potential benefits in terms of harmonisation of current practices, standardisation of procedures, establishment of a critical mass for negotiation, coordination and cost savings. The preferred BOA model among the JUs is a setup whereby one JU takes the lead in coordinating tasks together with one or two backup JUs. The preparation work prioritised those aspects of the

BOA that had the objective of bringing the most value in the short term, resulting in the BOA being drafted in the following areas during the course of 2022: accounting, HR (under the leadership of CBE JU), ICT and procurement.

Conclusion

In 2022, the Programme Office successfully managed the transition to the new partnership and the BBI JU legacy project portfolio in a remarkable fashion, delivering high quality results highlighting the efficiency of the organisation. In addition, the success of the first call for CBE JU, with 21 selected for funding, displayed the high level of interest in and impact of the public-private partnership. Funded projects continue to significantly outperform their KPIs and, together with the promising progress on the leverage effect (expected to reach €2.8), this highlights achievements which cannot be taken for granted. The structuring effect of the initiative and the positive contributions to the revitalisation of rural economies is evident, paving the way to making the bio-based sector a key enabler of the European Green Deal and related EU policies. The EU bio-based sector is supporting the shift from fossil-based resource inputs and the transition to a de-fossilised society, while at the same increasing the EU's competitiveness and industrial leadership.

1. IMPLEMENTATION OF THE ANNUAL WORK PROGRAMME 2022

The most relevant activities and major achievements of the CBE JU (and BBI JU legacy) occurring in 2022 are reported in this chapter, including leverage of private funding, scientific and technological advancements, progress towards the set KPIs, the expected impacts in terms of contribution to competitiveness, growth and job creation, and the contribution to overcome societal challenges.

1.1. KEY OBJECTIVES 2022, ASSOCIATED RISKS AND CORRECTIVE MEASURES

This section introduces the progress towards the achievement of CBE JU objectives and the SRIA strategic priorities. It also presents the associated operational risks, mitigation, preventive and corrective measures taken to meet the operational and management objectives as set for 2022.

1.1.1. CBE JU objectives, scientific priorities and challenges

CBE JU operates under the Horizon Europe programme and aims at accelerating the innovation process and market deployment of innovative bio-based solutions, while at the same time increasing the sustainability of the bio-based systems in aspects such as: end-of-life, zero-pollution ambition, contribution to climate change mitigation and resource efficiency. By bringing together many different actors across the value chain, from primary producers to consumers with technology developers, researchers and companies which together aim to develop new cross-sector collaborations and business models, it has the big potential to also support regional development.

CBE JU is expected to contribute to the European Green Deal and the Fit for 55 package in achieving 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. CBE JU will also 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[2], and will support the commitments set under the United Nation Sustainable Development Goals[3] (SDGs) and the COP 21 Paris Climate Agreement.

The transition from a fossil-based economy to a bio-based one requires the production of sustainable bio-based products that reach a high technical performance and fully meet market requirements, so that they can successfully replace their current fossil-based counterparts. In addition, the sustainable and local sourcing of the biomass, the valorisation of all types of bio-based side streams and the reuse, as well as the recycling and upcycling, of resources play a key

[2] https://op.europa.eu/en/publication-detail/-/publication/775a2dc7-2a8b-1e9-8d04-01aa75ed71a1

[3] https://www.un.org/sustainabledevelopment/sustainable-development-goals/

role in ensuring the sustainability of the bio-based systems and the efficient use of natural resources.

The general and specific objectives of CBE JU have been set in the Council Regulation establishing all Joint Undertakings under the Horizon Europe programme[4], while the related strategic priorities have been detailed in the Strategic Research and Innovation Agenda (SRIA)[5]. In Figure 1, the logical link among the three CBE JU objectives and the SRIA strategic priorities is visualised using three different colours (light blue, dark yellow and light green).

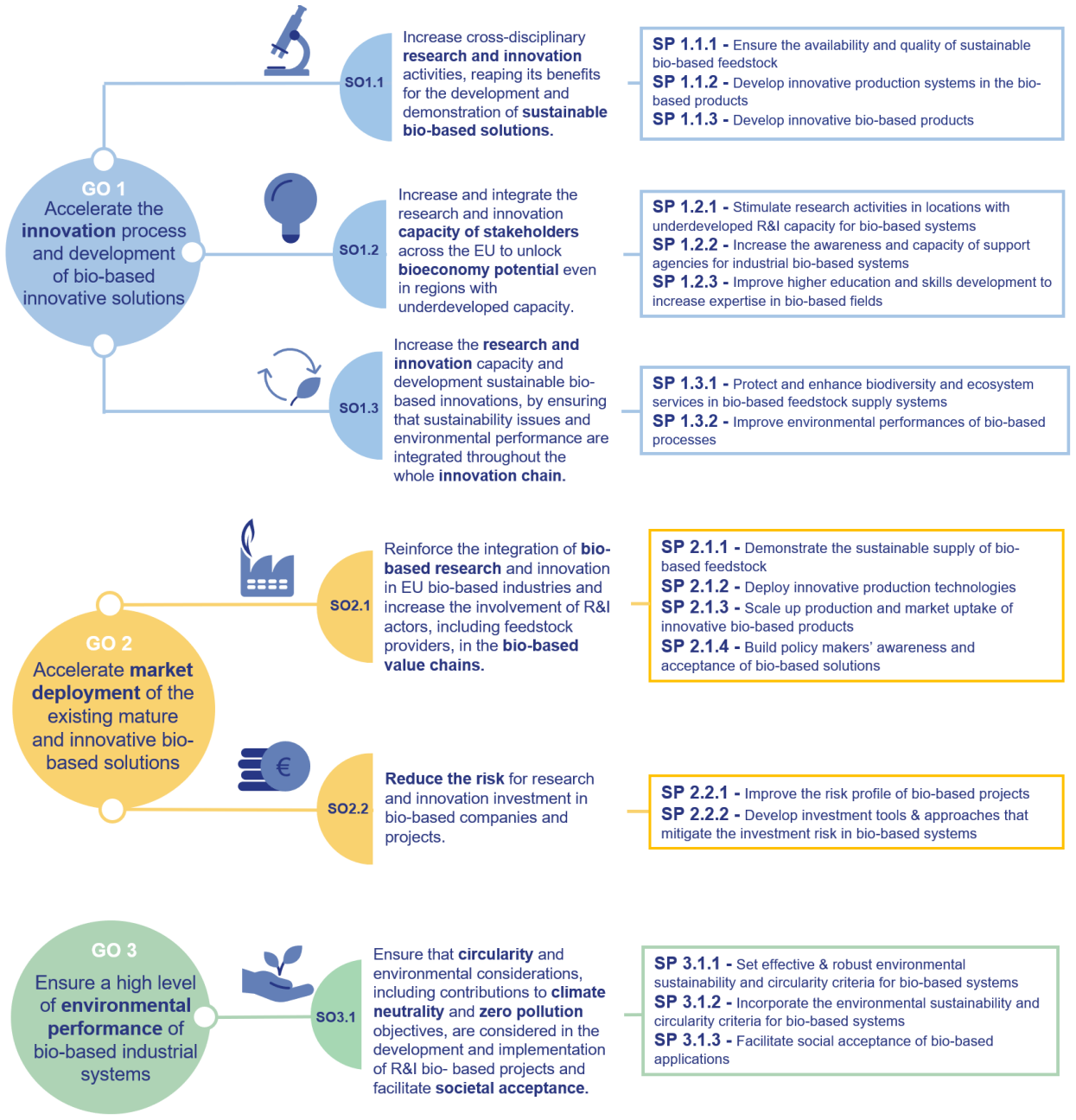


Figure 1 CBE JU general (GO) and specific objectives (SO) and related SRIA strategic priorities (SP)

[4] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R2085&from=EN

[5] cbeju-sria.pdf (europa.eu)

In Figure 2, the links between the strategic priorities identified in the SRIA and the 12 topics included in the CBE JU Annual Work Programme 2022[6] are presented along the three main blocks (feedstock, processing and products) and the dedicated cross-cutting priorities, such as the one dedicated to the environmental sustainability framework.

			CBE JU TOPICs											
			2022.IA-01	2022.IA-02	2022.IA-03	2022.IA-04	2022.IA-Flag01	2022.IAFlag-02	2022.R-01	2022.R-02	2022.R-03	2022.R-04	2022.R-05	2022.S-01
FEEDSTOCK		Strategic priority 1.1.1 - Ensure the availability and quality of sustainable bio-based feedstock											X	
		Strategic priority 1.3.1 - Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems											X	
		Strategic priority 2.1.1 - Demonstrate the sustainable supply of bio-based feedstock		X										
PROCESSING		Strategic priority 1.1.2 - Develop innovative production systems in the bio-based industry									X			
		Strategic priority 2.1.2 - Deploy innovative production technologies	X		X	X	X							
PRODUCTS		Strategic priority 1.1.3 - Develop innovative bio-based products							X	X	X	X		
		Strategic priority 2.1.3 – Scale-up production and market uptake of innovative bio-based products	X		X	X		X						
CROSS-CUTTING	Communication	Strategic priority 2.1.4 - Build policy makers' awareness and acceptance of bio-based solutions					X							
		Strategic priority 3.1.3 – Facilitate social acceptance of bio-based applications					X							
	Environmental sustainability framework	Strategic priority 3.1.1 - Set effective and robust environmental sustainability and circularity criteria for bio-based systems												X
		Strategic priority 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	

Figure 2 Contribution of AWP 2022 topics to SRIA strategic priorities and related CBE JU objectives

1.1.2.CBE JU operational and management objectives in 2022

The CBE JU objectives for 2022 were presented to the CBE JU Governing Board in December 2021, and they are summarised below, along with the respective achievements. In a nutshell: in 2022, all CBE JU core processes and governing bodies were established, two work programmes were adopted and the first CBE JU call was evaluated, setting the CBE JU in full operation.

1. Finalise the transition BBI-CBE JU under Horizon Europe with the governance bodies in place

The transition from BBI JU to CBE JU was successfully finalised, with all core operational and programming processes developed and adopted, and the Advisory Bodies established. The Scientific Committee and the states' representatives group were fully established in Q1 of 2022, including the adoption of the respective rules of procedure. Both bodies are fully operational, met twice during 2022 and provided advice to both AWP 2021 and AWP 2022, among other activities. Discussions leading to the establishment of dedicated Deployment Groups were ongoing throughout 2022. For more information, see section 3. Governance.

[6] https://www.cbe.europa.eu/media/93/download?attachment=

2. **Set up the CBE JU organisation and implement the New Ways Of Working**

   Following the CBE JU staff establishment plan, new recruitments took place and the CBE JU staff is now complete. Following a CBE Governing Board decision the EC implementing rules on working time and hybrid working are now applied by analogy.

3. **Agree upon monitoring systems to report on output, outcome and financial contribution, and submit them to the GB for approval**

   A set of CBE JU-specific KPIs were developed, including them in a broader framework for reporting including Horizon Europe KIPs and the commune KPIs for the Horizon Europe Partnerships.

4. **Keep CBE JU operational standards at the highest quality and ensure efficiency to absorb the 2022 workload linked with the transition phase and new missions expected by CBE JU**

   The transition to CBE JU was fully completed during 2022, including the establishment of governing bodies, core processes and the launching of the first CBE JU call. In parallel, CBE JU office continued to manage the BBI JU legacy and project portfolio, while maintaining high standards of quality and efficiency.

5. **Prepare, launch, promote and evaluate the call 2022 explaining all the novelties linked to the new programme as compared to BBI JU**

   CBE JU's first call, Call 2022, was successfully opened on 22 June 2022. The Call 2022 content and novelties were explained during a dedicated CBE JU online Info Day on 7 June 2022, as well as at different national info days. Specificities of the CBE JU were also explained in the AWP 2022 and in other supporting documents, such as the Call Frequently Asked Questions and the proposal templates.

6. **Continue to promote the achievements and impacts of the BBI JU initiative in line with relevant EU policy goals while promoting the establishment of CBE JU**

   Achievements and impacts of BBI JU have been highlighted via publications, campaigns and events. The CBE JU establishment was promoted via a wide range of communication actions. The CBE JU continues to further develop the communication tools and channels including the website, social media, newsletter, media relations and partnerships.

1.1.3. Associated risks

In line with the CBE JU procedures for identifying risks and their preventive measures, the 2021 risk assessment performed on the 2022 objectives identified 11 risks with varying degrees of importance, convergence and inter-dependency. Most of these risks were related to the effective deployment of human resources and to the organisation's performance.

These risks were described in the Risk Register of the organisation together with risk responses, responsibilities, and deadlines for implementation by the JU Programme Office or by external stakeholders. As a result of these planned actions, in the course of 2022 the JU Programme Office was able to monitor and mitigate both the likelihood and impact of the identified threats, maintaining them at acceptable levels. This is particularly the case for the following most significant risks:

Objective(s)	Risk(s)	Result(s)
Keep the CBE JU operational standards at the highest quality and ensure efficiency to absorb the workload in 2022 Ensure the necessary and competent Human Resources are timely available and working in safely conditions	Insufficient Human Resources and threats to staff safety and wellbeing	Achievement of expected efficiency ratios of operations while preserving and promoting staff safety and wellbeing
Ensure a smooth transition and set up of the new mandate under CBE	Delays and inefficiencies in the set up and running of CBE, notably during the transfer of key processes and the creation of new accountabilities (new accountant, new governance bodies)	Key processes, objectives and performance indicators for the transitions have been mapped and actions planned. All objectives were met, at the expected level of quality.
Consolidate the effective BBI JU project management and reporting for the achievement of the Strategic Objectives of the BBI JU SIRA.	Project failures/delays in Covid-19 scenario: by 2022, 58 projects introduced amendments requesting extensions due to Covid-19 (average extension 5 months; max 18 months; min 3 months).	Enhanced risk management routine on a well-identified list of cases in order to absorb project delays or mitigate risks of underperformance and support actual delivery of projects. Enhanced control measures in budget planning and execution in order to absorb low budget implementation rates recorded in 2022 and to achieve multi-annual control KPIs for the sound financial management of the BBI JU legacy and of the CBE JU.

Table 1: Most significant risks managed in 2021.

The above-mentioned results are detailed in the relevant sections of this document.

1.2. RESEARCH & INNOVATION ACTIVITIES / ACHIEVEMENTS

This section provides an overview of the CBE JU project portfolio, which encompasses a wide range of technologies, processes and types of biomass to develop products for various applications, ranging from feed and food ingredients to packaging, construction, personal and home care, automotive applications, among many others. The CBE JU project portfolio is currently composed of BBI JU finalised and ongoing projects, as the first CBE JU projects will start only in Q2 2023.

1.2.1. Overview of the projects' portfolio and its evolution

As presented in, the CBE JU implements its research and innovation programme founding four types of actions which aim at different Technology Readiness Levels[7].

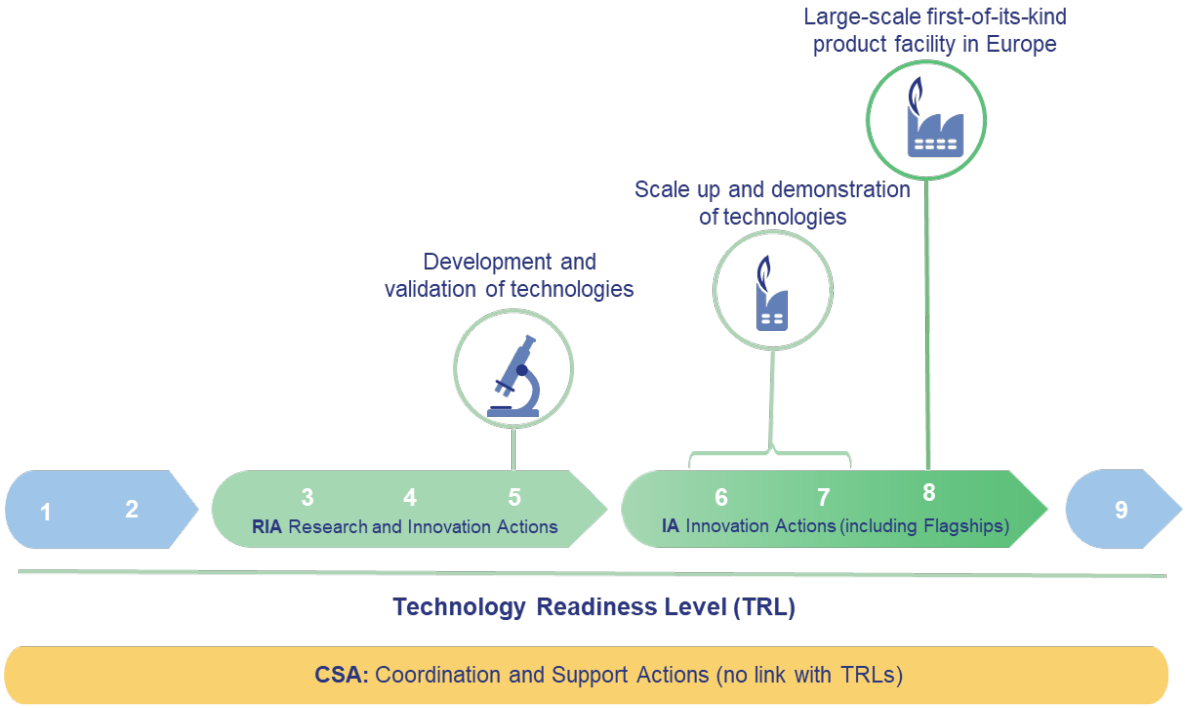


Figure 3 Types of actions in relation to their respective TRLs.

While **Research and Innovation Actions** (RIAs) focus on filling the gaps in technological innovation, **Innovation Actions** (IAs) prioritise the integration, deployment and upscaling of technologies and ultimately bringing the technology closer to the commercial scale, as in the case of **Flagships** first-of-their-kind biorefineries (IAs-Flagships). **Coordination and Support Actions** (CSAs) support the creation of value chains by addressing cross-cutting challenges.

As the first CBE JU projects will start only in the second half of 2023, CBE JU project portfolio is currently composed of BBI JU finalised and ongoing projects which cover a broad range of

[7] h2020-wp1415-annex-g-trl_en.pdf (europa.eu)

biomass, technologies, and applications. A total of 140 projects, of which 57 were still ongoing and 83 finalised at the end of 2022, are included in this reporting, while the two BBI JU projects that were terminated are not included in the analysis presented in Figure 4. In addition, in the following sections, an assessment of the CBE JU projects' portfolio based on the main source of feedstock and the main applications in relation to the different type of actions (IA–FLAG, IA-DEMO, RIA) is provided.

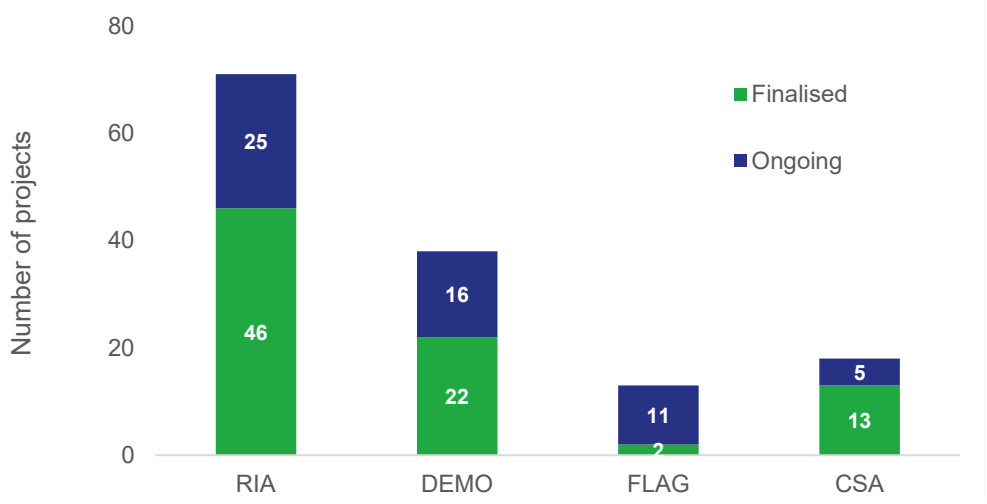


Figure 4 Number of CBE JU projects per type of action finalised and ongoing at the end of 2022.

Main source of feedstock

The main types of feedstocks used in the CBE JU projects finalised and ongoing at the end of 2022 are:

- **Agri-based feedstock**, including residues and by-products from the agro-food industry (37% of BBIJU projects excluding CSAs)
- **Forest-based feedstock,** including lignocellulosic side streams and wood residues (24% of BBIJU projects excluding CSAs)
- **Aquatic feedstock,** including aquatic organisms, fisheries, aquaculture sectors and their residues (10% of BBIJU projects excluding CSAs)
- **Side streams from industry,** including black liquor from pulp and paper industry and dairy process sidestreams (6% of BBIJU projects excluding CSAs)
- **Biowaste,** including Organic Fraction of Municipal Solid Waste (OFMSW) and wastewater (6% of BBIJU projects excluding CSAs)
- **Biogenic Gas** and, in particular, CO_2 (1% of BBIJU projects excluding CSAs)

In addition, a small number of RIA projects (RECOVER, BIZENTE, ENZYCLE) develop technologies to transform non-biomass feedstock (designated as other feedstock) using biotechnological processes (4% of BBIJU projects excluding CSAs).

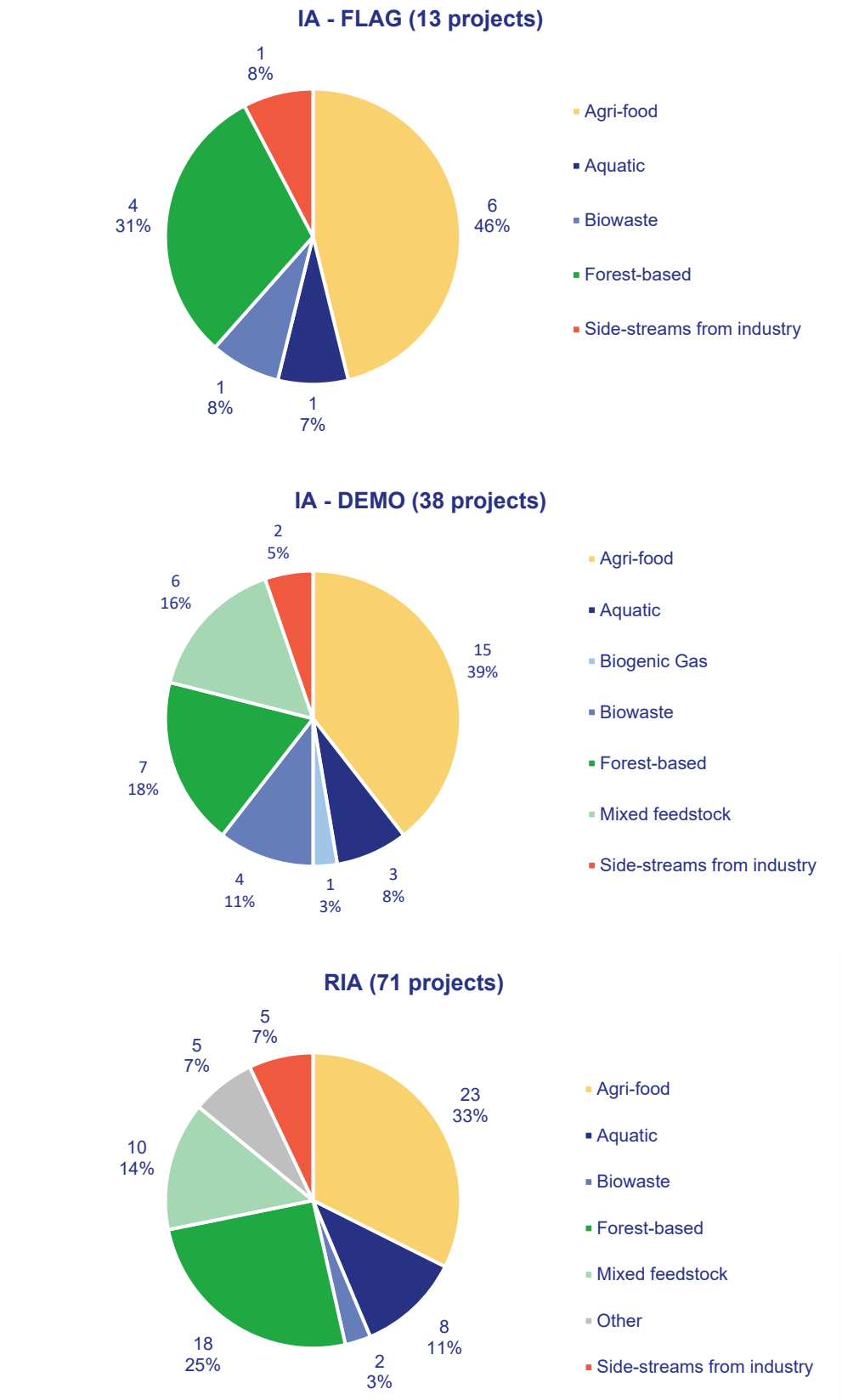


Figure 5 CBE JU number of projects in relation to their main feedstock divided per type of actions (excluding CSAs).

As shown in Figure 5, the agri-based sector represents the main source of feedstock for all type of actions, followed by the forest-based. The mixed feedstock is used by projects using two different feedstocks, which in most of the cases is a mixture between agri-food based and forest-based feedstocks. All the other feedstock sources have been addressed by at least one of the three types of action (RIA, IA- DEMO and/or IA-FLAG).

Here below some examples of CBE JU projects in relation to their main source of feedstock are reported.

Feedstock	CBE JU project
Agri-based	**OLEAF4VALUE** (RIA) applies a sustainable solution devoted to the full valorisation of olive pruning leaves and olive mill leaves, through the setup of six new value chains. The proposed approach aims at solving the problem of olive leaves removal from the fields while obtaining high added value bioactive compounds with high-market potential in the food, feed, nutraceutical, and cosmeceutical sectors.
Forest-based	**VEHICLE** (IA-DEMO) is converting a large portion of the organic material from pulp mills, currently considered a waste product, into valuable products for packaging applications (e.g. films, bags, trays).
Aquatic	**SCALE** (IA-FLAG) is a first of its kind Flagship plant producing rich microalgae bioactive compounds and proteins from novel microalgae species for integration into high-quality, high-performing and safe commercial end-products. The project aims to build and operate a plant utilising photobioreactor technology to produce high nutritional value ingredients derived from microalgae for the food, feed and cosmetics sectors on an industrial scale.
Sidestream from industry	**IRODDI** (RIA) project aims at developing mild and greener processes for obtaining bio-based products such as surfactants, base-oils, and polyols with specific properties derived from the Free Fatty Acids (FFAs) contained in deodorisation distillates, the sidestreams of deodorisation processes.
Biowaste	**CIRCULAR BIOCARBON** (IA-FLAG) is a first-of-its-kind Flagship where urban waste streams generated in cities are turned into several high added-value products: coatings, biodegradable and compostable bags, green graphene-based devices and products, biodegradable soil mulch films, biofertilisers, biostimulants.
Biogenic Gaseous carbongas	**REDWine** (IA-DEMO) project aims at demonstrating the feasibility of using carbon dioxide from wine fermentation and wine effluent (rich in several nutrients) for the cultivation of microalgae (Chlorella). Extracts from Chlorella biomass (mainly proteins and polysaccharides) will be valorised into food, cosmetics, and agricultural products.

Main application areas

The main areas of applications covered by the CBE JU portfolio are:

- **Bio-based chemicals**, including surfactants, solvents, platform chemicals
- **Biopolymers and bio-based plastics,** including coatings, polyurethanes, polyesters, resins, adhesives
- **Construction**, fibres and board for furniture, binders, composites, insulation materials
- **Crop protection and fertilisation**, including biopesticides, fertilisers, pheromones
- **Food & feed**, including proteins, sugars, additives, bioactive compounds
- **Packaging**, mainly the production of bio-based materials with tailored properties for packaging applications (including food packaging)
- **Textile**, including textile fibres and textile coatings

In addition, a small number of CBE JU projects is focusing on producing sustainable biofuel for the transport sector (LIGNOFLAG), demonstrating more efficient enzyme production to increase biogas yields (DEMETER), developing technologies to improve knowledge in forest management (EFFORTE and TECH4EFFECT) or developing digital tools for the optimisation of agri-food value chain processes and the supply of quality biomass for processing (BBTWINS).

As shown in Figure 6, the main application areas covered by the CBE JU project portfolio, by all types of actions IA-FLAG, IA-DEMO and RIA, are: food & feed (28 projects), biopolymers and bio-based plastics (23 projects), bio-based chemicals (21 projects) and packaging (20 projects), followed by the construction sector (11 projects). The portfolio also includes RIA and IA-DEMO projects in both the crop protection & fertilisation (8 projects) and textile areas (4 projects).

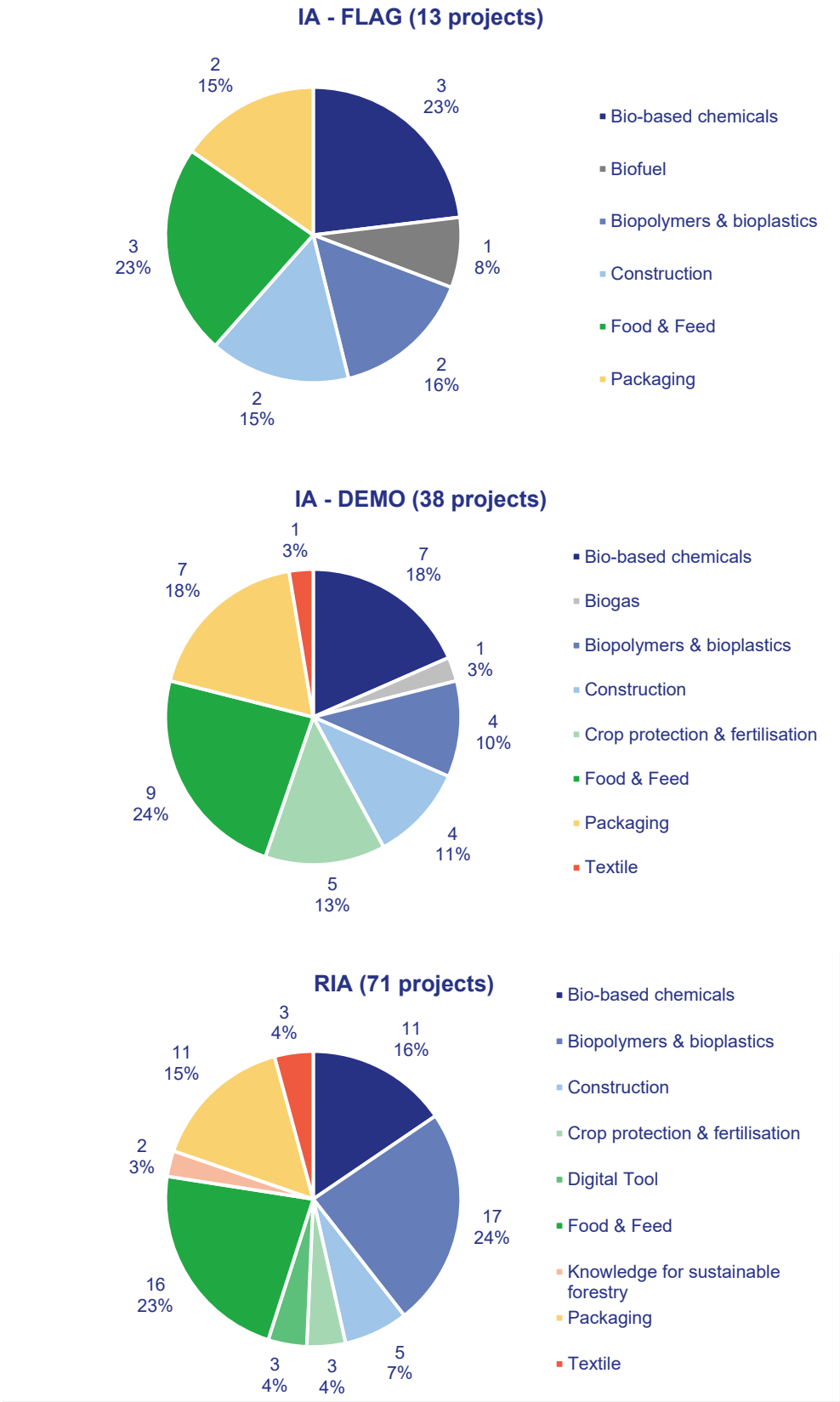


Figure 6 CBE JU number of projects in relation to their main areas of application and type of actions (excluding CSA).

Here below examples of CBE JU projects with their main applications are presented.

Feedstock	CBE JU project
Bio-based chemicals	**ReSolute** (IA-FLAG) is building a first-of-its-kind industrial plant to convert waste cellulosic biomass into safe, sustainable chemicals with applications across diverse industrial markets. The leading bio-based chemical produced will be the novel solvent Cyrene™ which is a replacement for petrochemical solvents.
Biopolymers and bio-based plastics	**UNLOCK** (IA-DEMO) aims at designing and demonstrating an economically and environmentally sustainable supply-chain for a feather-based bioeconomy, to generate innovative bio-based functional materials for agricultural applications such as geotextiles, mulch films, seed trays and hydroponic foams.
Construction	**VIOBOND** (IA-FLAG) is a first-of-its-kind biorefinery where lignin (by-product from pulp and paper production) partially replaces fossil-based phenol and formaldehyde in the production of resin, to be used in consumer products such as plywood coating, white furniture plywood, sandpaper adhesive and insulation glass wool binder.
Crop protection and fertilisation	**BIOVEXO** (IA-DEMO) develops pest management solutions to protect olive trees from pathogen Xylella, using existing or newly developed Xylella-targeting biopesticides (derived from onion extract and antagonistic bacteria) combined with biopesticides combatting the insect vectors (derived from plant extract, a fungus and a microbial metabolite).
Food & feed	**PLENITUDE** (IA-FLAG) is a first-of-its-kind bio-based value chain built to meet the growing global demand for proteins and to address a large and growing market for sustainable protein. The focus is the production of mycoprotein by aerobic fermentation of sustainable cereal crops, for its application as food ingredients in meat alternatives, meat hybrids, pet food and many others.
Packaging	**PEFerence** (IA-FLAG) is a biorefinery producing FDCA (furan dicarboxylic acid) from fructose (from wheat or second-generation feedstock) used as a building block for the production of polyesters, polyamides, coating resins, plasticisers and PEF Poly(ethylene 2,5-furandicarboxylate). PEF can be recycled and has superior gas barrier properties compared to PET (Polyethylene terephthalate).
Textile	**EFFECTIVE** (IA-DEMO) is demonstrating the production of innovative bio-based polyamides and polyesters from sustainable feedstock (sugar beet/agricultural waste and waste vegetable oil) to be used for the production textile yarns, fabrics, and garments and textile flooring; and combined with bio-polyesters for the production of films for packaging applications.

Primary producers

One of the objectives of the CBE JU initiative was to contribute to the increase of economic growth and employment in rural areas. Towards this end, measures were taken to enhance and consolidate the participation of the primary sector in funded projects, and consequently in the bio-based sector and its value chains. This section reports the engagement of the primary sector in BBI JU projects (Call 2014-2020) and will be used as a baseline to monitor the progress that is expected in the CBE JU.

The analysis of the participation of the primary sector in BBI JU projects (Calls 2014-2020) was based on the criteria used to define agricultural primary producers (or 'agri partners'[8]) in the "*Study on the participation of the agricultural sector in the BBI JU*"[9]. A similar logic was used to classify primary producers[10] from other sectors – including forestry, fishery, aquaculture and marine.[11] In this analysis, producers/harvesters of (micro/macro)algae are presented separately from other producers of aquatic biomass (fishery, aquaculture & marine).

In terms of absolute participation, the primary sector[12] corresponds to around 6% (98 entities), while as a share of net requested JU contribution allocated to the primary sector rises to around 10% (approximately 76€ M). Excluding the (micro/macro)algae sector, the share of participation is approximately 4% (82 entities) and corresponding JU contribution is 7% (approximately 55.6€ M).

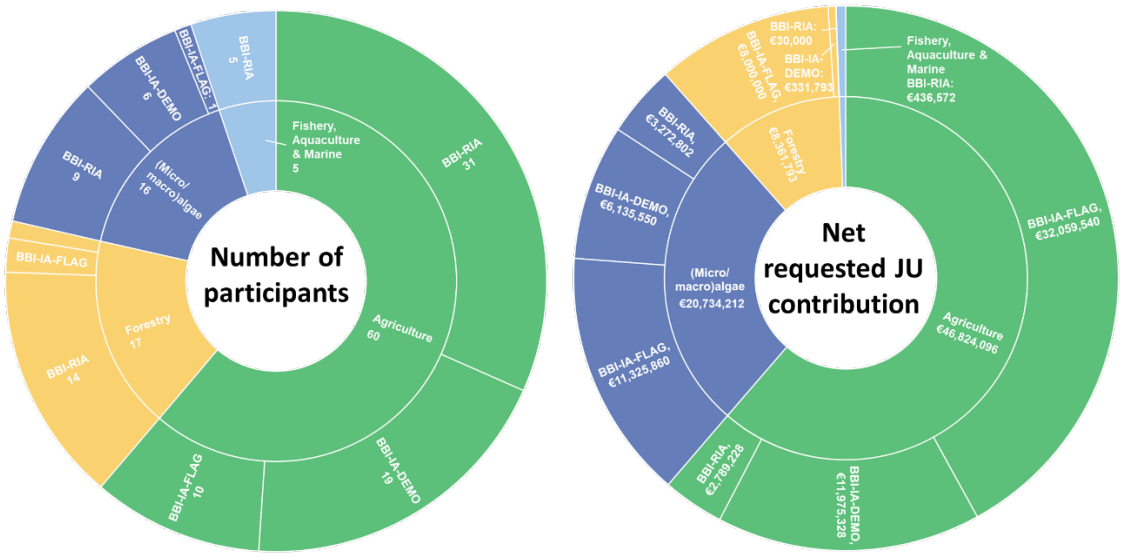


Figure 7 Participation of primary sector actors and distribution of net requested JU contribution (to nearest euro) by primary sector actors per sector and type of action in BBI JU projects (Calls 2014-2020).

