

Annual Activity Report 2019



Bio-based Industries
Joint Undertaking



Bio-based Industries
Consortium

In accordance with Article 16 of the Statutes of the BBI JU annexed to Council Regulation (EU) No 560/2014, as amended by Council Regulation (EU) 2018/121 of 23 January 2018, and with Article 20 of the Financial Rules of the BBI JU.

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FACTSHEET

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| Name | Bio-based Industries Joint Undertaking |
| Objectives | <p>The objectives of BBI JU are:</p> <p>To contribute to the implementation of Regulation (EU) No 1291/2013 and in particular Part III of Decision 2013/743/EU;</p> <p>To contribute to the objectives of the BBI Initiative 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:</p> <ul style="list-style-type: none"> • 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. <p>The mission of 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. BBI JU implements 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.</p> |
| 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 |

| | | |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Executive Director | Philippe Mengal | |
| Governing Board¹ | EC members (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 members |
| | <p>Wolfgang BURTSCHER, Deputy Director-General, DG RTD (Chair)</p> <p>John BELL, Director for "Healthy Planet", DG RTD/C</p> <p>Carlo PETTINELLI, Director for "Chemicals and Consumer Industries", DG GROW/D</p> <p>Peter DROELL, Director for "Industrial Technologies", DG RTD/F</p> <p>Nathalie SAUZE-VANDEVYVER, Director for "Quality Policy, Research & Innovation, Outreach", DG AGRI/B</p> | <p>Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Vice-Chair)</p> <p>Gloria GAUPMANN, Head of Public Affairs, Technology and Innovation, CLARIANT</p> <p>Hans KEUKEN, CEO Process Design Center</p> <p>Alex MICHINE, CEO METGEN</p> <p>Bill MORRISSEY, Bioeconomy programme manager, GLANBIA</p> |
| Other bodies | States Representatives Group (SRG) Scientific Committee (SC) | |
| Staff | 23 staff members | |
| 2019 Budget² | Commitment appropriations: EUR 141 624 199 ³ Payment appropriations: EUR 182 113 587 ⁴ | |

1 Composition in the last Governing Board meeting December 2019.

2 Total budget includes operational budget (used for funding selected projects) & administrative (used for funding Programme Office activities).


3 Voted commitment appropriations were EUR 141 297 325, subsequently amended to include unused appropriations from prior years.

4 Voted payment appropriations were EUR 199 241 275 and the amendment reduced the amount because of

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|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------|
| Budget implementation | Commitment appropriations: total consumption EUR 123 788 485 (87.4%) Title 1 – EUR 2 787 833 (91.3%) Title 2 – EUR 2 770 969 (92.4%) Title 3 – EUR 118 229 682 (87.2%) Payment appropriations: total consumption EUR 138 168 121 (75.9%) Title 1 – EUR 2 575 348 (81.7%) Title 2 – EUR 2 175 052 (73.6%) Title 3 – EUR 133 417 722 (75.8%) | | |
| Grants | 101 signed grants for a total value of EUR 599 419 910 | | |
| Strategic and Innovation Research Agenda | The original SIRA (2013) has undergone a process of revision which started in 2016 and which has delivered the adjusted SIRA (published in July 2017). | | |
| Call implementation | Calls launched/implemented in 2019: | 2018 (Implemented) | 2019 (Launched) |
| | Number of proposals submitted: | 144 | 184 |
| | Number of eligible proposals: | 140 | 178 |
| | Number of proposals funded or retained for funding: | 19 | 23 (retained) |
| | Global project portfolio (since the setting-up): | 101 | 124 |
| | Number and value of tenders (if any): | No Horizon 2020 tenders were launched | |
| Participation, including SMEs | Total number of participations in projects funded and retained for funding ⁵ : 1 466 of which: | | |

inferior needs and these appropriations were shifted to following years.

⁵ The data refers to all projects funded (Calls 2014-2018) and retained for funding (Call 2019) by the end of activity year 2019.



% of SME beneficiaries: 39%⁶
% of private-for-profit companies: 60%

⁶ The data refers to unique beneficiaries.

FOREWORD

At the moment of writing these lines, Europe is still fighting the COVID-19 crisis, one of the biggest challenges in its history that has caused tremendous human and economic losses. It is harder to look back in this situation, as all our efforts go to rebuilding the future. Our past can however teach us valuable lessons, and I am convinced, as a true European at heart, that tomorrow will find us stronger. With this idea in mind, I am happy to see that 2019 has been an important year for BBI JU and its community.

In 2019, BBI JU set its priorities on consolidating the project portfolio and maintaining the highest standards of quality and efficiency while absorbing a growing workload. Another important priority was to highlight the impactful results of the initiative to a wider group of stakeholders, as well as to contribute to the discussions on the next EU's framework programme for research and innovation, Horizon Europe.

You will see in various chapters of this report that BBI JU has performed very well and its achievements are well aligned with the initial goals. BBI JU was once more confirmed as a high impact initiative that since its inception has already contributed to the future EU Green Deal. The two main positive impacts of BBI JU so far have been the structuring effect in organising the value chains across sectors and the innovation-driven mobilising effect of all key stakeholders.

The structuring of the sector and its value chains are essential if we want to maximise new investments and create jobs that will eventually contribute to the socio-economic objectives of the EU Green Deal. Just consider that the nine Flagship biorefineries currently funded by BBI JU will generate 3,300 direct jobs and more than 10,000 indirect ones. For €195 million BBI JU funding, the industry is investing €1.2 billion. Most importantly, these biorefineries are the first-of-their-kind in Europe with a high capacity of replication, thus multiplying their impact. None of these achievements would have been possible without the successful cooperation with our two founding partners, the European Commission and the Bio-based Industries Consortium (BIC), as well as the support from our two advisory bodies. This year, as in the past, I would like to thank all our stakeholders for their advice, tireless work and open dialogue.

Due to the COVID-19 outbreak, the BBI JU Business Continuity Plan developed and tested during 2019 entered into force on 12 March 2020, allowing all staff to run all BBI JU operations remotely from home. Thanks to an early preparation and the dedication of the BBI JU staff, all activities of the programme office are well executed, coordinated and monitored.

Sadly, the outbreak has once again highlighted the extent to which Europe depends on the import of critical strategic raw materials - fossil materials, but also minerals like

phosphorus and potassium for soil fertilisation and proteins where imports make for around 70% of our needs. The message is clear - a strong European bio-based sector would offer Europe and its citizens an opportunity to decrease its dependency on imports and foster intra-EU trade in a sustainable way, while opening new opportunities for sustainable economic growth. It will be such a game changer in the fight against climate change and developing a new sustainable economy!

I fully support the opinion voiced by the President of the European Commission that the EU Green Deal will be our motor for Europe's recovery⁷. The bio-based sector has the potential to become an essential contributor to the Europe's green recovery. Putting public funding into an iPPP is key to maximise its socio-economic impact on the sector, while also leveraging other sources of funding. Within BBI JU, 40% of the funding goes to SMEs and 30% to universities and RTOs. Around 80% of the projects report increased collaboration between universities and companies. This is the result of investment in promoting the initiative and widening the participation via information days and other events, supported by our ambassadors from the State Representative Group and Scientific Committee members.

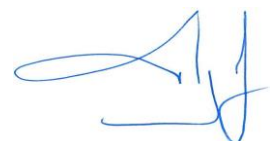
Under the current circumstances, I think that the BBI JU Virtual Info Day 2020 with more than 4,500 participants from 45 countries and nearly 2,500 remote one-to-one networking meetings is a considerable achievement demonstrating the mobilisation of the sector. It also helped all our key stakeholders to keep the momentum and continue building a circular, sustainable and competitive bio-based sector in Europe.

I am proud of the BBI JU team's achievements last year. Despite the increased workload, we have delivered excellent work maintaining high levels of efficiency, effectiveness and motivation. I want to thank them for their enthusiasm and dedication.

We are facing very challenging times, both at professional and personal level, yet we should celebrate the solidarity among Europeans and acknowledge the efforts put forward by the Union and the EU Institutions to tackle the crisis.

