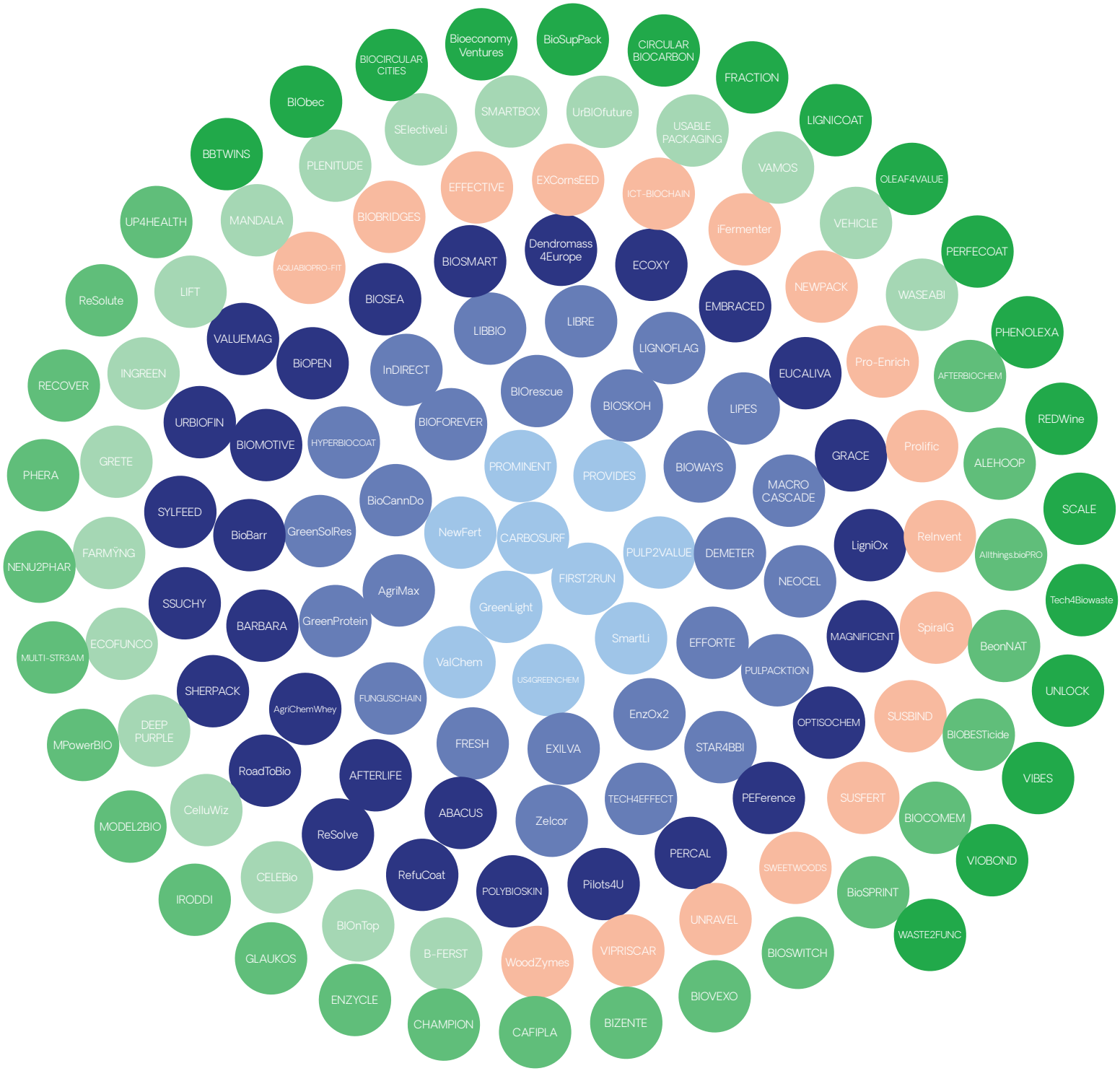
Ref. Ares(2022)4821138 - 01/07/2022

2021 Annual Activity Report

Circular Bio-based Europe Joint Undertaking



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EUROPEAN PARTNERSHIP

Bio-based Industries Consortium

The infographic on the cover page shows the evolution of the BBI JU project portfolio throughout the programme. Every circle represents a granted project, and the colour identifies the year of the call for proposals:

Contents

FACTSHEET

Name[1]	Bio-based Industries Joint Undertaking (BBI JU)	Circular Bio-based Europe Joint Undertaking (CBE JU)
Objectives	The BBI JU contributes to the implementation of the Horizon 2020 Framework Programme towards a more resource-efficient and sustainable low-carbon economy and increasing economic growth and employment, particularly in rural areas, by developing sustainable and competitive bio-based industries in Europe based on advanced biorefineries that source their biomass sustainably, and in particular to: • demonstrate technologies that enable new chemical building blocks, new materials, and new consumer products from European biomass which replace the need for fossil-based inputs; • develop business models that integrate economic actors along the whole value chain from supply of biomass to biorefinery plants to consumers of bio-based materials, chemicals and fuels, including by means of creating new cross-sector interconnections and supporting cross-industry clusters; and • set up Flagship biorefinery plants that deploy the technologies and business models for bio-based materials, chemicals and fuels and demonstrate cost and performance improvements to levels that are competitive with fossil-based alternatives.	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.
Founding Legal Act	Council Regulation (EU) No 560/2014, of 6 May 2014, as amended by Council Regulation (EU) 2018/121 of 23 January 2018	Council Regulation (EU) 2021/2085, of 19 November 2021 repealing (inter alia) Regulation (EU) No 560/2014

[1] On 30 November 2021, the Circular Bio-based Europe Joint Undertaking became the legal and universal successor of the Bio-based Industries Joint Undertaking.

Name[1]	Bio-based Industries Joint Undertaking (BBI JU)	Circular Bio-based Europe Joint Undertaking (CBE JU)
Executive Director	Philippe MENGAL	
Governing Board	Chair: Mat QUAEDVLIEG Vice-chair: John BELL	Chair: Mat QUAEDVLIEG Vice-chair: John BELL
Other bodies	States Representatives Group Scientific Committee	States Representatives Group Scientific Committee Deployment Groups
Staff	23 staff members	29 staff members
2021 Budget	Commitment appropriations: EUR 5,434,905[2] Payment appropriations: EUR 174,752,669	
Budget implementation	Commitment appropriations: EUR 4,554,873 Payment appropriations: EUR 125,075,654	
Grants	142 signed grants for a total value of EUR 822 million (18 in 2021)	NA (for 2021)
Strategic and Innovation Research Agenda	The 2017 Strategic and Innovation Research Agenda (SIRA) of the Bio-based and Renewable Industries for Development and Growth in Europe, that updated the original 2013 SIRA	The 2022 Strategic Research and Innovation Agenda (SRIA)
Calls implementation in 2021	No calls launched in 2021, the implementation of the last call launched in 2020 resulted in 18 funded proposals, for a value of EUR 104.5 million ; 41 projects finalised in 2021 ; 86 new cross-sector interconnections and 63 new bio-based value chains	NA (for 2021)
Participation, including SMEs	Total number of participations in funded projects: 1,887 of which: % of SME beneficiaries: 40% % of private-for-profit companies: 61%	NA (for 2021)

[2] Please see footnote to table 21 (budget amount includes revenues received during the year as a result of various administrative recoveries)

FOREWORD

Dear reader,

It gives me great pleasure to present to you the first Annual Activity Report for the Circular Biobased Europe Joint Undertaking (CBE JU), as well as my last foreword message. At the time of writing this personal message, I am counting down my last weeks as Executive Director of CBE JU, with 31 August 2022 being my last day.

Usually, I reserve my last word is for my team but this time, my first word will be for the current Programme Office of CBE JU and all the colleagues who worked for CBE and BBI JU since its establishment. It has been an immense pleasure for me to work with all of you and achieve together remarkable results. It has also been an honour, and I hope for all of us, contributing to build a competitive, sustainable and circular bioeconomy for Europe. Thank you so much for your hard work, commitment and resilience, and thank you for putting the BBI /CBE JU corporate values of “towards excellence, professionalism, care, commitment and team spirit” at the heart of your work. Your enthusiasm, your passion and dedication kept on inspiring me and our community since 2015.

I would like to extend my sincere thanks to the whole CBE JU community, the members of the advisory bodies and the Governing Board, the founding partners that are the Bio-based Industry Consortium (BIC) and the European Commission, the beneficiaries of our projects, our experts, and all the stakeholders who have been developing European bio-based industries over the past years, for their important contribution towards our achievements.

BBI JU is recognised as a very successful initiative achieving huge socio-economic and environmental impacts. In this report, you will discover the achievements of last year. While there was no call for proposals in 2021, it was an intense year thanks to the activity of our funded projects and due to the preparation and the establishment of CBE JU.

You will see in the various chapters of this report how BBI/CBE JU is delivering in areas that - up until now - had some remaining gaps, for example full geographic coverage and transformation at large scale of aquatic feedstock and municipal waste in flagship projects. Closing these gaps confirms the alignment of BBI JU’s achievements with its initial goals and illustrates the high impact of the initiative, that since its inception has been contributing to the objectives of the European Green Deal. Two major positive impacts of BBI JU on the industry have been the structuring effect in organising the value chains across sectors and the innovation-driven mobilising effect of key stakeholders. They are essential in maximising new investments and creating jobs that contribute to the socio-economic objectives of the European Green Deal. Alone the 13 BBI JU-funded flagship biorefinery projects will generate 4,700 direct and more than 15,000 indirect jobs, and with only EUR 250 million of BBI JU funding in these biorefineries, industry is investing EUR 1.3 billion! This means that every euro invested has attracted around 5.2 euros of private investment in these projects. Furthermore, these first-of-their-kind flagship biorefineries have a high replication potential that will multiply their impact.

This success was due to BBI JU, now BBI JU has a successor, the Circular Bio-based Europe Joint Undertaking (CBE JU). After a very long process, the Single Basic Act (SBA) for all EU Public Private

Partnerships under Article 187 entered into force on 1 December last year, following a decision of the Council on 9 November 2021. CBE JU will build on the success of its predecessor, BBI JU, in advancing competitive circular bio-based industries in Europe. This new partnership will demonstrate the potential of the biobased industry to green the EU's industrial production and contribute to the recovery of our economy in a sustainable and inclusive way. A circular and sustainable bioeconomy is essential to reach the ambitious goals of the European Green Deal, to make our societies prosperous and to protect the environment while contributing to the rural revitalisation.

With an expanded remit, CBE JU is expected to scale up technologies leading to industrial deployment, thus attracting investment and creating jobs, while aiming to achieve the goals outlined in the Strategic Research and Innovation Agenda (SRIA) 2030. In addition, the partnership will involve a wider range of stakeholders including the primary sector, regional authorities, and investors to prevent market failures and unsustainable bio-based processes. To deliver on its objectives, the partnership will only fund projects that respect the principles of circularity, sustainability, and planetary boundaries. Consequently, CBE JU will significantly contribute to the EU's climate targets for 2030, paving the way for climate neutrality by 2050, and advancing circular and sustainable production in line with the European Green Deal.

The motto of the CBE JU Programme Office is 'Building a greener, safer and better Europe' and to do so, the new partnership will launch its first call for proposals in 2022 with an indicative budget of EUR 120 million, which will support the strategic orientations defined in the SRIA as feedstock, processing and products, and the cross-cutting aspects of finance, communication and the environmental sustainability framework. The calls will fund three types of actions: that of, RIAs, IAs which includes Flagships, as well as CSAs.

Dear reader, it has been an honour for me to lead this programme. I enjoyed my mandate leading BBI JU since 2015. I am proud of our achievements, and I am optimistic for CBE JU. I hope you will enjoy reading this report and that you will share the passion of my colleagues working in CBE JU who drafted it. I can conclude by saying that this partnership is in good hands, with an excellent Programme Office team and a high-level management team.

Philippe Mengal
Executive Director of BBI JU

About the Bio-based Industries Joint Undertaking (BBI JU)

The Bio-based Industries Joint Undertaking (BBI JU) was established on 6 May 2014 by Council Regulation No 560/2014, published in the OJ on 7 June 2014, entering into force on 27 June 2014[3] (the 'Council Regulation'). The BBI JU is the body entrusted with the implementation of the BBI Initiative, for which a public-private partnership has been established between the European Union, represented by the European Commission (EC), and the Bio-based Industries Consortium (BIC), with total contributions from both partners of EUR 3.705 billion between 2014 and 2024, of which almost 75% will be contributed by the industry. The BBI JU aims to bring together all relevant stakeholders to establish innovative bio-based industries as a competitive sector in Europe, ranging from primary production, large industry, SMEs, clusters, trade associations, academia and RTOs to end users.

The **mission of the BBI JU** is to implement the Strategic Innovation and Research Agenda (SIRA) developed by the Bio-based Industries Consortium (so called BIC) and endorsed by the EC. The BBI JU operates its programme as the catalyst to enable the EU and industry to align their strategy and vision while respecting Horizon 2020 principles of openness, transparency and excellence for the call for proposals organised each year.

The **objective of the BBI JU** and of its members is to contribute to the development of sustainable and competitive bio-based industries in Europe based on advanced biorefineries that source their biomass sustainably; and in particular to:

- demonstrate technologies that enable new chemical building blocks, new materials, and new consumer products from European biomass, and which replace the need for fossil-based inputs;
- develop business models that integrate economic actors along the whole value chain from supply of biomass to biorefinery plants to consumers of bio-based materials, chemicals and fuels, including through creating new cross-sector interconnections and supporting cross-industry clusters; and
- set up flagship biorefinery plants that deploy the technologies and business models for bio-based materials, chemicals and fuels and demonstrate cost and performance improvements to levels that are competitive with fossil-based alternatives.

As announced in the updated Bioeconomy Strategy presented by the European Commission in October 2018, the BBI JU is considered as one of its key achievements: '*the EU public-private partnership on Bio-based Industries has been instrumental in the development and deployment of new bio-based value chains, based on the use of renewable resources including waste*'. This confirms some conclusions of the BBI JU interim evaluation: 'The *BBI JU has created a stimulating research and innovation environment in Europe. The BBI JU has also attracted a satisfactory level of participation of the best European players in the areas of the selected value chains. The development*

[3] As amended by Council Regulation (EU) 2018/121 of 23 January 2018 amending Regulation.

of business models to integrate economic actors along the whole value chains is an achievement: … As the realisation of these goals could not be achieved by a single member country, organisation or scientific discipline alone, the required common European effort is justified.'

The two main positive effects of the BBI JU remain the structuring effect in organising the value chains across sectors and the innovation-driven, mobilising effect of key stakeholders across sectors and across geographical areas as mentioned in the **interim evaluation** report of the BBI JU. The significant added value of the BBI JU is mostly in accelerating the integration of different sectors and industries towards the creation of new value chains, with different partners joining forces on a common project. In addition to these key aspects, other important achievements also highlighted in the report are the effectiveness of implementation, the KPIs specific to the BBI JU which are all well on track, the significant private sector participation, with an important mobilisation of private investment demonstrating a high leverage effect, and the strong SMEs participation.

About the bio-based industry sector in the EU

The **bio-based industry is an emerging sector** organised between inter-connected value chains, which aims at transforming renewable biological feedstock such as dedicated crops, agricultural and forest residues, biowaste and aquatic biomass, into bio-based products, materials and energy, replacing their fossil-based versions. According to Eurostat figures, in 2016 the bio-based industry sector accounted for 3.6 million jobs in EU28 and achieved a total turnover of around EUR 700 billion[4].

The bio-based industry is considered an emerging sector due to the fact that it is extremely fragmented in both the geographical and business organisation contexts. Industry therefore perceives risks in investing in it. It is also facing certain specific challenges and risks in terms of feedstock supply, notably the lack of an efficient logistical infrastructures to transport the feedstock from its place of generation to the biorefinery location. Biorefineries require a substantial level of investment that is not without risk because of: high costs for innovation, registration and infrastructure; often young companies involved; investments needed to develop applications and enter the market, which include communication to the society, fluctuating feedstock price, competition with well-established conventional production processes. In addition, the sector is faced with various regulatory hurdles related, for example, to standards, safety aspects, labels and certification and REACH legislation, impacting several levels of the value chains.

In **2012, as part of the impact assessment of the initiative**, the EC conducted a public consultation. From the 638 responses received, 94.3% of them recommended an EU initiative and a large majority considered a public-private partnership (PPP) to be the most appropriate mechanism. The impact assessment concluded that a Joint Undertaking between public and private sectors was necessary to:

- **de-risk investment** at all levels, from research to full scale deployment;
- **organise the sectors** by building bridges and collaboration between actors that had never collaborated in the past;
- **reach a critical mass** at European level, where a single country or small group of organisations is not sufficiently large to address such a strategic challenge.

The main expected impacts of the BBI JU are thus to contribute to the structuring and mobilising effect of the bio-based industry sector and to trigger, attract and maintain investment in Europe, creating competitiveness and jobs, particularly in coastal and rural areas.

[4] https://biconsortium.eu/sites/biconsortium.eu/files/documents/European_Bioeconomy_in_Figures_2008-201_06042018.pdf

EXECUTIVE SUMMARY

Introduction

2021 marked a defining moment for the bio-based industries, in that the successor to the Bio-based Industries Joint Undertaking (BBI JU) was formally launched on 30 November 2021. The aim of the Circular Bio-based Europe Joint Undertaking (CBE JU) will be to advance a sustainable and competitive EU bioeconomy, over the next 10 years, while addressing the environmental, climate, technological, regulatory, social and market challenges. This new EUR 2 billion partnership with an enhanced remit, which foresees a wider engagement of stakeholders, will demonstrate the potential of the bio-based industry to make the EU's industrial production greener and contribute to the recovery of our economy in a sustainable and inclusive way. The CBE JU will fund projects that will build strong, resource-efficient and competitive bio-industries in Europe by combining the financial support of Horizon Europe - the EU's research and innovation framework programme for 2021-2027 - and contributions from the private sector.

The Covid-19 pandemic continued to have a significant socio-economic impact in 2021. However, thanks to the consolidated business processes and procedures established in 2020, which have proven to be very effective, the continuity of day-to-day operations was enabled without any major disruption. The JU Programme Office maintained high levels of operational excellence throughout the year, in addition to making considerable progress in delivering on the research and innovation activities of the SIRA 2017 programme, while at the same time looking ahead and successfully transitioning to the CBE JU.

As there were no open calls for proposals in 2021, the last call being implemented in 2020, the BBI JU continued to efficiently manage its portfolio of projects which resulted in the **signature of 18 Grant Agreements, bringing the total number of projects in the BBI JU portfolio to 142**.

The Annual Key Performance Indicators (KPIs) and Impacts Survey continues to highlight the significant socio-economic impacts of the BBI JU funded projects, and the contribution the initiative is making towards the climate neutrality targets as well as increasing sustainability and circularity of production and consumption systems, in line with the EU Green Deal. Flagship projects alone report the creation of 4,700 direct and 15,000 indirect jobs. An important contribution to climate change mitigation is the reduction of emissions of CO_2 and other GHG gasses reported by 65% of BBI JU projects. In addition, the projects report major impacts on waste reduction, reuse and recycling (65%), as well as reduced energy (50%) and water consumption (35%) and improved land use (39%).

The BBI JU has proven to be an essential element of the bioeconomy strategy, structuring and mobilising the bio-based sector by stimulating projects and investments expected to generate a **leverage effect of EUR 2.61 of private contributions for every euro of EU public funds**, which is above the expectation for the reporting period.

Investing in the development and deployment of innovative technologies for the bio-based industries has resulted in increased competitiveness of European companies (87% reported by the BBI JU

funded projects), along with the creation of new markets (63%), the expansion of industrial capacities (18%) and the reduction of the external dependence on both fossil and other non-renewable resources, such as minerals from mining (29%).

SMEs participation continues to significantly surpass expectations, with more than 40% of all BBI JU beneficiaries being SMEs and receiving around 37% of the overall funding, further demonstrating the importance of this initiative in mobilising and attracting SMEs.

Another key distinct feature of BBI JU projects is the close and strong collaboration between academia and industry, including SMEs, which has resulted not only in knowledge creation and transfer but also the deployment of sustainable processes and commercialisation of bio-based products.

Operational highlights

41 projects were finalised in 2021, with all KPIs linked to project performance having been achieved. Moreover, the expected results reported by ongoing projects indicate that the final KPI results will significantly exceed the SIRA targets.

KPIs 1 and 2 report a **systemic transformation in the bio-based economy in Europe**, which saw the creation of 86 new cross-sector interconnections and 63 new bio-based value chains from the 41 finalised projects. There is an increasing diversity in the biomass used, which has evolved from mostly agri- and forest-based biomass to a broader range of feedstock, including aquatic biomass (fisheries and algae), the organic fraction of municipal solid waste and CO_2 effluents from bio-based operations. The shift away from conventional and linear value chains is opening-up opportunities for significantly more value chains than initially expected, with circularity in focus.

The number of new bio-based building blocks (KPI 4), materials (KPI 5) and consumer products (KPI 6) that are suitable for a wide range of industrial and commercial applications demonstrate the feasibility of the **transition from a fossil-based economy to a bio-based one**. The fact that more than one-third of the new bio-based materials and products report improved recyclability, indicates the potential for a shift from linear production and consumption models, based on the depletion of fossil resources, to circular models, based on the sustainable use of renewable resources. An important share of the new bio-based building blocks (40%) are breakthrough ones that have no fossil-based counterparts, which again confirms that the transition to a bio-based economy also brings the potential to develop new chemical structures with novel properties that can translate into desirable functionalities in the end products.

2021 also witnessed the BBI JU finalising the implementation of the "**BBI JU Synergy Label**" pilot phase, awarding 12 proposals from Call 2020 (10 DEMOs and 2 FLAGs). The aim of the initiative was to support the uptake of excellent proposals that could not be funded under the BBI JU calls despite their excellent scores, due to a lack of available budget. It has contributed to enhancing synergies between BBI JU activities, Member States, regions and other funding organisations in the field of bio-based Industries.

Dissemination and communication activities

Notwithstanding the Covid-19 pandemic, there was a significant increase in dissemination and communication activities. The majority of communication activities in 2021 focused on the preparation of the BBI JU's continuation in the framework of Horizon Europe programme (including a new logo and visual identity), highlighting the impacts of the BBI JU and its contribution to relevant EU policy goals.

The BBI JU reinforced its **ambassadors' network** by involving members of the Governing Board and advisory bodies, as well as project beneficiaries, in the dissemination activities. Collaboration with institutional partners was strengthened to amplify the impact of the new initiative under Horizon Europe. Communication tools and channels received a boost with the update of the social media and media relations plan.

One of the most successful communication initiatives in 2021 was the **BBI JU project photo competition**, which provided an opportunity to reconnect with the partnership's project beneficiaries, as well as leading to a collection of high-quality images on the bio-based production processes. The competition launch message on Twitter attracted over 14,000 views, with a public vote on social media engaging nearly 400 BBI JU stakeholders and generating more than 17,000 views.

As regards social media, all BBI JU channels were transformed to reflect the organisational change and identity while retaining the followership. The number of BBI JU / CBE JU followers on Twitter grew by 21%, LinkedIn became the most followed BBI JU / CBE JU social media account overtaking Twitter, BBI JU / CBE JU messages registered 10% more views compared to 2020 and the number of followers increased by 47%.

Conclusion

2021 marks the start of a new chapter for the bioeconomy and bio-based industries with the establishment of the CBE JU partnership. However, it is not the end per se of BBI JU as the JU Programme Office will continue to manage ongoing projects and reporting requirements. The EUR 3.7 billion public – private partnership has been instrumental in the European bio-based economy, supporting the development of innovative and competitive bio-based industries in Europe while aiming at contributing towards replacing fossil-based products with EU-sourced, more sustainable bio-based alternatives.

At a time when Europe is still recovering from the Covid-19 pandemic, the need to transform the way we live, produce and consume has become more obvious than ever. The achievements of the BBI JU over the last seven years have demonstrated concrete solutions to the challenges we are facing today. The industry-led initiative has helped to modernise and strengthen the EU industrial base, create new value chains and greener, more cost-effective industrial processes, while accounting for protecting biodiversity and the environment. The CBE JU initiative will continue the important work carried out by the BBI JU, developing a robust bioeconomy that will help the EU accelerate the transition towards a circular and low-carbon economy.

1 IMPLEMENTATION OF THE ANNUAL WORK PLAN 2020

1.1 KEY OBJECTIVES 2020 AND ASSOCIATED RISKS

1.1.1 Overall operational objectives from AWP 2021

In 2021 no call for proposal was launched and CBE JU concluded the Grant Agreement Preparation (GAP) of the proposals retained for funding from the last BBI JU Call 2020.

From 30 November 2021, the CBE JU ensured the overcoming of the main technological and innovation challenges described in the 2017 SIRA, via its funded portfolio.

1.1.2 Management objectives and achievements 2021

The 2021 priorities and objectives were first presented by the Executive Director to the BBI JU Governing Board during its meeting of 17 June 2020, prior to a final version being presented and discussed on 7 October. The priorities were then included in the AWP 2021. Those priorities were translated into objectives for 2021, aimed at consolidating the project portfolio whilst maintaining the highest standards of quality to absorb the peak of the workload. Another important priority was to prepare and ensure a smooth transition from the BBI JU to the new CBE JU under the Horizon Europe Framework Programme.

The main results achieved in 2021 for each of the four priorities are briefly described below:

1. **Keep the BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of the workload in 2021**

Despite the challenging conditions due to the Covid-19 pandemic, the JU Programme Office continued to consolidate the effective project management and reporting, including the assessment and payment of periodic cost claims. The implementation of the agreed methodology for the monitoring, validation and communication format of the project outcome KPIs was fully applied. The “Synergy Label” pilot was deployed for a third year and a number of conclusions and recommendations were highlighted for the CBE JU. The implementation of the action plan on the participation of the agricultural sector, initiated in 2020, was pursued in 2021, while the monitoring of such was overseen by a dedicated Task

Force. Finally, mobilisation in Eastern, Baltic and Southern Member States was consolidated, reporting concrete results from the widening participation strategy.

2. **Ensure and prepare the transition to the next Framework Programme under Horizon Europe and the new CBE JU**

The draft CBE budget for 2022 was prepared in particular for what concerns the call planning, taking into account the entry into force of the SBA. As the SBA entry into force was expected before the end of 2021, the JU Programme Office developed a new visual identity for the CBE JU, including a new web site and logo and the change management communication. Once the SBA entered into force on 30 November, the nomination process for the Governing Board members commenced, with a first meeting on 16 December 2021 establishing the new body. The procedures for the establishment of the new Scientific Committee and State Representatives Group (SRG) were also launched before the end of the year. The new organisation chart for the CBE JU Programme Office, based on the new SEP and the future mission and tasks of the CBE JU, was ready for the first Governing Board meeting and a number of recruitment procedures had also been anticipated (e.g. the reserve list for project officers, see section 2.6).

3. **Analyse and promote the achievements and impacts of the BBI JU initiative in line with the EU policy goals, in particular the EU Bioeconomy Strategy and the EU Green Deal including the EU Biodiversity Strategy, Circular Economy Action Plan and Farm to Fork Strategy**

This objective was achieved by integrating the EU Green Deal and other relevant policies in all communication actions, and the deployment of the Stakeholder Management Strategy. Despite the Covid-19 pandemic imposing a remote format for all communication activities, the BBI JU Programme Office further consolidated the collaboration with priority stakeholders (institutional, governmental and NGOs), to reinforce and support their role as ambassadors of the initiative and also engage with new stakeholders such as primary producers. The Communication Team produced new communication material, such as publications and videos, highlighting BBI JU project successes which were shared via social media, newsletters and events. The team continued to further develop the communication tools and channels including the website, social media, newsletter, media relations and partnerships, and carried out online campaigns on the programme's high-level achievements and contributions in relation to relevant EU policies.

4. **Ensure a smooth transition to the new proposed partnership - Circular Bio-based Europe under Horizon Europe - by providing lessons learnt, data and relevant information at operational level and involving key members of BBI staff in discussions where appropriate**

The transition to the new partnership finally occurred at the very end of 2021 with the entry into force of the SBA on 30 November and the first Governing Board meeting on 16 December. All relevant document procedures and nominations were performed in due time by the JU Programme Office in order to facilitate the establishment of the Governing Board with a new Chair and Vice Chair. All critical and key decisions were taken before the closing of the year. The establishment of other bodies of the CBE JU, the finalisation of the 2022 SRIA and the first CBE JU calls have been postponed to 2022.

1.1.3 Associated risks

In line with the BBI JU procedures for identifying risks and their preventive measures, the 2020 risk assessment performed on the 2021 objectives identified ten risks. Most of these risks related to the potential impacts of the Covid-19 pandemic on the project portfolio and on the daily operations of the organisation for the achievement of its objectives.

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 2021 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 BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of workload in 2021 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
Consolidate the effective BBI JU project management and reporting for the achievement of the Strategic Objectives	Project failures or delays	Enhanced project monitoring and timely intervention on reported criticalities provide reasonable assurance for the achievement of the Strategic Objectives
Coordination of the planning, certification and reporting on financial contributions to the initiative and its leverage effect	Reduced IKAA certifications compared to annual plans	Total certified and planned additional investments above the value that is expected at this stage of the initiative
Ensure business continuity and preservation of ICT assets	ICT discontinuity and threats to cyber security	No interruptions on business continuity and preservation of ICT assets

Table 1: Most significant risks managed in 2021.

These results are detailed in the relevant sections of this document.

1.2 RESEARCH & INNOVATION ACTIVITIES

The mission of the BBI JU has been to implement, under Horizon 2020 rules, the Strategic Innovation and Research Agenda (SIRA) 2017. This involved organising calls for proposals to support research, demonstration and deployment activities, enabling the collaboration between stakeholders along the entire value chains.

The section below provides an overview of the results of the BBI JU implementation including the BBI JU projects' portfolio, its contributions to the Strategic Orientations set out in the SIRA 2017, the analysis of feedstock addressed and the geographical coverage.

1.2.1 BBI JU projects' portfolio and its contribution to SIRA 2017

Overview of BBI JU's project portfolio

As presented in Figure 1, the BBI JU implemented its research and innovation programme via four types of actions aiming at different Technology Readiness Levels[5], with RIAs focusing on filling the gaps in technological innovation while IAs prioritise the integration, deployment and upscaling of technologies and ultimately bringing the technology closer to the commercial scale. CSAs are instead supporting the creation of value-chains by addressing cross-cutting challenges.

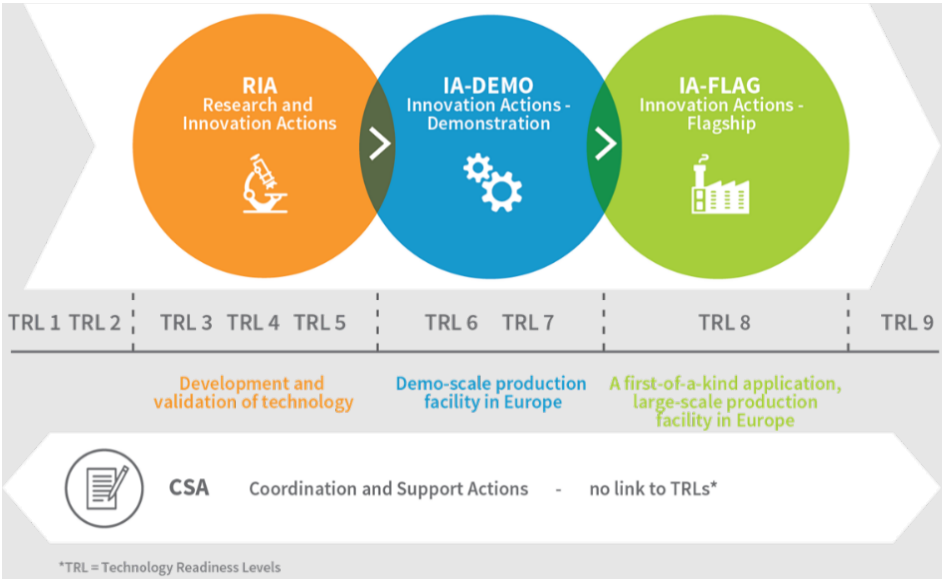

Figure 1: Types of actions in relation to their respective TRLs (for RIA and IAs).

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

Following the finalisation of the Grant Agreement Preparation for the last BBI Call 2020, the BBI JU projects' portfolio reached a total of 142 projects (see Table 2), of which 96 were still ongoing at the end of 2021 and 46 finalised as shown in Figure 2. **Error! Reference source not found.**

	RIAs	DEMO	FLAG	CSA	Total
Call 2014	7	2	1	0	10
Call 2015	11	9	3	3	26
Call 2016	15	9	2	3	29
Call 2017	10	4	1	2	17
Call 2018	9	5	2	3	19
Call 2019	12	6	2	3	23
Call 2020	7	4	3	4	18
Total	**71**	**39**	**14**	**18**	**142**

Table 2: BBI JU summary of projects per call and type of actions.

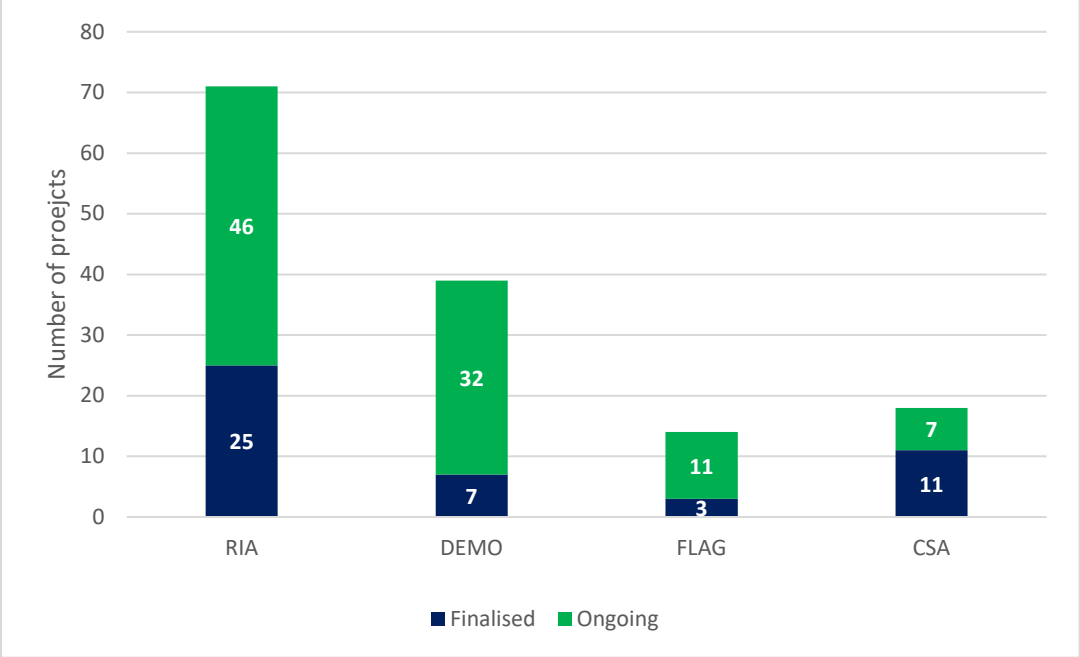

Figure 2: Number of BBI JU projects per type of action finalised and ongoing at the end of 2021.

Regarding the distribution of the operational budget among the different types of actions, Figure 3 shows the overall BBI JU funding allocated to each type of action based on the full portfolio of BBI JU projects compared to the distribution announced in the SIRA for the BBI initiative as a whole. This data demonstrates that the initiative has adhered to the expectations set out in the SIRA, in terms of the funding distribution, with DEMO and RIA projects receiving a slightly higher share of funding compared to the one initially estimated for Flagships and CSAs.

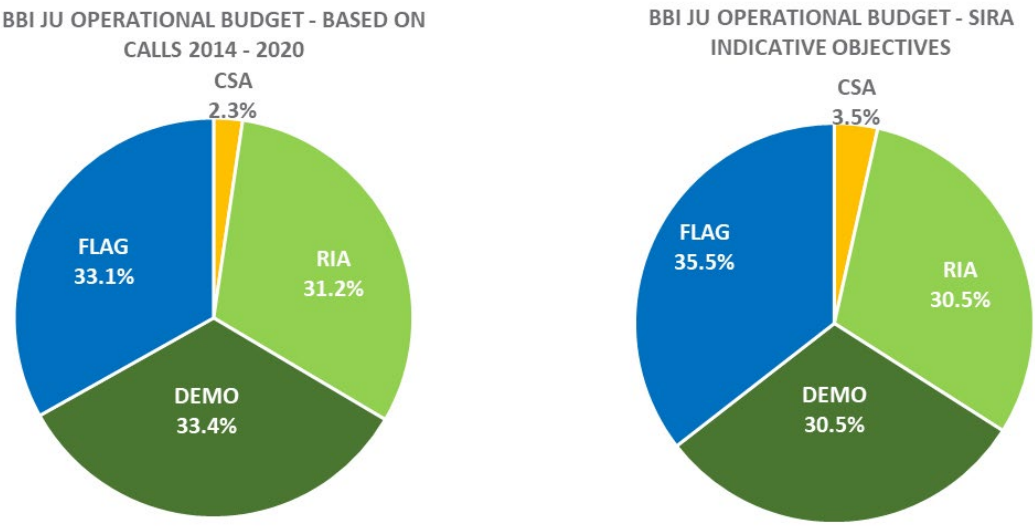

Figure 3: BBI JU overall operational budget: allocation of funding between types of actions in the cumulative figures for the period 2014-2020 compared to the indicative values estimated in SIRA 2017.

Contribution of BBI JU projects to SIRA 2017 Strategic Orientations

The SIRA 2017 defined four Strategic Orientations (SOs) for the bio-based industry in Europe (Figure 4) covering all steps of the value chain: from sustainable feedstock mobilisation to the final market uptake of bio-based products and applications. For each SO, the SIRA outlined the main technological and innovation challenges to be addressed in order to support bio-based value chains in Europe. These challenges have been translated into topics in the BBI JU Annual Work Plans in order to ensure that the projects selected were best suited to enable the development of sustainable and competitive bio-based industries. Typically, IAs covered all four SOs as they are expected to cover the entire value chain, resulting in the creation of new bio-based products with concrete applications meeting societal and market demands. On the other hand, since RIAs generally focus on tackling specific technological challenges, they were expected to tackle one SO (but they also covered more).

Figure 4 SIRA strategic orientations

SO1: As shown in Figure 4, SO1 deals with the supply of sustainable biomass feedstock. The challenges related to this SO fall under two main headings: *1) Increase biomass production by improving agricultural practices* and *2) Mobilising and increasing sustainable supply*

The BBI JU funded projects are enabling the diversification of the types of biomass which can be valorised to bio-based products and increasing the volume mobilised. This is achieved by resolving supply-chain hurdles (e.g. logistics, storage), addressing the efficiency (e.g. plant protection/nutrition products, new and improved crops) and intensification of cultivation (e.g. use of marginal land), as well as capturing the potential of emerging feedstock such as biogenic gaseous carbon, OFMSW and algae derived biomass. In the next section, the classification of the BBI JU projects by feedstock is outlined, nicely demonstrating the progress that has been made towards unlocking new biomass sources.

The **REDWine** (DEMO) project is addressing SO1 by harnessing the off-gas created during red wine fermentation (rich in CO_2) and winery liquid effluent to produce Chlorella biomass, therefore contributing to the increase of feedstock availability for the bio-based industry.

SO2: The next step of the value chain is efficient processing. As for SO1, specific challenges have been identified categorised by the type of process: pre-treatment, secondary conversion or downstream processes. The BBI JU funded projects are addressing all of these stages in order to

demonstrate efficient and cost-effective processing. The ultimate aim is to make the best possible use of feedstock and energy resources and to link all processing steps into an integrated biorefinery setting. As can be seen in Section 1.3.1.2. The BBI JU specific KPIs under KPI8, RIA projects are helping to fill gaps in value chains by increasing the TRL of key processing technologies, while DEMO and FLAG projects are scaling up these processing steps in integrated biorefineries.

The **FRACTION** (RIA) project is addressing SO2 by developing an organosolv fractionation process that allows operating with high-biomass loading, mild operation conditions, eliminating separation steps and offering extra feedstock flexibility in the plant.

SO3 addresses innovative bio-based products for specific applications for a wide range of industry sectors and consumer products. The new bio-based products include both drop-in solutions and radically new products and molecules. The contribution of the BBI JU projects to this SO is outlined in Section 1.3.1.2. BBI JU specific KPIs under KPIs 4, 5 and 6.

The **PHERA** (DEMO) project is addressing SO3 by demonstrating new bio-based sustainable pest control products based on insect sex pheromones.

SO4: The final section of the value chain is the focus of SO4, which seeks to accelerate the market-uptake of bio-based products and applications. CSA projects greatly contributed to addressing the non-technological hurdles that slow down the market uptake, including public awareness, bio-based product standardisation and regulation, networking within the bio-based industry or support to value chains via clustering and road-mapping activities.

The **BIOSWITCH** (CSA) project is addressing SO4 by encouraging brand owners to switch to a bio-based approach. Through events, outreach activities and the delivery of a 'BIOSWITCH toolbox', the project aims to aid companies seeking to make the switch.

In addition to the priorities established by the SIRA, cross-cutting aspects are crucial for the transition to a sustainable bio-based economy, such as the zero-waste biorefinery concept, the circular and cascading approaches.

A **circular approach** is present in several BBI JU projects, at feedstock, and/or process and/or product level. For example projects addressed bio-based materials that can be recycled, reused and upcycled or others focused on generating high-value products out of biowaste.

The **EMBRACED** (DEMO) project valorises the cellulosic fraction of Post-Consumer AHP waste to produce new bio-based building blocks and materials. The project will provide recommendations on the end-of-life criteria for AHP.

The **cascading biorefinery approach** is systematically embedded in BBI JU projects and aims at maximising the efficiency of biomass feedstock and its by-products use into higher added value

chemical products. Biorefineries can profit from the molecular complexity of biomass composition, while converting organic residues to energy only in the last steps of the biorefinery process.

The **Pulp2Value** (DEMO) project demonstrated an integrated and cost-effective cascading bio-refinery system to refine sugar beet pulp to produce microcellulose fibers, arabinose and galacturonic acid.

Classification of BBI JU projects according to the main source of feedstock

The SIRA 2017 introduces and defines four different types of feedstock:

- **Agri-based feedstock**, including residues and by-products from the agro-food industry;
- **Forest-based feedstock**, including side streams and residues;
- **Aquatic feedstock**, including aquatic organisms, fisheries and aquaculture sectors and their residues;
- **Biowaste**, including Municipal Solid Waste (MSW) and wastewater, and CO_2.

In addition, a small number of BBI JU projects (RECOVER, BIZENTE, ENZYCLE) transform non-biomass feedstock (designated as **other feedstock**) using biotechnological processes.

Figure 5 shows that all feedstock sources identified in the SIRA have been covered by one or more of the three types of action, RIA, DEMO and Flagship, by the BBI JU funded projects from calls 2014 until 2020. Overall, the agri-based sector represents the main source of feedstock for all actions (RIAs and IAs), followed by the forest-based.

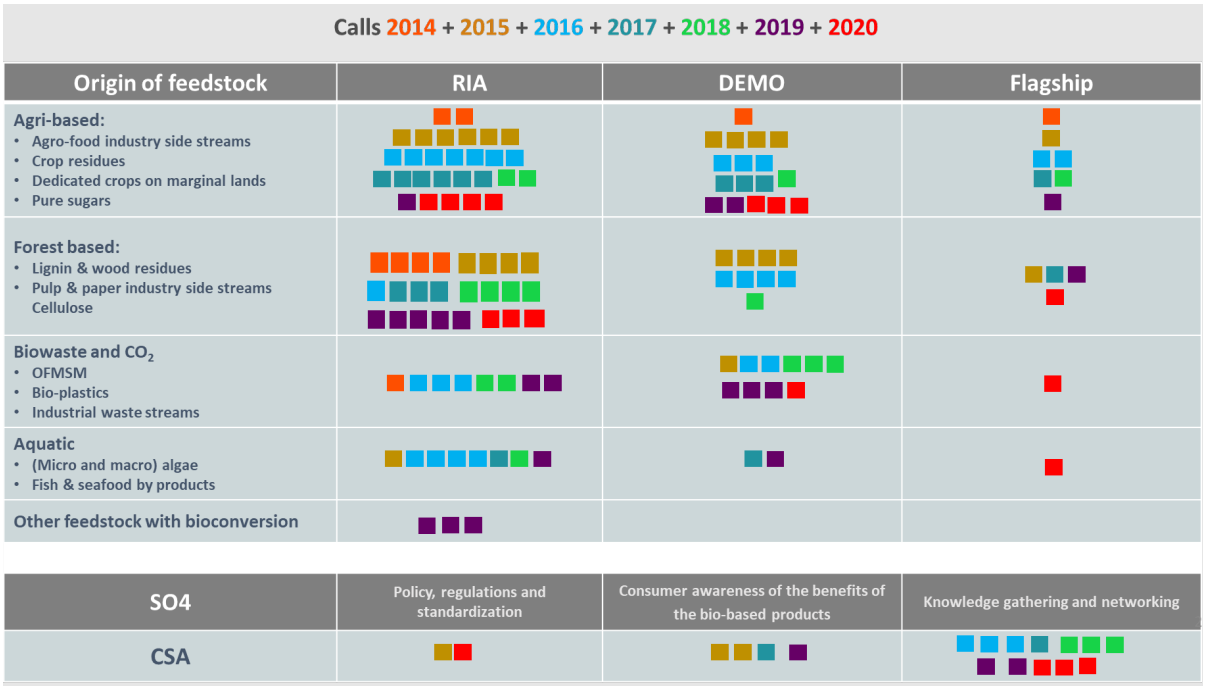

Figure 5: BBI JU RIA and IA projects from all BBI JU Calls (2014–2020).

Regarding CSA projects, they are contributing to the SO4 “Create and accelerate the market-uptake of bio-based products and applications” by addressing non-technological challenges. As visible in Figure 6, they cover policy regulations and standardisation, consumer awareness of the benefits of bio-based products and, in particular, knowledge gathering and networking between the many actors of the different value chain segments.

In Figure 6, the different types of feedstock sources are further classified, emphasising the fact that the BBI JU funded projects are predominantly creating higher value products from side streams, residuals and other waste derived from the respective sectors (agri, forest etc.). For example, 91% of agri-based feedstock is either derived from agro-food industry side streams (60%) or crop residues (31%), with a further 7% coming from dedicated crops grown on marginal lands. Similarly, for forest-based feedstock the majority of biomass (96%) can be traced back to residues or side streams from the pulp & paper industry, including cellulose; with 4% obtaining wood exclusively from sustainably managed forests. Finally, all aquatic feedstock used in the BBI JU projects are algae and by-products of fish and seafood, therefore helping to develop the circular blue bioeconomy.

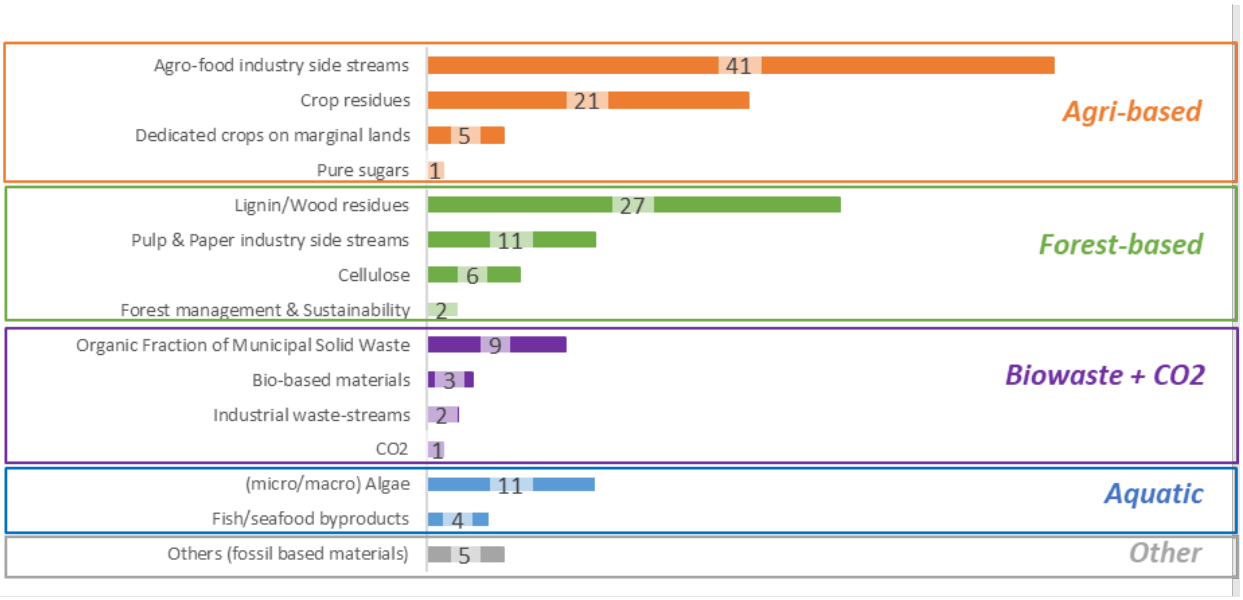

Figure 6 Types of feedstock used in BBI JU projects (2014-2020).

Figure 7 further illustrates the evolution of the use of feedstock across the BBI calls (2014-2020). The cumulative figures show that agri and forest-based feedstock are by far the most exploited types of biomass (44% and 33% of feedstock respectively). While there are comparatively fewer projects processing biowaste, biogenic CO_2 and aquatic biomass (each accounting for 10%), it is notable that there has been a steady increase in not only the cumulative number of projects, but also the TRL of the technologies used to address this feedstock. In fact, the first Flagships valorising biowaste and aquatic biomass were added to the BBI JU portfolio of projects in 2021 following the results of Call 2020.