[8] Agri partners": Group made up of project beneficiaries, therefore full members of the project consortium, belonging to the agricultural primary sector and involved in the production of biomass.
[9] Study on the participation of the agricultural sector in the BBI JU.
[10] Entities involved in the first step of the bio-based value chain performing activities related to the production, harvest, handling, and storage of biological resources, before moved to either processing or distribution. Not considered as primary biomass producers: entities not directly involved in the cultivation or production of biological resources, but only in their processing or transformation. Also not considered primary producers are: farmers' associations, food processors or federations of agricultural cooperatives which focus on representation, training and advocacy activities.
[11] Classification was performed based on information provided in project Grant Agreements and available on the official websites of the entities. In addition, it was considered a main criterion that primary biomass production should be a key part of the (daily) activities of the entity.
[12] Sectors that use and produce biological resources, including the following sectors: agricultural, forestry and marine and aquaculture, and fishery.

Looking at the split per primary sector and per type of action reported in Figure 7, the agriculture primary producers represent the higher share with around 60% in both participation and net JU contribution, followed by primary producers from the forestry and the aquatic sector. In addition, primary sector beneficiaries with a key role as coordinator in Flagship projects account for a significant share (approximately 73%) of the total net requested contribution by primary producers. In total, 7 projects (5%) are coordinated by beneficiaries from the primary sector of which two are producers of micro- and macro-algae.

In terms of the geographical distribution of the primary sector participation in BBI JU projects (Calls 2014-2020), the participation is highest in North and Western European countries with a strong agricultural sector (in particular in Spain, France, the Netherlands, Ireland and Italy) or forestry sector (in Sweden) while, despite the high estimated potential for agricultural biomass of several Central and Eastern European countries[13] (in particular, Poland and Romania), participation by the primary sector there remains low.

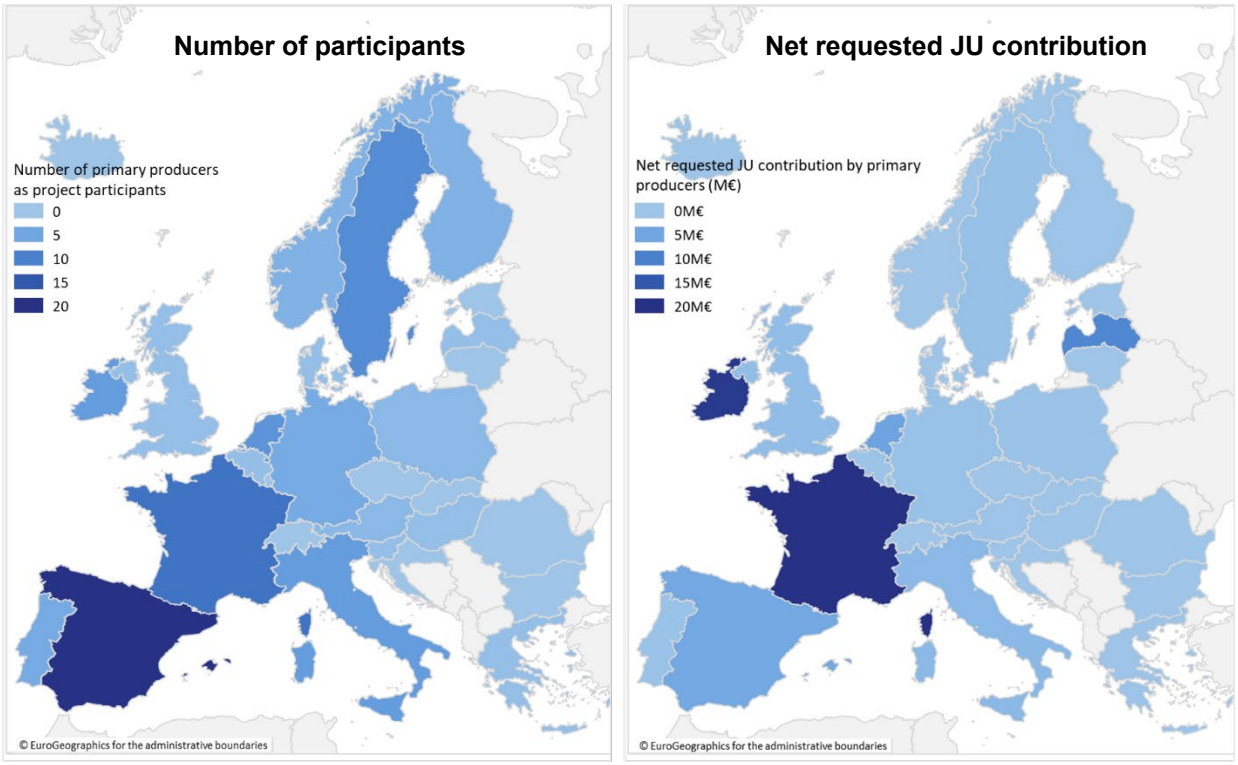


Figure 8 Geographic distribution of primary sector participants (beneficiaries and linked third parties) (left) and net requested JU contribution allocated to primary sector participants (right) in BBI JU projects (Call 2014-2020)[14].

[13] https://knowledge4policy.ec.europa.eu/publication/sustainable-biomass-availability-eu-2050_en
[14] Producers/harvesters of (micro/macro) algae are excluded from this analysis.

Coordination and Support Actions

To complete the CBE JU portfolio presentation, the 18 CSAs are briefly presented below.

Project acronym	Project title	Project focus
BIOWAYS	*Increase public awareness of bio-based products and applications supporting the growth of the European bioeconomy*	Public awareness and engagement
STAR4BBI	*Standards and regulations for the bio-based industry*	Mapping and definition of regulatory frameworks
BioCannDo	*Bioeconomy awareness and discourse project*	Public awareness and engagement
RoadToBio	*Roadmap for the Chemical Industry in Europe towards a Bioeconomy*	Network and strategies development
PILOTS4U	*A network of bioeconomy open access pilot and multipurpose demo facilities*	Network and strategies development
BiOPEN	*The open innovation platform to stimulate the business and innovation potential of the bio-based sector in Europe*	Network and strategies development
ICT-BIOCHAIN	*ICT Tools in efficient biomass supply chains for sustainable chemical production*	Exploring the possibilities to increase bioprocesses' efficiency
BIOBRIDGES	*Bridging consumers, brands and the bio-based industry to improve the market of sustainable bio-based products*	Public awareness and engagement & Network and strategies development
UrBIOfuture	*Boosting future careers, education and research activities in the European bio-based industry*	Education, skills and career development
LIFT	*Unleash the potential of CSAs results to contribute to sustainable and competitive Bio-based Industries in Europe*	Network and strategies development
CELEBio	*Central European leaders of bioeconomy network*	Network and strategies development
BIOSWITCH	*Encouraging Brand Owners to Switch-to-Bio-Based in highly innovative ecosystems*	Network and strategies development
MPowerBIO	*eM-POWERing SME Clusters to help SMEs to overcome the valley of death*	Network and strategies development
Allthings.bioPRO	*Game changer for the bio-based economy*	Public awareness and engagement
Tech4Biowaste	*A dynamic database of relevant technologies of bio-waste utilisation*	Exploring the possibilities to increase bioprocesses' efficiency
BIOCIRCULARCITIES	*Exploring the circular bioeconomy potential in cities. Proactive instruments for implementation by policy makers and stakeholders*	Exploring the increasing bioprocesses efficiency & Mapping and definition of regulatory frameworks
BioeconomyVenture	*Raising disruptive bioeconomy ventures, startups and spin-offs to the top*	Network and strategies development
BIObec	*Preparing the creation of Bio-based Education Centres to meet industry needs and boost the contribution of the bioeconomy to societal challenges*	Education, skills and career development

1.2.2. Main Research & Innovation achievements

2022 saw the realisation of significant CBE JU project milestones, including the successful finalisation of 21 projects. Furthermore, many ongoing projects and, in particular, several Flagship projects, reported important achievements during this reporting year.

This section highlights some examples of achievements from this subset of CBE JU projects. In particular, projects which have results with significant (potential) impact are presented, illustrating how sustainable bio-based solutions can help in addressing some of the most pressing societal challenges. These include the decoupling of economic growth from the depletion of natural resources, the introduction of circular approaches in production and consumption, the use of technologies and processes that are resource efficient, the reduction of GHG emissions and microplastics pollutants and preservation of biodiversity, among others.

PLENITUDE (ongoing IA-Flagship)

On 16th September 2022, the food tech company ENOUGH – beneficiary in the PLENITUDE project – celebrated the completion of the construction phase of the first-of-its-kind mycoprotein biorefinery in Sas van Gent in the Netherlands. This zero-waste biorefinery has an initial capacity to produce 10,000 tonnes of food-grade protein, with a view to increasing the output to 60,000 tonnes by 2027.[15]

Figure 9 First-of-its-kind mycoprotein biorefinery in Sas van Gent, in the Netherlands, supported by CBE JU through the PLENITUDE project.

The mycoprotein which will be produced offers an alternative for proteins derived from meat and is produced by fermenting fungi using renewable feedstocks, and in doing so it can help to meet the growing demand for food protein while reducing the associated CO2 emissions.[16]

[15] ENOUGH press release: 'Game changing scale for non-animal protein'

[16] ENOUGH press release: https://www.enough-food.com/news-series-b

AFTER-BIOCHEM (ongoing IA-Flagship)

On 29 September 2022 AFYREN, coordinator of the AFTER-BIOCHEM project, inaugurated the opening of the first-of-its-kind carboxylic acid biorefinery in Carling Saint-Avold (Grand Est, Moselle, France).

At full capacity, it is expected that the plant will produce 16,000 tons of bio-based carboxylic acids and a potassium-rich fertiliser, with an annual saving of 30,000 tons of CO_2 per year.[17] The carboxylic acids produced from agricultural co-products (e.g. sugar beet co-products) will offer bio-based alternatives to many sectors, including food, feed, flavours, fragrances and lubricants.

Figure 10 First-of-its-kind bio-based carboxylic acid biorefinery at Carling Saint-Avold, in France, supported by CBE JU through the AFTER-BIOCHEM project.

LigniOx (finalised IA-DEMO in February 2022)

LigniOx project has demonstrated a new lignin oxidation technology. The produced lignins demonstrated competitive performance as plasticisers compared to fossil-based concrete admixtures, as well as promise in potential applications such as dispersants and anti-scaling agents. The LigniOx lignins offer substantial reduction of global warming potential compared to the current synthetic products in an LCA assessment, especially when their production is integrated into an existing pulp mill or biorefinery.[18]

As a result of the LigniOx project, lignin-upgrading technology for production of versatile lignin-based dispersants is ready for the industrial installation of a demonstration size plant right after the project, and the new LigniOx products could enter the markets within 4-5 years, creating new business opportunities for lignocellulosic biorefineries and the chemical industry.[19]

Figure 11 Lignin oxidation at pilot scale (top); High-performance LigniOx - concrete plasticisers and versatile dispersants (bottom). © LigniOx project.

[17] See AFTER-BIOCHEM press release: https://after-biochem.eu/storage/2022/10/PR-Afterbiochem-september-2022-VF.pdf
[18] Sustainability 2022, 14(17), 10897; https://doi.org/10.3390/su141710897.
[19] See CORDIS for more information: https://cordis.europa.eu/project/id/745246

EMBRACED (finalised IA-DEMO in December 2022)

EMBRACED has successfully demonstrated a biorefinery in Italy (Veneto), allowing the full recovery of Absorbent Hygiene Products (AHP) waste into high-value bio-based and biodegradable products. The biorefinery has the potential to divert 10,000 t/year of waste from landfilling and incineration, thus generating a clear advantage for the environment, municipalities, citizens and the industry, and creating new employment.

The EMBRACED demonstration plant converts cellulose from the AHP into bio-based polyesters intended for film applications and bio-based PHB, targeting film and medical applications.[20]

Figure 12 EMBRACED AHP pre-treatment plant (left) and film prototypes (right). © EMBRACED project.

SSUCHY (finalised RIA in February 2022)[21]

SSUCHY successfully developed new bio-based composite materials and structures with advanced functionalities derived from hemp and wood. These materials were incorporated into product demonstrators for multiple applications, including a loudspeaker system, structural components for an electric scooter, interiors for an electric aircraft and floor and trim panel structures for automotive applications.

Figure 13 SSUCHY prototypes incorporating bio-based composites. Figure reproduced from CORDIS.

UNRAVEL (finalised RIA in May 2022)

UNRAVEL has successfully scaled up technologies for the fractionation and subsequent processing of lignocellulose to high-value products from TRL 3 to 5. Technologies enabling valorisation of mixed lignocellulosic biomass streams have been developed for a range of bio-based products, including insulation foams, bio-based bitumen for roofing applications and bio-based chemicals.[22]

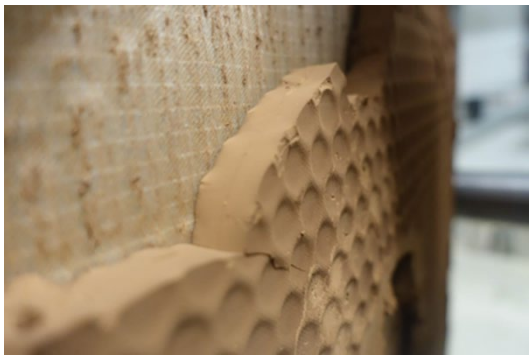


Figure 14 Dried lignin produced from wood chips with the new UNRAVEL fractionation process. ©MVerges UNRAVEL

[20] See CORDIS for more information: https://cordis.europa.eu/project/id/745746/reporting.
[21] Image from CORDIS: https://cordis.europa.eu/project/id/744349/reporting
[22] See CORDIS for more information: https://cordis.europa.eu/project/id/792004/reporting.

1.3. CALLS FOR PROPOSALS, GRANT INFORMATION AND OTHER FUNDED ACTIONS

In 2022, CBE JU implemented its first call for project proposals, launched under the new EU research and innovation programme HORIZON EUROPE. CBE JU picks up where BBI JU left off, stepping up SME participation even further. Although countries that were underrepresented among applicants in the past BBI JU calls are still insufficiently represented in this first CBE JU call, significant numbers of newcomers were attracted, offering both great promise and potential for the future.

1.3.1. Call for proposals

In its first call, CBE JU is funding up to EUR 120 million of projects that are dedicated to advancing competitive circular bio-based industries in Europe. Launched on 22 June 2022, it included 12 topics, each defining a specific research and innovation challenge via a dedicated type of action:

- Two innovation actions – Flagships (IA-Flag)
- Four innovation actions (IA)
- Five research & innovation actions (RIA)
- One coordination & support action (CSA)

Each type of action had a separate budget line as reported in Figure 15. By the deadline for submission, 124 eligible and admissible proposals were received, with only one ineligible and inadmissible proposal that was excluded from the evaluation. In the evaluated proposals, a total of 1,542 proposal participants requested over EUR 600 million in CBE JU funding, about five times the indicative total call budget of EUR 120 million. The total of 1,542 proposal participants is the number of not unique applicants, i.e. including multiple counts in case of participation in more than one proposal. Excluding multiple counts, this corresponds to 994 unique applicants.

Type of Action	Topic	Indicative Topic Budget	Estimated Number of Grants	Total Requested CBE Funding	Number of Evaluated Proposals	Actual Budget / Total Requested
IAFlag	HORIZON-JU-CBE-2022-IAFlag-01	14,000,000 €	1	69,868,268 €	5	20%
	HORIZON-JU-CBE-2022-IAFlag-02	14,000,000 €	1	27,677,060 €	4	51%
IA	HORIZON-JU-CBE-2022-IA-01	10,000,000 €	2	25,862,817 €	5	39%
	HORIZON-JU-CBE-2022-IA-02	10,000,000 €	2	9,860,059 €	2	101%
	HORIZON-JU-CBE-2022-IA-03	12,000,000 €	2	28,441,594 €	5	42%
	HORIZON-JU-CBE-2022-IA-04	12,000,000 €	2	22,657,277 €	4	53%
RIA	HORIZON-JU-CBE-2022-R-01	9,000,000 €	2	72,228,032 €	16	12%
	HORIZON-JU-CBE-2022-R-02	9,000,000 €	2	110,735,919 €	26	8%
	HORIZON-JU-CBE-2022-R-03	9,000,000 €	2	65,977,498 €	15	14%
	HORIZON-JU-CBE-2022-R-04	9,000,000 €	2	115,610,889 €	26	8%
	HORIZON-JU-CBE-2022-R-05	9,000,000 €	2	39,326,207 €	9	23%
CSA	HORIZON-JU-CBE-2022-S-01	3,000,000 €	1	16,518,285 €	7	18%
Total	**HORIZON-JU-CBE-2022**	**120,000,000 €**	**21**	**604,763,905 €**	**124**	**20%**

Figure 15: Overview of the CBE JU Call 2022 topics and submitted proposals per type of actions (eligible and admissible).

Geographical distribution of applicants

Most applicants to the first CBE JU call are based in one of the 27 EU Member States (1,386 or 90% of the total 1,542 not unique applicants, i.e. including multiple counts in case of participation in more than one proposal). Entities from Associated Countries account for 6% (87 applicants incl. those with provisional association applications) and Third Countries 4% (59 applicants). In terms of geographical spread, all Member States of the EU are represented (Figure 16). However, the share of participants from Central-Western EU countries is significantly higher compared to Eastern EU countries. For instance, the four countries with the highest number of applicants (Spain, Italy, Germany, and France) together account for 50% of all applicants. Comparing the geographical distribution of entities that applied to CBE JU Call 2022 with those that applied to BBI JU calls for the period 2014-2020, the geographical distribution remains largely similar.

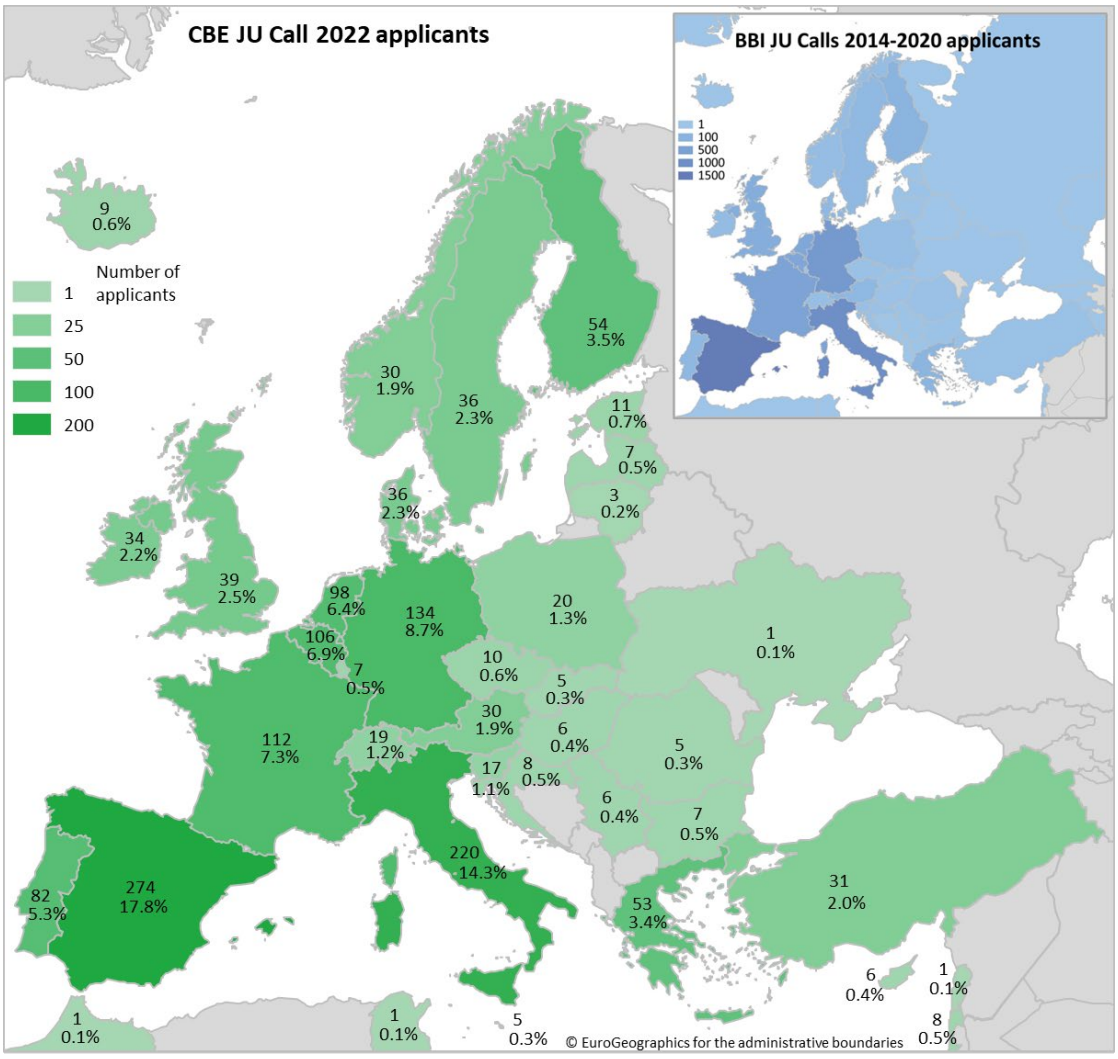


Figure 16: CBE JU Call 2022 applicants per country and related % calculated over the total number of applicants (1,542 not unique applicants, i.e. including multiple counts in case of participation in more than one proposal) and comparison with BBI JU calls' total applicants (2014-2020). Number of applicants from Third Countries (not unique) and related % calculated over the total that are not shown on the map and are reported here: Bangladesh 1 (0.06%), Brazil 2 (0.13%), Canada 1 (0.06%), China 3 (0.19%), Malaysia 1 (0.06%), NZ 1 (0.06%) and Thailand 1 (0.06%).

Types of applicants, including SMEs

The public-private nature of CBE JU as a partnership is reflected in the type of applicants. As shown in Figure 17, about half of all CBE JU Call 2022 applicants are private-for-profit companies, with the other half made up largely of research centres and higher education establishments, both of which come predominantly from the public sector. Looking back at past BBI JU Calls 2014-2020, the pattern is similar, with private-for-profit companies accounting for 54% of all 10,740 applicants (not unique, i.e. including multiple counts in case of participation in more than one proposal).

This roughly even distribution between private and public applicants is mirrored also at the level of their requested EU contributions. Of the nearly EUR 605 million total EU contribution requested in this Call, EUR 284 million was requested by private-for-profit companies, compared to EUR 283 million jointly requested by research centres and higher education establishments. These observations allow to conclude that, despite the novelties introduced by both a new partnership and a new EU research and innovation programme, good continuity exists between BBI JU and CBE JU in terms of type of applicants' diversification, with the continued **strong interest of both the private and public sectors**.

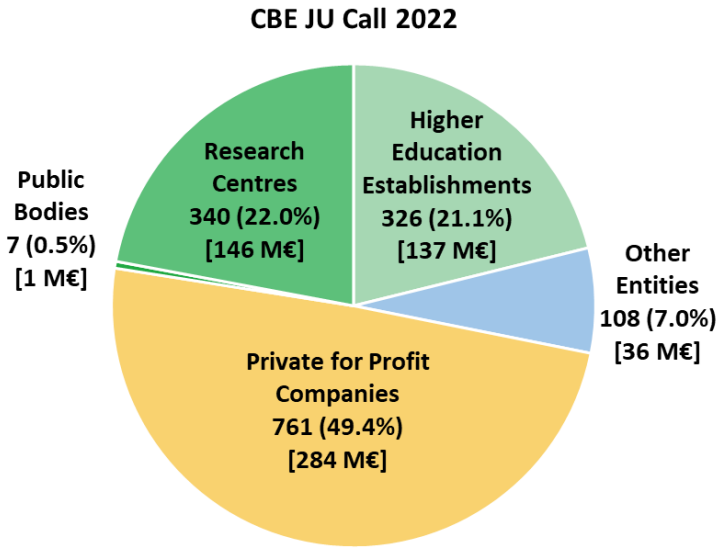


Figure 17: CBE JU Call 2022 (not unique) applicants per type of applicant and related % calculated over the total number of applicants, and related requested EU contribution.

SMEs account for 37% of the total EU contribution requested by applicants to CBE JU Call 2022 as shown in Figure 18. This share is high by any standard. It is nearly double the overall target set for SME funding under Horizon Europe and is 5% higher than the average contribution per call requested by SMEs in BBI JU Calls 2014-2020. Together, these numbers illustrate that, at the beginning of the new CBE JU partnership, the interest and need for support among SMEs in the bio-based industries are higher than ever.

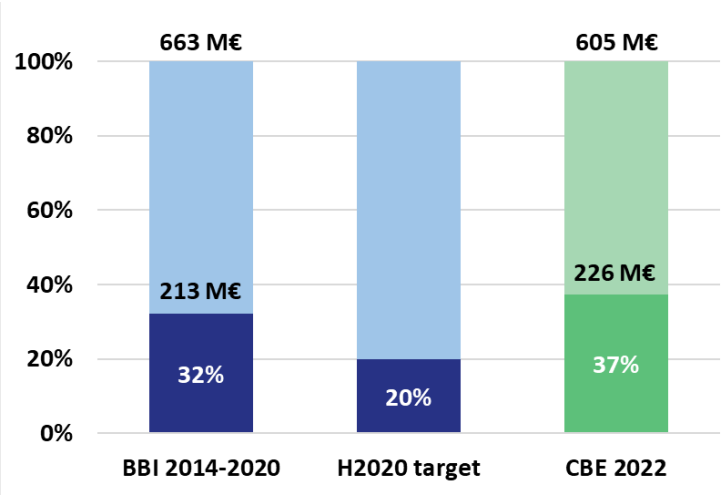


Figure 19: EU contribution requested by SME applicants in CBE JU Call 2022 (as % of total requested EU contribution and related absolute values) compared to the average EU contribution requested by SMEs per call in BBI JU Calls (2014-2020) and the Horizon 2020 (HE) target for budget allocated to SMEs (Horizon dashboard).

Considering the different types of action, 77% of all SME applicants participated in the frame of RIA proposals (Figure 20). This is proof that SMEs of the European bio-based industries are important contributors to high-risk, collaborative R&D projects. At the same time, the total EU contribution requested by SMEs in the frame of IA-Flagship project proposals is extremely high compared to other types of action (Figure 20). Obviously, the larger investment requirement of Flagship biorefineries is a major factor. But the fact that six out of nine IA-Flagship consortia were led by an SME coordinator, compared to 27% SME coordinator-ship overall, indicates that SMEs are particularly committed, not only to be a part of, but also to lead the deployment of first-of-their-kind biorefineries in Europe.

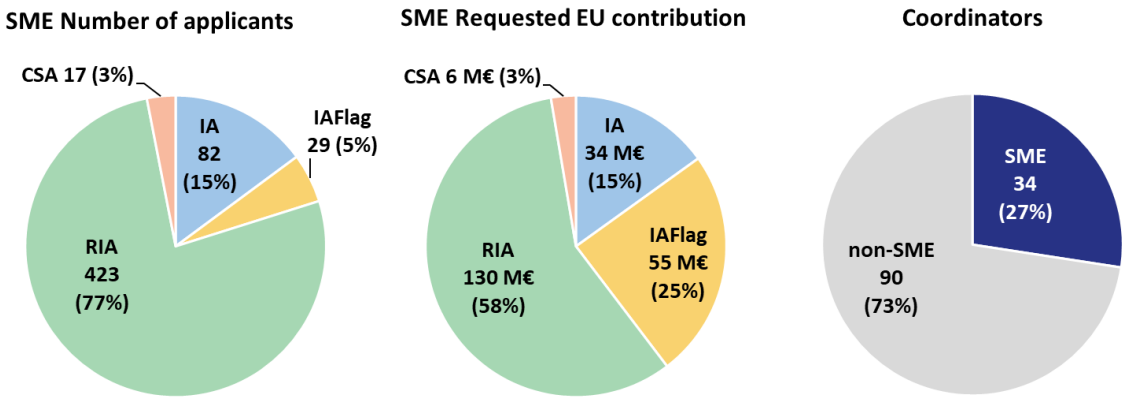


Figure 20: CBE JU Call 2022 (not unique) SME applicants and their total requested EU contribution per Type of Action, and SME applicant coordinators, all as absolute values and related % of total.

BIC

Compared with all BBI JU Calls 2014-2020, where BIC members represented 25% of all applicants, and their requested EU contribution amounted to 30% of the total, this share has increased significantly in the first CBE JU call (Figure 21), especially considering that around 10% of all CBE JU Call 2022 applicants are 'New' project members of BIC which cover only application-stage memberships. This is the result of the open approach implemented in the first CBE JU call and fostered by BIC with the new project membership approach.

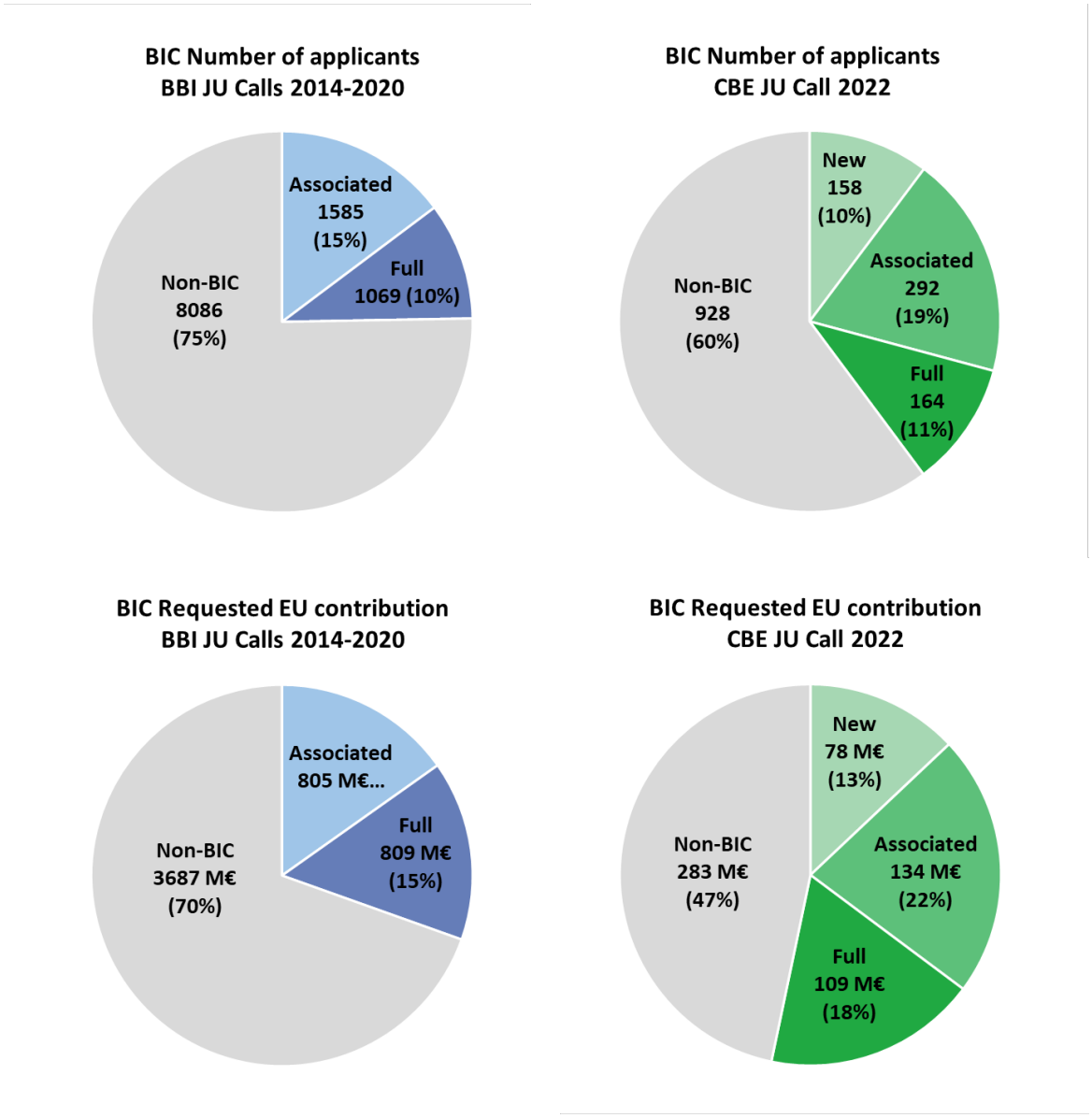


Figure 21: CBE JU Call 2022 (not unique) applicants and their total requested EU contribution per type of BIC membership (Full member, Associated member, New project member, or Non-BIC), and compared to numbers of BIC applicants in BBI JU Calls (2014-2020). All values are indicated as absolute values and related % of total.

Newcomers

Newcomers are applicants that have not yet received funding in any of the past BBI JU Calls 2014-2020. Thanks to the approach implemented in the first CBE JU annual work programme, about 35% of 994 (unique) applicants in the first CBE JU Call are newcomers. This significant share of newcomers is the result of the openness of the CBE JU programme and is a proof of the overall success in attracting new interest to the programme.

Looking at the share of newcomers per type of action (Figure 22), newcomer levels of each type are close to the overall average, apart from IA-Flagships, which attract a lower level of 14% newcomers. This is understandable considering the significant commitment expected in this type of action in terms of investments. When considering the different types of organisations, newcomers are most abundant among higher education establishments and research centres. Although there are fewer newcomers among private-for-profit companies, their share (31%) is still significant and not much below the overall average of 35%.

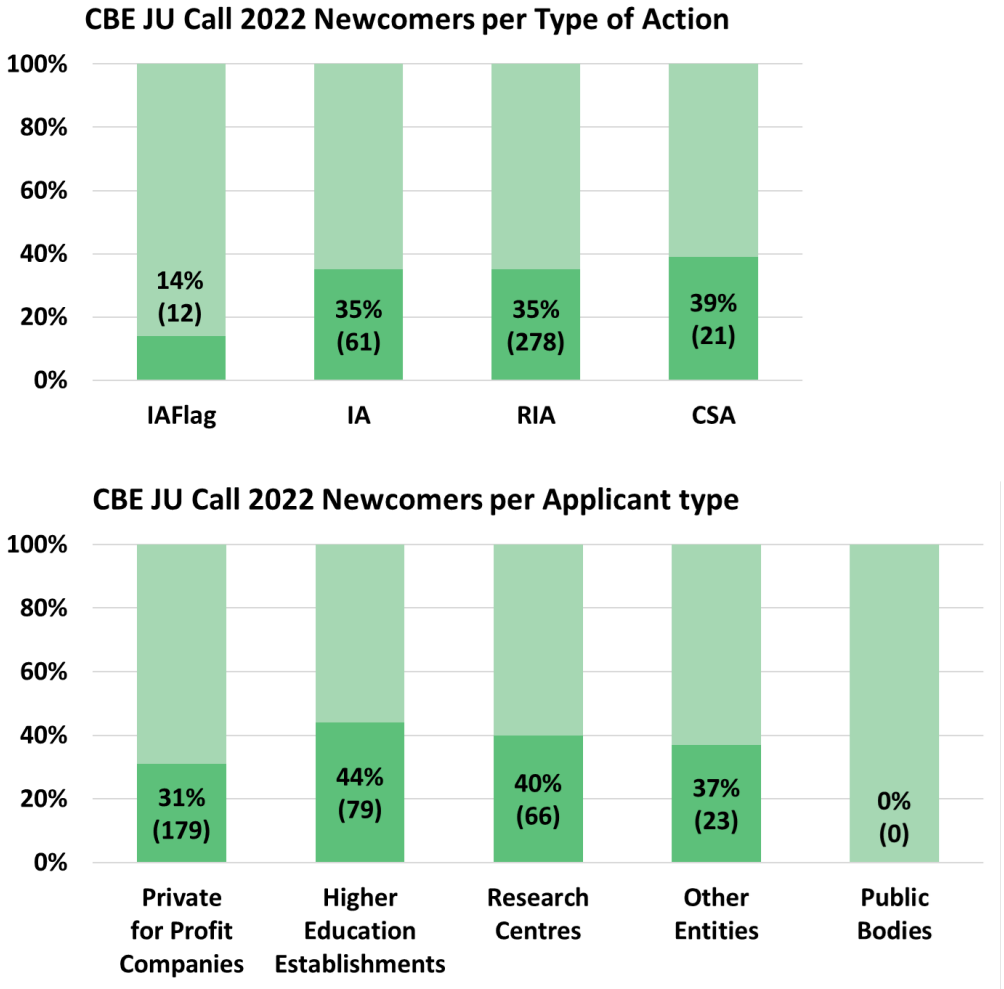


Figure 22: CBE JU Call 2022 % newcomer applicants (unique) per Type of Action and Applicant Type, and related number of (unique) newcomers.