BBI JU is in the frontline to help in the delivery of the EU Green Deal, and we are up for the challenge, together with our community, to help deliver a green recovery for Europe in the years to come.

Enjoy the reading!



Philippe Mengal
Executive Director of BBI JU

⁷ <https://audiovisual.ec.europa.eu/en/topnews/M-004745>

ABOUT 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 2014⁸ (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. 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 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. 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 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 Strategy⁹ presented by the European Commission in October 2018, 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*

⁸ As amended by Council Regulation (EU) 2018/121 of 23 January 2018 amending Regulation.

⁹ https://ec.europa.eu/commission/news/new-bioeconomy-strategy-sustainable-europe-2018-oct-11-0_en

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: 'BBI JU has created a stimulating research and innovation environment in Europe. 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 of business models to integrate economic actors along the whole value chains is an achievement: ... As the realization of these goals could not be achieved by a single member country, organization or scientific discipline alone, the required common European effort is justified.'

The two main positive effects of 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 BBI JU. The significant added value of 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 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 SME 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 2015 the bio-based industry sector accounted for 3.6 million jobs in EU28 and achieved a total turnover of around EUR 700 billion¹⁰.

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 infrastructure to transport the feedstock from its place of generation to the biorefinery location. The biorefineries require a substantial level of investment that is not without risk: high costs for innovation, registration and infrastructure, often young companies, investments needed to develop applications and enter the market including communication to the society, fluctuating feedstock price, competition with well-established conventional production processes. In addition, the sector is faced with various regulatory hurdles 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 PPP (public-private partnership) 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 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 to create competitiveness and jobs, particularly in coastal and rural areas.

¹⁰ https://biconsortium.eu/sites/biconsortium.eu/files/documents/European_Bioeconomy_in_Figures_2008-2015_06042018.pdf

EXECUTIVE SUMMARY

2019 was a crucial year for the BBI JU Programme Office, marking the transition from expected to actual projects' outcomes, displaying the impact of the BBI Initiative on the European bioeconomy.

The total number of grants reached its peak at 101 – generating a considerable workload in terms of project reporting - and the Programme Office demonstrated that it possesses a solid and adaptable framework which not only enhances the efficiency and effectiveness of operations, but increasingly encompasses content-related tasks (such as the analysis of the projects outputs and outcomes). The growing project portfolio confirms the positive trends in terms of actions financed, geographical distribution and strategic orientations covered. Call 2019 registered a record number of proposals with a 30% increase as compared with 2018, confirming the growing interest in BBI calls and the mobilisation of the bio-based sector.

The finalised projects - numbering 12 by the end of 2019 – 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.

BBI JU projects continue to contribute significantly in terms of socio-economic and environmental impact, maintaining a strong drive for innovative SMEs. Studies and analyses have been organised by the Programme Office in order to underline the key points of the initiative (impact, SME participation) and addressing areas identified for improvement (agricultural sector participation) with a very concrete action plan for the current initiative and its possible continuity.

These results have been fundamental to showcasing – through targeted campaigns and the 2nd Stakeholder event – the project outcomes, creating further networking opportunities and setting the scene for the discussions about the future of the partnership under the Horizon Europe programme.

The BBI JU Initiative proved 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 over EUR 2,1¹¹ per each euro of public funds.

¹¹ This figure includes the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members. Further details of the current calculation are exposed in section 1.3.5. *Monitoring the leverage effect of the initiative*

EFFICIENCY OF OPERATIONS

The consolidated business processes and well-established procedures allowed the BBI JU Programme Office to operate successfully despite the growing workload, making good use of the available resources and enjoying synergies with other joint undertakings and with the Commission services.

The BBI JU project portfolio is growing and now comprises 101 granted projects with a total funding of almost EUR 600 million, involving 1 193 beneficiaries from 26 Member States and eight associated countries. With the signature of the 23 grants awarded following the Call 2019 call, these figures will reach a peak of **124 funded projects** with 1466 total beneficiaries from 37 countries, and a total grant amount of EUR 717 million.

BBI JU's Call 2019 – amounting to EUR 135 million - again triggered a significant response compared to previous calls, with 184 proposals submitted, pushing the total number of proposals since the first call to 700, involving more than 7 991 applicants from 45 countries. The 27% increase in proposals received compared to Call 2018 is confirming the growing interest of the community of applicants in BBI JU's programme. Around 52% of proposals obtained scores above threshold, highlighting the competitiveness of the call, with an overall success rate of 13%, a slight decrease compared to Call 2018.

Risk Management has remained an integral part of the management processes, adding value to the organisation by efficiently and effectively supporting the achievement of objectives. The 2018 risk assessment performed on the 2019 objectives identified five main risks, together with measures to mitigate their impact on the organisation. For example, the risk of scarcity of staff resources was well anticipated and timely actions were put in place in order to ensure business continuity and to maintain high-level performance despite the departure of three staff members.

Internal control standards were once again assessed as effective and compliant, ensuring a smooth transition towards the new Internal Control Framework in force as from 1 January 2020.

In this context, the Programme Office managed to continue carrying out its duties efficiently and effectively as shown by the main Horizon 2020 KPIs:

- time to inform was 104 days against a target of 153 (100% on time);
- time to grant was 235 days on average against a target of 245 days (95% on time);
- time to pay was 9.9 days on average for pre-financing against a target of 30 days (100% on time);
- time to pay was 73.8 days on average for periodic payments against a target of 90 days (98% on time);

The BBI JU detected error rate is 0.6% while the residual error rate is 0.47%, these data remaining well below the 5% to 2% range applicable to the current stage of implementation of the initiative per the expectations provided by the legislative framework applicable to BBI JU.

AN EFFECTIVE AND BALANCED PROJECT PORTFOLIO

The overall landscape of participation and funding in 2019 further confirms the effectiveness of the BBI JU project portfolio highlighted by the interim evaluation of BBI JU. The BBI JU's objectives to de-risk investment, to organise value chains and to reach a critical mass remain highly relevant to maintaining the EU as a competitive and attractive market at the forefront of global bioeconomy development.

BBI JU continues to contribute to the structuring and mobilising effect of all key actors across EU industrial sectors and across disciplines in the scientific community. In fact, the **balance in the funding distributed among different actors involved in BBI JU projects is remarkable**: 30% of funding goes to research organisations and higher education establishments, 31% goes to large industries and 35% goes to small and medium-sized enterprises (SMEs).

Large industry remains a key actor in the BBI JU Initiative ensuring long-term vision, investment and the creation of opportunities for small and medium-sized enterprises to scale up technologies. 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 they play a dynamic role in the bio-based economy and that the BBI JU initiative represents a valuable instrument for SME-driven innovation.

Beneficiaries from the scientific community are also very important for BBI JU as they provide expertise and 'out of the box' thinking, driving the translation of science into innovation (the so-called 'innovation potential'). The annual survey of running projects demonstrates that 80% of them contribute to increasing the university/company collaboration. This also confirms that the BBI JU Initiative provides numerous possibilities for them to build relationships with industry and to participate in high-TRL projects, scaling up technologies and valorising their intellectual property.

The **coverage of different feedstock is improving**. Agri-based (side-streams included), forest-based, biowaste and aquatic biomass have been covered by RIA and DEMO projects, with a growing mobilisation of technologies used for processing municipal waste. While most RIA projects are still mainly clustered around agri-based and forest-

based biomass, the use of aquatic feedstock is progressing at a slower pace in RIAs and DEMOs, with to date no Flagship covering this type of biomass.

The **geographical distribution of 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 six new demonstration projects are expected to consolidate this positive trend.