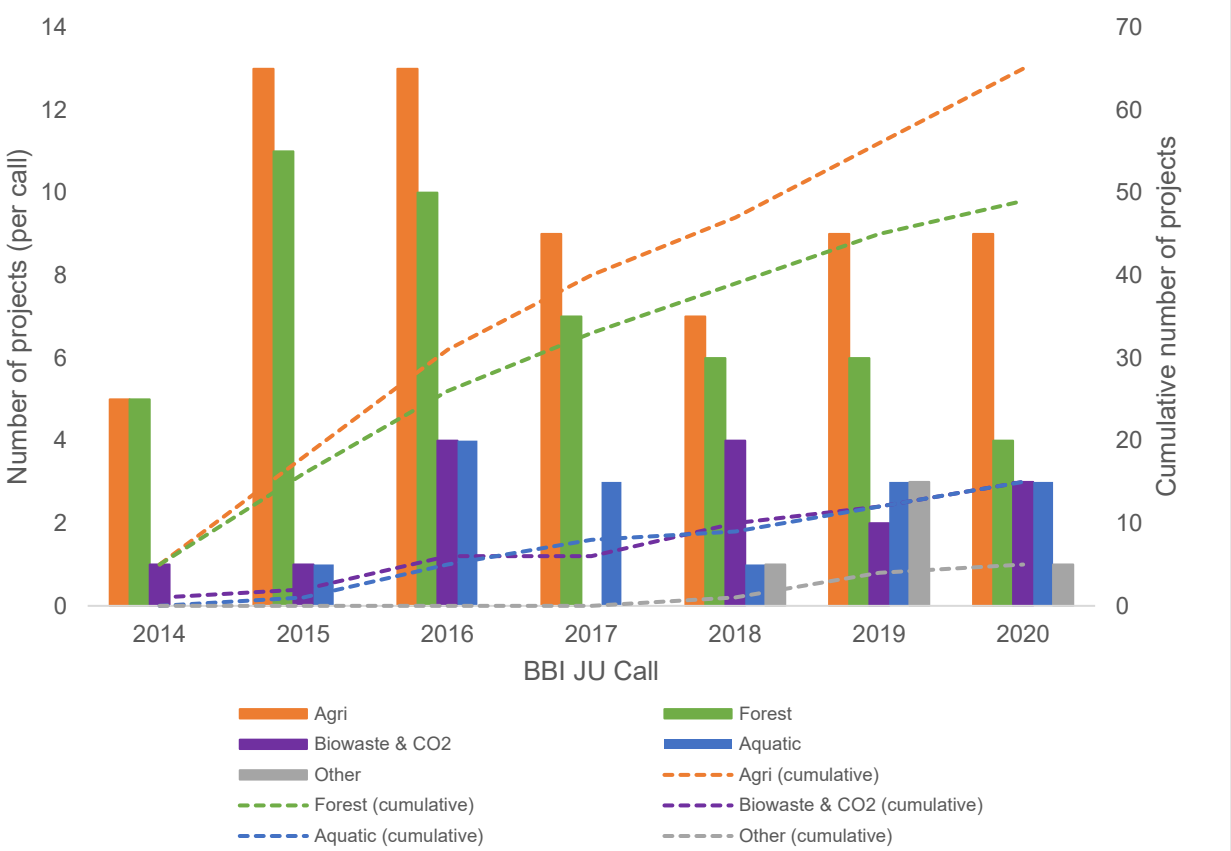

Figure 7 Feedstock addressed in BBI JU projects (Call 2014-2020). The number of projects per call is indicated by the bars, while the cumulative number of projects is indicated by the dashed line.

Geographical coverage of BBI JU projects

The geographical distribution of BBI JU DEMO and Flagship projects is well-balanced, with a good spread across the EU and Associated Countries (Figure 8). In addition, the Flagship bio-refineries are well distributed across Europe, with plants in Romania, Estonia, the Netherlands, Italy, France, Ireland, Spain and Belgium and one in an associated country, Norway.

This overall geographical distribution shows that the BBI JU has contributed to the SIRA objectives of supporting the development of a bio-based economy across Europe and addressing its full potential of feedstock. Noteworthy is the high involvement from Southern and North-western European countries, and a good coverage of Eastern European countries. However, there remains untapped potential for green growth and the development of the bio-based industries in these regions.

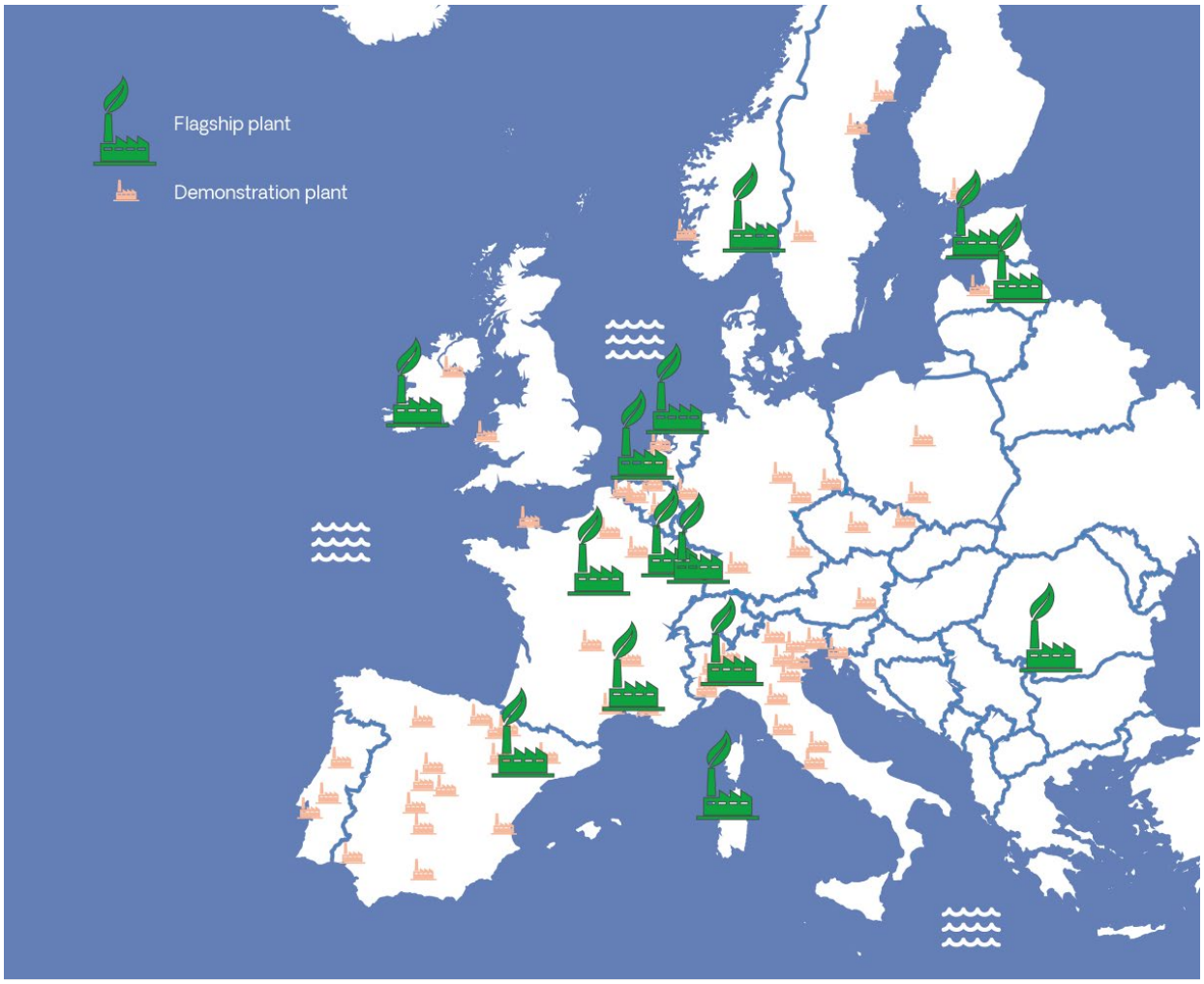

Figure 8 Geographical distribution of the BBI JU Demonstration and Flagship plants. Demonstration plants are represented by the locations that receive the main investment in the project.

1.2.2 Synergies with other initiatives

In accordance with the Council Regulation, the BBI JU developed close synergies with other EU programmes in areas such as: education, environment, competitiveness and SMEs, and with the Cohesion Policy funds and Rural Development Policy as well as the European Structural and Investment Funds (ESIF). Such synergies helped to strengthen local, regional and national research and innovation capabilities in areas of interest for the BBI JU. Further information on EU funding synergies can be found on the BBI JU website, while below an update of the main actions carried out in 2021 are reported.

BBI JU Synergy Label Pilot initiative

Following the mandate given by its Governing Board, the BBI JU launched the "BBI JU Synergy Label" pilot in September 2019, with the aim of supporting the uptake of excellent proposals that could not be funded under the BBI JU calls despite their excellent scores, due to a lack of available budget. The pilot phase covered 2018, 2019 and 2020 calls. The BBI JU Synergy Label focused on Innovation Actions (DEMOs and Flagships) because of the clear localisation of investments in specific countries/regions and their higher TRLs, all of which imply a higher socio-economic and environmental impact in the territories. During this pilot phase, 33 proposals (27 DEMOs and 6 FLAGs) were awarded with the BBI JU Synergy Label, recognising their value and excellence and supporting their search for alternative funding.

The BBI JU Synergy Label contributed to enhancing synergies between BBI JU activities, Member States, regions and other funding organisations in the field of bio-based Industries. In this framework, the BBI JU signed a Memorandum of Understanding with the European Bank for Reconstruction and Development and the European Circular Bioeconomy Fund. In addition, an Advisory Services Agreement was signed with the European Investment Bank pursuant to the InnovFin Initiative, to provide advisory services to BBI JU proposals awarded the Synergy Label. European Circular Bioeconomy Fund. In addition, an Advisory Services Agreement was signed with the European Investment Bank pursuant to the InnovFin Initiative, to provide advisory services to BBI JU proposals awarded the Synergy Label. In 2021, the BBI JU finalised the implementation of the BBI JU Synergy Label pilot phase, awarding 12 proposals from Call 2020 (10 DEMOs and 2 FLAGs). In addition, on 30 September 2021, the BBI JU organised an online webinar where the above-mentioned funding organisations presented the type of services and financial support to be provided to the awarded proposals. During the webinar, the BBI JU also provided details about the implementation of the BBI JU Synergy Label pilot initiative.

In view of the new CBE JU, the implementation of this Synergy Label initiative will be revised and improved based on the lessons learnt and on the outcomes of the pilot phase.

1.2.3 Involvement of the primary sector

Task Force on the Agriculture primary sector: Update of the Action Plan

The BBI/CBE JU has the potential to support the primary sector and to contribute to rural development, providing new and diversified incomes to primary producers as well as creating high skilled jobs. The need to maximise this potential is therefore a crucial element in the BBI/CBE JU priorities.

Following the work initiated in previous years, the BBI JU continued its efforts throughout 2021 to enhance and consolidate the participation of the primary sector in BBI JU projects, and in the bio-based sector and its value chains as a whole. This initiative was reinforced in 2019 with the study entitled "*participation of the agricultural sector in the BBI JU: business models, challenges and recommendations to enhance the impact in rural development*", launched in collaboration with BIC and the EC via the establishment of a dedicated Task Force on the Agriculture primary sector.

In order to optimize the outcome of this study, the above-mentioned task force prepared an analysis of the feasibility and impact of the proposed recommendations and set up an Action Plan to prioritise their implementation in an effective and coherent way.

The activities carried out in 2021 focused in particular on the monitoring of the implementation of the Action Plan and its update in view of the launch of the new CBE JU. In September 2021, the members of the Task Force revised the different actions of the Action Plan.

The updated Action Plan includes an overview of the actions already implemented under the last BBI JU Call 2020 as well as the actions to be considered for the CBE JU, classifying them in four main areas of intervention:

1 Reinforcement of the participation of the agriculture sector in the annual work programmes.

2 Support of the agriculture sector during the implementation of projects.

3 Dissemination and communication activities with specific focus on the agriculture sector.

4 Synergies with other programmes and initiatives such as the Rural Development Programmes and the Common Agriculture Policy networks such as the EIP-AGRI.

Most of the actions will be taken into consideration and will be realised as part of the future CBE JU SRIA, annual work plans and future CBE JU deployment groups.

Workshop on integrating the agricultural primary sector in the sustainable bio-based economy

On 29 June 2021, SCAR BSW[6] and the BBI JU SRG held a joint workshop to discuss the challenges encountered by the agricultural sector to participating in EU-funded projects and the opportunities they can have to benefit from an enhanced integration along the bio-based value chains.

The participants included important actors belonging to the agricultural sector, such as COPA-COGECA and CEJA, as well as key stakeholders from SCAR, SRG, BIC and EC.

The workshop included a presentation on the follow-up actions to the recommendations of the BBI JU study reported above and some examples of successful business models. A central part of the workshop was the discussion on how to better integrate the sector in the bio-based economy and how to benefit from its involvement in the value chains.

Key challenges identified, among others, included:

- extending the participation of agricultural primary producers in the bio-based value chains beyond the supply of biomass;
- enhancing benefits for agricultural primary producers involved in the bio-based value chains;
- promoting the role of farmers' associations and other organisations representing farmers, to facilitate the presence of the sector as well as their role in EU-funded projects;
- promoting synergies with EU initiatives like the EIP – AGRI and Rural Development Programme;
- and raising awareness about the opportunities of such participation.

In conclusion, the workshop provided relevant advice and guidelines on how to enhance the participation and role of the agricultural sector in the bio-based value chains in the coming years, in particular, in the framework of the CBE JU and other part of Horizon Europe and EU programmes,.

[6] Sustainable Bio-resources for a growing bioeconomy (scar-swg-sbgb.eu)

1.3 CALLS FOR PROPOSALS AND GRANT INFORMATION

In 2021, the BBI JU continued to efficiently manage its portfolio of projects and concluded the Grant Agreement Preparation (GAP) of the proposals retained for funding from the last BBI JU Call 2020, which resulted in the signature of 18 Grant Agreements, bringing the total number of projects in the BBI JU portfolio to 142.

In Section 1.3.1, the progress of the current project portfolio, including grants signed as a result of the Call 2020 evaluation, is presented, together with the KPIs which are common to all Horizon 2020 programmes as well as the ones specific to the BBI JU.

In Section 1.3.2, the leverage effect of private funding versus public funding is reported.

Section 1.3.3 covers the reporting on the evaluation, redress and related statistics. As in 2021, there were no further calls foreseen under the BBI JU (last call implemented in 2020) nor under the new CBE JU, so this section is empty.

1.3.1 Progress against KPIs / Statistics

The BBI JU programme implementation is monitored at four levels:

1.. **Efficiency monitoring** is based on Horizon 2020 KPIs common to all Joint Undertakings (JU) and further indicators linked to programme monitoring, such as gender dimension, widening participation, SMEs participation and type of organisation presented in section 1.3.1.1.

2.. **Project outcomes** are monitored through specific BBI KPIs described in the SIRA 2017, measured against yearly project reporting and agreed objectives. Achievements of objectives at the end of 2021 are presented in section 1.3.1.2.

3.. **Expected socio-economic and environmental impact** of the BBI JU projects. Achievements at the end of 2021 based on a yearly survey of projects are presented in section 1.3.1.3.

4.. **The leverage effect of private funding versus public funding** is monitored on a yearly basis. The in-kind contributions used to calculate the leverage effect are i) the difference between the total costs of the projects and the JU contribution for all beneficiaries (All Participants In Kind contributions - APIK) and ii) the In-Kind contributions for the Additional Activities (IKAA). Achievements of objectives at the end of 2021 are presented instead in section 1.3.2.

1.3.1.1 Horizon 2020 KPIs

Efficiency monitoring

In 2021, the BBI JU continued to operate efficiently and maintain a high performance in respect of the three main KPIs of Horizon 2020 on which the BBI JU is monitored (see section 7.5), exceeding the set targets despite the challenging conditions in which we continued to operate as reported below:

- **Time to Inform (TTI)** applicants of Call 2020 was met in January 2021, at 137 days against a target of 153 days (100% on time).
- **Time to Grant (TTG)** for retained proposals of Call 2020 was on average 236 days against the target of 245 days and all Grant Agreements were signed on time (100% on time).
- **Time to Amend (TTA)** was 9 days against the target of 45 days (100% on time).
- **Time to Pay (TTP)**
    - for pre-financing of retained proposals from Call 2020 was 9.5 days on average against the target of 30 days (100% on time).
    - for interim and final payments was 66 days on average against the target of 90 days (100% on time).

In addition, the BBI JU performed the following activities:

- **Kick-off meetings*:** The BBI JU participated in all the 18 kick-off meetings of the new projects from Call 2020, which took place between April and October 2021.
- **Project reviews*:** The BBI JU carried out 59 project reviews with the support of external experts in order to monitor the implementation of ongoing projects.
- **Periodic reporting and payments:** The BBI JU completed 63 periodic report assessments and 59 related payments (compared to 61 in 2020).
- **Amendments:** A total of 116 Grant Amendment requests were initiated by project coordinators (103 of which were accepted) and 2 Grant Amendments by the BBI JU. The number of amendment requests continued to be significant in 2021 due to the impacts of the Covid-19.

All kick-off and review meetings were organised via web-conferencing due to the Covid-19-related travel restrictions.

Geographical distribution of BBI JU participants

The total number of participations and total requested EU contribution per country in all BBI JU projects (2014-2020) are mapped in Figure 9 and Figure 10, respectively. The data shows that close to 60% of participation is clustered in Western European counties, including Spain, Italy, France, the Netherlands and Germany. It is important to highlight that this is closely linked to the relative number of applicants received per country in BBI JU calls 2014-2020 and gives an insight into the level of mobilisation of bioeconomy actors across Europe. In addition, participation from associated and third countries is led by Norway, Switzerland, Turkey and Israel.

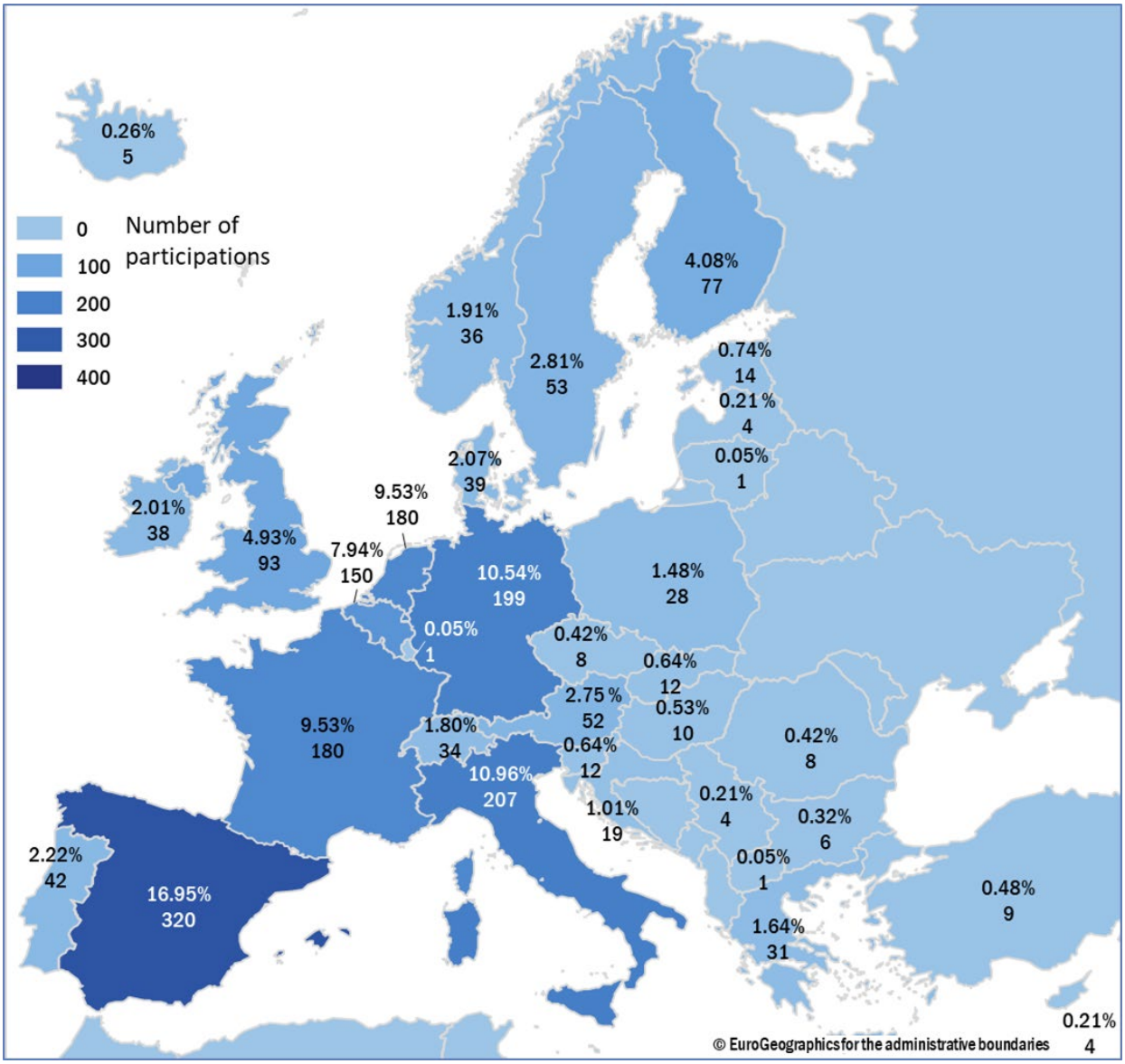

Figure 9 Participations in BBI JU funded projects (Calls 2014-2020) per Member States and Associated Countries and related % calculated over the total BBI JU participations at the end of 2021 (1888). Number of participants/% total BBI JU participations from countries not shown above: AU (2, 0.11%), FO (1; 0.05%), HK (1, 0.05%), IL (4; 0.21%), US (2, 0.11%), ZA (1, 0.05%).

The total requested EU contribution per country in all BBI JU projects (2014-2020) is largely following the trend observed for the number of participations, with some exception where the percentage share of the EU contribution is higher in proportion to the share of total participations. This can typically be explained by the distribution of the main beneficiaries of higher TRL projects and in particular with the location of Flagship biorefineries in Estonia, France, Norway, Romania and Ireland, which significantly increases the total EU contribution to these countries.

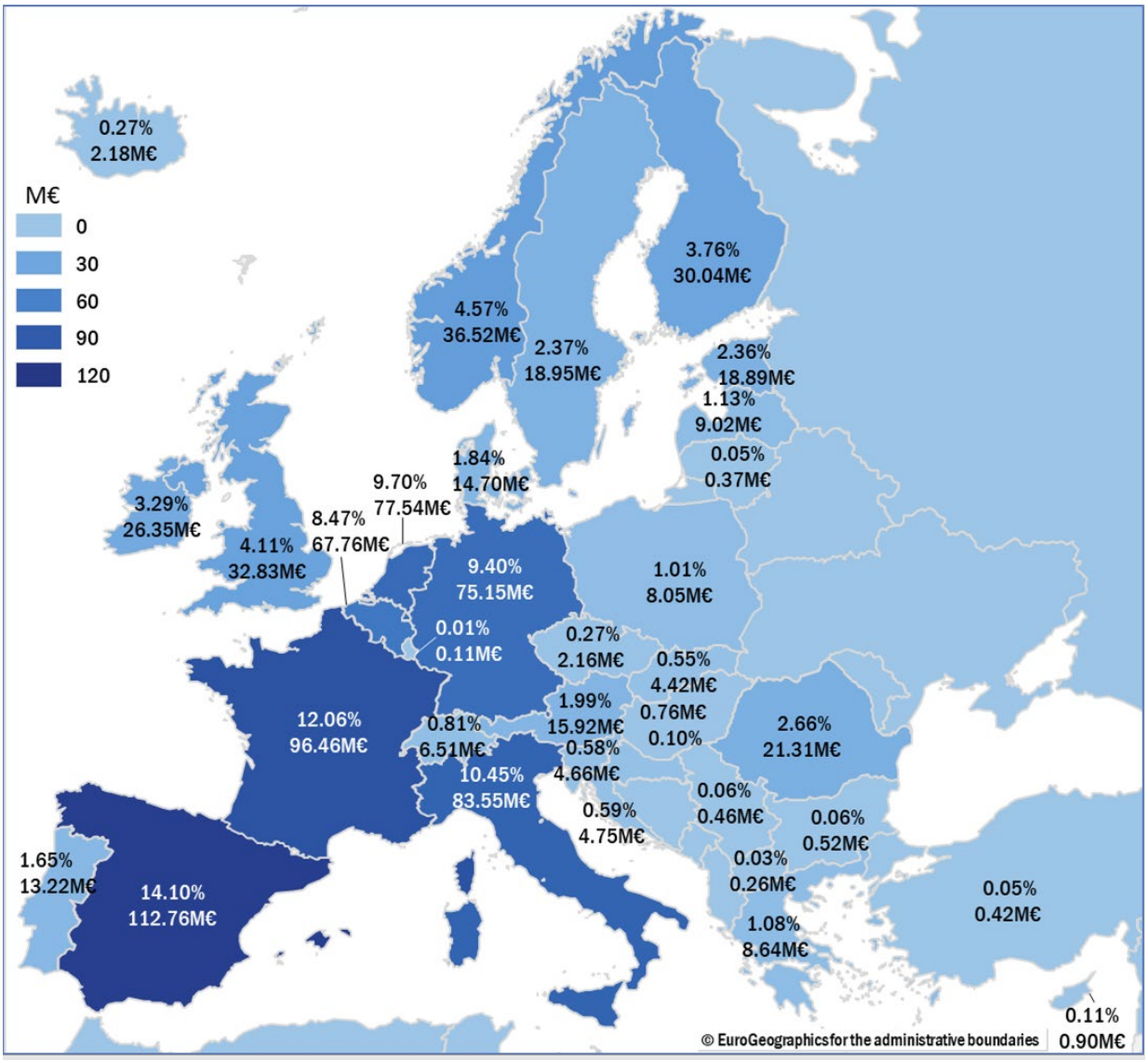

Figure 10 Cumulative EU contribution (in EUR millions) in BBI JU funded projects (Calls 2014-2020) per Member States and Associated Countries and related % calculated over the total BBI funding. Countries not shown on map: FO (0.54; 0.07%), IL (3.06; 0.38%).

It is important to note that if the Gross Domestic Expenditure in Research and Development (GERD) is considered, several Eastern European countries significantly outperform in terms of funding received.

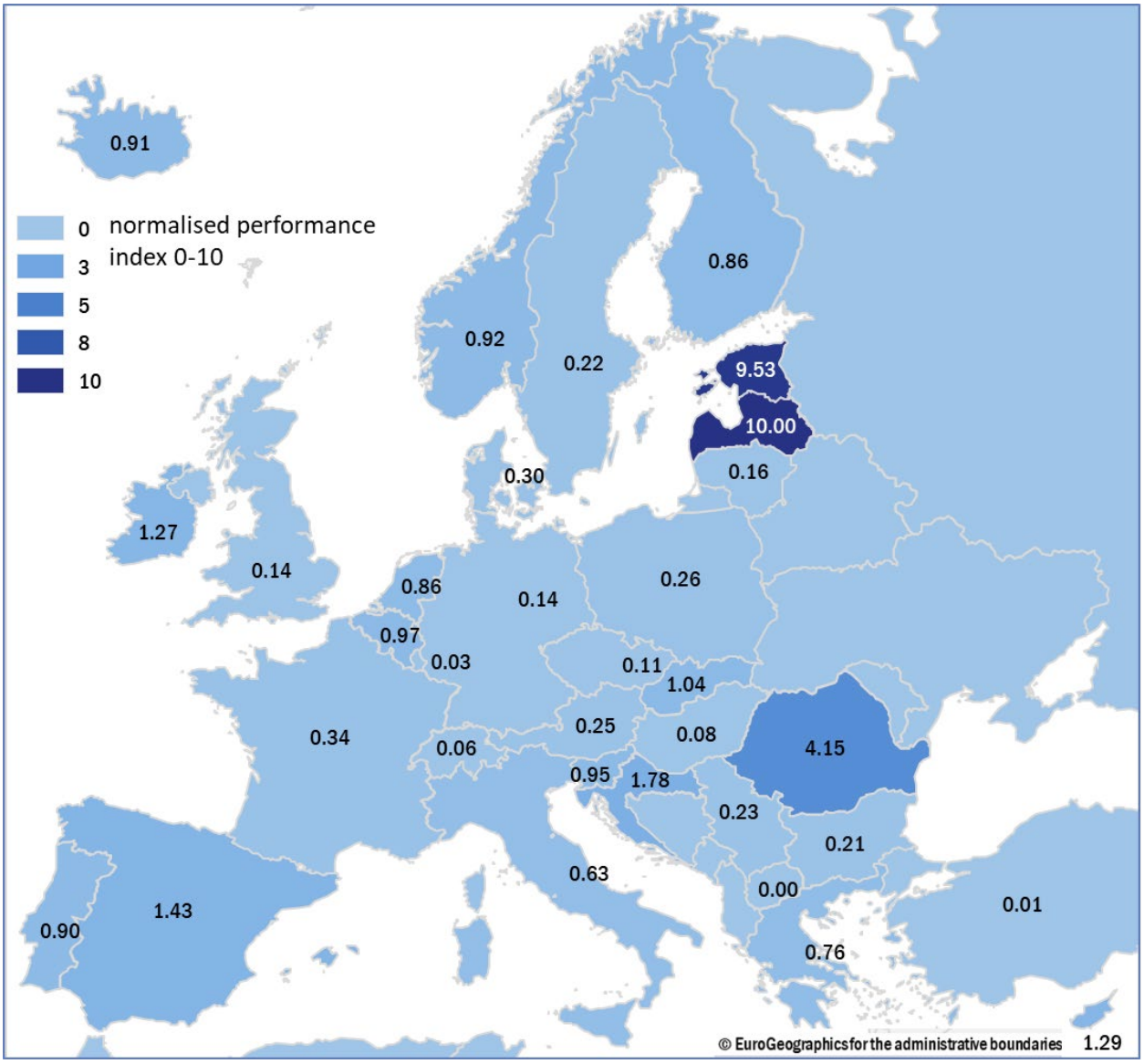

Figure 11 Cumulative EU contribution per country in BBI JU funded projects (calls 2014-2020) normalised to average GERD per country in this time period (normalised performance index 0-10) extracted from Eurostat (online data code: RD_E_GERDSC).

Over the years, the JU Programme Office, BIC, the EC and the SRG members have undertaken various actions to promote and raise awareness of the BBI JU programme at European and national levels as well as to encourage wider and more inclusive participation in the calls (e.g. through national info days). But since there has been no call for proposals in 2021, there are no updates to report related to the widening participation strategy.

Types of participants in BBI JU projects

BBI JU projects attract participation from a range of organisation types, as shown in Figure 12. Unsurprisingly, the highest share of participation is from the private sector, which is consistent with the fact that BBI, as a Joint Undertaking, is an industry-driven initiative. The good level of participation from research organisations and higher education establishments is also very important for forging new collaborations between industry and these actors, helping to bridge the gap between R&I and the deployment of technologies and innovations industrially and on the commercial scale.

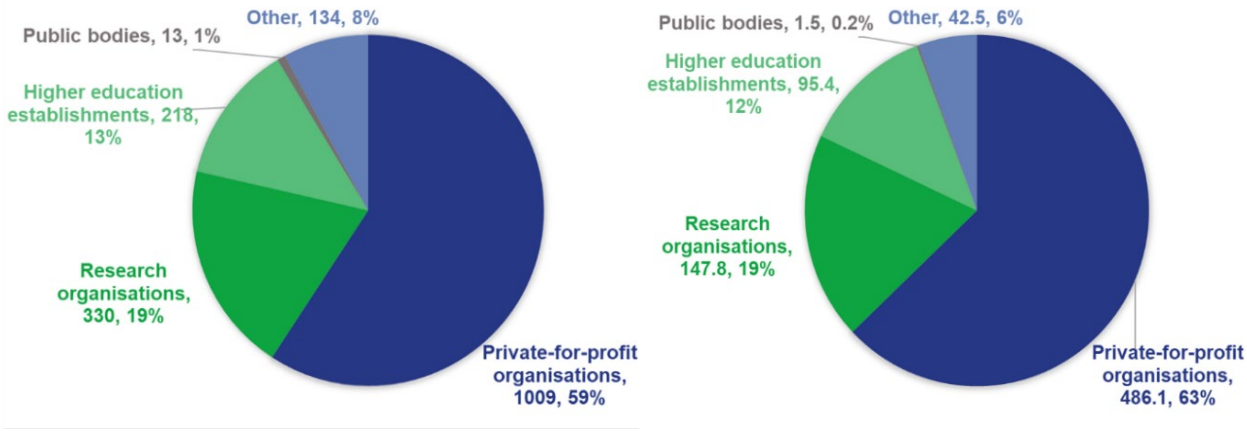

Figure 12 Number/type of beneficiaries (left) and funding (in EUR millions)/type of beneficiaries (right) in all BBI JU funded projects (call 2014-2020).

As an industry-driven initiative, the high participation of the private sector in the BBI JU programme is further substantiated by the share of participation and funding of BIC members (Full and Associated members) reported in Figure 13.

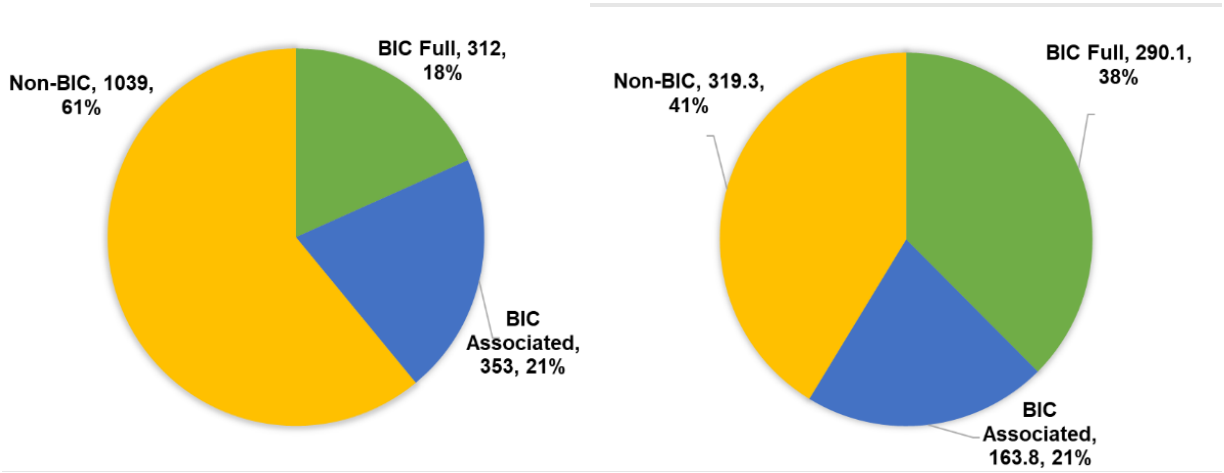

Figure 13 Share of total participations with and without BIC members in BBI JU funded projects (Calls 2014-2020) (left) and the corresponding distribution of funding (in EUR millions) (right).

SMEs participating in BBI JU projects

The private-for-profit beneficiaries can be further divided into large companies and SMEs. Considering the importance of the SMEs in the bioeconomy sector in Europe, in 2018, an analysis of the participation of SMEs in BBI JU projects, covering calls 2014-2017, was already conducted[7]. In 2021, this midterm analysis was expanded with the results of the remaining BBI JU calls for proposals (2018-2020) and the main outcomes of this analysis are described below. The analysis confirmed the significant role played by SME in BBI JU projects, as they represent more than 40% of all BBI JU beneficiaries, and receive ~37% of the overall funding[8], as further expanded in Figure 14 and Figure 15 respectively.

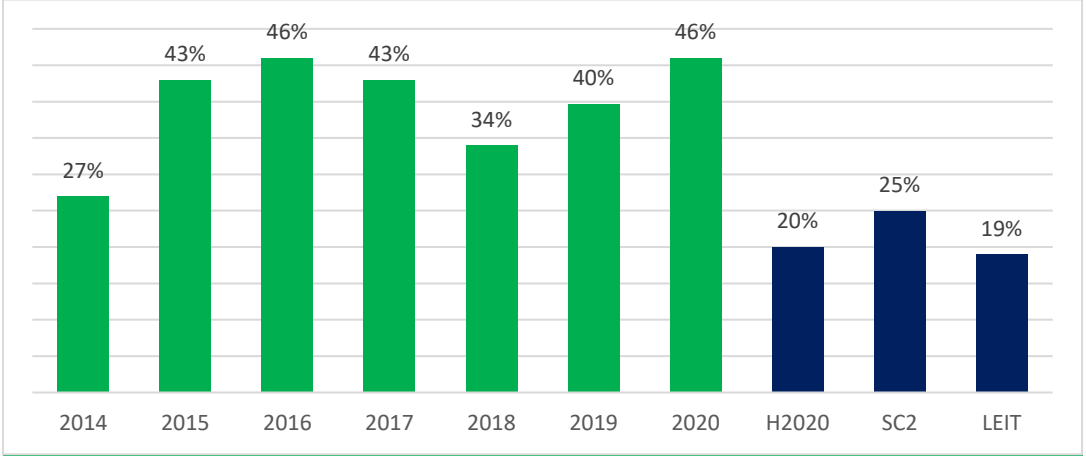

Figure 14 SME Participants in BBI JU funded projects per call (green bars). Source of the blue bars is a data extraction via the Horizon dashboard.

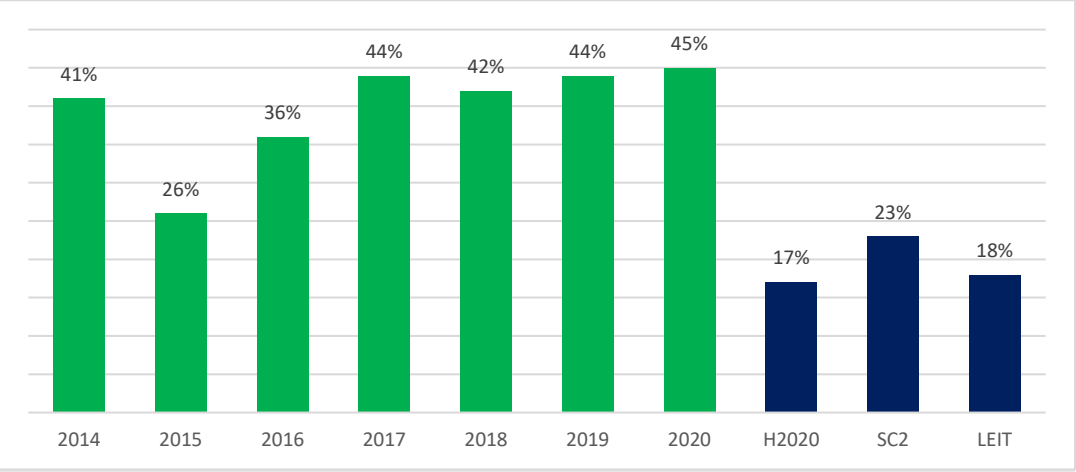

Figure 15 EU contribution allocated to SMEs compared to the total EU contribution in BBI JU funded projects (per call). Source of the blue bars is a data extraction via the Horizon dashboard.

[7] bbiju-sme-landscape.pdf (europa.eu)

[8] P.6 of the September 2021 publication "7 years advancing the European bio-based industry"

When comparing the SME percentages of participation in BBI JU funded projects (2014-2020) with the targets set for Horizon 2020, and those achieved in Horizon 2020 Societal Challenge 2 (SC2) and the Leadership in Enabling and Industrial Technologies (LEIT) actions, it is clear that the BBI JU programme significantly surpassed expectations, further **demonstrating the importance of this initiative in mobilising and attracting SMEs.**

In Figure 16, more information is provided about the participation and funding of SMEs in BBI JU's projects (excluding CSAs). While in terms of participation, the presence of SMEs is higher in RIAs (~60%), funding share reveals their significant role in the Innovation Actions projects, both DEMOs (35%) and FLAGs (29%). Furthermore, almost 30% of the SMEs participating in non-CSA projects have the role of project coordinator.

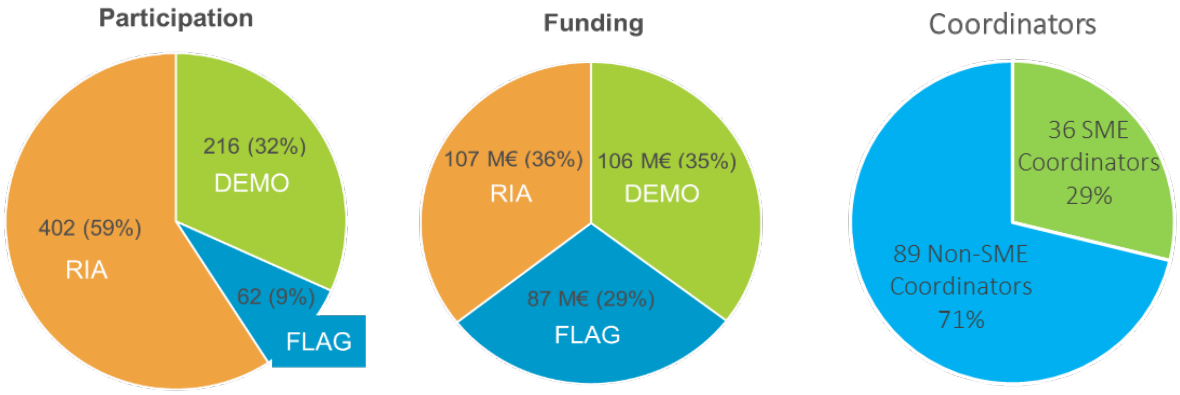

Figure 16 SMEs' participation, funding and coordinator share in BBI JU projects, excluding CSAs.

As shown in Figure 17, roughly 80% of SMEs involved in BBI JU projects (excluding CSAs) are active in sectors that are directly relevant for bio-based industries. Their roles vary significantly and range from technology providers to testing / data analysis / validation, and upscaling. Besides these roles, many involved SMEs are also feedstock suppliers and/or end users, thus contributing to the market uptake of the developed bio-based products and services. The remaining 20% can be broadly categorised as consulting companies. These companies, although less directly involved in R&I activities, play a key role in BBI JU consortia, as they are often responsible for communication activities, commercial exploitation and LCA analyses.

In addition, with a funding share of more than 30%, industrial biotechnology SMEs have a significant position in the BBI JU portfolio, mainly as technology providers (see Figure 18). Other SMEs are involved in a variety of sectors, such as chemicals, food/feed, materials, engineering/construction, waste processing/recycling, plastics/packaging, agriculture, and aquaculture. This variety is a good reflection of the diversity of the European bio-based sector.

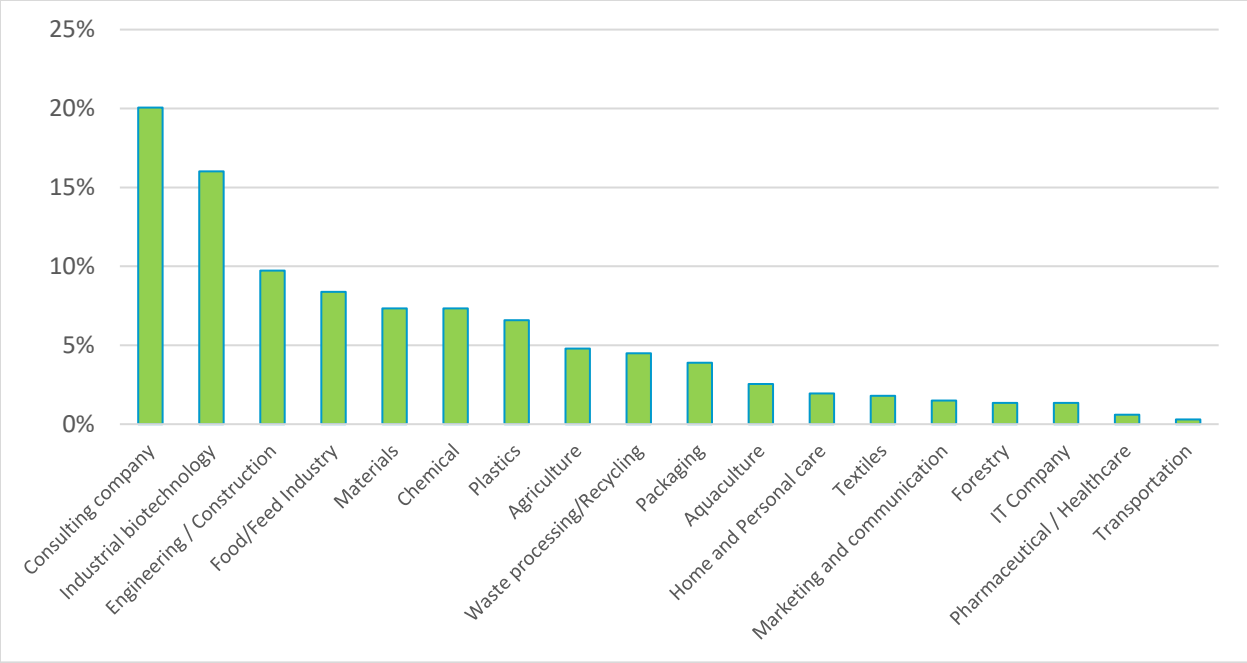

Figure 17 Participation percentage of SMEs per type of sector in BBI JU projects (2014-2020) excluding CSAs.

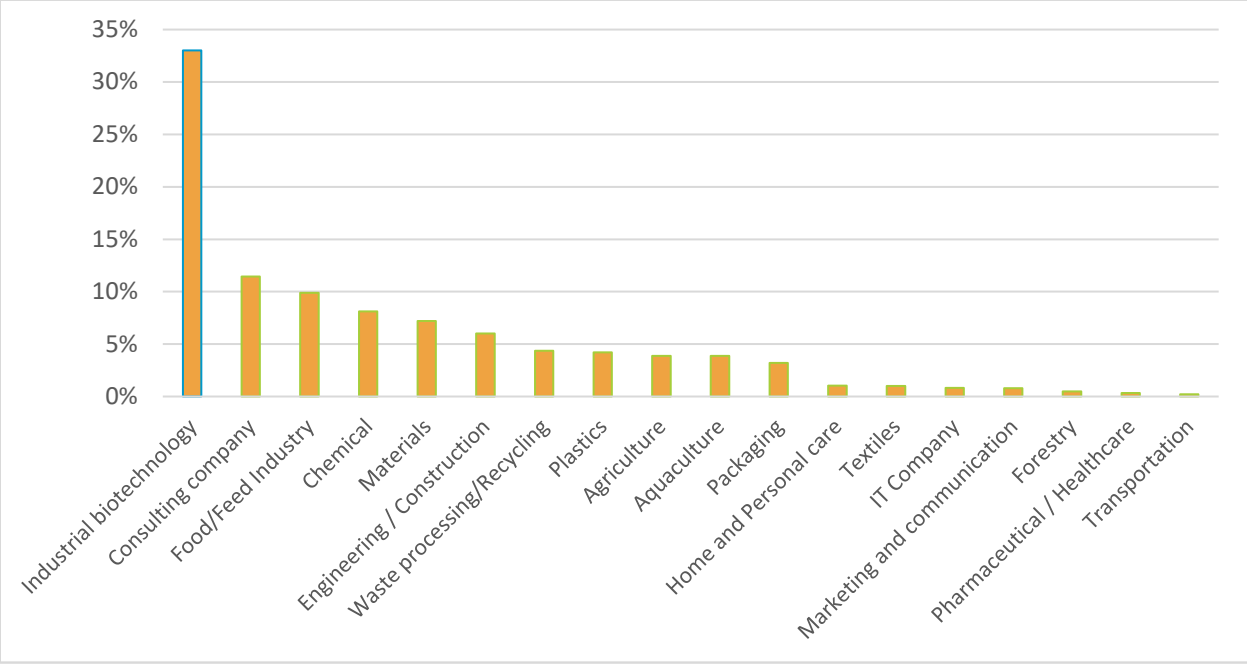

Figure 18 Funding share of SMEs per type of sector in BBI JU projects (2014-2020), excluding CSAs .

Gender dimension

The BBI JU continued to promote the three objectives underpinning the strategy on gender equality in Horizon 2020. At governance level (see Table 3), the gender balance in the BBI JU governance structures and staff is at the expected levels, with the exception of its Governing Board (whose composition is determined by the EC and BIC) and the JU Programme Office. It needs to be noted that the table below only takes into account the main (not alternate) members of the BBI JU governance bodies; however, if both sets of members were taken into account, similar percentages would apply. For example, the States Representatives Group has 31 main and 29 alternate members; of these 50 representatives in total, 46% are female, and 54% are male.

	Total number of members	Percentage of women	Percentage of men
Governing Board	10	30%	70%
Scientific Committee	14	57%	43%
States Representatives Group	31	52%	48%
JU Programme Office (staff)	22	64%	36%

Table 3: Percentage of women/men in BBI JU governance bodies and staff

At project level, based on data collated on 31 December 2021 via the 'continuous reporting' module of the Funding and Tenders Portal, where projects are requested to report on the gender of researchers and other workforce members involved in their projects' implementation, the gender balance of project consortium staff involved in BBI JU projects is 43,7% female versus 56.3% male, which are similar numbers compared to 2020.

No gender data on expert-evaluators are reported as the BBI JU did not have any call for proposals in 2021.

1.3.1.2 BBI JU project portfolio: BBI JU specific KPIs

Monitoring of BBI JU specific KPIs: process and methodology

The 8 specific BBI JU KPIs, as defined in the SIRA 2017, are listed in Table 4.

KPIs numbering and definition	Targets in SIRA
KPI 1 - New cross-sector interconnections in BBI JU projects	36
KPI 2 - New bio-based value chains created with BBI JU projects	10
KPI 3 - Number of Grant Agreements signed between the BBI JU and the project consortia	200
KPI 4 - New bio-based building blocks	5
KPI 5 - New bio-based materials	50
KPI 6 - New demonstrated consumer products based on bio-based chemicals and materials in IA projects	30
KPI 7 - Number of Flagship Grant Agreements signed between the BBI JU and project consortia	5
KPI 8 - Number of validated technologies that have realised a 'TRL gain' of at least one level in RIAs	20

Table 4 BBI JU specific KPIs as in SIRA 2017.

KPI 3 - number of BBI JU projects, and KPI 7- number of BBI JU Flagship projects, are figures based on the cumulative statistics extracted from the BBI calls (2014-2020). Instead, KPIs 1, 2, 4, 5, 6 and 8 refer to outcomes of BBI JU projects, and are monitored through an **annual survey** addressed to BBI JU project coordinators. Finalised projects are requested to report the actual results at the end of the project, and ongoing projects are requested to report on the expected results by 2024 or by the end of the project (the earliest). The questionnaire gathers both quantitative and qualitative information on KPI results and expected impacts.

The annual survey was launched for this reporting year in September 2021 and gathers the data from 136 BBI JU projects,[9] of which 85 are ongoing and 51 are finalised,[10] distributed as follows:

- ✓ Finalised projects: 2 FLAGs, 10 DEMOs, 29 RIAs and 10 CSAs
- ✓ Ongoing projects: 10 FLAGs, 28 DEMOs, 41 RIAs and 6 CSAs

[9] Projects that were suspended (1) or terminated (2) at that time are not included in the survey.

[10] In the context of the survey 2021, finalised projects are those that finished before 30 September 2021.

Overview of KPIs reporting and main conclusions

All KPI targets linked to project performance[11] have been achieved by the 41 finalised RIA and IA projects alone. Moreover, the expected results reported by ongoing projects indicate that the final KPI results will significantly exceed SIRA targets, as shown in Figure 19[12].