Countries with the highest number of applicants (Spain, Italy, Germany and France; Figure 16) are also those that have the highest number of newcomers. Interestingly, each of these four countries reports exactly a third of newcomers among all (unique) country applicants (Figure 23). Although significantly higher shares of newcomers are reached in other countries, this often corresponds to low absolute numbers overall, while other countries have the higher relative number due to their overall lower numbers of applicants (e. g. 75% newcomers due to 3 newcomers among 4 applicants). In conclusion, several currently underrepresented countries are still in need of significantly more newcomers, to increase their participation and potential success rate. Dedicated actions are foreseen within the CBE JU widening strategy, currently under development, to tackle these challenges.

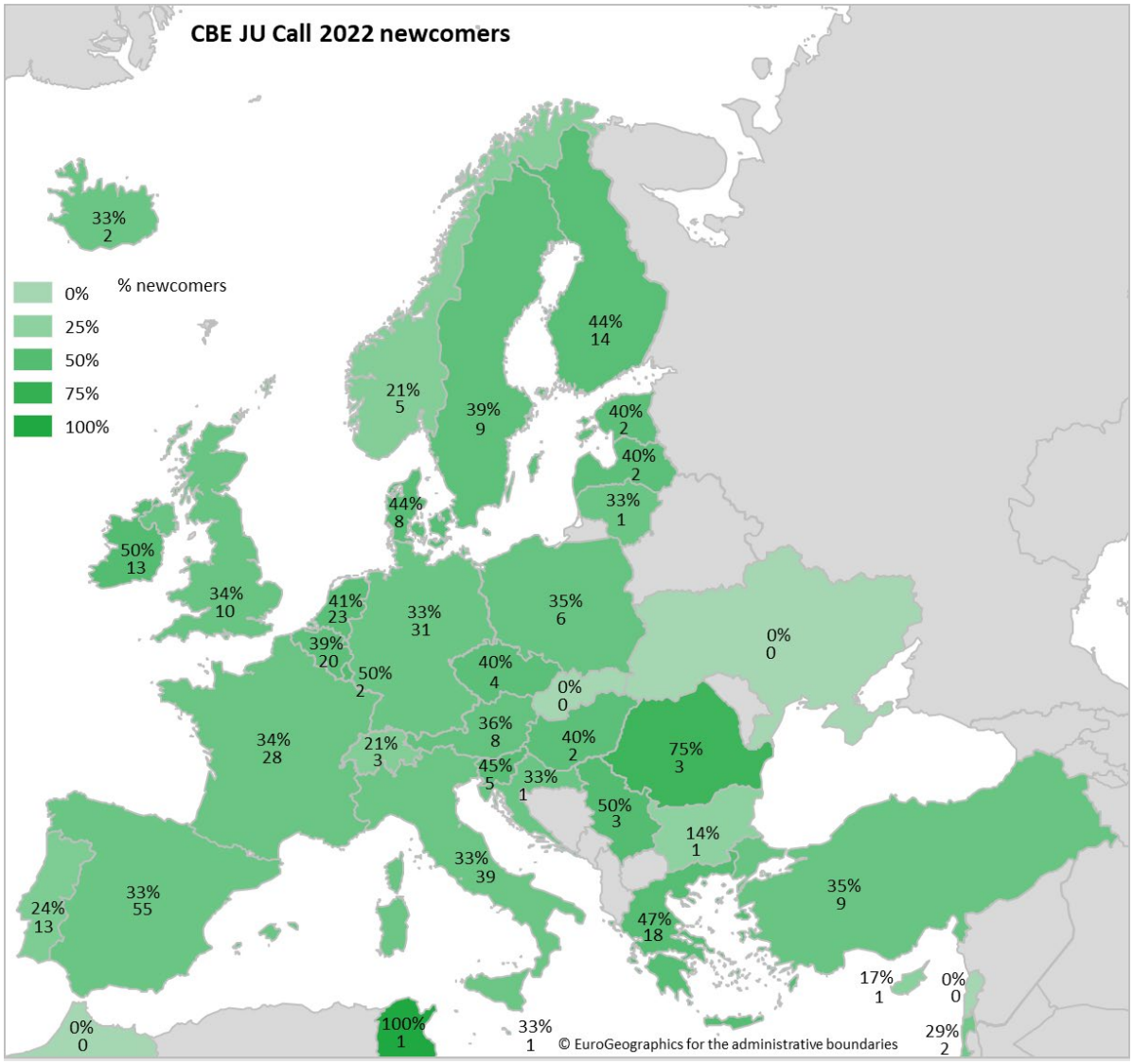


Figure 23: CBE JU Call 2022 % of (unique) newcomers calculated over total (unique) applicants (=984), and related number of newcomers.

1.3.2. Proposals selected for funding (grants)

21 proposals were selected for funding from Call 2022, covering all 12 topics identified in the AWP 2022. However, as the Grant Agreement Preparation started only on 26 January 2023, at the same time as all applicants were informed of the call results, only the list with the acronyms and titles of the selected proposals per topic is included in this year's reporting.

Topic Number	Proposal Acronym	Proposal title
IA-Flag-01	SUSTAINEXT	*Next generation, zero-waste, dynamic, multivalorization route biorefinery for sustainable botanical ingredients: showcasing a replicable and versatile model to bio-based industry in EU*
IA-Flag-02	SYLPLANT	*Alternative sources for high added value food and/or feed ingredients*
IA-01	SynoProtein	*Carbon capture from syngas to Single Cell Protein (SCP) and use as fish feed ingredient*
IA-01	HICCUPS	*Highly-Innovative technology demonstration for bio-based CO2 Capture and Utilization for production of bulk Plastic applicationS*
IA-02	ROBOCOOP	*circulaR bioecOnomy Business mOdels owned by agroCOOPeratives*
IA-02	BRILIAN	*Cooperative business models for bio-based chains in rural areas*
IA-03	LUCRA	*SustainabLe sUCcinic acid production using an integRAted electrochemical bioreactor and renewable feedstock*
IA-03	ENFORCE	*cost-Effective production of ligNin platFORm chemicals extending the biobased ChEmicals portfolio*
IA-04	MixMatters	*Smart and flexible Separation and Valorisation of mixed bio-waste from along the agri-food value chain.*
IA-04	ELLIPSE	*Efficient and novel waste streams co-processing to obtain bio-based solutions for packaging and agricultural sectors*
R-01	THERMOFIRE	*Bio-based fire-retardant thermoplastic composites reinforced with natural fibres.*
R-01	FURIOUS	*Versatile FUran-based polymeRs for strIct and high value applicatiOns in packaging, aUtomotive and underwater environmentS*
R-02	BIORING	*Engineering high performance biocoatings from renewable reactive building blocks*
R-02	SuperBark	*Safe, sustainable and high performance adhesives and coatings from industrial softwood bark*
R-03	CUBIC	*Improving the cirCUlarity of complex plastic multi-material composites using novel BIobased materials in B2B semi-finished produCts*
R-03	REDYSIGN	*Resource-efficient processes for the production and circularization of innovative RECYclable-by-DeSIGN fresh meat smart packaging from wood*
R-04	NewPROT	*New sustainable proteins for food, feed and non-food bio-based applications*
R-04	PROMISEANG	*Alternative PROteins from MIcrobial fermentation of non-conventional SEA sources for Next-Generation food, feed and non-food bio-based applications*
R-05	FIBSUN	*Novel fibre value chains and ecosystem services from sustainable feedstocks*
R-05	Bio-LUSH	*Biomass valorization for sustainable and high quality fiber materials*
S-01	BIORADAR	*Monitoring system of the environmental and social sustainability and circularity of industrial bio-based systems*

1.4. EVALUATION PROCEDURES AND OUTCOMES

In 2022, CBE JU organised its first ever call for proposals under the Horizon Europe framework programme. Below, an overview of the call publication, proposal submission and evaluation processes is provided, together with some key statistics.

1.4.1. CBE JU overall call process

In 2022, CBE JU organised its first ever call for proposals using Horizon Europe's grant lifecycle processes and IT tools. Within this framework, the CBE JU Call for proposals followed the structured approach consisting of the following steps:

- **Call publication** in the EC's F&T Portal. This publication allowed potential applicants to find CBE JU call topics, as well as proposal templates and guidelines.
- **Submission of proposals.** Before the call closure deadline, applicants needed to select topic(s) to apply to, to register all organisations that are part of their consortium in the F&T Portal, and to submit their proposal(s) via the F&T Portal.
- **Evaluation of proposals.** All proposals that passed the admissibility and eligibility checks were evaluated by external experts. Within max. five months after call closure, all applicants received an evaluation results letter via the F&T Portal, indicating the outcome of the evaluation. Applicants with unsuccessful proposals can submit a complaint (and launch the so-called 'redress procedure') within 30 days of receiving their evaluation results letter.
- **Grant Agreement Preparation (GAP).** The highest-scoring proposals were invited to start the GAP. Within eight months after call closure, Grant Agreements should be signed.

By 31 December 2022, call publication, submission and proposal evaluation were performed. The sending of the evaluation results letters took place on the 26th of January 2023, with the opening of the GAP for the proposals retained for funding and of the redress procedure. However, no information is provided on the redress cases, as these will only became known later in 2023.

1.4.2. CBE JU Call for proposals 2022: call publication and proposal submission

On 3 June 2022, CBE JU published its Annual Work Programme 2022[23], which included information about the 2022 call for proposals with 12 topics and a total funding envelope of EUR 120 million. The CBE JU Call for proposals 2022 was published in the F&T Portal on 22 June 2022. Before and after this F&T Portal publication, CBE JU promoted the call for proposals via the 7 June CBE JU Info & Networking Day, and its participation in numerous locally organised CBE JU info days.

[23] cbeju-awp-2022-2_0 (4).pdf

Applicants were invited to submit proposals by 22 September 2022, 17:00 Brussels time. By that deadline, CBE JU received 125 project proposals, requesting a total of EUR 600 million funding, against the indicative call budget of EUR 120 million. The amount of submitted proposals was published on the CBE JU website, and ranged between 2 and 26 proposals per topic.

1.4.3. CBE JU Call for proposals 2022: evaluation

The evaluation was performed using the award criteria and evaluation rules as set out in the CBE JU Annual Work Programme 2022. In line with the Horizon Europe principles, all proposals were evaluated as they were submitted.

Expert types & selection process

Immediately after call publication, CBE JU invited different types of experts to express their interest in participating in the Call 2022 evaluation. Candidates were requested to complete an online expert profile via the relevant F&T Portal section. All experts were selected in a way to ensure a high level of skills, experience and knowledge in the areas of the call topics, including project management, business management, innovation, exploitation, dissemination and communication. Special attention was given to achieving an appropriately balanced composition (skills, experience, knowledge, geographical diversity, gender and private-public sector balance) and rotation.

Five types of external experts were involved in the evaluation process:

- **Evaluators**: depending on the type of action each proposal was assessed by 3-5 experts (3 for RIA/CSA, 4 for IAs and 5 for IAs-Flag), using the award criteria and evaluation rules as set out in the call conditions of the CBE JU Annual Work Programme 2022.
- **Rapporteurs:** dedicated experts who were in charge of drafting the so-called 'Consensus Reports' based on the discussions during the consensus meetings (more info: see next section).
- **Quality controllers:** dedicated experts who were tasked to read the consensus reports created during the consensus meetings, and provide feedback so as to ensure the high quality of the final Evaluation Summary Reports, as well as consistency in the evaluation of each criteria within and between topics.
- **Ethics experts:** checked if the submitted proposals complied with the Horizon Europe ethical rules and standards.
- **Independent observer:** observed the whole evaluation process and had access to all trainings and meetings. Via a post-evaluation report, this expert provided an assessment on the conduct and fairness of the evaluation sessions, the application of the evaluation criteria, and on ways to improve the processes.

Evaluation process

Admissibility & eligibility: After the call closure, the admissibility & eligibility of all proposals was checked, taking into account the CBE JU call conditions and sections A and B of the Horizon Europe General Annexes 2021-2022. Only proposals that were deemed eligible and admissible were transferred to the next phases of the evaluation.

Assignment of proposal to expert: Each proposal was assigned to a panel of three to five expert-evaluators depending on the type of action as described above, and a dedicated rapporteur. Experts were asked to confirm no conflicts of interest with organisations participating in proposals assigned to them in SEP. For those topics where a higher number of proposals was submitted (more than could be evaluated by one panel of experts), multiple topic *sub*panels were created.

Individual evaluation: This phase lasted from 13 October until 13 November 2022. The purpose of this phase was twofold: evaluators were asked to submit - via the IT tool SEP - an Individual Evaluation Report (IER) for each proposal assigned to them, with comments and scores per evaluation criterion; rapporteurs were then asked to prepare a draft of the Consensus Report (CR) based on these IERs. At the start of the individual evaluation, the evaluators were briefed via a webinar on applicable rules, process, procedures, evaluation criteria, scope and objectives of the call. A separate webinar was also organised for the rapporteurs and quality checkers, in order to prepare the latters' involvement in the consensus evaluations. All briefings emphasised confidentiality requirements and the Horizon Europe rules on conflicts of interest. In addition to these webinars, all necessary guidelines were made available to the experts via the IT tool SEP.

Consensus phase: This phase took place between 14 November and 2 December 2022. The activities during each of these three weeks consisted of the consensus meetings, cross-reading and ranking panels plus, for the Flagship topics, hearings were included.

- **Briefings**: At the start of each of the three consensus weeks, the following briefings were organised on Monday mornings: a general briefing for all experts; topic-specific briefings for the evaluators and rapporteurs; and a briefing for all rapporteurs and quality checkers, to ensure alignment. Furthermore, daily briefings were given between Tuesday and Thursday to i) all experts involved in RIA proposal evaluations, to ensure alignment in the evaluation approach of the different RIA subpanels, and ii) the quality checkers, to ensure their consistent feedback across panels. On the Thursday of each consensus week, a briefing informed the RIA subpanel representatives and their rapporteurs about the purpose and outcome of the Evaluation Summary Report, and a cross-reading and ranking panel meeting was organised for the RIA topics on each Friday of the consensus weeks.

- **Consensus meetings**: In each consensus meeting, the experts discussed the proposals assigned to them, in order to reach a common view and agree on comments and scores. The Consensus Report drafted by the rapporteurs during the individual evaluation phase was finalised based on the outcome of the consensus discussions and was double-checked by the quality controllers.

- **Ranking panels**: For all RIA topics, each Friday a ranking panel was organised to finalise the ranking list, checking, among other things, the consistency of scores and comments in the draft Evaluation Summary Reports of the top ranked proposals and — in case of equal

scores — to agree on a priority order. For all other topics (FLAGs, IAs and CSA) as only one experts' panel was able to evaluate all proposals submitted for that topic, each consensus evaluation week was closed with a meeting where the topic evaluation outcome was presented.

- **Hearings**: Hearings were organised for all Flagship proposals. During these meetings, applicants were invited to clarify the business plan of their proposal. This extra input was used by the expert-evaluators to finalise the Consensus Reports.

Proposal ranking & prioritisation. The Annual Work Programme 2022 included separate budget lines per topic. For the 4 IA and 5 RIA topics, budget was planned to fund 2 proposals per topic. For the 2 IA-Flag and 1 CSA topics, the budget included the funding of one proposal per topic. Based on the Evaluation Summary Reports, a ranking of proposals was created per topic, taking into account the applicable conditions described in the Annual Work Programme 2022. In case of ex aequo scores, tiebreakers, as explained in section F of the Horizon Europe General Annexes 2021-2022, were used to establish a priority order. Based on the priority order per topic and the available budget per topic, the CBE JU Programme Office drew up the so-called 'EU call ranked lists' and sent them for approval to the CBE JU Governing Board. These EU ranked lists contained per topic a 'main list' of proposals (to be invited to GAP), a 'reserve list' of proposals (if any), and a list of proposals that could not be funded because they did not reach the necessary scoring thresholds and/or the available topic budget did not allow their funding.

The ethics evaluation lasted between 30 November and 9 December 2022. This evaluation phase, started with a short webinar aligning the Horizon Europe / CBE JU ethics (pre-)screening approach, after which all proposals on the main and reserve lists were ethically screened by two ethics experts. Ethics requirements and recommendations (if any) arising from this ethics screening will be considered during GAP.

Statistics (no. of evaluators, gender, area, etc.)

The evaluation of proposals for this call was carried out between 13 October and 2 December 2022, by 110 external experts comprising 84 evaluators plus 23 rapporteurs and 3 quality controllers. Out of the invited 84 expert-evaluators, 48.8% were female and 51.2% male. In addition, 68% came from universities and public or private research organisations and 32% were from private commercial firms.

Once all grants of this call have been signed, the list of expert evaluators hired for this call will be published on the CBE JU website.

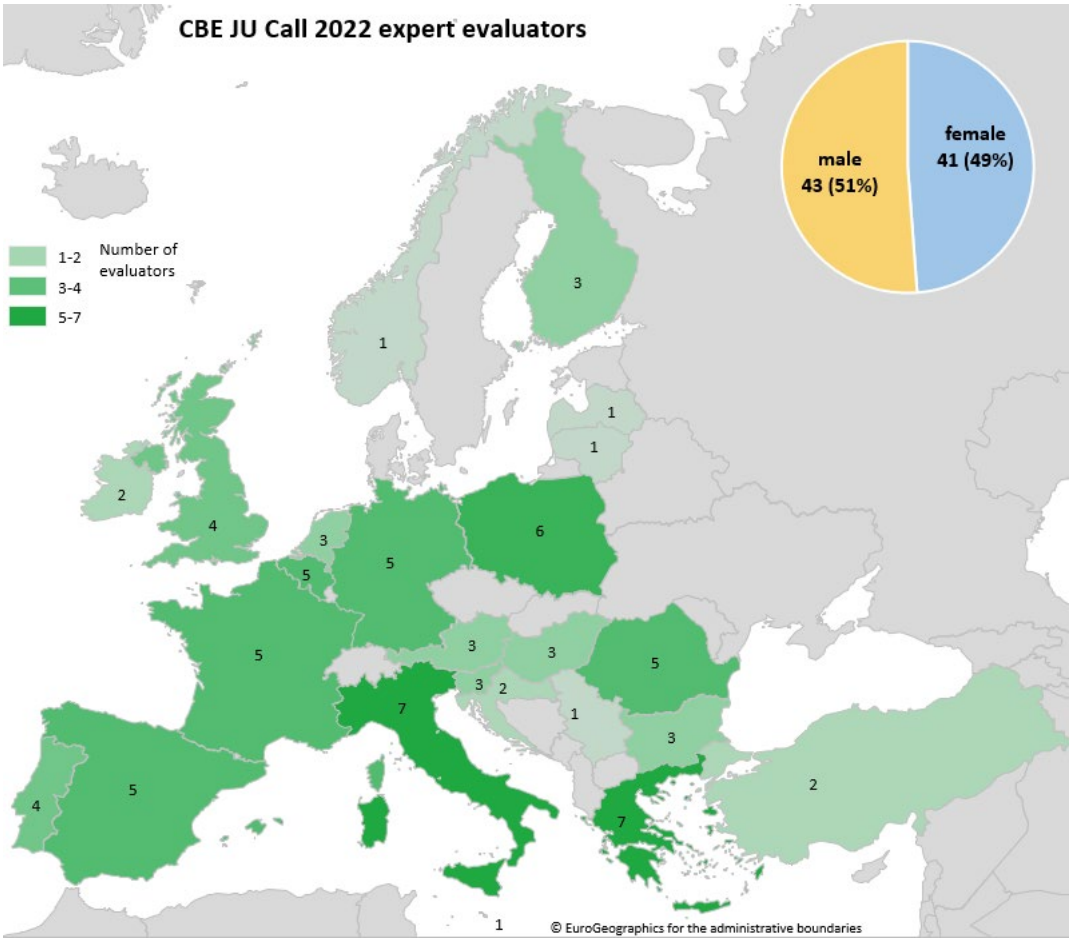


Figure 24: CBE JU Call 2022 expert evaluators per country and gender, including related gender % of total. One evaluator from Brazil is included in the gender balance but not shown on the map.

Redress

The redress process was opened at the time of the information to applicants on the 26th of January 2023. Therefore, there is no information at the stage of the AAR preparation about the number of cases or possible outcomes.

1.5. FOLLOW-UP ACTIVITIES LINKED TO PAST CALLS

This chapter summarises the main follow-up activities linked to past calls. As Call 2022 was the first CBE JU call, the main lessons learnt and related actions are reported together with the strategy for widening participation.

1.5.1. Lessons learnt from Call 2022

An Independent Observer (IO) participated throughout the whole evaluation process and had access to all trainings and meetings. In the IO report, he provided an assessment on the conduct and fairness of the evaluation sessions, the application of the evaluation criteria, and on ways to improve the processes. He highlighted the **high quality, reliability and consistency of the evaluation process, which ensured fairness and impartiality**. The IO acknowledged the good management of the first CBE JU call, noticing the clear instructions provided to all actors involved (evaluators, rapporteurs, moderators, quality checkers), as well as the effective and well-coordinated collaboration among them. The IO also pointed out the aspects that could be improved. This feedback was analysed together with the feedback collected from the other evaluation actors, including evaluators, rapporteurs and quality checkers. The collected feedback resulted in the following **lessons learnt**:

- Ensuring a clear definition of all requirements related to some aspects of the call such as the multi-actor approach, the economic viability requirements including business case, business model and business plan
- Ensuring common interpretation of HE aspects, such as ‘open science’ and ‘artificial intelligence’
- Clarity in the scope of the topics, especially concerning feedstock, main objectives of the action and terminology used
- Alignment between topic requirements and types of action vis-à-vis the expected end TRL

In the preparation of AWP 2023, some of the elements listed above have been already addressed in particular:

- Repetition among elements present in the HE common requirements, the additional requirements and the topic- specific requirements (e.g., Dissemination and Communication activities, synergies with other actions) has been avoided
- The additional requirements have been revised and divided into CBE JU specific requirements and cross-cutting aspects

The other lessons learnt mentioned above will be considered in the preparation of the future Annual Work Programme and related calls starting from AWP 2024.

1.5.2. Widening participation strategy

Increasing geographical outreach of calls for proposals has been a goal since BBI JU, which undertook several actions to promote and raise awareness about its programme at both European and national levels, in order to encourage a wider and more inclusive participation in it.

Stimulating research activities in countries and regions with underdeveloped R&I capacity for bio-based systems is an established priority of the CBE JU, which has included in its SRIA a specific KPI (n.10) to monitor the improvement of "participation of regions and countries with high unexploited potential and strategic interest to develop it".

In this context, at the end of 2022 the CBE JU started to draw up a strategy on widening participation with the aim of:

- Stimulating research and innovation in countries and regions with less mature bio-based ecosystems
- Stepping up the participation of less represented countries and regions in the CBE JU programme and ensuring their meaningful involvement in all actions of the CBE JU

The strategy will capitalise on BBI JU widening actions and will be implemented via a series of concrete actions and through the contribution of different stakeholders. To this end, two action plans will be developed. The first action plan will cover the period 2023-2024, while the second one (2025-2027) will take stock of the results achieved and of lessons learnt from the first biennium, to refine existing actions and define new ones to address the remaining challenges. The details of the strategy will be discussed and agreed with the CBE JU governance bodies in the first half of 2023.

1.6. OPENNESS, COOPERATION, SYNERGIES AND CROSS-CUTTING THEMES AND ACTIVITIES

This chapter contains information regarding the openness of the call implemented by the CBE JU, including measures implemented for attracting newcomers, and the synergies and collaborations established with other European programmes and partnerships.

1.6.1. Openness

Since its establishment and throughout 2022, the CBE JU has operated according to the principles of openness and transparency, in compliance with the Council Regulation. CBE JU demonstrated openness towards all relevant stakeholders at different levels of its operations., in particular:

- During the design of the Annual Work Programme (AWP) 2022, feedback on the content of the AWP was gathered via two consultations with the CBE JU Advisory Bodies: the SRG and the SC. Their inputs helped to identify programme priorities and ensured that a good portfolio of actions was included in the final version of the AWP.
- The AWP 2022 was advertised widely and via different means, in order to reach a large and diverse audience of stakeholders and potential applicants. The main channels included:
  - CBE JU website, as well as CBE JU social media (LinkedIn and Twitter) and newsletter
  - CBE JU general Info Day, which attracted **1,200** live viewers from 47 countries. Two days after the event, more than **1,500** people had already watched it online
  - Participation in nine national Info Days (listed in Annex 6.12) in little more than one month, a significant involvement given the tight timeline of call 2022
  - Participation in ad-hoc events with regional representations (e.g. *Pays de la Loire*; *ERRIN* - European Regions Research and Innovation Network), reaching out to regional firms, universities, clusters but also regional authorities, regional chambers of agriculture and associations
  - Ad-hoc events with industry representatives, in association with the BIC.
- CBE JU developed a detailed set of *FAQ for applicants*, explaining specific terminologies, rules around the consortium building and cost eligibility issues, among other things. The document was continuously updated to reflect incoming questions from applicants and proposal writers and included a section on topic interpretation, clarifying content-related questions.
- Moreover, an online CBE JU networking platform was set up to provide additional opportunities to applicants. The platform's services included: facilitating networking with potential consortium partners, providing a forum to pitch projects' ideas, creating a space to express interest in a topic or scheduling b2b meetings.

For transparency purposes, details about submissions and evaluation results of Call 2022 were published on the CBE JU website, along with other general information.

There was no exception to the open call principle, nor any restriction in terms of budget allocation or number of beneficiaries.

The above-mentioned measures greatly helped to attract a diverse audience of applicants: the preliminary monitoring of participation in the Call 2022 also confirms the strong interest of SMEs in the CBE JU programme, as they represented more than half of the private applicants. Similarly, higher education institutions and research organisations recorded an overall high participation in the Call 2022, including in IAs.

1.6.2. Cooperation and synergies

The CBE JU is committed to pursuing synergies and close collaboration with other relevant initiatives at the European, regional and national levels, in order to achieve maximum scientific, socioeconomic, and environmental impacts.

2022, being the first year of the CBE JU operations, was a year of stocktaking in terms of synergies, reflecting on the legacy of BBI JU and identifying additional opportunities offered by the new Framework Programme. A draft strategic plan on synergies was prepared and will be taken up for further discussion with the CBE JU Governing Board and other involved stakeholders in the first half of 2023.

Possible synergies have been earmarked to be explored, among others, with HE and other Union programmes and funding instruments, as well as with HE Partnerships. CBE JU will try to make full use of HE Partnership's interconnections at both organisational and programme levels, to identify areas in which complementary and/or joint activities would address common challenges more effectively and efficiently. Partnerships such as Processes4Planet[24] (P4P), the Sustainable Blue Economy Partnership (SBEP)[25] and Made in Europe[26] could offer good potential for cooperation, as they touch upon key aspects of the CBE JU value chains in a sustainable and circular way.

Moreover, CBE JU will intensify its interactions with Member States (i.e. SRG) as well as regional groups (e.g. BIOEAST) to further strengthen its ability to aggregate and mobilise national and macro regional stakeholders and to support synergies with national & regional financing instruments and programmes.

[24] P4P aims at extensive decarbonisation of European process industries, with a strong focus on circularity, competitiveness and low-carbon technologies: https://www.aspire2050.eu/content/p4planet-sria-2050.

[25] SBEP's objective is to boost the transformation towards a climate-neutral, sustainable, productive and competitive blue economy by 2030: home | Bluepartnership

[26] Made in Europe promotes the development of new and innovative production technologies promoting the development of new and innovative production technologies: https://www.effra.eu/effra.

1.7. PROGRESS AGAINST KPIS

The progress and performance of CBE JU programme will be monitored, in line with the Horizon Europe setting, through a framework of Key Impact Pathways (KIPs) and Key Performance Indicators (KPIs) defined at three levels:

- General Horizon Europe KIPs,
- Horizon Europe Common JU KPIs
- CBE JU specific KPIs, as defined in the SRIA

In addition, as the projects funded under BBI JU are still ongoing, they will continue to contribute to the specific KPIs defined in the Specific Programme implementing Horizon 2020 and to BBI JU specific KPIs. This section includes the progress of the KPIs at these different levels, both for the CBE JU programme and for the BBI JU legacy.

1.7.1. Progress against general HE KIPs

A common set of indicators has been defined for all programmes operating under Horizon Europe, including CBE JU. The indicators are structured around three Key Impact Pathways:

- **Scientific Impact Pathway indicators:** The HE programme is expected to have scientific impact by creating high-quality new knowledge, strengthening human capital in R&I, and fostering diffusion of knowledge and open science.

- **Societal Impact Pathway indicators:** The HE programme is expected to have societal impact by addressing the Union's policy priorities and global challenges, including SDGs, following the principles of the 2030 Agenda and the goals of the Paris Agreement, through R&I. Ultimately, by delivering benefits and impact through R&I missions and European Partnerships and by strengthening the uptake of innovation in society, HE contributes to people's well-being.

- **Technological and Economic Impact Pathway indicators:** The HE programme is expected to have technological and economic impact, especially within the Union, by influencing the creation and growth of companies, especially SMEs, including start-ups, creating direct and indirect jobs especially within the Union, and by leveraging investments for R&I.

The list of specific indicators is reported in Annex 5.6 Scoreboard of HE Common Key Impact Pathway indicators. As the CBE JU first grants will only be signed in Q2 2023, data from indicators is not yet available for this Annual Activity Report. Instead, for information on the Horizon 2020 key performance indicators, which refer to the BBI JU legacy, please see Annex 5.5 Scoreboard of Horizon 2020 legacy key performance indicators.

1.7.2. Progress against HE common JUs' KPIs

A common framework to monitor the progress of all European Partnerships, including JUs, has been established. It includes the definition of the Partnership Specific Impact Pathway, the main contributions to the UN SDG and a set of specific partnership indicators related to different criteria.

Partnership Specific Impact Pathway (PSIP)

The PSIP map shown in Figure 25 illustrates in a multi-level, cascading structure the linkages between the political objectives at EU and global levels, the most relevant EU policy initiatives for the CBE JU, the CBE JU impacts, outcomes and resources and activities needed.

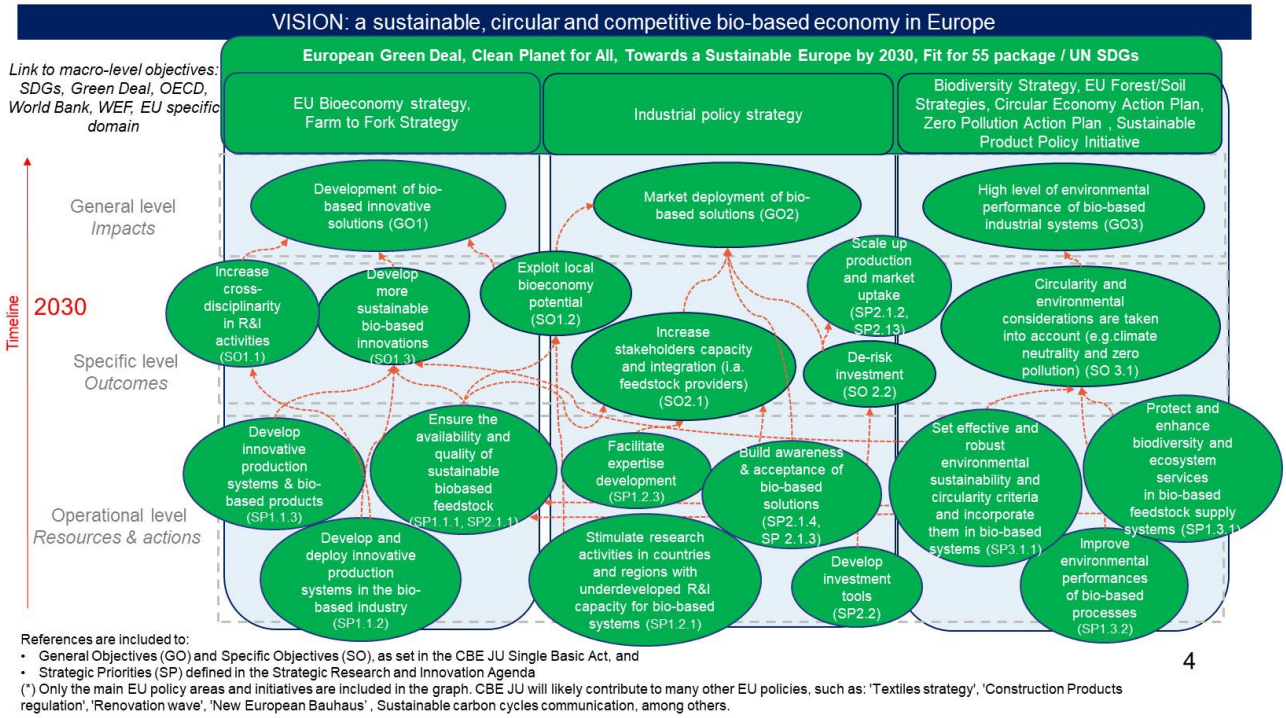


Figure 25 Partnership Specific Impacts Pathway strategic map

This strategic map also highlights the relation of these different levels with the CBE JU general and specific objectives and the SRIA strategic priorities. This way, we can distinguish the following levels under the umbrella of the CBE JU vision: a sustainable, circular and competitive bio-based economy in Europe:

- **Macro-level objectives included in global and EU-wide policy initiatives and policy packages**, such as European Green Deal, Clean Planet for All, Fit for 55 package, etc.
- **EU level policies most relevant to CBE JU,** such as the EU Bioeconomy strategy, Farm to Fork strategy, Industrial policy strategy, Biodiversity strategy or the Circular Economy Action Plan, among others
- **General level: Impacts, which are related to CBE JU General Objectives (GOs),** which aim at the development of bio-based solutions, their market deployment and the achievement of a high level of environmental performance

- **Specific level: Outcomes**, which are linked to the CBE JU Strategic Objectives, which demonstrate their connections to the CBE JU General Objectives

- **Operational level: resources and activities.** These are defined to address the SRIA Strategic Priorities, which are also linked to the CBE JU specific objectives shown in the upper level

Contribution to Sustainable Development Goals[27] (SDGs)

The contribution of the CBE JU/BBI JU project portfolio to SDGs is monitored annually (see section 1.7.4 for more details). The CBE JU programme is expected to contribute mainly to the following SDGs:

- SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation
- SDG 12: Ensure sustainable consumption and production patterns
- SDG 13: Take urgent action to combat climate change and its impacts
- SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- SDG 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt the reverse land degradation and biodiversity loss.

Figure 26 Main SDGs to which CBE JU contributes

Horizon Europe Partnerships common indicators

A set of common indicators has been defined for all Partnerships, including CBE JU, around the following criteria: directionality and additionality, coherence and synergies, transparency and openness, international visibility and positioning, and flexibility of implementation.

Annex 5.7 presents the set of all indicators linked to these criteria, including the baseline and targets for 2027. Data for 2022 is not available, as the first CBE JU GAs will be signed in Q2 2023.

[27] https://sdgs.un.org/goals

1.7.3. Progress against JU-specific KPIs

To monitor the implementation of the programme and the contributions of the selected projects, a set of specific CBE JU Key Performance Indicators (KPIs) has been included in the SRIA to complement the ones set at Horizon Europe programme level and Horizon Europe partnerships level. Figure 27 shows to which CBE JU KPIs the projects selected under each topic from call 2022 are expected to contribute.

CBE KPIs: Objectives and Units of measurement		CBE JU TOPICs											
		2022.IA-01	2022.IA-02	2022.IA-03	2022.IA-04	2022.IA-Flag01	2022.IAFlag-02	2022.R-01	2022.R-02	2022.R-03	2022.R-04	2022.R-05	2022.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	
1.2	*N of bio- waste management actors, involved as project beneficiaries and/or engaged in value chains at project level*				x								
2	**Unlock sustainable and circular bio-based feedstock for the industry**												
2	N of innovative bio-based value chains created or enabled based on sustainably-sourced biomass	x	x	x	x	x	x				x	x	
3	**Ensure environmental sustainability of feedstock**												
3.1	N of projects using feedstock generated with practices that contribute to enhance biodiversity		x				x					x	
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	
3.3	N of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation	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			
4.2	N of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste	x		x	x	x	x			x			
4.3	N of projects developing innovative & sustainable processes enabling to address zero pollution			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			
5	**Expand circularity in bio-based value chains**												
5.1	N of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular by design)							x	x	x			
5.2	N projects developing circular production practises (incl. industrial & industrial urban symbiosis)	x			x	x							
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	
6.2	N of innovative bio-based drop in outputs meeting applications requirements			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		
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		x										
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					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						

Figure 27 Expected contributions of AWP 2022 topics to CBE JU specific KPIs

1.7.4. BBI JU legacy

The BBI JU specific KPIs – as defined in the BBI JU SIRA 2017 – continue to be monitored through an annual survey completed by the project coordinators of ongoing and finalised BBI JU funded projects. The survey was launched for this reporting year in September 2022 and gathers the data from 138 BBI JU projects, of which 68 are ongoing and 70 are finalised.[28] The questionnaire gathered both quantitative and qualitative information on KPI results and expected impacts.

Figure 28 summarises the cumulative results compared to the targets identified in the BBI JU SIRA. In the case of the ongoing projects the figures refer to **expected** contributions, while the finalised projects refer to **actual** results. It should be noted that KPIs 3 and 7 refer to signed Grant Agreements and the results have been determined from the BBI JU call statistics. Notably, the results reported by the finalised projects already **confirm the achievement of the targets for all KPIs linked to project outputs (KPIs 1, 2, 4, 5, 6 and 8) and even surpass them**.