The **participation of EU13 countries has remained steady** over the last three calls, confirming the successful widening participation strategy implemented by the BBI JU Programme Office in terms of awareness raising, supporting partnerships and mobilising regional stakeholders. In addition, by normalising the analysis using gross domestic expenditure in research and development or funding per capita, EU13 countries are shown to perform well in the BBI JU programme. Although EU13 countries receive a lower share of the BBI JU contribution compared to EU15, the former group performs better overall in BBI JU calls (10%) than in other programmes such as Societal Challenge 2 (8.05%) or the LEIT KET Biotechnology programme (4.0%)

PROJECT OUTCOMES MOVING FROM EXPECTED TO ACTUAL RESULTS

The 2020 objectives relating to the projects' outcomes are defined in the SIRA 2017 and are monitored by the Programme Office on an annual basis. With a larger share of projects concluded in 2019, participants have been able to report – in addition to expected results – the actual outcomes obtained. These results confirm that BBI projects are well on their way to exceeding the targets set for the Initiative, reinforcing the JU's significant contribution to the systemic evolution of the sector in bridging the gap between innovation and market.

KPIs 1, 2 and 3 confirm the mobilisation of the sector and the structuring effect on the bio-based sector in Europe.

- According to KPI 1, finished projects have already generated 25 new cross-sector interconnections out of the target of 36 in the SIRA 2017. They are expected to generate an additional 187 new cross-sector interconnections by 2020, largely exceeding the initial target;
- According to KPI 2, finished projects already defined 17 new bio-based value chains, largely surpassing the target of 10 in the SIRA 2017. On top of this, 163 additional new bio-based value chains are expected by 2024;

- According to KPI 3, 101 Grant Agreements (soon to be 124) are already signed out of 200 expected by the end of the initiative.

Although we will only have the final numbers after the finalisation of the projects, most of the results – both actually reported and expected - go substantially beyond the initial expectations, demonstrating a systemic change in the bio-based sector that is manifested by a much higher number of bio-based value chains and sector interconnections. This also demonstrates a level of complexity and number of interconnections among the different value chains that were not initially expected.

These figures also confirm the structuring effect involved in organising the value chains across sectors and the innovation-driven mobilisation of all key stakeholders across sectors and geographical regions. The significant benefit brought by BBI JU in this context is the acceleration of uniting different sectors and industries in the creation of new value chains.

KPIs 4, 5, 6 and 7 underline the market uptake potential showing that new bio-based building blocks, materials and consumer products are accessing markets and, in most cases, have properties superior to those of fossil-based equivalents. This indicates that the trend of the portfolio is directed towards improving product performance and enlarging the portfolio of 'green label' materials and chemicals. Thanks to their versatility and the possibility to produce them from various types of feedstock and with different technologies, they are demonstrating important elements of novelty such as inferior CO₂ and/or other GHG emissions, optimal energy consumption, inferior production costs, enhanced levels of biodegradability, recyclability, improved health and safety aspects.

- Regarding KPI 4, projects reported the creation of nine new bio-based building blocks by 2020, largely surpassing the target of five given in the SIRA 2017. On top of this, 77 additional new bio-based building blocks are expected by 2024;
- Regarding KPI 5, projects reported the creation of 15 new bio-based materials by 2020 against the 2020 target of 50 in the SIRA 2017. An additional 168 new bio-based materials are expected to be created by 2024.
- Regarding KPI 6, projects reported the creation of 12 new bio-based consumer products by 2020 against the 2020 target of 30 in the SIRA 2017. An additional 95 new bio-based consumer products are expected to be created by 2024.
- KPI 7 shows that BBI JU has granted nine Flagship projects, which is almost the double the 2020 target of at least 5 Flagships in the SIRA 2017.

In addition to the KPIs defined by the SIRA, the Programme Office continues to monitor the leverage effect of the initiative, which is currently expected at 2.1 EUR¹² marking an increase compared to last year. The overall contributions from the JU's member other than the Union are slightly below the level expected at this point of the initiative, mainly because of the lack of financial contributions, while the number of certificates of in-kind additional activities submitted by the Bio-based Industries Consortium (BIC) members remains high.

SOCIO-ECONOMIC AND ENVIRONMENTAL IMPACT

BBI projects also show interesting figures in terms of employment: 82% of projects contribute to job creation. In particular, the nine Flagship projects will generate more than 3,300 direct and more than 10,000 indirect jobs, evenly shared between EU15, EU13 and associated countries and most of them in rural areas. Those nine Flagships received EUR 195 million of grants leveraging more than EUR 1.2 billion of private investments.

BBI projects have reported some positive effects regarding the participation of the primary producers and the impact of the initiative on rural development, especially in projects using agri-based feedstock. In 2019, the Programme Office launched a study to gain a better understanding of the **challenges and opportunities faced by primary producers when participating** in the bio-based sector and its value chains. A set of innovative business models were also analysed and provided a list of successful examples for fostering the meaningful participation of agricultural producers. The study also delivered a set of 28 recommendations and a concrete action plan to enhance and further consolidate the participation of the agricultural sector within the current BBI Initiative and its possible successor under Horizon Europe.

At the regional level, nearly half of the projects (45%) report the reutilisation of local residues and synergies with regional initiatives. Around 40% of the respondents state that they are supporting regional development and diversifying the local economy as well as involving local associations and stakeholders. Moreover, more than one quarter of the projects reports having established a collaboration with the local administration, and 15% to contributing to reindustrialisation or reconversion in their regions, and to the valorisation of unexploited marginal land.

The **expected environmental impact** is also considerable as 84% expect to contribute to lower GHG emissions compared to fossil-based counterparts; 75% of the projects report a contribution to waste reduction, reuse, recycling or valorisation; and nearly half of the projects report a reduced energy consumption and improved land use. In addition,

¹² This figure includes the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members. Further details of the current calculation are exposed in section 1.3.5. Monitoring the leverage effect of the initiative

35% of the projects are reporting improved water efficiency and more sustainable use of natural resources. Considering only the seven Flagships funded so far, the total CO₂ saving is expected to reach 600 kT CO₂/year.

The **contribution of BBI JU projects to SDGs** is confirmed by a first analysis carried out by the Programme Office. A strong involvement of BBI JU projects in improving the use of the bioresources is evident, aimed at valorising them not only for their energy content, but also to unlock their full potential as residues, industrial side streams and biowaste. The projects contribute to several of the SDGs by replacing fossil-based products, feeding the world under challenging climatic conditions and creating new jobs in rural areas while preserving the biodiversity. BBI JU's projects also address SDGs related to the promotion of a sustainable industrialisation and this is implemented by building resilient infrastructures to ensure access to renewable energy for everyone in an efficient way and to contribute to sustainable economic growth through the creation of new jobs, whilst always considering the impact that these actions might have on the environment. Due to their scope, Flagship actions contribute to promoting sustainable agriculture and energy consumption, combating desertification, land degradation and the loss of biodiversity in the area where the biorefinery is located.

COMMUNICATING THE IMPACT AND THE ADDED VALUE OF THE BBI JU AND ITS PROJECT PORTFOLIO

The impact on the added value of the BBI JU Initiative and its project portfolio has been at the core of the communication activities carried out in 2019. In particular, the Programme Office organised the 2nd BBI JU Stakeholders Forum on 3 and 4 December 2019, welcoming nearly 600 participants, 30 speakers and expert panellists to discuss the strategic importance of the bio-based economy in Europe and BBI JU's key role in implementing it. In addition to this, projects' representatives were invited to exchange ideas, finding potential areas of common interest and synergies, as well as networking.

The Stakeholders Forum was anticipated by a campaign about the impact of BBI projects that generated more than 570 000 views, 2 400 likes, 1 200 retweets and 28 600 video views on Twitter. The campaign also included articles in the specialised press, discussing the projects' impact, models of the circular bioeconomy, the blue bioeconomy and SME participation.

BBI JU continued to promote the annual call for proposals at its annual info day in Brussels, during 14 events in the Member States and associated countries and by participating - in coordination with the Commission and BIC - in a wide range of events.

CONTRIBUTE TO THE DISCUSSIONS OF HORIZON EUROPE

During 2019, the Programme Office contributed to the discussion about the future partnership under the next research and innovation framework programme Horizon Europe. On the one hand, the Programme Office supported the members of the JU in setting the scene for discussions around the future partnership, particularly - but not exclusively - during Governing Board meetings. In this context, the work of the States Representatives Group and the Scientific Committee has been fundamental in bringing the experience and contribution of its members to the Horizon Europe preparation process.