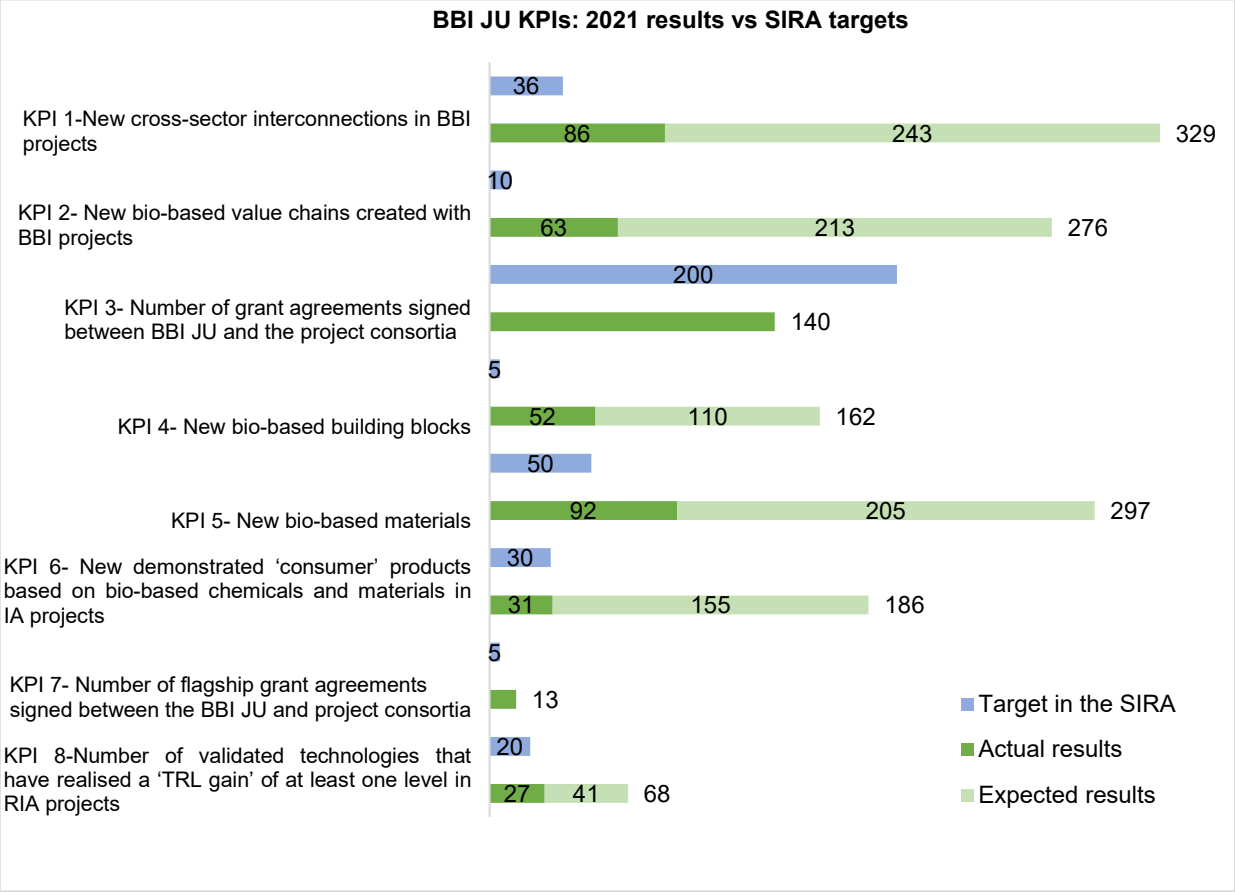

Figure 19 BBI JU KPIs 2021: results vs SIRA targets

A systemic transformation in the bio-based economy in Europe (KPI 1 & 2)

The high number of new bio-based cross-sector interconnections among actors that had never worked together before (KPI 1) illustrates the ongoing structuring of the bio-based sectors in Europe, as well as the creation of a strong and diverse bio-based industrial fabric in areas traditionally relying on fossil resources.

There is an increasing diversity in the biomass used, which has evolved from mostly agri- and forest-based biomass to a broader range of feedstock, including aquatic biomass (fisheries and algae), the organic fraction of municipal solid waste and CO_2 effluents from bio-based operations. The multiple combinations of different feedstock and innovative processing technologies result in a large number of potential new value chains. The shift away from more conventional and linear value chains is

[11] Excluding KPI 3, linked to signature of GAs

[12] These numbers refer to all ongoing and finalised RIAs, DEMOs and FLAGs

opening-up opportunities for significantly more value chains than initially expected (KPI 2). The aspects of novelty in the new value chains concern not only the feedstock and processing technologies, but also the introduction of the cascading approach in the use of biomass and the creation of circular value chains that allow recyclability of the products.

The mobilisation of actors in all segments of the value chain, from the primary sector to technology providers, academia, industry and end users, plays a key role in enabling the creation of both cross-sector interconnections and value chains, as well as new inclusive business models.

Towards a circular bio-based Europe (KPI 4, 5, 6 & 8)

The number of new bio-based building blocks (KPI 4), materials (KPI 5) and consumer products (KPI 6) that are suitable for a wide range of industrial and commercial applications indicate the feasibility of the transition from a fossil-based economy to a bio-based one. In addition, the fact that more than one-third of the new bio-based materials and products report improved recyclability, indicates the potential for a shift towards circular models based on the sustainable use of renewable resources.

In a significant number of cases, the new bio-based products not only replace their fossil-based counterparts, but also bring improved environmental performance. On average, around 80% of the new building blocks, materials and products are responsible for reduced CO_2 or other GHG emissions, and approximately one third have a reduced energy and water demand.

An important share of the new building blocks (40%) are breakthrough ones that have no fossil-based counterparts, which again confirms that this transition to a bio-based economy is not based on a mere replacement of platform chemicals of fossil origin, but also develops new building blocks with novel properties that can translate into desirable functionalities in end products.

The new bio-based materials and products, developed under the BBI JU, target a wide range of applications, such as packaging, textiles, food and feed ingredients, pharma and nutraceuticals, personal care and cosmetics, automotive, construction, chemicals for agriculture, adhesives, coatings, and different types of bio-based plastics. Among the more frequently improve functionalities there are: biodegradability, recyclability, structural and mechanical properties, extended durability and safety.

The actual deployment of the bio-refineries at a commercial level is the ultimate step to enable these new bio-based products to effectively replace the fossil-based products in the market and society. Closing the technological gaps in the value chains requires the testing and validation of the innovative processing technologies (KPI 8), so that they can be upscaled, demonstrated and integrated in industrial facilities.

Each of the BBI JU Flagships is an example of a bio-based factory: a fully functional biorefinery that can produce bio-based products using sustainably sourced biomass, such as residues, and sustainable and innovative bio-based processing technologies. A key element is the EU sourcing of biomass with logistics considerations which, in addition to avoiding CO_2 emissions linked to transportation, ensures the full participation of local and regional actors, enabling the replication across regions with similar types of biomass. The replication of these first-of-their-kind biorefineries across Europe is a key step for the realisation of a circular bio-based economy.

KPI 1: New cross-sector interconnections

86 new cross-sector interconnections[13] were reported by **41 finalised projects**[14] identified against the SIRA target of 36.

Table 5 shows the cross-sector interconnections between different types of feedstock and end users. The largest number of interconnections involves agricultural and forest-based biomass, while there is a lower (but steadily growing) number of interconnections using aquatic biomass. This responds largely to the later introduction of this type of feedstock in the SIRA 2017, which in turn reflects the increasing maturity of the involved technologies and changes in the industrial landscape.

	Agri-based feedstock (46%)	Forest-based feedstock (36%)	Aquatic feedstock (10%)	Bio- waste and CO_2 (22%)
Packaging	40	30	5	16
Medical & healthcare	14	7	11	4
Personal care & cosmetics	29	7	10	11
Home care	3	4	0	5
Pharmaceutical	4	5	3	3
Food ingredients	35	8	12	13
Feed ingredients	24	8	7	7
Textile	8	8	1	8
Automotive	10	21	0	10
Construction and built environment	12	25	0	10
Chemicals for agriculture	25	14	0	13
Equipment producers & designers	14	8	0	4
Adhesives	17	22	3	12
Coatings	18	17	5	11
Electronics	8	6	0	3
Biofuels & Bioenergy	18	10	0	8
Bioplastics	29	19	1	12
Biomaterials	19	14	0	11
Other sectors	28	12	4	7

Table 5 Number of cross-sector interconnections reported between different sectors of feedstock providers and end users for all BBI JU finalised and ongoing projects.

EUCALIVA (finalised DEMO): new interconnections between the pulp & paper industry, materials producers and end users has enabled the production of carbon fibres and stretchable films for high-tech applications.

REDWine (ongoing DEMO): new interconnections between wineries, microalgae producers and end users in the food and cosmetic sectors will help to build new value chains while reducing the carbon footprint and residues associated with wine production.

[13] Definition of BBI KPI1: This indicator refers to the number of new interactions created between companies and actors from different sectors, who interconnect/cooperate to build new value chains within BBI JU projects. An interconnection is considered new if the actors have never previously cooperated or engaged with each other in a business context in a specific value chain (even if they have worked together in a completely different field). The new interconnection/cooperation can concern feedstock, technology, product markets, regions and business models

[14] These 41 finalised projects include RIA and IA projects, and exclude CSAs.

KPI 2: New bio-based value chains

63 new bio-based value chains[15] were reported by **41 finalised projects**[16], while 10 bio-based value chains identified were targeted in the SIRA.

Figure 20 shows the innovative nature of the new bio-based value chains, the majority of which are demonstrating new products or market applications and applying new technologies. Another significant aspect of novelty is the use of new types of feedstock. In addition, around 40% of new value chains present elements of circularity and/or application of a cascading approach.

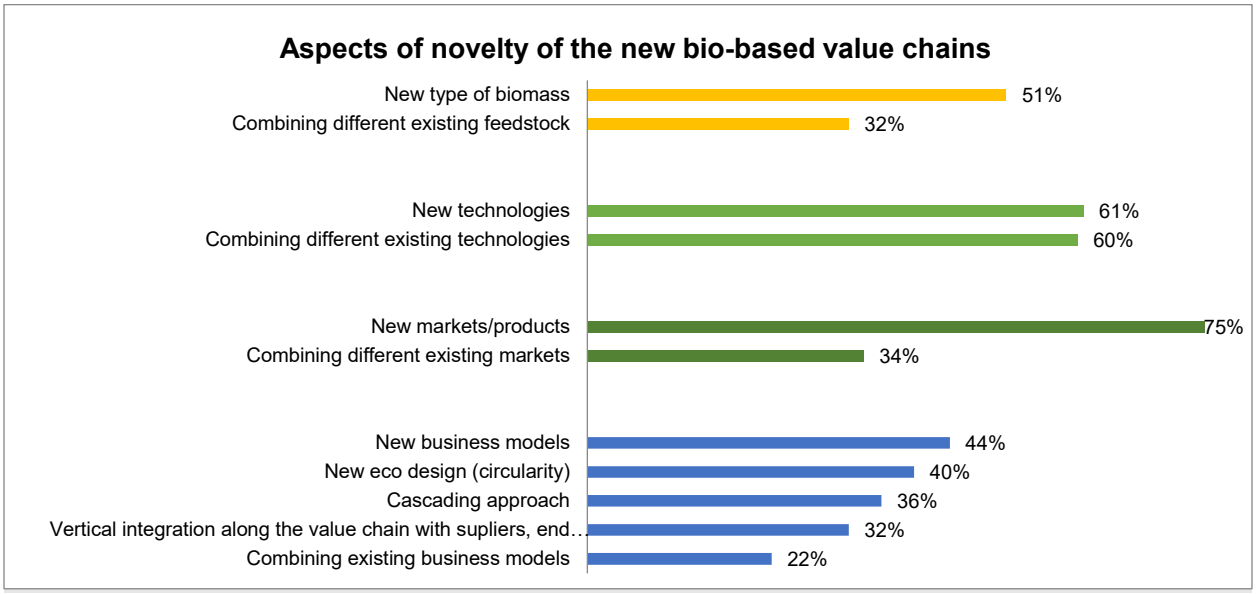

Figure 20 Aspects of novelty of the reported new bio-based value chains in both BBI JU ongoing and finalised RIA and IA projects.

SYLFEED (finalised DEMO): has demonstrated a novel wood-to-feed value chain which uses forestry co-products to produce the proteins for feed ingredients. The performance of the product, SylPro, has been validated by end users in the fish feed and aquaculture sectors.

UNLOCK (ongoing DEMO): aims to create new value chains using feathers as feedstock. By demonstrating the valorisation of feather waste to a range of agricultural products, the project will make better use of the biomass, which is currently converted to feather meal and fertilisers.

[15] Definition of KPI 2: Number of new value chains (from raw material to product application) created with BBI projects. A new value chain is one in which at least one part is new: the biomass feedstock, processing, end product or application. A new value chain is created when its resultant (new) product or service has been tested and validated to be ready for a specified and accepted market application (IA). The new value chains are economically viable and fulfil all relevant sustainability criteria. Each of the value chains has drawn up business cases or plans commercialisation (if not already scaled up to flagship projects - see objective 7). (RIA results are delivered with the aim of facilitating or creating a value chain, but by themselves do not create full value chains.)

[16] These 41 finalised projects include RIA and IA projects, and exclude CSAs

KPI 4 New bio-based building blocks

52 new[17] bio-based building blocks[18] were reported by **41 finalised RIA and IA projects** against the expected 5 bio-based building blocks set as target in the SIRA.

The main aspects of novelty reported for the developed bio-based building blocks are:

- Environmental: CO_2 and other GHG emissions reduction (84% of the reported building blocks), reduction in energy consumption (45%), use of water (36%) or improved land use (35%).
- Economic: decreased input costs and material efficiency (41%), decreased production costs (31%) or increased process yields (27%).
- Functional: improved safety (34%) and health aspects (30%), recyclability (31%) or biodegradability (28%).

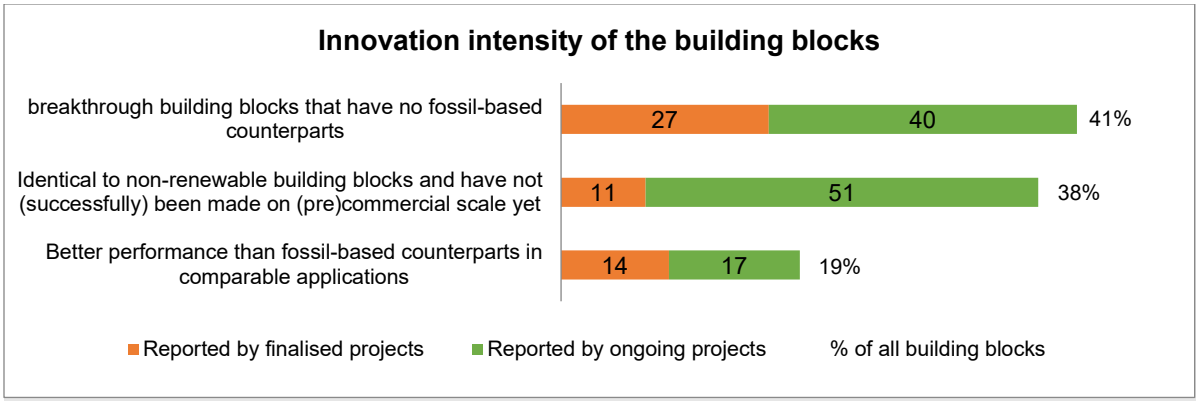

Figure 21 Innovation intensity of new reported bio-based building blocks both by BBI JU ongoing and finalised projects.

ECOXY (finalised RIA): synthesised breakthrough building blocks for repairable, reprocessable and recyclable (3R) epoxy composites. The bio-based epoxy monomers developed within the project offer a potential alternative to toxic chemical building blocks.

OPTISOCHEM (ongoing DEMO): is demonstrating a process for obtaining (bio)-isobutene, a drop-in chemical from wheat straw waste which can be oligomerised or polymerised to produce compounds relevant for lubricants, adhesives, sealants, flavours & fragrances.

[17] The same molecule may be reported more than once as new building block, but it is considered a new distinct building block if either the origin of the feedstock or the processing technologies are different.

[18] Definition of KPI 4: New building blocks developed (TRL 3), validated (TRL 4 or 5) or demonstrated (TRL 6 or 7) with BBI projects. New bio-based building blocks are chemical building blocks that are identical to non-renewable building blocks and have not (successfully) been made on a (pre-)commercial scale yet, or new building blocks that perform better than fossil-based counterparts in comparable applications, or novel, breakthrough building blocks with no fossil-based counterparts. The new building blocks meet a clear (market) demand and fulfil all technical requirements, are economically viable and match all relevant sustainability criteria.

KPI 5 New bio-based materials

92 new bio-based materials[19] were reported by **41 finalised RIA and IA projects** against the expected 50 bio-based value chains set as target in the SIRA.

Figure 22 shows that the main aspects of novelty of the new bio-based materials concern the environmental performance, with 80% of the projects reporting reduced emissions of CO_2 and other GHG emissions resulting from their production when compared with the relevant fossil-based counterpart currently used in the selected application. Regarding the functional performance, the new materials report significant improvements in biodegradability, recyclability and health and safety aspects.

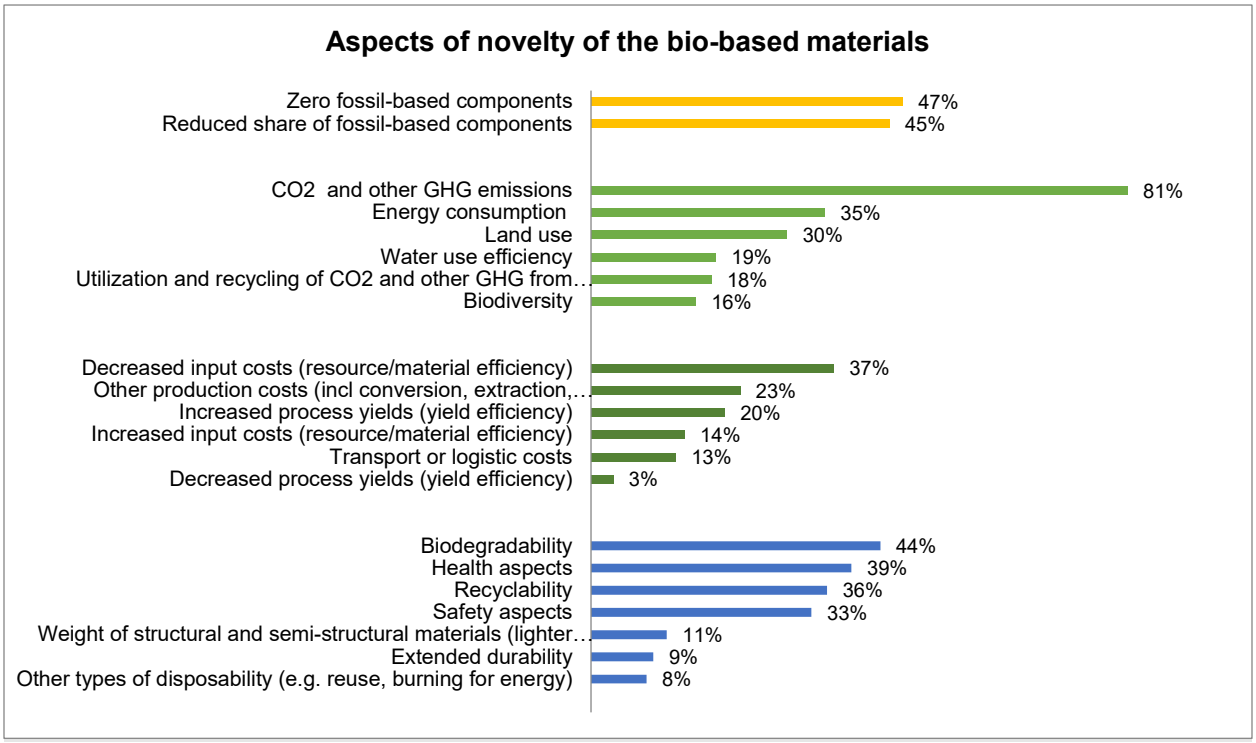

Figure 22 Main aspects of novelty in reported new bio-based materials in BBI JU ongoing and finalised projects (% of reported materials).

PULPACKTION (finalised DEMO): developed bio-based coatings and films to enhance the mechanical and barrier properties of cellulose-based packaging solutions.

CHAMPION (ongoing RIA): aims to develop bio-based polymers for applications such as coatings, textiles and structural adhesives. The aza-Michael-addition polymers will be circular by design, offering improved end-of-life (EOL) solutions compared to the current alternatives.

[19] Definition of KPI 5: New bio-based materials developed (TRL3), validated (TRL 4 or 5) or demonstrated (TRL 6, 7 or 8) with BBI projects. Examples of new bio-based materials are speciality fibres, plastics, composites and packaging solutions. The bio-based materials that replace fossil-based materials have proven to have an equal or overall better sustainability (because of the LCA, improved material efficiency, reduced GHG emissions, biodegradability, recyclability or other improved functionalities during use or reuse). The new bio-based materials meet a clear market demand and fulfil all technical requirements, are economically viable and match all relevant sustainability criteria.

KPI 6 New bio-based consumer products

31 new bio-based consumer products[20] were reported by **12 finalised IA projects (2 Flagships and 10 DEMO)** against the expected 30 bio-based consumer products set as target in the SIRA.

Figure 23 shows that the new consumer products bring benefits in terms of reduction of GHG emissions, improved energy and water efficiency and better land use when compared to their fossil-based counterparts. Concerning economic performance, 51% of products report reduced inputs costs against 9% that report an increase.

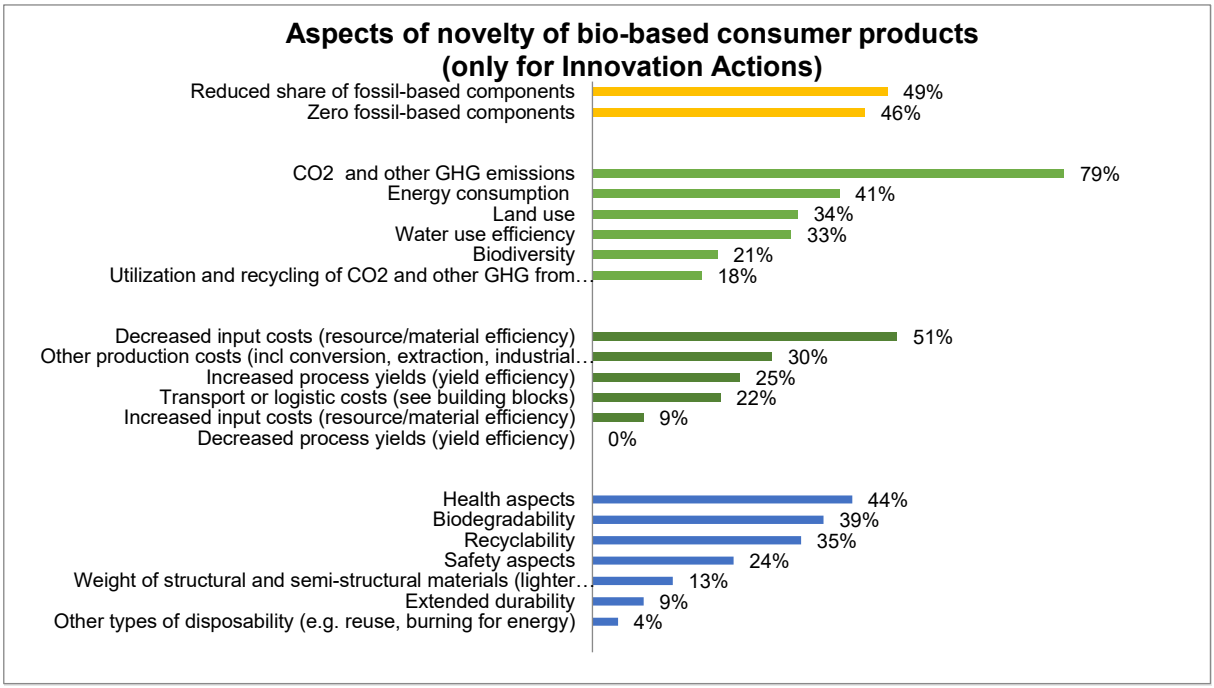

Figure 23 Main aspects of novelty in reported new bio-based products in both BBI JU ongoing and finalised projects (% of reported materials).

PEFerence (ongoing Flagship): aims to deliver new products based on polyethylene furanoate (PEF), a bio-based alternative to polyethylene terephthalate (PET) with enhanced properties including an improved gas barrier. The products under development include beverage bottles for beer and carbonated drinks.

[20] Definition of KPI 6: New bio-based products and applications demonstrated (TRL 6, 7 or 8) with BBI projects. The bio-based intermediate products (materials, building blocks, chemicals) successfully converted into 'consumer' products (such as cosmetics, food applications, vehicles, fertilisers, adhesives, etc.). The 'consumer product' will have a better overall sustainability score than its current alternative (because of the LCA, improved material efficiency, reduced GHG emissions, biodegradability, recyclability or other improved effects during use or reuse). The biobased 'consumer products' meet a clear market demand and fulfil all technical requirements, are economically viable and match all relevant sustainability criteria.

AFTERBIOCHEM (ongoing Flagship): will incorporate carboxylic acids and derivatives produced from sugar industry co-products into a range of new bio-based consumer products, including in food & feed, flavours & fragrances and personal care applications (e.g. nail varnish).

KPI 7 Flagship projects

13 BBI JU Flagships[21] are under construction or in operation, largely surpassing the SIRA target of 5 Flagships. They are located all over Europe as shown in Figure 24.

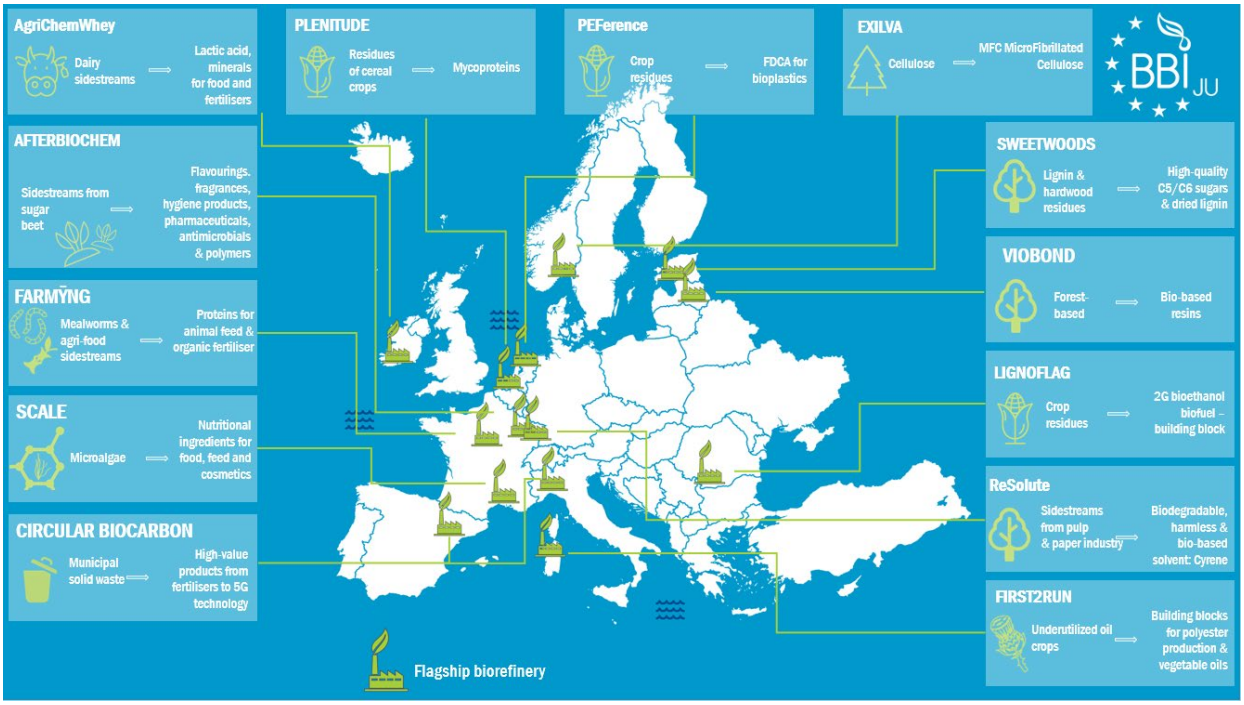

Figure 24 Map with the BBI JU Flagships.

Information on the BBI JU Flagships can be found on the website. Below are highlighted the newly started Flagships from Call 2020.

Call 2020 Flagships in a nutshell

- **CIRCULAR BIOCARBON** aims to establish a biorefinery to turn urban waste streams generated in cities into products including decorative coatings for consumer products and mechanical moving parts, green graphene-based devices (e.g. night vision cameras) and agricultural products (e.g. bio-stimulant liquid fertiliser).

[21] Definition: Number of flagship projects started since the launch of BBI joint undertaking, based on BBI and other demonstration projects. 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.

- **SCALE** 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.
- **VIOBOND** will create the first commercially viable resin plant, producing formaldehyde resins that will partially substitute fossil-based phenol and formaldehyde with lignin-derived raw materials. These resins will be used as adhesives/binders in products such as sandpaper, plywood and insulation.

KPI 8 Technology Readiness Level (TRL) gain

The **29 finalised RIA projects** have reported a **TRL gain of one or more levels for 27 core technologies**, against a target of 20 in SIRA.

KPI 8[22] aims at monitoring the progress in maturity of the core technologies in RIA projects. It refers to validated technologies that fill gaps in value chains and unlock new chemical building blocks, materials, 'consumer' products or applications.

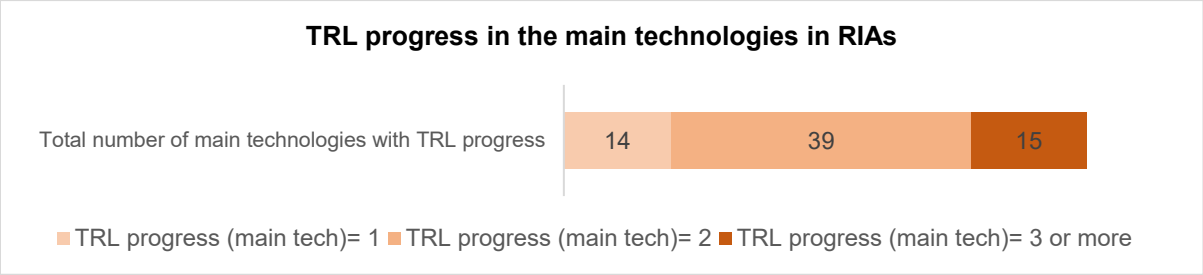

Figure 25 Number of main technologies with reported increase of TRL of 1, 2 and 3 or more levels in BBI JU RIA projects.

Although this KPI is targeted at RIAs, IA actions are also requested to report on their TRL progress.

[22] KPI 8 description: Number of new and improved processing technologies validated with BBI projects. This KPI is complementary to KPIs 4, 5 and 6.

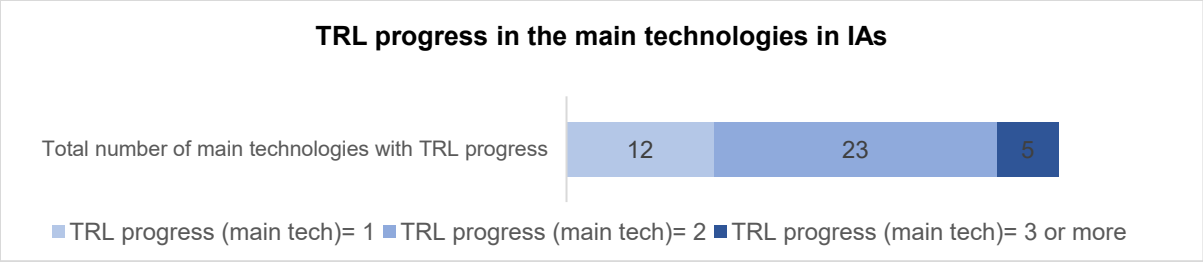

Figure 26 Number of main technologies with reported increase of TRL of 1, 2 and 3 or more levels in BBI JU IA projects.

BIZENTE (ongoing RIA): aims to demonstrate enzymatic biodegradation technology for resolving end-of-life issues of thermoset composites up to TRL 5.

BIOSMART (finalised RIA): has demonstrated and scaled-up technologies (from TRL 3 to 5) for incorporating active and smart functionalities to packaging in order to enhance performance and has increased the TRL of an intelligent packaging system which monitors food shelf-life.

Results from the study on BBI JU project portfolio and KPIs validation

In 2021, a dedicated study[23] was performed by an external contractor to both validate the KPI results of the 32 BBI JU projects completed by July 2020 and provide an overall assessment of the BBI JU project portfolio.

The validation exercise analysed the reported KPI results and impacts against the evidence provided in the project documentation, including the periodic report, deliverables and review reports performed by independent experts. A validation score was developed to indicate the extent to which the reported KPI results were supported by evidence.

The majority (around90%) of the validated data reaches scores 1 or 2 showing that the KPI framework set for BBI gives a meaningful measure of the outcomes and impacts of the programme, as demonstrated in the summary of the overall results presented in Figure 27.

[23] The executive summary of the Study on BBI JU project portfolio and KPIs validation can be found here: https://www.bbi.europa.eu/sites/default/files/executive-summary-bbi-ju-portfolio-kpi.pdf

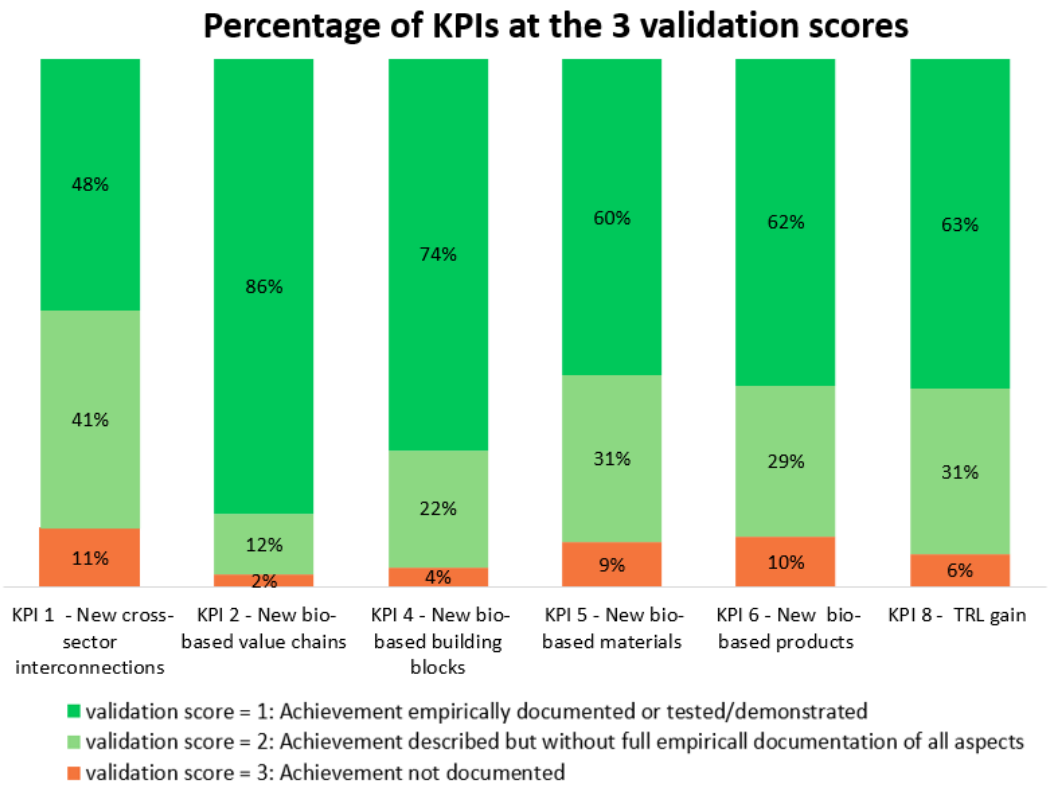

Figure 27 Percentage of KPIs validated at different validation scores, for the BBI JU 23 RIA and IA projects completed by July 2020.

1.3.1.3 Monitoring the 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 section 1.3.1.2. 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

Flagships and advanced DEMOs are, not surprisingly, the projects contributing the most to socio-economic impacts such as job creation, rural development and benefits to primary producers, regional and local impact and impacts on markets and industry. Their high TRL allows the deployment of the technologies at a large, pre-industrial scale, engaging actors from the whole value chain, from local feedstock suppliers to end users and local authorities.

The survey results show that 80% of the BBI JU projects (all actions) contribute to **job creation**, 68% of them in engineering and product development, and 56% of them in rural areas. Flagships (finalised and ongoing) alone estimate the creation of 4,700 direct jobs and 15,000 indirect jobs.

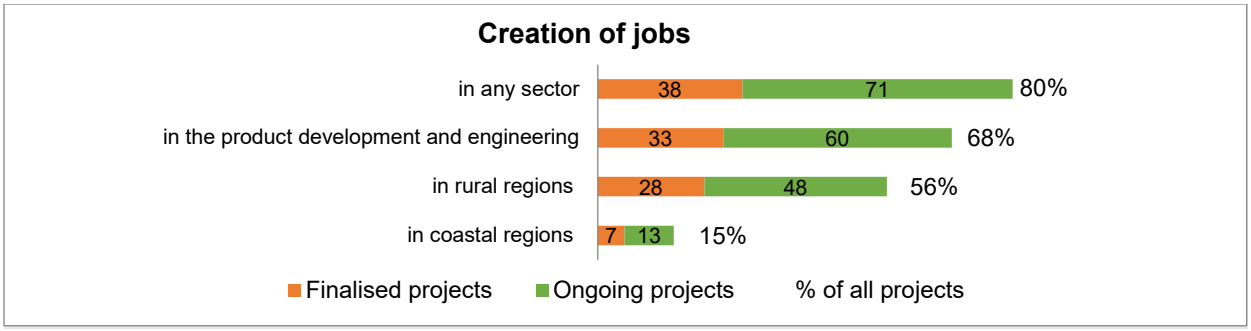

Figure 28 BBI JU projects (all actions) reporting on creation of jobs (direct and indirect).

SCALE (ongoing FLAG) estimates the creation of 50 to 60 direct jobs per microalgae biorefinery and 190 indirect jobs in the food, food supplements, feed and cosmetics industry as well as in construction and engineering.

BBI JU projects contribute 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.

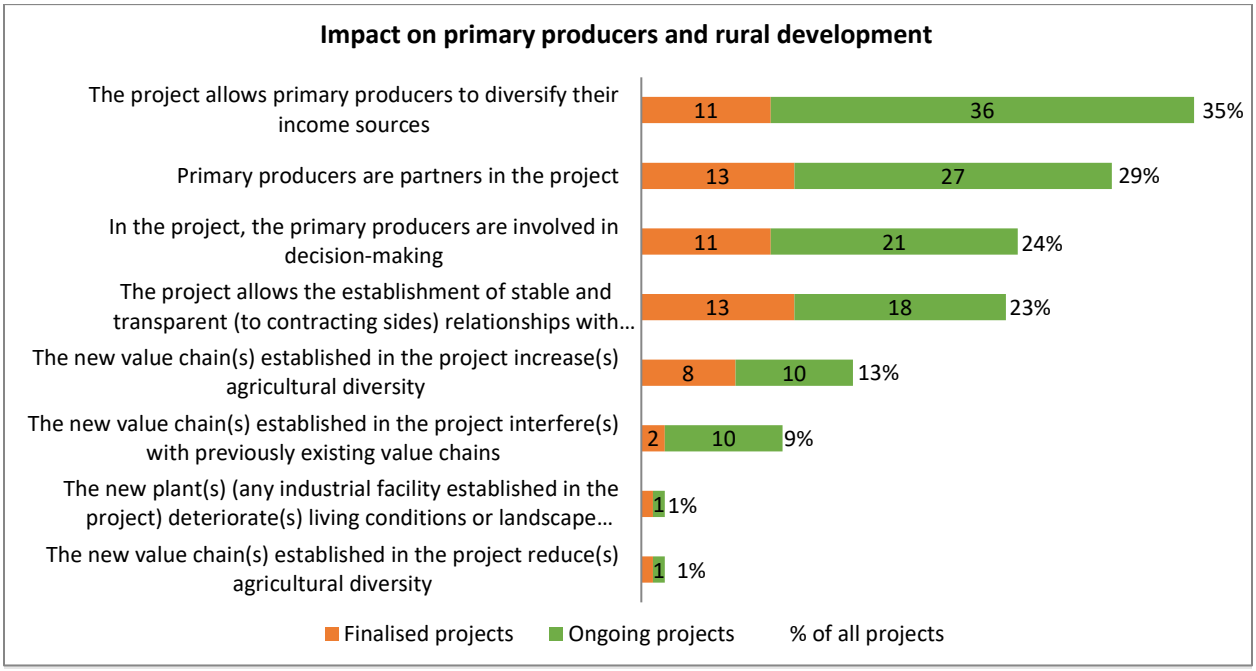

Figure 29 BBI JU projects (all actions) reporting impacts on primary producers and rural development.

GreenProtein (finalised DEMO), which has demonstrated the production of high-added value, food grade proteins from vegetal food waste streams, is coordinated by a farmers' cooperative. This

business model allows farmers to receive an additional income for residues that would remain unused and is easily replicable across Europe.

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.

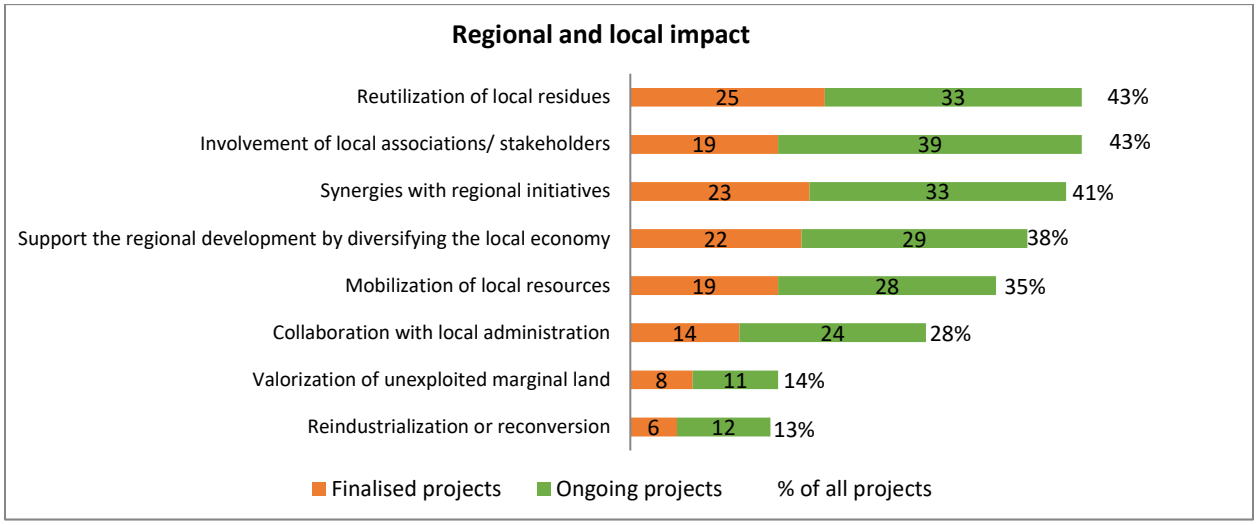

Figure 30 BBI JU projects (all actions) reporting regional and local impacts.

PHENOLEXA (ongoing RIA) valorises agricultural sidestreams (grape and onion shoots and leaves, chicory and onion residues) thereby mobilising local resources and engaging in collaboration with local feedstock providers, farmers, cooperatives and unions.

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.

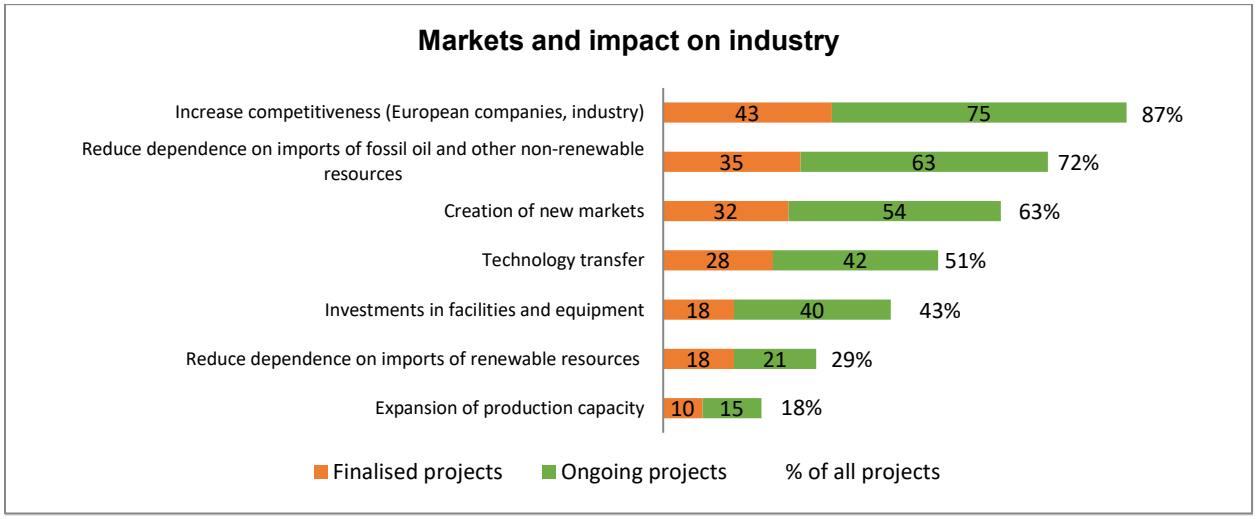

Figure 31 BBI JU projects (all actions) reporting impacts on markets and industry.

Bioeconomy Ventures (ongoing CSA) is developing a platform to help spin-offs, start-ups and entrepreneurs in the bio-based economy to gain funding and business insights, thereby supporting innovative and competitive concepts.

EXILVA (finalised FLAG) has built a biorefinery for the production of micro-fibrillated cellulose to be used in several applications (adhesives, coatings, chemicals for agriculture, packaging, among many others), leading the world market in the cellulose specialties sector.

Environmental impacts

Decreasing the environmental impact of industrial processes and products is one of the core objectives of the BBI JU projects.

An important contribution to climate change mitigation is the **reduction of emissions of CO_2 and other GHG gases** reported by 65% of the BBI JU projects. Many factors contribute to this decrease, such as reducing indirect emissions via: 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 local or regional biomass (thereby avoiding CO_2 emissions linked to transportation). As shown in Figure 32, 29% of projects report the utilisation/recycling of CO_2 released from bio-based operations, which corresponds to reducing their direct GHG emissions.

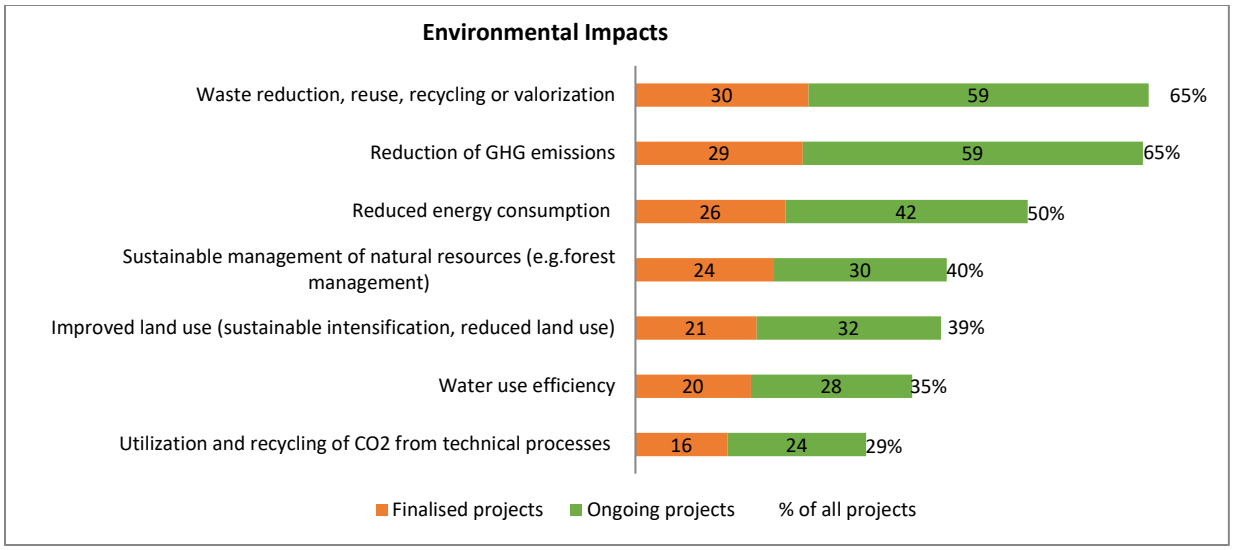

Figure 32 BBI JU projects (all actions) reporting on environmental impacts.

The **reuse, recycling and valorisation of organic residues and waste** biomass which would otherwise remain unused and be disposed of is a clear positive impact of the bio-based industries and is directly addressed by 65% of the projects.

CIRCULAR BIOCARBON (ongoing FLAG) is using the organic fraction of municipal solid waste and sewage sludge to develop marketable products, thereby reducing CO_2 and CH_4 emissions. In addition, it incorporates technologies for CO_2 capture and biogas valorisation.

An essential aspect for the sustainability of the bio-based industries is the **sustainable use and management of natural renewable resources** (incl. forests, arable land, aquatic resources, etc.), as well as the **improvement of the land use**, which are both specifically addressed by 40% of the BBI JU projects.

TECH4EFFECT (finalised RIA) has developed benchmarking and decision-making tools to help forest operators of different European regions to improve the efficiency and sustainability of forest management.

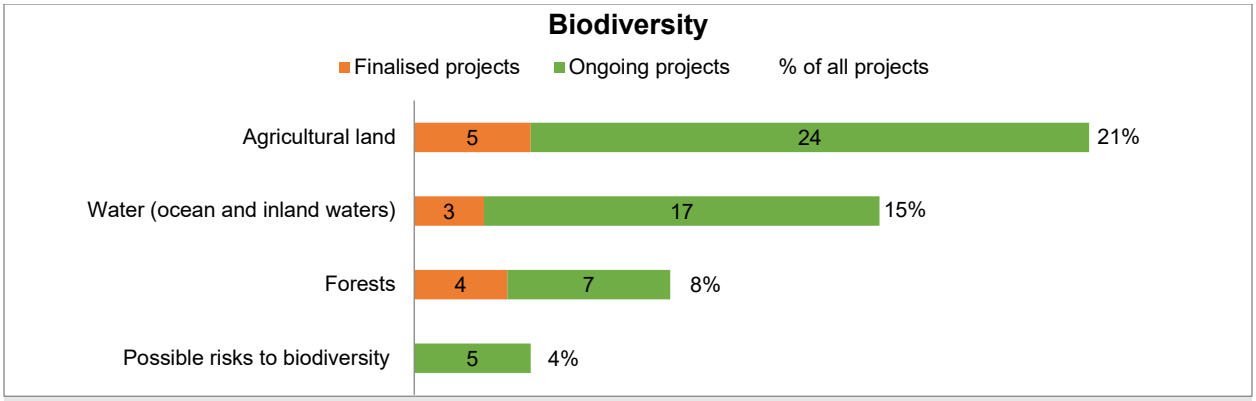

Figure 33 BBI JU projects reporting contributions to preserve and/or enhance biodiversity.

OLEAF4VALUE (ongoing RIA) extracts valuable compounds from olive trees' leaves, which would otherwise be burnt or left unused. In addition, the project will foster the preservation of particular cultivar varieties typical to different geographical zones of the Mediterranean region.

DEEP PURPLE (ongoing DEMO) recovers valuable resources from mixed urban waste streams to produce high added-value compounds. This includes efficiently removing nutrients from wastewater, which can improve water quality and avoid algal blooms and eutrophication which threaten aquatic ecosystems.