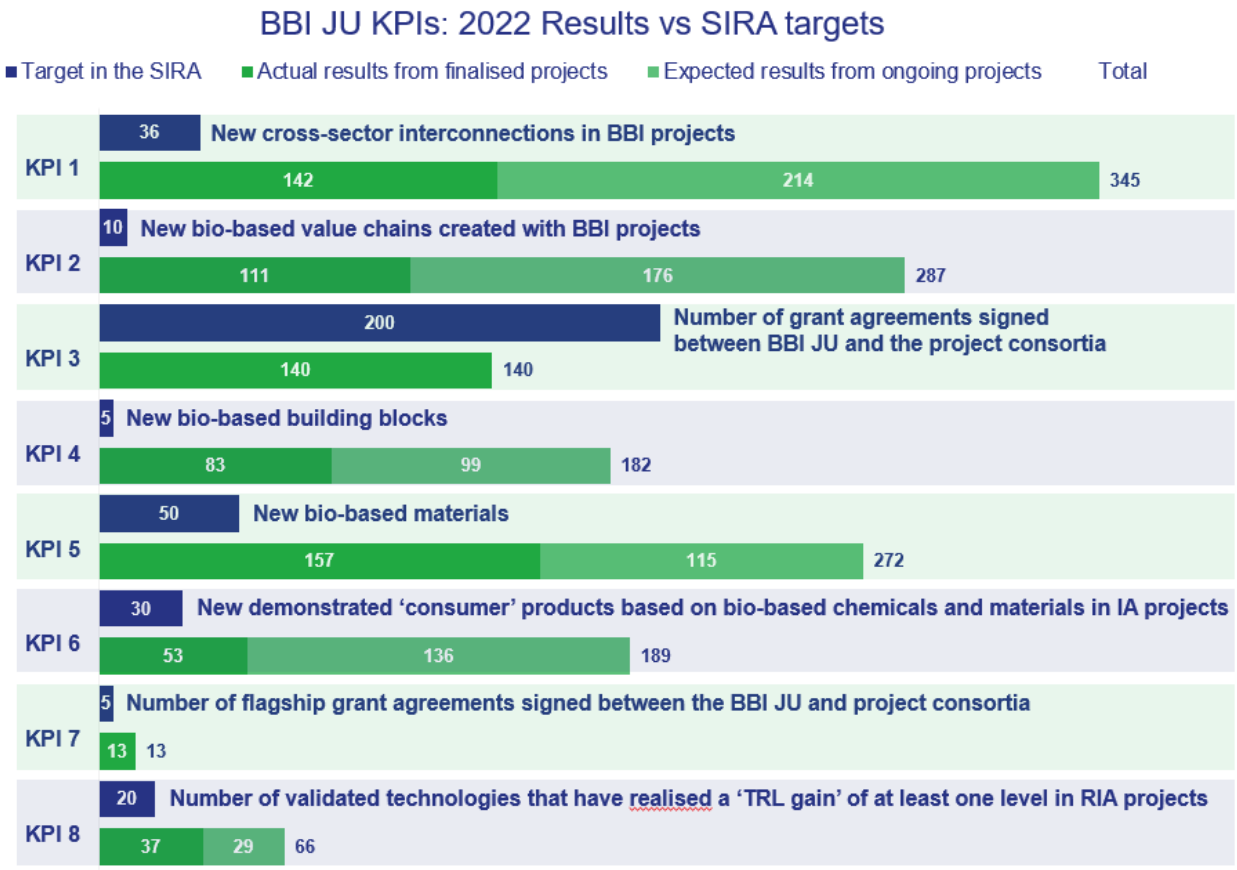


Figure 28 BBI JU KPIs: 2022 results vs. SIRA targets.

[28] In the context of the survey 2022, finalised projects are those that finished on or before 30 September 2022. Finalised projects: 2 FLAGs, 16 DEMOs, 41 RIAs and 11 CSAs; Ongoing projects: 10 FLAGs, 22 DEMOs, 30 RIAs and 6 CSAs.

KPI 1 & 2: New cross-sector interconnections and new bio-based value chains[29]

Figure 29 a) shows the main sectors mobilised through BBI JU RIA and IA projects to create new cross-sector interconnections at either end of the new bio-based value chains (feedstock providers and end users). These results are in line with the main feedstock and application sectors addressed by BBI JU projects as identified in Section 1.2. In addition, the collaboration between actors from diverse sectors has triggered the creation of innovative new bio-based value chains which are novel in terms of the feedstock addressed, the applied processes, the end product or the application (Figure 29b).

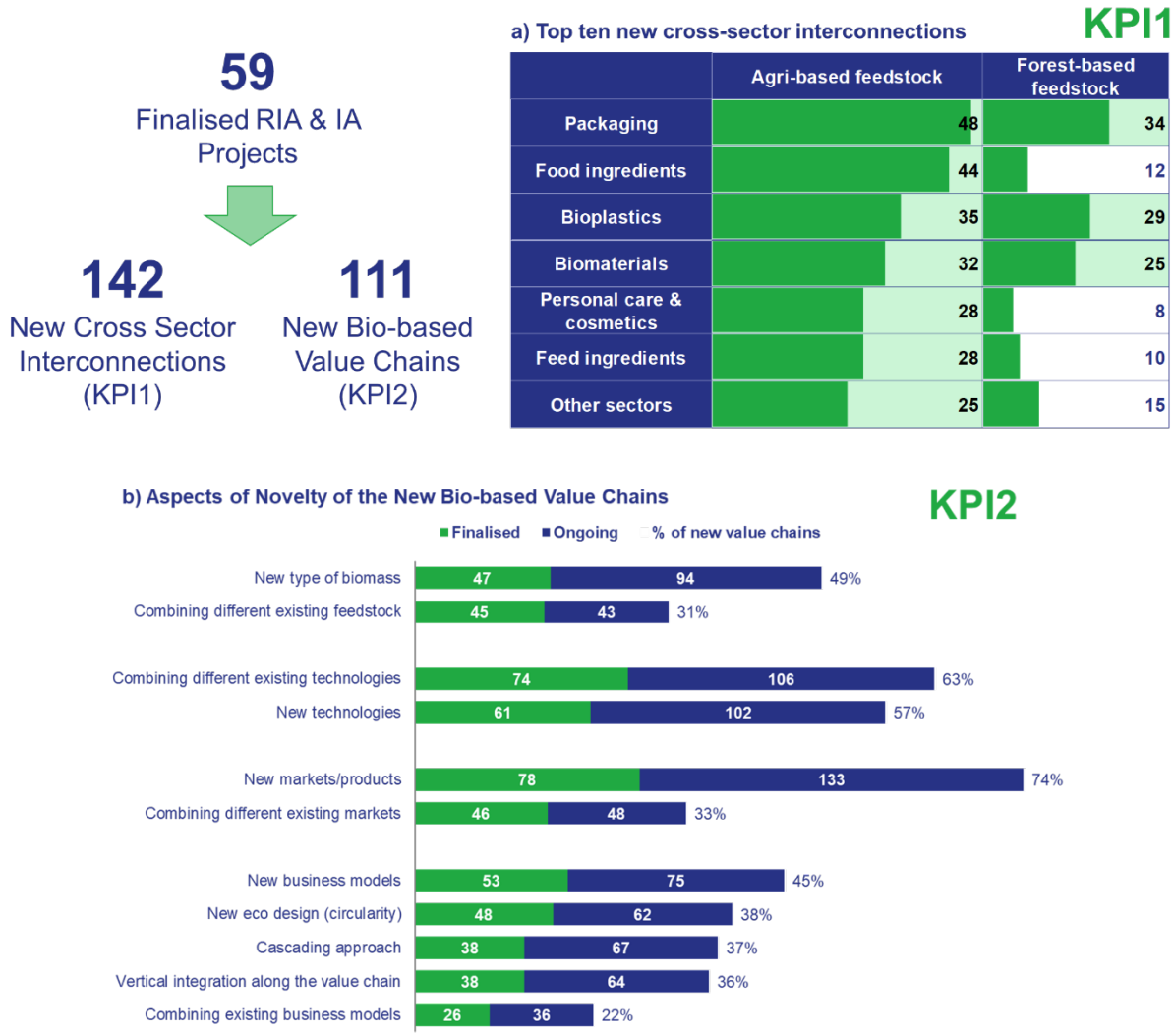


Figure 29 a) KPI 1: Top ten new cross-sector interconnections (shaded green) in BBI JU projects reported by finalised and ongoing projects. b) Aspects of novelty of the new bio-based value chains.

[29] KPI1: Number of new interactions created between companies and actors from different sectors, who interconnect/cooperate to build new value chains within BBI JU projects; KPI2: Number of new value chains (from raw material to product application) created with BBI projects. For full definitions see the Strategic Innovation and Research Agenda (SIRA; 2017).

KPI 4, 5 & 6: New bio-based building blocks, materials and products

Figure 30 summarises the innovative nature of the outputs of the ongoing and finalised BBI JU-funded projects in terms of building blocks, materials and products/applications (KPIs 4, 5 and 6).[30]

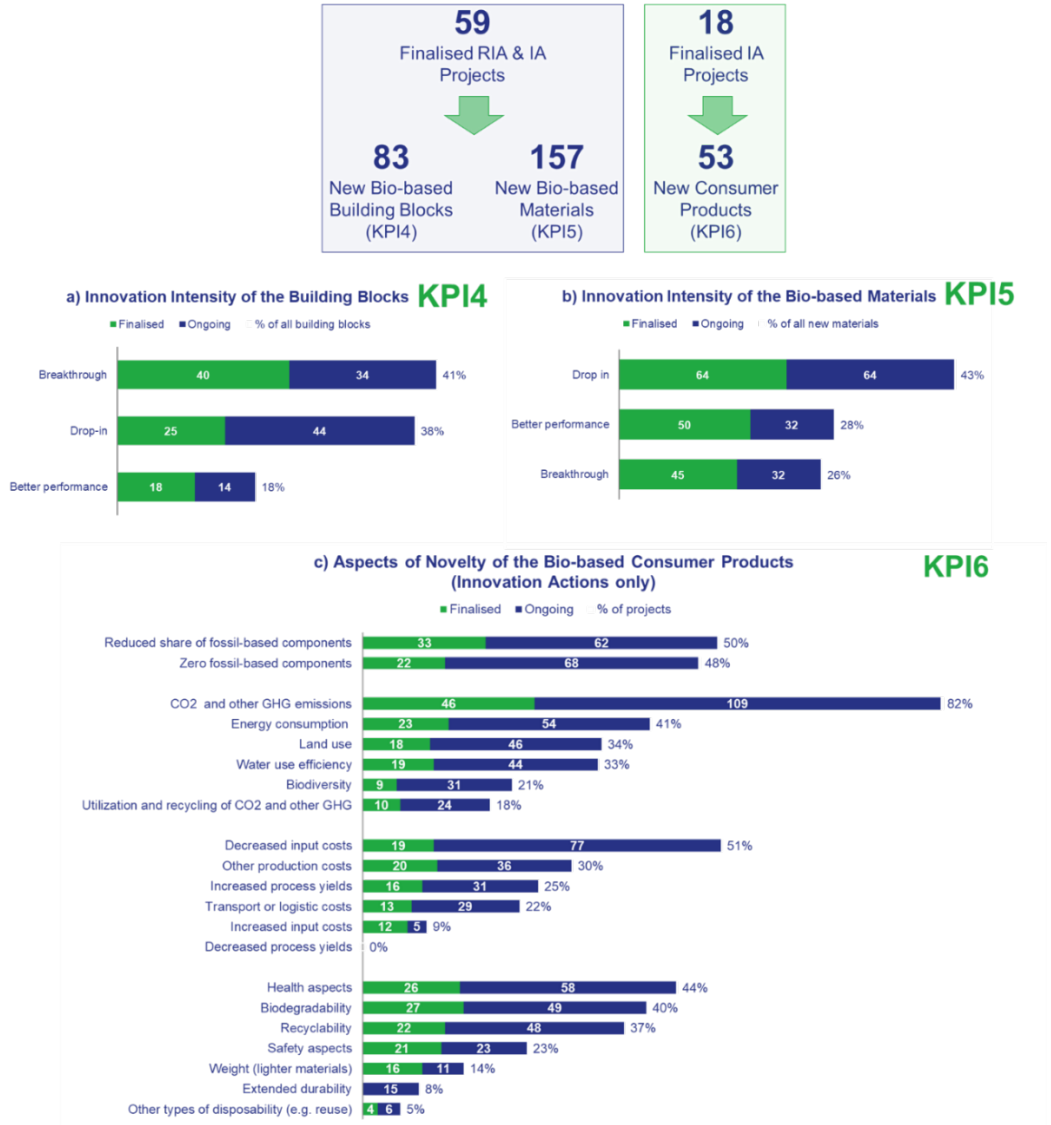


Figure 30 a) Innovation intensity of new reported bio-based building blocks by both BBI JU ongoing and finalised projects; b) Innovation intensity of new reported bio-based materials by both BBI JU ongoing and finalised projects and c) Main aspects of novelty in reported new bio-based products in both BBI JU ongoing and finalised IA projects (% of reported products).

BBI JU-funded projects are demonstrating the potential of renewable bio-based feedstock to replace fossil-based raw materials through the development, validation and demonstration of both drop-in and breakthrough building blocks and materials (Figure 30a/b). The novelty of the new bio-based products demonstrated by IA projects is presented in Figure 30c, which shows that bio-

[30] KPI4: New building blocks developed (TRL 3), validated (TRL 4 or 5) or demonstrated (TRL 6 or 7) with BBI projects; KPI5: New bio-based materials developed (TRL3), validated (TRL 4 or 5) or demonstrated (TRL 6, 7 or 8) with BBI projects; KPI6: New bio-based products and applications demonstrated (TRL 6, 7 or 8) with BBI projects. For full definitions see the Strategic Innovation and Research Agenda (SIRA; 2017).

based feedstock and processes can deliver in terms of environmental, economic and functional performance.

KPI 7 Flagship projects[31]

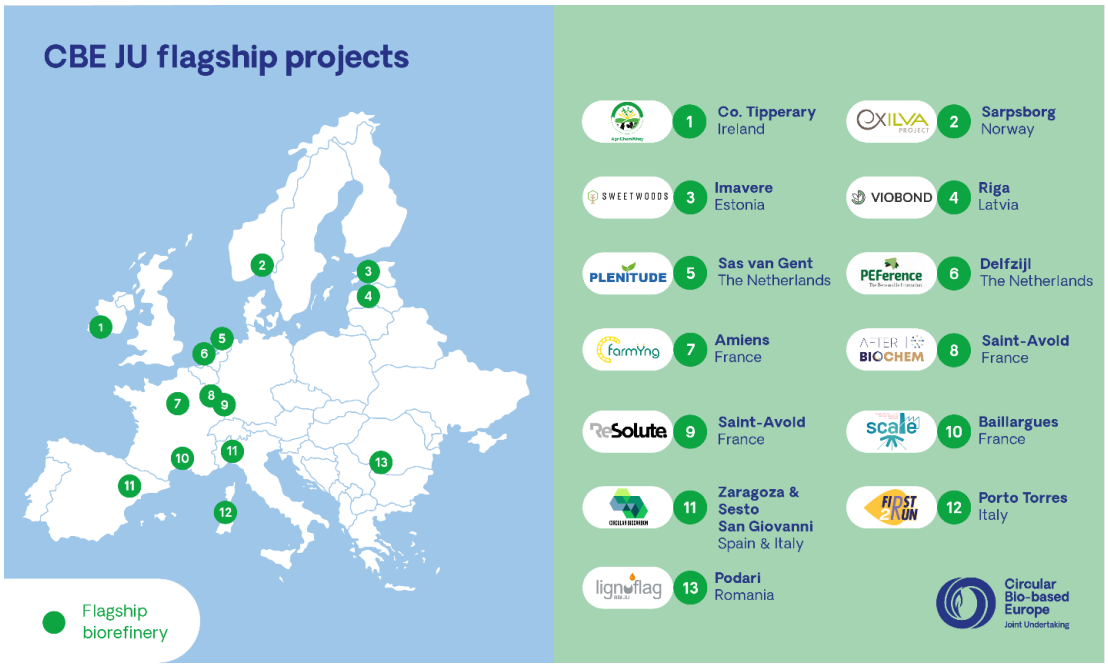


Figure 31 13 BBI JU Flagships under construction or in operation across Europe. Information on the BBI JU Flagships can be found on the CBE JU website.

KPI 8: 'TRL gain' - validated technologies that fill gaps in value chains[32]

RIA projects are contributing towards closing technological gaps in value chains by testing and validating the innovative processing technologies (Figure 32), so that they can be upscaled, demonstrated and integrated in industrial facilities.

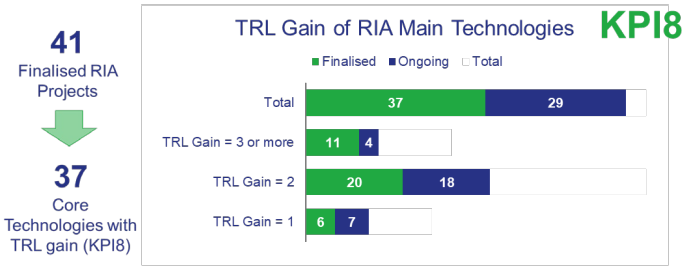


Figure 32 Number of main technologies with reported increase of TRL of 1, 2 and 3 or more levels in BBI JU RIA projects.

[31] Number of Flagship projects started since the launch of BBI JU. The number refers to successful projects, i.e.. all those for which Grant Agreements have been signed and the expected outcomes have materialised. The number excludes those projects for which an agreement was signed, but which have failed to deliver the expected outcomes or have been terminated.

[32] KPI8: Number of new and improved processing technologies validated with BBI projects. This KPI is complementary to KPIs 4, 5 and 6.

BBI JU contribution to the expected environmental and socio-economic impacts of projects

BBI JU projects report their environmental and socio-economic expected impacts through the annual KPIs & Impacts survey described in the above section. While there are no specific KPIs and targets for socio-economic and environmental impact, the questionnaire gathers quantitative and qualitative information on the various social, economic and environmental impacts set out in the SIRA 2017, as well as the projects' contribution to the UN SDGs.

Socio-economic impacts

A significant percentage of BBI JU projects report contributions to job creation, with the most significant contribution expected from the IAs, as technologies are deployed at a large, pre-industrial scale (e.g. the Flagships alone estimate the creation of 4,700 direct jobs and 15,000 indirect jobs).

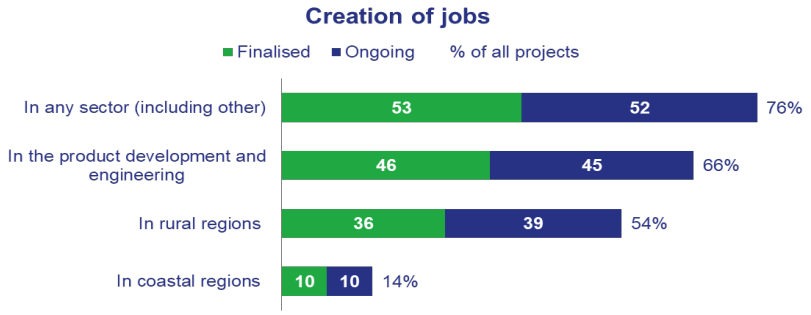


Figure 33 BBI JU all projects reporting on creation of jobs (direct and indirect).

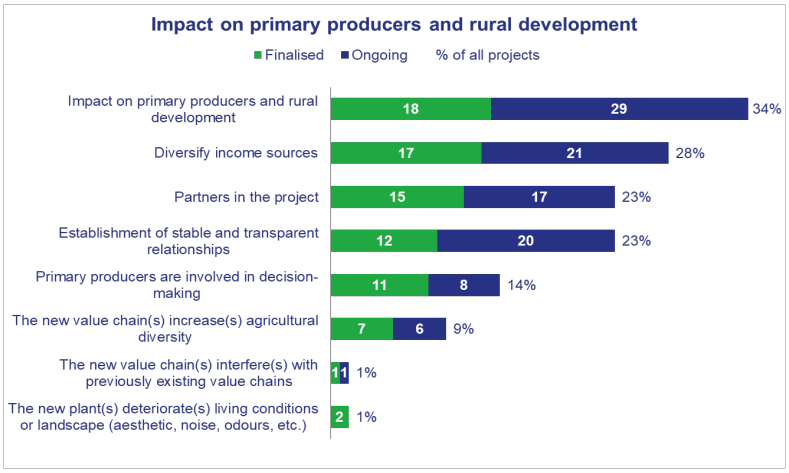


Figure 34 BBI JU projects (all actions) reporting impacts on primary producers and rural development.

BBI JU contributes to the revitalisation of regional economies in different ways. Nearly one third of the projects involve the participation of primary producers. These are key partners as they not only provide the feedstock, but also contribute to the consolidation of sustainable, local bio-based value chains with inclusive business models that incentivise the modernisation of the primary sector and the diversification of its sources of income.

A key aspect is the sustainable and local sourcing of the biomass, including the valorisation and reuse of local organic residues and the cultivation of biomass in marginal and unused lands. To unlock the potential of unused biomass and to customise the biorefinery models to local and regional needs, the involvement of regional and local organisations, stakeholders and authorities is crucial.

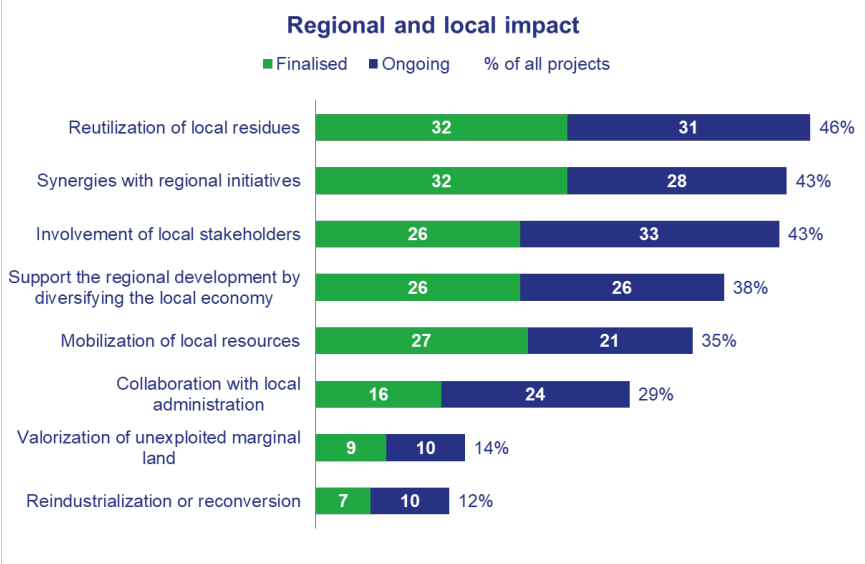
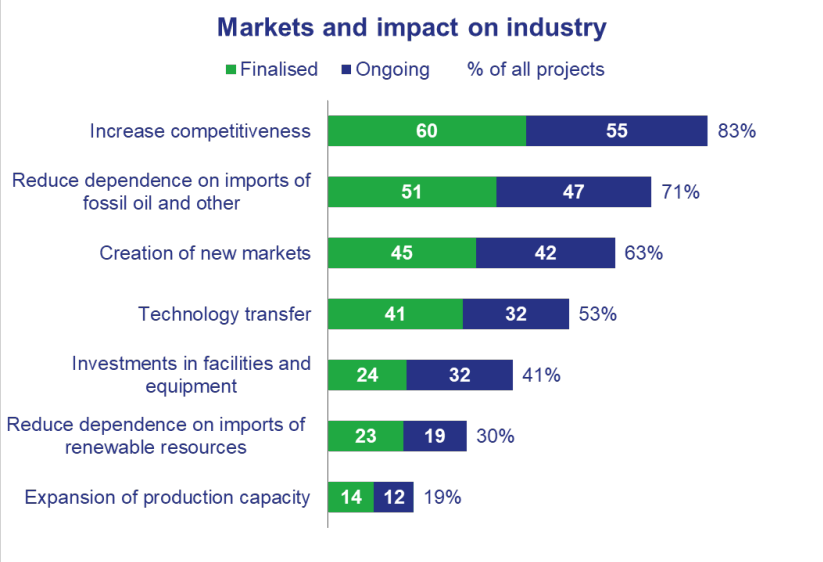


Figure 35 BBI JU projects (all actions) reporting regional and local impacts.



Investing in the development and deployment of innovative technologies for the bio-based industries results in the increase of competitiveness of European companies, along with the creation of new markets, the expansion of industrial capacities and the reduction of the external dependence on both fossil and other non-renewable resources.

Figure 36 BBI JU projects (all actions) reporting impacts on markets and industry.

Environmental impacts

Decreasing the environmental impact of industrial processes and products is one of the core objectives of the BBI JU projects. Factors contributing to the positive environmental impact are the replacement of fossil-based resources by biomass, the improvement of the end-of-life of bio-based products, the development of energy-efficient process technologies and the increased use of sustainable local or regional biomass. While contributions towards the preservation and enhancement of biodiversity are reported by only a modest portion BBI JU projects, projects under the new CBE JU partnership are expected to step up this contribution as the protection and enhancement of biodiversity and ecosystem services is a strategic priority.[33]

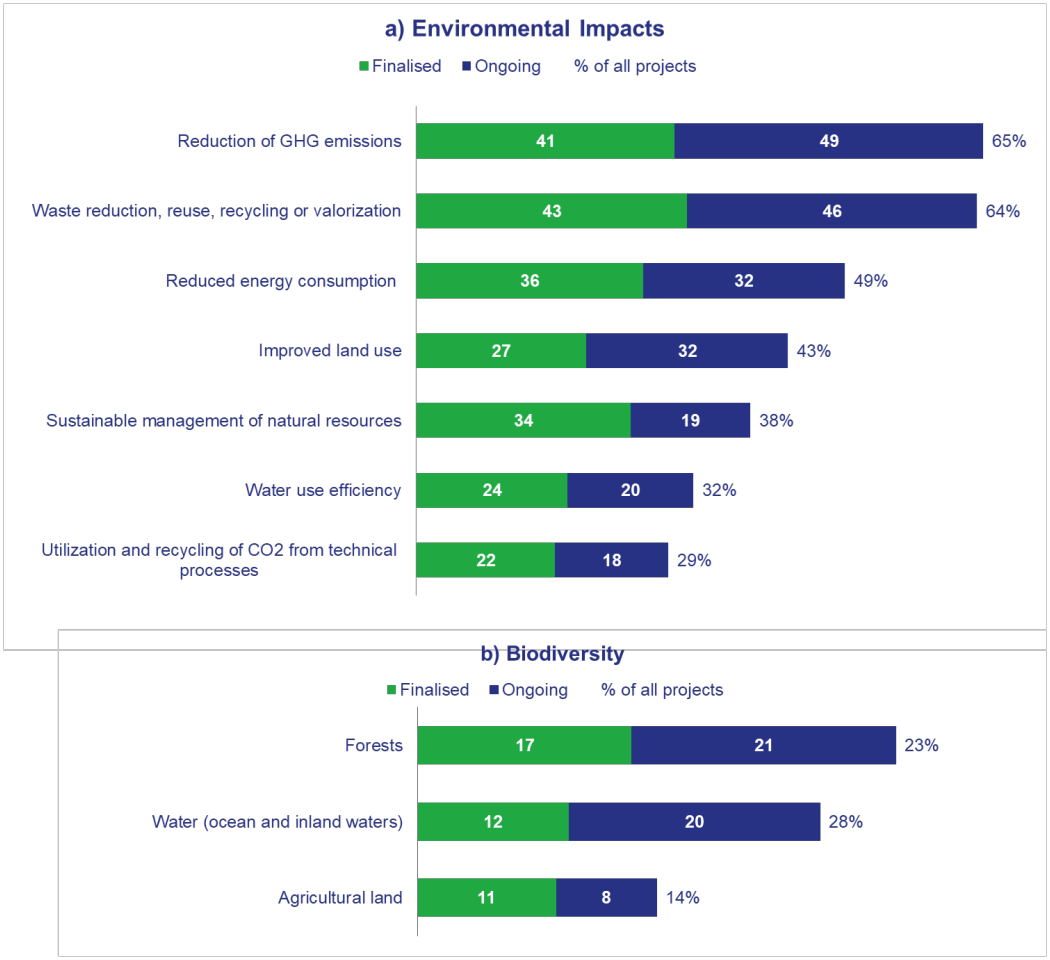
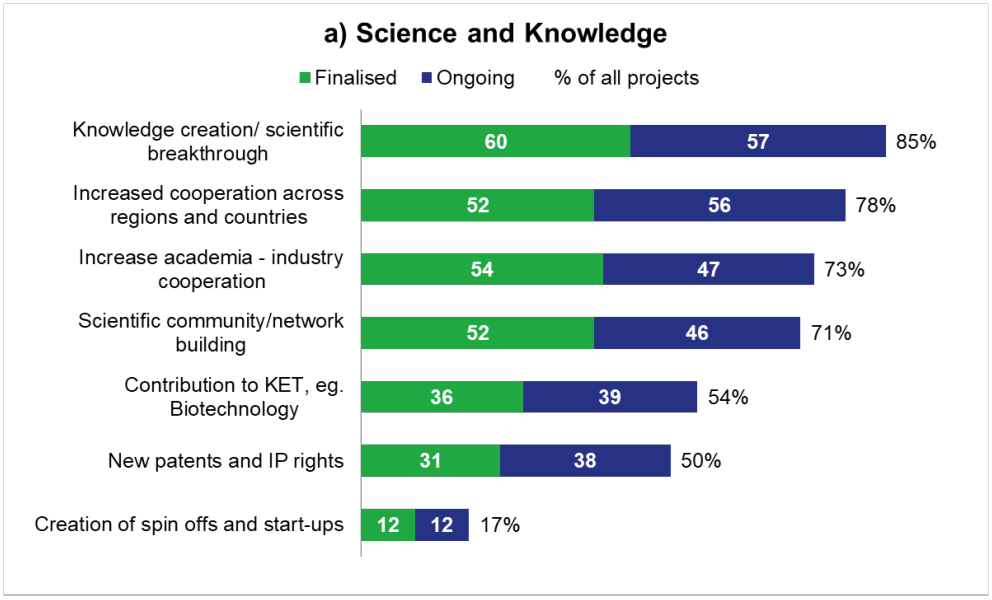


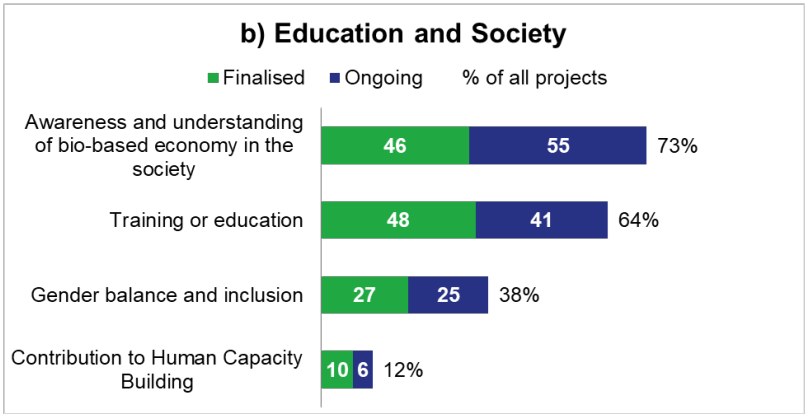
Figure 37 a) BBI JU projects (all actions) reporting on environmental impacts; b) BBI JU projects reporting contributions to preserve and/or enhance biodiversity.

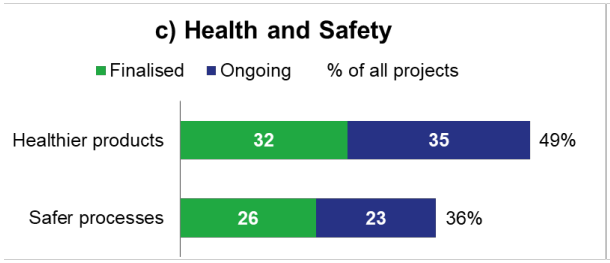
[33] CBE JU Strategic Research and Innovation Agenda (SRIA).

Additional societal impacts

In addition to environmental and socio-economic impacts, BBI JU projects report a positive contribution to knowledge creation and transfer, raising awareness and understanding of the bio-based economy, increasing standardisation and improving the regulatory environment as well as the development of safer processes and final products.







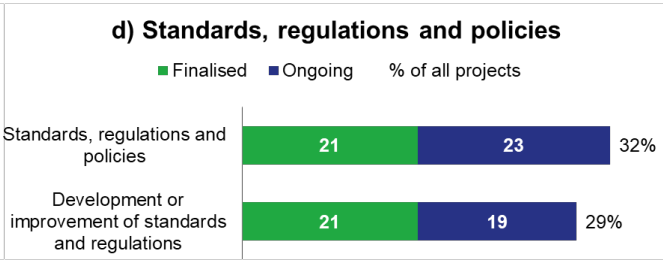


Figure 38 a) BBI JU projects (all actions) reporting impacts linked to science and knowledge. KET = key enabling technology; b) BBI JU projects reporting impacts linked to education and society; c) BBI JU projects reporting impacts in aspects linked to health and safety.; d) BBI JU projects reporting impacts in aspects linked to standards, regulations and policies.

BBI JU projects' contribution to the United Nations Sustainable Development Goals

The objectives of the BBI JU projects are well aligned with global goals on sustainability, and projects report a significant contribution to several United Nations Sustainable Development Goals, and most specifically, to SDG 9, SDG 13 and SDG 12.

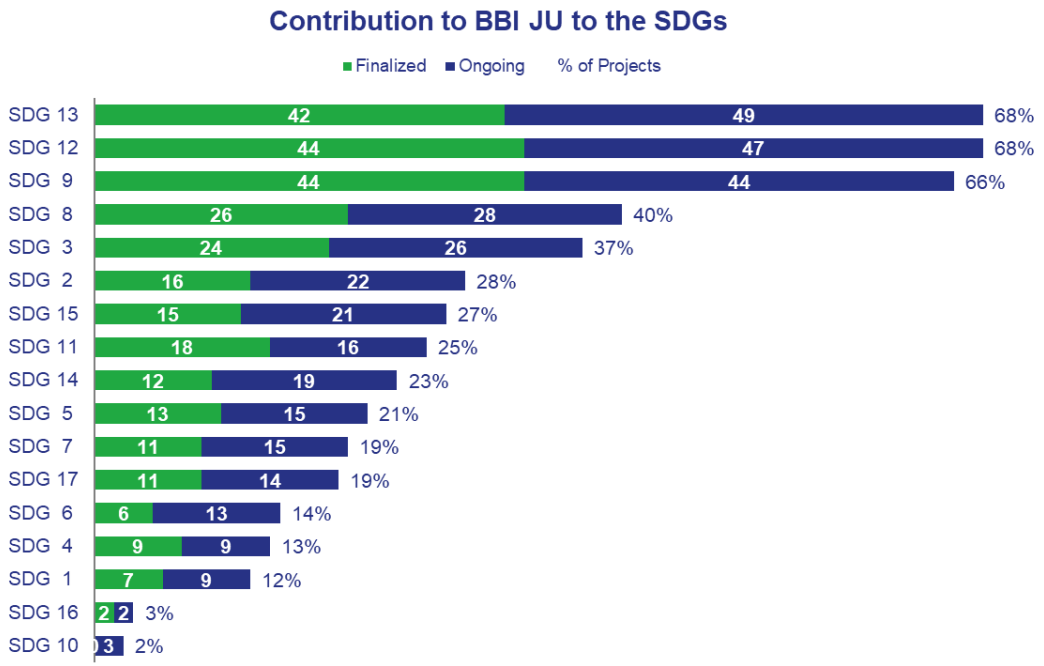


Figure 39 BBI JU projects' contributions to UN SDGs.

Monitoring the leverage effect of the BBI JU initiative

The leverage effect aims to measure the ability of the BBI JU initiative to attract additional financing from beneficiaries – whether members of the JU or not – and to multiply Horizon 2020 budget resources, including through additional activities.

As far as the contributions from BBI JU members are concerned, the BBI JU Regulation states that for the period from 2014 until the end of the initiative in 2024, the contribution by BIC and/or its constituent entities shall be at least EUR 2.73 billion and that the EU contribution shall be up to EUR 975 million. So, by 2024 a minimum of EUR 2.8 of in-kind and/or financial contributions by BIC and its constituent entities shall be leveraged for each euro of EU funding.

At the finalisation of the last call for proposal of BBI JU in 2021, the maximum EU contribution estimated in BBI grants until 2024 eventually amounted to EUR 822,066,-903. A more in-depth analysis of the different types of contributions from BIC to the BBI JU Initiative and the estimated projections for the period until 2024 are available in section 2.4 below.

The leverage calculation considers not only the contributions from JU members other than the EU, but also those from other beneficiaries, which represent the costs incurred by all participants in the implementation of indirect actions less the contribution of the BBI JU and any other Union contribution to those costs (APIK). At the finalisation of the last call for proposals of BBI JU in 2021, the estimated difference between budgeted costs and requested EU contribution in BBI grants attained EUR 487,928,957.