On the other hand, the Programme Office maintained a strong collaboration with the Commission's services and the other Joint Undertakings, leading common actions to collect lessons learnt from the implementation of Horizon 2020 and prepare contributions about the future framework for the rules underlying the functioning of institutional partnerships under Horizon Europe.

Finally, the Programme Office was a key contributor in providing information about the projects' results and the initiative's outcomes in the context of the impact assessment of the BBI JU Initiative.

CONCLUSION

In 2019, the Programme Office managed the project portfolio in a truly remarkable fashion, delivering high-quality results highlighting the efficiency of the organisation and displaying the impact of the BBI Joint Undertaking. The European Bio-based sector is showing a growing interest in BBI calls, revealing its structuring effect across strategic priorities and its mobilisation in different geographical areas as well as ensuring the balanced participation of industry, academia and small and medium enterprises, creating a fertile environment for the future of the initiative.



Implementation of the Annual Work Plan 2019

1.1. 2019 KEY OBJECTIVES AND ASSOCIATED RISKS

1.1.1. Overall operational objectives from AWP 2019

Call 2019¹³ focused on the need to better integrate biomass feedstock suppliers at the front end of the chain and to create a demand for biomass feedstock from biorefining processes. Similarly, Call 2019 aimed at stimulating partnerships involving end-market actors to create a 'market pull' for bio-based products for identified applications.

In this way the 2019 call continued the trend initiated in 2016, moving from a strict biomass feedstock 'push' based on traditional value chains towards a demand for biomass, to enable processes to adequately respond to a 'pull' from the end markets.

Call 2019 continued to develop the four Strategic Orientations (SOs) linked in a matrix, with three 'vertical' orientations and the 'horizontal' one cutting across them.

The SOs for 2019 were:

1. Fostering a sustainable biomass feedstock supply to feed both existing and new value chains, by expanding and diversifying the biomass feedstock portfolio through the improvement and utilisation of existing sources as well as tapping into new sources;
2. Optimising efficient processing for integrated biorefineries by developing new breakthrough processes, and by improving the efficiency and sustainability of biorefining biomass into compounds for chemicals (including food and feed ingredients) and materials;
3. Developing innovative bio-based products for specific market applications by increasing the applicability of high value-added bio-based products, and avoiding price competition with fossil-based products by pursuing advanced functionalities and unmatched performance;
4. Creating and accelerating the market uptake of bio-based products and applications by responding to the concerns of society about bio-based products, engaging in dialogue with societal and consumer groups about benefits and how potential risks are addressed and managed.

The implementation and achievement of the SOs developed in the AWP 2019 are outlined in sections 1.2 and 1.3 of the current report.

¹³ <https://www.bbi-europe.eu/sites/default/files/bbi-ju-awp-2019.pdf>

1.1.2. Management objectives and achievements 2019

The 2019 priorities and objectives were presented by the Executive Director to the BBI JU Governing Board in 2018. The priorities were mainly concerned with the consolidation of the project portfolio, keeping the highest standards of quality and efficiency while absorbing a growing workload. Another important priority for 2019 was to highlight the impact of the initiative to a wider group of stakeholders as well as to contribute to the discussions of Horizon Europe, communicating the lessons learnt from the operational implementation experience garnered under Horizon 2020.

The 2019 objectives were organised around four priorities, the main results achieved for each of them are briefly described below:

1. Maintain the quality of the BBI JU operational standards at the highest level and ensure optimal efficiency to absorb the increase in the workload.

The Programme Office consolidated and fine-tuned the reporting landscape on the financial contribution and the leverage effect as originally approved by the BBI JU GB in 2018. In order to absorb the workload peak the Programme Office looked at all options including an adjustment of the Staff Establishment Plan (SEP). A suitable option implying no increase of the administrative budget was identified but not approved. Consequently, a solution of employing interim staff was retained.

Throughout the year the JU optimised the ex-post control process based on an analysis of the first ex-post audits and of the specificities of BBI JU beneficiaries. The implementation of the new Internal Control Framework was prepared by end 2019, building on achieved compliance and effectiveness while fostering efficiency.

2. Analyse and communicate the impact and the added value of the BBI JU iPPP and its project portfolio to a wide audience of stakeholders.

In 2019 more detailed analyses and studies of the socio-economic and environmental impact of BBI JU projects were undertaken to demonstrate the added value and additionality of the initiative. The objective was also to communicate about the results and achievements of BBI JU's completed projects, with a specific focus on the scientific advancements and market uptake potential.

Based on those analyses and studies, specific tools, reports and campaigns (including events) were developed to communicate the added value of the BBI Initiative and its impact on the daily lives of EU citizens. On December 3rd and 4th BBI organised the second BBI JU Stakeholder Forum keeping the successful format of 2017, with a specific focus on output, impact and benefits for the EU citizens. All those initiatives also contributed to

consolidating the relationship built with priority stakeholders (institutional, governmental and NGOs) to reinforce and support their role as ambassadors.

3. Implement the adjustments to the project portfolio following the recommendations of the BBI JU interim evaluations, while maintaining all of its recognised key strengths.

In 2019, BBI JU continued to consolidate its effective project management and reporting, including the assessment and payments of final project reports. The agreed methodology for the monitoring, validation and communication format of the project outcome KPIs was also further developed and it was agreed to perform this via a specific study to be carried out in 2020.

The specific study on the BBI JU added value for and from SMEs in the bio-based industries was finalised in 2019 and a report was published. The outcome of this study was widely diffused, and several useful aspects were taken into account to contribute to the discussion on the potential partnership under Horizon Europe, Circular Bio-based Europe (CBE). Another study on the participation of the agriculture sector in BBI JU was also performed in 2019. The report and action plan for the short, medium and long-term were published in December 2019.

4. Contribute to the discussions of Horizon Europe in terms of both Missions and Objectives and the operational functioning of the BBI JU as implementing body, by building on the lessons learnt from the implementation of Horizon 2020.

- The BBI JU Programme Office together with its two advisory bodies contributed to the discussion of Horizon Europe via several initiatives:
- Proposal of a set of solutions to better integrate the BBI JU industries into the entire bioeconomy value chains, addressing the issues of biodiversity, competition with food and feed, and water and soil management practices; the analysis of the BBI JU project portfolio as well as the specific study on the agriculture sector participation enabled proposals to be prepared on how better to address the mobilisation of the primary sectors, scarcely covered geographic areas and insufficiently mobilised feedstocks;
- The identification and proposal of a set of opportunities in terms of operational practice and implementing rules to improve the implementation of HE vis-à-vis H2020;
- The preparation of a draft plan to cover the transition between H2020 and Horizon Europe, taking into consideration the possible scenarios regarding

the type of instrument to be selected for the implementation of a partnership on the “Circular Bio-based Europe”.

1.1.3. Associated risks

In line with the BBI JU procedures for identifying risks and their preventive measures, the 2018 risk assessment performed on the 2019 objectives identified five risks. These risks were described in the Risk Register of the organisation together with individual responsibilities, the relevant risk responses and the deadlines for implementation by the Programme Office. The management monitored and reported possible threats as necessary during the year.

As a result, the Programme Office implemented the mitigating actions effectively: all the risk responses planned for 2019 were adequately implemented in a timely fashion and/or were updated. These results improved the control over the identified threats and the relevant information was used to re-assess the future risk exposure of the organisation as detailed in section 4.6 below.

Indeed, one of the most significant challenges identified in the past eventually started being realised in 2019: an increased staff turnover rate and changes in working patterns for some key staff members had to be promptly addressed in a context of a progressively increasing workload. In previous years, the Management Team had already adopted preventive and mitigating measures that proved to be effective in managing this situation while maintaining the high-quality standards of BBI JU’s operations.

1.2. RESEARCH & INNOVATION ACTIVITIES

The mission of the BBI JU is to implement, under Horizon 2020 rules, the Strategic Innovation and Research Agenda (SIRA) driven by BIC. This involves organising calls for proposals to support research, demonstration and deployment activities, enabling the collaboration between stakeholders along the entire value chains and covering primary production of biomass, processing industry and final use.