Additional societal impacts

One of the key distinct features of the BBI JU projects is the close and **strong collaboration between academia and industry, including SMEs.** This cooperation results not only in knowledge creation and transfer, but also in the actual deployment of sustainable processes and commercialisation of bio-based products.

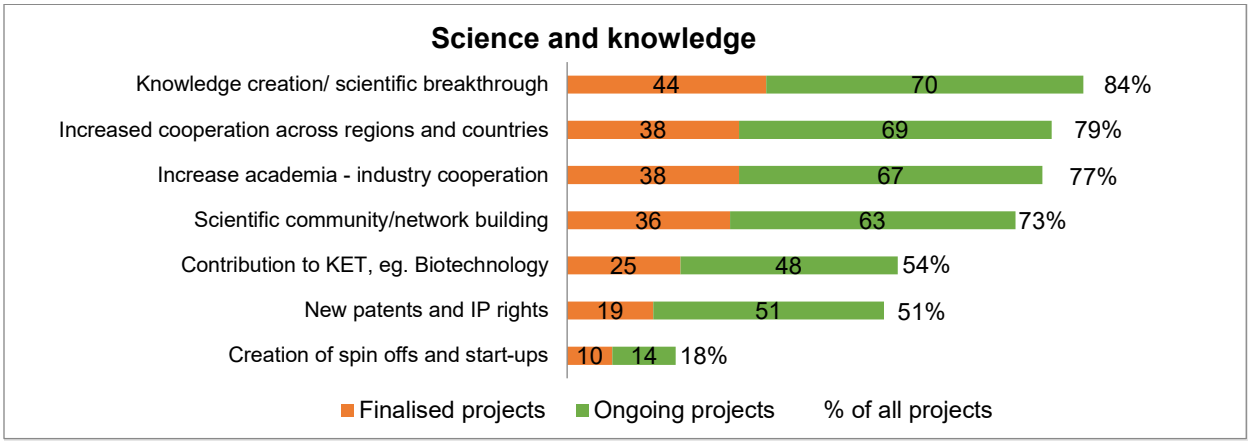

Figure 34 BBI JU projects (all actions) reporting impacts linked to science and knowledge. KET = key enabling technology.

VIBES (ongoing RIA) is developing advanced bio-based bonding materials with controlled reversible properties as an innovative solution to resolve the end-of-life issues of thermoset composites, as a result of a close collaboration between research organisations and industrial partners, which will also result in the launching of a spin-off for the exploitation of results.

In addition to the technological developments, the BBI JU projects also contribute to **raising awareness and understanding of the bio-based economy**, as reported by 70% of the projects, and provide opportunities for training and education.

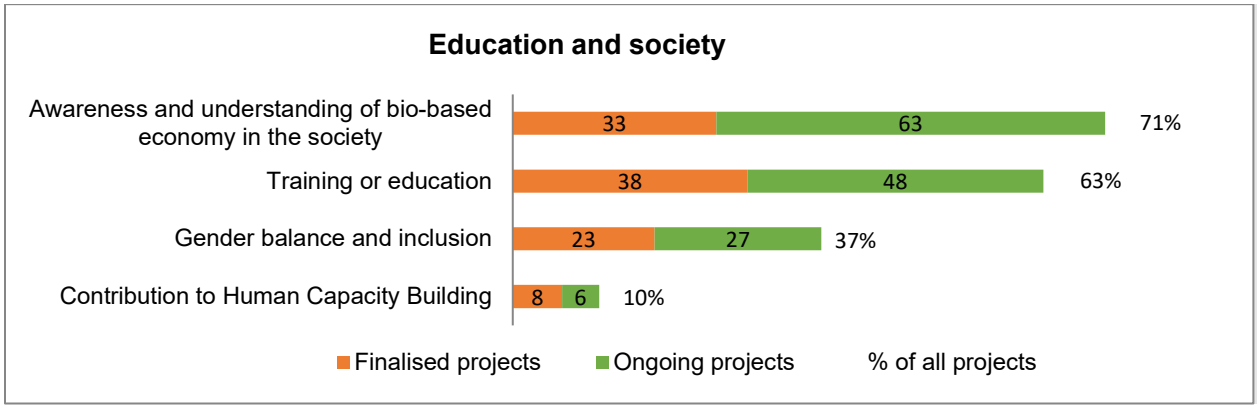

Figure 35 BBI JU projects reporting impacts linked to Education and society.

WASTE2FUNC (ongoing DEMO), which is working on the production of lactic acid and biosurfactants from agri-food residues, is developing educational activities such as courses for farmers, talks, interviews in popular scientific magazines, and an internal workshop to address the gender bias, among other initiatives.

The use of bio-based solvents, coatings and additives that can be less toxic than their fossil-based counterparts, as well as the use of materials with improved functionalities (e.g. longer shelf-life) result in both safer processes and safer final products.

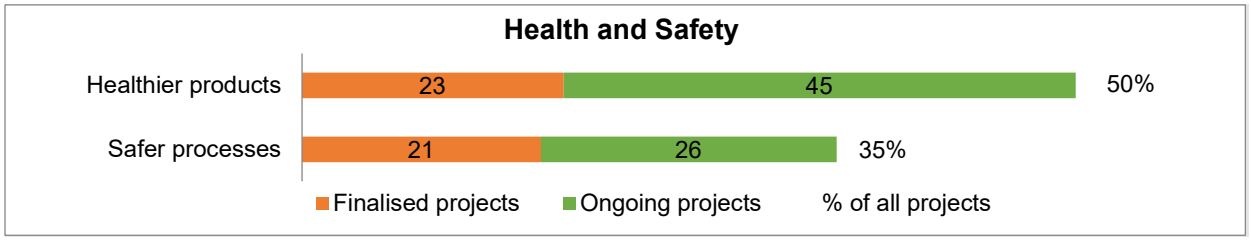

Figure 36 BBI JU projects reporting impacts in aspects linked to health and safety.

PERFECOAT (ongoing RIA) includes health-grade materials, like alginate, in its functional bio-based coatings, which constitute a drastic improvement in the coating quality in respect of the health impacts of the product.

RESOLUTE (ongoing FLAG) is upscaling the production of a biodegradable, biocompatible solvent, Cyrene, which replaces the current toxic petrochemicals, thus creating safer working conditions.

One third of the projects contribute to **improving the regulatory environment** by identifying bottlenecks to the uptake of the bio-based products, issuing policy recommendations and contributing to develop standards for bio-based products.

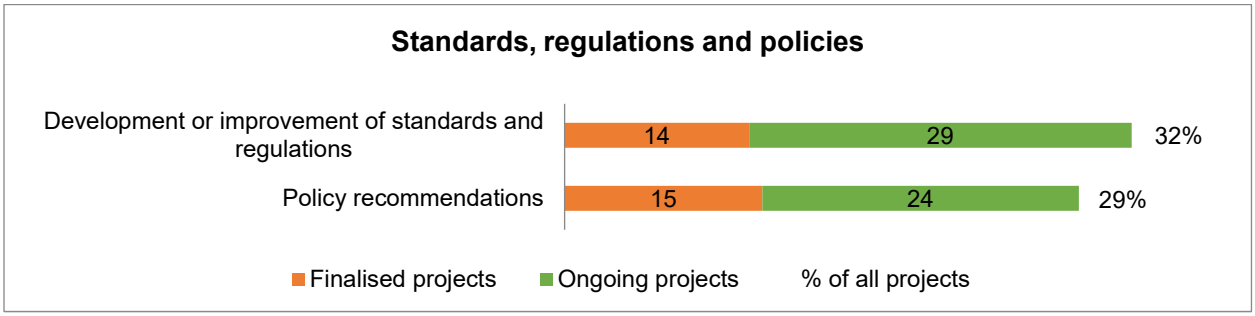

Figure 37 BBI JU projects reporting impacts in aspects linked to standards, regulations and policies.

BioSupPack (ongoing DEMO) works on the production and enzymatic recycling of environmentally safe, superior, and versatile PHA-based rigid packaging solutions. It will develop policy recommendations on waste management and study the need for new or improved standards for biodegradation.
TECH4BIOWASTE (ongoing CSA) is developing a dynamic database of relevant technologies for bio-waste utilisation, which will include a mapping of needs and requirements of different stakeholders.

BBI JU projects' contribution to the UN 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 UN Sustainable Development Goals, and most specifically, to **SDG 9, SDG 13** and **SDG 12** as shown in Figure 38.

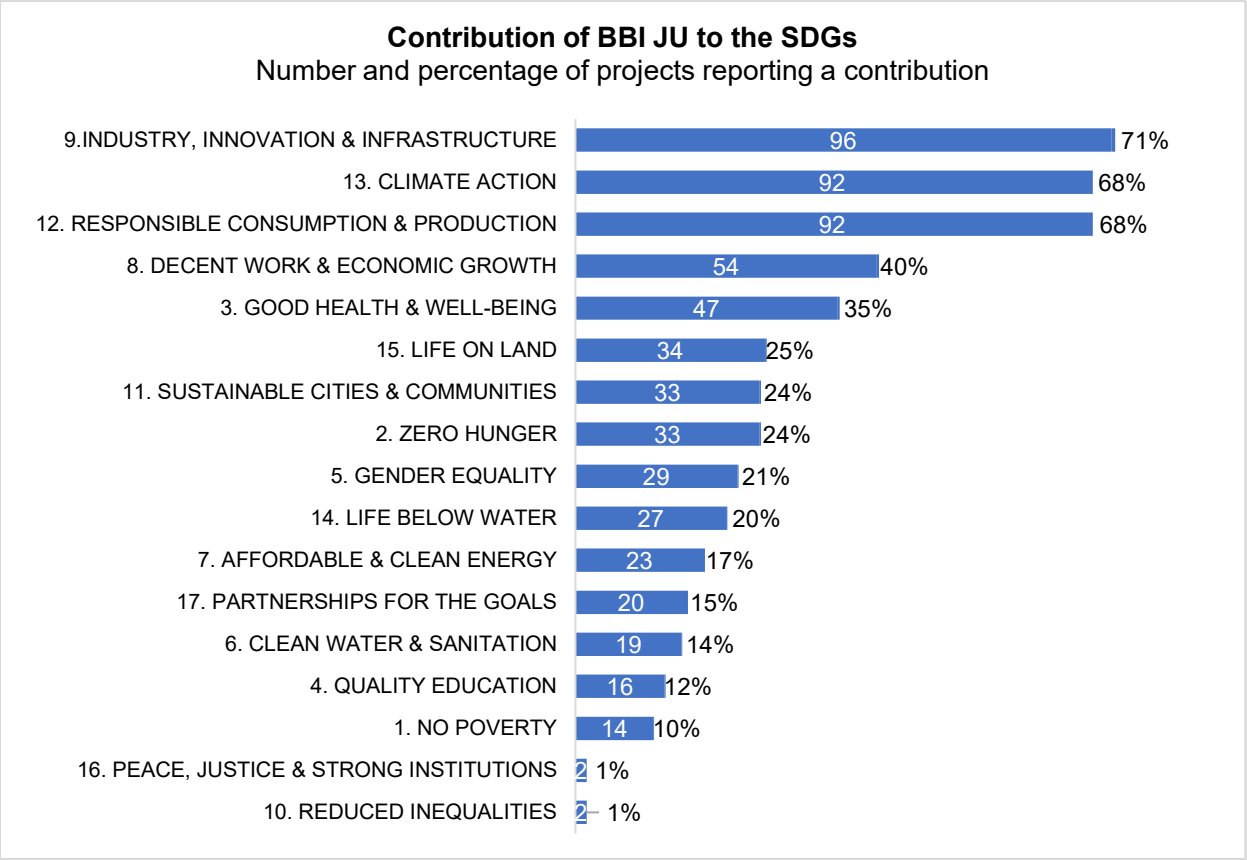

Figure 38 BBI JU projects' contributions to UN SDGs.

SDG 9: EFFECTIVE (ongoing DEMO) produces bio-based polyamides and polyesters for different products (e.g. textiles, automotive) with a sustainable end-of-life. It contributes to SDG 9 by demonstrating innovative and sustainable industrial processes and reconverting old production sites previously dedicated to the manufacturing of fossil-based products.

SDG 13: REDWine (ongoing DEMO) utilises the CO_2 resulting from wine production for the cultivation of microalgae, which provide valuable compounds for different applications (e.g. food, cosmetics, fertilisers), contributing to climate change mitigation both by capturing CO_2 and substituting fossil-based chemicals and additives.

SDG 12: SYFEED (finalised DEMO) has developed a new value chain, from wood to feed, that produces proteins for fish feed from the bioconversion of wood residues. It contributes to reducing the environmental impact of the aquaculture sector by providing a sustainable source of proteins.

1.3.2 Monitoring the leverage effect of the initiative

The leverage effect aims to measure the ability of the BBI JU 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 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. A more in-depth analysis of the different types of contributions from BIC to the BBI JU Initiative is available under section 1.7 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). Its total value for the period 2014-2021 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[24]. In 2017, the calculation method was formally adopted by the BBI JU Governing Board[25]. 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:

$$Operational\ leverage = \frac{\sum APIK^{26} + \sum FC^{27}}{\sum EU\ contribution^{28}}$$

[24] 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

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

[26] All Participants In Kind contribution (APIK) is the difference between the total costs and the JU contribution of the grant agreements signed by the cut-off date of the data reported in the AAR.

[27] Total amount of financial ("cash") contributions by BIC, delivered at programme level, and/or by BIC constituent entities that are beneficiaries not receiving funding, delivered at project level and committed by the cut-off date of the data reported in the AAR.

[28] Total amount of EU funding committed in grant agreements signed by the cut-off date of the data reported in the AAR.

$$Additional\ leverage = \frac{\sum IKAA^{29}}{\sum EU\ contribution}$$

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 2021, the value of the leverage effect of the BBI JU initiative is:

$$Operational\ leverage = \left(487\ 928\ 957 + 3\ 250\ 00030\right) / 822\ 066\ 903 = 0.60$$

$$Expected\ Additional\ leverage = 1\ 646\ 530\ 181\ /\ 822\ 066\ 903 = 2.01$$

$$(Total)\ \ expected\ leverage\ by\ end\ 2021 = \ 0.60 + 2.01 = 2.61$$

The reported operational leverage is in line with that of the previous years. The additional leverage is reported as “expected” because the IKAA certification process will be finalised in May 2022 for the final version of this document. The expected leverage value – considering the planned IKAA value for 2021 - is above target over the reporting period.

The following Figure 39 shows the evolution of the leverage effect, and the Table 6 further below details each component of the leverage effect calculation over the first years of the initiative.

[29] Total amount of in-kind contribution to additional activities by BIC and/or its constituent entities implemented by the cut-off date of the data reported in the AAR and duly certified later.

[30] This amount includes the financial contribution from the member other than the Union and its constituent entities at programme and project level.

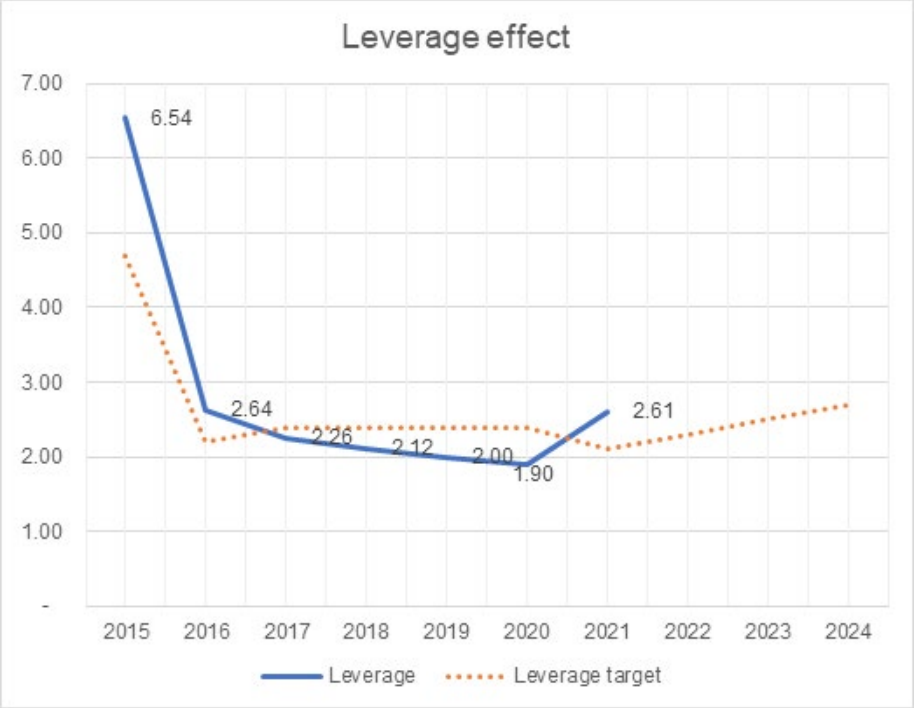

Figure 39 Evolution of the leverage effect over the initiative

Year	APIK (EUR committed)	Financial contribution (EUR committed)	IKAA (EUR)	Total (EUR)
2015	33,107,991		291,482,000	318,109,047
2016	87,982,848	750,000	187,377,001	244,630,117
2017	129,336,282	500,000	195,985,238	269,023,239
2018	58,296,568	2,000,000	59,919,566	100,445,963
2019	69,317,889		79,083,090	115,340,935
2020	46,749,640		117,073,286	134,545,668
2021	63,137,740		715,610,000	730,979,206
Total	**487,928,957**	**3,250,000**	**1,646,530,181**	**2,137,709,138**
Percentage of the expected value by end of initiative	62%	2%	94%	78%
Expected value by end of initiative	792,500,000	182,500,000	1,755,000,000	2,730,000,000

Table 6 Components of the leverage effect calculation over the first years of the initiative

1.3.3 Evaluation: procedures and global evaluation outcome, redress and statistics

The section is empty as no calls were foreseen in 2021 under the BBI JU (last call implemented in 2020) nor under the new CBE JU.

1.4 CALL FOR TENDERS

No calls for tenders were planned in the AWP 2021, within the scope of Horizon 2020 forms of funding, to support the development and implementation of research and innovation agendas. Public procurements and contracts concluded for BBI JU administrative expenditure are reported under section 2.4 below.

1.5 DISSEMINATION AND INFORMATION ABOUT PROJECTS RESULTS

Data on dissemination, publications and patents are gathered through the 'continuous reporting' IT module of the Funding & tender opportunities Portal and are reported below, while a detailed overview of publications and patents is provided in Annexes 7.3 and 7.4 respectively.

Dissemination activities

In the two tables below, an extract of the dissemination-related data, as recorded on 31 December 2021, is reported together with data collected since 2017.

Type of dissemination & communication activities	2017	2018	2019	2020	2021
Organisation of a Conference	5	39	41	120	200
Organisation of a Workshop	14	36	49	196	311
Press release	59	164	1209	407	635
Non-scientific and non-peer-reviewed publication	111	487	592	1.314	2.225
Exhibition	23	96	119	258	306
Flyer	24	5.553	5.574	24.762	37.816
Training	20	62	82	171	276
Social media	45	2.735	59.566	15.187	23.172
Website	86	230	314	31.984	55.035
Communication campaign (e.g. radio, TV)	14	37	51	181	296
Participation at a conference	159	550	686	1.653	2.146
Participation at a workshop	59	128	178	424	619
Participation to events, other than conference or workshop	51	179	222	487	674
Video/film	12	59	70	244	444
Pitch event	5	9	14	108	150
Trade Fair	19	66	84	179	221
Participation in activities organised jointly with other Horizon 2020 projects	13	71	80	189	254
Other	34	157	189	554	59.782

Table 7 Number of dissemination and communication activities of all BBI JU projects (in 18 categories, such as organisation of a conference; press release, flyer, etc.) as reported in the Funding and Tenders Portal (2017-2021; Total / cumulative reported amounts).

By the end of 2021, new dissemination activities were mainly performed by projects resulting from BBI JU Calls 2015-2019, since projects from Call 2014 were all finalised, and the projects from Call 2020 only started as of Q2 2021.

The comparison with 2017-2020 shows that in 2021, notwithstanding the Covid-19 travel and other restrictions, there was a significant increase in dissemination and communication activities. It should also be noted that the 2021 figures are based on reported (raw) data; data outliers, resulting from misinterpretations on how to complete certain fields (and subsequent corrections), were kept in the tables above. This explains the high amounts in the data fields ‘flyers’, ‘website’ and ‘other’.

	Estimated number of persons reached				
	2017	2018	2019	2020	2021
Scientific Community (Higher Education, Research)	124.007	450.043	989.124	3.185.837	19.985.654
Industry	231.388	414.702	2.975.462	4.273.681	6.059.571
Civil Society	9.141	2.935.852	4.548.619	10.015.569	38.598.871
General Public	945.855	8.173.203	18.749.257	52.201.777	225.888.130
Policy Makers	15.489	62.034	108.457	557.980	309.671
Media	15.371	1.577.383	1.797.584	2.037.192	2.388.378
Investors	6.845	39.195	51.425	371.216	107.710
Customers	104.997	365.529	5.757.952	787.993	538.179

Table 8 Estimated number of persons reached (in eight categories, such as scientific community, industry, policy makers, etc.), in the context of all dissemination and communication activities (2017-2021; Total / cumulative reported amounts)

When analysing the estimated number of persons reached as reported in Table 8, increases can be observed in 5 of the 8 categories listed. The decrease in categories 'policy makers', 'investors' and 'customers' can be explained by corrections made compared to previously reported data (cf. the issue with reported (raw) data described above), and the sometime unclear distinction between the categories 'industry' and 'investors', as well as 'general public' and 'customers'. In BBI JU projects, industry can often be considered as (co)-investors, whereas the consumers are customers of a significant proportion of bio-based products.

Publications from BBI JU projects

In Table 9, an overview is provided of the publications reported by BBI JU projects in the period 2015-2021 using the 7 different categories specified in the Horizon 2020 framework to group the 'publications', namely: articles, book chapters, conference proceedings, monographic books, peer-reviewed articles, thesis dissertations, and 'other'.

	2015	2016	2017	2018	2019	2020	2021
Article	0	0	1	4	4	3	8
Book chapter	0	0	1	5	4	7	1
Conference proceedings	1	7	19	27	39	11	1
Monographic book	0	0	1	0	0	0	2
Other	1	1	21	16	20	19	10
Peer reviewed articles	0	5	27	61	103	157	116
Thesis dissertation	1	2	5	17	10	5	8
Total	**3**	**15**	**75**	**130**	**180**	**202**	**146**

Table 9 Publications reported by BBI JU projects (2015-2021)

The following conclusions can be drawn when analysing these data:

- The 2020 downward trend in conference proceedings continued in 2021, most likely caused by the more limited conference opportunities as consequence of Covid-19.
- The data for 2015-2018 remained the same, whereas the total amount of reported publications increased for 2019 (+11) and 2020 (+39) compared to the amounts reported in the BBI JU AAR 2020. This trend has persisted throughout all AARs: publication data reported for the past 1-2 years has structurally been an underestimation and was updated in the subsequent AARs. For the last reported year (2021), it is expected that the amounts will increase further once all 2021 data has been gathered and officially reported via the periodic reports.
- The BBI JU projects followed the Horizon 2020 guidelines for Open Access (OA) publications. Of the 146 reported publications for 2021, 51 are in Green OA and 86 are in Gold OA. Out of the 9 remaining publications that are not in OA, only 1 of them is a peer-reviewed journal article, which in practice means that 115 of the 116 (more than 99%) of the peer-reviewed journal publications from BBI JU are Open Access, which is considered a very good outcome.

Patents from BBI JU projects

By the end of 2021 and for the period 2015-2021, BBI JU projects have:

- Obtained 23 patents, 1 registered design and 3 trademarks;
- Submitted 106 patent applications (incl. the obtained ones), which is 35 applications more compared to the data reported in AAR 2020.

BBI JU activity in support to dissemination of projects results

Throughout 2021, the BBI JU actively contributed to the dissemination of project results via IT tools managed by the BBI JU and the EC. Specifically, the BBI JU successfully used the following media:

- o The BBI JU website to showcase each project's objectives and project success stories. Via each project's dedicated page on the BBI JU website, additional information was disseminated via dedicated URLs to CORDIS (the official results repository of EU-funded research and innovation projects) and each project's self-developed website. Furthermore, the website contains a section dedicated to project management, which provides more information to project beneficiaries about best practices and additional support measures for dissemination, communication and exploitation of project results.

2 Newsletter to promote significant results and events organised by selected projects.

3 Presentation slots in internal and external events to promote and showcase the most relevant project results for the event's target audience.

4 Social media presence (mainly Twitter, LinkedIn and YouTube) to disseminate and promote project outcomes.

1.6 OPERATIONAL BUDGET EXECUTION

In 2021 no call for proposal was published by the JU Programme Office.

Commitment appropriations

For what concerns the implementation of the BBI JU Call 2020, 18 grant agreements were signed by the "time to grant" deadline for a total of EUR 104,460,161 and the average TTG was 236 days.

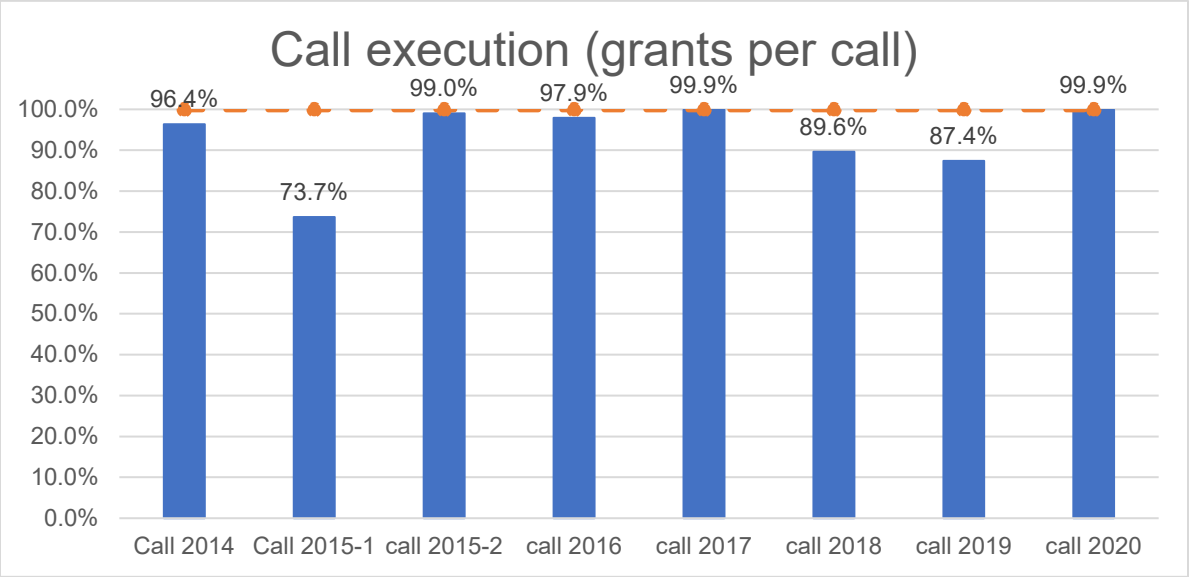

Figure 40 Call budget execution

From a budget implementation perspective the unused appropriations that were not fully used in a given call were shifted to subsequent years. Thanks to this efficient management of unused appropriations from previous calls, the overall budget execution in commitment appropriations for the BBI JU programme reached 99.9% with the implementation of the last BBI JU Call 2020.

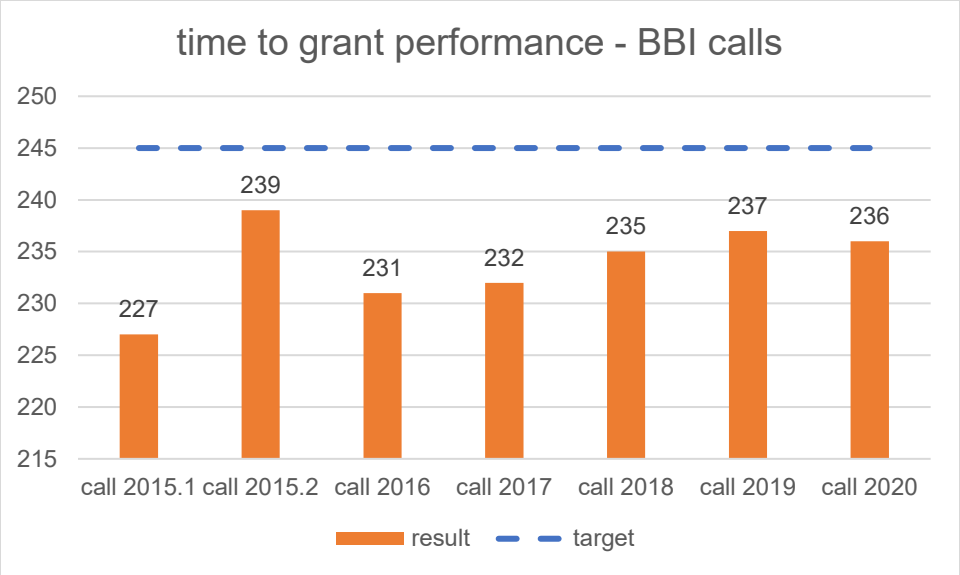

Figure 41 Time to Grant performance in BBI JU calls

For what concerns the Time-To-Grant, the JU Programme Office achieved an average of 235 days in TTG and 98% of grants were signed on time during the GAPs implemented under H2020.

Payment appropriations

The JU Programme Office finalised EUR 121,695,988 in payments of which EUR 67,668,888 in pre-financing and EUR 54,027,100 in periodic and final payments. The 59 cost claims were processed within an average of 66 days and all of them were paid on time. Pre-financing payments were also performed on a timely basis and within an average of 9.5 days.

1.7 IN-KIND AND FINANCIAL CONTRIBUTIONS

The Single Basic Act of the Joint Undertakings[31] 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 Industry Consortium (BIC). 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 2024 to report on the progress of the contribution from BIC to the BBI initiative under the Horizon 2020 programme.

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

Since no call has yet been implemented for CBE in 2021, 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.

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[32] or their constituent entities 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[33] also includes two well-defined objectives: at least EUR 1,755 million as in-kind contributions for additional activities (IKAA)[34] and at least EUR 182.5 million as financial contributions to operational costs.

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)

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[35]; (3) certified mostly at the end of the projects.

The founding regulation does not set a target to be reached by the Members other than the Union but these contributions also contribute to the achievement of the expected total contribution to the initiative. Indicative expected values are included each year in the respective BBI AWPs. The Table 10 below shows the values of expected/committed IKOP in signed grant agreements, resulting from the difference between the total grant amount and the total costs to be incurred by BIC constituent entities during the execution of the actions. The lower level of committed IKOP in BBI JU grant agreements compared to the expected levels set in the AWPs is mainly due to the increased funding of non-BIC applicants over time. The BBI JU runs call for proposals that are open also to non-BIC applicants and successful applicants are not obliged to join the BIC consortium. Moreover, the committed IKOP remains an estimation based on indicative budgets of signed grant agreements.

32 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.

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

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

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

Call	Total expected IKOP (in EUR) according to BBI AWPs	Committed IKOP (in EUR)
2014	23,785,000	26,627,047
2015.1	105,000,000	56,503,116
2015.2		22,227,114
2016	110,000,000	72,538,001
2017	40,000,000	38,526,397
2018	45,000,000	36,257,845
2019	60,000,000	17,472,382
2020	49,000,000	15,369,206
TOTAL	**432,785,000**	**263,239,995**

Table 10: value of IKOP committed in running grants by BIC beneficiaries, per call

Out of the total amount of IKOP committed by BIC constituent entities in BBI JU grants, around EUR 52.2 million has already been certified and will be included in the BBI JU accounts as net assets. The IKOP certification was done based on certificates of financial statements (CFS) submitted in the context of the concluded projects and on audits performed before the end of the projects.

In-kind contribution in the implementation of additional activities (IKAA): certification and validation

IKAA constitutes the in-kind contribution incurred by the Members other than the Union or its constituent entities, consisting of the costs incurred by them in implementing additional activities outside the work plan of the BBI JU but contributing to its objectives. IKAA are linked to those reflected in the Additional Activities Plan (AAP) over the same period and are certified by independent external auditors in compliance with Article 4.4 of the Council Regulation establishing the BBI JU.

Despite the difficulties encountered by BIC constituent entities to certify IKAA during the COVID 19 pandemic and the conjunctural shift of several investments from 2020 to 2021, in 2021 BIC was able to deliver a large amount of certificates covering IKAA mostly from 2020, but also from 2019 and 2018. On top of this, the AAP for 2021 amounts to EUR 715 million and it is included in the calculation due to the impossibility for BIC to certify this amount by the deadline of 15 May 2022.

The total certified additional investments by the end of 2021 – considering the planned value for 2021 - reached a total of EUR 1,646,530,181, that would be above the expected value at this level of the initiative.

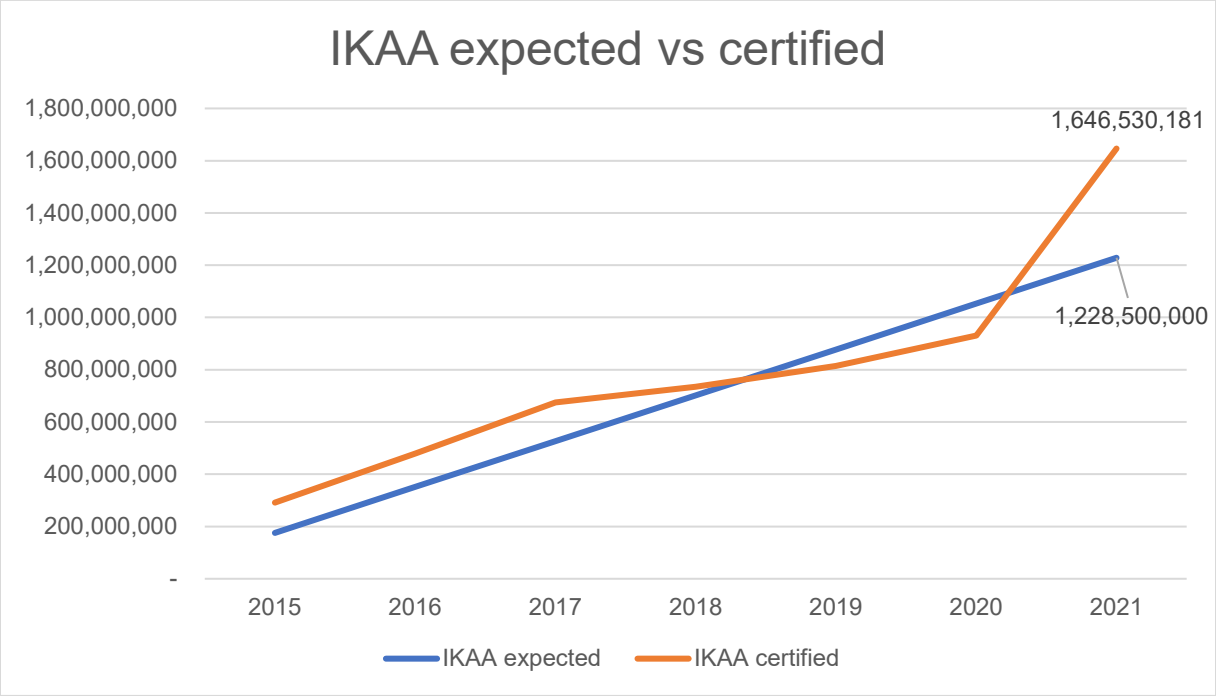

Figure 42 IKAA evolution in the period 2015-2021

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 2021, 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"*[36]. 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*

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

financial contribution amount will be achieved by the end of the programme"[37]. 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 contributions from both members EC and BIC, the initiative succeeded in achieving its strategic objectives""*[38]. *This Annual Activity Report provides further and updated details in this respect in sections 1.1 to 1.5.*

Overall industry contribution to the BBI JU initiative

The total level of the contribution by BIC and its constituent entities at the end of 2021 exceeded the expected values at this level of the initiative, mainly due to the progress in the IKAA certification process and to the large amount of forecast IKAA in 2021. The overall level of financial contributions already reached 70% of the EUR 2.73 billion final expected value and is well on track to reach its final objective by 2024.

Year	IKOP (EUR committed)	Financial contribution (EUR committed)	IKAA (EUR)	Total (EUR)
2015	26,627,047		291,482,000	318,109,047
2016	56,503,116	750,000	187,377,001	244,630,117
2017	72,538,001	500,000	195,985,238	269,023,239
2018	38,526,397	2,000,000	59,919,566	100,445,963
2019	36,257,845		79,083,090	115,340,935
2020	17,472,382		117,073,286	134,545,668
2021	15,369,206		715,610,000	730,979,206
Total	263,293,995	3,250,000	1,646,530,181	1,913,074,176
Percentage of the expected value by end of 2021	61%	100%	134%	115%
Expected value by end of 2021	432,785,000	3,250,000	1,228,500,000	1,664,535,000

Table 11 financial contribution from Members other than the EU against expected values by the end of 2021

For the calculation of the related leverage effect, please refer to section 1.3.3. above.

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

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

2 SUPPORT TO OPERATIONS

2.1 COMMUNICATION ACTIVITIES

In 2021, communication activities focused on the preparation of the BBI JU's continuation in the framework of Horizon Europe programme, and on highlighting the impacts of the BBI JU, as well as its contribution to the goals of relevant EU policies. The BBI JU reinforced its ambassadors' network by involving members of the Governing Board and advisory bodies, as well as project beneficiaries, in the dissemination activities. Collaboration with institutional partners was strengthened to achieve a higher impact of the CBE JU launch communication. Communication tools and channels received a boost with the update of the social media and media relations plan, and the preparatory work ahead of the CBE JU website launch in early 2022. The BBI JU participated in 77 events and after it the CBE JU , in 5 events, most of them online.

2.1.1 Delivering CBE JU launch communication

On 30 November, CBE JU delivered a **full launch communication**, including: a new logo, branding strategy and messaging; new visual identity; updated information throughout the BBI JU website and a new section on the CBE JU; new social media accounts; a news article; a communication campaign targeting CBE JU stakeholders; an information package for BBI JU beneficiaries; and updated templates and documents.

Throughout 2021, BBI JU communicated to its stakeholders every milestone of the CBE JU preparation process:

- 23 February: European Commission adopts a draft regulation establishing CBE JU;
- 21 October: European Parliament adopts the regulation establishing CBE JU;
- 19 November: Council of the EU adopts the regulation establishing CBE JU.

The establishment of the CBE JU Governing Board and the call for CBE JU Scientific Committee members were also highlighted. Regular communication contributed to higher awareness about the CBE JU and a better engagement at its launch.

Date	LinkedIn: views per message	LinkedIn: engagements per message	Twitter: views per message	Newsletter: open rate	Website: article views
2020 average	1,400	31	6,200	41%	n.a.
2021 average	3,400	90	9,600	39%	n.a.
23 February	9,800	360	47,000	47%	2,600
21 October	7,200	210	11,000	n.a.	1,100
19 November	3,600	100	4,300	50%	1,500
30 November	6,800	153	21,000	32%	600

Table 12 CBE JU launch communication statistics

The communication concept and channels were tailored to each milestone. February's announcement became the most read news article in 2021 and generated very high engagement on social media (275% more than the 2021 campaign average, on LinkedIn); the CBE JU launch video received more than 10,000 views, and the newsletter became the second most opened of the year. Communications on the adoption by the European Parliament and Council of the EU were linked, due to their nature and timeframe. The special newsletter announcing the Council adoption on 19 November set the record as the most opened general newsletter ever. It was also highlighted in several media outlets, such as Politico's Sustainability Insights newsletter for subscribers and Agro&Chemistry, an opinion leader in the bioeconomy.

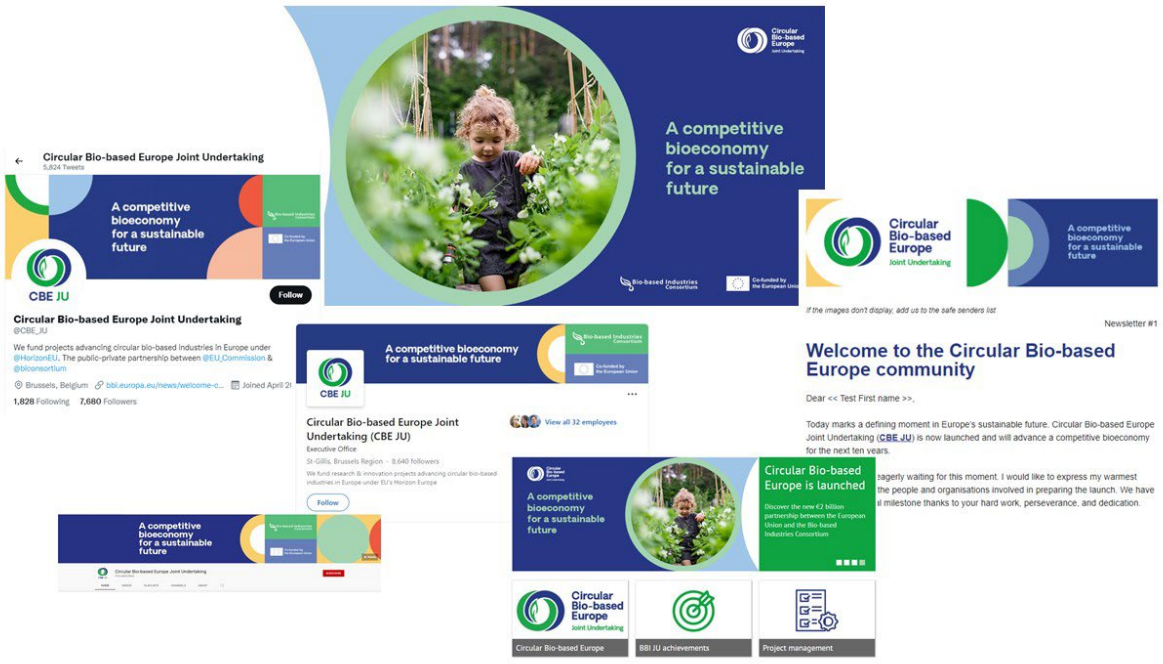

Figure 43 Visuals of the CBE JU launch campaign

2.1.2 Communicating the impact of the BBI JU

Following the completion of BBI JU calls, communication in 2021 focused on highlighting the **achievements and impacts** of the initiative. BBI JU produced and promoted:

- 7 years advancing the European bio-based industries", a publication on its achievements in the 2014-2020 period;
- Infographics about BBI JU impact in 35 countries;
- Visuals and a campaign about BBI JU-funded flagship projects;
- A scientific article about the environmental and socio-economic impacts of BBI JU, and a number of articles in specialised media (example);
- A video about BBI JU impacts;
- Communication on the 2020 Annual Activity Report with a focus on the impacts of the initiative;
- BBI JU project photo competition gave the opportunity to reconnect with the partnership's important beneficiary group, as well as leading to a collection of high-quality images about the bio-based production processes. The competition launch message on Twitter attracted over 14,000 views. The public vote on social media engaged nearly 400 BBI JU stakeholders and generated more than 17,000 views, the highest number per post reached so far on LinkedIn.

These communication products were the main axes of several communication campaigns: #BBIimpact running throughout the year; a campaign on BBI JU's Flagship projects; and #2021Resolutions, a lighter campaign on the achievements of BBI JU projects as inspiration for the new year's resolutions.

Campaign	LinkedIn: views per message	LinkedIn: engagements per message	Twitter: views per message	Newsletter: open rate	Website: article views
2020 average	1,400	31	6,200	41%	n.a.
2021 average	3,400	90	9,600	39%	n.a.
#2021Resolutions	1,200	28	3,300	n.a.	n.a.
Flagship projects	1,400	37	6,300	43%	1,860
#BBIimpact	2,200	38	2,700	38%	1,500
BBI JU Photo competition	3,100	72	3,800	n.a.	1,216

Table 13 BBI JU impacts campaigns statistics

In collaboration with the European Commission services, the BBI JU narrated the success stories of its projects. 15 stories were published and promoted in 2021. The most visited stories are the ones linked to the conversion of organic waste into sustainable projects by PERCAL project (296 views), and the advancements in the blue bioeconomy by VALUEMAG project (305 views).

Published stories	Total views	Average view per story
15	2,914	194

Table 14 Web statistics of the success stories

The BBI JU's **contribution to the goals of relevant EU policies**, such as the European Green Deal, the EU Bioeconomy Strategy, the EU Biodiversity Strategy, Circular Economy Action Plan and Farm to Fork Strategy, was an important part of the communication activities. The BBI JU produced and promoted communication packages on this contribution, following the legislative calendar on:

- European Green Deal;
- Zero Pollution Action Plan;
- Farm to Fork Strategy;
- New Soil Strategy.

Policy	Website: news article views	LinkedIn: views per post	Twitter: views per tweet
European Green Deal	427	1,800	1,300
Zero Pollution Action Plan	479	600	3,100
Farm to Fork Strategy	299	1,300	6,600
New Soil Strategy	83	600	n.a.

Table 15 Statistics on communication packages about BBI JU's contribution to relevant EU policies

2.1.3 Promoting BBI JU Call 2020 results

The JU Programme Office closed the call communication cycle with a promotion campaign on the projects selected in the Call 2020, which was the second most read article in 2021 with over 2,200 views, and the third most opened newsletter. The digital campaign received one of the highest click-through rates on LinkedIn (3%).

Campaign	LinkedIn: views per message	LinkedIn: engagements per message	Twitter: views per message	Newsletter: open rate	Website: article views
2020 average	1,400	31	6,200	41%	n.a.
2021 average	3,400	90	9,600	39%	n.a.
Call 2020 projects	800	24	4,700	44%	2,200

Table 16 Call 2020 projects promotion statistics

As every year, the BBI JU promoted the BBI JU Synergy Label awardees.

2.1.4 Communication channels and tools

Website

In 2021, the BBI JU conducted a user study and created a design to prepare the future CBE JU website to be launched in early 2022. In addition, the BBI JU website was entirely revamped to adapt it to the objectives and activities of the CBE JU.

The BBI JU migrated to a new website statistics tool, making the comparison to the 2020 data unreliable. Additionally, the new tool only compiled data from mid-March 2021. In general, the number of visits to the website remained stable despite the lack of new funding opportunities and the launch of the new partnership only late in the year.

Visits	Page views	Actions per visit	Average session duration	Bounce rate	New sessions
95,598	201,581	2.58	00:02:12	57%	68%

Table 17 Web statistics, April-December 2021

These numbers are in line with the average of websites primarily used for information search, as in the case of the CBE JU.

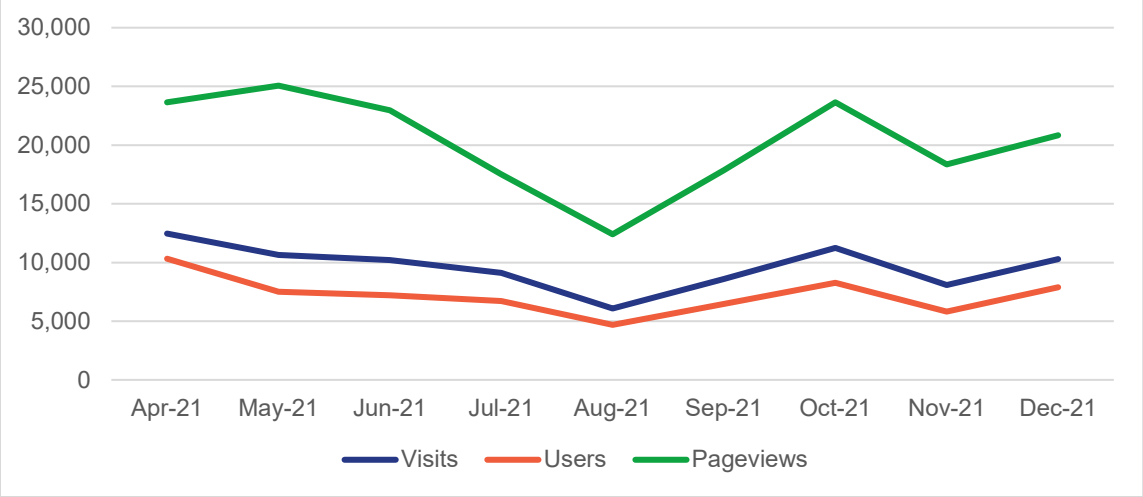

Figure 44 Web statistics, April-December 2021

May was the month with the highest number of page views following the new Call 2020 projects announcement. October scored the second highest result following the publication of several vacancies and the European Parliament's endorsement of the CBE JU.

19% of all website visits originated in Belgium, 9% in Spain, 7% in the US, 7% in Italy and 5% in Germany. Visits from Europe accounted for 81% of the total, with Estonia, France, Portugal, the UK, the Netherlands and Greece completing the top 10. European visitors stayed longer on the website (2 minutes 25 seconds) and showed a lower bounce rate (54%) than those from the other continents.

Most visited pages were:

- Jobs, with over 20,000 views;
- About the BBI JU, with over 6,000 views;
- About the CBE JU, with almost 3,000 views (as of end-November);
- News article on Commission's endorsement of the CBE JU, with 2,600 views;
- News article on the new projects selected in the Call 2020, with 2,200 views.

Social media

On 30 November 2021, all BBI JU channels were transformed to reflect the organisation change and identity while keeping the followership:

- Twitter: CBE_JU;
- LinkedIn: Circular Bio-based Europe Joint Undertaking (CBE JU);
- YouTube: Circular Bio-based Europe Joint Undertaking.

Communication via **Twitter** was reviewed in September following changes in the platform's algorithm to discourage the use of external links in posts. These changes nevertheless led to a significant decrease in the number of views compared to 2020.

	Tweets	Views	Views per tweet	Profile visits	Mentions	Followers
2020	738	2,670,800	3,618	31,097	3,603	6,458
2021	568	1,653,200	2,910	127,912	2,366	7,795

Table 18 Twitter statistics, 2020-2021 comparison

At the same time, the number of BBI JU / CBE JU followers on Twitter grew by 21%, generating a 311% increase in the number of profile visits.

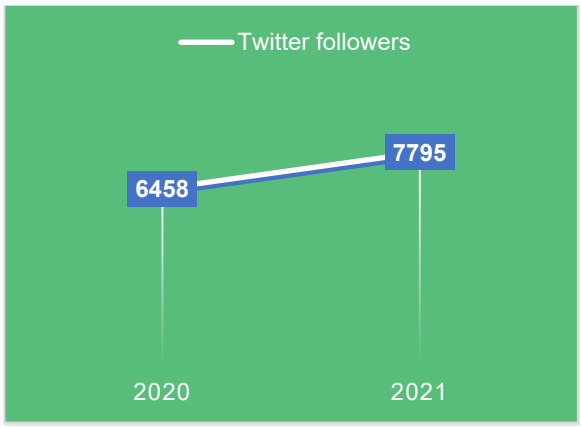

Figure 45 Number of Twitter followers

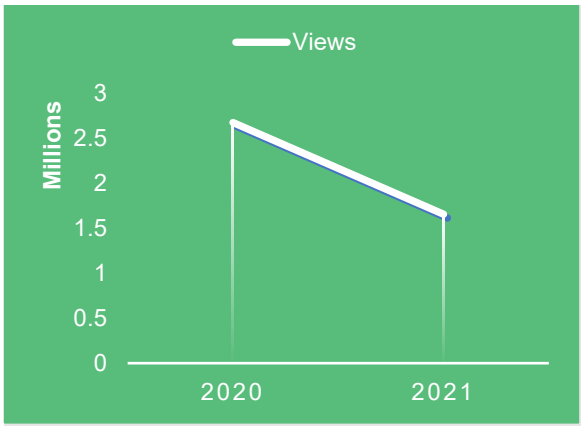

Figure 46 Number of views on Twitter

In 2021, **LinkedIn** became the most followed BBI JU / CBE JU social media account overtaking Twitter, following a strategic adaptation of the platform to get higher visibility and engagement.