In order to measure the leverage effect, the European Commission proposed a calculation method that was applied to all Joint Undertakings in the context of the mid-term evaluation of the JUs operating under Horizon 2020. This calculation method excludes the contribution to the administrative costs of the Joint Undertaking[34]. In 2017, the calculation method was formally adopted by the BBI JU Governing Board[35]. It provides an indication of the total leverage effect of the initiative over a given period. The formula is the following:

(Total) leverage = Operational leverage + additional leverage:

$$Operational\ leverage = \frac{\sum APIK^{36} + \sum FC^{37}}{\sum EU\ contribution^{38}} ditional\ leverage = \frac{\sum IKAA^{39}}{\sum EU\ contribution}$$

[34] Excluding the contribution to the administrative costs of the BBI JU, the final target leverage effect amounts to EUR 2.85 instead of EUR 2.8

[35] BBI JU Governing Board meeting of 28 June 2017

As each element of this calculation has its own reporting and certification process with significant differences over time, it is only at the end of the programme that the result reaches the appropriate level of reliability. Despite this consideration, the BBI JU Governing Board discussed and agreed that the calculation of the leverage effect shall be monitored on a yearly basis as soon as the different elements of the calculation reach a consistent level of reliability.

For the period up to the end of 2022, the value of the leverage effect of the BBI JU initiative is:

Operational leverage = (487 928 957 + 3 250 000) / 822 066 903 = 0.6

$$Expected\ Additional\ leverage = 1\ 797\ 920\ 181 / 822\ 066\ 903 = 2.2$$

$$(Total)\ expected\ leverage\ by\ end\ 2022 = 0.60 + 2.2 = 2.8$$

The reported operational leverage has not changed since 2021. The additional leverage is reported as 'expected' because the IKAA certification process will be finalised in May 2023 for the final version of this document. The expected leverage value – considering the planned IKAA value for 2022 - is above target over the reporting period and the target expected for 2024 is almost reached without counting two additional IKAA planning exercises for 2023 and 2024.

The following shows the evolution of the leverage effect, and the table below details each component of the leverage effect calculation over the period 2014-2022.

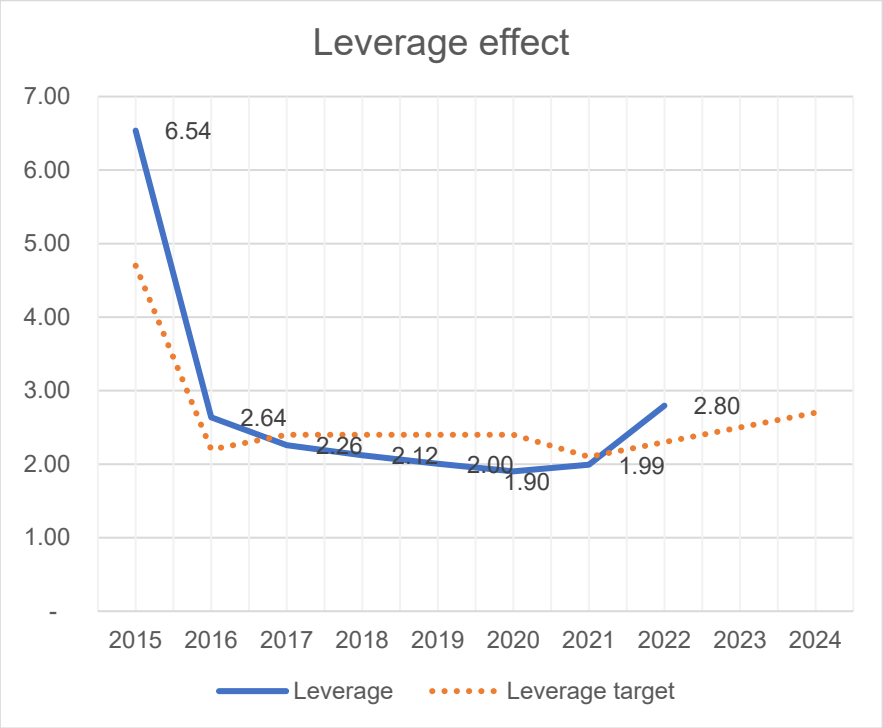


Figure 40 Evolution of the leverage effect over the initiative

Values cumulated across the years (EUR)						Leverage evolution
Year	**APIK**	**BIC Financial contributions**	**IKAA**	**Total**	**EU funding**	
2015	33,107,991		291,482,000	324,589,991	49,653,708	6.54
2016	121,090,840	750,000	478,859,001	358,518,161	228,503,234	2.64
2017	250,427,121	1,250,000	674,844,239	425,667,118	411,376,322	2.26
2018	308,723,689	**3,250,000**	734,763,805	429,290,116	496,538,314	2.12
2019	378,041,578		813,846,895	1,195,138,473	599,419,909	2.00
2020	424,791,217		930,920,181	1,358,961,398	717,606,742	1.90
2021	**487,928,957**		1,139,920,181	1,631,099,138	**822,066,903**	1.99
2022			**1,797,920,181**	**2,289,099,138**		**2.80**

Table 2 Components of the leverage effect calculation over the first years of the initiative

1.8. DISSEMINATION AND INFORMATION ABOUT PROJECT RESULTS

Project beneficiaries are required to report on their publications, patents and dissemination activities via the 'continuous reporting' IT module of the Funding & tender opportunities Portal. In 2022, 124 new publications were reported, and by the end of 2022, CBE JU projects had obtained or registered 37 patents, 1 registered design and 6 trademarks during the period 2015-2022. A detailed overview of these publications as well as of the different forms of intellectual property reported is provided in Annex 5.3 and Annex 5.4, respectively.

In the two tables below, a summary of the dissemination and communication activities of CBE JU projects, and their cumulative increase in the past five years (since 2018) is provided. New and updated data is mainly provided by CBE JU projects resulting from Calls 2016-2020, as most projects from Calls 2014 and 2015 were already finalised.

Types of dissemination & communication activities	2018	2019	2020	2021	2022
Organisation of a conference	39	41	120	200	234
Organisation of a workshop	36	49	196	311	415
Press release	164	1,209	407	635	686
Non-scientific, non-peer-reviewed publications	487	592	1,314	2,225	2,351
Exhibition	96	119	258	306	361
Flyer	5,553	5,574	24,762	37,816	40,178
Training	62	82	171	276	336
Social media	2,735	59,566	15,187	23,172	27,872
Website	230	314	31,984	55,035	102,143
Communication campaign (e.g. radio, TV)	37	51	181	296	360
Participation at a conference	550	686	1,653	2,146	2,562
Participation at a workshop	128	178	424	619	715
Participation to events, other than conference or workshop	179	222	487	674	776
Video / film	59	70	244	444	590
Pitch event	9	14	108	150	165
Trade fair	71	80	189	254	271
Participation in activities organised jointly with other H2020 projects	71	80	189	254	305
Other	157	189	554	59,782	1,979

Table 3 Number of dissemination and communication activities reported by all CBE JU projects via the Funding & tender opportunities Portal (2018-2022; total / cumulative amounts). The presented amounts are solely based on raw data reported by projects; outliers and later corrections, resulting from e.g., misinterpretations on how to complete certain fields, were kept in the table.

	2018	2019	2020	2021	2022
Scientific community (Higher education, research)	450,043	989,124	3,185,837	19,985,654	20,779,521
Industry	414,702	2,975,462	4,273,681	6,059,571	4,936,636
Civil society	2,935,852	4,548,619	10,015,569	38,598,871	34,102,215
General Public	8,173.203	18,749,257	52,201,77	225,888,130	193,009,146
Policy makers	62,034	108,457	557,980	309,671	289,518
Media	1,577,383	1,797,584	2.,037,192	2,388,378	1,997,842
Investors	39,195	51,425	371,216	107,710	107,693
Customers	356,529	5,757,952	787,993	528,179	564,753

Table 4 Estimated number of persons reached, reported by all CBE JU projects via the Funding & tender opportunities Portal (2018-2022; total / cumulative amounts). The presented amounts are solely based on raw data reported by projects; outliers and later corrections, resulting from e.g., misinterpretations on how to complete certain fields, were kept in the table.

2. SUPPORT TO OPERATIONS

2.1. COMMUNICATION ACTIVITIES

In 2022, communication activities focused on four main objectives:

- Promoting the impact of BBI and CBE JUs
- Promoting the funding opportunities
- Raising awareness about the new partnership
- Boosting the communication channels and tools

2.1.1. Communicating the impact of the CBE JU

Highlighting the positive socio-economic and environmental impacts of the initiative was a key communication objective in 2022, and the CBE JU addressed it with these main activities:

- Organising the CBE JU celebration event on 27 September for 100 high-level stakeholders, to mark the full establishment of the partnership, take stock of the achievements and look forward to new opportunities and challenges for the CBE JU. Videos from the CBE JU celebration event were used later to run an additional impacts campaign on social media. The media presence at the event and collaborations resulted in a number of articles detailed in the Media relations section of this report.
- Telling the success story of the CBE JU-funded Flagship projects in a travelling exhibition launched at the celebration event and later brought to the EU Bioeconomy conference on 6-7 October. A full catalogue accompanied the exhibition.
- Showing the crucial role of the public-private partnership in the EU Bioeconomy Strategy progress report.
- Looking back at the achievements of BBI JU in the 2014-2021 period in a dedicated publication.
- Promoting the achievements of BBI JU in the context of the 2021 annual activity report.
- Covering the milestones of CBE JU-funded projects, such as inauguration of the LIGNOFLAG, AFTER-BIOCHEM and PLENITUDE Flagship biorefineries, and supporting the communication on the ground-breaking event of the PEFerence site.
- Publishing and promoting 13 project achievements stories.

Year	Stories published	Website views	LinkedIn views	Twitter views
2022	13	3,600	42,000	8,900
2021	15	2,900	*not collected*	*not collected*

Table 5 Statistics on the project achievement stories published in 2022.

- Publishing a series of articles and running campaigns on the contribution of CBE JU-funded projects to the European Green Deal and related EU policies, such as the EC's communication on fertilisers, zero pollution action plan, new rules to reduce the use of chemical pesticides and a legally binding nature restoration law, as well as the EU strategy for sustainable and circular textiles.

Policy	Website views	LinkedIn views	Twitter views
Textile Strategy	810	1,900	6,800
EU Bioeconomy strategy	165	3,300	1,150
Biodiversity strategy: bio-based pesticides	70	920	555
Zero pollution action plan	70	1,750	640
Communication on fertilisers	185	3,560	24,000
Total	**1,300**	**11,500**	**33,200**

Table 6 Statistics on the articles about contribution of CBE JU-funded projects to EU policies.

2.1.2. Promoting CBE JU funding opportunities

The CBE JU's AWP and Call 2022 were promoted throughout numerous campaigns in 2022:

- Launch of the networking platform for potential applicants and opening of the registration for the Info Day on 10 May
- Publication of the CBE JU AWP 2022 on 3 June
- Publication of the SRIA on 16 June
- Launch of the call on 22 June
- Call submission data on 23 September
- Publication of the AWP 2023 on 19 December

The 2022 Info Day, held in fully digital format on 7 June, attracted 2,500 views and showed a very high satisfaction rate of participants. Linked to the event, CBE JU also moved to a new user-friendly networking platform, which supported 480 one-to-one online meetings and an integrated registration for the Info Day. Participants could choose to keep their details on the platform for the next call.

2.1.3. Raising awareness about CBE JU

As a newly established partnership, CBE JU needed to promote various steps related to its setting-up to the stakeholders, as well as to raise the awareness of decision-makers and new stakeholder communities about its mission. CBE JU Programme Office ran integrated communication campaigns on:

- Establishment of the Scientific Committee;
- Establishment of the states' representatives group;
- Change of the Executive Director;
- Celebration of CBE JU's one-year anniversary.

To support the promotion campaign, CBE JU launched a new video and a flyer about the partnership and its mission. Both were revealed at the CBE JU celebration event. Parts of the exhibition were also dedicated to promoting the new partnership.

The CBE JU Programme Office showed the staff and values of the partnership in its digital communication, and issued a new video promoting the CBE JU traineeship scheme.

In the context of raising awareness about the partnership, there were two visits of the EU Contest for Young Scientists (EUCYS) winners to CBE JU, the one of 2019 delayed due to the pandemic, and the one of 2021. Together with CBE JU Programme Office representatives, the winners met a number of decision-makers (MEPs, cabinet members of Commissioners, EU officials) and visited CBE JU-funded projects.

In parallel, the CBE JU's visual identity and its adaptation to various formats were finalised, and the new CBE JU website launched.

Overview of digital campaigns in 2022

Campaign	LinkedIn: views per message	LinkedIn: engagements per message	Twitter: views per message	Newsletter: open rate	Website: article views
CBE JU Info Day 2022	1,900	160	730	47.2%	4,600
EUCYS 2021 winners' visit	3,200	130	410	n.a.	160
#celebrateCBE	4,100	555	190	n.a.	280
#CBEachievements AFTERBIOCHEM	5,200	780	310	n.a.	300
EUCYS 2019 winner's visit	1,400	32	380	n.a.	60
#EUBioeconomy conference	2,800	460	640	n.a.	n.a.
#1yearCBE	330	300	690	35.4%	280
BBI JU achievements book	5,900	290	300	n.a.	345
Call 2023 announcement	4,200	300	3,300	35.2%	2,000
2022 average	2,900	300	800	39.3%	n.a.
2021 average	3,400	90	9,600	39.0%	n.a.

Table 7 Digital campaigns in 2022: statistics

#CBEresearch: it is the hashtag CBE JU uses on social media to publish the CBE JU-funded projects' scientific articles. Many of these articles are also included in the CBE JU newsletter:

Year	Messages	LinkedIn views	Twitter views
2022	33	54,000	12,400
2021	39	33,100	39,200

Table 8 #CBEresearch statistics

2.1.4. Boosting the communication channels and tools

Website

CBE JU launched its new website on 29 April 2022. Informed by the results of the users' study carried out in 2021, the website includes improvements and new features compared to BBI JU's website. The two main highlights of the new website are:

- **Up-to-date responsive design.** The design combines the latest graphic design trends with the visual identity of CBE JU. Photos and infographics play a prominent role in telling the story of the circular bio-based industries in Europe. The website adapts to all screen sizes.
- **User-friendly, easy navigation.** The information on the website focuses on the needs of its users. For example, the content in the section *Apply for funding* has been organised and written from the call for proposal applicant's perspective. The search and filter options throughout the sections help users find what they need.

The website content has been considerably upgraded:

- **Improved project pages**, including beneficiaries' maps, new information about the project's scope, related projects and news articles. To ensure the accuracy of the information, the project data are now automatically retrieved from the official CORDA database. The search page includes relevant filtering options (project focus, status, type of project, feedstock origin, feedstock type, call & country) to optimise the results.
- The **achievement stories** enable multimedia storytelling to highlight the milestones and impacts of CBE JU-funded projects.
- The **news and events pages** present new search and filter options, as well as links to relevant projects and other pages.
- The **vacancies page** was conceived as a panel where applicants can easily visualise and interact with the open, ongoing and closed vacancies.

The website statistics provide the May-December 2022 overview and the full-year overview, in combination with BBI JU website statistics from January-April 2022:

	Visits	Page views	Actions per visit	Average session duration (min)	Bounce rate	New users	Downloaded documents
CBE JU - May-Dec	53,000	107,000	2.48	02:40	66%	100%	2,330
CBE + BBI JU - Jan-Dec	94,600	193,900	2.49	02:27	63%	63%	7,575
2021	95,500	201,500	2.57	02:11	58%	68%	11,103

Table 9 Web statistics in 2022

Compared to 2021, the lower number of actions per visit combined with the longer average session duration proves the success of the new website in simplifying the navigation. Fewer actions are needed to find the information, and the users expend more time on the website because the content they find is more relevant. The marked decrease in downloaded documents points in the same direction: the relevant content is more integrated on the pages, reducing the need to download documents.

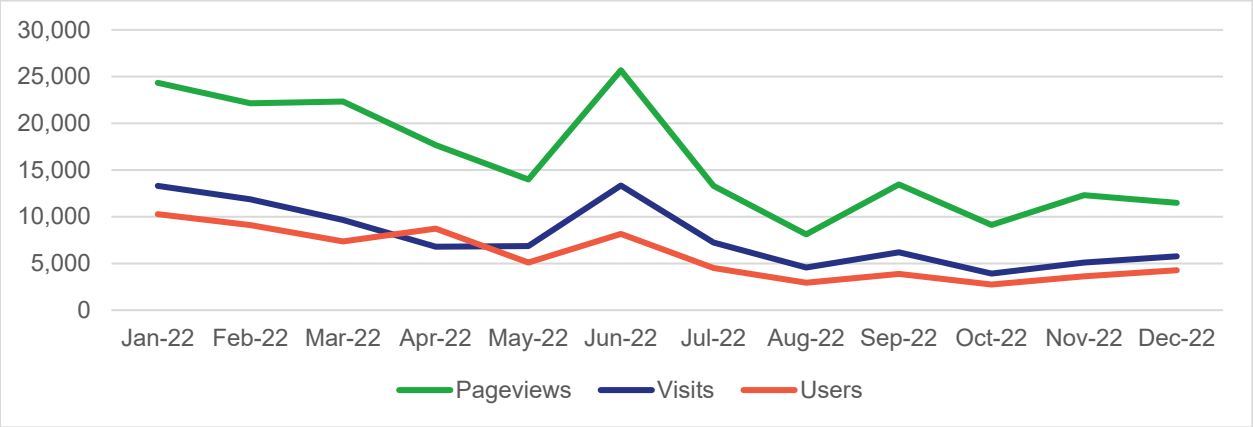


Figure 41 Web statistics, BBI and CBE JU website combined

June was the month with the highest number of pageviews and visits following the CBE JU Info Day 2022.

84% of the visitors of the CBE JU website came from Europe. Belgium (12.7%), Spain (11.5%), Italy (8.7%), France (6.5%), USA (6.3%) and Germany (6.2%) were the biggest source of visits. The Netherlands, Portugal, UK, Finland, Greece, Ireland, Poland and Austria completed the list of countries originating more than 2% of the visits each.

The most visited pages of the CBE JU website were:

- Open calls for proposals, with over 15,000 views
- Vacancies, with over 8,000 views
- CBE JU Info Day 2022, with over 4,000 views
- News article on the Call 2022 opening, with over 4,000 views
- Projects, with over 3,000 views

Social media

LinkedIn

This professionals-oriented channel was the cornerstone of CBE JU's presence on social media. In 2022, our followership increased by 39%, reaching the 10,000-follower milestone on 10 May, and ending the year with over 12,000 followers.

	Views	Profile visits	Followers	Clicks	Reactions	Comments	Reposts
2022	439,755	12,389	12,392	20,420	8,472	132	745
2021	426,395	11,364	8,907	20,742	7,195	212	not collected

Table 10 LinkedIn statistics

All indicators grew or remained in line with 2021. There was a 3% increase in views of CBE JU's messages compared to 2021, reactions increased by 18%, and the organisation's profile was checked 9% more than in the previous year. The drop in comments is linked to the CBE JU launch in 2021, which generated many comments.

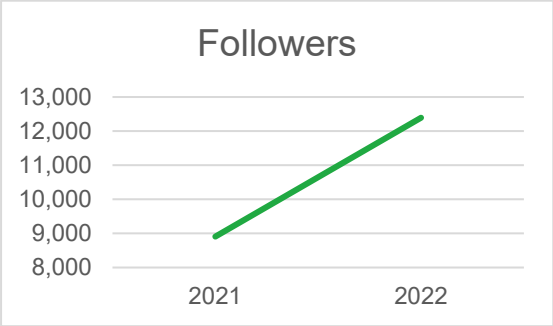


Figure 43 Number of LinkedIn followers

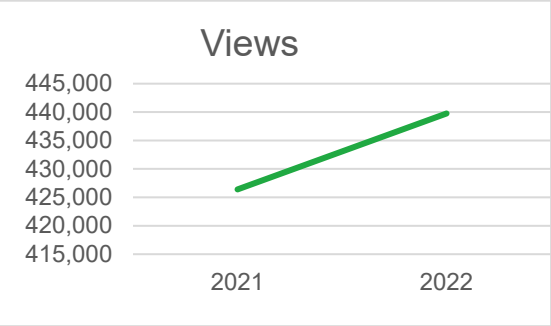


Figure 42 Number of views on LinkedIn

8.3% of the visits of the CBE JU's website originated from LinkedIn placing it as the 3rd most important channel after Google search and EPSO. The three most viewed messages in 2022 were on the EURACTIV's report about biorefineries (9,600 views), the farewell message for Philippe Mengal (7,500 views), and the launch of the Call 2022 (7,200 views).

Twitter

The microblogging network has experienced many technical changes throughout the year, making this platform unpredictable and difficult to exploit for corporate accounts like CBE JU's. Linking to external websites is highly penalised by Twitter, with the consequence that more than 427,000 views generated only 474 website visits. Therefore, CBE JU reduced the weight of Twitter in its social media strategy.

	Tweets	Views	Profile visits	Followers	Clicks	Likes	Retweets
2022	470	427,524	116,410	8,883	1,226	4,140	1,899
2021	568	1,653,200	127,912	7,795	2,767	7,714	3,403

Table 11 Twitter statistics

The most viewed message from CBE JU was the story about projects producing circular bio-based fertilisers with 23,000 views.

Newsletter

CBE JU sent 15 newsletters in 2022, to 4,800 subscribers, representing a 17% audience increase compared to 2021. All indicators remained high, outperforming the platform's governmental newsletter average in all aspects.

The most successful issue was the registration opening of the CBE JU Info Day 2022, with a 47.2% open rate and 17.2% recipients clicking on the links for more information. The call for Scientific Committee members was the second most read issue, with a 45.1% opening and a 17.1% click rate.

Figure 44 Newsletter subscribers

	Opening	Open rate	Clicks	Click rate
2022 average	1,709	38.2%	467	10.6%
2021 average	1,615	39.4%	519	12.6%

Table 12 Newsletter statistics

Events

The two key events of 2022 were:

- The **CBE JU Info Day** on 7 June: for the first time, the event was recorded in a professional studio and as in previous years streamed from the CBE JU offices. The event attracted 1,200 live views from 47 countries and 2,500 views in total. This was the first BBI or CBE JU info day for 55% of the respondents to the event's satisfaction survey. 95% of them replied that they would share the information received during the event with other people. The average satisfaction rate with various aspects of the event was 94%.

- The **CBE JU celebration event** on 27 September brought together around 100 high-level stakeholders (by invitation only) from the EU Institutions, BIC and industry, as well as CBE JU's Governing Board and advisory bodies. The discussions focused on the BBI JU achievements and new challenges that the bio-based industries are currently facing. Feedback from the participants will inform the CBE JU Stakeholder Forum planned for end 2023, and the event's exhibition will be showcased in the European Commission buildings in 2023.

CBE JU Programme Office representatives attended 64 other events in 2022 and took part in 57 of them as speakers. CBE JU was also the co-organiser of the EUBCE conference's "Industry track" covering a number of relevant sessions. Nine of the events with CBE JU participation were national info days. See the full list of events in Annex 5.12 of the report.

Videos

Videos supported the CBE JU's storytelling about the impacts of the initiative in a more engaging way across the different channels. The number of views reflect the sum of video views on YouTube, LinkedIn and Twitter:

Thumbnail	Title and views
	Unlock the future of the circular bioeconomy in Europe 3,700 views
	Celebrating CBE JU and the future outlook of the European bioeconomy 1,800 views
	CBE JU's traineeship promotion 2,000 views
	Circular season's greetings 700 views

Table 13 Videos produced in 2022

Media relations

In 2022, CBE JU worked on media relations supporting the main communication objectives:

- A full Euractiv report on bio-based industries and successes of the Flagship projects, as well as a Latvian national radio show dedicated to the circular economy, resulted from the media presence at the CBE JU celebration event and the EU Bioeconomy conference
- An awareness-raising campaign in Politico, as well as an article in the European Files and a series of articles in the Open Access Government magazine highlighted the successes of the initiative and the importance of the bioeconomy
- Specialised media, which are CBE JU's regular partners, such as Agro Chemistry and World Bio Markets, supported the communication about funding opportunities

Other highlights of the CBE JU and its projects in the media:

- The RECOVER project's work on tackling the soil contamination issue by transforming plastics into biofertilisers or similar biodegradable products was featured in El País and on the national TV and radio
- The FARMŸNG project's approach to converting mealworms into sustainable proteins and lipids for fish feed and pet food end markets was highlighted in the Wired magazine, on Arte and Radio France. The project was also featured in the Financial Times along with AFTERBIOCHEM
- The inauguration of the AFTERBIOCHEM project's biorefinery was covered on France 3
- The work of the RECOVER project on degrading plastics for food and agricultural packaging by using insects and earthworms received important media coverage in La Repubblica and La Stampa
- The PEFerence project's new generation fibre beer bottle developed for Carlsberg was featured in the Guardian and on CNN
- The UP4HEALTH project's work on upcycling the olive oil industry's side streams into ingredients for health and food products appeared on Spanish national TV

2.2. LEGAL AND FINANCIAL FRAMEWORK

The Council Regulation 2021/2085, of 19 November, establishing the Joint Undertakings under Horizon Europe and repealing Regulation (EC) No 219/2007, (EU) No 557/2014, (EU) No 558/2014, (EU) No 559/2014, (EU) No 56/2014, (EU) No 561/2014 and EU No 642/2014, entered into force on 30 November 2021.

As stated in Article 174 of the above-mentioned Council Regulation 2021/2085, the CBE JU shall be the legal and universal successor in respect of all contracts, including employment contracts and grants agreements, liabilities and acquired property, of the BBI JU established by Regulation (EU) No 560/2014.

As stated in point 12 of the same Article 174, the CBE JU adopted in its first Governing Board meeting the list of decisions adopted by the BBI JU, that shall continue to apply for the CBE JU (Governing Board decision CBE-GB-2/21 of 17 December 2021). Among others, these include all the staff implementing rules, financial rules, management and prevention of conflict of interest rules, originally adopted by BBU JU that continue to apply in CBE JU.

The Strategic Research and Innovation Agenda (SRIA), the document covering the duration of Horizon Europe that identifies the key priorities and the essential technologies and innovations required to achieve the objectives of the CBE JU, was adopted on 31 May 2022 by the Governing Board decision CBE-GB-6/22.

The CBE JU Annual Work Programme 2022 was amended on 14 June 2022 by the Governing Board decision CBE-GB-7/22, to take into account the new programme and related budget for CBE JU, and especially the planned call for proposals to be launched in 2022, aimed at implementing the CBE JU SRIA

2.3. BUDGETARY AND FINANCIAL MANAGEMENT

2.3.1. Overview

The Governing Board adopted the 2022 budget for the CBE JU in two stages. On 16 December 2021 the budget for the BBI JU legacy part was voted (adopted C1 budget and C2 reactivations from prior year) for a total of EUR 6,052,262 in commitment appropriations (CA) and EUR 85,562,888 in payment appropriations (PA). This was followed on 31 May 2022 with a budgetary amendment to add the 2022 C1 (fresh) budget for CBE JU, comprising EUR 254,860,805 in CA and EUR 1,664,205 in PA. The amendment also included a reduction of EUR 11,196,795 to the BBI JU operational PA reactivations, deemed at that stage to be surplus to needs (so total CA budget amendment was -EUR 9,532,590 (minus)). Eventually, on 28 November 2022, another amendment to the budget provided an extra EUR 1,000,000 PA for the CBE JU expert evaluators under Title 3, and in order to reflect at accounting level the approach taken by the European Commission for the treatment of PA for expert evaluators in the calls.

The original BBI JU budget included a relatively large surplus of unused budget from prior years (2019, 2020 and 2021): on the administrative side, EUR 1,135,769 in CA and EUR 1,566,182 in PA and on the operational side EUR 40,000,000 in PA. These reactivated appropriations were consumed wherever possible in priority in line with CBE JU's Financial Rules Art. 6(5), and reached 69% consumption on the admin CA side, 88% on the admin PA side and 100% on the operational PA side by year end. The main reason for the lower execution in the administrative budget is that a large amount of both C1 and C2 appropriations were kept available on the Title 2 communications budget lines until the very end of the year, in view of committing the contract for the Stakeholder Forum event taking place in 2023. At the last minute it was unfortunately not possible to manage this, and the contract was eventually signed in mid-January 2023. The unused C2 appropriations are being reactivated in the budgets of 2023 (voted) and 2024 (draft). At the end of 2022, there was a total surplus of BBI JU unused appropriations of EUR 1,138,343 in administrative CA and EUR 1,460,476 in administrative PA. In operational PA there was EUR 25,156,689.

On the CBE JU side there were no reactivated appropriations (aside for a tiny amount of kEUR 14 on the expert reviewers' line), as no budget had been requested for prior year 2021. However, as the budget originally foreseen for CBE JU on the side of the Commission (including a Call 2021 which never took place) had been committed by DG RTD, CBE JU had to assume in its 2022 administrative and operational budget the foreseen CBE JU CA and PA for both years 2021 and 2022. As, on the administrative side, the execution of the BBI JU legacy budget will be prioritised until end of 2024, virtually none of the CBE JU admin budget was executed in 2022. This obviously reduces the overall budget execution, but for this exercise the implementation rates of the BBI JU-only admin budget will also be given for a realistic comparison. The total C1 administrative budget for CBE JU was EUR 1,664,205 in CA and PA.

2.3.2. Administrative expenditure

The total (CBE + BBI) consumption of the administrative budget was 62% in CA and 59% in PA. For BBI JU the rates were 79% in CA and 76%.

Title 1: Overall CA implementation of staff-related costs was 63%. For BBI JU the total was 72%. On the BBI JU only side, salary costs (total budget EUR 2.9 million) showed a strong execution at 88% and other staff costs (EUR 467,460) at 85%. The BBI JU mission expenses budget of EUR 113,712 again suffered during the first half of the year with the COVID impacts and continued use of virtual technologies for meetings, with only 31% implementation. As of the latter part of the year, an increasing number of physical missions was starting to be undertaken and a “normal” level should be resumed as of 2023. There were no installation/resettlement costs (budgeted at EUR 60,000). The overall PA execution in Title 1 is 55% of which 72% for BBI JU. Several of the SLA contracts for staff-related costs for 2022 (such as training) will send their invoices only in 2023.

Title 2: The 2022 infrastructure budget achieved an overall implementation of 60% in 2022. For BBI JU the total was 82%. On the BBI JU side, two of the highest costs - building-related (EUR 390,244) and IT (EUR 412,039), achieved a good implementation, respectively 77% and 73%. The rental line had included an amount for some planned works to the office space, which were not in the end carried out. IT execution was also somewhat affected by the planning of a costly project on KPI reporting which was finally not contracted during the year. The BBI JU communications budget implementation (total budget EUR 738,865 including reactivations of EUR 338,665) was only 38%, affected, as mentioned above, by the delay in contracting a large amount of up to EUR 400,000 for the Stakeholder Forum of 2023 (one large contract was signed in early 2023). Budget lines which were strongly executed were external staff (EUR 199,888 for BBI) at 99% and expert reviewers (EUR 327,642) at 100%.

The overall PA consumption in Title 2 is 68%. For BBI JU this is 81%.

2.3.3. Operational expenditure

As there was no CBE JU call in 2021, there were no Grant Agreements signed in 2022. The first call for proposals of CBE JU was launched in mid-2022 for EUR 120,000,000 and following the proposal evaluations towards the end of the year, the GAP will be launched by the end of January 2023.

In respect of the operational PA r, the Programme Office achieved a 65% implementation of the 2022 budget, with payments of interim and final periodic reports for grants from the previous BBI JU calls, and EUR 470,825 for expert-evaluators of the CBE Call 2022 (total Title 3 EUR 47,430,727 out of budget EUR 72,587,416). This disappointing execution was even lower (by 6%) than for 2021. This was because:

i) There were ongoing issues with several large projects which resulted in delays and suspensions, meaning the forecasted payments would be postponed to 2023. The total payments represented by such projects is around EUR 20.5 million.

ii) Termination of a large flagship project (BIOSKOH) with a recovery, where a payment of over EUR 2 million had originally been forecasted

iii) Around EUR 2 million of negative differences where the project payments forecasts were higher than the actual cost claims received.

Regarding the payment of the periodic reports, the CBE JU Programme Office dealt with 60 periodic reports claiming a total contribution of EUR 186 million which led to 60 net payments in 2022 for a total of EUR 47 million.

2.3.4. KPI performance

The financial KPIs showed a strong performance in 2022:

- All interim and final cost claims validated in 2022 (60) were paid on time with an average Time To Pay of 65,75 days. The average TTP in 2021 was 68,2 days.
- The Time To Pay of administrative payments showed only 16 (5%) of a total 316 payments were late. The average TTP was 15 days (11,71 in 2021), late payments included.

Statement of revenue:	Voted budget 2022		Amended budget 2022	
Heading	Commitment appropriations (in EUR)	Payment appropriations (in EUR)	Commitment appropriations (in EUR)	Payment appropriations (in EUR)
EU contribution excl. EFTA	**2,166,413**	**40,769,770**	**250,079,489**	**42,725,552**
of which Administrative	2,166,413	2,166,413	2,986,096	2,986,096
of which Operational	0	38,603,357	247,093,393	39,739,456
Third countries contribution including EFTA	**53,510**	**1,007,013**	**6,169,137**	**883,333**
of which Administrative	53,510	53,510	65,930	65,930
of which Administrative third countries excluding EFTA	0	0	0	0
of which Operational	0	953,503	6,103,207	817,403
Industry financial contribution	**2,219,923**	**2,219,923**	**3,052,026**	**3,052,026**
of which Administrative	2,219,923	2,219,923	3,052,026	3,052,026
of which Operational	0	0	0	0
Other revenue			**3,303,482**	**3,303,482**
SUB-TOTAL REVENUES	**4,439,846**	**43,996,706**	**262,604,134**	**49,934,394**
Reactivation of unused appropriations from administrative expenditure	**1,135,769**	**1,566,182**	**1,135,769**	**1,566,182**
Of which from 2019	35,769	266,182	35,769	266,182
Of which from 2020	1,100,000	1,300,000	1,100,000	1,300,000
Of which from 2021	0	0	0	0
Reactivation of unused appropriations from operational expenditure	**476,647**	**40,000,000**	**476,647**	**28,803,205**
Of which from 2019	476,647	0	476,647	0
Of which from 2020	0	28,803,205	0	28,803,205
Of which from 2021	0	11,196,795	0	0
Sub-total reactivations	**476,647**	**41,566,182**	**1,612,416**	**30,369,387**
TOTAL	**6,052,262**	**85,562,888**	**264,216,550**	**80,333,780**

Title	Statement of expenditure (commitment appropriations)	Amended budget 2022 (AWP)	Amended budget 2022 after transfers	Executed budget 2022 CA	%	Carry over to 2023	Available for future use (N+3 rule)
	Staff Expenditure	**4,546,589**	**4,550,943**	**2,863,114**	**63%**	**162,205**	**1,687,829**
11	Staff in active employment	3,997,540	3,997,540	2,560,681	64%	21,750	1,436,859
12	Staff recruitment / Miscellaneous expenditure	102,564	102,564	18,500	18%	8,986	84,064
13	Mission and duty travels	133,479	133,479	35,000	26%	18,811	98,479
14	Other staff costs (socio-medical structure)	295,034	299,388	238,933	80%	112,638	60,455
15	Entertainment and representation expenses	17,972	17,972	10,000	56%	0	7,972
2	Other administrative expenditure	**2,693,231**	**2,765,008**	**1,649,749**	**60%**	**617,586**	**1,115,259**
20	Rental of buildings and associated costs	487,595	434,244	301,915	70%	700	132,329
21	Administrative information technology)	407,040	478,006	353,941	74%	237,438	124,066
22	Movable property and associated costs	1,744	1,744	0	0%	0	1,744
23	Current administrative expenditure	70,899	70,900	44,057	62%	8,575	26,844
24	Telecommunications and postal charges	28,704	28,704	8,733	30%	6,765	19,972
25	Expenditure on formal meetings	108,860	52,860	11,400	22%	3,786	41,460
26	External communication, information, publicity	844,412	844,412	281,859	33%	180,708	562,553
27	Service contracts	371,411	480,762	320,203	67%	99,618	160,559
28	Experts' contracts and evaluations	0	0	0	0%	0	0
29	Expert reviewers	373,376	373,376	327,642	87%	79,994	45,734

	Reactivations of prior year unused administrative budget (*incl. at chapter level)*	***1,135,769***	***1,135,769***	**0**	**0%**	**0**	**0**
	of which from 2019 (BBI) (*incl. at chapter level)*	*35,769*	*35,769*	0	0	0	0
	of which from 2020 (BBI)	*1,100,000*	*1,100,000*	0	0	0	0
3	**Operational expenditure**	**253,196,600**	**256,423,951**	**120,470,825**	**48%**	**213,956,422**	**136,429,773**
	Expert evaluators	0	0	0	0	0	0
30	**Previous years' calls BBI**	0	3,227,351	0	0%	33,686,852	3,703,998
31	**Current year's call (s) CBE**	252,196,600	252,196,600	119,470,825	47%	179,740,396	132,725,775
32	**Evaluators' contract CBE**	1,000,000	1,000,000	1,000,000	100%	529,175	0
	Reactivations of prior year unused operational budget	**476,647**	**476,647**	**0**	**0**	**0**	**476,647**
	of which from 2019	476,647	476,647	0	0	0	0
	of which from 2020	0		0	0	0	0
	of which from 2021 (BBI) [3]	0		0	0	0	0
	of which from 2021 (CBE)	0	0	0	0	0	0
	Sub-total reactivations inc. at chapter level	***1,612,416***	***1,612,416***	**0**	**0**	**0**	**0**
	Assigned revenue inc. at chapter level		***3,303,482***				**3,303,482**
	TOTAL EXPENDITURE	**260,913,068**	**264,216,550**	**124,983,688**	**47%**	**214,736,214**	**139,232,863**

Title	Statement of Expenditure (Payment appropriations)	Amended budget 2022 (AWP)	Amended budget 2022 after transfers	Executed budget 2022 CA (in €)	%	Available for future use (N+3 rule)
1	**Staff Expenditure**	**5,015,018**	**5,015,018**	**2,761,346**	**55%**	**2,258,026**
11	**Staff in active employment**	4,473,217	4,473,217	2,538,931	57%	1,934,286
12	**Staff recruitment / Miscellaneous expenditure**	112,078	112,078	9,514	8%	102,564
13	**Mission and duty travels**	86,399	86,399	17,606	20%	68,792
14	**Other staff costs (socio-medical structure)**	324,738	329,092	185,316	56%	143,777
15	**Entertainment and representation expenses**	18,586	18,586	9,979	54%	8,607
2	**Other administrative expenditure**	**2,655,215**	**2,726,992**	**1,860,336**	**68%**	**866,654**
20	**Rental of buildings and associated costs**	520,284	476,933	301,241	63%	175,691
21	**Administrative information technology)**	447,767	518,733	427,606	82%	91,127
22	**Movable property and associated costs**	6,891	6,891	5,440	79%	1,451
23	**Current administrative expenditure**	66,855	66,856	39,951	60%	26,905
24	**Telecommunications and postal charges**	29,980	29,980	12,460	42%	17,520
25	**Expenditure on formal meetings**	113,185	57,185	7,614	13%	49,571
26	**External communication, information, publicity**	641,545	641,545	421,027	66%	220,518
27	**Service contracts**	236,581423,559	522,910	343,126	66%	179,784
28	**Experts' contracts and evaluations**	0	0	0	0%	0
29	**Expert reviewers**	174,149405,959	405,959	301,872	74%	104,087
	Reactivations of prior year unused administrative budget	***1,566,182***	**0**	**0**	**0%**	**0**
	of which from 2019 (BBI) (included at chapter level)	*266,182*				
	of which from 2020 (BBI) ***(included at chapter level)***	*1,300,000*				

Title	Statement of Expenditure (Payment appropriations)	Amended budget 2022 (AWP)	Amended budget 2022 after transfers	Executed budget 2022 CA (in €)	%	Available for future use (N+3 rule)
	of which from 2021 (BBI)(included at chapter level)					
	of which from 2021 (BBI)					
3	**Operational expenditure**	**69,360,065**	**69,360,065**	**47,430,727**	**65%**	**25,156,390**
	Expert evaluators	0	0	0	0	0
30	**Previous years' calls BBI**	49,883,948	29,883,948	17,146,350	52%	15,964,949
31	**Current year's call (s) CBE**	18,476,117	38,476,117	29,813,552	77%	8,662,266
32	**Evaluators' contract CBE**	1,000,000	1,000,000	470,825	47%	529,175
	Reactivations of prior year unused operational budget			**0**	**0**	**0**
	of which from 2019					
	of which from 2020 (*inc at chapter level)*	*28,803,205*	*28,803,205*			
	of which from 2021 (BBI)					
	of which from 2021 (CBE)					
	SUB-TOTAL reactivations	***30,369,387***	***30,369,387***	**0**	**0%**	**0**
	Assigned revenue		**3,303,482**			
	TOTAL EXPENDITURE	**77,030,298**	**80,333,780**	**52,052,409**	**65%**	**28,281,371**

2.4. FINANCIAL AND IN-KIND CONTRIBUTIONS FROM MEMBERS OTHER THAN THE UNION

The Single Basic Act of the Joint Undertakings[40] operating under Horizon Europe – including the Circular Bio-based Europe JU – entered into force on 30th November 2021, setting new targets in terms of financial contributions from the private member of the JU, the Bio-based Industries Consortium (BIC).