The section below provides an overview of the status of BBI JU's achievements with respect to the implementation of its AWP and the management of its project portfolio, in addition to its contributions to the SIRA 2017 (see section 1.2.1). More specifically, sections 1.2.2 and 1.2.3 provide a description of the various types of actions and an overview of the BBI JU calls and the current projects portfolio. Finally, section 1.2.4 outlines the BBI JU project monitoring activities carried out in 2019.

1.2.1. Strategic Innovation and Research Agenda (SIRA)

The Strategic Research and Innovation Agenda 2017 (SIRA) presents the overall strategic orientation of BBI JU, developed by BIC and based on extensive consultation with the European Commission and other public and private stakeholders. The SIRA 2017 results from the revision of the SIRA 2013.

The SIRA 2017 presents a broadened scope that reflects the changes occurring in the rapidly evolving bio-based industries, such as the inclusion of new sectors and the incorporation of new sources of feedstock, e.g. aquatic biomass, biowaste, CO₂ and other exhaust gases. In addition, the SIRA 2017 pursues the crossover between 'traditional' value chains, moving to a multi-value chain approach that increases the opportunities to transform and valorise new feedstock into numerous new bio-based products for a wide range of applications.

The SIRA defines four Strategic Orientations (SOs) of the bio-based industry in Europe (Figure 1):

- SO1: foster supply of **sustainable biomass feedstock** to feed both existing and new value chains; SO1 refers to the four main sources of biomass feedstock for bio-based industries in Europe: agri-based feedstock, comprising agriculture, agro-food sector and mainly their residuals and side-streams; forest-based feedstock, including forestry, forest-based sector and their residuals and side-streams; aquatic feedstock, including aquatic organisms, fisheries and aquaculture sectors and their residues;

biowaste and CO₂, including municipal solid waste, sludge from wastewater and CO₂ effluents

- SO2: optimise **efficient processing for integrated biorefineries** through research, development and innovation (R&D&I) (SO2); SO2 focuses on the technological developments for the optimisation of all industrial processes involved in integrated bio-refineries, covering the pre-treatment of biomass, the conversion of the pre-treated feedstock to bio-based chemicals and materials, the downstream processes and the system modelling.
- SO3: develop **innovative bio-based products** for identified market applications (SO3); SO3 aims at creating a wide range of bio-based products, including 'drop-in' solutions, bio-based products that outperform their fossil-based counterparts, new breakthrough chemicals and proteins and active ingredients for feed/food, pharmaceuticals and cosmetics, among others.
- SO4: create and accelerate the **market uptake** of bio-based products and applications (SO4); SO4 aims at facilitating the market uptake of the new bio-based products by addressing different non-technological hurdles, such as standardisation, policy and regulations; increasing consumer awareness on the societal benefits of the bio-based products, and fostering strategic aspects such as knowledge-gathering and networking.

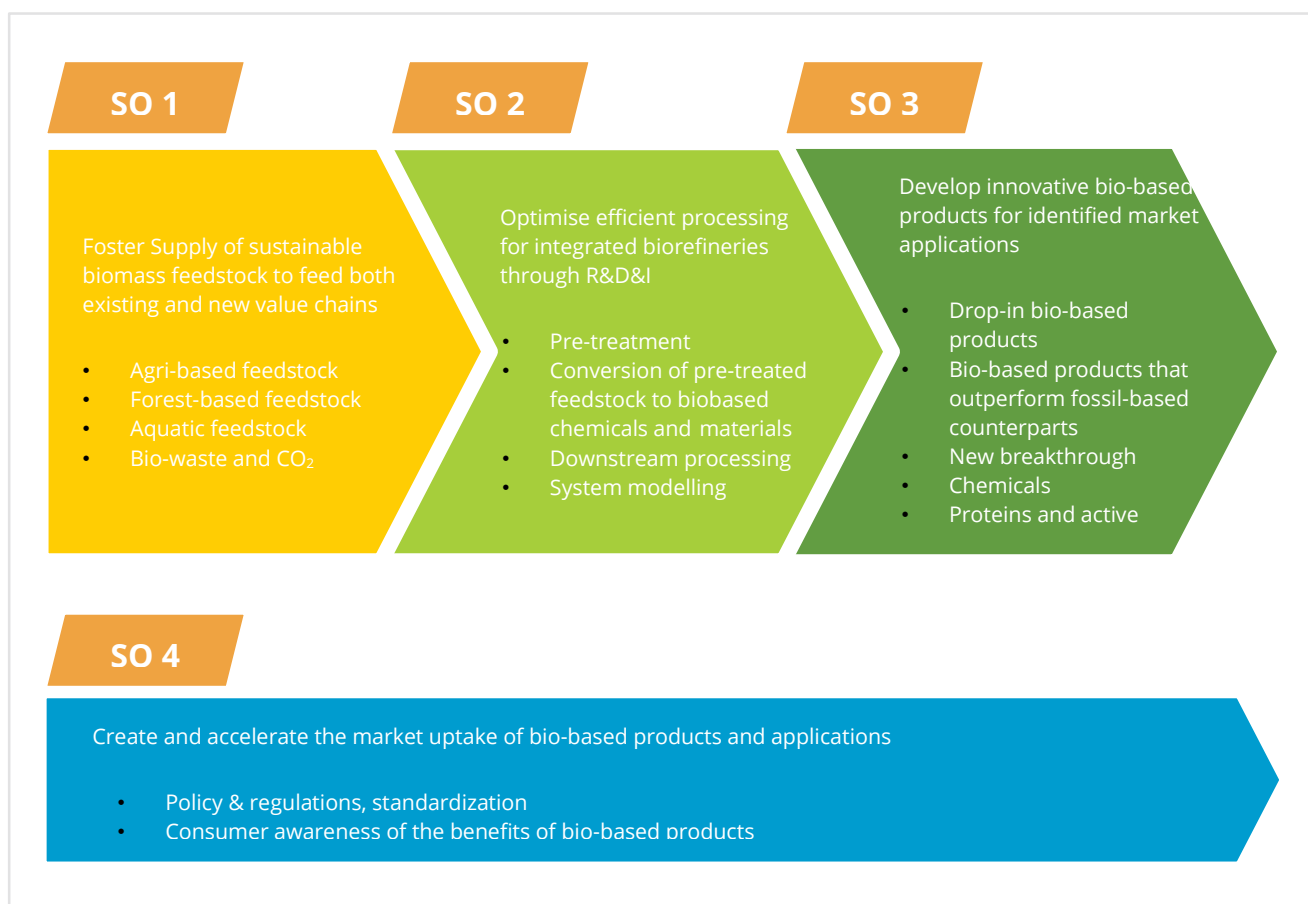


Figure 1: SIRA strategic orientations

1.2.2. BBI JU types of actions and scale of project impact (Technology Readiness Level)

BBI JU implements its research and innovation programme via four types of actions as defined in the Annual Work Programmes:

- Research and Innovation Actions (RIAs);
- Innovation Actions (IAs), namely Demonstration Actions (DEMOS) and Flagship Actions (Flagships);
- Coordination and Support Actions (CSAs).

Apart from CSAs, all actions correspond to a different Technology Readiness Level (TRL) (Figure 2). The TRL scale is a tool for decision-making on research, development and innovation investments at EU level.¹⁴ It enables the assessment of the maturity of a particular technology and the consistent comparison of maturity between different types of technologies.

¹⁴ See also https://ec.europa.eu/research/participants/data/ref/h2020/wp/2014_2015/annexes/h2020-wp1415-annex-g-trl_en.pdf.