	Views	Profile visits	Followers	Clicks	Reactions	Comments
2020	387,390	12,656	6,047	*not collected*	*not collected*	*not collected*
2021	426,395	11,364	8,907	20,742	7,195	212

Table 19 LinkedIn statistics

In 2021, BBI JU / CBE JU messages registered 10% more views than in 2020 and the number of followers increased by 47%. More than 20,000 clicks on published links hint at the CBE JU's LinkedIn profile becoming an important information and news hub for the stakeholders. Moreover, the CBE JU staff used their personal social media profiles to boost the communication. As an example, the message of the Executive Director Philippe Mengal about the European Commission's endorsement of the CBE JU received more than 200 reactions and 20 shares.

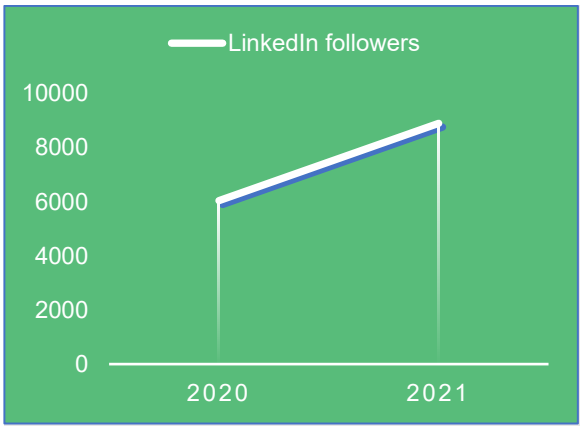

Figure 47 Number of LinkedIn followers

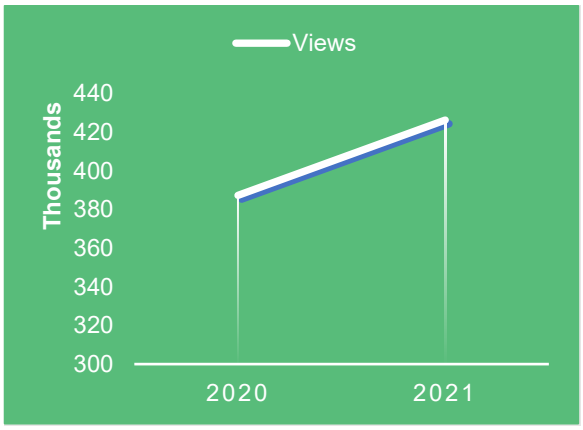

Figure 48 Number of views on LinkedIn

Due to the lack of events organised by BBI JU, YouTube was used only as a repository of videos. Nevertheless, the number of subscribers increased by 22% to 430.

Newsletter

BBI JU sent 12 newsletters to 4,000+ subscribers in 2021, three of them already from the CBE JU. The number of subscribers remained stable while all the other indicators have slightly increased compared to 2020.

	Opens	Open rate	Clicks	Click rate
2020 average	1,478	38.4%	501	11%
2021 average	1,615	39.4%	519	12.6%

Table 20 Newsletter statistics

The best performing issues of the newsletter were the special edition about the Council's endorsement of the CBE JU (50% open rate and 15% click rate), February's edition about the Commission's proposal for the CBE JU (47% open rate and 23% click rate), and May's edition announcing the new Call 2020 projects (44% open rate and 18% click rate).

The newsletter was redesigned for the CBE JU launch on 30 November to reflect the new corporate identity. Further visual improvements are planned for 2022.

Events

The BBI JU and the CBE JU participated in 82 events:

- The BBI JU / CBE JU had a speaking slot in 54 events (66%);
- 69 events were held fully online;
- Some of the largest events with the BBI JU / CBE JU participation were: BIOKET 2021, World Bioeconomy Roundtable 'Global leaders and financial world', the Plant-based Summit, IFIB and EFIB, and ECOMONDO;
- Two important project-related events with the participation of BBI JU were the launch of the AgriMax pilot plants and the ground-breaking event of the PLENITUDE's flagship plant.

See a full list of events with the BBI JU / CBE JU participation in Annex 7.10 of the report.

Videos

Videos were created to make some of the main communication actions this year more engaging across the different channels. The number of views reflects the sum of views on YouTube, LinkedIn and Twitter:

Thumbnail	Title and views
	European Commission gives the green light to the successor of BBI JU 10,000+ views
	Advancing the European circular bio-based economy: the impacts of BBI JU 2,200 views
	7 years advancing the European bio-based industry 3,400 views
	Get into the circular spirit 590 views

Figure 49 Videos produced in 2021

Media relations

In 2021, the BBI JU and the CBE JU improved media relations via a dedicated plan and active participation of project beneficiaries and other stakeholders, resulting in a better mainstream and specialised media uptake. A few examples:

- 10 December: visit of The French Minister Delegate for Industry, Agnès Pannier-Runacher, to the site of the BBI JU-funded Resolute project reflected in several regional and national media outlets;

- 15 October: an article in the Guardian on how Avantium, the PEFerence project coordinator, is building a biorefinery to produce sustainable bottles;
- 8 April: BBI JU-funded BARBARA project was featured in the TV6 news.

Please see the full media review on the CBE JU website.

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 560/2014, (EU) No 561/2014 and EU No 642/2014, entered into force the 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 originally 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), and which establishes that, inter alia, all the staff implementing rules, financial rules, management and prevention of conflict of interest rules, adopted by BBU JU, continue to apply for the CBE JU. Furthermore, this decision established that the BBI JU Annual Work Plan 2022 adopted in November 2021 was to be implemented by the CBE JU, thus ensuring the continuous operation of the Joint Undertaking, without interruptions.

2.3 BUDGETARY AND FINANCIAL MANAGEMENT

2.3.1 Overview

The Governing Board adopted the 2021 budget for the BBI JU for the global amount of EUR 5.215.066 in commitment appropriations (CA) and kEUR 174.626.895 in payment appropriations (PA) in December 2020. There were no amendments to this budget in 2021.

The original BBI JU budget included a relatively large surplus of unused budget from prior years (2018, 2019 and 2020): EUR 600.000 in administrative CA and PA and on the operational side EUR 46.881.709 in PA. The reactivated appropriations were consumed in priority in line with CBE's Financial Rules art. 6(5), and reached almost 100% consumption on the admin side and 79% on the operational side by year end.

At the end of 2021, there was a total surplus of unused CA and PA of EUR 785.968 in administrative CA and of EUR 1.087.514 in administrative PA. In operational CA there was no surplus 8 and in operational PA there was EUR 48.589,502.

A Governing Board decision was taken at the end of 2021 to reactivate EUR 1.135.769 in administrative CA from 2020 and EUR 1.566.182 in administrative PA (EUR 266.182 from 2019 and EUR 1.300.000 from 2020) as well as EUR 40 million in operational PA (EUR 28.803.205 from 2020 and EUR 11.196.795 from 2021) in the 2022 budget. (In the amendment to AWP 2022 the EUR 11.196.795 was removed as deemed surplus to requirements following recent budget assessments).

The operational PA include kEUR 4.292 from 2018 and kEUR 42.590 from 2019. Further reactivations (covering 2019 and 2020 surpluses) are to be envisaged in the 2022 budget.

The Covid-19 crisis continued to make itself felt during this second year of the pandemic. Nevertheless the overall budget execution was satisfactory given the impact. The execution of any budget lines involving e.g. travel expenditure or hire of a venue – missions, meetings, communications events, teambuilding events etc. – was again negatively impacted, with the costs of organising such events in a “virtual” manner being minimal.

2.3.2 Administrative expenditure

The total consumption of the administrative budget was 85% in CA and 80% in PA.

Title 1: Staff related costs showed a strong overall execution of 93%, with salaries (total budget EUR 2.7 million) at 99% and other staff costs (kEUR 455) at 57%. Mission expenses budget of kEUR 71 again suffered during the Covid-19 period, with only 10% execution. There were no installation/resettlement costs (budgeted at kEUR 60).

Title 2: The infrastructure budget achieved an overall execution of 74% in the CA of the 2021 budget. Among the highest costs - building-related (kEUR 391), IT (kEUR 537), and communications (kEUR 538) all achieved a robust execution, respectively 87%, 77% and 87%. Underspending was recorded for the expert reviewers (kEUR 330, 55%). The low execution on certain communications categories like events and public relations costs was compensated by the commitment of a large budget (kEUR 408) for the development and maintenance costs of the new CBE website (including transition to Drupal 9). The overall PA consumption in Title 2 is 64%. Communications execution (on total budget kEUR 528) was only 30%, because the payments related to the above-mentioned website contracts will not be made until 2022.

2.3.3 Operational expenditure

Concerning the CA of the operational budget, the JU Programme Office concluded 18 grant agreements from Call 2020 for a total grant value of EUR 104.5 million resulting in a 100% execution of CA envisaged for this call (EUR 104.7 million).

In respect of the PA, the JU Programme Office achieved a 71% execution of the 2021 budget, with pre-financing payments for the grants of Call 2020 (EUR 68 million) together with payments of periodic reports for grants from the previous BBI JU calls (EUR 53 million). The execution was lower (by 14%) compared to the previous year. This was because i) the 2020 PA execution was "eased" by sending back a large amount of reactivated appropriations to the years of origin and ii) because the impact of Covid-19 continued thoughout 2021, where the budget had been established in anticipation of the pandemic slowing and projects "catching up" on delays.

Regarding the payment of the periodic reports, BBI JU Programme Office dealt with 59 periodic reports claiming a total contribution of EUR 104 million (€54 million net), which led to 59 payments in 2021 for a total of EUR 53 million (net of prefinancing clearing).

2.3.4 KPI performance

The financial KPIs showed a strong performance in 2021:

- All grant agreements relating to Call 2020 were signed on time.
- All prefinancing payments relating to Call 2020 were paid on time
- All interim and final cost claims validated in 2021 were paid on time.
- The Time to Pay of administrative payments showed only 16 (4%) of a total 451 payments were late. Two were three or less days late. Most of the others (nine) were monthly grant payments to trainees and therefore the TTP was not applicable. Five concerned technical bugs with missions payments notifications which have since been resolved.

Statement of revenue:	Voted budget 2021		Final budget 2021	
Heading	Commitment appropriations (in EUR)	Payment appropriations (in EUR)	Commitment appropriations (in EUR)	Payment appropriations (in EUR)
EU contribution excl. EFTA	**2,253,230**	**121,899,866**	**2,347,294**	**121,993,930**
of which Administrative[39]	2,253,230	2,253,230	2,347,294	2,347,294
of which Operational	0	119,646,636	0	119,646,636
Other revenue[40]			**125,775**	**125,775**
Third countries contribution including EFTA[41]	**54,303**	**2,937,787**	**54,303**	**2,937,787**
of which Administrative	54,303	54,303	54,303	54,303
of which administrative third countries excluding EFTA	0	0	0	0
of which Operational	0	2,883,484	0	2,883,484
Industry financial (cash) contribution	**2,307,533**	**2 307 533**	**2,307,533**	**2,307,533**
of which Administrative	2,307,533	2,307,533	2,307,533	2,307,533
of which Operational			0	0
SUB-TOTAL REVENUES	**4,615,066**	**127,145,186**	**4,834,905**	**127,365,025**
C2 reactivation of unused appropriations from administrative expenditure	**600,000**	**600,000**	**600,000**	**600,000**
Of which from 2017	0	0	0	0
Of which from 2018	0	0	0	0
Of which from 2019	300,000	600,000	300,000	600,000
Of which from 2020	300,000	0	300,000	0
C2 reactivation of unused appropriations from operational expenditure	**0**	**46,881,708**	**0**	**46,881,709**

[39] Final budget includes EUR 94k to EC for the outstanding RAL on the last commitment of REA for the expert evaluators (offset with the RAL balance).

[40] Various recovery orders including EUR 94.5k to other JUs for the recharge of the costs relating to the implementation of the Systal HR tool (total paid by CBE).

[41] The rate used for the EFTA contribution computed on the EU contribution (excl. third countries not attracting EFTA), is 2.47%

Statement of revenue:	Voted budget 2021		Final budget 2021	
Heading	Commitment appropriations (in EUR)	Payment appropriations (in EUR)	Commitment appropriations (in EUR)	Payment appropriations (in EUR)
Of which from 2016	0	0	0	0
Of which from 2017	0	0	0	0
Of which from 2018	0	4,291,956	0	4,291,956
Of which from 2019	0	42,589,752	0	42,589,753
SUB-TOTAL REACTIVATIONS	**600,000**	**47,481,708**	**600,000**	**47,481,708**
GRAND TOTAL	**5,215,066**	**174,626,894**	**5,434,905**	**174,752,669**

Table 21 Statement of revenue 2021

Statement of Expenditure (Commitment appropriations)	Voted budget 2021 (AWP)	Final budget 2021 after transfers	Executed Budget 2021	%	Carry over to 2022 (C8)[42]	Available for future use (N+3 rule) (C2)[43]
Title 1 - Staff expenditure	**3,133,466**	**3,187,274**	**2,955,525**	**92.73%**	**145,575**	**231,749**
11 Salaries & allowances	2,705,966	2,732,023	2,697,548	98.74%	56,320	34,475
12 Expenditure relating to Staff recruitment	87,200	97,643	30,783	31.53%	9,177	66,860
13 Mission expenses	80,000	71,028	7,000	9.86%	5,606	64,028
14 Socio-medical infrastructure (incl. training)	300,300	276,580	218,147	78.87%	74,472	58,433
15 Receptions, events and representation	10,000	10,000	2,047	20.47%	0	7,953
Title 2 - Infrastructure and operating expenditure	**2,031,600**	**2,247,631**	**1,599,348**	**74.27%**	**876,101**	**648,284**
20 Rental of buildings and associated costs	339,500	391,000	339,350	93.66%	28,296	51,650
21 Information, communication technology and data processing	345,000	536,654	412,671	99.33%	318,856	123,983
22 Movable property and associated costs	5,000	10,440	5,440	94.68%	5,440	5,000

[42] Outstanding balance ("RAL" or "reste à liquider") on open 2021 commitments for which payment is expected to be made in 2022. The RAL goes from a C1 or C2 fund source in current year to C8 in the following year.

[43] Unused 2021 commitment appropriations which can be carried over to (or "reactivated" in) the budget of future years (maximum three) under the "N+3" rule applicable to Joint Undertakings. Reactivated appropriations go from C1 fund source in current year to C2 in following year(s).

Statement of Expenditure (Commitment appropriations)	Voted budget 2021 (AWP)	Final budget 2021 after transfers	Executed Budget 2021	%	Carry over to 2022 (C8)[42]	Available for future use (N+3 rule) (C2)[43]
23 Current administrative expenditure	35,000	42,134	17,884	76.36%	10,135	24,250
24 Postage / Telecommunications	19,000	19,000	13,182	83.18%	13,182	5,818
25 Expenditure on formal meetings	113,000	72,760	0	0%	0	72,760
26 External communication information and publishing	600,000	537,979	465,840	86.59%	340,302	72,140
27 Service contracts	75,000	213,500	164,981	77.27%	101,337	48,519
29 Expert reviewers	225,000	330,100	180,000	54.53%	58,553	150,100
Expert-evaluators (RAL)[44]		94,064				94,064
Title 3 – Operational expenditure						
Reactivations of prior year unused budget						
of which administrative (included at chapter level)	*600,000*	*600,000*				
of which operational						
TOTAL	**5,215,066**	**5,434,905**	**4,554,873**	**85.28%**	**1,021,676**	**880,032**

Table 22 Statement of expenditure (commitment appropriations)

Statement of Expenditure (Payment appropriations)	Amended budget 2021	Final budget 2021 after transfers	Executed Budget 2021	%	Available for future use (N+3 rule)[45] (C2)
Title 1 - Staff expenditure	**3,133,466**	**3,187,274**	**2,883,275**	**90.46%**	**303,999**
11 Salaries & allowances	2,705,966	2,738,466	2,697,537	98.51%	40,929
12 Expenditure relating to Staff recruitment	87,200	97,643	21,606	22.13%	76,037
13 Mission expenses	80,000	71,028	1,394	1.96%	69,634
14 Socio-medical infrastructure (incl. training)	250,300	270,137	160,691	59.48%	109,446

[44] Outstanding balance (RAL) on REA commitments for expert-evaluators for CBE calls under H 2020 – reimbursed to CBE by the Commission. To be linked to expense line and executed in 2022.

[45] Unused 2021 payment appropriations which can be carried over to (or "reactivated" in) the budget of future years (maximum three) under the "N+3" rule applicable to Joint Undertakings. Reactivated appropriations go from C1 fund source in current year to C2 in following year(s).

Statement of Expenditure (Payment appropriations)	Amended budget 2021	Final budget 2021 after transfers	Executed Budget 2021	%	Available for future use (N+3 rule)[45] (C2)
15 Receptions, events and representation	10,000	10,000	2,047	20.47%	7,953
Title 2 - Infrastructure and operating expenditure	**2,031,600**	**2,153,566**	**1,370,053**	**63.62%**	**783,515**
20 Rental of buildings and associated costs	279,500	391,000	311,054	79.55%	79,946
21 Information, communication technology and data processing	300,990	550,848	528,854	96.01%	21,995
22 Movable property and associated costs	5,000	10,440	1,700	16.28%	8,740
23 Current administrative expenditure	35,240	44,134	7,940	17.99%	36,194
24 Postage / Telecommunications	18,929	18,929	5,182	27.37%	13,748
25 Expenditure on formal meetings	66,841	66,841	0	0.00%	66,841
26 External communication information and publishing	400,000	527,774	156,653	29.68%	371,121
27 Service Contracts	175,000	213,500	159,545	74.73%	53,955
29 Expert reviewers	200,100	330,100	199,125	60.32%	130,975
Title 3 – Operational expenditure	**169,411,829**	**169,411,829**	**120,822,326**	**71.32%**	**48,589,502**
30 Previous years' calls	169,411,829	169,411,829	120,822,326	71.32%	48,589,502
31 Current years call					
Reactivations of prior year unused budget (included at chapter level)	***47,481,708***	***47,481,708***			
of which administrative	*600,000*	*600,000*			
of which operational	*46,881,709*	*46.881.709*			
TOTAL	**174,626,894**	**174,752,669**	**125,075,654**	**71.57%**	**49,677,016**

Table 23 Statement of expenditure (payment appropriations)

2.4 PROCUREMENT AND CONTRACTS

In 2021, BBI 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 BBI JU or they had expired, it was necessary to launch specific tender procedures, most of them for low-value contracts

BBI 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 2021, BBI 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 24 shows contracts concluded in 2021 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	332,899.24
Hypertech	N	Negotiated procedure with three contractors	Assistance with the launch of a new website	03/03/2021	62,120
Science Cruncher	N	Negotiated procedure with three contractors	Rebranding of BBI JU	22/07/2021	28,700
Nova-Institut für politische und ökologische Innovation GmbH and SQ Consult B.V	N	Negotiated procedure with three contractors	Study of the environmental sustainability requirements of bio-based value chains and supply chains for bio-based industry in future EU funded R&I demonstration and flagship projects46	19/05/2021	118,000

Table 24 Contracts signed in 2021 above EUR 15,000

[46] https://www.bbi.europa.eu/sites/default/files/Ex-ante%20publicity%20study%20-%20extended%20dealine.pdf

2.5 IT AND LOGISTICS

In 2021 the pandemic continued, requiring special considerations from an ICT perspective. To name a few: the equipment of new recruits had to be delivered with extra caution to their place of residence, respecting sanitary measures; mobile hotspots had to be provided to staff members whose home Internet connection was too unstable to allow efficient remote work; video-conferencing equipment had to be installed in the office to support the growing number of hybrid meetings; a remote desktop service was implemented to provide a business continuity guarantee in case a staff member's corporate device became unusable while working far away from the place of work.

Nevertheless, the JU Programme Office also had to prepare for a gradual return to the office. To support this activity, a cloud-based IT tool was developed. It allows staff members to request access to the office for a given day and gives management control to approve or reject the requests based on the applicable Covid-19 restrictions.

2.5.1 BBI -> CBE transition

On 30 November 2021 the Single Basic Act[47] entered into force, establishing the Circular Bio-based Europe Joint Undertaking, and at the same time terminating the Bio-based Industries Joint Undertaking.

Preparatory works to implement the transition from an ICT perspective had already started early in the year. Multiple tasks had to be performed, many of them involving multiple stakeholders, requiring recurrent coordination meetings. In particular, the new framework conditions for open procurement procedures will not require anymore a customisation of E-Tendering modules and in the course of 2022 the CBE JU will launch with the business owner departments of the European Commission the definition of a plan for the full implementation of the eProcurement solution in the organisation.

2.5.2 Data Protection and Security

Based on the outcome of the Data Protection Impact Assessment and Security Assessment conducted in 2020, the BBI JU was implementing the recommended mitigating measures. The JU Programme Office is actively seeking advice from its cyber-security partner CERT-EU and is also following the guidelines and recommendations of the European Data Protection Supervisor (EDPS). During 2021, special attention has been given to the following areas.

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

Endpoint security solution

In the form of a dedicated project, the endpoint security solution deployed on BBI JU devices was replaced with a new technology. The chosen solution brings more efficient tools against the growing number of security threats and better monitoring, while not impacting the daily work of the JU Programme Office.

Mobile Device Management & Mobile Application Management

Another dedicated project was conducted to pave the way to the replacement of the old corporate device provisioning toolset. The new system allows easier deployment and more efficient management of end user devices. In addition it is natively integrated with the previously mentioned endpoint security solution. Moreover, the new platform allows the rollout of a new, more secure bring-your-own-device (BYOD) policy.

Exchange Migration

Preparatory works were carried out throughout the year to allow the BBI JU to migrate its on-premises email server to a cloud-based one to benefit from higher availability and improved security. The complex requirements caused the project to be extended to the 1st half of 2022.

VPN migration

The extended forced teleworking scheme put a high load on the previous, outdated virtual private network (VPN) solution. To improve its stability and security, the BBI JU implemented a new, more robust platform. This allows better monitoring and easier troubleshooting, and in general promotes higher satisfaction among colleagues.

User training

User training sessions were organised for each new implemented service with specific focus on data protection and security. Phishing exercises were conducted throughout the year, followed by awareness-raising sessions to maximise uptake by BBI JU staff members.

2.5.3 Unified Communications – Teams Calling

The cloud-based unified communications solution Microsoft Teams was put in place in 2020 to allow efficient remote work after the start of the pandemic. During 2021 a project was carried out to integrate it with the on-premises telephony solution that exists at the headquarters of the BBI JU. This allows the JU Programme Office staff to be reached on their office phone numbers while working from home, and also to make calls while being physically away from the office.

2.5.4 HR Recruitment Tool - SYSTAL

In 2021, BBI JU was leading a project to implement an Oracle Taleo-based HR e-recruitment tool dubbed “SYSTAL”, for itself and for four other Joint Undertakings. This platform is also in use in several other EU agencies. Following the successful implementation, the JU Programme Office continues to provide IT support towards the other JUs who utilise the tool.

2.5.5 Paper-less office - EU Sign

The BBI JU implemented the EU Sign service offered by the European Commission. This system supports faster, more efficient fully electronic signatory workflows by providing blue-ink equivalent Qualified Electronic Certificates (QEC). In 2022 this solution will be further extended to Qualified Electronic Seals (QES), making it possible to fully integrate it to the records management and e-signatory platform in use (ARES).

2.5.6 Kai-Zen: optimisation of task assignments for operational activities

In the context of the JU-wide optimisation project dubbed “Kai-Zen”, the project management IT tools have been reconfigured to make work allocation more efficient both in the Programme Unit and in the Administration and Finance Unit.

2.5.7 Kai-Zen: KPI study project

Within the context of the same optimisation effort, preparatory works were carried out to launch a KPI study project. The aim of the project is twofold: define the exact technical and non-technical requirements for a new IT platform that supports the data gathering, data analysis and reporting aspects of the KPI process, and recommend technologies and solutions for the platform to be developed.

The contract was signed at the end of 2021 and the project is already well underway at time of writing this report.

2.6 HUMAN RESOURCES

Staff and recruitment

By the end of 2021, the JU Programme Office comprised 22 staff members. Four recruitment procedures were launched in 2021 for the following posts:

- Reserve list for Financial Assistants (CA);
- Stakeholder Relations and Executive Assistant (TA);
- Communication Assistant (TA);
- Reserve list for Project Officers (CA).

Therefore, four staff members took up duties in 2021: one Project Officer (CA), one Stakeholder Relations and Executive Assistant (TA), One Communication Assistant (TA) and one Financial Assistant (CA).

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.

Despite the pandemic, the CBE JU gave the opportunity to four trainees to acquire a first-hand experience in the CBE JU framework. 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 two trainees joined the Communication team for a period of six months.

In 2021, the CBE JU took the lead with four other Joint Undertakings in the implementation of the SYSTAL tool, an e-recruitment tool designed by Oracle and already used by several decentralised agencies. The CBE JU used the tool for the first time in September 2021 with the publication of one post.

The two graphs below show both the gender and geographical balance within the CBE JU on 31/12/2021. The JU Programme Office pays attention to ensuring the widest representation of EU countries among its staff.

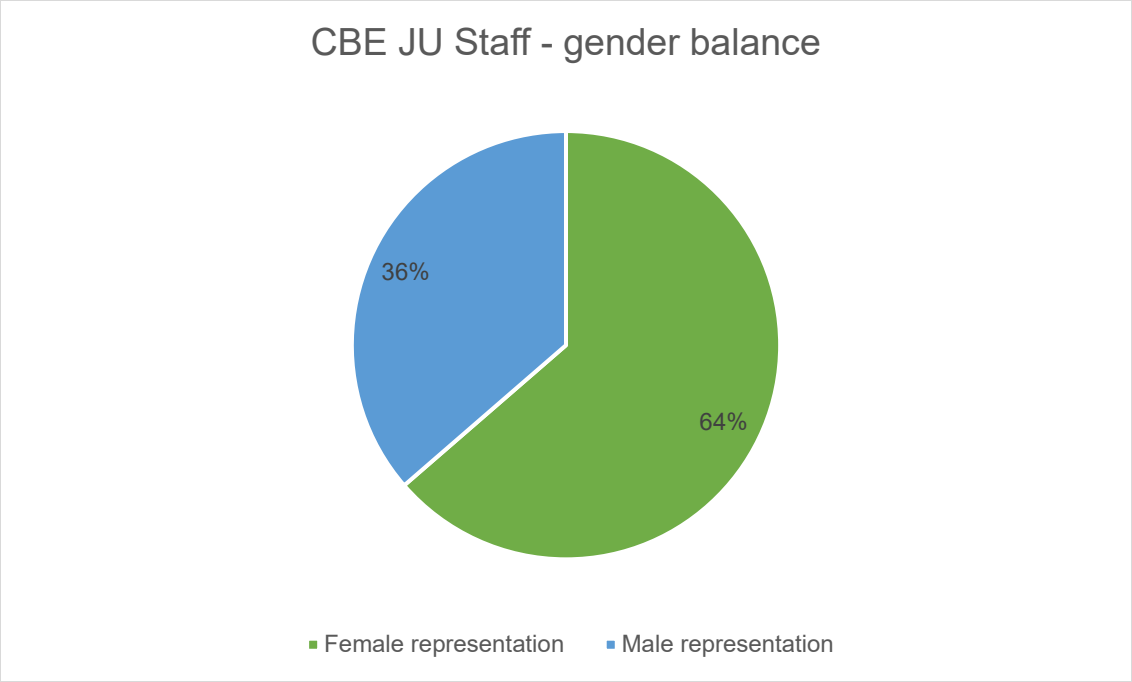

Figure 50 Gender balance of the CBE JU programme team by 31/12/2021.

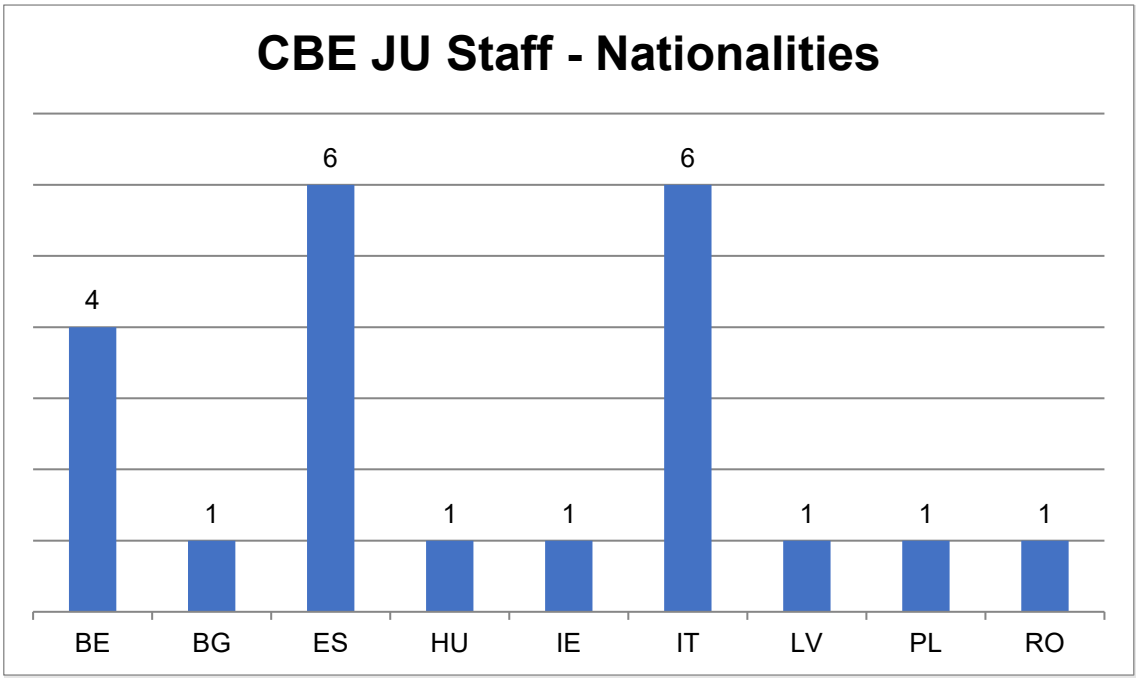

Figure 51 EU countries represented among the CBE JU staff by 31/12/2021.

Legal framework

In 2021, 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. Due to Covid-19 , the HR function was in constant contact with the EC to check the rules on teleworking and working times. 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).

The HR function worked with an external consultant on the New Ways Of Working and designed a staff survey to prepare the CBE JU return to the office strategy for after the Covid-19.

The CBE JU organised its annual appraisal and reclassification exercises resulting in the reclassification of six staff members.

Learning and career development

The BBI 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 2021, the HR function developed a Learning and Development Framework taking into consideration the CBE JU's annual objectives. Due to the Covid-19 outbreak, all learning activities were organised online.

A Service Level Agreement in force with the European Commission provided access to a wide catalogue of training courses, and ad hoc learning opportunities were constantly communicated to staff members across the year. In addition, workshops around growth mindset were organised for all staff as well as wellbeing sessions to cope with the challenging period of remote working. The HR function also participated, with the other JUs in the framework of the inter-JU network of Confidential Counsellors, in the design of "BEST Practices for Remote and Hybrid Work in the JUs", developed by the Inter-JU working groups under the Inter-JU initiative "Working Together for Support and Care".

In 2021, the HR function launched two surveys, one staff engagement survey, including a section on working during Covid-19 times, and one survey on the New Ways Of Working, in order to prepare the return to the office strategy after the Covid-19. The CBE JU staff also participated in the EUAN staff survey on Diversity and Inclusion.

Some conclusions of the staff engagement survey:

- High level of participation (91%).
- Very positive feedback from the staff despite the challenging year due to the pandemic with improvements compared to last year's survey.
- Points for attention remain workload, work life balance, teleworking framework, wellbeing.

Over 90% of the staff members enjoy working at the BBI JU and would recommend it as a place to work. All staff members know the BBI JU values and adhere to the BBI JU's mission and vision. All staff members are satisfied with their responsibilities in BBI JU. All staff are satisfied with the learning and training opportunities in the BBI JU and feel valued and respected by colleagues. Internal communication flows are very good. The majority of staff members feel comfortable giving feedback to BBI JU's Management. Just less than half of the staff members indicated that the pandemic had an effect on their morale and energy. Nevertheless, the vast majority of them acknowledged the support and the help of the BBI JU Management throughout this difficult period. They were also satisfied with the teleworking equipment provided by the BBI JU as well as the safety and health measures put in place.

The following topics have been addressed in the survey on the New Ways Of Working in order to prepare the return to the office strategy: making the workplace a healthy and safe environment, adjusting to new ways of working, behaviour at work, adjusting to a more digital way of working.

3 GOVERNANCE

3.1 GOVERNING BOARD

The Governing Board has overall responsibility for the strategic orientation and the operations of the JU and shall supervise the implementation of its activities.

In both BBI and CBE JUs the Governing Board includes five representatives of the BIC and five representatives of the EC.

Due to the health crisis caused by the Covid-19 outbreak all meetings in 2021 were held via video conference, nonetheless the original schedule of the four annual meetings was maintained.

For BBI JU three Governing Board meetings were held on 25 March, 17 June and 7 October 2021.

As of the last meeting of the BBI JU Governing Board its composition was:

EC (As designated by their post according to Commission Decision 4255 (2014) of 27 June, as amended by the Commission Decisions 3268 (2016) of 6 June 2016 and 1811 (2017) of 23 March 2017))	BIC constituent entities
John BELL, Director for "Healthy Planet", DG RTD/C (Vice-Chair). Pavel MISIGA, Head of Unit, DG RTD/C1 Kristin SCHREIBER, Director for "Chemicals and Consumer Industries", DG GROW/D Peter DROELL, Director for "Industrial Technologies", DG RTD/F Nathalie SAUZE-VANDEVYVER, Director for "Quality Policy, Research & Innovation, Outreach", DG AGRI/B	Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Chair) Giulia GREGORI, Manager Strategic Planning and Corporate Communication, NOVAMONT Alex MICHINE, CEO METGEN Rob BEEKERS, Strategic Marketing & Innovation, CARGILL BIO INDUSTRIAL (CBI) Frank VAN NOORD, Vice-President for Innovation at Cosun

Table 25 Members of the BBI JU Governing Board as at 7 October 2021

The decisions taken by the BBI JU Governing Board during 2021 were the following:

- BBI-GB-1/21 of 18 January 2021: approving the ranking lists of the proposals selected for funding, to be placed on a reserve list and to be rejected;
- BBI-GB-2/21 of 26 February 2021: approving the Annual Additional Activities plan for 2021;
- BBI-GB-3/21 of 30 June 2021: approving the Annual Activity Report 2020 including the corresponding expenditure and adopting its Assessment;
- BBI-GB-4/21 of 29 November 2021: approving the Annual Work Plan and Budget 2022

The Council Regulation 2021/2085, of 19 November 2021, entered into force on 30 November 2021. From that moment the BBI JU Governing Board ceased to exist and a first CBE JU Governing Board meeting was called on the 16 December 2021. The members of the CBE JU Governing Board meeting are:

EC	BIC constituent entities
John BELL, Director for "Healthy Planet", DG RTD/C (Chair)	Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Vice - Chair)
Pavel MISIGA, Head of Unit, DG RTD/C1	Giulia GREGORI, Manager Strategic Planning and Corporate Communication, NOVAMONT
Kristin SCHREIBER, Director for Ecosystems I: Chemicals, Food, Retail, DG GROW	Alex MICHINE, CEO METGEN
Peter DROELL, Director for "Industrial Technologies", DG RTD/F	Rob BEEKERS, Strategic Marketing & Innovation, CARGILL BIO INDUSTRIAL (CBI)
Nathalie SAUZE-VANDEVYVER, Director for "Quality Policy, Research & Innovation, Outreach", DG AGRI/B	Frank VAN NOORD, Vice-President for Innovation at Cosun

Table 26 Members of the CBE JU Governing Board as at 31 December 2021.

Before the meeting all the members signed the declarations of interest and confidentiality that are publicly available at the CBE JU webpage. During this first meeting John Bell was selected as Chair of the Governing Board for the next 2 year, and Mat Quaedvlieg as Vice Chair for the same period.

The decisions taken by the CBE JU Governing Board at its first meeting were:

- CBE-GB-1/21 of 17 December 2021: approving the GB Rules of Procedure;
- CBE-GB-2/21 of 17 December 2021: approving the list of decisions adopted by the Bio-based Industries Joint Undertaking that shall continue to apply for the Circular Bio-based Europe JU;
- CBE-GB-.3/21 of 17 December 2021: approving the selection process for the members of the Scientific Advisory Body of the Circular Bio-based Europe Joint Undertaking.

Update on the status of the implementation of the Action Plan on the recommendations of the BBI JU Interim Evaluation

Article 11 of the Council Regulation 560/2014 sets out that "by 30 June 2017 the European Commission (EC) shall carry out, with the assistance of independent experts, an interim evaluation of the BBI JU". The interim evaluation report of BBI JU was published in October 2017.

The interim evaluation report provided a set of recommendations aimed at improving BBI JU's functioning and the continuous delivery of solid outputs towards set objectives, including the contribution of its members. In response to these recommendations, and as a concluding step in the evaluation process, an "Action Plan in response to the recommendations of the interim evaluation of the BBI JU" was drafted in close cooperation between the responsible Commission services, the Bio-based Industries Consortium (BIC) and the BBI JU and adopted on 21 March 2018 by the Governing Board of the BBI JU.

In 2021 BBI JU continued to monitor the implementation of the remaining actions, some of which are valid recommendations in the framework of the new CBE JU, such as:

- Continue focus on de-risking the process of bringing new bio-based value chains to market;
- Include brand owners and sectors at the interface with consumers, as interactions at programme level with selected relevant stakeholders will strengthen the overall impact;
- Respond to important emerging trends through future CBE JU calls that could consider conversion of biogenic CO_2 into chemicals and materials as well as digitalisation (including big-data analysis and exploitation) as aspects in Bioeconomy value chains. Staying on top of the scientific and technical excellence to keep the JU relevant and innovative by transparent involvement of best players/ leaders;
- Support development of completely new value chains and cross-value chains products and processes. More DEMO and especially FLAG projects demonstrating the feasibility and economic viability of completely new bio-based value chains;
- Complement or exploit the results of LEIT BIOTEC to move with the future CBE JU calls to higher TRL and greater involvement of the industry;
- Improve the participation of EU-13 MS through a more open programming strategy, which should take into account potentials for growth at macro regional level, also in synergy with other EU initiatives (e.g. Smart Specialisation Strategies, S3);
- Analyse cases of success in terms of national participation and deliver 'best practices' for Member States;
- Identify win-win strategies for a larger involvement of Third Countries while ensuring the protection of EU industry's interests;

- Increase the involvement of educational and research institutions in the programme and projects, in medium to long-term precompetitive industrial innovation topics to be defined by all stakeholders;
- Improve coordination among all EU initiatives boosting the Bioeconomy and maximize their effect by i) assuring prompt access to project deliverables by the EC and ii) catching the emerging trends in innovation for promoting long term competitiveness, also by a procedure involving associated public research partners of BIC in the programming activities at an early stage;
- Avoid programming strategies aiming at short term benefit of BIC's specific sectors but rather invest resources in topics able to create wider and longer-lasting benefits both at multi-sectorial and macro-regional levels;
- Strengthen the whole value chain approach by a greater participation of end users and customers;
- Reach out to EU Member States and regions with rural or deindustrialised areas for catalysing revitalisation through bio-based industries;
- CSA projects to be used as an opportunity to support market analysis for bio-based products and processes and thus support 'market pull';
- Constant monitoring and analysis of the bio-based markets is of high importance for the development of the future calls.

3.2 EXECUTIVE DIRECTOR

The Executive Director is the chief executive responsible for the day-to-day management of the BBI JU in accordance with the decisions of the Governing Board. Mr Philippe Mengal has been Executive Director of the JU Programme Office since 1 October 2015.

Each year the Executive Director presents his proposals of priorities for the coming year to the Governing Board. The priorities are translated into yearly objectives for the BBI JU programme team and then cascaded into individual objectives for all staff members according to the SMART principles (Specific, Measurable, Accepted, Realistic and Time-related).

For 2021, the priorities and objectives were presented to the BBI JU Governing Board at the meeting held on 17 June 2020. A final version was presented and discussed during the GB meeting on 7 October 2020 and the priorities were then included in the AWP 2021. Those priorities were translated into objectives for 2021. The priorities were mainly about consolidating the project portfolio whilst maintaining the highest standards of quality to absorb the peak of workload. Another important priority of 2021 was to prepare a smooth transition of BBI JU towards the new CBE JU under the Horizon Europe Framework Programme.

The 2021 objectives were organised around four priorities detailed below:

1. Keep BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of workload in 2021:

2. Ensure and prepare the transition to the next Framework Programme Horizon Europe and the new CBE JU:

3. Analyse and promote the achievements and impacts of the BBI JU initiative in line with the EU policy goals, in particular the EU Bioeconomy Strategy and the EU Green Deal including the EU Biodiversity Strategy, Circular Economy Action Plan and Farm to Fork Strategy:

4. Ensure a smooth transition to the new proposed partnership - Circular Bio-based Europe under Horizon Europe - by providing lessons learnt, data and relevant information at operational level and involving key members of BBI staff in discussions where appropriate.

For 2022, the Executive Director and his management team proposed six priorities during the first CBE JU Governing Board meeting held on 16 December 2021. They were identified by the management team taking into account the following considerations:

- The BBI-CBE transition phase will continue in 2022 and has to be finalised by the end of the year with all governance bodies in place and monitoring systems finalised and approved by the GB
- CBE will continue to manage the running of BBI JU projects until at least 2026, as well as the communication-related activities
- In 2022 CBE will launch its first call but later in the year as compared to BBI JU, due to the late adoption of the SRIA and AWP 2022 topic text
- The Call 2022 GAP will take place in 2023 and the first CBE GAs will start running in June 2023
- A huge uncertainty linked to the Covid-19 pandemic will remain, impacting the execution of projects and the format of communication events
- The current mandate of the CBE ED will end in September 2022; a transition period of at least three months, with the nomination of an ad interim ED, has to be anticipated

The six priorities for 2022 are as follows:

1) Finalise the BBI-CBE transition under Horizon Europe with all governance bodies in place by end 2022;

2) Set up the CBE organisation and implement the New Ways Of Working (NWOW) by September 2022;

3) Agree upon the monitoring systems to be used to report on output, outcome and financial contribution, and submit them to the GB for approval in September 2022;

4) Keep the 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;

5) Prepare, launch, promote and evaluate the first CBE call, to be opened by June 2022, explaining all the novelties linked to the new programme as compared to the BBI JU;

6) Continue to promote the achievements and impacts of the BBI JU initiative while launching the communication plan for the CBE JU, in line with relevant EU policy goals.

The Executive Director and his management team will incorporate these priorities in the amended AWP 2022. They will be cascaded into the JU Programme Office objectives and further into individual objectives for the JU Programme Office staff by the end of March 2022.

3.3 STATES REPRESENTATIVES GROUP

The SRG was one of the advisory bodies of the BBI JU. It was established in accordance with the BBI JU Regulation[48] and it represents the interests of Member States and Associated Countries under Horizon 2020. Its members provided advice to the Governing Board on the programme progress and on the achievement of its targets. It also gave valuable input on the definition of the strategic objectives identified in the SIRA for the programme, and on the Annual Work Plans. The SRG also had an important role in reporting on national activities and programmes related to the deployment of the bio-based industrial sector at national level, in order to promote synergies and complementarities with the BBI programme which operates at European level.

Figure 52 shows the representation of Member States and Associated Countries in the SRG.

[48] For the role of the SRG see art 11 of the Statutes of the BBI JU annexed to Council Regulation.

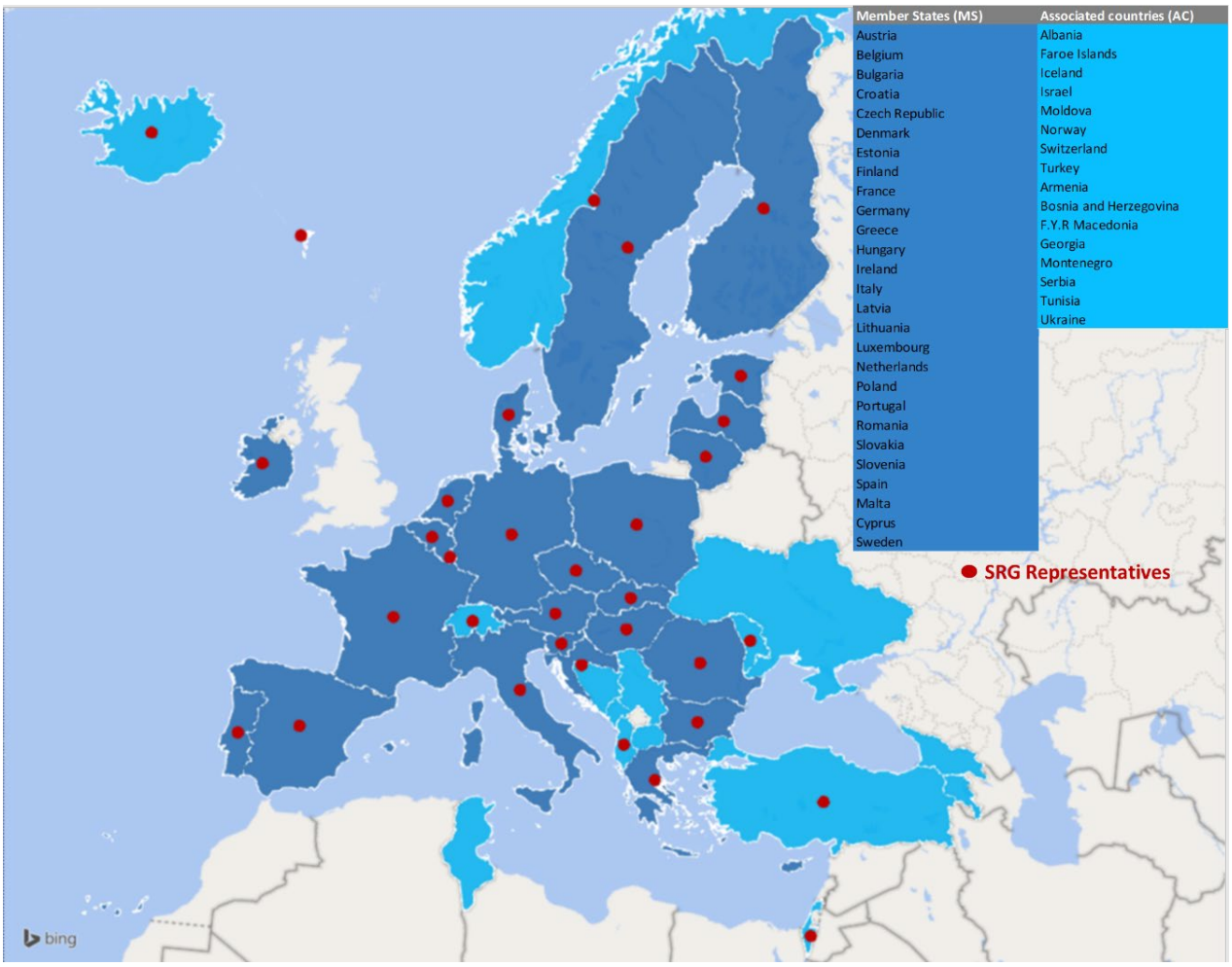

Figure 52: SRG representatives (red dots) and SRG members list from EU Member States (dark blue) and Associated Countries (light blue) as of 30/11/2021.

In 2021, the SRG received updated information about the BBI JU programme implementation, and it was consulted on a preliminary version of the 2022 Annual Work Plan. The SRG was also informed about the activities conducted by BIC and EC, in particular in relation to the transition from BBI JU towards the CBE JU under Horizon Europe. SRG continued sharing 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 BBI JU activities, including the latest developments at national level in relation to Horizon Europe.

In 2021, the SRG made valuable contributions to the programme-related activities. The SRG played a pivotal role as BBI JU's ambassador towards CBE, providing relevant information, when needed, to national authorities and other stakeholders and ensuring a smooth transition from the BBI JU towards the CBE JU. Moreover, SRG members continued mobilising national stakeholders to ensure their maximum involvement with the BBI JU programme and an optimisation of its impact.

BBI JU States Representatives Group meetings in 2021

During 2021, two meetings of the SRG under BBI JU were organised by the JU Programme Office on 2 June 2021 and 18 November 2021 respectively. The meetings were held remotely via video conference and chaired by Fabio Fava (Chair of the SRG and representative of Italy). They were also attended by the Chair of the Governing Board, the Chair of the Scientific Committee, the BBI JU Executive Director, BIC, the European Commission and BBI JU staff.

The main items addressed during the two SRG meetings are reported below:

14th meeting of the SRG held on 2 June 2021:

- ✓ Extension of the mandate of Agata Foks, representative from Poland, as second SRG Vice Chair until the new SRG under CBE is established and after having served the SRG for one term during the last two years. This was done following the SRG rules of procedure, which foresee that the mandate of the Vice Chair might be extended for one consecutive term.
- ✓ The progress and achievements of the BBI JU programme since the previous meeting, including: information on Call 2020 outcomes after GAP; new projects granted; update on the KPI & impact analysis; status of leverage effect; primary sector analysis; main results of the study on BBI JU project portfolio assessment and KPIs' validation; status of the new study of the environmental sustainability requirements; and communication activities.
- ✓ Update from BIC on last activities undertaken for the establishment of the new partnership, including the business plan for BIC (BIC business plan 2.0.) and the status of the SRIA 2030.
- ✓ Update from EC on the latest developments related to BBI JU activities, including information on the status of the legal act establishing the Specific Programme implementing Horizon Europe, as well as other policy instruments such as the Bioeconomy Policy Support Facility Expert Group and the Bioeconomy European Policy Forum. The EC also presented an overview on the status and next steps towards the adoption of the Single Basic Act and the establishment of the CBE JU.
- ✓ Information on national activities to deploy and support the development of the bio-based industrial sector.
- ✓ Last developments in the area of synergies and collaboration between SRG BBI JU and SCAR-BSW, including the organisation of the workshop on 29 June 2021 entitled "Integrating the agricultural primary sector in the sustainable bio-based economy".

15th meeting of the SRG held on 18 November 2021:

- ✓ The 15th SRG meeting was the last SRG meeting under BBI JU.
- ✓ The meeting focused on presenting the overview of the main achievements and impacts of the BBI JU programme over the last years (2014-2021) and the way forward towards a smooth transition from BBI JU to the establishment of the CBE JU partnership. The SRG received the

latest updates from updates from BIC and EC on the process of establishing an SRG under CBE. During the meeting, SRG also received information on the status and preparation of the 2022 AWP and was consulted on the preliminary and available version.