The members of BIC expect or arrange for their constituent or affiliated entities to make a total contribution of at least EUR 1 ,000 ,000 ,000 to the CBE JU programme, including up to EUR 23 ,500 ,000 for administrative costs until 2031.

The JU Programme Office will report on the progress of the financial contribution to the CBE JU under the new Horizon Europe programme, and will continue until end 2024 to report on the progress of the contribution from BIC to the BBI JU initiative under the Horizon 2020 programme.

2.4.1. Contributions under Horizon Europe

The financial contributions from BIC are being reported in section 3.3. The first planning and reporting cycles for the in-kind contributions to additional activities related to project will start on the basis of the information provided in CBE JU signed Grant Agreements, starting from 2023.

2.4.2. Contributions under Horizon 2020

This section will address the progress of the financial contributions to the BBI JU, in line with the requirements of the Council Regulation establishing the BBI JU and having CBE JU as its successor.

Global level

According to the Council Regulation establishing the BBI JU, by the end of the initiative in 2024 the total contribution by the members other than the Union or their constituent entities (from now on referred to in this report as BIC members[41]) shall be at least EUR 2.73 billion, while the EU contribution to the BBI JU shall be up to EUR 975 million.

Within the global target of the contributions from the Members other than the Union to be reached by 2024, the Council Regulation[42] also includes two well-defined objectives: at least EUR 1,755 million as in-kind contributions to additional activities (IKAA)[43] and at least EUR 182.5 million as financial contributions to operational costs.

[40] Council regulation 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe

[41] Whereas the Council Regulation mentions 'members other than the Union' in plural, the singular will be used consistently in this report as there is only one 'member other than the Union', BIC.

[42] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02014R0560-20180215&from=FR

[43] Additional activities are outside the work plan of the BBI Joint Undertaking contributing to the objectives of the BBI Initiative.

In 2018 the European Commission decided to reduce the EU contribution to the BBI JU from EUR 975 million to EUR 835 million to compensate the lack of financial contribution by the Members other than the Union (see dedicated section below).

In-kind contribution to operational costs (IKOP)

The founding regulation does not set a target to be reached by the members other than the Union in the form of in-kind contributions to operational costs, but theseare includedalso in the calculation of the expected total contribution to the initiative. IKOP represents the costs incurred by BIC or its constituent entities in the implementation of indirect actions less the contribution of the BBI JU and any other Union contribution to those costs.

IKOP can be categorised at three different levels in terms of the status of the related costs: (1) expected/committed in signed Grant Agreements; (2) estimated/reported by BIC members on an annual basis[44]; (3) certified mostly at the end of the projects.

1. IKOP expected/committed in signed grant agreements

With the implementation of the last calls for proposals of BBI JU in 2021, BIC and its constituent entities committed for a total value of EUR 263 million of IKOP.

The IKOP actually committed by BIC or its constituent entities is calculated as the difference between budgeted costs and requested EU contribution at the signature of the Grant Agreements and, as such, it remains an expectation.

Indicative targets for IKOP in calls were formulated in the Annual Work Programmes of the BBI JU. These targets were indicative because BBI JU had been running calls for proposals that were fully open and none of the successful beneficiaries was obliged to join the BIC consortium. The ratio of IKOP committed by BIC members in proportion to the EU contribution has been decreasing over time because of a growing participation of non-BIC members to the BBI JU calls and with high success rates. Moreover, the budgetary cuts mentioned above at global level had an impact in reducing the potential leverage of IKOP by financial contributions that were eventually not committed in indirect actions.

[44] These estimations are used to calculate the IKOP accruals reported in the annual accounts of the JU, ref Annex 7.8 of this report

Calls	Committed values (EUR)			Ratios with committed EU contribution	
	Committed EU contribution	IKOP targets in WPs	IKOP actually committed in grants	Target IKOP	Committed IKOP
2015	49,653,708	23,785,000	26,627,047	48%	54%
2016	178,849,526	105,000,000	56,503,116	59%	32%
2017	182,873,089	110,000,000	72,538,001	60%	40%
2018	85,161,992	40,000,000	38,526,397	47%	45%
2019	102,881,595	45,000,000	36,257,845	44%	35%
2020	118,186,833	60,000,000	17,472,382	51%	15%
2021	104,460,161	49,000,000	15,369,206	47%	15%
Totals	**822,066,903**	**432,785,000**	**263,293,995**	**53%**	**32%**

Table 14 IKOP expected/committed in signed grant agreements at the implementation of BBI JU calls

2. IKOP estimated/reported by BIC members on an annual basis

Alongside the implementation, reporting and closing of BBI JU projects - thus including possible amendments - estimations on actual realisation of IKOP are done on an annual basis. Corroborative information is collected in line with the accounting methodologies adopted by the JU and accrued values are disclosed in the yearly accounts of the JU under its liabilities[45]. The reported values remain estimations because the JU maintains the right to implement adjustments to both components of the IKOP calculation until final project reporting and audit certification is provided.

At the end of 2022 the estimated IKOP incurred in BBI JU projects amounts to EUR 81,304,051. Of this amount EUR 13,659,790 has been certified and transferred from liabilities to net assets at year end, leaving EUR 67,644,357 to be validated. .

3. IKOP certified mostly at the end of the projects reporting

The actual realisation of IKOP is valuated by the CBE JU on the basis of Certificates of Financial Statements submitted by BIC members at the end of BBI JU projects' reporting. This information might be complemented when ex-post controls on financial statements are implemented by the European Commission[46]. The audit certification provides assurance on the actual realisation of the operational costs incurred by BIC members and final payments of EU contributions are based only on those costs that are eligible under the Horizon 2020 framework regulation. The valuation of IKOP contributions is done on a yearly basis and cumulative values are disclosed in the annual accounts of the JU under its net assets.

[45] These estimations are used to calculate the IKOP accruals reported in the annual accounts of the JU, ref Annex 5.10 of this report

[46] Detailed information on ex-post controls on operational expenditure are provided in section 4.1.1 of this report

At the end of 2022, out of EUR 200.5 million final EU funding validated for BIC members, around EURO 65,9N million have already been certified and valuated by the JU.

Year	Valuations at projects' reporting closure (Cumulative - EUR)		Ratio
	EU funding validated in closed projects for BIC members	Certified IKOP	
2015			
2016			
2017	20,335,634.01		0%
2018	63,872,770.03	12,102,672.42	19%
2019	99,897,017.10	16,776,317.83	17%
2020	155,074,492.51	41,927,036.81	27%
2021	179,088,558.83	52,238,555.03	29%
2022	**200,464,250.30**	65,898,344.68T	33%

Table 15 Cumulative values of EU contribution to BIC members at project closure and of certified IKOP

The last final payment of BBI JU project is expected to occur in 2027 and ex-post audit controls may potentially be performed until 2029.

Financial contribution in the implementation of operational activities

The Council Regulation establishing the BBI JU lays down the minimum financial contribution to be provided by the Member other than the Union or its constituent entities towards operational costs. The objective at the end of the initiative is that at least EUR 182.5 million is contributed by BIC and its constituent entities towards this aim.

At the end of 2018, the financial contribution paid by BIC and/or its constituent entities as direct contribution to the BBI JU operational budget amounted to a total of EUR 3,250,000 – less than 2 % of the total amount committed. This amount is not expected to change by 2024 and, in its Annual Report for 2020, the European Court of Auditors (ECA) observed *"that the JU encounters significant obstacles in obtaining such contributions and that the minimum target will not be achieved by the end of the Horizon 2020 programme"*[47]. For this reason, already in 2018, the European Commission decided to address the shortcoming by reducing the EU contribution to the BBI JU by EUR 140 million for its final call in 2020, in line with Article 4(5) of Council Regulation 560/2014.

In its Annual Report for 2019, the European Court of Auditors (ECA) recommended that *"Where a JU founding regulation requests operational financial contributions from the JU's private members, it is very important that it also provides for an appropriate legal framework that ensures that the required financial contribution amount will be achieved by the end of the programme"*[48]. These instances have been addressed in the Single Basic Act of the Joint Undertakings operating under Horizon Europe and, for what concerns the implementation of Horizon 2020 Framework Programme, as stated in the BBI JU official reply to the 2020 report of the Court: *"in the case of BBI JU this experience has also demonstrated that, despite the significant reduction of in-cash*

[47] Annual report on the EU Joint Undertakings for the financial year 2020, page 113

[48] Annual report on the EU Joint Undertakings for the financial year 2019, page 33

contributions from both members EC and BIC, the initiative succeeded in achieving its strategic objectives"[49]*. This Annual Activity Report provides further and updated details in this respect in sections 1.1 to 1.5.*

In-kind contribution in the implementation of additional activities (IKAA)

The IKAA constitute the in-kind contributions incurred by the BIC Members in implementing additional activities outside the Annual Work Programmes set under the BBI JU mandate but contributing to the objectives of the BBI JU initiative. Starting from 2014 and up until 2023, BIC members have to submit, for the approval of the Governing Board of the JU, Additional Activities Plans (AAP) for the following year. The actual realisation of these contributions is certified by independent external auditors in compliance with Article 4.4 of the Council Regulation establishing the BBI JU.

The total estimated additional investments by the end of 2022 – taking into account the planned value for 2022 - reached a total of EUR 1,797,920,181. That would be above the expected value at this level of the initiative, and already achieves the target set for this specific contribution in the Council Regulation establishing the BBI JU.

Year	IKAA expected (EUR)	IKAA certified (EUR)	Ratio
2015	175,500,000	291,482,000	166%
2016	351,000,000	478,859,001	136%
2017	526,500,000	674,844,239	128%
2018	702,000,000	734,763,805	105%
2019	877,500,000	813,846,895	93%
2020	1,053,000,000	930,920,181	88%
2021	1,228,500,000	1,139,920,181	93%
2022	1,404,000,000	1,797,920,181[50]	128%

Table 16 Cumulative values of IKAA expected and certified

[49] Annual report on the EU Joint Undertakings for the financial year 2020, page 117

[50] Out of which EUR 658,000,000 are planned estimations for 2022)

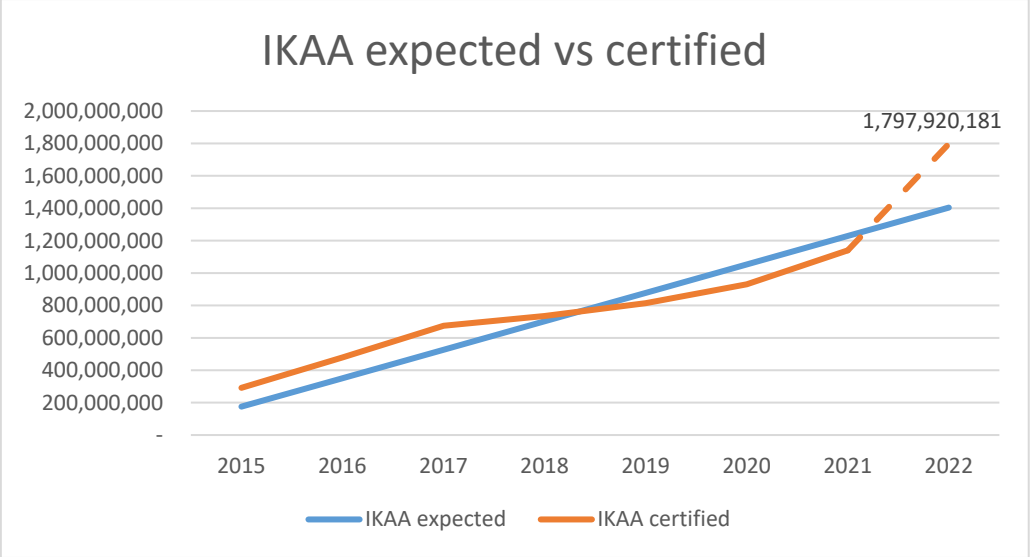


Figure 45 IKAA evolution in the period 2015-2021.

Overall industry contribution to the BBI JU initiative

For what concerns the total level of the contribution by BIC members at the end of 2022, the IKOP target was set at the closure of the BBI JU calls, and it will contribute to achieving the overall legal target alongside the finalisation of BBI JU projects (40% of which are still ongoing, the last one expected to end in 2027). The low result achieved in 2018 for financial contributions will not change and this contribution to the overall target will be minimal.

The specific legal target for IKAA contributions has already been achieved in 2022 as reported above and the planning cycle for these contributions will continue until 2024, therefore IKAA will play a pivotal role for the achievement of the EUR 2.73 billion overall target of BIC contributions to the BBI initiative. In order to achieve this result, the IKAA planning process shall reach EUR 2.46 billion to be achieved by the end of the initiative. In 2022 BIC submitted to the Governing Board an AAP for 2023 for a total EUR 416 million, and an additional EUR 358 million shall be planned for 2024 in order to achieve the overall target.

EUR	IKOP	Financial	IKAA	Overall legal target
Actual Targets	**263,293,995.00**	**3,250,000.00**	**2,463,456,005.00**	**2,730,000,000.00**
2022 results	154,758,062.03	3,250,000.00	1,797,920,181.00	1,955,928,243.03
Target ratio	59%	100%	73%	72%
	Amount still to be reached for the overall target			774,071,756.97
	IKAA planned for 2023			416,000,000.00
	Scope for IKAA plan 2024			358,071,756.97

Table 17 Actual targets for the types of contributions to be provided by BIC members and 2022 results against overall expected value.

For the calculation of the related leverage effect, please refer to section 1.7.4.

2.5. ADMINISTRATIVE PROCUREMENT AND CONTRACTS

In 2022, CBE JU continued exploiting as much as possible the existing framework contracts at the level of the European Commission. When these contracts were not available to CBE JU or they had expired, it was necessary to launch specific tender procedures, most of them for low-value contracts.

CBE JU also signed specific contracts under the framework contract jointly managed with the other JUs present in the White Atrium, namely for common IT services.

In addition, throughout 2022, CBE JU used Service Level Agreements (SLAs) in force with the European Commission.

Several other contracts were concluded for less than EUR 15,000 each, while the following table shows contracts concluded in 2022 for single amounts higher than EUR 15,000:

Contractor	Framework contract Y/N	Tender procedure	Subject of the contract	Signature date	Amount (in EUR)
Randstad	Y	Various specific contracts under a framework contract	Interim Staff	various	269,154.46
Baker Tilly	N	Negotiated procedure	Audit of the annual accounts of the Circular Bio-based Europe Joint Undertaking (CBE JU) for the years 2022, 2023, 2024, 2025	12/12/2022	86,982

Table 18 Contracts signed in 2022 above EUR 15,000

2.6. IT AND LOGISTICS

In 2022, the main goals set in the Annual Work Plan were successfully achieved. The roll-out of cloud-based services continued, and the migration of email and file services to the cloud was finalised, enhancing the availability and accessibility of these essential IT services. The CBE JU Intranet was also evolved and improved, and the use of SharePoint was extended, enabling staff to share documents and work collaboratively with the full capabilities of Microsoft 365. Data protection and security measures were implemented to mitigate residual risks, according to the data protection impacts assessment previously performed.

After the successful outcome of the pilot phase, Microsoft Teams become an established working tool and in 2022 was integrated with the telephone infrastructure, ensuring seamless communication both in the office and while working remotely.

As part of CBE JU's efforts to achieve a paperless administration, the Qualified Electronic Signature system (EU Sign) was integrated with the already existing electronic signatory and the document-and- records management platform (ARES). Finally, the study project for the KPI data gathering and reporting tool was completed, producing a list of requirements and technical recommendations.

2.7. HUMAN RESOURCES

2.7.1. HR Management

By the end of 2022, the JU Programme Office comprised 26 staff members, almost reaching its full staff establishment plan under its new mandate. 2022 was a transition year from BBI JU to CBE JU and the CBE JU welcomed eight new colleagues under the new mandate of the JU.

Four recruitment procedures were launched for the following posts:

- Reserve list for project officers (CA)
- Reserve list for administrative assistants (CA)
- Reserve list for IT Assistant via internal and external publications (TA)
- Reserve list for Legal Assistant (CA)

The vacancy notice for the position of Executive Director of the CBE JU was published by the European Commission in the Official Journal on 23rd of May.

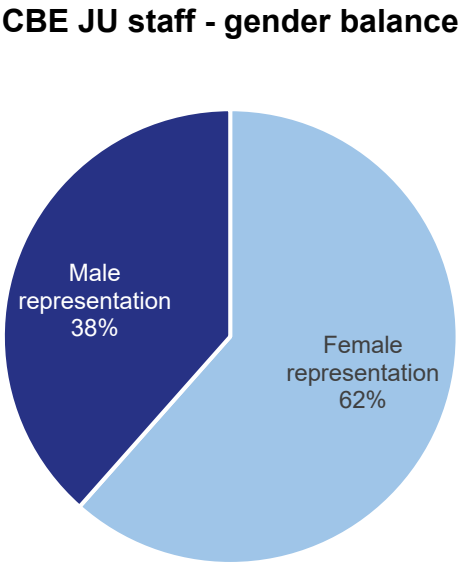
The CBE JU gave the opportunity to three trainees to acquire a first-hand experience in the CBE JU organisation. The main objective of the programme is to provide the trainees with a high-quality experience that enriches the professional profile of the laureate while providing a first insight into the objectives and activities of the CBE JU. As a consequence, two trainees joined the Programme Unit and one trainee joined the Communication team for a period of six months.

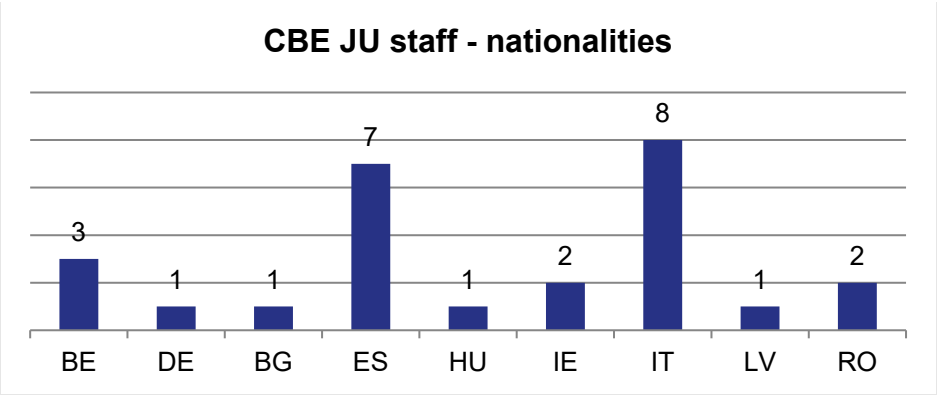
The CBE JU traineeship programme 2023 was launched in 2022 and finalised in December 2022, allowing the trainees to start their traineeship in January 2023.

To cope with the peak period of workload, the CBE JU concluded – via the EC framework contract for interim services - several short-term contracts for interim services to address specific needs of the JU Programme Office.

The two graphs below show both the gender and geographical balance within the CBE JU on 31/12/2022. The JU Programme Office pays attention to ensuring the widest representation of EU countries among its staff.

In 2022, the CBE JU confirm gender balance in management positions with 50% female representation.





Legal framework

In 2022, the HR function continued to strengthen the legal framework of the CBE JU, focusing on how implementing rules of the European Commission shall apply to the CBE JU. In this context, the CBE JU adopted by analogy the EC implementing rules on working time and hybrid working. The CBE JU also adopted the implementing rules on the conduct of administrative inquiries and disciplinary proceedings.

SIR implemented in 2022	
Title of the SIR	**Reference and date of the GB decision (if relevant)**
Working time and hybrid working C(2022)1788	18/06/2022
Conduct of administrative inquiries and disciplinary proceedings	18/06/2022

The CBE JU organised its annual appraisal and reclassification exercises resulting in the reclassification of four staff members. HR info sessions were delivered by the HR function on these processes.

The HR function participated in several meetings and working groups related to the new HR Strategy of the EC as well as the New Ways Of Working (NWOW) and the working group on diversity and inclusion.

In 20222022, the CBE JU HR function launched the inter-JU new call for confidential counsellors to reinforce the inter-JU network with additional confidential counsellors.

The CBE JU HR function also launched the elections of the CBE JU staff committee, resulting in the nomination of three staff members at the end of 2022.

The HR function drafted, with the Head of Administration, the background note related to the Back Office Arrangement for HR support. The CBE JU will take the lead and coordinate the work in this BOA in 2023, with the IHI JU as the back-up JU.

Learning and career development

The CBE JU values the continuous development of its staff to ensure that staff members are competent in their roles and can cope with the demanding working environment. In 2022, the HR function developed a Learning and Development Framework taking into consideration the CBE JU's annual objectives.

A Service Level Agreement in force with the European Commission provided access to a wide catalogue of learning courses, and ad hoc learning opportunities were constantly communicated to staff members across the year. In addition, workshops around growth mindset and embracing change were organised for all staff to familiarise newly-joined staff members with the CBE JU culture and values and to create a sense of 'fit for challenges of the future' in a positive way. Wellbeing sessions and teambuilding activities were also organised.

A staff survey was launched at the end of 2022 with a high participation rate (100%) as well as a high satisfaction rate. A section “New Ways of Working/Hybrid Working” was also added as well as questions on diversity and inclusion.

Some conclusions of the staff engagement survey:

1. High level of participation (100%)

2. High satisfaction rate and very positive feedback from the staff despite the challenging year and all the changes the CBE JU experienced in 2022 (new team dynamic, new ways of working, *ad interim* ED…)

3. Points for attention from last year (workload, work-life balance, teleworking framework, wellbeing) were addressed and staff were satisfied with actions taken by the CBE JU in this respect

All staff members enjoy working at the CBE JU and would recommend it as a place to work. Most staff members know the CBE JU values and all staff members adhere to the CBE JU’s mission and vision. All staff members are satisfied with their responsibilities in CBE JU. All staff are satisfied with the learning and training opportunities in the CBE JU and feel valued and respected by colleagues. Internal communication flows are very good. All staff members feel comfortable giving feedback to CBE JU’s Management. Most of the staff members consider that CBE JU is a diverse & inclusive workplace.

In 2022, some refurbishments were made to the CBE JU office to welcome more staff members while keeping the same office space and responding to the New Ways Of Working. Further adaptations are planned for 2023.

2.7.2. Efficiency gains and synergies

Introduction

The Single Basic Act of the Joint Undertakings establishes that the JUs shall achieve synergies via the establishment of Back Office Arrangements (BOA), operating in certain identified areas. The SBA also underlines that these synergies should be implemented where screening of resources has proved to be efficient and cost effective, while respecting the autonomy and the responsibility of each Authorising Officer. In order to obtain an independent view on the possible synergies among the JUs and the impact in terms of economies and efficiencies, the JUs contracted an external consultant to perform a study on the common Back Office Arrangements. The study was finalised in July 2022 and its specific objectives were to:

- Identify areas, or sub-functions of areas, which could be operated under Back Office Arrangements, taking into account necessary considerations of cost efficiency, risks and opportunities;

- Support the JUs to assess the viability (including the screening of resources) of these areas.

The study identified 21 potential synergy opportunities among the JUs, analysing all services covered by Article 13 of the SBA. It concluded that the estimated efficiency gains in terms of FTE savings were modest for most synergies, but that there were potential benefits in terms of harmonisation of current practices, standardisation of procedures, establishment of critical mass for effective negotiation, coordination and cost savings.

Those synergy opportunities were clustered into three main groups:

- Quick wins (14) – Synergies that scale-up the existing collaboration among the JUs, as a result, these should be potentially implemented in a first wave

- Long-term solutions (5) – These synergies require further reflection on the structuring and planning of their setup and an accurate assessment of the potential benefits, cost-efficiency and risks

- Low priority opportunities (2) – Synergies which were identified as less feasible/desirable by the Joint Undertakings due to their limitations in terms of practical applicability and value

The largely preferred model for the BOA among JUs is a setup with one JU taking the lead in coordinating tasks with one or two backup JUs, organising the work among staff of several JUs and having a clear scope and decision-making power. Example: Back Office Arrangement for the provision of accounting services set up at the end of 2022 (following DG BUDG's decision to terminate the contract for EC Accounting Officer services with the JUs).

For some synergies a more flexible option was chosen, with collaboration involving only some JUs, while remaining open for the others to join at a later stage.

The preparation work led to the establishment of coordinated plans, prioritising those aspects of the BOA that had the objective of bringing the most value in the short term. These included, as top priorities, (i) the accounting function, (ii) IT deployment, (iii) common synergies regarding the White Atrium occupation and other buildings that house JUs, (iv) joint procurement opportunities and (v) HR support. These topics encompass five of the seven synergies stipulated in SBA Article 13. This approach was endorsed by the respective Governing Boards.

When these arrangements were presented, the respective Governing Boards stressed the need to have a balanced approach to the BOA implementation, ensuring, as a priority, the execution of JUs' core business (including budget execution and call implementation) which is very challenging in the context of a new programme with new legislation, new actors and ambitious timelines due to the delayed launch of the Horizon Europe programme.

In more detail the BOA arrangements that were put in place in 2022 were:

BOA accounting

The JUs took over the Accounting Officer services which, up until late 2022, had been provided by DG BUDG. In this BOA EU Rail is the lead JU, and to reinforce these services the support of three additional Contractual Agents and an external Accounting Services provider were agreed upon. The Accounting Officer's services will be provided by three JUs: Clean Aviation JU, SESAR3 JU and Europe's Rail JU.

Organisation:

- The Executive Director of the lead JU is responsible for the organisation, monitoring and coordination of the accounting services to the other JUs on the basis of an annex to the BOA Service Level Agreement
- The Head of Administration and Finance, or another officer with the necessary grade, skills and competencies of the lead JU shall act as Accounting Coordinator of the BOA Accounting Officers
- The Accounting Officer(s) of the JU Accounting Providers delivers the service to one or more JU Accounting Beneficiaries and is responsible for the accounts they sign off, while counting on the support and collaboration of the lead JU

BOA HR

For what concerns the HR domain, the study recommended exploring synergies by coordinating the management of SYSPER, possibly obtaining a single contract for all JUs, perform joint recruitments, harmonise job profiles and procedures.

These synergies will contribute to obtaining a better harmonisation among the JUs, exploiting best practices, achieving efficiency gains and economies of scale. In particular the areas in which this BOA will act are: recruitment, legal framework and the IT landscape in the HR domain.

Following the screening of HR resources in each JU, the study also points out that only marginal FTE gains would be achieved in this area due to the very limited HR staffing of the JUs.

These arrangements were presented to the GB and further implementation will happen in 2023, under the leadership of CBE JU.

BOA ICT

The ICT area covers a list of ~50 services (service catalogue) structured in six service groups:

1. Inter-JU IT Governance
2. Management of shared ICT infrastructure
3. Management of ICT tools, services and contracts
4. Workplace services provision
5. Security and compliance management
6. ICT activities specific per JU

The underlying concept is that, out of the ICT service catalogue, everything that is non-specific to a JU should be managed through the ICT BOA. Therefore, ICT developments and other activities specific to each JU will remain under the responsibility of each ED and will not be part of the ICT BOA, which in any case will have to ensure the integrity of the overall ICT architecture.

BOA procurement

This BOA has been established with the objective of centralising the administrative procurement capability and process in order to maximise open tenders for award of inter-JUs FWCs and middle value negotiated procedures.

The focus is on the critical joint administrative procurements, such as ICT, building management/corporate services and common support services, that will be identified and agreed via a joint Public Procurement Planning (PPP).

3. GOVERNANCE

3.1. MAJOR DEVELOPMENTS

One of the principal objectives for the first half of the year was to ensure the timely and smooth transition to the new partnership. This included the establishment of the governing bodies, the states' representatives group (SRG and the SC, which successfully kicked off their activities by adopting their respective rules of procedure and electing a Chair and Vice-Chair. The advisory bodies were consulted and provided feedback on the amended Annual Work Plan 2022 and the draft Annual Work Plan 2023, as well as providing strategic feedback to the multi-annual programming (MAP) progress. While the SRG members are nominated by the Member States, membership of the SC followed an open call for expression of interest. Following an assessment of eligibility criteria, the CBE JU Governing Board appointed 15 independent experts, achieving gender balance and equitable geographical representation from the worlds of academia, industry, SMEs, non-governmental organisations as well as regulatory bodies. Members of both the SRG and SC played pivotal roles as active ambassadors of the CBE JU by participating in activities at national and regional levels and promoting the funding programme, disseminating information, and mobilising key stakeholders.

3.2. GOVERNING BOARD

Four CBE JU Governing Board ordinary meetings were held on 23 February, 17 June, 20 September and 8 December 2022. An extraordinary meeting was held on 23 March 2022.

The members of the CBE JU Governing Board meeting are:

EC	BIC constituent entities
John BELL, Director for "Healthy Planet", DG RTD/B (Chair) Pavel MISIGA, Head of Unit, DG RTD/B1 Kristin SCHREIBER, Director for "Ecosystems I: Chemicals, Food, Retail", DG GROW/F Peter DROELL, Director for "Industrial Technologies", DG RTD/F Nathalie SAUZE-VANDEVYVER, Director for "Quality Policy, Research and Innovation, Outreach", DG AGRI/B (until 31 March) João ONOFRE, Acting-Director for "Outreach, Research and Geographical Indications", DG AGRI/F (from 1 April to 31 October) Diego CANGA FANO, Director for "Quality Policy, Research & Innovation, Outreach", DG AGRI/F (from 1 November)	Rob BEEKERS, Strategic Marketing & Innovation, CARGILL BIO INDUSTRIAL (CBI) (Vice-Chair) Mat QUAEDVLIEG Giulia GREGORI, Manager Strategic Planning and Corporate Communication, NOVAMONT Alex MICHINE, CEO METGEN Frank VAN NOORD, Vice-President for Innovation at Cosun

Table 19 Members of the CBE JU Governing Board as of 31 December 2022

The decisions taken by CBE JU Governing Board in 2022 were:

- CBE-GB-1/22: first amendment of Work Programme and Budget 2022;
- CBE-GB-2/22 approving vacancy notice for the position of Executive Director of CBE JU;
- CBE-GB-3/22: approving the IKAA plan 2022;
- CBE-GB-4/22: nomination of the reporting officers for the Executive Director;
- CBE-GB-5/22: appointment of the Scientific Committee members;
- CBE-GB-6/22: adoption of the Strategic Research Innovation Agenda;
- CBE-GB-7/22: second amendment of the Work Programme and Budget 2022;
- CBE-GB-8/22: working time and hybrid working mode;
- CBE-GB-9/22: disciplinary procedure;
- CBE-GB-10/22: non-application by analogy of the home leave for third countries;
- CBE-GB-11/22: adoption of the Annual Activity Report 2021;
- CBE-GB-12/22: decision on the appointment of an Interim Executive Director;
- CBE-GB-13/22: approval of the Code of Conduct;
- CBE-GB-14/22: third amendment of the Work Programme and Budget 2022;
- CBE-GB-15/22: nomination of CBE JU accounting officers;
- CBE-GB-16/22: adoption of the Work Programme and Budget 2023.
-

3.3. EXECUTIVE DIRECTOR

2022 marked the end of the mandate of the former CBE JU Executive Director, Philippe Mengal, who left the organisation on 31 of August. The Governing Board appointed Nicoló Giacomuzzi-Moore as *ad interim* Executive Director from 1 September and until the nomination of the new Executive Director. The selection procedure is ongoing.

3.4. STATES' REPRESENTATIVES GROUP

3.4.1. Introduction about SRG role and activities

The SRG is one of the advisory bodies of CBE JU. In line with the roles, tasks and responsibilities defined in Article 20 of the Council Regulation (EU) 2021/2085, the SRG provides to the CBE JU Governing Board the advice of EU's Member States and associated countries on the operations of CBE JU. In particular, the SRG provides opinions and recommendations related to the progress of the programme implementation, updates of the SRIA, the draft work programmes, the annual activity reports, as well as other measures taken to address specific objectives of the initiative.

The Council Regulation also stresses the importance of an ongoing and structured dialogue between the CBE JU and the Member States and associated countries, with the aim of aligning CBE JU´s activities with the policies and actions taken at national and regional levels and ensure synergies at the national, regional and EU levels. In this context, following the obligations set out in the Council Regulation, the SRG also has an important role in providing to the CBE JU

Governing Board information on regional and national research and innovation programmes and other initiatives, aiming to improve and deploy relevant technologies and innovative solutions, with a view to ensuring complementarities with the actions funded by the CBE JU programme. Finally, the SRG is requested to submit, at the end of each calendar year, a report describing the national or regional policies within the scope of the Joint Undertaking and identifying specific ways of cooperation with the actions funded by the Joint Undertaking.

3.4.2. SRG establishment and membership in 2022

In 2022, the SRG was formally established and successfully kicked off its operations. During its first meeting, the rules of procedure of the group were approved and a Chair and Vice Chair were appointed for a term of two years. Ms. Agata Foks, the Polish representative, is the Chair of the CBE JU SRG and Mr. Fabio Fava, the Italian representative, is the group's Vice-Chair.

According to the Council Regulation, each Member State and associated country can nominate up to two representatives and up to two alternates. In 2022, the SRG was composed of 31 main members and 34 alternate members. Among the main and alternates members 57% are female and 43% are male. The list of the SRG appointed members together with the rules of procedure and description of their main tasks are published on the CBE JU website.

3.4.3. Main activities and achievements in 2022

In 2022, the SRG received timely and relevant information about the CBE JU programme progress and 2022 call for proposals, including submission results. The group was consulted on the amended AWP 2022 and provided advice to the CBE JU Governing Board on drafts of the AWP 2023. The SRG also provided strategic feedbacks on the multi-annual programming (MAP) process with a view to proceeding with the consultation on the first MAP draft in 2023. In addition, the SRG was informed about the activities conducted by BIC and EC relevant to CBE JU.