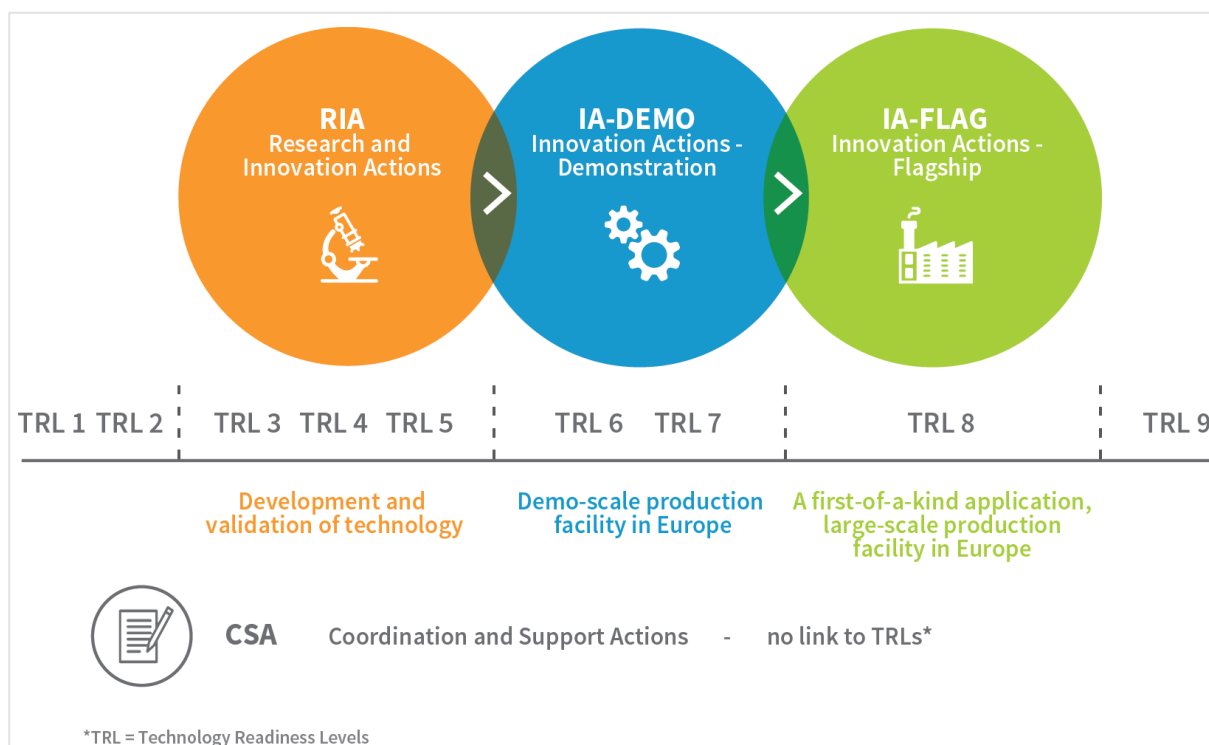


Figure 2: Technology Readiness Levels (TRLs) according to the SIRA and connection to BBI JU types of actions

RIAs cover various activities to develop (TRL 3) or validate (TRL 4-5) technologies to fill gaps in value chains and enable new bio-based chemical building blocks, new bio-based materials, and new bio-based 'consumer products' or applications.

The DEMOs conduct activities to demonstrate the technical and economic viability of a new or improved technology (or a combination of linked technologies), process, or product in a relevant environment (TRL 6) or a system prototype in an operational environment (TRL 7). DEMOs at higher TRL perform a full value chain demonstration at pilot scale demonstrating also an optimised feedstock pre-treatment and downstream processing combination.

Flagships deal with the deployment of the demonstrated technologies and the delivery - by the end of the project - of a system that is complete and qualified (TRL 8) for successful commercial operation ('first of a kind' large-scale production facility in Europe). Flagship projects aim at improved environmental and economical processes for the industry when competing with fossil-based technologies (e.g. reduction in CO₂ footprint) and have a positive socio-economic impact. The flagships' main aim is to deliver specific product(s) possibly with new functionalities at a full-scale application, and subsequently to introduce those products on the market.

1.2.3. Overview of BBI JU Calls and Project Portfolio

CALL AND PROJECT MANAGEMENT OVERVIEW

BBI JU has thus far implemented six calls¹⁵ out of the seven foreseen until the end of 2020, concluding grants for EUR 599 419 910 that represent about 99% of the cumulative indicative funding, and 75% of its overall budget foreseen for all calls until 2020 (taking into account the budget reduction of Call 2020).

The following table shows an overview of all calls implemented to date.

| Call | 2014 | 2015 | 2016 | 2017 | 2018 | Total at 31/12/2019 |
|----------------------------|------------|-------------|-------------|------------|-------------|---------------------|
| Proposals | 38 | 82 | 103 | 149 | 144 | 516 |
| Applicants | 364 | 901 | 1190 | 1734 | 1633 | 5822 |
| Grant agreements | 10 | 26 | 29 | 17 | 19 | 101 |
| Beneficiaries (non-unique) | 104 | 317 | 341 | 197 | 234 | 1193 |
| Beneficiaries (unique) | 95 | 273 | 285 | 178 | 206 | 794 |
| Grant amount (EUR) | 49,653,708 | 178,849,527 | 182,873,089 | 85,161,992 | 102,881,595 | 599,419,909 |

Table 1: Overview of the implemented BBI JU calls for proposals by 31/12/2019

The main activities that occurred during 2019 include the following:

- Finalisation of the Grant Agreement preparation (GAP) process of Call 2018 projects, resulting in the signature of 19 Grant Agreements for new projects;
- Implementation of Call 2019 starting with the publication of the call in April, remote evaluation from September to October, central evaluation during the months of October and November;
- Communication of the evaluation results of Call 2019 to the applicants and launch of the respective GAP in December 2019 upon approval of the ranking list by the BBI JU Governing Board;

¹⁵ The two Calls of 2015 – Call 2015.1 for Flagships and Call 2015.2 for RIAs, DEMOs and CSAs – are counted as one single call here. Call 2018 implementation is currently in the phase of GAP.

- Adoption of the AWP 2020 followed by its publication on the BBI JU website;
- Analysis of periodic reporting and review of projects.

Regarding the distribution of the operational budget, Figure 3 shows the distribution of BBI JU's funding allocated to the different types of actions for the projects from Calls 2014 to 2019 compared to the distribution announced in the SIRA for the initiative as a whole. This data demonstrates that while the budget allocation for RIAs and Flagships is in line with the targets, adjustments are still required for DEMO and CSA actions. In particular, the budget allocation for DEMO actions is still higher than the target. This deviation has been tackled at the programming level through the 2019 AWP and will be further addressed in the 2020 AWP. For CSAs, the overall funding is still below the indicative target; however, the increase in funding introduced in AWP 2019 has been maintained in AWP 2020, and an improvement in the distribution of the operational budget may be expected via Call 2020.

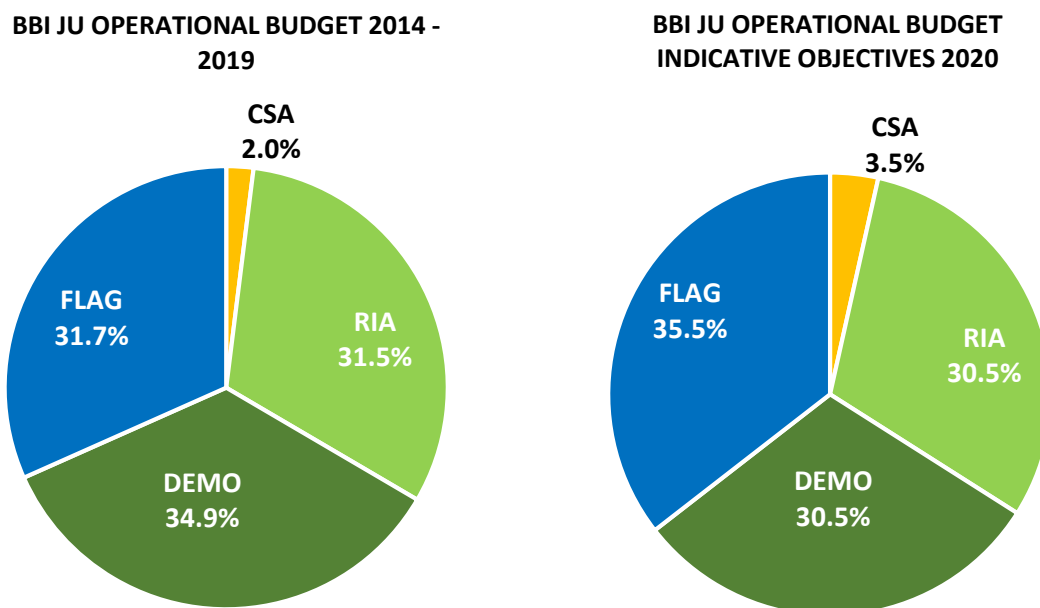


Figure 3: BBI JU overall operational budget: allocation of funding between types of actions. Cumulative figures for the period 2014-2019 as compared to the indicative values at the end of 2020 (SIRA 2017). Data for 2019 refers to proposals currently in GAP.