- ✓ EC, BIC and BBI JU thanked the SRG for its involvement, commitment and valuable contributions since its inception (e.g. advice on annual work plans, the new SIRA 2017 and numerous strategic consultations on very relevant topics, such as widening participation, SME participation, involvement of the primary sector, synergies with other activities, activities and indicators to monitor the implementation of the programme, valorise project outputs, etc.). The role of SRG as BBI JU ambassadors was also highlighted and has proved crucial in supporting the deployment of BBI JU in the territories as well as the mobilisation of relevant stakeholders. Special mention was given to the commitment and work of the different Chairs and Vice Chairs of SRG during the last years.

A secure dedicated governance area was used throughout 2021 to distribute and archive all related background documents, agendas and presentations as well as meeting minutes and recommendations for the States Representatives Group.

CBE JU States Representatives Group

With the adoption of the Single Basic Act and the entry into force of the CBE JU on 30/11/2021, all the arrangements to establish the new SRG under the CBE JU were initiated. On 23 November 2021, the countries were requested to nominate their representatives to become members of the new SRGs. The process for the SRG formal establishment will take place at the beginning of 2022.

3.4 SCIENTIFIC COMMITTEE

The Scientific Committee (SC) is one of the advisory bodies of the BBI JU. It was established in accordance with the BBI JU Regulation to provide scientific advice on the areas of work undertaken by the BBI JU, such as the scientific priorities to be addressed in the AWPs, as well as providing guidance to the programme implementation. BBI JU SC's mandate ceased with the entry into force of the CBE JU on 30 November 2021.

The BBI SC was composed of 14 members[49] - listed in Table 27 BBI JU Scientific Committee members - who had expertise in scientific, technological, socio-economic and environmental subjects relevant to the bio-based industries. These fields of expertise include:

- technical expertise in biorefinery technologies, microbiology, chemistry, biocatalysis and enzymes, industrial biotechnology and agricultural and forest sciences, aquaculture, synthetic biology, waste, logistics;
- environmental, social and economic sustainability;
- international cooperation and regional dimension;
- investment and financial sectors;
- knowledge transfer and dissemination and social sciences.

Name	Role in SC	Position
Kevin O'Connor	Chair	BiOrbic SFI Bioeconomy Research Centre, School of Biomolecular and Biomedical Science, University College Dublin, Dublin, Ireland
Lene Lange	Vice Chair	BioEconomy, Research and Advisory, Copenhagen, Denmark
Bruno Jarry	Member	Vice-President, French National Academy of Technologies
Calliope Panoutsou	Member	Senior Research Fellow, Imperial College London
Christian Huyghe	Member	Scientific Director Agriculture, INRA-France
Dagmar Stengel	Member	Senior Lecturer / Head of Botany and Plant Science at the National University of Ireland Galway (NUI Galway)
Joe Gallagher	Member	Institute of Biological, Environmental and Rural sciences (IBERS), Aberystwyth University, Aberystwyth, United Kingdom
Helena Vieira	Member	Directorate General of Maritime Policy, Ministry of the Sea, and BioISI – Biosystems & Integrative Sciences Institute, Faculty of Sciences, University of Lisbon, Lisbon, Portugal
Lígia Rodrigues	Member	Professor Centre of Biological Engineering, University of Minho, Portugal

[49] The SC was initially composed by 15 members. Ms. Johanna Buchert resigned due to other professional commitments. SC members' CV can be found here: https://www.bbi-europe.eu/about/scientific-committee

Lígia O. Martins	Member	Assistant Professor, Instituto de Tecnologia Química e Biológica – Universidade Nova de Lisboa
Mariya Marinova	Member	Department of Chemistry and Chemical Engineering, Royal Military College of Canada, Kingston, ON, Canada
Sigurjon Arason	Member	Faculty of Food Science and Nutrition in the University of Iceland and Matis ohf, Reykjavík, Iceland
Uffe BundgaardJørgensen	Member	CEO Gate2Growth, DTU Science Park, Kongens Lyngby, Denmark
Yvonne Van der Meer	Member	Dr. ir. Associate / Professor at Aachen Maastricht Institute for Bio-based Materials Maastricht University

Table 27 BBI JU Scientific Committee members

In 2021, the SC received updated information about the BBI JU programme implementation, and it was consulted on a preliminary version of the 2022 Annual Work Plan. The SC was also informed about the activities conducted by BIC and EC, in particular, in relation to the transition from BBI JU towards the CBE partnership under Horizon Europe.

SC members have continued to provide important inputs on the way forward to CBE JU including lessons learnt and challenges ahead. They also made valuable contributions to the programme-related activities, including the analysis of the project portfolio, monitoring activities and indicators, SME participation or the involvement of the primary sector, among others.

The SC members played a key role as BBI JU's ambassadors contributing to engaging and mobilising the research community, reaching out to different stakeholders, and actively promoting and developing educational programmes in the area of the bio-based economy.

Scientific Committee meetings in 2021

During 2021, two meetings of the BBI JU SC were organised, on 1 June 2021 and 17 November 2021, respectively. Meetings were held remotely via video conference and chaired by Kevin O'Connor (Chair of the SC). They were also attended by the Chair of the Governing Board, the Chair of the States Representatives Group, the BBI JU Executive Director, BIC, the European Commission and BBI JU staff.

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

14th meeting of the SC held on 1 June 2021:

- ✓ The progress and achievements of the BBI JU programme since the previous meeting, including: information on Call 2020 outcomes after GAP; new projects granted; update on the KPI & impact analysis; status of leverage effect; primary sector analysis; main results of the study on BBI JU project portfolio assessment and KPIs validation; status of the new study of the environmental sustainability requirements; and communication activities.
- ✓ Update from BIC on latest activities undertaken for the establishment of the new partnership, including the business plan for BIC (BIC business plan 2.0.) and the status of the SRIA 2030.
- ✓ Update from EC on the last developments related to BBI JU activities, including information on the status of the legal act establishing the Specific Programme implementing Horizon Europe, as well as other policy instruments such as the Bioeconomy Policy Support Facility Expert Group and the Bioeconomy European Policy Forum. The EC also presented an overview on the status and next steps towards the adoption of the Single Basic Act and the establishment of the CBE JU.

15th meeting of the SC held on 17 November 2021:

- ✓ The 15th SC meeting was the last SC meeting under BBI JU.
- ✓ The meeting focused on presenting the overview of the main achievements and impacts of the BBI JU programme over the last years (2014-2021) and the way forward towards a smooth transition from BBI JU to the establishment of the CBE JU. During the meeting, SC also received information on the status and preparation of the 2022 AWP and was consulted on the preliminary and available version.
- ✓ EC, BIC and BBI JU thanked the SC for its involvement, commitment of and valuable contributions since its inception (e.g. advice on annual work plans, the new SIRA 2017 and numerous strategic consultations on very relevant topics, such as widening participation, SME participation, involvement of the primary sector, synergies with other activities, activities and indicators to monitor the implementation of the programme, valorise project outputs, etc.). The role of SC as BBI JU ambassadors was also highlighted and has resulted crucial in mobilisation of the scientific community and other relevant stakeholders. Special mention was given to the commitment and work of the Chairs and Vice Chairs of SC.

A secure dedicated governance area was used throughout 2021 to distribute and archive all related background documents, agendas and presentations as well as meeting minutes and recommendations for the Scientific Committee.

CBE JU Scientific Committee

With the adoption of the Single Basic Act and the entry into force of the CBE JU on 30/11/2021, the preparatory phase for the establishment of the CBE JU Scientific Committee started. The Call for

expression of interest to become a CBE JU member was published on 20 December on the Official Journal of the European Union and on the CBE JU website, which remained open until 30 January 2022. The process of selection and appointment of the CBE JU Scientific Committee by the CBE JU Governing Board is planned to be finalised by March 2022.

4 INTERNAL CONTROL FRAMEWORK

4.1 FINANCIAL PROCEDURES

Financial procedures are established in the BBI JU Manual of Financial Procedures adopted in October 2015. This document was updated during the first quarter of 2018 to take into account the new operations BBI JU had dealt with (e.g. intervention of the Participants' Guarantee Fund), the COMPASS transactions that were carried out for the first time (payment of experts, recoveries) and some suggestions from the European Court of Auditors regarding the business continuity of the Authorising Officer's function.

Since 2018, the JU Programme Office has continued to improve the internal procedure for tendering and signing procurement contracts, aimed at decreasing the administrative burden and improving the efficiency of the payment process.

In 2020, the pandemic forced the transition to fully paperless workflows for public procurement and administrative payments. This generated some additional workload in liaising with contractors during the transition phase, on the other hand, however, staff committed to new ways of working which resulted in efficiency gains and a better performance overall, for example with respect to payment times.

4.2 EX-ANTE CONTROLS ON OPERATIONAL EXPENDITURE

The JU Programme Office, through the close collaboration between the Administration and Finance Unit and the Programme Unit, has been performing ex ante controls in line with the provision of Article 18 of the CBE JU Financial Rules, in order to provide assurance to the Authorising Officer on the correctness of all payments.

Checklists further complement guidance on the ex-ante controls included in the Financial Rules and in CBE JU's Manual of Financial Procedures. For the operational expenditure, the processing and recording of transactions in the IT accounting system (ABAC) are mostly performed via the corporate Horizon IT tools (SYGMA/COMPASS), which assures a high degree of automation, and controls are embedded in each workflow. In addition to this, the JU Programme Office has established internal step-by-step procedures and checklists for financial and operational verification, to ensure coherence in controls and to facilitate the learning curve of newly recruited staff, particularly in the context of the payment of cost claims linked to the periodic reporting of ongoing grants.

During 2021 the operational expenditure was implemented by means of pre-financing payments as well as periodic and final payments of ongoing grants. In 2021 the JU Programme Office processed many periodic reports leading to 59 payments. Ex ante controls for all grant operations have been put in place in accordance with the Horizon 2020 Vademecum and in line with the Horizon 2020 ex ante control strategy.

In addition to this, 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 an internal workshop on financial matters was organised to brief the project officers and financial officers about possible financial issues related to the periodic reporting.

To reinforce the ex-ante controls, specific ad hoc reviews performed by external experts were put in place also for specific cases, for example requests for amendments significantly modifying the description of the action.

Concerning the amendments to the ongoing Grant Agreements, in 2021 the BBI JU Programme Office dealt with a higher number of requests: 116 amendment requests initiated by project coordinators were processed. The high number of requests continues to be mainly linked to the impacts of the Covid-19 outbreak and its related restrictions. Such impacts on projects' activities have been managed in accordance with the Covid-19 FAQS on the Funding & Tender Opportunities Portal.

With respect to the controls related to fraud detection and prevention, the JU Programme Office followed the common Horizon 2020 anti-fraud strategy. Corporate trainings on anti-fraud prevention and detection are mandatory for operational and financial staff. In addition, a specific briefing on this matter was given to staff in view of the grant preparation process, discussing examples provided by the European Commission and by Executive Agencies as well as good practices defined by the European Anti-Fraud Office (OLAF). Regarding the prevention of double funding, the JU Programme Office consults the European Commission and the Executive Agencies in order to ensure that there is no overlapping of ranked proposals arising from BBI JU calls with other running grants managed by these entities. To better address the detection and prevention of plagiarism, BBI JU is following the development by DG RTD of dedicated corporate IT tools and is exploring the possibility of joining EC framework contracts to use tailored IT applications.

4.3 EX-POST CONTROL OF OPERATIONAL EXPENDITURE AND ERROR RATES IDENTIFIED

Ex post controls of operational expenditure are implemented in line with the Horizon 2020 Audit Strategy. The Horizon 2020 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 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 2021, the main results were:

- Ex post controls launched on BBI JU operational expenditure covered EUR 87 million out of EUR 368 million of expenditure (23.6%);
- Ex post controls closed on BBI JU operational expenditure covered EUR 59 million (16% of expenditure);
- **The Representative Detected Error Rate for BBI JU is 1.91%** (2.29% for the whole Horizon 2020 programme);
- **The Cumulative Residual Error Rate for BBI JU is 1.17%** (1.60% for the whole Horizon 2020 programme).

The methodology applied to calculate the error rates for BBI JU is described in Annex 7.9 ‘Materiality criteria’. The calculations of the overall error rates for Horizon 2020 are detailed in the AAR of the European Commission.

The error rates presented above should be treated with caution. Since not all audit results are available yet, the error rates are not fully representative of the expenditure under control.

As Horizon 2020 is a multiannual programme, the error rates, and especially the Cumulative Residual Error Rate, must be considered over time. In particular, the cleaning effect of audits over a given period will tend to increase the difference between the representative detected error rate and the cumulative

residual error rate, with the latter finishing at a lower value. This expected trend is confirmed for BBI JU with a cleaning effect that increased over time (0.14% in 2019; 0.44% in 2020 and 0.74% in 2021).

As was the case last year, there is evidence that the simplifications introduced in Horizon 2020, along with the progressively increasing experience acquired by the major beneficiaries, have positively affected the number and level of errors. However, beneficiaries still make errors, usually because of a lack of understanding or non-respect of the rules.

BBI JU has been actively participating in common actions taken in this context by the Research Family (i.e. introduction of simplifications or clarifications of different aspects of the Model Grant Agreement, and its accompanying annotations) and taken stock of lessons learnt from the results of the audits in order to improve ex ante controls.

Given the results of the audit campaign up until 2020, and the observations made by the European Court of Auditors in its Annual Reports, the Common Implementation Centre, in close cooperation with central Commission services, is defining actions aimed at significantly simplifying the rules, and paving the way for a significant reduction of the error rate in Horizon Europe. Actions were undertaken including further simplification, increased use of simplified forms of funding (including lump sums and unit costs), focused communication campaigns to more “error-prone” types of beneficiaries with higher-than-average error rates, such as SMEs and newcomers, and enhanced training to external audit firms performing audits on behalf of the Commission (the last three measures also target H2020 grants and beneficiaries). Focusing on the most common errors, these events will be straightforward, reaching more participants and achieving higher impact.

In the context of further reducing the error rates, the Common Implementation Centre will revisit the existing tools for ex-ante controls. It will consult the stakeholders in order to collect their views on possible improvements in the grant management risk module.

The results of these actions 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[50].

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

[50] 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

4.4 AUDIT OF THE EUROPEAN COURT OF AUDITORS

On 12 November 2021 the European Court of Auditors (ECA) published its report on BBI JU's annual accounts for the financial year 2019[51]. 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.

Replies of BBI JU to the most significant observations made by the Court were already provided in the document and updates for the year 2021 are provided in this report. In particular:

- Paragraphs 2.19 and 3.7.12 observations about in cash contributions to be done by industry members of the BBI JU were addressed in the official reply to the ECA report and no further updates are provided in section 1.7 of this report compared to 2020 nor further actions need to be planned;
- Paragraphs 2.16, 3.7.13 about the total in-kind contributions to additional activities and the follow ups to the 2019 observation about delays in the certification process caused by COVID-19 pandemic have been addressed in the official reply and updates are provided in section 1.7 of this report;
- Paragraph 2.27 about the main sources of error detected by ex-post audits and follow ups to the recommended action 2 for the JUs to strengthen their internal controls systems to address this risk are provided in section 4.3 of this report;
- Paragraph 2.34 about the partial integration by BBI JU of the eProcurement solution provided by the European Commission for open procurement procedures and follow ups to the recommended action 6 for the JUs to fully implement this solution are provided in section 2.5.1 of this report;
- Paragraph 3.7.18 about results of the European Anti-Fraud Office (OLAF) investigations and implementation of their recommendations: updates are provided in section 4.6 of this report.

4.5 INTERNAL AUDIT

The Internal Audit Service (IAS) of the European Commission performs the internal audit function for the BBI JU as specified in its Financial Rules.

Until 2021, the IAS concluded two assurance audits on BBI JU and covering the following topics:

3. Limited review of the implementation of the Internal Control Standards (ICS);

[51] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021TA1112%2801%29

4. Horizon 2020 grant process (from the identification of the call topics to the signature of the grant agreement).

Both audits provided assurance to the Director and to the Governing Board on the compliant effectiveness and efficiency of the internal control system, highlighting some strengths and providing some recommendations for additional improvements. None of these recommendations was critical and they were all addressed with timebound action plans that were defined in agreement with the IAS.

Each year, the IAS must report if critical risks and recommendations have not been addressed and/or if there are significant delays in the implementation of recommendations made in previous years. Recommendations are considered significantly delayed if they are still open more than six months after the original expected date of implementation.

By the end of 2021, the IAS formally reported a significant delay in the implementation of a recommendation made following the audit of the Horizon 2020 grant process (from the identification of the call topics to the signature of the grant agreement). The outstanding recommendation aims to improve effectiveness and efficiency of the call topics definition process and was originally expected to be addressed by 30 April 2020, in line with the timeline expected for the implementation of the Horizon Europe Framework Programme. However, the new legal mandate for the CBE JU was eventually formalised only on 1st December 2021 and the formalisation of procedures for the Strategic Planning process has been postponed. Ad hoc controls set up for the definition of the CBE AWP 2022 already address the recommended improvements and, with the consolidation of all new advisory bodies of CBE involved in this process, the procedure will be finalised and adopted in the course of 2022.

In July 2021, the IAS also started the audit on Horizon 2020 grant agreement implementation and closing, in line with its Strategic Internal Audit Plan (SIAP) that covers the period 2021-2023. By the end of 2021 the audit is still ongoing and preliminary works do not point to significant weaknesses in the effectiveness and efficiency of controls implemented by the JU.

4.6 RISK MANAGEMENT AND CONFLICT OF INTEREST

Risk Management has been an integral part of the management processes in place at BBI JU since its outset and adds value to the organisation by efficiently and effectively supporting the achievement of objectives. Its effectiveness is regularly assessed as a cross-cutting component of the internal control system of the organisation (refer to section 4.7 below). 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.

At the end of 2021 a total of 11 risks were identified and described in the Risk Register with varying degrees of importance, convergence and inter-dependency.

The risk assessment exercise conducted in 2021 confirmed the trend of previous years and some additional risks were absorbed or reduced by an increased effectiveness of internal controls as well as experience gained in the core activities, such as the Horizon 2020 grant planning, processes and systems.

Certain other risks persist in the remit of the JU Programme Office together with some new challenges and constraints to their effective mitigation. This is notably the case for threats to the effective deployment of human resources and to the performing conditions of the organisation. In these areas, the JU Programme Office continues to demonstrate that it is operating to high quality operational standards and efficiency ratios of operations are continuously being tested, while workload patterns and the stability of services acquired outside the organisation are closely monitored.

Enhanced controls on financial contributions to the initiative will provide reasonable assurance for a timely reporting and assessment of an expected compliance with targets set in the Funding Regulation. Lessons learnt on ex ante and ex post controls shall optimise risk management of operational expenditure below materiality levels set in the financial regulations and by the assurance providers. The mitigating actions envisaged in the past will continue to be applied in 2022 and new dedicated responses to the identified threats have been envisaged in action plans for 2022.

The Risk Register remains an internal living document and the management of identified risks will be ensured through appropriate mitigating actions, wherever possible, and continuously monitored by BBI JU throughout the year.

Management of potential conflicts 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 BBI JU are in place. Besides the general rules on this regard established in each JU rules of procedure, the Governing Board decision 13/17 of 13 December 2017 adopted specific rules for the preventions and management of conflict of interests 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 2021 these controls systems operated effectively, and nothing needs to be reported which may influence the reasonable assurance to be provided by the Authorising Officer in section 6.1 below.

Management of fraud risks

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 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 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 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 2021 these controls systems operated effectively. OLAF investigation closed in the course of the year have not concluded on irregularities and the CBE JU continued to implement and top 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 6.1 below.

Data protection

Six of the Joint Undertakings of the European Commission namely; Circular Bio-based Europe, Clean Aviation, Clean Hydrogen, Europe's Rail, Innovative Health Initiative, Key Digital Technologies and Single European Sky ATM Research jointly collaborated to perform a risk assessment and Data Protection Impact Assessment ("joint DPIA") in accordance with Article 39 of Regulation (EU) 2018/1725 related to the Microsoft Systems, prior to the deployment and migration to Microsoft Office 365 (M65) and Azure Active Directory ("cloud systems").

Microsoft Office 365 (M365) service is composed of twelve assets: SharePoint, OneDrive, OneNote, Stream, Teams, PowerApps, Yammer, Exchange Online, Sway, Forms, Access, PowerBI. Out of the twelve assets, four (OneDrive, Teams, SharePoint and Exchange on-line) were selected as priority. This joint exercise was carried out in order to assess the level of compliance of services with the

applicable data protection rules and to identify possible risks, as well as the applicable mitigation measures. There were 42 risks that were identified by the DPIA. The number of necessary mitigation actions to be taken were 1,669 in total.

4.7 COMPLIANCE AND EFFECTIVENESS OF INTERNAL CONTROL

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 as of 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.

The results of the 2021 internal control assessment confirm that the BBI JU control system is present and functioning while some improvements are needed. Overall, all internal control components operate together in an integrated manner, the system is compliant with the Internal Control Framework, it is working to an acceptable level of effectiveness, and it allows sufficient control of risks for the achievement of control objectives.

This self-assessment was based on the similar criteria and same methodologies in use by the European Commission. The assessment criteria included consideration of: a set of pre-defined indicators complemented by targets and baselines; an objective examination of reports and assessments carried out by management - notably in the analysis of internal control weaknesses and registering of exceptions - by internal (Internal Audit Service) and external auditors (independent financial auditors and the European Court of Auditors), the annual evaluation of the local accounting systems made by the Accounting Officer, as well as the management's overview on progress made on the implementation of the corresponding action plans.

Cost-effectiveness and efficiency 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 2021 results of the CBE JU reported in the Table 28 below allow to conclude that control activities over financial transactions:

- Were cost-effective, as benefit of controls were more than their costs.
- Were cost efficient, as the organisation achieved high operational performance in executing
- payments with relatively low cost of controls (0.58% of the yearly expenditure) and maintaining the residual error rates on operational expenditure below the 2%

2021 Payments (in EUR)	**125,075,654**
Estimated costs of controls (in EUR)	**727,940**
As a % of yearly expenditure	*0.58%*
Benefits of controls (in EUR)	**1,697,203**
As a % of yearly expenditure	*1.36%*
% Administrative payments on time	*96%*
% Operational payments on time	*100%*
% Residual error rate on operational expenditure	*1.17%*

Table 28 2021 results for assessing cost--effectiveness and cost-efficiency of controls

5 MANAGEMENT ASSURANCE

5.1 ASSESSMENT OF THE ANNUAL ACTIVITY REPORT BY THE GOVERNING BOARD

Introduction

The Circular Bio-based Europe Joint Undertaking (CBE JU) programme office submitted the 2021 Annual Activity Report (AAR) on 31 March 2022 to its Governing Board.

On 23 March 2022, the Governing Board appointed a working group to carry out all the preparatory work required for the assessment of the 2021 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(3 of the Governing Board's rules of procedure, the working group reported to the Governing Board on 17 June 2022 by providing a draft assessment of the AAR. This forms the basis for the Governing Board's current assessment.

In the AAR 2021 both the BBI JU and the CBE JU are covered, as from 30 November 2021 the CBE JU took over the responsibilities of the BBI JU. Therefore, the AAR 2021 also discusses the achievements of the CBE JU in the limited time remaining in 2021.

Analysis

The Governing Board adopted the 2021 Annual Work Plan (AWP) on 11 December 2020. It recognises the progress made by the BBI JU towards achieving the objectives set in this work plan. It notes the following points in particular:

- In 2021, the efficient performance of BBI JU and 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 2021 the BBI JU portfolio reached a total of 142 projects (71 RIA, 39 DEMO, 14 FLAG and 18 CSA) of which 96 were still ongoing at the end of 2021 and 46 finalised.
- BIC's and the Union's contribution to the BBI Initiative is shown in the amounts of funding provided in the past 8 years[52] to fulfil the commitments set out in the Council Regulation:

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

- The members paid around EUR 15.318.641,00 each in administration costs to the BBI JU programme office up to 2021This accounts for only 51% of the 10-year administrative budget envisaged under Article 12(2) of the Statutes of the BBI JU, which shows that the BBI JU programme office has budgeted carefully when it comes to administration

- The total consumption of the administrative budget was 85% in CA and 80% in Payment Apprpriations.

- Staff related costs showed a strong overall execution of 93%, with salaries (total budget EUR 2.7 million) at 99% and other staff costs (kEUR 455) at 57%. Mission expenses budget of kEUR 71 suffered again during the Covid-19 period, with only 10% execution. There were no installation/resettlement costs (budgeted at kEUR 60).

- The infrastructure budget achieved an overall execution of 74% in the CA of the 2021 budget. Among the highest costs - building-related (kEUR 391), IT (kEUR 537), and communications (kEUR 538) all achieved a robust execution, respectively 87%, 77% and 87%. Underspending was recorded for the expert reviewers (kEUR 330, 55%). The low execution on certain communications categories like events and public relations costs was compensated by the commitment of a large budget (kEUR 408) for the development and maintenance costs of the new CBE website (including transition to Drupal 9). The overall PA consumption in Title 2 is 64%. Communications execution (on total budget kEUR 528) was only 30%, because the payments related to the above-mentioned website contracts will not be made until 2022.

- The committed total **in kind contributions** made by BIC's constituent entities towards **operational activities** (committed total IKOP in grant agreements of Calls 2014-20) amounted to EUR 263 239 995BIC reported that certified in-kind contributions made by its constituent entities towards operational activities (certified IKOP) amounted to EUR 52 238 555[53],[54]. IKOP and IKAA will still be certified until 2024. The public funding is indeed spent during 10 years.

- In 2021, BIC's constituent entities contributed EUR 715 610 000 [55] in kind to **additional activities**, leading to an amount of EUR 1 646 530 181 for the years 2014 to 2021 in total. This is nearly 134% of the amount expected in 2021 according to the linear projection of Article 4(2)(b) objective.

- BIC and its constituent entities have therefore delivered a reported EUR 1 927 847 176 financial contributions in total[56]. After 8 out of 11 years, this is 71% of the total expected amount of at least EUR 2 730 million (Article 4(1) of the Council Regulation).

[53] Only this amount can be considered towards the contributory target of EUR 2 730 million provided for in Article 4(1) of the Council Regulation.

[54] The remainder of the committed resp. reported total IKOP will be certified when the projects have ended, according to the methodology approved by the Governing Board. As the calls are open, also many non-BIC members participate to the programme. They also participate with in kind contributions (eligible, not-reimbursed costs) which are - however – not officially certified as IKOP

[55] Maximum estimated amount in relation to the 2021 IKAA plan

[56] EUR 13 011 108 (administrative) + EUR 3 250 000 (financial contribution at programme level) + EUR 247 924 789 (IKOP committed in GAs) + EUR 929 212 506 (certified IKAA).

- The deficits in generation of IKOP and IKAA are explained in the AAR 2021. Several factors coincided included the effects of the pandemic that delayed additional investment that generate IKAA.
- The methodology for calculating the initiative's **leverage** is consistent with the methodology used by the Commission for the interim evaluation of the joint technology initiatives in 2017[57].
- The Governing Board encourages BIC, as it did in 2021, to take measures so that the objectives concerning the contributions from the private partner are met and the initiative achieves the expected level of investment leverage.

- The BBI JU's efficiency is monitored via key performance indicators (KPIs) that are applied by all joint undertakings under Horizon 2020. The Governing Board notes that the KPIs related to programme monitoring show that the BBI JU is operating efficiently. The CBE JU likewise, operated efficiently in the first month of its existence in 2021, adopting several Governing Board decisions under the omnibus decision package at its first GB meeting in December 2021. This act of the Governing Board allowed the CBE JU to operate as a legitimate successor of the BBI JU right after the Single Basic Act entered into force in late 2021.

- 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 BBI JU projects (39%) compared to other initiatives under Horizon 2020, this picture confirms that the BBI JU plays a dynamic role in the bio-based economy and that the BBI JU initiative represents a valuable instrument for SME-driven innovation.

- The KPI related to the geographical distribution of participants shows that the beneficiaries in BBI JU calls remains well balanced with a good spread between EU15, EU13 and associated countries. For example, mirroring the geographical variety of the feedstock used, five Flagship projects are located in EU 15 (Ireland, Belgium, France and Italy), three in EU13 (Estonia, Slovakia and Romania) and one in Norway, an associated country. Similarly, 28 DEMO projects are evenly located across Europe, with a strong involvement of Eastern and Southern European countries and associated countries.

- The finalised projects - numbering 46 by the end of 2021 are reporting actual results for the first time and they 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 BBI JU's work on communication and outreach, which helped it gain recognition. The BBI JU programme office organised successful meetings and

[57] Although the Council Regulation itself does not mention a calculated leverage objective for measuring BIC's and the Union's contribution to the BBI Initiative, a summary figure may be well suited to showing how the initiative has developed in general.

conferences online given the difficult circumstances caused by the COVID-19 pandemic. The BBI/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 BBI JU to gradually change from expected to validated KPI figures once projects have ended, as planned.

Conclusion

The Governing Board believes that the technical and operational information provided in the 2021 AAR reflects the situation at the end of 2021. It believes that the 2021 AAR provides a complete and accurate report of the progress made by the BBI JU and CBE JU in 2021, in particular on the objectives set in the 2021 AWP. The report clearly identifies the risks associated with the BBI JU's operations, duly reports on how the resources were used, and indicates the efficiency and effectiveness of the BBI JU's internal control system. The report also describes well the limited achievements of the CBE JU in its one month of existence in 2021.

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 2021 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 Executive Director of the BBI JU and 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 BBI JU is properly monitoring and mitigating any risks.

5.2 ELEMENTS SUPPORTING ASSURANCE

This section reviews the assessment of the elements reported in chapters 2 and 4 and draws conclusions that enable the Executive Director to obtain a full picture of the state of play of the BBI JU, underpinning the reasonable assurance given by the Authorising Officer in his declaration of assurance on the Annual Activity Report.

The main elements supporting this assurance are based on the management assessment of the results of key indicators related to the budget execution, the internal control self-assessment, the results of audits from the ECA and of the work performed by the IAS in the course of the reporting

year, the first audit results on the overall Horizon 2020 expenditure, as well as the reporting from the Head of Administration and Finance, the Head of Programme, the Internal Control and Audit Manager and the Accounting Officer of BBI JU.

All this information positively supports the statements of the declaration of assurance and no significant weaknesses were identified that call into question the reasonable assurance as to the use of resources for their intended purpose, in accordance with the principles of sound financial management and the fact that the implemented control procedures give the necessary guarantees on the legality and regularity of the underlying transactions.

5.3 RESERVATIONS

No reservation is made for 2021.

5.4 OVERALL CONCLUSION

In conclusion, management 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. Therefore, the Executive Director, in his capacity as Authorising Officer, has signed the declaration of assurance presented below

Declaration of Assurance of the Authorising Officer

I, the undersigned, Philippe Mengal, Executive Director of the Circular Bio-based Europe Joint Undertaking (CBE JU),in my capacity as authorising officer:

- *Declare that the information contained in this report gives a true and fair view[1].*

- *State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions.*
  This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the self-assessment, ex-post controls, the work of the Internal Audit Service and the lessons learnt from the reports of the Court of Auditors for years prior to the year of this declaration.

- *Confirm that I am not aware of anything not reported here which could harm the interests of the institution BBI JU.*

Place: Brussels

Date: 31/03/2022

Philippe MENGAL
Executive Director

[1] True and fair in this context means a reliable, complete and correct view on the state of affairs in the JU

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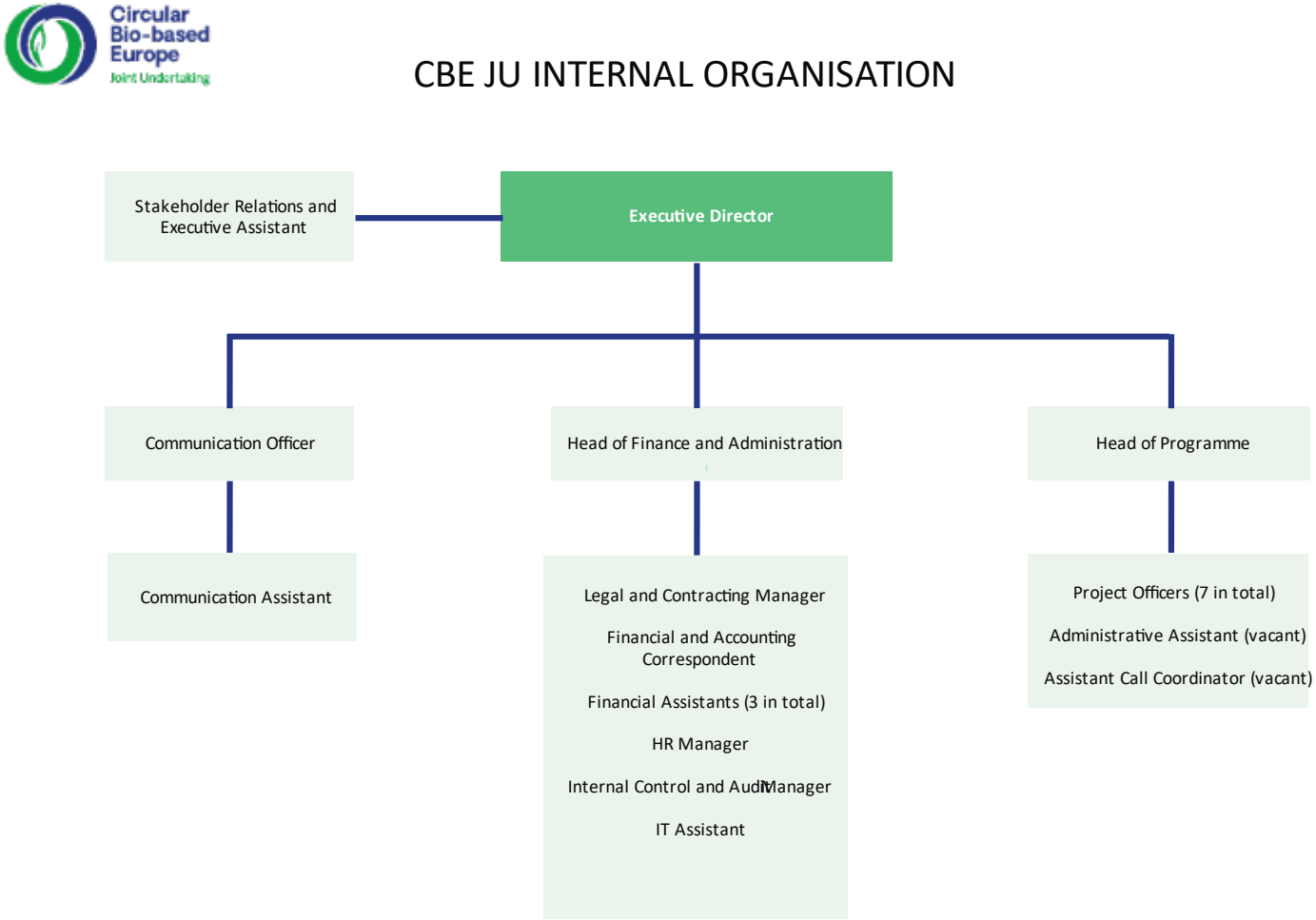
Co-funded by the European Union
Bio-based Industries Consortium

7 ANNEXES

7.1 ORGANISATIONAL CHART



7.2 STAFF ESTABLISHMENT PLAN

Function group and grade	2020				2021			
	Authorised budget		Filled in position as of 31/12/2020		Authorised budget		Filled in position as of 31/12/2021	
	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts
AD 16								
AD 15								
AD 14		1		1		1		1
AD 13								
AD 12		2		1		2		1
AD 11				1				1
AD 10								
AD 9						2		2
AD 8		4		4		3		3
AD 7		3		3		2		2
AD 6								
AD 5								
AD total		10		10		10		10
AST 11								
AST 10								
AST 9								
AST 8								
AST 7								
AST 6								
AST 5		2		1		1		1
AST 4				1		1		1
AST 3								
AST 2		1		1		1		1
AST 1								
AST total		3		3		3		3
AST/SC 6								
AST/SC 5								
AST/SC 4								
AST/SC 3								
AST/SC 2								
AST/SC 1								
AST/SC total								
TOTAL		13		13		13		12
GRAND TOTAL	13		13		13		12	

Staff resources also include five GF IV and five GF III contract agents according to the table below:

Contract agents	Authorised 2020	Recruited as of 31/12/2020	Authorised 2021	Recruited as of 31/12/2021
Function group IV	5	5	5	5
Function group III	5	5	5	4
Function group II				
Function group I				
TOTAL	10	10	10	9

7.3 PUBLICATIONS FROM PROJECTS

An overview of the 146 publications reported for 2021 is presented below, using the following structure: Author(s); Publication title; Journal Title; Journal number; relevant pages; Repository URL.

A. Gala Morena, Arnau Bassegoda, Javier Hoyo, Tzanko Tzanov; Hybrid Tellurium–Lignin Nanoparticles with Enhanced Antibacterial Properties; ACS Applied Materials & Interfaces; 13/13; 14885-14893

Alejandro González-Benjumea, Dolores Linde, Juan Carro, René Ullrich, Martin Hofrichter, Angel T. Martínez,* and Ana Gutiérrez*; Regioselective and stereoselective epoxidation of n-3 and n-6 fatty acids by fungal peroxygenases; Antioxidants; continuous publication online; https://www.mdpi.com/2076-3921/10/12/1888

Alessandro A. Carmona-Martínez; Eva Marcos-Rodrigo; Sergio Bordel; David Marín; Raquel Herrero-Lobo; Pedro A. García-Encina; Raúl Muñoz; Elucidating the key environmental parameters during the production of ectoines from biogas by mixed methanotrophic consortia; Journal of Environmental Management; 1; 113462; https://api.elsevier.com/content/article/PII:S0301479721015243?httpAccept=text/xml

Alex Adams-Waite; Agitated Cell Reactor Mixing Characterisation Studies

Alexandra Leeper, Ricardo Ekmay, Stephen Knobloch, Sigurlaug Skírnisdóttir, Madhushri Varunjikar, Marianne Dubois, Birgir Örn Smárason, Jón Árnason, Wolfgang Koppe, David Benhaïm; Torula; Yeast in the Diet of Atlantic Salmon Salmo Salar and the Impact on Growth Performance and Gut Microbiome.; Journal of Animal Science and Biotechnology

Andrea Bassani, Cecilia Fiorentini, Guillermo Duserm Garrido, Daniele Carullo, Giorgia Spigno; Kinetic Model of Wheat Straw Autohydrolysis Considering Heating and Cooling Phases; CHEMICAL ENGINEERING TRANSACTIONS; Volume 87; 199-204; http://hdl.handle.net/10807/182683

Annalisa Scroccarello, Flavio Della Pelle, Qurat Ul Ain Bukhari, Filippo Silveri, Daniele Zappi, Enrico Cozzoni and Dario Compagnone; Eucalyptus Biochar as a Sustainable Nanomaterial for Electrochemical Sensors; Chemistry Proceedings; Volume 5 / Issue 1; https://www.mdpi.com/2673-4583/5/1/13

Antoine Vassaux, Marie Rannou, Soline Peers, Théo Daboudet, Philippe Jacques and François Coutte; Impact of the Purification Process on the Spray-Drying Performances of the Three Families of Lipopeptide Biosurfactant Produced by Bacillus subtilis; Front. Bioeng. Biotechnol.; https://www.researchgate.net/publication/357256277_Impact_of_the_Purification_Process_on_the_Spray-Drying_Performances_of_the_Three_Families_of_Lipopeptide_Biosurfactant_Produced_by_Bacillus_subtilis

Bahareh Azimi; Claudio Ricci; Alessandra Fusco; Lorenzo Zavagna; Stefano Linari; Giovanna Donnarumma; Ahdi Hadrich; Patrizia Cinelli; Maria-Beatrice Coltelli; Serena Danti; Andrea Lazzeri; Electrosprayed shrimp and mushroom nanochitins on cellulose tissue for skin contact application; Molecules; 26-14; http://hdl.handle.net/11568/1108716

Barbara Prandi, Chiara Zurlini, Cigognini Ilaria Maria, Sara Cutroneo, Martina Di Massimo, Marika Bondi, Andrea Brutti, Stefano Sforza, Tullia Tedeschi; Targeting the Nutritional Value of Proteins From Legumes By-Products Through Mild Extraction Technologies; Frontiers in Nutrition; 8; https://air.unipr.it/handle/11381/2896266?mode=full.839

Barbara Prandi, Maura Ferri, Stefania Monari, Chiara Zurlini, Ilaria Cigognini, Stefanie Verstringe, Dennis Schaller, Martha Walter, Luciano Navarini, Annalisa Tassoni, Stefano Sforza, Tullia Tedeschi; Extraction and Chemical Characterization of Functional Phenols and Proteins from Coffee (Coffea arabica) By-Products; Biomolecules; 11/11; 1571; http://hdl.handle.net/11381/2903404

Beatriz de la Fuente, Noelia Pallarés, Francisco J. Barba, Houda Berrada; An Integrated Approach for the Valorization of Sea Bass (Dicentrarchus labrax) Side Streams: Evaluation of Contaminants and Development of Antioxidant Protein Extracts by Pressurized Liquid Extraction; Foods; 10/3; 546; https://doi.org/10.3390/foods10030546

Beatriz Meléndez-Rodríguez, Sergio Torres-Giner, Maria A. M. Reis, Fernando Silva, Mariana Matos, Luis Cabedo, José María Lagarón; Blends of Poly(3-Hydroxybutyrate-co-3-Hydroxyvalerate) with Fruit Pulp Biowaste Derived Poly(3-Hydroxybutyrate-co-3-Hydroxyvalerate-co-3-Hydroxyhexanoate) for Organic Recycling Food Packaging; Polymers; 13/7; 1155

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Benjamin Sala, Xavier Gabrion, Thomas Jeannin, Frédérique Trivaudey, Violaine Guicheret-Retel, Fabrizio Scarpa, Vincent Placet; Effect of hygrothermal ageing on the shear creep behaviour of eco-friendly sandwich cores; Composites Part B: Engineering; https://www.ssuchy.eu/wp-content/uploads/2022/01/Sala-et-al-2020-CompPartB.pdf

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7.4 PATENTS FROM PROJECTS

By the end of 2021, BBI JU had 142 projects in its portfolio. Based on the information provided by the projects via the 'continuous reporting' module of the Funding & tender opportunities Portal, for the period 2015-2021 BBI JU projects have:

- Obtained 23 patents, 1 registered design and 3 trademarks (see table below);
- Submitted 106 patent applications (incl. the obtained ones), which is 35 applications more compared to the data reported in AAR 2020.

Acronym	Amount of IPR	Type of IPR
AgriChemWhey	2	Patent
BIOMOTIVE	2	Patent
DEEP PURPLE	2	Patent
EMBRACED	2	Patent
EnzOx2	2	Patent
EUCALIVA	1	Registered Design
InDIRECT	3	Patent
PEFerence	4	Patent
PHERA	2	Patent
PULP2VALUE	2	Patent
SCALE	1	Trademark
TECH4EFFECT	1	Trademark

7.5 SCOREBOARD OF HORIZON 2020 COMMON KEY PERFORMANCE INDICATORS

		KPI	Definition		Target at the end of H2020	Results in 2021
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[58] 164 SMEs introduced innovations in the company 197 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 2021[59] Turnover: EUR 1,181,605,438 Employees: 6,891
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 €10 million funding	2021: 126 publications Total (2015–2021): 532 publications[60]
	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 €10 million funding (2014 - 2020)	106 patent applications/ 23 patents awarded[61]
	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	1,179[62]
	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	191[63]
	18	New products, processes, and methods launched into the market	Number of projects with new innovative products, processes, and methods. Project count and drop-down list allowing to choose the type processes, products, methods		To be developed on the basis of first Horizon 2020 results	Number of projects with new innovative: Products: 95 Processes: 82 Methods: 49
Evaluation	NA	Time to inform (TTI) all applicants of the outcome of the evaluation of their application from the final date	To provide applicants with high-quality and timely evaluation results and feedback after each evaluation step by	Number and % of information letters sent to applicants within target Average TTI (calendar days)	153 calendar days	BBI Call 2020: 229 letters (100%) Average TTI: 137 Maximum TTI: 139

[58] Based on input from 142 projects from calls 2014-2020, and as per information available on CORDA (26 Jan 2022). Data is reported globally per project with no indication of SME share.

[59] Based on input from 60 out of 62 projects finalised by 31 December 2021. Number of SMEs (unique beneficiaries) providing data: 201 out of 205.

[60] 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.

[61] Cumulative figure (2015-2021)

[62] Sum of all prototypes and testing activities reported until end 2021.

[63] Sum of all joint public-private publications published up until end 2021.

		for submission of completed proposals	implementing and monitoring a high scientific level peer reviewed process	Maximum TTI (calendar days)		
	NA	Redress after evaluations		Number of redresses requested	n/a	2[64]
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)	BBI Call 2020: 18 Grants (100%) Average: 236 Maximum: 245
	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	BBI Call 2020: 18 Grants (100%) Average: 99 Maximum: 108
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)	13 days on average for pre-financing 67 days on average for interim and final payments (100% on time) Number of experts appointed: 107
HR	NA	Vacancy rate (%)	% of posts filled in, composition of the JU staff		n/a	See Section 2.6
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	CA: 99.9% PA: 71% (pre-financing of the 2020 call and payments of periodic reports of previous calls)
	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 (4.44%)

[64] The result of the evaluation review concluded that the complaint was unfounded.

7.6 INDICATORS FOR MONITORING CROSS-CUTTING ISSUES

	Cross-cutting issue	Definition/Responding to Question	Type of Data Required	Results in 2021
2	Widening participation	2.1 Total number of participations by EU28 Member State	Nationality of Horizon 2020 applicants & beneficiaries (number of)	EU28: 1616
		2.2 Total amount of EU financial contribution by EU-28 Member State (EUR millions)	Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution	EU28: €725,089,294.8
NA		Total number of participations by Associated Countries	Nationality of Horizon 2020 applicants & beneficiaries (number of)	85
NA		Total amount of EU financial contribution by Associated Country (EUR millions)	Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution	€48,226,303.37
3	SMEs participation	3.1 Share of EU financial contribution going to SMEs (Enabling & industrial tech and Part III of Horizon 2020)	Number of Horizon 2020 beneficiaries flagged as SME; % of EU contribution going to beneficiaries flagged as SME	See Section 1.3.1.1
6	Gender	6.1 Percentage of women participants in Horizon 2020 projects	Gender of participants in Horizon 2020 projects	See Section 1.3.1.1
		6.2 Percentage of women project coordinators in Horizon 2020	Gender of MSC fellows, ERC principle investigators and scientific coordinators in other Horizon 2020 activities	See Section 1.3.1.1
		6.3 Percentage of women in EC advisory groups, expert groups, evaluation panels, individual experts, etc.	Gender of memberships in advisory groups, panels, etc.	Not available
7	International cooperation	7.1 Share of third-country participants in Horizon 2020	Nationality of Horizon 2020 beneficiaries	3 (ZA, HK, AU)
		7.2 Percentage of EU financial contribution attributed to third country participants	Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution	0%
9	Bridging from discovery to market	9.1 Share of projects and EU financial contribution allocated to Innovation Actions (IAs)	Number of IA proposals and projects properly flagged in the WP; follow up at grant level.	No call in 2021 7 IAs with GAs signed (Call 2020)

		9.2 Within the innovation actions, share of EU financial contribution focussed on demonstration and first-of-a-kind activities	Topics properly flagged in the WP; follow-up at grant level	Call 2020: 3 FLAG (27%) 4 DEMO (27%) All calls: 13 FLAG (32%) 38 DEMO (33%)
NA		Scale of impact of projects (High Technology Readiness Level)	Number of projects addressing TRL8 between …(4-6, 5-7)?	Call 2020: 7 RIA TRL 3-5 4 DEMO TRL 6-7 3 FLAG TRL 8-9 All calls: 71 RIA TRL 3-5 38 DEMO TRL 6-7 13 FLAG TRL 8-9
11	Private sector participation	11.1 Percentage of Horizon 2020 beneficiaries from the private for profit sector	Number of and % of the total Horizon 2020 beneficiaries classified by type of activity and legal status	Call 2020: 123 (56%) All calls: 1009 (59%)
		11.2 Share of EU financial contribution going to private for profit entities (Enabling & industrial tech and Part III of Horizon 2020)	Horizon 2020 beneficiaries classified by type of activity; corresponding EU contribution	Call 2020: 66% All calls: 63%
12	Funding for PPPs	12.1 EU financial contribution for PPP (Art 187)	EU contribution to PPP (Art 187)	No call in 2021
		12.2 PPPs leverage: total amount of funds leveraged through Art. 187 initiatives, including additional activities, divided by the EU contribution	Total funding made by private actors involved in PPPs - in-kind contribution already committed by private members in project selected for funding - additional activities (i.e. research expenditures/investment of industry in the sector, compared to previous year)	See Section 1.3.2
13	Communication and dissemination	13.3 Dissemination and outreach activities other than peer-reviewed publications - [Conferences, workshops, press releases, publications, flyers, exhibitions, trainings, social media, web-sites, communication campaigns (e.g. radio, TV)]	A drop down list allows to choose the type of dissemination activity. Number of events, funding amount and number of persons reached thanks to the dissemination activities	See Section 1.5
14	Participation patterns of independent experts	14.2 Proposal evaluators by country	Nationality of proposal evaluators	No evaluation in 2021
		14.3 Proposal evaluators by organisations' type of activity	Type of activity of evaluators' organisations	No evaluation in 2021

NA	Participation of RTOs and Universities	Participation of RTOs and Universities in PPPs (Art 187 initiatives) Number of participations of RTOs to funded projects and % of the total	Number of participations of Universities to funded projects and % of the total % of budget allocated to RTOs and to Universities	Call 2020: RTO: 40 = 18% HES: 29 = 13% RTO: 17% of budget HES: 8% of budget All calls: RTO: 330 = 19% HES: 218 = 13% RTO: 19% of budget HES: 12% of budget
NA	Ethics	The objective is ensuring that research projects funded are compliant with provisions on ethics efficiently	% of proposals not granted because non-compliance with ethical rules/proposals invited to grant (target 0%); time to ethics clearance (target 45 days)	0
NA	Audit	Error rate	% of common representative error; % residual error	Representative Detected Error rate: 1.91% Residual Error Rate for BBI JU: 1.17%
NA		Implementation of ex-post audit results	Number of cases implemented; in total €million; ´of cases implemented/total cases	88 cases implemented out of 114 € 1.16 million out of € 1.25 million theoretical negative impact on EU funding

7.7 SCOREBOARD OF KEY PERFORMANCE INDICATORS SPECIFIC TO BBI JU

KPI[65]	Target at the end of Horizon 2020	Results in 2021[66]
KPI 1 - Number of new cross-sector interconnections	36	329
KPI 2 - Number of new bio-based value chains realised	10	276
KPI 3 - Number of BBI JU Grant Agreements signed	200	142
KPI 4 - Number of new bio-based building blocks	5	162
KPI 5 - Number of new bio-based materials	50	297
KPI 6 - Number of new bio-based consumer products	30	186
KPI 7 - Number of Flagship biorefinery plants	5	13
KPI 8 - Number of validated technologies that have realised a TRL gain of at least one level (RIA projects)	20	68

[65] BBI JU KPIs are defined in the Strategic Research and Innovation Agenda 2017

[66] BBI JU KPIs 1, 2, 4, 5, 6 and 8 are based on the figures reported by all BBI JU ongoing projects by the end of 2021. These figures refer to the expected and actual results of the projects by 2024 or by the end of the project (the earliest date). These results are monitored yearly and are validated at the end of the projects. For more details on the methodology and results, please see section 1.3.1.2 BBI JU projects outcome: BBI JU specific KPIs. There is no legal target for the PP leverage and for the funding balance

Circular Bio-based Europe Joint Undertaking

Annual accounts of the Circular Bio-based Europe Joint Undertaking

Financial year 2021

CONTENTS

CERTIFICATION OF THE ACCOUNTS

I acknowledge my responsibility for the preparation and presentation of the annual accounts of the Circular Bio-based Europe Joint Undertaking in accordance with Article 52 of the Model Financial Regulation ('MFR')[1] and I hereby certify that the annual accounts of the Circular Bio-based Europe Joint Undertaking for the year 2021 have been prepared in accordance with Chapter 8 of the MFR and the accounting rules adopted by the Commission's Accounting Officer, as are to be applied by all the institutions and union bodies.