In relation to the new SRG reporting obligation on national and regional initiatives to the Governing Board in the scope of the Joint Undertaking and identifying specific ways of cooperation with the actions funded by the Joint Undertaking, in 2022 the SRG Chair coordinated the establishment of a task force on reporting involving several SRG members (BE, DK, ES, IE, IT, PL, PT). The work of this task force has ensured that the scope, objectives and mechanism for SRG reporting were in place and a decision in this regard was approved by SRG in the 2nd meeting of 2022. Following the SRG decision, the group submitted the 1st report by December 2022 and the task force started working on a summary of the report and some conclusions to be reported to the GB and published in 2023. Moreover, at each of the SRG meetings, a dialogue with SRG members was organised, allowing the sharing of information on national and regional research and innovation programmes as well as activities on communication, dissemination and deployment, aimed at strengthening synergies and cooperation with the CBE JU activities.

Last, but not least, SRG members played a pivotal role as CBE JU ambassadors in 2022, via their involvement in specific measures taken at national or regional level with regard to dissemination events, deployment activities and mobilisation of key stakeholders. In annex 5.12, the list of different events is presented, including the info days organised by SRG members with the support

of the CBE JU Programme Officers at national level, to communicate and disseminate information about the first 2022 CBE JU call for proposals. Several other events and initiatives were organised at national or regional level with the involvement of SRG members. For example, the SRG representative of Hungary led the organisation of a workshop in the context of the BIOEAST initiative, to identify priority areas of the region in terms of research and innovation and ensure synergies with the SRIA and the CBE JU AWPs. Some SRG members were also present, as crucial stakeholders, during the 1st CBE JU celebration event that took place in September 2022.

3.4.4. CBE JU SRG meetings in 2022

During 2022, two SRG meetings were organised by the Programme Office, on 24 March 2022 and 10 November respectively. The meetings were held remotely and chaired by Mrs. Agata Foks (SRG Chair and representative of Poland). They were also attended by the Chair of the Governing Board, the Chair of the Scientific Committee, the CBE JU Executive Director, the Bio-based Industries Consortium, the European Commission and CBE JU Programme Office staff. The main items addressed during the two SRG meetings are reported below:

1st SRG meeting held on 24 March 2022

- Introductory session to ensure that the recently appointed SRG members get to know each other as well as the key actors of the CBE JU governance, including the Governing Board, the BIC, the EC and the CBE JU Programme Office.
- The approval of the SRG rules of procedure which are available on the CBE JU website.
- The election of the Chair and Vice Chair following a voting procedure, who play a crucial role in leading and coordinating the activities of the group.
- Presentation and discussion about the SRG's expected role and activities.
- Updates from the BIC and the EC about the consultation process of the amended 2022 AWP and the last steps towards the publication of the SRIA.
- Information sharing on national and regional activities linked to CBE JU.

2nd SRG meeting held on 10 November 2022

- Discussion and advice on the draft 2023 Annual Work Programme.
- Discussion and strategic advice on finalising the CBE JU multi-annual programming process.
- The SRG adopted the decision on reporting national or regional policies in the scope of the Joint Undertaking and identifying specific ways of cooperation with the actions funded by CBE.
- SRG members shared information about the last updates on national and regional policies and initiatives linked to CBE JU.
- SRG received timely and relevant information on the progress of the CBE JU programme implementation since the last meeting, including information on the status of the Deployment Groups, important dissemination & communication activities, as well as the submission results of the call for proposals 2022.

- Updates about CBE JU-related activities by the Bio-based Industries Consortium (access to finance, communication and the Bio-based innovation student challenge Europe) and the European Commission (outcomes of recent events and initiatives relevant for SRG including the EU Bioeconomy Conference, the International Bioeconomy Forum and the European Bioeconomy Policy Forum as well as the process and programming aspects of the Horizon Europe Cluster 6 WP, with emphasis on the synergies with CBE JU programme).

3.5. SCIENTIFIC ADVISORY BODY

3.5.1. SC role and activities

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 Scientific Committee carries out the following tasks:

a) Advises on the scientific priorities to be addressed in the work programmes including on the scope of calls for proposals, in line with the Strategic Research and Innovation Agenda and the Horizon Europe strategic planning;

b) Advises on the scientific achievements to be described in the annual activity report;

c) Suggests, 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;

d) Provides independent advice and scientific analysis on specific issues as requested by the Governing Board, in particular as regards developments in adjacent sectors or to support the assessment of applications of potential associated members and contributing partners.

3.5.2. Selection and establishment of the SC

The selection process for SC members of the CBE JU Scientific Advisory Body was based on the Governing Board Decision CBE-GB3/21 of 16 December 2021. The call for expression of interest[51] to become a CBE JU Scientific Committee member was opened on 20 December 2021 and closed on 30 January 2022. The selection criteria included, among other things: proven competence in areas relevant to the CBE JU programme, namely: biomass feedstock supply (i.e. agricultural, forestry, aquatic, biowaste, etc…); biomass feedstock pre-treatment, transformation/conversion and downstream processing into high-value bio-based chemicals and materials; market uptake of bio-based products; socio-economic sustainability of the bio-based systems and related value chains in regional, rural, coastal and urban settings; sustainable management of natural resources including circularity, environmental sustainability, biodiversity preservation and enhancement, climate mitigation and adaptation, zero pollution, socio-economic sustainability of the bio-based systems and related value chains.

[51] https://wayback.archive-it.org/12090/20220315173939/https://www.bbi.europa.eu/sites/default/files/Call-for-expression-of-interest-cbe-ju-sc-2021.pdf

After the candidates were assessed against all eligibility criteria, the GB appointed the SC members taking into consideration also the following aspects:

a) The need to have the necessary scientific competencies and expertise covering the technical domain needed to make science-based recommendations to the CBE JU

b) The need to reflect a balanced representation of relevant disciplines related to the bio-based sector and its value chains

c) The need to ensure geographical and gender balance

3.5.3. SC composition

The CBE SC is composed of 15 independent experts with a balanced representation of worldwide recognised experts from academia, industry, SMEs, non-governmental organisations and regulatory bodies. Collectively, the Scientific Committee members have the necessary scientific competencies and expertise covering the technical domain needed to make science-based recommendations to the CBE JU. The list of SC members, including their background and expertise, can be found on the CBE JU website here: Scientific Committee | Circular Bio-based Europe Joint Undertaking (CBE JU). Among the SC members seven are female (47%) and eight male (53%).

3.5.4. Activities and achievements of the SC in 2022

During the first SC meeting, the group approved the Rules of Procedure and elected the Chair and Vice-Chair, setting the basis for the start of their advisory activities across the CBE JU programme. Ms. Helena Vieira is the SC Chair, and Mr. Piergiuseppe Morone is the SC Vice-Chair.

The SC was consulted and provided valuable advice to the CBE JU Governing Board on both the amended AWP 2022 and on AWP 2023. The SC also provided suggestions on the programming process, which was adopted by the Governing Board in 2022. In order to foster the interaction and facilitate the communication between the two advisory bodies, the SC Chair participated in both SRG's meetings and presented the main points of discussion and advice provided by SC members on AWP 2022 and AWP 2023 and other strategic discussions.

During the SC meetings the SC members were informed in a timely manner about activities conducted by BIC and EC relevant to CBE JU, as well as the CBE JU programme progress and 2022 call for proposals, including the submission results, and other relevant updates on CBE JU activities throughout the year.

SC members are also active ambassadors of the CBE JU programme, conveying relevant information about the CBE JU programme to the networks (academia, industry, research centres, international organisations, among others) and promoting their activities. Some SC members participated in the CBE JU celebration event that took place in September 2022, as part of the broader community of CBE JU stakeholders.

3.5.5. CBE JU SC meetings in 2022

Two SC meetings were organised by the CBE JU Programme Office in 2022, on 31 March and on 9 November respectively. The meetings were held remotely and chaired by Ms. Helena Vieira, SC Chair. They were also attended by the Chair of the GB, the Chair of the SC, the CBE JU Executive Director, the BIC, the EC and CBE JU Programme Office staff.

The main items addressed during the two SC meetings are reported below.

1st SC meeting held on 31 March 2022

- Brief session to allow SC members to introduce themselves, their background and expertise, to get to know each other as well as the representatives of the GB, the BIC, the EC and the CBE JU Programme Officer.
- The approval of the SC rules of procedure.
- The election of the SC Chair and Vice Chair.
- Presentation and discussion about the SC's expected role and activities
- Update from the BIC and the EC about the consultation process of the amended AWP 2022 and the last steps towards the publication of the SRIA.

2nd SC meeting held on 9 November 2022

- Discussion and advice on the draft AWP2023.
- Discussion and strategic advice to finalise the CBE JU multi-annual programming process.
- Presentation and discussion on the progress of the CBE JU programme implementation since the last meeting, including information on the status of the Deployment Groups, important dissemination & communication activities, as well as the submission results of the call for proposals 2022.
- Update and discussion about CBE JU-related activities by the Bio-based Industries Consortium (access to finance, communication and the Bio-based innovation student challenge Europe) and the European Commission (outcomes of recent events and initiatives relevant for the SC including the EU Bioeconomy Conference, the International Bioeconomy Forum and the European Bioeconomy Policy Forum as well as the process and programming aspects of the Horizon Europe Cluster 6 WP with emphasis on the synergies with CBE JU programme).

3.6. DEPLOYMENT GROUPS

The CBE JU Deployment Groups are new types of advisory bodies to be established in accordance with Article 22 and 56 of the Council Regulation[52]. They will play a key role in the creation of favourable conditions for the deployment of bio-based solutions in their thematic area and will advise the Governing Board on issues critical to the market uptake of bio-based innovation.

3.6.1. Deployment Group on finance & investments

An overall agreement on the general scope and area of intervention of the first Deployment Group was reached at the Governing Board meeting of 17 June 2022. Hence, the CBE JU Deployment Group on Finance & Investments will be the first to be established under the new mandate of the JU.

In Q4 2022, discussions between the EC, BIC and the CBE JU on the specific aspects of this Deployment Group took place. The first of these - a kick-off meeting - was held on 30 September 2022, and the first draft of a concept note, presenting the scope and objectives of the Deployment Group, was shared among the three organisations in October 2022. A consolidated version of the draft concept note was then shared and presented to the Governing Board on 8 December 2022.

This note describes the challenges that the Deployment Group will tackle and defines its tasks and composition. It also covers the role and responsibilities of the different actors in the CBE JU (EC, BIC and the CBE PO) and identifies the institutions to be nominated, the scope and length of the mandate as well as a provisional calendar of activities.

The finalisation of the note is expected in the first half of 2023 with the establishment of the Deployment Group in the second half of 2023.

[52] Council Regulation (EU) 2021/2085 of 19 November 2021 establishing the Joint Undertakings under Horizon Europe

4. FINANCIAL MANAGEMENT AND INTERNAL CONTROL

This section reports the control results and other relevant information that support management's assurance on the achievement of the financial management and internal control objectives. It includes the information necessary to establish that the available evidence is reliable, complete and comprehensive. It reports on the performance of internal control and management systems covering all activities, programmes and management modes relevant to the JU. The internal control and risk management systems in place are described, together with an assessment of their effectiveness: compliance, efficiency and effectiveness.

Assurance is provided, on the basis of an objective examination of evidence, of the effectiveness of risk management, control and governance processes.

This examination is carried out both by management, which monitors the functioning of the internal control systems on a continuous basis, and by internal and external auditors. The results are explicitly documented in a yearly assessment of the Internal Control Framework and reported to the Executive Director of the JU. The following reports have been considered:

- The annual Declaration of Assurance reports provided by the Authorising Officer by Sub-Delegation (AOSD) to the delegating Authorising Officer
- The reports on recorded exceptions, non-compliance events and internal control weaknesses
- The opinion of the Internal Control and Audit Manager responsible for Risk Management and Internal Control
- The outcome of activities of the ex-post audit function and fraud prevention measures
- The result of yearly risk assessments performed by the Internal Audit Service and the observations and recommendations reported in the course of the year;
- The observations and recommendations reported by the European Court of Auditors
- The observations and recommendations reported by the Accounting Officer in the context of the validation of the local accounting systems
- The conclusion of annual risk assessment exercises
- The registers of security and data breaches.

These reports result from a systematic analysis of the available evidence. This approach provides sufficient guarantees as to the completeness and reliability of the information reported and results in a complete coverage of the budget under the accountability of the Executive Director of the CBE JU. The CBE JU budget is composed of different categories of expenditure, namely staff-related and other administrative costs and grant management costs.

The control environment for grant management in which CBE JU operates is largely a corporate one. The results reported in the following sections are the outcome of controls designed principally by the Common Implementation Centre (CIC) in charge of the control system for the R&I framework programmes. CBE JU actively participates in the various governance structures put in place by the CIC and contributes to the development and continuous improvement of the common legal framework, the business processes and IT tools. For staff expenses and other administrative costs CBE JU uses exclusively the EC accounting system ABAC to perform financial operations and, in 2022, CBE JU implemented all accession requirements for using eTendering and eProcurement solutions provided at corporate level.

CBE JU has adopted and keeps updated a manual of financial procedures that describes the financial circuits involved in the implementation of the budget. The financial circuits concern all financial operations, taking into account the lean structure of the CBE JU and any risks associated with the management environment and the nature of the financing operations. They are established in order to standardise the mandatory steps of the processing of financial transactions, to clarify the different actors, their main responsibilities and the controls they shall perform.

In 2022 the manual of financial procedures was updated to reflect the new CBE JU structure and to introduce new financial circuits for public procurement.

Certain control activities carried out in the CBE JU cannot be fully captured by quantitative indicators, even though they significantly contribute to the overall benefits of the programme implementation or the centralised support services delivered to the Commission services. These activities include feedback for joint policy making, process improvements, information and communication, dissemination and exploitation of the project results, etc.

In respect of the Accounting Officer, in late 2022, the contract with DG BUDG for the EC Accounting Officer services was terminated. A new Back Office Arrangement (BOA) for these accounting services was established within the Joint Undertakings and the appointment of the new Accounting Officer for CBE JU, within this common structure, was approved by a Governing Board on 29 November 2022.Please refer to section 3.7.2 Efficiency Gains and Synergies for more details about the BOA for accounting. The Accounting Officer is responsible for, inter alia, the proper implementation of payments, collection of revenue, recovery of amounts, maintaining the accounts, year-end closure and the preparation and signing off of the annual financial statements and the central budgetary framework, in cooperation and in coordination with CBE JU financial staff.

4.1. CONTROL RESULTS

This section reports on and assesses the elements identified by management which support the assurance on the achievement of the internal control objectives: (1) effectiveness, efficiency and economy of operations; (2) reliability of reporting; (3) safeguarding of assets and information; (4) prevention, detection, correction and follow-up of fraud and irregularities, and (5) adequate management of the risks relating to the legality and regularity of the underlying transactions, taking into account the multiannual character of programmes as well as the nature of the relevant payments.

4.1.1. Effectiveness of controls

Control results are detailed here regarding the legality and regularity of the operations, the fraud prevention and the safeguarding of assets.

4.1.2. Legality and regularity of the financial transactions

CBE JU uses internal control processes to ensure the adequate management of the risks relating to the legality and regularity of the underlying transactions it is responsible for, taking into account the multiannual character of programmes and the nature of the payments concerned.

The results of the controls implemented are measured through ex-post audits and ex-post controls carried out on transactions made from the CBE JU's operational budget, which in 2022 represented 91.12% of the total relevant expenditure.

Ex-post controls of operational expenditure are implemented in line with the Horizon 2020 Audit Strategy. The Common Implementation Centre (CIC) developed this audit strategy in cooperation with all its clients: services of the European Commission, Executive Agencies and Joint Undertakings.

The main objective of the Audit Strategy is to provide the individual Authorising 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) is the department of the CIC serving all Horizon 2020 and 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 the CAS and its clients. The main objectives of the cooperation are to align operations and exploit synergies in 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 2022, the main results were:

- Ex-post controls launched on BBI JU operational expenditure covered EUR 121,942,395.28 million out of EUR 469,989,041.37 of expenditure (25.95%)
- Ex-post controls closed on BBI JU operational expenditure covered EUR 70,517,340.02 (15% of expenditure)
- **The Representative Detected Error Rate for CBE JU is 1.88%** (2.71% for the whole Horizon 2020 programme)
- **The Cumulative Residual Error Rate for CBE JU is 1.15%** (1.67% for the whole Horizon 2020 programme)

The methodology applied to calculate the error rates for CBE JU is described in Annex 5.11 'Materiality criteria'. The calculations of the overall error rates for Horizon 2020 are detailed in the AAR of the European Commission.

The results of these controls shall contribute to achieving the multiannual objectives relating to errors detected in the Horizon 2020 expenditure. The expectations provided to the Legislator in the legislative proposal for the Horizon 2020 Framework Programme are the same as those formulated in the legislative proposal for BBI JU. These expectations define that, on an annual basis, error rates should range between 2% and 5%, with the ultimate aim of achieving a residual error level as close as possible to 2 % at the closure of the multiannual programme[53].

In conclusion, the CBE JU does not consider that a reservation is needed for Horizon 2020 expenditure this year.

4.1.3. Fraud prevention, detection, and correction

An anti-fraud strategy is in place covering the prevention and detection of potential fraud as well as the conditions for investigating it. This strategy is proportionate to the level of risk, and to the nature and magnitude of fraud identified. The anti-fraud strategy for grant management is developed and implemented in cooperation with services of the European Commission, Executive Agencies and Joint Undertakings that implement the Horizon 2020 Framework Programme. The staff of the CBE JU is continuously updated about the identification of fraud risks, and dedicated tools are made available for the prevention, detection and reporting of suspicious cases. The Learning and Development Framework prescribes mandatory trainings on fraud awareness,

[53] Legislative Financial Statement as part of the 2011 Commission proposal for the Regulation on Horizon 2020 (COM/2011/809) of 30 November 2011, pages 98-102, as recalled in the Commission proposal for the Regulation on the Bio-based Industries Joint Undertaking (COM/2013/496) of 10 July 2014, pages 34 -36.

prevention and detection to be included in the training maps of staff involved with financial transactions.

The JU Programme Office designated its correspondent with the European Anti-Fraud Office (OLAF) for all activities related to reporting fraud, supporting OLAF on investigative matters, following up on OLAF's recommendations and cooperating on fraud prevention.

In the course of 2022 these control systems operated effectively. OLAF investigations closed in the course of the year have not concluded on irregularities, and the CBE JU continued to implement and to report to OLAF about the effective implementation of recommendations made in previous years. In conclusion, nothing needs to be reported which may influence the reasonable assurance to be provided by the Authorising Officer in section 4.5.2 below.

4.1.4. Assets and information, reliability of reporting

In 2022 the following controls were performed:

1. The Accounting Officer carried out its annual evaluation of the local financial systems set up in CBE JU. The evaluation methodology was adapted taking into account the results of previous years' assessments. The evaluation reviewed the available information regarding the follow-up of the 2021 evaluation, the analysis of a sample of the operations authorised during the 2021 financial year and key performance indicators. On the basis of the available evidence and the scope of the work conducted, the evaluation did not identify any internal control weakness which would have a material impact on the accuracy, completeness and timeliness of the information required to draft the annual accounts and produce reliable reporting.

2. In the context of the yearly validation of access rights granted in ABAC, CBE JU and Europe's Rail JU Rail agreed to perform a cross-check exercise as neutral verifiers on their respective 2022 ABAC access rights granted to staff members. This exercise aims to ensure that IT systems managed by the JU are adequately protected against threats to their confidentiality and integrity. The conclusion of this check confirmed that the documentation on the JU financial circuits, the segregation of duties between the Authorising Officer and the Accounting Officer, the table of delegations, backups, general principles and framework conditions and appointment of a Local Authorisation Manager, present a reliable overview of the CBE JU ABAC Financial Environment and the adequacy of the corresponding access rights.

Lastly, the Management Representation Letter issued by the Authorising Officer and the Accounting Officer of CBE JU covering the 2022 Provisional Accounts provided no reservation to the opinion that these present fairly, in all material respects, the financial position of the CBE JU at 31 December 2022, the results of its operations, its cash flows, and the changes in net assets for the year then ended.

In conclusion, nothing needs to be reported which may influence the reasonable assurance to be provided by the Authorising Officer in section 4.5.2.

4.1.5. Efficiency of controls

The efficiency indicators provided by the financial regulation are: Time To Pay (TTP), Time To Inform (TTI) and Time to Grant (TTG). Since the Call 2022 was not finalised in the course of 2022, the following information can be provided:

- For operational expenditure, all interim and final cost claims validated in 2022 (60) were paid on time with an average Time To Pay of 65,75 days. The average TTP in 2021 was 68,2 days.
- The Time To Pay of administrative payments showed only 16 (5%) of a total 316 payments were late. Two were five or less days late. The average TTP was 15 days (11.71 in 2021) late payments included. The rate of late payments in 2021 was 3%, nine late payments out of 285.

4.1.6. Economy of controls

For a programme-implementing organisation like the CBE JU, the estimation of the cost-effectiveness and efficiency of controls focuses on yearly activities which are linked to the implementation of the annual budget, including both the operational and the financial aspects of the operations.

The cost-effectiveness of controls compares the control benefits with their costs. The quantification of the benefits of controls counts the total amount of corrections implemented in cost claims processed by the organisation in the year. There are however other benefits of controls that will not appear in the calculation, for instance ex-ante monitoring and communications activities resulting in lower corrections to be implemented and the deterrent effects of controls on fraud or conflict of interest risks.

The cost-efficiency of controls compares their costs with the resulting operational performance of the organisation. Knowing that reducing controls might reduce their costs and speed up processes but may also increase the risk of error (and vice-versa), the most relevant KPIs on control results mentioned above are the Time To Pay of the underlying cost claims and the residual error rate detected by ex-post controls on the operational expenditure.

The 2022 results of the CBE JU reported in the Table 2020 allow to conclude that control activities applied to financial transactions:

- Were cost-effective, as benefits of controls were more than their costs
- Were cost-efficient, as the organisation achieved a high operational performance in executing payments with a relatively low cost of controls (0.62% of the yearly expenditure) and maintained the residual error rates on operational expenditure below the 2%

2021 payments (in EUR)	108,231,083
Estimated costs of controls (in EUR)	**666,912**
As a % of yearly expenditure	*0.62%*
Benefits of controls (in EUR)	**1,910,504**
As a % of yearly expenditure	*1.77%*
% Administrative payments on time	*95%*
% Operational payments on time	*100%*
% Residual error rate on operational expenditure	*1.15%*

Table 20 2021 results for assessing cost-effectiveness and cost-efficiency of controls.

4.2. AUDIT OBSERVATIONS AND RECOMMENDATIONS

This section sets out the activities, observations, opinions and conclusions reported by the Internal Auditor and by the European Court of Auditors. Summaries of the management measures taken in response to the audit recommendations are also included, together with an assessment of the likely material impact of the findings on the achievement of the internal control objectives, and therefore on management's assurance.

4.2.1. Internal audit

The Internal Audit Service (IAS) of the European Commission performs the internal audit function for the CBE JU.

Until 2022, the IAS concluded three assurance audits on CBE JU covering the following topics:

1. Limited review of the implementation of the Internal Control Standards (ICS)
2. Horizon 2020 grant process (from the identification of the call topics to the signature of the Grant Agreement)
3. Horizon 2020 grant implementation and closing

In 2022, the Programme Office of the CBE JU reported to the IAS the implementation of the following actions:

1. The adoption of a programming procedure for the identification of the CBE JU call topics that is now tailored to the new governance structure and objectives of the CBE JU. This action aims to improve the effectiveness, efficiency and economy of strategic planning and programming operations.
2. The adoption of an internal guidance document that streamlines existing internal workflows to activate and implement reinforced monitoring actions in all steps of the grant management cycles. This action aims to improve the effectiveness, efficiency and economy of ex-ante control operations on operational expenditure.

4.2.2. Audit of the European Court of Auditors

On 15 November 2022, the European Court of Auditors (ECA) published its report on CBE JU's annual accounts for the financial year 2021[54]. The ECA issued an 'unmodified opinion' (with no qualifications) on the reliability of the accounts and on the legality and regularity of revenue and of payments underlying the accounts.

[54] https://www.eca.europa.eu/Lists/ECADocuments/JUS_2021/JUS_2021_EN.pdf

Official replies of the CBE JU to the most significant observations made by the Court were already provided in the document and updates for the year 2022 are provided in this report. In particular, with reference to some selected observations that did not call into question the opinion above:

- For the observations at paragraphs 3.7.11 and 3.7.12, referring to the pending quantification and invoicing by the Services of the European Commission to the CBE JU of the employer contributions to the EU pension scheme: in 2022 the EC Services invoiced the CBE JU, and this has been paid.
- For the observations at paragraphs 3.7.14 and 3.7.16, referring to the contributions of the funding members of the CBE JU for the implementation of the Horizon 2020 Framework Programme, the present report provides at paragraph 2.4 further details and updated information on the state of play of such contributions by the end of 2022.
- For the observations at paragraph 3.7.15, referring to the budget implementation results achieved in 2021, the present report provides an analysis of the 2022 results in section 3.3.

4.2.3. Overall conclusions

All audit conclusions of the Internal Audit Service provided assurance to the Executive Director and to the Governing Board on the compliant effectiveness and efficiency of the Internal Control Framework implemented by the JU. The Internal Auditor observed some strengths and provided some recommendations for adding value to the operations of the JU and for mitigating risks. None of these observations was critical and they were all addressed with action plans that were designed for timely implementation in agreement with the IAS.

The most significant observations of the ECA report for the financial year 2021 have been considered for follow-up and disclosure in the present reporting.

The work of the auditors and the follow-ups implemented by the Programme Office constitute part of the evidence base used to assess the effectiveness of the internal control systems of the JU as being reported in the section 4.3 and to draw management conclusions on the assurance in the section 4.4.

4.3. ASSESSMENT OF THE EFFECTIVENESS OF INTERNAL CONTROL SYSTEMS

The CBE JU Internal Control Framework is based on 17 control principles. It is aligned with the control framework of the European Commission and is in force since 1 January 2020. All the principles of the new control model are embedded throughout the CBE JU's organisational structure and rely on a combination of ex-ante and ex-post controls, segregation of duties, documented processes and procedures, control of deviations, and promotion of ethical behaviour.

Within this context, the Executive Director steers and supervises the risk and internal control management, assisted by the Internal Control and Audit Manager and by the Management Team members who cover the robustness of reporting on operational performance. The CBE JU staff at all levels ensure the implementation of the Internal Control Framework with well identified roles, accountabilities, objectives and performance assessment mechanisms in place.

The results of the 2022 Internal Control Framework assessment confirm that the CBE JU control systems are present and functioning effectively. At the level of principles, the self-assessment of the combined impact of detected strengths and deficiencies provided reasonable assurance over the presence and effective functioning of all 17 principles. Few minor instances have been identified with no detrimental impact on the effectiveness of the internal control systems to work in an integrated manner, and they rather provided the opportunity to plan actions to be implemented in 2023 in order to improve the efficiency of internal control operations and the cross reliance of relevant systems.

Consequently, all five internal control components are assessed as present and functioning reasonably well in an integrated manner.

1. **For the control environment component** that provides the basis for carrying out internal control across the organisation, no major deficiencies were identified, but historical KPIs on staff rotation point to structural constraints that have been re-assessed together with the relevant observations formulated in the ECA DAS report 2021, notably pointing to the risks and limitations of procuring interim support services. The Programme Office has implemented incremental controls since the early set-up of the organisation and all organisational KPIs potentially impacted by these instances are currently metmet and staff engagement surveys corroborate the effective integration of this component in the overall functioning of the Internal Control Framework.

2. **The risk assessment component** is a dynamic and iterative process for identifying and assessing risks which could affect the achievement of objectives, and for determining how such risks should be managed. No weaknesses have been identified for this component and currently all underlying principles are proving to be fully present and effective.

3. **For the control activities component** that ensures the mitigation of risks related to the achievement of objectives, no major deficiencies were identified. The 2022 budget implementation results reported in section 2.3.2 and 2.3.3 of this report are below the targets set for the internal control monitoring. However the impact of these results is moderate because still in compliance with the specific principle of annuality provided in Art

6.5 of the Financial Rules adopted by CBE JU (unused appropriations may be entered in the estimate of revenue and expenditure of up to the following three financial years). Minor instances on adopted business continuity need to be more efficiently addressed in 2023 under the newly created Back Office Arrangements and for the JUs based in the same building.

4. **The information and communication component** ensures that information is necessary for the organisation to carry out internal control and to support the achievement of objectives. The Accounting Officer identified desirable objectives to improve qualitatively and timely information to be registered in the accounting system, but no internal control weakness have been identified which would have a material impact on the accuracy, completeness and timeliness of the information required to draft the annual accounts and produce reliable reporting.

5. **The monitoring activities component** is functioning well: continuous and specific assessments are used to ascertain whether each of the five components of internal control is present and functioning. Continuous assessments, built into business processes at different levels of the organisation, provide timely information on deficiencies. Findings are assessed and deficiencies are communicated and corrected in a timely manner, with serious matters reported where appropriate. Positive results of KPIs on document management are available and need to be used to substantiate an assessment of the state of implementation of the document management policy in the organisation.

4.3.1. Continuous monitoring

Management structures are comprehensive. The design and implementation of management and supervision structures cover all programmes and activities. In particular for spending programmes, they cover all expenditure types, delivery mechanisms and the budget implementation, to support the achievement of policy, operational and control objectives.

For the operational activities, CBE JU continuously monitors the performance of the internal control system via a number of indicators. For operational expenditure this monitoring is built into the e-grants suite of IT tools and reports can be generated at any moment with real time information on operational performance. The information systems (SyGMa) and workflows (COMPASS) ensure the processing and recording of transactions in the IT accounting system (ABAC) with a high degree of automation, controls embedded in each workflow, assessments, deviations and formal notifications are registered, documents are preserved (ARES).

Staff performing assessments in regular workflows or in specific assessments have a good knowledge about control requirements and objectives. Operational and financial staff attended the dedicated corporate trainings (grant preparation and signature, reporting and payments, project monitoring, amendments, be aware – fraud in the research family, and others) and internal workshops on financial or operational matters are organised as necessary.

Governance bodies, management and staff meetings are regularly convened, and agendas include reporting on the implementation of action plans previously agreed and discussion points on emerging activities.

If there are indications of a specific risk emerging in a process, or the continuous control results may show a sudden dip in the performance in an area, managers might take direct action (specific assessment) to identify the root causes of the risk/underperformance/inefficiency and plan corrective actions.

A procedure for reporting and assessing exceptions, noncompliance and internal control weaknesses is in place and implemented when relevant. The resulting assessments and remedy action plans are proposed to the Authorising Officer for approval and recorded in a local register.

The Internal Control and Audit Manager monitors and reports on the timely implementation of action plans defined in local registers or stemming from audit recommendations.

4.3.2. Risk assessment and management

Risk Management adds value to the organisation by efficiently and effectively supporting the achievement of objectives. Its effectiveness is regularly assessed as an integrated component of the internal control system of the organisation (refer to section 4.3 above). The level of resources devoted to it as well as the level of documentation produced are adequate and proportionate to the criticality of the relevant activities. Across the JU Programme Office, the management is alerted about emerging risks. In addition, the Governing Board is kept informed in a timely manner about risks and responses that should be discussed and agreed at that level.

Effective management of risks in the course of 2022 is reported in section 1.1.3.

At the end of 2022, the CBE JU conducted a risk assessment exercise on the achievement of objectives described in this work programme for the year 2023. 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. Relevant information is disclosed in the CBE JU Annual Work Programme 2023 section 2.2.1.

4.3.3. Prevention of conflict of interest

The JU Programme Office has developed a comprehensive set of rules and procedures that are effectively implemented across its entire governance structure as follows:

- When joining the JU Programme Office team, each staff member agrees to the application of the Staff Regulation and signs a declaration of honour on the management of conflicts of interest.
- A copy of the code of good administrative behaviour is provided to staff members. Furthermore, compulsory trainings on the management of conflicts of interest and whistleblowing are included in the Learning and Development Framework of the CBE JU.
- Conflict of interest procedures for the members of both the Governing Board and the advisory boards of CBE JU are in place. Besides the general rules on this regard

established in each JU's rules of procedure, the Governing Board decision 13/17 of 13 December 2017 adopted specific rules for the preventions and management of conflicts of interest applicable to the bodies of the Bio-based industries Joint Undertaking. Specific measures have been implemented for the prevention and management of conflicts of interest of experts in charge of the review of projects and tenders.

In the course of 2022 these control systems operated effectively, and nothing needs to be reported which may influence the reasonable assurance to be provided by the Authorising Officer in section 4.5.2 below.

4.4. CONCLUSION ON THE ASSURANCE

In conclusion, based on the elements reported above, the management of CBE JU has reasonable assurance that, overall, suitable controls are in place and working as intended; risks are being appropriately monitored and mitigated; and necessary improvements and reinforcements are being implemented.

The Authorising Officers by Delegation have signed their declarations that cover robustness of reporting on operational performance. The Manager in charge of risk management and internal control has signed the yearly declaration covering the state of internal control in the Programme Office and taking responsibility for the completeness and reliability of management reporting on the subject. Nothing has been reported which may influence the reasonable assurance to be provided by the Authorising Officer in section 4.5.2.

4.5. STATEMENT OF ASSURANCE

4.5.1. Assessment of the Annual Activity Report by the Governing Board

Circular Bio-based Europe Joint Undertaking –

Governing Board Assessment

of the 2022 Annual Activity Report

Introduction

The Circular Bio-based Europe Joint Undertaking (CBE JU) programme office submitted the 2022 Annual Activity Report (AAR) on 31 March 2023 to its Governing Board.

On 16 March 2023, the Governing Board appointed a working group to carry out all the preparatory work required for the assessment of the 2022 AAR. This working group included representatives of the Bio-based Industries Consortium (BIC, the only member other than the Union) and the Commission.

In accordance with Article 16 of the Governing Board's rules of procedure, the working group reported to the Governing Board on 14 June 2023 by providing a draft assessment of the AAR. This forms the basis for the Governing Board's current assessment.

The AAR 2022 discusses the achievements of the CBE JU in the year 2022.

Analysis

The Governing Board adopted the 2022 Annual Work Plan (AWP) on 29 November 2021. It recognises the progress made by the CBE JU towards achieving the objectives set in this work plan. It notes the following points in particular:

- In 2022, the efficient performance of the CBE JU in core operations was confirmed, continuing the positive trends observed in previous years.
- In terms of types of action, at the beginning of 2022 the CBE JU portfolio reached a total of 142 projects (71 RIA, 39 DEMO, 14 FLAG and 18 CSA) of which 57 were still ongoing at the end of 2021 and 46 finalised.
- BIC's and the Union's contribution to the CBE Initiative is shown in the amounts of funding provided in the past 8 years[1] to fulfil the commitments set out in the Council Regulation:
    - The members paid EUR 3,052,026 each in administration costs to the CBE JU programme office up to 2022 (EUR 2,219,923 relating to BBI JU and

[1] Out of 7 years for operational budget commitments for calls (2014-2020), and 10 years for the administrative budget (2015-2024).

EUR 832,103 relating to CBE JU), so total EUR 6,104,052. This accounts for 12% of the 10-year administrative budget envisaged under Article 49 and 50 of the SBA, which shows that the CBE JU programme office has budgeted carefully when it comes to administration.

- The total consumption of the administrative budget, including reactivation of BBI JU unused prior year appropriations, was 62% (BBI 79%) in Commitment Appropriations and 59% (BBI 76%) in Payment Appropriations (PA).

- Staff related costs showed an overall execution of 63% (BBI 72%), with salaries (total budget EUR 3.7 million, EUR 2.7 mio for BBI) at 64% (BBI 88%) and other staff costs at 55 % (BBI 85%)

- The infrastructure budget achieved an overall execution of 60% (BBI 82%) in the CA of the 2022 budget. Among the highest costs - building-related (kEUR 434, BBI kEUR 391) and IT (kEUR 478, BBI kEUR 412), achieved a robust execution, respectively 70% (BBI 77%), and 74% (BBI 73%). External staff (kEUR 481, BBI kEUR 200, total 67%, BBI 99%) and expert reviewers (kEUR 378, BBI kEUR 328, total 88%, BBI 100 %) also showed a strong execution. Underspending was recorded for the communications budget (kEUR 834, BBI kEUR 739) - 33% (BBI 38%). The overall PA consumption in Title 2 is 68% (BBI 81%).

- BIC reported that total certified in-kind contributions, linked only with BBI JU, made by its constituent entities towards operational activities (certified IKOP) amounted to EUR 65,898,645 at end 2022. An additional EUR 67,644,357 of estimated in-kind contributions are expected to be certified in the coming years.

- At the end of 2022, BIC's constituent entities contributed EUR 1,798 million in kind to additional activities related to BBI JU, including the planned amount for 2022. This is reaching already the amount expected in the Article 4(2)(b) objective of the BBI JU Council Regulation.

- BIC and its constituent entities have therefore delivered EUR 1,954 million in total financial contributions as of at end 2022.

- The CBE JU's efficiency is monitored via key performance indicators (KPIs) that are applied by all joint undertakings under Horizon Europe. The Governing Board notes that the KPIs related to programme monitoring show that the CBE JU is operating efficiently.