The share of funding allocated across the various types of action in BBI JU is rather comparable over the six calls implemented to date (Figure 4), with the majority of funding going to IAs (DEMOs and Flagships).

Further details on the performance of BBI JU against Horizon 2020 and specific KPIs are provided in section 1.3.1. Details on the implementation of Call 2019 are provided in section 1.3.2.

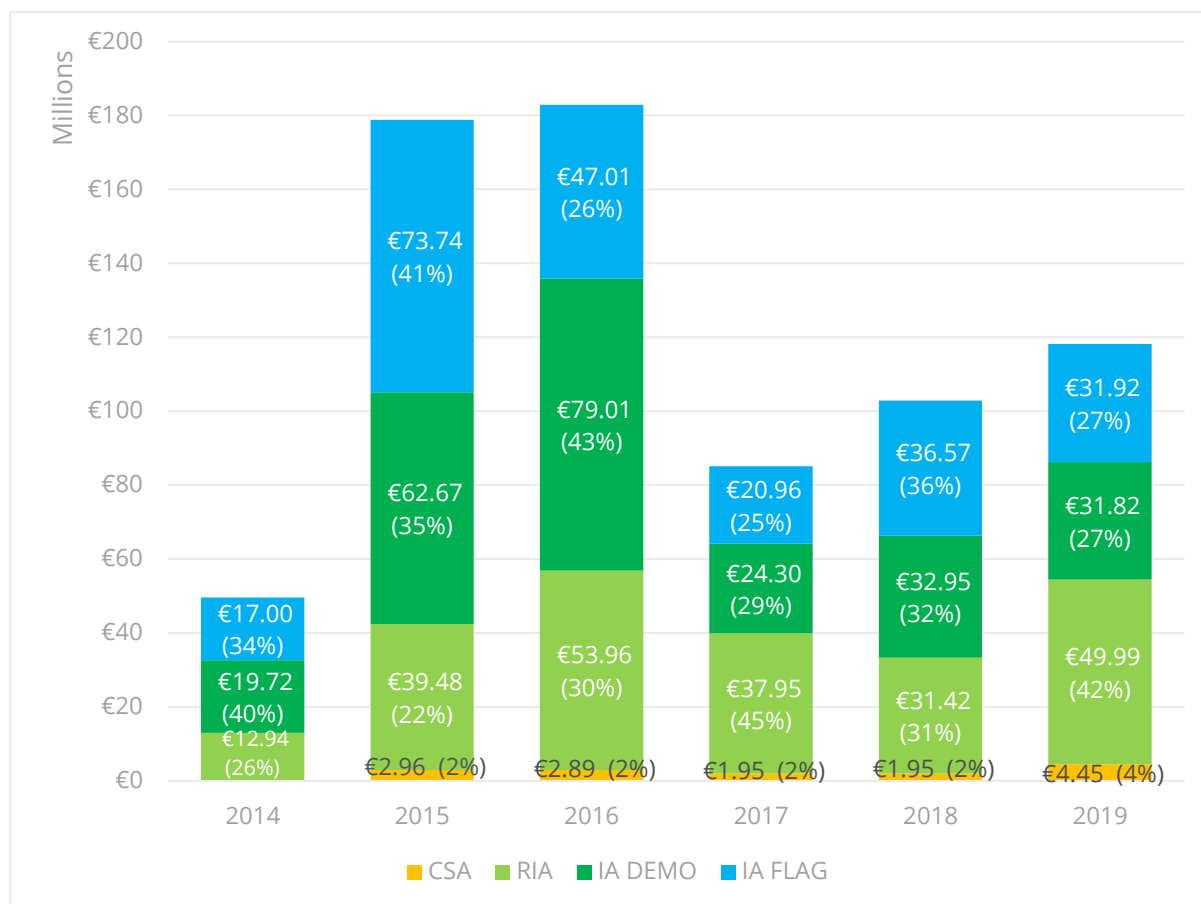


Figure 4: BBI JU overall operational budget expenditure in Calls 2014 - 2019 (the data for the Call 2019 refers to retained proposals)

OVERVIEW OF BBI JU'S PROJECT PORTFOLIO

At the end of 2019, the BBI JU project portfolio consisted of 101 granted projects¹⁶ (52 RIAs, 29 DEMOs, 9 Flagships and 11 CSAs, resulting from the calls of years 2014, 2015, 2016, 2017 and 2018). After the finalisation of the GAP process from Call 2019, 12 RIAs, 6 DEMOs, 2 Flagships and 3 CSA projects are expected to be added to the BBI JU's project portfolio. Table 2 summarises the number of projects by call and action for each year and the plan for Call 2020.

Call 2014

10 projects: 7 RIAs, 2 DEMOs, 1 Flagship
(first periodic reports were submitted in March 2017)

¹⁶ One DEMO project from Call 2014 has been terminated.

| | |
|--------------------------------|----------------------------------------------------------------------------------------------------------------|
| Call 2015 | 26 projects: 11 RIAs, 9 DEMOs, 3 Flagships, 3 CSAs (first periodic reports were submitted in November 2017) |
| Call 2016 | 29 projects: 15 RIAs, 9 DEMOs, 2 Flagships, 3 CSAs (first periodic reports were submitted in May 2018) |
| Call 2017 | 17 projects: 10 RIAs, 4 DEMOs, 1 Flagship, 2 CSAs |
| Call 2018 | 19 projects: 9 RIAs, 5 DEMOs, 2 Flagships, 3 CSAs |
| Call 2019 | 23 projects in GAP: 12 RIAs, 6 DEMOs, 2 Flagships, 3 CSAs |
| Call 2020 (ongoing) | Projects not yet funded |

Table 2: BBI JU summary of calls: achievements by the end of 2019

CLASSIFICATION OF BBI JU PROJECTS ACCORDING TO THE MAIN SOURCE OF FEEDSTOCK

The SIRA 2017, in the frame of the SO 1 “Foster supply of sustainable biomass feedstock to feed both existing and new value chains”, 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 MSW and wastewater, and CO₂.

Table 3 presents the projects’ distribution according to the main sources of feedstock for the three types of action, RIA, DEMO and Flagship. All the projects from the six BBI JU calls (2014-2018) are represented by a square with different colours.

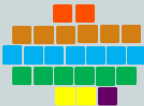


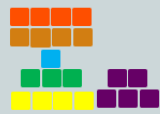







| Origin of feedstock | RIA | DEMO | Flagship |
|-------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Agri-based |  |  |  |
| Forest based |  |  |  |
| Bio-waste and CO ₂ |  |  | |
| Aquatic Biomass |  |  | |
| Other feedstock |  | | |

Table 3 BBI JU RIA and IA projects from: Call -2014 (red) -15 (brown) -16 (blue) -17 (green) -18 (yellow) and the proposals in GAP in Call 2019 (purple). The distributions reflect the portfolio of projects by the end of 2019

As shown in the table, “other feedstock” is an additional category for BBI JU projects that use a biomass which is not identified in the SIRA 2017. For example, this category includes the projects resulting from BBI JU’s Call 2019 for the topic “BBI2019.SO2.R3 – *Apply microorganisms and/or enzymes to resolve end-of-life issues of plastics*”, where circularity concepts are applied in the treatment of plastic waste.

The table 3 shows that all SO1 feedstock sources have been covered by RIA and DEMO projects. Overall, the agri-based sector represents the main source of feedstock, followed by the forest-based, for all actions (RIAs and IAs). The last call, 2019, consolidates these trends with five new DEMOs, one RIA and one Flagship using agri-based feedstock and five new RIAs and one Flagship using forest-based feedstock.