I have obtained from the Authorising Officer, who certified its reliability, all the information necessary for the production of the accounts that show the Circular Bio-based Europe Joint Undertaking's assets and liabilities and the budgetary implementation. Based on this information, and on such checks as I deemed necessary to sign off the accounts, I have a reasonable assurance that the accounts present fairly, in all material aspects, the financial position, the results of the operations and the cash-flow of the Circular Bio-based Europe Joint Undertaking.

Rosa ALDEA BUSQUETS

Accounting Officer of the CBE JU

[1] COMMISSION DELEGATED REGULATION (EU) 2019/887 of 13 March 2019 on the model financial regulation for public-private partnership bodies referred to in Article 71 of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council.

BACKGROUND INFORMATION NOTE

1. General background on the entity

Establishment

Horizon Europe – the EU Framework Programme for Research and Innovation (2021-2027) – aims to increase the EU's research and innovation impact by combining European partnership co-investment with additional private and public sector funds in areas where the scope and scale of the research and innovation resources can help achieve the EU's Horizon Europe priorities notably, its Pillar II – Global challenges and European industrial competitiveness.

The setting up of the joint undertakings under Horizon Europe was regulated through Council Regulation (EU) 2021/2085 of 19 November 2021 and published in the Official Journal on 30 November 2021 (also known as the Single Basic Act).

Under the Single Basic Act (Article 174.3), the Circular Bio-based Europe Joint Undertaking (CBE JU) shall be the legal and universal successor in respect of all contracts, including employment contracts and grant agreements, liabilities and acquired property of the Bio-based Industries Joint Undertaking established by Council Regulation (EU) 2014/560 of 6 May 2014, which it shall replace and succeed. The Joint Undertaking is based in Brussels. The Bio-based Industries Joint Undertaking, known also as BBI JU, was a public-private partnership between the European Union (EU) and the Bio-based Industries Consortium (BIC). It aimed to bring together all relevant stakeholders and contributes to establishing Europe as a key player in the research, demonstration and deployment of advanced bio-based products and biofuels.

Mission

CBE JUs mission is to implement, under Horizon Europe rules, the Strategic Research and Innovation Agenda (SRIA) developed jointly by the industry and by the European Commission and adopted by CBE JU Governing Board, by organising calls for proposals to support research, demonstration and deployment activities enabling the collaboration between stakeholders along the entire value chains, covering primary production of biomass, processing industry and final use.

Main operational activities

CBE JU contributes to a more resource-efficient and sustainable low-carbon economy and to increasing economic growth and employment, in particular in rural areas, by developing sustainable and competitive bio-based industries in Europe. This is based on advanced bio refineries that source their biomass sustainably and in particular aims to:

- Accelerate the innovation process and development of the bio-based innovative solutions;
- Accelerate the market deployment of the existing mature innovative bio-based systems; and
- Ensure high level of environmental performance of bio-based industrial systems.

Governance

CBE JU is headed by an Executive Director, who is accountable to a Governing Board – the main decision-making body of the CBE JU. The Governing Board has overall responsibility for the strategic orientation and the operations of the CBE JU and supervises the implementation of its activities. It brings together the two groups of the JU's Members:

- The EU, represented by the European Commission (the Commission);
- The Bio-based Industries Consortium Aisbl (the 'BIC'), a non-profit organisation established under Belgium law, with its permanent office in Brussels, Belgium.

The Governing Board is made up of representatives from the Commission (5) and the Bio-based Industries Consortium (BIC) (5). The Governing Board holds its ordinary meetings at least twice a year.

Other bodies of CBE JU are:

- The Scientific Committee, which is composed of a balanced representation of worldwide recognised experts from academia, industry, SMEs, non-governmental organisations and regulatory bodies; and

- The States Representatives Group, which is composed of one representative of each Member State and of each country associated to Horizon Europe.

- The Stakeholders' or Deployment Groups

Sources of financing

CBE JU is jointly funded by the EU and the "Members other than the Union" (BIC) through financial contributions paid in instalments and in kind contributions consisting of the costs incurred by them in implementing indirect actions that are not reimbursed by the CBE JU. The resources of the CBE JU entered to its budget are composed of:

- Members' financial contributions to the administrative costs;

- Members' financial contributions to the operational costs;

- Any revenue generated by the JU;

- Any other financial contributions, resources and revenues.

2. Annual accounts

Basis for preparation

The legal framework and the deadlines for the preparation of the annual accounts are set by the Model Financial Regulation (MFR)[2]. As per this regulation, the annual accounts are prepared in accordance with the rules adopted by the Accounting Officer of the Commission (EU Accounting Rules, EAR), which are based on internationally accepted accounting standards for the public sector (IPSAS).

Accounting Officer

In accordance with the MFR, the Governing Board of the entity appoints the Accounting Officer who is, amongst other tasks, responsible for preparation of the annual accounts.

Following the decision of the BBI JU's Governing Board of 9 December 2014 (BBI-GB-D-03/14), the Accounting Officer of the Commission shall act as the Accounting Officer of CBE JU[3].

Composition of the annual accounts

The annual accounts cover the period from 1 January to 31 December and comprise the financial statements and the reports on the implementation of the budget. While the financial statements and the complementary notes are prepared on an accrual accounting basis, the budget implementation reports are primarily based on movements of cash.

Process from provisional accounts to discharge

The provisional annual accounts prepared by the Accounting Officer are transmitted, by 1 March of the following year, to the European Court of Auditors (ECA) and to the audit company selected by the entity. Following the audit, the Accounting Officer prepares the final annual accounts and submits them to the Governing Board for opinion.

The final annual accounts, together with the opinion of the Governing board, are sent to the Accounting Officer of the Commission, the Court of Auditors, the European Parliament and the Council by 1 July of

[2] A Commission Delegated Regulation (EU) 2019/887 of 13 March 2019 on the model financial regulation for public-private partnership bodies referred to in Article 71 of Regulation (EU, Euratom) 2018/1046 of the European Parliament and of the Council, OJEU L 142, 29.5.2019.

[3] [3] In force on the basis of the CBE JU Governing Board decision 2/21 of 16 December 2021, approving the list of decisions adopted by the Bio-based Industries Joint Undertaking that shall continue to apply for the Circular Bio-based Europe Joint Undertaking.

the following financial year. The ECA scrutinises the final annual accounts and includes any findings in the annual report for the European Parliament and the Council.

It falls to the Council to recommend, and then to the European Parliament to decide, whether to grant discharge to the Director in respect of the implementation of the budget for a given financial year. Amongst other elements, this decision is also based on a review of the accounts and the annual report of the ECA.

3. Operational highlights

Achievements of the year

The most important achievements of 2021 were that BBI JU accomplished its major annual objectives as well as the successful transition towards the new Circular Bio-based Europe Joint Undertaking, despite challenging conditions due to the COVID-19 crisis, necessitating the implementation of, inter alia, the following measures:

- The COVID pandemic continued to impact the day-to-day activities of the JU. BBI JU continued to advocate teleworking for most of the year, allowing only a limited presence of staff in the office, while respecting strict precautionary measures to prevent the spread of the virus and to maintain business continuity. The promotion of the vaccination campaign, the improvements to the IT tools and support to the home working environment all contributed to establishing an effective framework to ensure the continuation of the core activities of the Joint Undertaking.
- A large portion of the work of the Programme Office in 2021 was to prepare and implement the transition to the new Joint Undertaking - Circular Bio-based Europe - which is BBI JU's successor and which entered into force on the 30th of November 2021. The thorough and high-quality preparation – acknowledged by both the Commission and the Bio-based Industries Consortium - enabled a smooth transition with only minor interruptions in business continuity. The first Governing Board of CBE JU took place on the 16th of December ensuring the legal and financial grounds for the JU to continue its activities under the new programme.
- Also, throughout 2021 meetings of corporate bodies such as the Governing Board, the Scientific Committee and the States Representatives Group took place "virtually". The high-level experience of staff and the sound support infrastructure ensured full efficiency and all events were successfully implemented.
- In 2021 BBI JU did not carry out any call evaluations due to the delay in the transition to the new Joint Undertaking under Horizon Europe and consequently the launch of the first call. All 23 grants stemming from Call 2020, and totalling over EUR 104 million, were signed in good time and all pre-financings were also paid by the due date. On the project management side, the BBI Programme Office continued to provide full support to beneficiaries encountering issues linked to the COVID-19 crisis: several suspensions and extensions of projects were agreed in order to accommodate the most intense period of the pandemic. At the same time, 59 interim and final payments were processed (the maximum for BBI since its autonomy) covering over EUR 104 million of requested EU contribution.
- At the financial level, the budget implementation was good overall (see section below), despite certain administrative budget lines having a low execution due to COVID-19 (travel-related, missions, meetings, events, etc.). On the operational side, the suspensions and extensions of running projects due to the pandemic, and the unexpected termination of a large project, negatively impacted the budget implementation, which on the payments side achieved only 71% of available appropriations, despite major efforts by the Programme Office to perform as many payments as possible before the year end closure.

Budget and budget implementation

The Governing Board adopted the 2021 budget for the BBI JU for the global amount (adopted budget and reactivations) of kEUR 5 215 in commitment appropriations (CA) and kEUR 174 627 in payment appropriations (PA) in December 2020. There were no amendments to this budget during 2021.

The original BBI JU budget included a relatively large surplus of unused budget from prior years (2018, 2019 and 2020): kEUR 600 in administrative CA and PA and on the operational side kEUR 46 882 in PA. The reactivated appropriations were consumed in priority in line with CBE's Financial Rules art. 6(5), and reached almost 100% consumption on the admin CA side, 84% on the admin PA side and 79% on the operational PA side by year end.

At the end of 2021, there was a total surplus of unused appropriations of kEUR 786 in administrative CA and kEUR 1 088 in administrative PA. In operational PA there was kEUR 48 590.

In terms of operational commitments outstanding from the previous year, there remains kEUR 159 595 at the end of the year.

A Governing Board decision was taken at the end of 2021 to reactivate in the 2022 budget kEUR 1 135 in administrative CA from 2020 and kEUR 1 566 in administrative PA (kEUR 266 from 2019 and kEUR 1 300 from 2020) as well as EUR 40 million in operational PA (kEUR 28 803 from 2020 and kEUR 11 197 from 2021). An amendment to the 2022 Annual Work Plan removed the kEUR 11 197 following a recent re-assessment of the budgetary needs (it will be reactivated in 2023).

The 2021 operational PA include kEUR 4 292 from 2018 and kEUR 42 590 from 2019. Further reactivations are to be envisaged in the 2023 budget.
The COVID-19 crisis continued to make itself felt during this second year of the pandemic. Nevertheless the overall budget implementation was satisfactory given the impact. The implementation of any budget lines involving e.g. travel expenditure or hire of a venue – missions, meetings, communications events, teambuilding events etc. – was again negatively impacted, with the costs of organising such events in a "virtual" manner being minimal.

Administrative expenditure

The total consumption of the administrative budget was 85% in CA and 80% in PA.

Title 1: Staff related costs showed a strong overall CA implementation of 93%, with salaries (total budget EUR 2.7 million) at 99% and other staff costs (kEUR 455) at 57%. Mission expenses budget of kEUR 71 again suffered during the COVID-19 period, with only 10% implementation. There were no installation/resettlement costs (budgeted at kEUR 60).

Title 2: The infrastructure budget achieved an overall implementation of 74% in the CA of the 2021 budget. Among the highest costs - building-related (kEUR 391), IT (kEUR 537), and communications (kEUR 538) all achieved a robust implementation, respectively 87%, 77% and 87%. Underspending was recorded for the expert reviewers (kEUR 330, 55%), as there were no call evaluations needed in 2021. The low implementation on certain communications categories like events and public relations costs was compensated by the commitment of a large budget (kEUR 408) for development and maintenance costs of the new CBE website (including transition to Drupal-9). The overall PA consumption in Title 2 is 64%. Communications implementation (on total budget kEUR 528) was only 30%, because the payments related to the above-mentioned website contracts will not be made until 2022.

Operational expenditure

Concerning the outstanding commitments from previous year of the operational budget, the Programme Office concluded 18 grant agreements from the Call 2020 for a total grant value of EUR 104.5 million resulting in a 100% implementation of CA envisaged for this call (EUR 104.7 million).

In respect of the PA, the Programme Office achieved a 71% implementation of the 2021 budget, with pre-financing payments for the grants of Call 2020 (EUR 68 million) together with payments of periodic reports for grants from the previous BBI JU calls (EUR 53 million). The implementation was lower (by 14%) compared to the previous year. This was because:

i) The 2020 PA implementation was "eased" by sending back a large amount of reactivated appropriations to the years of origin and

ii) The impact of COVID-19 continued throughout 2021, where the budget had been established in anticipation of the pandemic slowing and projects "catching up" on delays.

Regarding the payment of the periodic reports, CBE JU Programme Office dealt with 59 periodic reports claiming a total contribution of EUR 104 million (€54 million net), which led to 59 payments in 2021 for a total of EUR 53 million (net of pre-financing clearing).

Impact of the activities in the financial statements

In the financial statements, the impact of the above-mentioned activities resulted in:

- **Increase of payables:** The payables increased by kEUR 27 085 (2021: kEUR 89 486 from 2020: kEUR 62 401) mainly because of an increase of the main element – contributions in-kind to be validated.

- In 2021 CBE JU changed the methodology of estimation of IKOP at the end of the year from an estimation based on annual declarations of members to an estimation based on i) pro rata of IKOP reported in projects' cost claims (which is not automatically recorded in the accounting system) as well as a pro rata calculation based on total IKOP allocated in projects for either the whole of 2021, or part of 2021, following the period covered by pro rata of IKOP reported in cost claims (see note 2.4).

- **Increase of Members' cash contributions** recognised under **net assets:** The increase of kEUR 127 145 is largely due to the increase of EU contributions necessary to cover 59 interim and final payments (the maximum for CBE JU since its autonomy) – see note **2.6**.

- **Increase of operational costs:** The increase in the operational costs is due to a combined effect. Firstly, there was an increase in the estimated operational project costs relating to Call 2020. These were added to the pro-rata temporis calculation in 2021 because no cost claims, covering the whole year, had been received or validated for these projects by the year-end. Secondly, there was an increase in estimated in-kind contributions due to the changing in the calculation methodology. In 2021 kEUR 10 312 of in-kind contributions were validated and transferred to net assets (see note **3.3**).

- **Decrease of other expenses:** the general decrease of certain other administrative expenses, and increase of other items under this title, can be directly linked to the new ways of working imposed by COVID 19 restrictions (please see note **3.5**).

FINANCIAL STATEMENTS AND EXPLANATORY NOTES

It should be noted that due to the rounding of figures into thousands of euros (kEUR), some financial data in the tables below may appear not to add-up.

CONTENTS

BALANCE SHEET

EUR '000

	Note	31.12.2021	31.12.2020
NON-CURRENT ASSETS			
Property, plant and equipment	*2.1*	*60*	*63*
Pre-financing	*2.2*	*99 772*	*109 558*
		99 832	**109 621**
CURRENT ASSETS			
Pre-financing	*2.2*	*106 979*	*98 120*
Exchange receivables and non-exchange recoverables	*2.3*	*81 089*	*78 614*
		188 068	**176 733**
TOTAL ASSETS		**287 901**	**286 355**
CURRENT LIABILITIES			
Payables and other liabilities	*2.4*	*(89 487)*	*(62 401)*
Accrued charges	*2.5*	*(56 894)*	*(73 176)*
		(146 380)	**(135 577)**
TOTAL LIABILITIES		**(146 380)**	**(135 577)**
NET ASSETS		**141 520**	**150 778**
Contribution from Members	*2.6*	*798 276*	*660 819*
Accumulated deficit		*(510 041)*	*(371 727)*
Economic result of the year		*(146 714)*	*(138 314)*
NET ASSETS		**141 520**	**150 778**

STATEMENT OF FINANCIAL PERFORMANCE

EUR '000

	Note	2021	2020
REVENUE			
Revenue from non-exchange transactions			
Recovery of expenses	*3.1*	*356*	*566*
		356	**566**
Revenue from exchange transactions			
Other	*3.2*	*124*	*38*
		124	**38**
Total revenue		**480**	**603**
EXPENSES			
Operational costs	*3.3*	*(142 764)*	*(134 459)*
Staff costs	*3.4*	*(2 258)*	*(2 204)*
Finance costs		*–*	*(1)*
Other expenses	*3.5*	*(2 171)*	*(2 254)*
Total expenses		**(147 194)**	**(138 917)**
ECONOMIC RESULT OF THE YEAR		**(146 714)**	**(138 314)**

CASHFLOW STATEMENT[4]

EUR '000

	2021	2020
Economic result of the year	*(146 714)*	*(138 314)*
Operating activities		
Depreciation and amortization	*21*	*17*
(Increase)/decrease in pre-financing	*926*	*(20 798)*
(Increase)/decrease in exchange receivables and non-exchange recoverables	*(2 475)*	*(25 583)*
Increase/(decrease) in payables	*27 085*	*(9 720)*
Increase/(decrease) in accrued charges	*(16 282)*	*(21 902)*
Increase/(decrease) in cash contributions	*127 145*	*191 179*
Increase/(decrease) in in-kind contributions	*10 312*	*25 151*
Investing activities		
(Increase)/decrease in intangible assets and property, plant and equipment	*(18)*	*(31)*
NET CASHFLOW	**–**	**–**
Net increase/(decrease) in cash and cash equivalents	–	–
Cash and cash equivalents at the beginning of the year	–	–
Cash and cash equivalents at year-end	–	–

[4] Following the appointment of the Accounting Officer of the Commission as the Accounting Officer of CBE JU, the treasury of CBE JU was integrated into the Commission's treasury system. Therefore, CBE JU does not have any bank accounts of its own. All payments and receipts are processed via the Commission's treasury system and registered on intercompany accounts which are presented under the heading exchange receivables.

STATEMENT OF CHANGES IN NET ASSETS

EUR '000

	Contribution from Members	Accumulated Surplus/ (Deficit)	Economic result of the year	Net Assets
BALANCE AS AT 31.12.2019	**444 489**	**(246 795)**	**(124 932)**	**72 762**
Allocation 2019 economic result	*–*	*(124 932)*	*124 932*	*–*
Cash contribution	*191 179*	*–*	*–*	*191 179*
Contribution in-kind	*25 151*	*–*	*–*	*25 151*
Economic result of the year	*–*	*–*	*(138 314)*	*(138 314)*
BALANCE AS AT 31.12.2020	**660 819**	**(371 727)**	**(138 314)**	**150 778**
Allocation 2020 economic result	*–*	*(138 314)*	*138 314*	*–*
Cash contribution	*127 145*	*–*	*–*	*127 145*
Contribution in-kind	*10 312*	*–*	*–*	*10 312*
Economic result of the year	*–*	*–*	*(146 714)*	*(146 714)*
BALANCE AS AT 31.12.2021	**798 276**	**(510 041)**	**(146 714)**	**141 520**

NOTES TO THE FINANCIAL STATEMENTS

1. SIGNIFICANT ACCOUNTING POLICIES

1.1. ACCOUNTING PRINCIPLES

The objective of financial statements is to provide information about the financial position, performance and cashflows of an entity that is useful to a wide range of stakeholders.

The overall considerations (or accounting principles) to be followed when preparing the financial statements are laid down in EU Accounting Rule 1 'Financial Statements' and are the same as those described in IPSAS 1: fair presentation, accrual basis, going concern, consistency of presentation, materiality, aggregation, offsetting and comparative information. The qualitative characteristics of financial reporting are relevance, faithful representation (reliability), understandability, timeliness, comparability and verifiability.

1.2. BASIS OF PREPARATION

1.2.1. Reporting period

Financial statements are presented annually. The accounting year begins on 1 January and ends on 31 December.

1.2.2. Currency and basis for conversion

The annual accounts are presented in thousands of euros, the euro being the EU's functional currency. Foreign currency transactions are translated into euros using the exchange rates prevailing at the dates of the transactions. Foreign exchange gains and losses resulting from the settlement of foreign currency transactions and from the re-translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies are recognised in the statement of financial performance. Different conversion methods apply to property, plant and equipment and intangible assets, which retain their value in euros at the date when they were purchased.

Year-end balances of monetary assets and liabilities denominated in foreign currencies are translated into euros on the basis of the European Central Bank (ECB) exchange rates applying on 31 December.

Euro exchange rates

Currency	31.12.2021	31.12.2020	Currency	31.12.2021	31.12.2020
BGN	**1.9558**	*1.9558*	**PLN**	**4.5969**	4.5597
CZK	**26.8580**	26.2420	**RON**	**4.9490**	4.8683
DKK	**7.4364**	7.4409	**SEK**	**10.2503**	10.0343
GBP	**0.84028**	0.8990	**CHF**	**1.0331**	1.0802
HRK	**7.5156**	7.5519	**JPY**	**130.3800**	126.4900
HUF	**369.1900**	363.8900	**USD**	**1.1326**	1.2271

1.2.3. Use of estimates

In accordance with IPSAS and generally accepted accounting principles, the financial statements necessarily include amounts based on estimates and assumptions by management based on the most reliable information available. Significant estimates include, but are not limited to: amounts for employee benefit liabilities, financial risk of accounts receivable and the amounts disclosed in the notes concerning financial instruments, impairment allowance for financial assets at amortised cost and for financial guarantee contract liabilities, accrued revenue and charges, provisions, degree of impairment of

intangible assets and property, plant and equipment, net realisable value of inventories, contingent assets and liabilities. Actual results could differ from those estimates.

Reasonable estimates are an essential part of the preparation of financial statements and do not undermine their reliability. An estimate may need revision if changes occur in the circumstances on which the estimate was based or as a result of new information or more experience. By its nature, the revision of an estimate does not relate to prior periods and is not the correction of an error. The effect of a change in accounting estimate shall be recognised in the surplus or deficit in the periods in which it becomes known.

1.2.4. Application of new and revised European Union Accounting Rules (EAR)

Revised EAR which is effective for annual periods beginning on or after 1 January 2021

In 2020, the Accounting Officer adopted the revised EAR 11 'Financial Instruments', which is mandatorily effective as of 1 January 2021. The revised EAR 11 is based on the new IPSAS 41 'Financial Instruments', the amended IPSAS 28 'Financial Instruments: Presentation' and the amended IPSAS 30 'Financial Instruments: Disclosures' which were issued in August 2018. It establishes the financial reporting principles for financial assets and financial liabilities. In accordance with the transition provisions of the revised EAR 11, the entity accounts for any changes from the initial application, on 1 January 2021. The revised EAR 11 does not require the restatement of prior periods.

Changes from the application of the revised EAR 11

The only financial instruments of the entity, are the receivables from exchange transactions. In accordance with the revised EAR 11 requirements, the entity has classified these receivables as 'financial assets at amortised cost' ('loans and receivables' in prior periods). The entity has applied the impairment requirements of the revised EAR 11 to the receivables and has recognised the required adjustment of the loss allowance in the accumulated surplus or deficit on 1 January 2021.

1.3. BALANCE SHEET

1.3.1. Property, plant and equipment

All property, plant and equipment are stated at historical cost less accumulated depreciation and impairment losses. Cost includes expenditure that is directly attributable to the acquisition, construction or transfer of the asset. Subsequent costs are included in the asset's carrying amount or recognised as a separate asset, as appropriate, only when it is probable that future economic benefits or service potential associated with the item will flow to the entity and its cost can be measured reliably. Repairs and maintenance costs are charged to the statement of financial performance during the financial period in which they are incurred. Land is not depreciated, as it is deemed to have an indefinite useful life. Assets under construction are not depreciated as these assets are not yet available for use. Depreciation on other assets is calculated using the straight-line method to allocate their cost less their residual values over their estimated useful lives, as follows:

Type of asset	Straight line depreciation rate
Buildings	*4 % to 10 %*
Plant and equipment	*10 % to 25 %*
Furniture and vehicles	*10 % to 25 %*
Computer hardware	*25 % to 33 %*
Other	*10 % to 33 %*

Gains or losses on disposals are determined by comparing proceeds less selling expenses with the carrying amount of the disposed asset and are included in the statement of financial performance.

Leases

A lease is an agreement whereby the lessor conveys to the lessee, in return for a payment or series of payments, the right to use an asset for an agreed period of time. Leases are classified as either finance leases or operating leases.

Finance leases are leases where substantially all the risks and rewards incidental to ownership are transferred to the lessee.

An operating lease is a lease other than a finance lease, i.e. a lease where the lessor retains substantially all the risks and rewards incidental to ownership of an asset. When entering an operating lease as a lessee, the operating lease payments are recognised as an expense in the statement of financial performance on a straight-line basis over the lease term with neither an asset nor a liability recognised in the balance sheet.

1.3.2. Impairment of non-financial assets

Assets that have an indefinite useful life are not subject to amortisation/depreciation and are tested annually for impairment. Assets that are subject to amortisation/depreciation are tested for impairment whenever there is an indication at the reporting date that an asset may be impaired. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable (service) amount. The recoverable (service) amount is the higher of an asset's fair value less costs to sell and its value in use.

Intangible assets and property, plant and equipment residual values and useful lives are reviewed, and adjusted if appropriate, at least once per year. If the reasons for impairments recognised in previous years no longer apply, the impairment losses are reversed accordingly.

1.3.3. Financial assets

The classification of the financial instruments is determined at initial recognition. Based on the management model and the asset contractual cash-flow characteristics the financial assets can be classified in three categories: Financial assets at amortised cost ('AC'), financial assets at fair value through net assets/equity ('FVNA') or financial assets at fair value through surplus or deficit ('FVSD'). Based on this classification, the entity has only 'financial assets at amortised cost', which are exchange receivables.

Financial assets at amortised cost are non-derivative financial assets that meet two conditions: 1) The entity holds them in order to collect the contractual cash flows. 2) On specified days, there are contractual cash flows that are solely payments of the principal and interest on the outstanding principal.

Financial assets at amortised cost are included in current assets, except for those with maturity of more than 12 months from the balance sheet reporting date.

Initial recognition and measurement

Financial assets at amortised cost are initially recognised at their fair value plus the transaction costs.

Subsequent measurement

Financial assets at amortised cost are carried at amortised cost, which is the amount initially recognised minus the principal repayments, plus or minus the cumulative amortisation of the interests using the effective interest method. In addition, the entity recognises a loss allowance for expected credit losses over the lifetime of the financial assets. At each reporting date, the annual movement in the loss allowance adjusts the carrying amount of the financial asset. In the statement of financial performance, the entity recognises an impairment gain or loss for the adjustment of the loss allowance.

Derecognition

Financial assets at amortised cost are derecognised either when the rights to receive cash flows from the investments have expired or are waived, or when the entity has transferred substantially all risks and rewards of ownership to another party.

1.3.4. Pre-financing amounts

Pre-financing is a payment intended to provide the beneficiary with a cash advance, i.e. a float. It may be split into a number of payments over a period defined in the particular contract, decision, agreement or basic legal act. The float or advance is either used for the purpose for which it was provided during the period defined in the agreement or it is repaid. If the beneficiary does not incur eligible expenditure, he

has the obligation to return the pre-financing advance to the entity. Thus, as the entity retains control over the pre-financing and is entitled to a refund for the ineligible part, the amount is recognised as an asset.

Pre-financing is initially recognised on the balance sheet when cash is transferred to the recipient. It is measured at the amount of the consideration given. In subsequent periods pre-financing is measured at the amount initially recognised on the balance sheet less eligible expenses (including estimated amounts where necessary) incurred during the period.

1.3.5. Receivables and recoverables

The EU accounting rules require separate presentation of exchange and non-exchange transactions. To distinguish between the two categories, the term 'receivable' is reserved for exchange transactions, whereas for non-exchange transactions, i.e. when the EU receives value from another entity without directly giving approximately equal value in exchange, the term 'recoverables' is used (e.g. recoverables from Member States related to own resources).

Receivables from exchange transactions meet the definition of financial instruments. The entity classified them as financial assets at amortised cost and measured them accordingly.

Recoverables from non-exchange transactions are carried at fair value as at the date of acquisition less write-down for impairment. A write-down for impairment is established when there is objective evidence that the entity will not be able to collect all amounts due according to the original terms of the recoverables. The amount of the write-down is the difference between the asset's carrying amount and the recoverable amount. The amount of the write-down is recognised in the statement of financial performance.

1.3.6. Payables

Included under accounts payable are both amounts related to exchange transactions such as the purchase of goods and services, and to non-exchange transactions e.g. to cost claims from beneficiaries, grants or other EU funding, or pre-financing received (see note **1.4.1**).

Where grants or other funding are provided to the beneficiaries, the cost claims are recorded as payables for the requested amount, at the moment when the cost claim is received. Upon verification and acceptance of the eligible costs, the payables are valued at the accepted and eligible amount.

Payables arising from the purchase of goods and services are recognised at invoice reception for the original amount. The corresponding expenses are entered in the accounts when the supplies or services are delivered and accepted by the entity.

1.3.7. Accrued and deferred revenue and charges

Transactions and events are recognised in the financial statements in the period to which they relate. At year-end, if an invoice is not yet issued but the service has been rendered, or the supplies have been delivered by the entity or a contractual agreement exists (e.g. by reference to a contract), an accrued revenue will be recognised in the financial statements. In addition, at year-end, if an invoice is issued but the services have not yet been rendered or the goods supplied have not yet been delivered, the revenue will be deferred and recognised in the subsequent accounting period.

Expenses are also accounted for in the period to which they relate. At the end of the accounting period, accrued expenses are recognised based on an estimated amount of the transfer obligation of the period. The calculation of accrued expenses is done in accordance with detailed operational and practical guidelines issued by the Accounting Officer. These aim at ensuring that the financial statements provide a faithful representation of the economic and other phenomena they purport to represent. By analogy, if a payment has been made in advance for services or goods that have not yet been received, the expense will be deferred and recognised in the subsequent accounting period.

1.4. STATEMENT OF FINANCIAL PERFORMANCE

1.4.1. Revenue

Revenue comprises gross inflows of economic benefits or service potential received and receivable by the entity, which represents an increase in net assets, other than increases relating to contributions from owners.

Depending on the nature of the underlying transactions in the statement of financial performance, revenue is distinguished between:

(i) Revenue from non-exchange transactions

Revenue from non-exchange transactions are taxes and transfers, because the transferor provides resources to the recipient entity, without the recipient entity providing approximately equal value directly in exchange. Transfers are inflows of future economic benefits or service potential from non-exchange transactions, other than taxes. For the EU entities, transfers mostly comprise funds received from the Commission (e.g. balancing subsidy to the traditional agencies, operating subsidy for the delegation agreements).

The entity shall recognise an asset in respect of transfers when the entity controls the resources as a result of a past event (the transfer) and expects to receive future economic benefits or service potential from those resources, and when the fair value can be reliably measured. An inflow of resources from a non-exchange transaction recognised as an asset (i.e. cash) is also recognised as revenue, except to the extent that the entity has a present obligation in respect of that transfer (condition), which needs to be satisfied before the revenue can be recognised. Until the condition is met the revenue is deferred and recognised as a liability.

(ii) Revenue from exchange transactions

Revenue from the sale of goods and services is recognised when the significant risk and rewards of ownership of the goods are transferred to the purchaser. Revenue associated with a transaction involving the provision of services is recognised by reference to the stage of completion of the transaction at the reporting date.

1.4.2. Expenses

Expenses are decreases in economic benefits or service potential during the reporting period in the form of outflows or consumption of assets or the incurring of liabilities that result in decreases in net assets. They include both the expenses from exchange transactions and expenses from non-exchange transactions.

Expenses from exchange transactions arising from the purchase of goods and services are recognised when the supplies are delivered and accepted by the entity. They are valued at the original invoice amount. Furthermore, at the balance sheet date expenses related to the service delivered during the period for which an invoice has not yet been received or accepted are recognised in the statement of financial performance.

Expenses from non-exchange transactions relate to transfers to beneficiaries and can be of three types: entitlements, transfers under agreement and discretionary grants, contributions and donations. Transfers are recognised as expenses in the period during which the events giving rise to the transfer occurred, as long as the nature of the transfer is allowed by regulation or an agreement has been signed authorising the transfer; any eligibility criteria have been met by the beneficiary; and a reasonable estimate of the amount can be made.

When a request for payment or cost claim is received and meets the recognition criteria, it is recognised as an expense for the eligible amount. At year-end, incurred eligible expenses due to the beneficiaries but not yet reported are estimated and recorded as accrued expense.

1.5. CONTINGENT ASSETS AND LIABILITIES

1.5.1. Contingent assets

A contingent asset is a possible asset that arises from past events and of which the existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity. A contingent asset is disclosed when an inflow of economic benefits or service potential is probable.

1.5.2. Contingent liabilities

A contingent liability is either a possible obligation of which the existence will be confirmed only by the occurrence or non-occurrence of one or more uncertain future events not wholly within the control of the entity; or a present obligation where it is not probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation.

A contingent liability also arises in the rare circumstances where a present obligation exists but cannot be measured with sufficient reliability.

Contingent liabilities are not recognised in the accounts. They are disclosed unless the possibility of an outflow of resources embodying economic benefits or service potential is remote.

1.6. CONTRIBUTIONS FROM MEMBERS

The contributions from the Members of the Joint Undertakings (JU) form the funding of the JU and are treated as contributions from owners. An owner in this context does not mean an owner in the sense of owning shares of the JU (no shares are issued) but rather in the sense of political interest and governance of the JU by exercising the voting rights linked to these contributions.

1.6.1. Financial contributions

Financial contributions are contributions of Members made in cash in order to provide funding of the operational or administrative needs of the JU. These financial contributions are recognised in net assets in the period in which the enforceable right to receive the payment was established.

1.6.2. In-kind contributions

Members other than the EU (i.e. 'Private Members') can also contribute resources other than cash, e.g. laboratory equipment, specialised staff, etc. These in-kind contributions consist of the costs incurred by Private Members in implementing indirect actions.

The Regulation distinguishes between two types of in-kind contributions: (1) In-kind contributions to operational activities (IKOP) and (2) in-kind contributions to additional activities (IKAA).

The IKOP represents in-kind contributions made to the JU linked to its work plan and co-financed by the EU. The IKOP are recognised in net assets of the JU in the period when the conditions for Members' contributions stipulated by the Regulation are met.

The expenses related to the IKOP incurred in the financial year are recognised in the statement of financial performance. At year-end, incurred IKOP not yet reported are estimated and recorded as other liabilities ('Contributions of Members to be validated').

The IKAA relate to contributions linked to implementing additional activities outside the work plan of the JU that contribute to the objectives of the JU. Because the outflow of resources related to those activities is outside of the control of the JU, these contributions are not recognised in the financial statements of the JU. However to provide a complete picture of the operational activities related to the JU they are still disclosed as additional information in the notes.

2. NOTES TO THE BALANCE SHEET

ASSETS

2.1. PROPERTY, PLANT AND EQUIPMENT

Property, plant and equipment are tangible assets that are held for use in the production or supply of goods or services, for rental to others, or for administrative purposes, and are expected to be used during more than one reporting period.

EUR '000

	Furniture and vehicles	Computer hardware	Other	TOTAL
Gross carrying amount at 31.12.2020	*34*	*76*	*26*	*137*
Additions	*–*	*3*	*15*	*18*
Gross carrying amount at 31.12.2021	**34**	**79**	**41**	**155**
Accumulated depreciation at 31.12.2020	*(16)*	*(47)*	*(11)*	*(74)*
Depreciation charge for the year	*(3)*	*(11)*	*(7)*	*(21)*
Accumulated depreciation at 31.12.2021	**(19)**	**(58)**	**(18)**	**(95)**
NET CARRYING AMOUNT AT 31.12.2021	**15**	**22**	**23**	**60**
NET CARRYING AMOUNT AT 31.12.2020	*18*	*30*	*15*	*63*

2.2. PRE-FINANCING

Pre-financing is a payment intended to provide the beneficiary with a cash advance, i.e. a float. It may be split into a number of payments over a period defined in the particular underlying contract, decision, agreement or basic legal act but is usually paid in one go in advance of the project start date.

EUR '000

	31.12.2021	31.12.2020
Non-current pre-financing	*99 772*	*109 558*
Current pre-financing	*106 979*	*98 120*
Total	**206 752**	**207 678**

For all pre-financing amounts open at 31 December 2021 a case-by-case assessment has been performed and all pre-financing that was considered unlikely to be cleared in the course of 2022 was classified as non-current pre-financing. The outstanding pre-financing, presented under this heading is net of estimated (cut-off) expenses of kEUR 88 600 for ongoing projects without validated cost claims as at 31 December 2021. The remaining portion of the cut-off expenses is recorded in accrued charges (see note **2.5**).

The overall high amount of the open pre-financing can be explained by the fact that, according to the Horizon 2020 rules, the incurred project costs (both actual and estimated) only start to clear against pre-financing when the total amounts paid to the beneficiary reach 90% of the grant agreement amount. In addition, only the amount exceeding this threshold is cleared. Consequently, in the first years of the project's life there is usually significant open pre-financing that will only be cleared in later years.

The overall decrease in pre-financing is due to a combined effect. The amounts paid to the beneficiaries of the grant agreements increased in 2021, as pre-financing of 23 grants stemming from the H2020 call and starting in 2021 was paid in full. The increase in payments has been offset by an increase of clearing of pre-financing due to higher number of interim and final cost claims validated during 2021, and cost claims received after year end, relating to 2021, which were included in the adjustment for the final accounts.

2.3. EXCHANGE RECEIVABLES & NON-EXCHANGE RECOVERABLES

The revenue from exchange transactions and events relates to following types of transactions: rendering of services; sale of goods; and the use by others of entity assets yielding interest, royalties and dividends.

The amounts included under this heading are fully composed of current receivables from exchange transactions and can be split as follows:

EUR '000

	31.12.2021	31.12.2020
Recoverables from non-exchange transactions		
Accrued income Non exchange	*294*	*-*
	294	**-**
Recoverables from exchange transactions		
Central treasury liaison accounts	*80 761*	*78 448*
Customers	*–*	*94*
Other	*35*	*71*
	80 796	**78 613**
Total	**81 089**	**78 614**

The Central treasury liaison accounts with the Commission represent virtual bank accounts of CBE JU. Following the appointment of the Accounting Officer of the Commission as the Accounting Officer of CBE JU, the treasury of BBU JU, now CBE JU, was integrated into the Commission's treasury system. Because of this CBE JU does not have any bank accounts of its own. All payments and receipts are processed via the Commission's treasury and registered on those intercompany accounts. The ending balance of this heading is thus the result of the total incoming and outgoing payments and represents the funds available for the Joint Undertaking.

The increase under this heading and the overall large year-end cash balance is a consequence of the delays in reimbursement and/or lower reimbursement levels for several large projects, due to suspensions/extensions of running projects, mostly due to the COVID-19 pandemic. The balance will be redressed in the coming years, as larger cost claims arrive.

LIABILITIES

2.4. PAYABLES AND OTHER LIABILITIES

Payables are liabilities to pay for goods or services that have been received or supplied and - unlike accrued charges - have already been invoiced or formally agreed with the supplier. Payables can relate to both exchange transactions (such as the purchase of goods and services) and non-exchange transactions (e.g. cost claims from beneficiaries of grants, pre-financing or other EU funding).

EUR '000

	31.12.2021	31.12.2020
Contribution in kind to be validated	*79 877*	*53 676*
Public Bodies	*–*	*8 546*
Vendors	*9 604*	*174*
Other	*6*	*6*
Total	**89 487**	**62 401**

Included under the heading Contributions in kind to be validated are the in-kind contributions from the private Members relating to projects for which the amount of the in-kind contribution generated by individual beneficiaries, was estimated on a case-by-case basis using the best available information on the projects at 31 December 2021. The estimated cash contribution to the operational cost of those projects is included under accrued charges (see note **2.5**).

The increase in the Contributions in kind to be validated is driven by the changes in the methodology of estimation of the IKOP . Instead of basing the estimates on annual declarations of IKOP from the private Members, the new method combines the real amount of IKOP from the project cost claims validated during the year (but which has to be accrued, as not automatically recorded in the accounting system) with a pro rata estimate based on total IKOP allocated to the project, calculated for the remaining period after the cost claim end date.

In addition, even though no new calls have been launched, there were projects from the 2020 Calls for which the IKOP declarations were not certified and validated and thus the amounts related to 2021 had to be estimated during the closure (cut-off) exercise.

The amount of vendor payables relates to invoices and cost claims received but not yet validated and paid at the year end.

2.5. ACCRUED CHARGES

Accruals are liabilities to pay for goods or services that have been received or supplied but - unlike payables - have not yet been invoiced or formally agreed with the supplier. They include amounts due to employees (e.g. accruals for untaken holidays). The calculation of accruals is based on the open amount of budgetary commitments at year-end. The portion of the estimated accrued charges which, if actual costs, would result in a clearing of the open paid pre-financing, has been recorded as a reduction of the pre-financing amounts.

EUR '000

	31.12.2021	31.12.2020
Accrued charges	*56 894*	*73 176*

The heading comprises estimated operational costs of kEUR 56 197, accrued administrative expenses of kEUR 640 and accrued staff expense for untaken leave of kEUR 57.

Accrued operating charges relate to on-going projects without a validated cost statement where the 2021 expense was estimated on a case-by-case basis using the best available information about the projects at 31 December 2021. The portion of the estimated accrued charges which, if actual costs, would result in a clearing of the open paid pre-financing, has been recorded as a reduction of the pre-financing amounts in line with the H2020 rules (see note **2.2**). Following the validation of a large number of final and interim cost claims, the estimated expenses were replaced by actual costs hence the decrease in the accrued charges.

NET ASSETS

2.6. CONTRIBUTIONS FROM MEMBERS

The JU is funded by contributions from its members. Given their funding nature these contributions, which comprise both cash contributions and contributions in kind, are recognised in the JU's net assets as 'Contributions from owners' . The term 'owner' does not imply ownership of any shares of the JU (in fact no shares are issued), but reflects the specific governance of the JU where voting rights are allocated in accordance with the contributions made.

EUR '000

Programme	2021			2020		
	Cash	In kind	Total	Cash	In kind	Total
H2020	*746 037*	*52 239*	*798 276*	*618 892*	*41 927*	*660 819*

With regard to the Horizon 2020 programme, Council Regulation (EC) No 2014/560 (its current legal mandate stems from the amending Regulation (EU) 2018/121 of 23 January 2018) distinguishes between Members (European Commission, Industry Grouping) and non-members of the JU. In addition, only the in-kind contributions from the Members that are both certified by external auditors and validated by the Executive Director of CBE JU are considered in-kind contributions. Estimated in-kind contributions, i.e. contributions for which no certifications have been received and/or this certification has not been validated by the Executive Director are reported under other liabilities (see note **2.4**).

EUR '000

Member	EU	Industry Grouping			Total	
	Cash	Cash	In kind	Total	Cash	In kind
Running costs contributions at 31.12.2020	*11 979*	*12 465*	*-*	*12 465*	*24 444*	*-*
Adjustments of prior years' contributions	*214*	*(214)*	*-*	*(214)*	*-*	*-*
Current year contributions	*2 307*	*2 308*	*-*	*2 308*	*4 615*	*-*
Running costs contributions at 31.12.2021	**14 500**	**14 559**	**-**	**14 559**	**29 059**	**-**
Operating costs contributions at 31.12.2020	*591 198*	*3 250*	*41 927*	*45 177*	*594 448*	*41 927*
Current year contributions	*122 530*	*-*	*10 312*	*10 312*	*122 530*	*10 312*
Operating costs contributions at 31.12.2021	**713 728**	**3 250**	**52 239**	**55 489**	**716 978**	**52 239**
TOTAL contributions at 31.12.2020	*603 177*	*15 715*	*41 927*	*57 642*	*618 892*	*41 927*
TOTAL contributions at 31.12.2021	**728 228**	**17 809**	**52 239**	**70 048**	**746 037**	**52 239**
% of total contributions (by type)	*97.61%*		*2.39%*		*100.00%*	*100.00%*
Total contribution in %	*91.23%*		*8.77%*		*100.00%*	
Voting rights %	*0.00%*		*0.00%*		*100.00%*	

3. NOTES TO THE STATEMENT OF FINANCIAL PERFORMANCE

REVENUE FROM NON-EXCHANGE TRANSACTIONS

Revenue from non-exchange transactions relates to transactions where the transferor provides resources to the recipient entity without the recipient entity providing approximately equal value directly in exchange. The heading mainly includes amounts received from the Commission during the year and recoveries of operational expenses.

3.1. RECOVERY OF EXPENSES

The revenue resulting from recovery of expenses refers to operational expenses recovered from beneficiaries during the year and adjustments coming from audits that will be collected in the following year.

EUR '000

	2021	2020
Recovery of expenses	*356*	*566*

REVENUE FROM EXCHANGE TRANSACTIONS

The revenue from exchange transactions and events relates to following types of transactions: rendering of services; sale of goods; and the use by others of entity assets yielding interest, royalties and dividends.

3.2. OTHER EXCHANGE REVENUE

EUR '000

	2021	2020
Recovery of administrative expenses	*121*	*38*
Miscellaneous income exchange	*3*	*0*
Total	**124**	**38**

EXPENSES

3.3. OPERATIONAL COSTS

EUR '000

	2021	2020
Operational costs: validated in-kind contributions	*10 312*	*25 151*
Operational costs: estimated in-kind contributions	*26 200*	*1 679*
Total operational costs from in-kind contributions	**36 512**	**26 830**
Operational costs: validated EU contributions	*96 636*	*115 868*
Operational costs: estimated EU contributions	*9 616*	*(8 239)*
Total operational costs: from EU contributions	**106 252**	**107 629**
Total	**142 764**	**134 459**

Depending on the availability of information at the time of the preparation of the annual accounts, the estimates are based on reports of services or work performed (e.g. Report of the Member of the Joint

Undertaking other than the EU on the in-kind contributions as per the meaning of Article 4(3) and 4(4) of Regulation (EU) No 2014/557) or actual costs incurred to date followed by pro rata temporise estimates based on total project grant amounts (remaining balance).

The increase in the in the operational costs from in-kind contributions is driven by an increase of estimated in-kind contributions due to the changes in the methodology of estimation of the IKOP for which no project cost claims covering the whole year were validated at the year end. Instead of basing the estimates on annual declarations of IKOP from the private Members, the new method combines the real amount of IKOP from the project cost claims validated during the year with a pro-rata estimate based on total IKOP allocated to the project, calculated for the remaining period after the cost claim end date. In 2021 kEUR 10 312 of IKOP contributions were validated and transferred to net assets.

3.4. STAFF COSTS

This heading includes the expenses for salaries, allowances and other employment-related benefits. Based on the service level agreement between the JU and the Commission, the calculations of staff-related costs is carried out by the Commission's Office for Administration and Payment of Individual Entitlements (also known as the Paymaster's Office - PMO). The pensions of the JU staff members are covered by the Pension Scheme of European Officials. This pension scheme is a defined benefit plan, i.e. the amount of benefit an employee will receive on retirement depends on several factors, the most important of which is years of service. Both the JU staff and the EU budget contribute to the pension scheme, with the contribution percentage being revised annually in line with the changes in the Staff Regulation governing the scheme. The cost to the EU Budget is not reflected in the JU accounts. Similarly, no provision related to the future pension payments is recognised in the annual accounts of the JU, as the obligation falls to the Commission. Consequently, both the annual cost to the EU budget, and the future benefits payable to the JU staff, are accounted for in the Commission's annual accounts as part of its provision for pensions and other post-employment benefits. The pension costs included in the Commission's Statement of Financial Performance represent current service cost (rights accrued during the year due to service) and interest cost (unwinding of the liability discounting) which have arisen following the year-end actuarial valuation of the employee benefits liabilities.

EUR '000

	2021	2020
Staff costs	*2 258*	*2 204*

3.5. OTHER EXPENSES

Included under this heading are expenses of administrative nature such as external non IT services, operating leasing expenses, communications and publications, training costs etc.

EUR '000

	2021	2020
External IT services	*743*	*264*
External non IT services	*603*	*384*
Operating lease expenses	*298*	*310*
Experts' fees	*269*	*1 097*
Communications and publications	*185*	*80*
Training costs	*53*	*32*
Property, plant and equipment related expenses	*21*	*17*
Office supplies and maintenance	*5*	*24*
Missions	*1*	*2*
Other	*(7)*	*45*
Total	**2 171**	**2 254**

The decrease in expenses related to experts' fees is mainly due to the fact that no call was launched in 2021 requiring evaluations by expert-evaluators of the REA agency.

The increase of other administrative expenses, such as External IT services can be directly linked to the new ways of working imposed by COVID 19 restrictions.

Operating lease expenses concern the CBE JU office in the 'White Atrium' building. Amounts committed to be paid during the remaining term of this lease contract include rent and related charges and are as follows:

EUR '000

	Future amounts to be paid			
	< 1 year	1- 5 years	> 5 years	Total
Buildings	*295*	*319*	*658*	*1 272*

4. OTHER SIGNIFICANT DISCLOSURES

4.1. CONTINGENT ASSETS

EUR '000

	31.12.2021	31.12.2020
Other	*179*	-

The increase of the heading contingent assets of kEUR 179 is due to negative ex-post audit corrections of projects. Nevertheless, as the audit contradictory procedure is not yet finalised, CBE JU will only recognise the amounts when receiving a signed agreement from the beneficiaries. Before the signing of the agreement, they are disclosed off-balance, i.e. shown as a contingent asset.

4.2. CONTINGENT LIABILITIES

EUR '000

	31.12.2021	31.12.2020
Other	*241*	-

The increase of the heading contingent liability of kEUR 241 is due to positive ex-post audit corrections of projects. As for contingent assets they are disclosed off-balance, i.e. shown as a contingent liabilities.

4.3. OUTSTANDING COMMITMENTS NOT YET EXPENSED

The outstanding commitments not yet expensed comprise the budgetary RAL ('Reste à Liquider') less related amounts that have been included as expenses in the current year's statement of financial performance. The RAL represents the open budgetary commitments for which payments and/or de-commitments have not yet been made. This is the normal consequence of the existence of multi-annual programmes.

EUR '000

	31.12.2021	31.12.2020
Outstanding commitments not yet expensed	*94 031*	*199 536*

The high decrease between the years is driven by the high decrease in the budgetary RAL which is seen the budget implementation reports (see chapter **6**).

4.4. RELATED PARTIES

The related parties of the JU are the participants of the JU and the key management personnel of these entities. As transactions between the JU and these parties take place as part of the normal operations of the JU and on terms and conditions that are normal for such transactions, no specific disclosures are required.