- The KPIs related to crosscutting issues, gender equality, private sector participation and the participation of small and medium-sized enterprises (SMEs) are positive. The analysis of SME participation carried out by the Programme Office shows that they enable the generation of new products and processes by providing new

knowledge, supplying customised technologies and services for testing, data analysis and validation. With a relatively high participation rate in CBE JU projects (40%) compared to other initiatives under Horizon Europe, this picture confirms that the CBE JU plays a dynamic role in the circular bio-based economy and that the CBE JU initiative represents a valuable instrument for SME-driven innovation.

- Even though geographical distribution shows positive signs over the past and currently running projects, looking ahead a widening strategy is needed to involve more beneficiaries from southern European regions as well as from the Central and Eastern European regions.

- The finalised projects - numbering 83 by the end of 2022 are reporting actual results for the first time. The projects confirm the trend detected so far: that the project outcomes are actually outperforming all the KPIs, interactions within the sector are revealing better than expected dynamics and for the end of the programme expectations are even higher. The Governing Board appreciates that the finalised projects are in line with the foreseen KPIs and objectives.

- The Governing Board appreciates the CBE JU's work on communication and outreach, which helped it gain recognition. The CBE JU programme office organised successful meetings and conferences online given the difficult circumstances caused by the COVID-19 pandemic. The CBE JU programme office also delivered a successful launch campaign for the CBE JU in order to update its constituency about the launch of the CBE JU.

- The Governing Board acknowledges that the programme office management processes and functions meet the four objectives of its internal control framework.

The Governing Board considers that some aspects described in the report merit improvement, and:

- asks the CBE JU to continue to gradually change from expected to validated KPI figures once projects have ended, as planned.

- The governing Board asks the CBE JU to work on a Widening Strategy to involve a wider range of participants in its calls from Eastern and Southern parts of Europe.

Conclusion

The Governing Board believes that the technical and operational information provided in the 2022 AAR reflects the situation at the end of 2022. It believes that the 2022 AAR provides a complete and accurate report of the progress made by the CBE JU and in 2022, in particular on the objectives set in the 2022 AWP. The report clearly identifies the risks associated with the CBE JU's operations, duly reports on how the resources

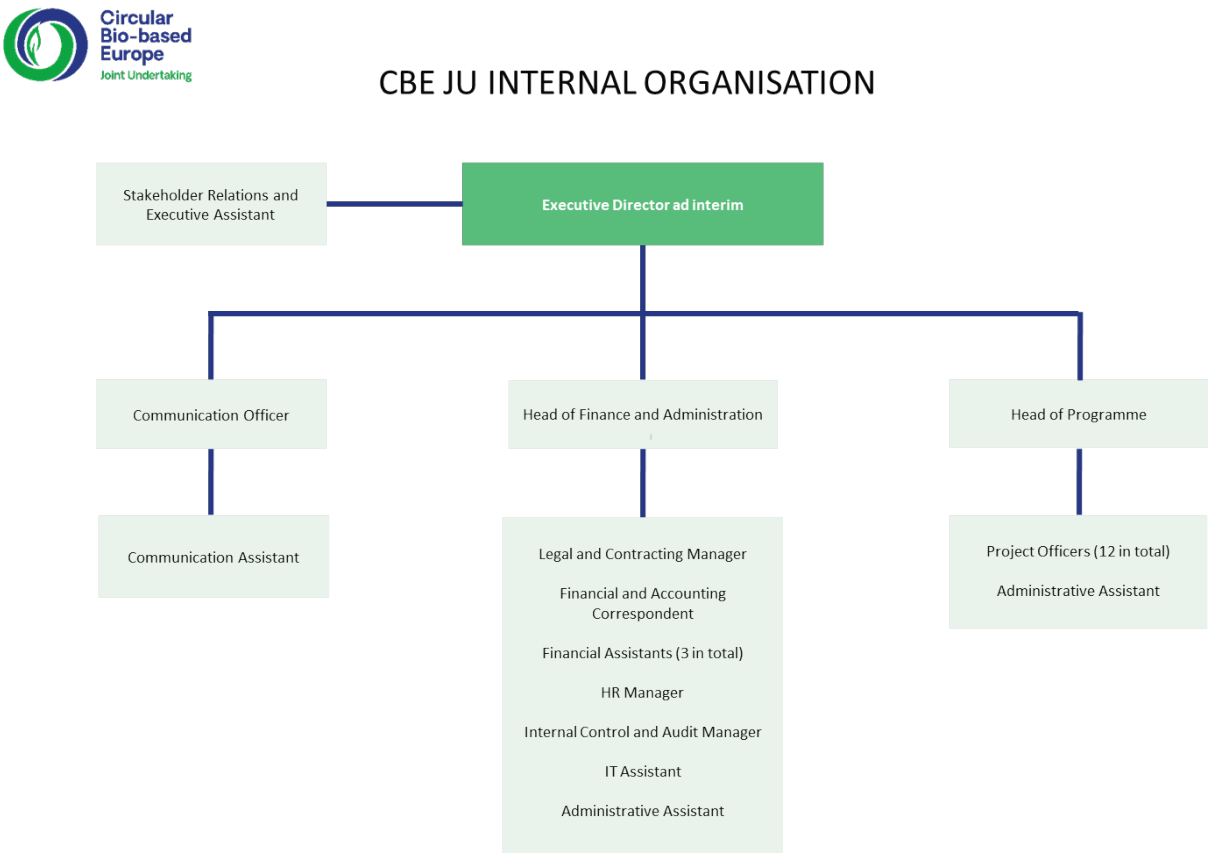
were used, and indicates the efficiency and effectiveness of the CBE JU's internal control system.

Based on the working group's report, the declaration of the authorising officer, and the information provided in this report, the Governing Board concludes that the 2022 key objectives have been achieved in compliance with the principles of legality and sound financial management.

Taking note of the declaration of assurance provided by the Ad-interim Executive Director of the CBE JU, the Governing Board confirms that, in general, suitable internal control standards either have been put in place or have largely been implemented and require supplementary action, and that the CBE JU is properly monitoring and mitigating any risks.

5. ANNEXES

5.1. ORGANISATIONAL CHART



5.2. ESTABLISHMENT PLAN AND ADDITIONAL INFORMATION ON HR MANAGEMENT

Function group and grade	YEAR N-1				YEAR N			
	Authorised		Actually filled as of 31/12/2021		Authorised		Actually filled as of 31/12/2022	
	Permanent posts	Temporary posts	Permanent posts	Temporary posts	Perm.	Temp.	Perm.	Temp.
AD 16								
AD 15								
AD 14		1		1		1		
AD 13								
AD 12		2		1		2		1
AD 11				1				1
AD 10								
AD 9		2		2		3		3
AD 8		3		3		4		4
AD 7		2		2				
AD 6								
AD 5								
TOTAL AD			10				9	
AST 11								
AST10								
AST 9								
AST 8								
AST 7								
AST 6								
AST 5		1		1				
AST 4		1		1		2		2
AST 3								
AST 2		1		1		1		1
AST 1								
TOTAL AST			3				3	
AST/SC 6								
AST/SC 5								
AST/SC 4								

AST/SC 3								
AST/SC 2								
AST/SC 1								
TOTAL AST/SC								
TOTAL AD+AST+				13				
AST/SC GRAND TOTAL			13				12	

Contract Agents	Authorised	Actually filled as of 31/12/2022
Function Group IV	10	10
Function Group III	6	4
Function Group II		
Function Group I		
TOTAL	16	14

Seconded National Experts	Authorised	Actually filled as of 31/12/2022
	0	0
TOTAL	0	0

5.3. PUBLICATIONS FROM PROJECTS

AM Rodrigues (NOVAID), RDG Franca (NOVAID), M Dionísio, C Sevrin, C Grandfils, MAM Reis (NOVAID), ND Lourenço (NOVAID) / Polyhydroxyalkanoates from a mixed microbial culture: extraction optimization and polymer characterization / Polymers / 14(11) / 2155

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Arjan T. Smit; André van Zomeren; Karla Dussan; Luke A. Riddell; Wouter J. J. Huijgen; Jan Wilco Dijkstra; Pieter C. A. Bruijnincx / Biomass Pre-Extraction as a Versatile Strategy to Improve Biorefinery Feedstock Flexibility, Sugar Yields, and Lignin Purity / Biomass Pre-Extraction as a Versatile Strategy to Improve Biorefinery Feedstock Flexibility, Sugar Yields, and Lignin Purity / 2 / https://zenodo.org/record/6926248

Arjan T. Smit; Marlen Verges; Peter Schulze; André van Zomeren; Heike Lorenz / Laboratory- to Pilot-Scale Fractionation of Lignocellulosic Biomass Using an Acetone Organosolv Process / Laboratory- to Pilot-Scale Fractionation of Lignocellulosic Biomass Using an Acetone Organosolv Process / 1 / 10503–10513 / https://zenodo.org/record/7066650

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Barba Orellana, Francisco; Martí Quijal, Francisco; Pallarés Barrachina, Noelia; Juan García, Cristina; Berrada Ramdani, Houda / Development and implementation of an "escape room" gamification methodology as an innovative teaching tool for students of the degree in Gastronomic Sciences / Congresos de la Universitat Politècnica de València, IN-RED 2022: VIII Congreso de Innovación Educativa y Docencia en Red / 1 / 8 / https://hdl.handle.net/10251/190322

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5.4. PATENTS FROM PROJECTS

Project acronym	Amount of IPR	Type of IPR
AgriChemWhey	2	Patent
BIOMOTIVE	5	Patent
DEEP PURPLE	2	Patent
EMBRACED	6	Patent
EnzOx2	2	Patent
EUCALIVA	1	Registered design
FARMYNG	4	Patent
HYPERBIOCOAT	1	Patent
InDIRECT	3	Patent
PEFerence	5	Patent
PHERA	4	Patent
PULP2VALUE	2	Patent
SCALE	5	Trademark
SusBind	1	Patent
TECH4EFFECT	1	Trademark

5.5. SCOREBOARD OF HORIZON 2020 LEGACY KPIS

		KPI	Definition	Target at the end of H2020	Results in 2022
Industrial Leadership	12	SME - Share of participating SMEs Introducing innovations new to the company or the market (covering the period of the project plus three years)	Number and % of Participating SMEs that have introduced innovations to the company or to the market	50%	Cumulative figures[55] 187 SMEs introduced innovations in the company 221 SMEs introduced innovations in the market
	13	SME – Growth and job creation in participating SMEs	Turnover of company, number of employees	To be developed based on FP7 ex-post evaluation and /or first Horizon 2020 project results	Cumulative figures for projects finalised by 31 December 2022[56] Turnover: EUR 2,175,415,451.82 Employees: 15,306
Societal Challenges	14	Publications in peer-reviewed high impact journals	The percentage of papers published in the top 10% impact ranked journals by subject category Publications from relevant funded projects (DOI: Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases	On average, 20 publications per EUR 10 million funding	2022: 73 publications Total (2015–2022): 649 publications[57]
	15	Patent applications and patents awarded in the area of the JTI	Number of patent applications by theme; Number of awarded patents by theme	On average, 2 per EUR 10 million funding (2014 - 2020)	120 patent applications/ 26 patents awarded[58]
	16	Number of prototypes and testing activities	Number of prototypes and testing (feasibility/demo) activities	To be developed on the basis of first Horizon 2020 results	1,268[59]
	17	Number of joint public-private publications in projects	Number and share of joint public-private publications out of all relevant publications	To be developed on the basis of first Horizon 2020 results	224 (181 peer-reviewed)[60]
	18	New products, processes, and methods launched into the market	Number of projects with new innovative products, processes, and methods.	To be developed on the basis of first Horizon 2020 results	Number of projects with new innovative: Products: 101 Processes: 85

[55] Based on input from 142 projects from calls 2014-2020, and as per information available on CORDA (13 February 2022). Data is reported globally per project with no indication of SME share.

[56] Based on input from 82 out of 84 projects finalised by 31 December 2022. Number of SMEs (unique beneficiaries) providing data: 388 out of 392.

[57] These figures include all peer-reviewed publications as the bio-based sector is multi-disciplinary and therefore it is not possible to determine the top 10% impact ranked journals.

[58] Cumulative figure (2015-2022).

[59] Sum of all prototypes and testing activities reported until end 2022.

[60] Sum of all joint public-private publications published up until end 2022.

Evaluation			Project count and drop-down list allowing to choose the type processes, products, methods			Methods: 51
	NA	Time to inform (TTI) all applicants of the outcome of the evaluation of their application from the final date for submission of completed proposals	To provide applicants with high-quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process	Number and % of information letters sent to applicants within target, Average TTI (calendar days), Maximum TTI (calendar days)	153 calendar days	n/a in 2022
	NA	Redress after evaluations		Number of redresses requested	n/a	n/a in 2022
Grants	NA	Time to grant (TTG) measured (average) from Call deadline to signature of grants	To minimise the duration of the granting process aiming at ensuring a prompt implementation of the Grant Agreements through a simple and transparent grant preparation process	Number and % of grants signed within target, Average TTG in calendar days, Maximum TTG in calendar days	TTG ≤ 245 days (as % of GAs signed)	n/a in 2022
	NA	Time to sign (TTS) grant agreements from the date of informing successful applicants (information letters)		Number and % of grants signed within target, Average TTS in calendar days, Maximum TTS in calendar days	TTS ≥ 92 calendar days	n/a in 2022
Payments	NA	Time to pay (TTP) (% made on time) -pre-financing - interim payment -final payment	To optimise the payments circuits, both operational and administrative, including payments to experts (Average number of days for Grants pre-financing, interim payments and final payments; Number of experts appointed Average number of days for administrative payments)		-pre-financing (30 days) - interim payment (90 days) -final payment (90 days)	-pre-financing (n/a in 2022) - interim payment 100% -final payment 100%
HR	NA	Vacancy rate (%)	% of posts filled in, composition of the JU staff		n/a	90%
JU efficiency	NA	Budget implementation/ execution: 1. % CA to total budget 2. % PA to total budget	Realistic yearly budget proposal, possibility to monitor and report on its execution, both in commitment (CA) and payments (PA), in line with sound financial management principle % of CA and PA		100% in CA and PA	47% CA execution 65% PA execution
	NA	Administrative Budget: Number and % of total of late payments	Realistic yearly budget proposal, possibility to monitor and report on its execution in line with sound financial management principle (Number of delayed payments % of delayed payments (of the total))		n/a	16 (5%) of a total 316 payments were late

5.6. SCOREBOARD OF HORIZON EUROPE COMMON KEY IMPACT PATHWAY INDICATORS (KIPS)[61]

The indicators' figures result from the aggregation of CBE JU projects' outcomes. CBE JU first projects will only start working in Q2 2023, so indicators' data is not yet available. In the future, once CBE JU projects are ongoing, data will be available at the Horizon Europe dashboard.

A public version of the Horizon Dashboard can be found here: https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-dashboard

Key Impact Pathway[62]	Short-term	Medium-term	Longer-term	Detail per action or globally for 2022
Towards scientific impact				
1-Creating high-quality new knowledge	Publications -Number of peer-reviewed scientific publications resulting from the Programme	Citations -Field-Weighted Citation Index of peer-reviewed Publications resulting from the Programme	World-class science -Number and share of peer-reviewed publications resulting from the projects funded by the Programme that are core contribution to scientific fields	No data available for 2022
2-Strengthening human capital in R&I	Skills -Number of researchers involved in upskilling (training, mentoring/coaching, mobility and access to R&I infrastructures) activities in projects funded by the Programme	Careers -Number and share of upskilled researchers involved in the Programme with increased individual impact in their R&I field	Working conditions -Number and share of upskilled researchers involved in the Programme with improved working conditions, including researchers' salaries	No data available for 2022
3-Fostering diffusion of knowledge and open science	Shared knowledge -Share of research outputs (open data/publication/software etc.) resulting from the Programme shared through open knowledge infrastructures	Knowledge diffusion -Share of open access research outputs resulting from the Programme actively used/cited	New collaborations -Share of Programme beneficiaries which have developed new transdisciplinary/transsectoral collaborations with users of their open access research outputs resulting from the Programme	No data available for 2022
Towards societal impact				
4-Addressing Union policy priorities and global challenges through R&I	Results -Number and share of results aimed at addressing identified Union policy priorities and global challenges (including SDGs) (multidimensional: for each identified priority)	Solutions -Number and share of innovations and research outcomes addressing identified Union policy priorities and global challenges	Benefits -Aggregated estimated effects from use/exploitation of results funded by the Programme on tackling identified Union policy priorities and global challenges	No data available for 2022

[61] (based on Annex V to Regulation 2021/695/EU)

[62] NB: For some of those KIPs the data will not be available in the short or even medium term.

	Including: Number and share of climate-relevant results aimed at delivering on the Union's commitment under the Paris Agreement	(including SDGs) (multidimensional: for each identified priority) Including: Number and share of climate-relevant innovations and research outcomes delivering on Union's commitment under the Paris Agreement	(including SDGs), including contribution to the policy and law-making cycle (such as norms and standards) (multidimensional: for each identified priority) Including: Aggregated estimated effects from use/exploitation of climate-relevant results funded by the Programme on delivering on the Union's commitment under the Paris Agreement including contribution to the policy and law-making cycle (such as norms and standards)	
5-Delivering benefits and impact through R&I missions	R&I mission results -Results in specific R&I missions (multidimensional: for each identified mission)	R&I mission outcomes - Outcomes in specific R&I missions (multidimensional: for each identified mission)	R&I mission targets met -Targets achieved in specific R&I missions (multidimensional: for each identified mission)	No data available for 2022
6-Strengthening the uptake of R&I in society	Co-creation -Number and share of projects funded by the Programme where Union citizens and end-users contribute to the co-creation of R&I content	Engagement -Number and share of participating legal entities which have citizen and end-users engagement mechanisms in place after the end of projects funded by the Programme	Societal R&I uptake -Uptake and outreach of co-created scientific results and innovative solutions generated under the Programme	No data available for 2022
Towards technological / economic impact				
7-Generating innovation-based growth	Innovative results -Number of innovative products, processes or methods resulting from the Programme (by type of innovation) & Intellectual Property Rights (IPR) applications	Innovations -Number of innovations resulting from the projects funded by the Programme (by type of innovation) including from awarded IPRs	Economic growth -Creation, growth & market shares of companies having developed innovations in the Programme	No data available for 2022
8-Creating more and better jobs	Supported employment -Number of full time equivalent (FTE) jobs created, and jobs maintained in participating legal entities for the project funded by the Programme (by type of job)	Sustained employment -Increase of FTE jobs in participating legal entities following the project funded by the Programme (by type of job)	Total employment -Number of direct & indirect jobs created or maintained due to diffusion of results from the Programme (by type of job)	No data available for 2022
9- Leveraging investments in R&I	Co-investment -Amount of public & private investment mobilised with the initial investment from the Programme	Scaling-up -Amount of public & private investment mobilised to exploit or scale-up results from the Programme (including foreign direct investments)	Contribution to '3 % target' - Union progress towards 3 % GDP target due to the Programme	No data available for 2022

5.7. HORIZON EUROPE PARTNERSHIP COMMON INDICATORS[63]

First CBE JU GAs will be signed in Q2 2023, so no data is available for 2023. Please see the qualitative contributions in section 1.7.2.

N°	Criterion addressed	Proposed common indicators	Baseline	Results for 2022	Target 2027
1	Additionality	Progress towards (financial and in-kind) contributions from partners other than the Union – i.e. committed vs. actual	n/a	n/a	n/a
2	Additionality/ Synergies	Additional investments triggered by the EU contribution, including qualitative impacts related to additional activities[64]	n/a	n/a	
3	Directionality	Overall (public and private, in-kind and cash) investments mobilised towards EU priorities	100% of investments mobilised towards Green Deal objectives 33% of investments mobilised to *Make Europe more resilient* objectives	n/a	100% of investments mobilised towards Green Deal objectives 40% of investments mobilised to *Make Europe more resilient* objectives
4	International visibility and positioning	International actors involved	n/a	n/a	n/a
5	Transparency and openness	Share & type of stakeholders and countries invited/engaged	n/a	n/a	n/a
6	Transparency and openness	No and types of newcomer members [65] in partnerships and their countries of origin (geographical coverage)	n/a	n/a	n/a

[63] (based on an interim report published on 21 June 2021 (Commission Experts' report, Section 5 and Appendix 1 https://op.europa.eu/en/publication-detail/-/publication/6b63295f-d305-11eb-ac72-01aa75ed71a1/language-en/format-PDF/source-215872593)

[64] For this indicator, quantitative data will hopefully become available as of 2023 or later. For qualitative inputs, please elaborate it in 1.7.2, as relevant.

[65] In the context of joint undertakings partners mean 'members other than the Union'. In CBE JU partnership, there's only one member other than the Union, the Bio-based industries consortium, BIC.

N°	Criterion addressed	Proposed common indicators	Baseline	Results for 2022	Target 2027
7	Transparency and openness	No and types of newcomer beneficiaries in funded projects (in terms of types and countries of origin)[66]	n/a	n/a	n/a
8	Coherence and synergies	Number and type of coordinated and joint activities with other European Partnerships	n/a	n/a	n/a
9	Coherence and synergies	Number and type of coordinated and joint activities with other R&I Initiatives at EU /national/regional/sectorial level	n/a	n/a	n/a
10	Coherence and synergies	Complementary and cumulative funding from other Union funds (Horizon Europe, National funding, ERDF, RRF, Other cohesion policy funds, CEF, DEP, LIFE, other)	n/a	n/a	n/a
11	International visibility and positioning	Visibility of the partnership in national, European, international policy/industry cycles	n/a	n/a	n/a

[66] CBE JU aims at ensuring an appropriate level of SRGs member mobilization, especially in underrepresented Countries. In this context, a Widening participation strategy is being developed, which will be implemented in collaboration with the State Representative Group and the Deployment Groups. In this context a quantitative target has been set under CBE JU specific KPI 10.1 N of participants from the underrepresented EU countries and regions, aiming at 150 beneficiaries by 2027.

5.8. SCOREBOARD OF KPIS SPECIFIC TO CBE JU

KPI Name	Unit of measurement	Baseline	Estimated target 2023	Estimated target 2025[a]	Estimated target 2027[a]	Ambition >2027	Status
Resources (input), processes and activities							
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	n/a	n/a	52	79	100	
	1.2. N of (bio)waste management actors, involved as project beneficiaries and/or engaged in value chains at project level	n/a	n/a	10	16	20	
3. Ensure environmental sustainability of feedstock	3.1. N of projects using feedstock generated with practices that contribute to enhance biodiversity	n/a	n/a	16	24	30	
	3.2. N of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption	n/a	n/a	19	28	40	
	3.3. N of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation	n/a	n/a	32	47	60	
7. Improve the market uptake of biobased products	7. N of brand owners involved as project partners and/or engaged with other mechanisms	n/a	n/a	24	38	50	
Outcomes							
2. Unlock sustainable and circular biobased feedstock for the industry	2. N of innovative bio-based value chains created or enabled based on sustainably sourced biomass	n/a	n/a	60	95	120	
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 emissions reduction	n/a	n/a	32	47	60	
	4.2. N of projects developing innovative & sustainable processes that improve on resource efficiency and zero waste	n/a	n/a	32	47	60	

Text space below the table:

	4.3. N of projects developing innovative & sustainable processes enabling to address zero pollution	n/a	n/a	32	47	60	
	4.4. N of projects with innovative & sustainable processes with improved energy efficiency	n/a	n/a	32	47	60	
	4.5. N of products with improved life cycle environmental performance	n/a	n/a	25	40	50	
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)	n/a	n/a	51	76	100	
	5.2. N projects developing circular production practices (incl. industrial & industrial-urban symbiosis)	n/a	n/a	20	32	40	
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	n/a	n/a	47	71	100	
	6.2. N of innovative bio-based drop-in outputs meeting applications requirements	n/a	n/a	16	24	30	
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	n/a	n/a	15	23	30	
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	n/a	n/a	26	40	50	
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	n/a	n/a	50	100	150	
	10.2. N of regional hubs established and operated to process bio-based feedstocks and other cooperation aspects	n/a	n/a	8	13	15	
	10.3. N of projects with synergies with other funding programmes at EU, national or regional level	n/a	n/a	30	47	60	

The KPIs reported in this table are the one set for the CBE JU partnership in its Strategic Research and Innovation Agenda (SRIA).

5.9. IKAA REPORT

Not available yet: the first planning and reporting cycles of additional activities will start with the signature of the first CBE JU grant agreements in 2023.

5.10. DRAFT/FINAL ANNUAL ACCOUNTS

Please consult the Annual Accounts 2022 on the CBE JU website.

5.11. MATERIALITY CRITERIA

The ‘materiality’ concept provides the Authorising Officer with a basis for assessing the importance of the weaknesses/risks identified and thus whether those weaknesses should be subject to a formal reservation to his declaration.

When deciding whether something is material, both qualitative and quantitative terms have been considered.

In qualitative terms, when assessing the significance of any weakness, the following factors have been taken into account:

- The nature and scope of the weakness
- The duration of the weakness
- The existence of compensatory measures (mitigating controls which reduce the impact of the weakness)
- The existence of effective corrective actions to correct the weaknesses (action plans and financial corrections) which have had a measurable impact

In quantitative terms, in order to make a judgement on the significance of a weakness, the potential maximum (financial) impact is quantified.

Whereas the BBI JU control strategy is of a multiannual nature (i.e. the effectiveness of the JU’s control strategy can only be assessed at the end of the programme, when the strategy has been fully implemented and errors detected have been corrected), the ED is required to sign a declaration of assurance for each financial year. In order to determine whether to qualify his declaration of assurance with a reservation, the effectiveness of the JU’s control system must be assessed, not only for the year of reference, but more importantly, with a multiannual perspective.

The control objective for BBI JU is set out in the Commission proposal for the Council Regulation on the Bio-based Industries Joint Undertaking. The objective is to ensure that the ‘residual error rate’ - i.e. the level of errors which remain undetected and uncorrected - on an annual basis, can range between two and five per cent, with the ultimate aim of achieving a residual level of error as close as possible to two per cent at the closure of the multiannual programme. Progress towards this objective is to be (re)assessed annually, in view of the results of the implementation of the ex-post audit strategy. As long as the residual error rate is not (yet) close to two per cent at the end of a reporting year within the programme life cycle, the Authorising Officer may also take into account other management information at his disposal to identify the overall impact of the situation and determine whether or not it leads to a reservation.

If an adequate calculation of the residual error rate is not possible, for reasons not involving control deficiencies, the consequences are to be assessed quantitatively by estimating the likely exposure for

the reporting year. The relative impact on the declaration of assurance would then be considered by analysing the available information on qualitative grounds and considering evidence from other sources and areas (e.g. information available on error rates in more experienced organisations with similar risk profiles).

EFFECTIVENESS OF CONTROLS

The starting point for determining the effectiveness of the controls in place is the 'representative error rate' (RepER) expressed as a percentage of errors in favour of the BBI JU, detected by ex post audits measured with respect to the amounts of BBI JU actual contributions accepted after ex ante controls.

The representative error rate will be based on the weighted average error rate (WAER) for a population, from which a random sample has been drawn according to the following formula:

$$WAER\% = \frac{\sum (er)}{RepA} = RepER\%$$

Where:

Σ (er) = sum of all individual errors the sample (in value). Only the errors in favour of the JU will be taken into consideration[67];

RepA = total amount of the representative audited sample expressed in €.

Second step: calculation of residual error rate.

In order to take into account the impact of the ex-post controls, this error level is to be adjusted by subtracting:

- errors detected and corrected as a result of the implementation of audit conclusions;
- errors corrected as a result of the extrapolation of audit results to non-audited contracts with the same beneficiary.

This results in a residual error rate that shows how much error is left in the auditable population after the outcome of ex-post audits. It is calculated by using the following formula:

[67] Adjustments in favour of the Beneficiary are considered as 0 for the purpose of calculating the WAER.

$$\text{ResER\%} = \frac{[\text{RepER\%} * (P\text{-}A) - \text{RepERsys\%} * E]}{P}$$

Where:

ResER% = residual error rate, expressed as a percentage

RepER% = representative error rate, or error rate detected in the representative sample, in the form of the WAER, expressed as a percentage and calculated as described above (WAER%)

RepERsys% = systematic portion of the RepER% (the RepER% is composed of complementary portions reflecting the proportion of 'systematic' and 'non-systematic' errors detected) expressed as a percentage of errors in favour of the BBI JU detected by ex post audits measured with respect to the amounts of BBI JU eligible contributions accepted after ex ante controls. Only the errors in favour of the JU that are more than 2% (threshold for extrapolation) will be taken into consideration[68].

P = total amount of the auditable population of cost claims, expressed in EUR

A = total amount of all audited amounts, expressed in EUR

E = total non-audited amounts of all audited beneficiaries, expressed in EUR. This will comprise the total amount of all non-audited but validated and paid costs for all audited beneficiaries, excluding those beneficiaries for which an extrapolation is ongoing

This calculation will be performed on a point-in-time basis, i.e. all the figures will be provided as of a certain date.

[68] Adjustments in favour of the Beneficiary are considered as 0 for the purpose of calculating the RepERsys.

5.12. LIST OF EVENTS WITH CBE JU PARTICIPATION

Date	Event	Place	Type of participation
18/01/2022	Le partenariat européen CBE JU, successeur de BBI JU	Online	Speaker
25/01/2022	Change 2022 - l'événement de la bioéconomie	Online	Speaker
09/02/2022	EU Industry Days 22: transition pathways of the EU chemicals industry	Online	Speaker
09/02/2022	SSUCHY project's final event	Besançon, France	Speaker
01/03/2022	Webinar for PLENITUDE partners 'The sustainable mycoprotein future'	Online	Speaker
03/03/2022	EuropaBio National Associations Council (NAC) summit	Online	Speaker
15/03/2022	BIOKET international conference 2022	Lille, France	Speaker
28/03/2022	Building a bridge between Italy and France in the circular bioeconomy	Paris	Speaker
07/04/2022	National info day - France	Paris	Speaker
20/04/2022	PEFerence ground-breaking event	Delfzij, the Netherlands	Speaker
20/04/2022	ECRN conference 'Waste as a feedstock for the circular economy – challenges and opportunities for the chemical industry'	Online	Speaker
20/04/2022	BIOVEXO project meeting	Alicante, Spain	Speaker
26/04/2022	MANDALA project's info day for students	Biscay, Spain & online	Speaker
27/04/2022	Transformation to bioeconomy - a work in progress	Brussels, Belgium	Speaker
28/04/2022	BIOEAST workshop 'Monetizing grants for bio-based innovations in the CEE countries'	Online	Speaker
04/05/2022	Rethinking Materials Summit	London, UK	Speaker
05/05/2022	The contribution of forest circular bioeconomy to sustainable development	Online	Speaker
09/05/2022	EUBCE	Online	Speaker, co-organiser
10/05/2022	Grand Est-Europe meeting	Brussels, Belgium	Speaker
11/05/2022	European partnerships in Horizon Europe - training for NCPs	Online	Speaker
18/05/2022	BIC General Assembly	Brussels, Belgium	Speaker
18/05/2022	ReInvent project's final meeting	Online	Speaker
19/05/2022	Final biotech HUB-meeting of ERA-Nets and European instruments related to biotechnology and innovative technologies	Online	Speaker

31/05/2022	LIGNOFLAG project's opening ceremony	Podari, Romania	Speaker
31/05/2022	Seminar 'Digitization of biology for circular bio-economy applications'	Brussels, Belgium	Speaker
01/06/2022	SUSBIND project's final conference	Online	Speaker
01/06/2022	ECBForum | Scale-up bioeconomy event	Brussels, Belgium	Speaker
08/06/2022	CELABOR - Journée thématique : stratégies de valorisation des co-produits agricoles et agro-alimentaires dans un contexte d'économie circulaire	Online	Speaker
09/06/2022	Pays de la Loire Bioeconomy Hub	Brussels, Belgium	Speaker
10/06/2022	National info day - Finland	Online	Speaker
16/06/2022	Greenovate! Europe General Assembly	Brussels, Belgium	Speaker
16/06/2022	National info day - Estonia	Online	Speaker
16/06/2022	National info day - the Czech Republic	Online	Speaker
20/06/2022	Forum of innovation on the biobased economy	Online	Speaker
20/06/2022	Glaukos project's stakeholder workshop: Tackling microplastics pollution: can biodegradable textile and coating be a solution?	Online	Speaker
21/06/2022	Spring bioeconomy cluster's General Assembly	Florence	Speaker
21/06/2022	Circular economy in the Visegrad countries	Online	Speaker
21/06/2022	ERRIN WG on bioeconomy	Online	Speaker
22/06/2022	SCALE project's General Assembly	Online	Speaker
22/06/2022	National info day - Norway	Online	Speaker
22/06/2022	National info day - Poland	Online	Speaker
24/06/2022	National info day - Ireland	Online	Speaker
28/06/2022	2021 EUCYS bioeconomy prize winner's visit	Brussels, Belgium	Speaker
28/06/2022	National info day - Spain	Online	Speaker
06/07/2022	National info day - Germany	Online	Speaker
06/07/2022	International congress on biomass	Online	Speaker
13/07/2022	ENZYCLE & sister project webinar & stakeholder workshop	Online	Speaker
13/07/2022	Le scienze agro-alimentari	Online	Speaker
20/07/2022	National info day - Italy	Online	Speaker
07/09/2022	World Bioeconomy Forum	Online	Speaker
13/09/2022	5th international conference on technologies and business models for circular economy	Online	Speaker
16/09/2022	Celebration event for PLENITUDE's first production	Sas Van Gent, the Netherlands	Speaker
29/09/2022	IFIB 2022	Bari, Italy	Speaker
05/10/2022	Side-Event 'CrOpportunity – perennial crops for bioeconomy'	Brussels, Belgium	Speaker
06/10/2022	EU Bioeconomy conference	Brussels, Belgium	Speaker
12/10/2022	Irish Bioeconomy Summit	Tullamore, Ireland	Speaker
26/10/2022	EFIB 2022	Vilnius, Lithuania	Speaker

5.13. LIST OF ACRONYMS

AAR	Annual Activity Report
APIK	All Participants In-Kind contributions
AHP	Absorbent Hygiene Products
AWP	Annual Work Plan
BBI JU	Bio-Based Industries Joint Undertaking
BIC	Bio-based Industries Consortium
BOA	Back Office Arrangement
CAS	Common Audit Service
CEO	Chief Executive Officer
CA	Contractual Agent or Commitment Appropriation
CAS	Common Audit Service of the European Commission
CBE JU	Circular Bio-based Europe Joint Undertaking
CO_2	Carbon dioxide
CRS	Common Representative Sample
CSA	Coordination and Support Actions
CIC	Common Implementation Centre
DEMOS-IA	Innovation Action for demonstrators
DG AGRI	Directorate-General Agriculture & Rural Development
DG GROW	Directorate-General Internal Markets, Industry, Entrepreneurship and SMEs
DG HR	Directorate-General for Human Resources
DG RTD	Directorate-General Research and Innovation
DPO	Data Protection Officer
EC	European Commission

ECA	European Court of Auditors
ECBF	European Circular Bioeconomy Fund
EFTA	European Free Trade Association
EFIB	European Forum for Industrial Biotechnology and the Bioeconomy
EIB	European Investment Bank
EU	European Union
F&T Portal	Funding & Tender opportunities Portal
FAQ	Frequently Asked Question
FDCA	Furan Dicarboxylic Acid
FLAGS-IA	Innovation Action for Flagship
FR	Financial Regulation of the European Union
GA	Grant Agreement
GAP	Grant Agreement preparation
GB	Governing Board of the BBI JU and CBE JU
GDP	Gross Domestic Product
GHG	Green House Gas
HES	Higher or Secondary Education
IAS	Internal Audit Service
IA	Innovation Action
ICF	Internal Control Framework
ICT	Information and communication technology
IFIB	International Forum on Industrial Biotechnology and Bioeconomy
IKAA	In-kind contributions by BIC’s constituent entities to additional activities
IKOP	In-kind contributions by BIC’s constituent entities to operational activities
IT	Information Technology
JU	Joint Undertaking

KPI	Key Performance Indicator
KIPS	Key Impact Pathways
LA	Lactic Acid
LGO	Levoglucosenone
LISO	Local Informatics Security Officer
MS	Member State of the European Union
MSW	Municipal Solid Waste
OFMSW	Organic Fraction of Municipal Solid Waste
OLAF	European Anti-Fraud Office
OTH	Other type of organisations
PA	Payment Appropriation
PEF	Polyethylene furanoate
PET	Polyethylene terephthalate
PPP	Public Procurement Planning
PRC	Private- for- Profit
PUB	Public Body (excluding research and education)
REA	Research Executive Agency
REC	Research Organisation
RIA	Research and Innovation Actions
R&D	Research and Development
RTO	Research and Technology Organisation
SC	Scientific Committee of the BBI JU
SDG	Sustainable Development Goal
SIAP	Strategic Internal Audit Plan
SIRA	Strategic Innovation and Research Agenda for BBI JU
SRIA	Strategic Research and Innovation Agenda for CBE JU

SO	Strategic Orientation provided in the Strategic Innovation and Research Agenda
SLA	Services Legal Agreement
SMEs	Small and Medium-Size Enterprises
SRG	States' representatives group of the CBE JU
TA	Temporary Agent
TRL	Technology Readiness Level
TTG	Time to Grant
TTI	Time to Inform
TTP	Time to Pay
UN	United Nations Organisation