4.5. KEY MANAGEMENT ENTITLEMENTS

The highest ranking civil servant of CBE JU is the Executive Director, who executes the role of Authorising Officer.

	31.12.2021	31.12.2020
Executive Director	*AD 14*	*AD 14*

The Executive Director is remunerated in accordance with the Staff Regulations of the European Union that is published on the Europa website and is the official document describing the rights and the obligations of all officials of the EU.

4.6. OTHER EVENTS

Establishment of CBE JU

Council Regulation (EU) 2021/2085 of 19 November 2021 ("Single Basic Act" or "SBA"), which became effective on 30 November 2021, established the new Joint Undertakings under Horizon Europe, including the reporting entity of these financial statements. According to Article 174(3) SBA, the reporting entity is the legal and universal successor of the previous Joint Undertaking in respect of all contracts, including employment contracts and grant agreements, liabilities and acquired property. As a consequence, the 2021 amounts presented in these financial statements are based on both transactions and events that occurred in the period 01 January to 30 November under the previous Joint Undertaking and transactions and events that occurred in the period 01 December to 31 December 2021 under the reporting entity.

Pension contribution of private members

Based on analysis undertaken in 2021 it has been determined that the entity, in line with Article 83a (2) of the Staff Regulations, should pay into the general budget of the European Union the part of the employers' contributions which corresponds to the proportion between the entity's revenues without the subsidy from the general budget of the European Union and its total revenues. The applicable proportion should be calculated based on the specific percentage of the administrative costs funded by the Private members. The Commission is working on guidance for calculating and collection the employer contributions which has not been finalised and approved at the time of signature of these annual accounts. Due to the administrative limitations of applying Art. 83a (2) of the Staff Regulations retroactively, and in particular the change in the composition of Private members as compared to the entity's legal predecessor (see Council Regulation (EU) 2021/2085), the new guidance will be applied as of the financial year 2022 only.

4.7. EVENTS AFTER REPORTING DATE

In accordance with EU accounting rule 19, Events after Reporting Date, the war in Ukraine that began in February 2022 is a non-adjusting event, thus not requiring any adjustments to the figures reported in these financial statements at 31 December 2021. For subsequent reporting periods, the war may affect the recognition and measurement of some assets and liabilities on the balance sheet and also of some revenue and expenses recognised in the statement of financial performance. Based on the facts and circumstances at the time of preparation of these financial statements, in particular the evolving situation, the financial effect of the war in Ukraine on the CBE JU accounts cannot be reliably estimated.

5. FINANCIAL RISK MANAGEMENT

5.1. TYPES OF RISK

Market risk is the risk that the fair value or future cash flows of a financial instrument will fluctuate, because of variations in market prices. Market risk embodies not only the potential for loss, but also the potential for gain. It comprises currency risk, interest rate risk and other price risk (the entity has no significant interest rate risk and other price risk).

(1) Currency risk is the risk that the entity operations will be affected by changes in exchange rates. This risk arises from the change in the price of one currency against another.

(2) Interest rate risk is the possibility of a reduction in the value of a security, especially a bond, resulting from an increase in interest rates. In general, higher interest rates will lead to lower prices of fixed rate bonds, and vice versa. The entity does not have any securities thus it is not exposed to the interest rate risk.

Credit risk is the risk of loss due to a debtor's non-payment or other failure to meet a contractual obligation. The default events include a delay in repayments, and bankruptcy.

Liquidity risk is the risk that an EU entity will encounter difficulty in meeting obligations associated with financial liabilities that are settled by delivering cash or another financial asset.

5.2. CURRENCY RISKS

At the end of the year, the financial assets are composed of exchange receivables. The financial liabilities are composed of accounts payable. Their ending balances are mainly quoted in EUR, the entity is thus not exposed to currency risk.

5.3. CREDIT RISK

At the end of the year, the financial assets comprise exchange receivables that are not past due for more than 30 days. As no credit loss is expected during the life time of those receivables the entity is not exposed to any significant credit risk.

5.4. LIQUIDITY RISK

The financial liabilities are mainly composed of accounts payable. All the accounts payable have remaining contractual maturity of less than 1 year.

THE BUDGET IMPLEMENTATION REPORTS AND EXPLANATORY NOTES

It should be noted that due to the rounding of figures into thousands of euros (kEUR), some financial data in the tables below may appear not to add-up.

CONTENTS

1. BUDGETARY PRINCIPLES AND STRUCTURE

1.1. BUDGETARY PRINCIPLES

The establishment and implementation of the budget of CBE JU is governed by the following basic principles set out in the Chapter 2 of the Financial Rules of CBE JU:

Principles of unity and budget accuracy

This principle means that no revenue shall be collected and no expenditure effected unless booked to a line in the budget of CBE JU. No expenditure may be committed or authorised in excess of the appropriations authorised by the budget. An appropriation may be entered in the budget only if it is for an item of expenditure considered necessary.

Principle of annuality

The appropriations entered in the budget shall be authorised for a financial year which shall run from 1 January to 31 December. As specified in its Financial Rules, CBE JU is subject to an exception to the annuality principle, specific only to the joint undertakings (the "N+3" rule), whereby any unused appropriations may be entered in the estimate of revenue and expenditure of up to the following three financial years. These appropriations must be used first.

Principle of equilibrium

Revenue and payment appropriations shall be in balance.

Principle of unit of account

The budget shall be drawn up and implemented in euro and the accounts shall be presented in euro.

Principle of universality

Total revenue shall cover total payment appropriations and all revenue and expenditure shall be entered in full without any adjustment against each other.

Principle of specification

Appropriations shall be earmarked for specific purposes at least by title and chapter.

Principle of sound financial management

Appropriations shall be used in accordance with the principle of sound financial management, namely in accordance with the principles of economy, efficiency and effectiveness.

Principle of transparency

The budget shall be established and implemented and the accounts presented in accordance with the principle of transparency. The budget and any amending budgets shall be published on the internet site of the CBE JU within four weeks of their adoption and shall be transmitted to the Commission and the Court of Auditors.

1.2. STRUCTURE AND PRESENTATION OF THE BUDGET

Since 1 January 2015, no distinction is made between non-dissociated and dissociated appropriations. All appropriations follow the dissociated logic.

Following the provisions of the Financial rules of CBE JU, the budget accounts shall consist of a statement of revenue and a statement of expenditure. The budget is distributed in the following titles:

Title 1

Budget lines relating to staff expenditure such as salaries and allowances for personnel working with CBE JU. It also includes recruitment expenses, staff missions, expenses for the socio-medical infrastructure and representation costs.

Title 2

Budget lines relate to all infrastructure, equipment and miscellaneous administrative expenditure.

Title 3

Budget lines provide for the implementation of the activities and tasks assigned to CBE JU in accordance with its establishing Council Regulation (EC) No 560/2014.

2. RESULT OF THE IMPLEMENTATION OF THE BUDGET

EUR '000

	Title	2021	2020
Revenue		**127 365**	**191 638**
of which:			
European Commission (incl. EFTA) contribution to administrative expenditure	1	2 402	2 791
European Commission (incl. EFTA) contribution to operational expenditure	1	122 530	186 169
Bio-based Industries Consortium contribution to administrative expenditure	1	2 308	2 641
Joint Undertaking revenues	1	126	36
Expenditure		**(125 076)**	**(166 078)**
of which:			
Staff expenditure	1	(2 883)	(2 674)
Administrative expenditure	2	(1 370)	(2 550)
Operational expenditure	3	(120 822)	(160 854)
Exchange rate differences		**0**	**–**
Budget result		**2 289**	**25 560**

3. RECONCILIATION OF ECONOMIC RESULT WITH BUDGET RESULT

EUR '000

	2021	2020
ECONOMIC RESULT OF THE YEAR	**(146 714)**	**(138 314)**
Adjustment for accrual items (items not in the budgetary result but	**46 370**	**17 661**
Adjustments for accrual cut-off (net)	*46 014*	*17 833*
Depreciation, amortization and impairment of intangible and tangible assets	*22*	*17*
Uncleared balance on projects' payments	*334*	*(189)*
Adjustment for budgetary items (item included in the budgetary	**102 633**	**146 213**
Members' cash contributions collected in the year	*127 239*	*191,602*
Asset acquisitions (less unpaid amounts)	*(21)*	*(32)*
New pre-financing paid in the year and remaining open as at 31 December	*(24 583)*	*(45 363)*
Adjustment for carry-over from the previous year of appropriations available		
Other individually immaterial	*(2)*	*6*
BUDGET RESULT OF THE YEAR	**2 289**	**25 560**

4. IMPLEMENTATION OF BUDGET REVENUE

4.1. Implementation of budget revenue – Title 1

EUR '000

	Item	Income appropriations		Entitlements established			Revenue				
		Initial budget	Final budget	Current year	Carried over	Total	On entitlements of current year	On entitlements carried over	Total	%	Out-standing
		1	2	3	4	5=3+4	6	7	8=6+7	9=8/2	10=5-8
1001	European Commission (incl. EFTA) contribution to administrative expenditure	2 308	2 308	2 402	–	2 402	2 402	–	2 402	104 %	–
1002	European Commission (incl. EFTA) contribution to operational expenditure	122 530	122 530	122 530	–	122 530	122 530	–	122 530	100 %	–
1003	Bio-based Industries Consortium contribution to administrative expenditure	2 308	2 308	2 308	–	2 308	2 308	–	2 308	100 %	–
1005	Joint Undertaking revenues	0	0	126	–	126	126	–	126	-	–
Total Chapter 10		127 145	127 145	127 365	–	127 365	127 365	–	127 365	100 %	–
Total Title 1		**127 145**	**127 145**	**127 365**	**–**	**127 365**	**127 365**	**–**	**127 365**	**100 %**	**–**
GRAND TOTAL		**127 145**	**127 145**	**127 365**	**–**	**127 365**	**127 365**	**–**	**127 365**	**100 %**	**–**

5. IMPLEMENTATION OF BUDGET EXPENDITURE

5.1. Breakdown & changes in commitment appropriations

5.1.1. Breakdown & changes in commitment appropriations – Title 1

EUR '000

Item		Budget appropriations				Additional appropriations			Total appropr. available
		Initial adopted budget	Amending budgets	Transfers	Final adopted budget	Reactivated appropriations	Assigned revenue	Total	
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
1100	Staff costs	2 375	–	(34)	2 342	–	–	–	2 342
1110	Trainees	–	–	30	30	8	–	8	37
1120	External staff	331	–	14	345	9	–	9	354
Total Chapter 11		2 706	–	10	2 716	16	–	16	2 732
1200	Sundry recruitment expenses	27	–	–	27	10	–	10	38
1201	Installation, resettlement and daily subsistence allowances and removal and travel expenses	60	–	–	60	–	–	–	60
Total Chapter 12		87	–	–	87	10	–	10	98
1300	Mission expenses, duty travel expenses and other ancillary expenditure	80	–	(10)	70	–	1	1	71
Total Chapter 13		80	–	(10)	70	–	1	1	71
1400	Medical service	14	–	–	14	20	–	20	34
1401	Mobility costs and other social expenses for staff	125	–	–	125	–	3	3	128
1402	Training	82	–	–	82	4	–	4	85
1403	Supplementary aid for the disabled	29	–	–	29	–	–	–	29
Total Chapter 14		250	–	–	250	24	3	26	277
1500	Staff teambuilding and related events	10	–	–	10	–	–	–	10
Total Chapter 15		10	–	–	10	–	–	–	10
Total Title 1		**3 133**	**–**	**–**	**3 133**	**50**	**4**	**54**	**3 187**

5.1.2. Breakdown & changes in commitment appropriations – Title 2

EUR '000

Item		Budget appropriations				Additional appropriations			Total appropr. available
		Initial adopted budget	Amending budgets	Transfers	Final adopted budget	Reactivated appropriations	Assigned revenue	Total	
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
2000	Rentals	231	–	–	231	112	–	112	343
2010	Charges and works	109	–	(60)	49	–	–	–	49
Total Chapter 20		340	–	(60)	280	112	–	112	391
2100	IT equipment & software purchase/development costs	95	–	56	151	17	–	17	168
2101	Other IT costs	200	–	(56)	144	103	122	225	369
Total Chapter 21		295	–	–	295	120	122	242	537
2200	Movable property and associated office equipment purchase costs	5	–	–	5	5	–	5	10
Total Chapter 22		5	–	–	5	5	–	5	10
2300	Stationery and office supplies	15	–	(1)	14	1	–	1	15
2302	Legal expenditure	20	–	–	20	6	–	6	26
2303	Other current administrative expenditure	–	–	1	1	–	–	–	1
Total Chapter 23		35	–	0	35	7	–	7	42
2400	Telecommunications and postal charges	19	–	–	19	–	–	–	19
Total Chapter 24		19	–	–	19	–	–	–	19
2500	Expenditure on formal meetings	113	–	(40)	73	–	–	–	73
Total Chapter 25		113	–	(40)	73	–	–	–	73
2600	Events and campaigns	265	–	(252)	13	6	–	6	18
2601	Materials	50	–	–	50	4	–	4	54
2602	Communications tools	40	–	252	292	116	–	116	408
2603	Public relations	45	–	–	45	13	–	13	58
Total Chapter 26		400	–	–	400	138	–	138	538
2700	Studies, consultancy and other services	–	–	100	100	39	–	39	139
2702	Audit costs	75	–	–	75	–	–	–	75
Total Chapter 27		75	–	100	175	39	–	39	214
2900	Expert reviewers	200	–	–	200	130	–	130	330
Total Chapter 29		200	–	–	200	130	–	130	330
Total Title 2		**1 482**	**–**	**–**	**1 482**	**550**	**122**	**672**	**2 154**
GRAND TOTAL		**4 615**	**–**	**–**	**4 615**	**600**	**126**	**726**	**5 341**

5.2. Breakdown & changes in payment appropriations

5.2.1. Breakdown & changes in payment appropriations – Title 1

EUR '000

Item		Budget appropriations				Additional appropriations			Total appropr. available
		Initial adopted budget	Amending budgets	Transfers	Final adopted budget	Reactivated appropriations	Assigned revenue	Total	
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
1100	Staff costs	2 375	–	(74)	2 301	–	–	–	2 301
1110	Trainees	–	–	22	22	23	–	23	45
1120	External staff	331	–	62	393	–	–	–	393
Total Chapter 11		2 706	–	10	2 716	23	–	23	2 738
1200	Sundry recruitment expenses	27	–	–	27	10	–	10	38
1201	Installation, resettlement and daily subsistence allowances and removal and travel expenses	60	–	–	60	–	–	–	60
Total Chapter 12		87	–	–	87	10	–	10	98
1300	Mission expenses, duty travel expenses and other ancillary expenditure	80	–	(10)	70	–	1	1	71
Total Chapter 13		80	–	(10)	70	–	1	1	71
1400	Medical service	14	–	–	14	14	–	14	28
1401	Mobility costs and other social expenses for staff	125	–	–	125	–	3	3	128
1402	Training	82	–	–	82	4	–	4	85
1403	Supplementary aid for the disabled	29	–	–	29	–	–	–	29
Total Chapter 14		250	–	–	250	17	3	20	270
1500	Staff teambuilding and related events	10	–	–	10	–	–	–	10
Total Chapter 15		10	–	–	10	–	–	–	10
Total Title 1		**3 133**	**–**	**0**	**3 133**	**50**	**4**	**54**	**3 187**

5.2.2. Breakdown & changes in payment appropriations – Title 2

EUR '000

Item		Budget appropriations				Additional appropriations			Total appropr. available
		Initial budget adopted	Amending budgets	Transfers	Final adopted budget	Reactivated appropriations	Assigned revenue	Total	
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
2000	Rentals	231	–	–	231	112	–	112	343
2010	Charges and works	109	–	(60)	49	–	–	–	49
Total Chapter 20		340	–	(60)	280	112	–	112	391
2100	IT equipment & software purchase/development costs	95	–	62	157	32	33	65	222
2101	Other IT costs	200	–	(57)	144	96	89	185	329
Total Chapter 21		295	–	6	301	128	122	250	551
2200	Movable property and associated office equipment purchase costs	5	–	–	5	5	–	5	10
Total Chapter 22		5	–	–	5	5	–	5	10
2300	Stationery and office supplies	15	–	–	15	1	–	1	16
2302	Legal expenditure	20	–	–	20	6	–	6	26
2303	Other current administrative expenditure	–	–	0	0	2	–	2	2
Total Chapter 23		35	–	0	35	9	–	9	44
2400	Telecommunications and postal charges	19	–	(0)	19	–	–	–	19
Total Chapter 24		19	–	(0)	19	–	–	–	19
2500	Expenditure on formal meetings	113	–	(46)	67	–	–	–	67
Total Chapter 25		113	–	(46)	67	–	–	–	67
2600	Events and campaigns	265	–	(252)	13	19	–	19	32
2601	Materials	50	–	–	50	4	–	4	54
2602	Communications tools	40	–	252	292	92	–	92	384
2603	Public relations	45	–	–	45	13	–	13	58
Total Chapter 26		400	–	–	400	128	–	128	528
2700	Studies, consultancy and other services	–	–	100	100	39	–	39	139
2702	Audit costs	75	–	–	75	–	–	–	75
Total Chapter 27		75	–	100	175	39	–	39	214
2900	Expert reviewers	200	–	–	200	130	–	130	330
Total Chapter 29		200	–	–	200	130	–	130	330
Total Title 2		**1 482**	**–**	**–**	**1 482**	**550**	**122**	**672**	**2 154**

5.2.3. Breakdown & changes in payment appropriations – Title 3

EUR '000

Item	Budget appropriations				Additional appropriations			Total appropr. available
	Initial budget adopted	Amending budgets	Transfers	Final adopted budget	Reactivated appropriations	Assigned revenue	Total	
	1	2	3	4=1+2+3	5	6	7=5+6	
3000 Previous years' calls	122 530	–	(98 640)	23 890	45 135	–	45 135	69 025
Total Chapter 30	122 530	–	(98 640)	23 890	45 135	–	45 135	69 025
3100 Current year call	–	–	98 640	98 640	1 747	–	1 747	100 387
Total Chapter 31	–	–	98 640	98 640	1 747	–	1 747	100 387
Total Title 3	**122 530**	**–**	**–**	**122 530**	**46 882**	**–**	**46 882**	**169 412**
GRAND TOTAL	**127 145**	**–**	**–**	**127 145**	**47 482**	**126**	**47 607**	**174 753**

5.3. IMPLEMENTATION OF COMMITMENT APPROPRIATIONS

5.3.1. Implementation of commitment appropriations - Title 1

EUR '000

Item		Total approp. available	Commitments made					Appropriations carried over to 2022			Appropriations lapsing			
			from final adopt. budget	from re-activations	from assign. revenue	Total	%	Assign. revenue	By decision	Total	from final adopt. budget	from re-activa-tions	from assign. revenue	Total
		1	2	3	4	5=2+3+4	6=5/1	7	8	9=7+8	10	11	12	13=10+11+12
1100	Staff costs	2 342	2 311	–	–	2 311	99 %	–	–	–	31	–	–	31
1110	Trainees	37	26	8	–	33	90 %	–	–	–	4	–	–	4
1120	External staff	354	345	9	–	354	100 %	–	–	–	–	–	–	–
Total Chapter 11		2 732	2 681	16	–	2 698	99 %	–	–	–	34	–	–	34
1200	Sundry recruitment expenses	38	20	10	–	31	82 %	–	–	–	7	–	–	7
1201	Installation, resettlement and daily subsistence allowances and removal and travel expenses	60	–	–	–	–	–	–	–	–	60	–	–	60
Total Chapter 12		98	20	10	–	31	0	–	–	–	67	–	–	67
1300	Mission expenses, duty travel expenses and other ancillary expenditure	71	7	–	–	7	0	–	–	–	63	–	1	64
Total Chapter 13		71	7	–	–	7	10 %	–	–	–	63	–	1	64
1400	Medical service	34	7	20	–	27	77 %	–	–	–	8	–	–	8
1401	Mobility costs and other social expenses for staff	128	104	–	–	104	81 %	–	–	–	22	–	3	25
1402	Training	85	79	4	–	83	97 %	–	–	–	2	–	–	2
1403	Supplementary aid for the disabled	29	5	–	–	5	18 %	–	–	–	24	–	–	24
Total Chapter 14		277	195	24	–	218	79 %	–	–	–	56	–	3	58
1500	Staff teambuilding and related events	10	2	–	–	2	20 %	–	–	–	8	–	–	8
Total Chapter 15		10	2	–	–	2	20 %	–	–	–	8	–	–	8
Total Title 1		**3 187**	**2 906**	**50**	**–**	**2 956**	**93 %**	**–**	**–**	**–**	**228**	**–**	**4**	**232**

5.3.2. Implementation of commitment appropriations - Title 2

EUR '000

Item		Total approp. available	Commitments made					Appropriations carried over to 2022			Appropriations lapsing			
			from final adopt. budget	from re-activations	from assign. revenue	Total	%	Assign. revenue	By decision	Total	from final adopt. budget	from re-activa-tions	from assign. revenue	Total
		1	2	3	4	5=2+3+4	6=5/1	7	8	9=7+8	10	11	12	13=10+11+12
2000	Rentals	343	228	112	–	339	99 %	–	–	–	3	–	–	3
2010	Charges and works	49	–	–	–	–	0 %	–	–	–	49	–	–	49
Total Chapter 20		391	228	112	–	339	87 %	–	–	–	52	–	–	52
2100	IT equipment & software purchase/development costs	168	28	17	–	45	27 %	–	–	–	123	0	–	123
2101	Other IT costs	369	144	103	121	368	100 %	–	–	–	0	–	1	1
Total Chapter 21		537	172	120	121	413	77 %	–	–	–	123	0	1	124
2200	Movable property and associated office equipment purchase costs	10	–	5	–	5	52 %	–	–	–	5	–	–	5
Total Chapter 22		10	–	5	–	5	52 %	–	–	–	5	–	–	5
2300	Stationery and office supplies	15	10	1	–	11	72 %	–	–	–	4	–	–	4
2302	Legal expenditure	26	–	6	–	6	23 %	–	–	–	20	–	–	20
2303	Other current administrative expenditure	1	1	–	–	1	100 %	–	–	–	–	–	–	–
Total Chapter 23		42	11	7	–	18	42 %	–	–	–	24	–	–	24
2400	Telecommunications and postal charges	19	13	–	–	13	69 %	–	–	–	6	–	–	6
Total Chapter 24		19	13	–	–	13	69 %	–	–	–	6	–	–	6
2500	Expenditure on formal meetings	73	–	–	–	–	0 %	–	–	–	73	–	–	73
Total Chapter 25		73	–	–	–	–	0 %	–	–	–	73	–	–	73
2600	Events and campaigns	18	–	6	–	6	30 %	–	–	–	13	–	–	13
2601	Materials	54	39	4	–	42	79 %	–	–	–	11	–	–	11
2602	Communications tools	408	292	113	–	406	99 %	–	–	–	–	3	–	3
2603	Public relations	58	–	13	–	13	22 %	–	–	–	45	–	–	45
Total Chapter 26		538	331	135	–	466	87 %	–	–	–	69	3	–	72
2700	Studies, consultancy and other services	139	86	39	–	124	90 %	–	–	–	15	–	–	15
2702	Audit costs	75	41	–	–	41	55 %	–	–	–	34	–	–	34
Total Chapter 27		214	126	39	–	165	77 %	–	–	–	49	–	–	49
2900	Expert reviewers	330	50	130	–	180	55 %	–	–	–	150	–	–	150
Total Chapter 29		330	50	130	–	180	55 %	–	–	–	150	–	–	150
Total Title 2		**2 154**	**931**	**547**	**121**	**1 599**	**74 %**	**–**	**–**	**–**	**551**	**3**	**1**	**554**
GRAND TOTAL		**5 341**	**3 836**	**597**	**121**	**4 555**	**85 %**	**–**	**–**	**–**	**779**	**3**	**4**	**786**

5.4. IMPLEMENTATION OF PAYMENT APPROPRIATIONS

5.4.1. Implementation of payment appropriations - Title 1

EUR '000

Item		Total approp. availab.	Payments made					Appropriations carried over to 2022				Appropriations lapsing			
			from final adopt. budget	from re-activations	from assign. revenue	Total	%	Autom. carry-overs	By decision	Assigned rev.	Total	from final adopt. budget	from re-activa-tions	from assig. rev.	Total
		1	2	3	4	5=2+3+4	6=5/1	7	8	9	10=7+8+9	11	12	13	14=11+12+13
1100	Staff costs	2 301	2 287	–	–	2 287	99 %	–	–	–	–	15	–	–	15
1110	Trainees	45	10	22	–	32	71 %	–	–	–	–	12	1	–	13
1120	External staff	393	379	–	–	379	97 %	–	–	–	–	14	–	–	14
Total Chapter 11		2 738	2 676	22	–	2 698	99 %	–	–	–	–	40	1	–	41
1200	Sundry recruitment expenses	38	15	6	–	22	57 %	–	–	–	–	12	4	–	16
1201	Installation, resettlement and daily subsistence allowances and removal and travel expenses	60	–	–	–	–	0 %	–	–	–	–	60	–	–	60
Total Chapter 12		98	15	6	–	22	22 %	–	–	–	–	72	4	–	76
1300	Mission expenses, duty travel expenses and other ancillary expenditure	71	1	–	1	1	2 %	–	–	–	–	69	–	0	70
Total Chapter 13		71	1	–	1	1	2 %	–	–	–	–	69	–	0	70
1400	Medical service	28	6	10	–	16	57 %	–	–	–	–	9	3	–	12
1401	Mobility costs and other social expenses for staff	128	91	–	–	91	71 %	–	–	–	–	35	–	3	37
1402	Training	85	47	4	–	50	59 %	–	–	–	–	35	–	–	35
1403	Supplementary aid for the disabled	29	4	–	–	4	13 %	–	–	–	–	25	–	–	25
Total Chapter 14		270	147	14	–	161	59 %	–	–	–	–	103	3	3	109
1500	Staff teambuilding and related events	10	2	–	–	2	20 %	–	–	–	–	8	–	–	8
Total Chapter 15		10	2	–	–	2	20 %	–	–	–	–	8	–	–	8
Total Title 1		**3 187**	**2 841**	**42**	**1**	**2 883**	**90 %**	**–**	**–**	**–**	**–**	**293**	**8**	**3**	**304**

5.4.2. Implementation of payment appropriations - Title 2

EUR '000

Item		Total approp. availab.	Payments made					Appropriations carried over to 2022				Appropriations lapsing			
			from final adopt. budget	from re-activations	from assign. revenue	Total	%	Autom. carry-overs	By decision	Assigned rev.	Total	from final adopt. budget	from re-activa-tions	from assig. rev.	Total
		1	2	3	4	5=2+3+4	6=5/1	7	8	9	10=7+8+9	11	12	13	14=11+12+13
2000	Rentals	343	200	112	–	311	91 %	–	–	–	–	31	–	–	31
2010	Charges and works	49	–	–	–	–	0 %	–	–	–	–	49	–	–	49
Total Chapter 20		391	200	112	–	311	80 %	–	–	–	–	80	–	–	80
2100	IT equipment & software purchase/development costs	222	157	32	33	222	100 %	–	–	–	–	–	–	–	–
2101	Other IT costs	329	142	96	68	307	93 %	–	–	–	–	1	–	21	22
Total Chapter 21		551	300	128	101	529	96 %	–	–	–	–	1	–	21	22
2200	Movable property and associated office equipment purchase costs	10	2	–	–	2	16 %	–	–	–	–	3	5	–	9
Total Chapter 22		10	2	–	–	2	16 %	–	–	–	–	3	5	–	9
2300	Stationery and office supplies	16	1	0	–	2	10 %	–	–	–	–	14	1	–	14
2302	Legal expenditure	26	–	6	–	6	23 %	–	–	–	–	20	–	–	20
2303	Other current administrative expenditure	2	–	0	–	0	22 %	–	–	–	–	0	2	–	2
Total Chapter 23		44	1	7	–	8	18 %	–	–	–	–	34	2	–	36
2400	Telecommunications and postal charges	19	5	–	–	5	27 %	–	–	–	–	14	–	–	14
Total Chapter 24		19	5	–	–	5	27 %	–	–	–	–	14	–	–	14
2500	Expenditure on formal meetings	67	–	–	–	–	0 %	–	–	–	–	67	–	–	67
Total Chapter 25		67	–	–	–	–	0 %	–	–	–	–	67	–	–	67
2600	Events and campaigns	32	–	2	–	2	5 %	–	–	–	–	13	18	–	30
2601	Materials	54	31	4	–	35	65 %	–	–	–	–	19	–	–	19
2602	Communications tools	384	15	92	–	107	28 %	–	–	–	–	277	–	–	277
2603	Public relations	58	–	13	–	13	22 %	–	–	–	–	45	–	–	45
Total Chapter 26		528	47	110	–	157	30 %	–	–	–	–	353	18	–	371
2700	Studies, consultancy and other services	139	99	35	–	135	97 %	–	–	–	–	1	3	–	4
2702	Audit costs	75	25	–	–	25	33 %	–	–	–	–	50	–	–	50
Total Chapter 27		214	124	35	–	160	75 %	–	–	–	–	51	3	–	54
2900	Expert reviewers	330	127	72	–	199	60 %	–	–	–	–	73	58	–	131
Total Chapter 29		330	127	72	–	199	60 %	–	–	–	–	73	58	–	131
Total Title 2		**2 154**	**805**	**463**	**101**	**1 370**	**64 %**	**–**	**–**	**–**	**–**	**676**	**87**	**21**	**784**

5.4.3. Implementation of payment appropriations - Title 3

EUR '000

Item		Total approp. availab.	Payments made					Appropriations carried over to 2022				Appropriations lapsing			
			from final adopt. budget	from re-activations	from assign. revenue	Total	%	Autom. carry-overs	By decision	Assigned rev.	Total	from final adopt. budget	from re-activa-tions	from assig. rev.	Total
		1	2	3	4	5=2+3+4	6=5/1	7	8	9	10=7+8+9	11	12	13	14=11+12+13
3000	Previous years' calls	69 025	4 803	35 175	–	39 977	58 %	–	–	–	–	19 087	9 960	–	29 047
Total Chapter 30		69 025	4 803	35 175	–	39 977	58 %	–	–	–	–	19 087	9 960	–	29 047
3100	Current year call	100 387	79 098	1 747	–	80 845	81 %	–	–	–	–	19 542	–	–	19 542
Total Chapter 31		100 387	79 098	1 747	–	80 845	81 %	–	–	–	–	19 542	–	–	19 542
Total Title 3		**169 412**	**83 901**	**36 921**	**–**	**120 822**	**71 %**	**–**	**–**	**–**	**–**	**38 629**	**9 960**	**–**	**48 590**
GRAND TOTAL		**174 753**	**87 547**	**37 427**	**102**	**125 076**	**72 %**	**–**	**–**	**–**	**–**	**39 598**	**10 055**	**24**	**49 677**

6. OUTSTANDING COMMITMENTS

6.1. Outstanding commitments – Title 1

EUR '000

Item		Commitments outstanding at the end of previous year				Commitments of the current year				
		Commitm. carried forward from previous year	Decommit. Revaluation Cancellations	Payments	Total	Commitments made during the year	Payments	Cancellation of commit. which cannot be carried forward	Commit. outstanding at year-end	Total commitm. outstanding at year-end
		1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
1100	Staff costs	19	(18)	1	–	2 311	2 285	–	25	25
1110	Trainees	26	(26)	–	–	33	32	–	2	2
1120	External staff	55	–	55	–	354	324	–	29	29
Total Chapter 11		100	(44)	56	–	2 698	2 641	–	56	56
1200	Sundry recruitment expenses	7	(7)	–	–	31	22	–	9	9
Total Chapter 12		7	(7)	–	–	31	22	–	9	9
1300	Mission expenses, duty travel expenses and other ancillary expenditure	5	(5)	–	–	7	1	–	6	6
Total Chapter 13		5	(5)	–	–	7	1	–	6	6
1400	Medical service	16	(16)	0	–	27	16	–	11	11
1401	Mobility costs and other social expenses for staff	67	(59)	8	–	104	83	–	20	20
1402	Training	30	(22)	8	–	83	42	–	41	41
1403	Supplementary aid for the disabled	14	(13)	1	–	5	3	–	3	3
Total Chapter 14		127	(110)	17	–	218	144	–	74	74
1500	Staff teambuilding and related events	–	–	–	–	2	2	–	–	–
Total Chapter 15		–	–	–	–	2	2	–	–	–
Total Title 1		**239**	**(165)**	**73**	**–**	**2 956**	**2 810**	**–**	**146**	**146**

6.2. Outstanding commitments – Title 2

EUR '000

Item	Commitments outstanding at the end of previous year				Commitments of the current year				
	Commitm. carried forward from previous year	Decommit. Revaluation Cancellations	Payments	Total	Commitments made during the year	Payments	Cancellation of commit. which cannot be carried forward	Commit. outstanding at year-end	Total commitm. outstanding at year-end
	1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
2000 Rentals	7	(7)	–	–	339	311	–	28	28
Total Chapter 20	7	(7)	–	–	339	311	–	28	28
2100 IT equipment & software purchase/development costs	279	(4)	218	57	45	4	–	41	98
2101 Other IT costs	170	(10)	120	40	368	187	–	181	221
Total Chapter 21	449	(14)	338	97	413	191	–	222	319
2200 Movable property and associated office equipment purchase costs	2	–	2	–	5	–	–	5	5
Total Chapter 22	2	–	2	–	5	–	–	5	5
2300 Stationery and office supplies	1	(1)	0	–	11	1	–	10	10
2302 Legal expenditure	5	(5)	–	–	6	6	–	–	–
2303 Other current administrative expenditure	2	(2)	–	–	1	0	–	1	1
Total Chapter 23	9	(8)	0	–	18	8	–	10	10
2400 Telecommunications and postal charges	11	(6)	5	–	13	–	–	13	13
Total Chapter 24	11	(6)	5	–	13	–	–	13	13
2500 Expenditure on formal meetings	3	(3)	–	–	–	–	–	–	–
Total Chapter 25	3	(3)	–	–	–	–	–	–	–
2600 Events and campaigns	7	(5)	2	–	6	–	–	6	6
2601 Materials	48	(19)	24	6	42	11	–	31	37
2602 Communications tools	–	–	–	–	406	107	–	298	298
2603 Public relations	–	–	–	–	13	13	–	–	–
Total Chapter 26	55	(24)	26	6	466	131	–	335	340
2700 Studies, consultancy and other services	96	–	96	–	124	39	–	85	85
2702 Audit costs	–	–	–	–	41	25	–	16	16
Total Chapter 27	96	–	96	–	165	64	–	101	101
2900 Expert reviewers	78	–	74	4	180	125	–	55	59
Total Chapter 29	78	–	74	4	180	125	–	55	59
Total Title 2	**709**	**(62)**	**540**	**107**	**1 599**	**830**	**–**	**770**	**876**

6.3. Outstanding commitments – Title 3

EUR '000

Item	Commitments outstanding at the end of previous year				Commitments of the current year				Total commitm. outstanding at year-end
	Commitm. carried forward from previous year	Decommit. Revaluation Cancellations	Payments	Total	Commitments made during the year	Payments	Cancellation of commit. which cannot be carried forward	Commit. outstanding at year-end	
	1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
3000 Previous years' calls	108 869	–	39 977	68 892	–	–	–	–	68 892
Total Chapter 30	108 869	–	39 977	68 892	–	–	–	–	68 892
3100 Current year call	171 549	–	80 845	90 703	–	–	–	–	90 703
Total Chapter 31	171 549	–	80 845	90 703	–	–	–	–	90 703
Total Title 3	**280 418**	**–**	**120 822**	**159 595**	**–**	**–**	**–**	**–**	**159 595**
GRAND TOTAL	**281 365**	**(228)**	**121 436**	**159 702**	**4 555**	**3 640**	**–**	**915**	**160 617**

7. GLOSSARY

Administrative appropriations

Appropriations to cover the running costs of the entities (staff, buildings, office equipment).

Adopted budget

Draft budget becomes the adopted budget as soon as approved by the budgetary authority.

Amending budget

Decision adopted during the budget year to amend (increase, decrease, transfer) aspects of the adopted budget of that year.

Appropriations

Budget funding.

The budget forecasts both commitments (legal pledges to provide finance) and payments (cash or bank transfers to the beneficiaries). Appropriations for commitments and payments often differ — differentiated appropriations — because multiannual programmes and projects are usually fully committed in the year they are decided and are paid over the years as the implementation of the programme and project progresses.

Assigned revenue

Revenue dedicated to finance specific items of expenditure.

Budget result

The difference between income received and amounts paid, including adjustments for carry-overs, cancellations and exchange rate differences.

For agencies, the resulting amount will have to be reimbursed to the funding authority.

Budget implementation

Consumption of the budget through expenditure and revenue operations.

Budget item / Budget line / Budget position

Revenue and expenditure are shown in the budget structure in accordance with a binding nomenclature, which reflects the nature and purpose of each item, as imposed by the budgetary authority. The individual headings (title, chapter, article or item) provide a formal description of the nomenclature.

Budgetary commitment

Operation by which the authorising officer responsible reserves the budget appropriations necessary to cover for subsequent payments to honour legal commitments.

Cancellation of appropriations

Appropriations which have not been used by the end of the financial year and which cannot be carried over, shall be cancelled.

Carryover of appropriations

Exception to the principle of annuality in so far as appropriations that could not be used in a given budget year may, under strict conditions, be exceptionally carried over for use during the following year.

Commitment appropriations

Commitment appropriations cover the total value of legal obligations (contracts, grant agreements or decisions) that could be signed in the current financial year.

De-commitment

Operation whereby the authorising officer responsible cancels wholly or partly the reservation of appropriations previously made by means of a budgetary commitment.

Differentiated appropriations

Differentiated appropriations are used to finance multiannual operations; they cover, for the current financial year, the total cost of the legal obligations entered into for operations whose implementation extends over more than one financial year.

Economic result

Impact on the balance sheet of expenditure and revenue based on accrual accounting rules.

Entitlements established

Right to collect income from a debtor as recognised through the issuing of a recovery order.

Exchange rate difference

The difference resulting from currency exchange rates applied to the transactions concerning countries outside the euro area, or from the revaluation of assets and liabilities in foreign currencies at the date of the accounts.

Expenditure

Term used to describe spending the budget from all types of funds sources.

Grants

Direct financial contributions from the budget to third-party beneficiaries, engaged in activities that serve Union policies.

Lapsing appropriations

Unused appropriations to be cancelled at the end of the financial year. Lapsing means the cancellation of all or part of the authorisation to make expenditures and/or incur liabilities, as represented by an appropriation.

For joint undertakings (and EIT), as specified in their Financial Rules, any unused appropriations may be entered in the estimate of revenue and expenditure of up to the following three financial years (the so-called "N+3" rule). Hence, lapsing appropriations for JUs can be re-activated until financial year "N+3".

Legal basis / basic act

The legal act adopted by the legislative authority (usually the Council and European Parliament) specifying the objective of a Union spending programme, the purpose of the appropriations, the rules for intervention, expiry date and the relevant financial rules to serve as a legal basis for the implementation of the spending programme.

Legal commitment

The act whereby the Authorising Officer enters into an obligation towards third parties which results in a charge for the Union budget.

Common forms of legal commitments are contracts in the case of procurement, grant agreements and grant decisions.

Non-differentiated appropriations

Appropriations which meet annual needs and must therefore be committed during the budget year. Only amounts qualifying for automatic carryover can be disbursed in the following year. Non-differentiated appropriations which have not been used, i.e. committed, by the end of the year, are cancelled (unless, exceptionally, permission is given by a Commission decision for a non-automatic carryover). Non-differentiated appropriations apply to administrative expenditure and commitment appropriations equal payment appropriations.

Operational appropriations

Operational appropriations finance the different policies, mainly in the form of grants or procurement.

Outstanding commitments

Outstanding commitments (or RAL, from the French 'reste à liquider') are defined as the amount of appropriations committed that have not yet been paid. They stem directly from the existence of multiannual programmes and the dissociation between commitment and payment appropriations.

Payment appropriations

Payment appropriations cover expenditure due in the current year, arising from legal commitments entered in the current year and/or earlier years.

RAL (Reste à liquider)

Amount remaining to be paid on a budgetary commitment at a given moment. Cf. Outstanding commitments

Surplus

Positive difference between revenue and expenditure, which has to be returned to the funding authority. Cf. Budget result

Transfer between budget lines

Transfers between budget lines imply the relocation of appropriations from one budget line to another, in the course of the financial year, and thereby they constitute an exception to the budgetary principle of specification.

7.9 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.

7.10 LIST OF EVENTS WITH PARTICIPATON OF BBI JU / CBE JU IN 2021

Event	Date	Place	Type of participation
BBI Ambassador Workshop	20 January 2021	Online	Speaker
Follow up meeting: 'Promoting the development of bio-based industries: from policy to action - the case of European Union	27 January 2021	Online	Speaker
Exploring synergies between Horizon Europe and regional policy	02 February 2021	Online	Participant
EUMOFA Talk: Blue bioeconomy outlook	16 February 2021	Online	Participant
Info Day: MANDALA for students	17 February 2021	Online	Speaker
Join our community: Horizon Europe Started	18 February 2021	Online	Speaker
EU Industry Days	22 February 2021	Online	Participant
Stakeholders workshop: 'Biopolymers eco-design to address sustainability challenges for the ocean’s protection'	03 March 2021	Online	Speaker
ISBWG webinar 'Innovation and investments in the bioeconomy: from lab to market	16 March 2021	Online	Participant
BIOKET 2021	16 March 2021	Online	Speaker
BIC webinar: 'Towards a Circular Economy - Untapping the potential of bio-waste: opportunities and challenges ahead'	17 March 2021	Online	Participant
Empowering the circular bioeconomy through the EU Green Deal	17 March 2021	Online	Participant

Webinar: BIOEAST	23 March 2021	Online	Speaker
Investing in Climate Action	24 March 2021	Online	Participant
‘How to prepare a successful proposal in Horizon Europe’	24 March 2021	Online	Participant
MACRO CASCADE final conference	24 March 2021	Online	Speaker
CEMA Summit	14 April 2021	Online	Participant
FUNGUSCHAIN final conference	14 April 2021	Online	Speaker
LIBRE final meeting and showcase event	26 April 2021	Online	Speaker
Talent4BBI network meeting	05 May 2021	Online	Speaker
BIC webinar: 'How to stimulate market uptake and consumer acceptance of bio-based products?'	17 May 2021	Online	Participant
Verso Horizon Europe - Valorizzare il potenziale della ricerca e dell’innovazione in Lombardia. Il ruolo dei finanziamenti dell’Unione Europea	17 May 2021	Online	Speaker
EURADA Inmersión en Bruselas	18 May 2021	Online	Speaker
World Bioeconomy Roundtable 'Global leaders and financial world'	18 May 2021	Online	Speaker
VIPRISCAR webinar: 'Towards a sustainable industrial chemistry model in Europe'	18 May 2021	Online	Speaker
European Maritime Day	20 May 2021	Online	Participant
GREENPROTEIN final general assembly	25 May 2021	Online	Speaker
Three projects, one solution: the power of enzymes	27 May 2021	Online	Speaker
EU Green Week 2021	31 May 2021	Online	Participant
Conama 2020	02 June 2021	Online	Speaker
Primo incontro del Working Group sulle partnership istituzionalizzate nell’ambito del GIURI	03 June 2021	Online	Speaker

The market-driven circular & bioeconomy	08 June 2021	Online	Speaker
LIBBIO Final Conference	10 June 2021	Online	Participant
Meeting of research projects into biomaterials	11 June 2021	Online	Speaker
Presentation event: CIRCULAR BIOCARBON	15 June 2021	Zaragoza, Spain	Speaker
Plastics pollution: Are biodegradable plastics a solution?	16 June 2021	Online	Participant
Industrial symbiosis: A tool for the Green Deal	16 June 2021	Online	Participant
ECOFUNCO workshop	16 June 2021	Online	Speaker
R&I Days	23 June 2021	Online	Participant
SCAR BSW and BBI JU SRG joint workshop: 'Integrating the agricultural primary sector in the sustainable bio-based economy'	29 June 2021	Online	Speaker
Presentation of the Report on Bioeconomy in Europe by Intesa Sanpaolo	30 June 2021	Online	Speaker
Microbial-based products and microbiome R&D: game-changing opportunities for ecosystem restoration	30 June 2021	Online	Participant
Fourth ISBWG Webinar on Circular Bioeconomy	30 June 2021	Online	Participant
Greenovate! Europe General Assembly	01 July 2021	Online	Speaker
Farming in a climate neutral Europe – POLITICO	05 July 2021	Online	Participant
Dissemination Event - EU Bioeconomy Policy Support Facility	05 July 2021	Online	Participant
Horizon Europe info day: ‘Cluster 6 – Food, bioeconomy, natural resources, agriculture & environment’	07 July 2021	Online	Participant
AFTER-BIOCHEM 2nd Executive Committee Meeting	12 July 2021	Online	Speaker
The Circular Bioeconomy as engine to generate employment and new business models	14 July 2021	Online	Speaker
Agrimax pilot plant launch	20 July 2021	Online	Speaker
11th International Conference on Environmental Engineering and Management	08 September 2021	Muttenz, Switzerland	Speaker

Plenitude groundbreaking event	16 September 2021	Sas Van Gent, Netherlands	Speaker
EUCYS	17 September 2021	Salamanca, Spain	Participant
Plant Based Summit	22 September 2021	Reims, France	Speaker
World Industry summit	27 September 2021	Online	Speaker
BioTech Research & Innovation Hack 2021	28 September 2021	Online	Speaker
BIOSPAIN 2021	29 September 2021	Pamplona, Spain	Speaker
Agrimax general assembly	30 September 2021	Online	Speaker
BBI JU Synergy Label	30 September 2021	Online	Speaker
IFIB 2021	30 September 2021	Trento, Italy	Speaker
EFIB 2021	06 October 2021	Vienna, Austria	Speaker
Irish National Bioeconomy Summit	18 October 2021	Online	Participant
Verso una net zero society	20 October 2021	Online	Speaker
Seminari in pillole	21 October 2021	Online	Speaker
BE-Rural Capacity building Workshop for researchers and SMEs	25 October 2021	Online	Speaker
EU Circular Talk 'Resource efficiency to help combat food waste'	26 October 2021	Online	Speaker

Foro de Bioeconomía de Castilla y León	27 October 2021	Online	Speaker
Bioeconomy stakeholder workshop	28 October 2021	Online	Speaker
Xylella Forum	28 October 2021	Locorotondo, Italy	Speaker
ECOMONDO	29 October 2021	Rimini, Italy	Speaker
Towards full exploitation of lignocellulose: WoodZymes final workshop & BBI JU related projects	04 November 2021	Bordeaux, France	Speaker
International conference on biomolecules and bioeconomy	04 November 2021	Nancy, France	Speaker
bio!TOY post-conference	10 November 2021	Online	Participant
Talent4BBI PhD co-fund MSCA launch	11 November 2021	Online	Speaker
Virtual Bioeconomy Forum Canada - Spain	18 November 2021	Online	Speaker
BioBarr Final Workshop	29 November 2021	Online	Speaker
BIOMOTIVE project final event	29 November 2021	Online	Participant
European Bioplastics Conference	30 November 2021	Online	Participant
European Forum for Industrial Biotechnology and the Bioeconomy (EFIB)	30 November 2021	Online	Participant
PLANET BIO Workshop: Prospective LCA for Novel and Emerging Technologies for bio-based products	06 December 2021	Online	Participant
CAFIPLA internal meeting	13 December 2021	Online	Speaker

Stakeholder event for the bio-based industries community	15 December 2021	Vienna, Austria	Speaker

7.11 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
CAS	Common Audit Service
CEO	Chief Executive Officer
CA	Contractual Agent or Commitment Appropriation
CAS	Common Audit Service of the European Commission for Horizon 2020
CBE	Circular Bio-based Europe
CF	Carbon fibre
CO_2	Carbon dioxide
CRS	Common Representative Sample
CSA	Coordination and Support Action
CIC	Common Implementation Centre for Horizon 2020
DEMOS-IA	Innovation Action for demonstrators
DG AGRI	Directorate-General Agriculture & Rural Development
DG DIGIT	Directorate-General for Informatics
DG GROW	Directorate-General Internal Markets, Industry, Entrepreneurship and SMEs
DG HR	Directorate-General for Human Resources
DG RTD	Directorate-General Research and Innovation
DMAc	Dimethylacetamide

DMF	Dimethylformamide
DMO	Document Management Officer
DPIA	Data Protection Impact Assessment
DPO	Data Protection Officer
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECA	European Court of Auditors
ECBF	European Circular Bioeconomy Fund
EDPS	European Data Protection Supervisor
EFTA	European Free Trade Association
EFIB	European Forum for Industrial Biotechnology and the Bioeconomy
EIB	European Investment Bank
EOL	End-of-life
ESIF	European Structural and Investment Funds
ESOF	EuroScience Open Forum
EU	European Union
EUSAIR	EU strategy for the Adriatic and the Ionian Region
FAO	Food and Agriculture Organisation of the United Nations
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
GERD	Gross Domestic Expenditure on R&D

GDP	Gross Domestic Product
GHG	Green House Gas
HES	Higher or Secondary Education
IAS	Internal Audit Service
IAs	Innovation Actions
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
ILUC	indirect Land Use Change
IT	Information Technology
JRC	Joint Research Centre
JU	Joint Undertaking
JURS	Joint Undertaking Representative Sample
KPIs	Key Performances Indicators
LA	Lactic Acid
LGO	Levoglucosenone
LISO	Local Informatics Security Officer
MEG	mono-ethylene glycol
MFC	Microfibrillated Cellulose
MFR	Model Financial Regulation
MS	Member State of the European Union
MSW	Municipal Solid Waste
NMP	N-methyl-2-pyrrolidone
OECD	Organisation for Economic Co-operation and Development

OFMSW	Organic Fraction of Municipal Solid Waste
OIB	Office for Infrastructure and Logistics
OLAF	European Anti-Fraud Office
OTH	Other type of organisations
PA	Payment Appropriation
PEBA	Polyether block amide
PEF	Polyethylene furanoate
PET	Polyethylene terephthalate
PHA	Polyhydroxyalkanoates
PLA	Polylactic Acid
PPB	Purple Phototrophic Bacteria
PPP	Public-Private Partnership
PRC	Private- for- Profit
PU	Polyurethane
PUB	Public Body (excluding research and education)
PVAc	Polyvinyl acetate
REA	Research Executive Agency
REC	Research Organisation
RfP	Rules for Participation in Horizon 2020
RIA	Research and Innovation Actions
R&D	Research and Development
RTO	Research and Technology Organisation
SC	Scientific Committee of the BBI JU
SCAR	Standing Committee on Agricultural Research
SDG	Sustainable Development Goal
SIAP	Strategic Internal Audit Plan

SIRA	Strategic Innovation and Research Agenda
SO	Strategic Orientation provided in the Strategic Innovation and Research Agenda
SLA	Services Legal Agreement
SMEs	Small and Medium-Size Enterprises
SRC	Short-Rotation Coppice
SRG	States Representatives Group of the BBI JU
SPIRE	Sustainable Process Industry through Resource and Energy Efficiency
TA	Temporary Agent
TRL	Technology Readiness Level
TTG	Time to Grant
TTI	Time to Inform
TTP	Time to Pay
UN	United Nations Organisation
URL	Uniform Resource Locator