There is a steady increase in RIA and DEMO projects processing municipal solid waste, with two new RIAs from Call 2019. It is interesting to note that the number of DEMO projects processing biowaste, including MSW and wastewater, almost equals the number of RIAs processing the same feedstock, showing a growing maturity in the technologies used for processing this feedstock, as well as reflecting the maturity of the sector.

The use of aquatic biomass, although well represented, shows a slower adoption in both RIAs and DEMOs. Call 2019, the projects of which are still in the GAP, delivered only one RIA and one DEMO valorising this biomass.

The table shows that to date there are as yet no Flagships processing either aquatic biomass or biowaste biomasses. This denotes that these sectors are not yet ready to move to a higher level of TRL and technologies need still to be developed to generate products that can reach the market. Seven ongoing flagship projects are clustered around agri-based biomass while the other two are valorising diverse types of forest-based

feedstock. The two new Flagship projects resulting from Call 2019 will use respectively agri-based and forest-based feedstock.

CSA projects are contributing to the SO4 “Create and accelerate the market-uptake of bio-based products and applications” by addressing non-technological challenges. They cover policy regulations and standardisation, consumer awareness of the benefits of bio-based products, knowledge gathering and networking between the many actors of the different segments of the value chains. Overall, there are nine CSA projects that are addressing the strategic aspects of knowledge-gathering and networking to stimulate the market uptake for bio-based products. There are in total 11 ongoing CSA projects in the current BBI JU project portfolio and three additional ones are added as a result of Call 2019. This is shown in table 4.

| SO4 | Policy, regulations and standardization | Consumer awareness of the benefits of the bio-based products | Knowledge gathering and networking |
|-----|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| CSA |  |  |  |

Table 4: CSA projects from: Call -2014 (red) -15 (brown) -16 (blue) -17 (green) -18 (yellow) and the proposals in GAP in Call 2019 (purple). The distributions reflect the portfolio of projects by the end of 2019

CONTRIBUTION OF BBI JU PROJECTS TO SIRA STRATEGIC ORIENTATIONS

The SIRA 2017 introduced the definitions of four SOs, as explained in section 1.2.1. The SOs focus on the supply of sustainable biomass (SO1), efficient processing (SO2), bio-based product development and application (SO3) and lastly the market uptake of bio-based products and applications (SO4). The programming of BBI JU Annual Work Plans reflects this strategy by defining topics which address the main priorities within each SO. Hence, projects selected under BBI JU calls incorporate by design the development and deployment of technologies that are best suited to tackle the challenges and needs identified in the SIRA. The current section aims at providing a general overview of the coverage of SOs by BBI JU project portfolio.

IAs (DEMOs and Flagships) are required to cover the whole value chain, from the sustainable production and sourcing of biomass, to the development and integration of technologies and processes, up to the creation of new bio-based products with a concrete application that meet societal and market demands. Therefore, IAs usually address all four SOs, even though they may place specific emphasis on one or several. RIAs focus on filling the gap in a bio-based value chain, by tackling one or more technological challenges, and may address one or more SOs. Finally, CSAs facilitate the market uptake by addressing non-technological hurdles, such as standards and regulations and citizens’ awareness about bio-based products.

The contribution of the BBI JU project portfolio to **SO1**, the **sustainable sourcing of different types of feedstock defined in the SIRA**, is analysed in detail in the previous section - *Classification of BBI JU projects according to the main source of feedstock*.

SO2 on **efficient processing** encompass objectives for the different steps of the biorefinery process:

- **Pre-treatment:** one of the needs highlighted in the SIRA is the development of flexible and effective pre-treatment technologies to break down recalcitrant lignocellulosic biomass into functional fractions. For example, US4GREENCHEM combines mechanical pre-treatment methods with ultrasound pre-treatment capable of disrupting the lignocellulosic matrix with reduced energy input and minimal production of inhibitory by-products.
- **Conversion of pre-treated feedstock into bio-based chemicals and materials,** using thermo- chemical processes, chemical catalysis and industrial biotechnology. For example, SYLFEED DEMO project has developed an innovative “wood to feed” value chain. After the pre-treatment of the cellulose with acid and the subsequent enzymatic process, SYLFEED second generation sugars are fermented and converted into high-value Single Cell Protein (SCP) for its use as animal feed.
- **Downstream processing,** including the development of efficient recovery, fractionation, separation and purification steps. DEMO project SpiralG aims to build an algal biorefinery production site, where algal biomass from spirulina will be cultivated for the further extraction of phycocyanin, which is used as a pigment in several applications in the pharmaceutical, cosmetic and food industries.

SO3 on **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. Please see the description of KPIs 4, 5 and 6 in section 1.3.3 *BBI JU project portfolio: BBI JU specific KPIs* for more details on the different types of new bio-based building blocks, materials and consumer products. The following are only a few examples of the areas of application covered by BBI JU projects:

- **Proteins and bioactive ingredients for food and feed, cosmetic and pharma applications.** The sustainable production of proteins, from both vegetal sources or insects, is the focus of several BBI JU projects, such as FARMYNG, PLENITUDE, GreenProtein, iFermenter, SYLFEED, InDirect or PROMINENT, among others. Several other projects work on the extraction of bioactive compounds for food/feed, cosmetic or health applications,

such as: BIOSEA, AQUABIOPROFIT, Pro-enrich, MACRO CASCADE, AgriMax, ExCornsEED or Prolific.

- **Bio-based packaging** for food or other applications, with enhanced biodegradability and/or recyclability and improved mechanical, barrier and antimicrobial properties, which result in more sustainable end-of-life cycles and longer shelf lives, respectively. Examples of the BBI JU projects delivering bio-based packaging are BioBarr, SHERPACK, FRESH, PULPACKTION, BIONtop, Celluwiz, BIOSMART, MANDALA or PEFerence, to name just a few.
- **Automotive sector.** In line with trends in the car industry, an increasing number of BBI JU projects work on the production of bio-based materials and composites, which are lighter and have improved mechanical properties. Some examples are GreenLight, BIOMOTIVE, BARBARA, ECOXY or Relinvent.
- **Textiles.** Several BBI JU projects aim at developing sustainable bio-based fibres and textiles for different applications, such as sportswear, carpets, fishing or others. These fibres are eco-designed and have reduced environmental impacts at both the production and end-of-life phases. Some examples are: Neocel, EFFECTIVE, BIONtop and POLYBIOSKIN.

SO4 - Accelerating market uptake of bio-based products. CSA projects greatly contribute to addressing the non-technological hurdles that slow down the market uptake, including public awareness, bio-based products standardisation and regulations, networking within the bio-based industry or support to value chains via clustering and road- mapping activities. Some examples are:

- **Communication on benefits of the bio-based economy:** BioCannDo focuses on improving communication on the sustainability aspects of bio-based products among the multi-stakeholders. The goal is to engage a European stakeholder network dealing with communication issues regarding the bioeconomy with the involvement of a broader public view.
- **Standards and regulations:** STAR4BBI aims at identifying the technological trends in the bio-based economy to help establish a coherent, well-coordinated and favourable regulatory framework that helps develop a cutting-edge bio-based economy for Europe.
- **Facilitate access to infrastructures:** Pilots4U supports the visibility of European pilot and demo biorefinery facilities by providing an open-access platform to assess the current and future needs of the European based

biorefineries and catalyses the communication between the bioeconomy investors and European biorefinery technology developers.

- **Support the definition of roadmaps:** RoadToBio aims to create a roadmap and a platform for the European chemical industry, firstly to illustrate the EU's 'sweetspots' for the bioeconomy and secondly to bring together chemical industry actors, civil society and governing bodies.
- **ICT support to an increased efficiency in the biomass sourcing:** ICT-BIOCHAIN targets the creation of ICT tools to increase the efficiency of biomass supply chains. This tool will eventually be used to enhance the connections between biomass suppliers and technology providers of bio-based biorefineries.
- **Promoting education and research activities in the European bio-based industry:** UrBIOfuture will map the industry needs and the skills gap and facilitate the interaction between the education sector, academia and industry. Based on its insights and engagement, UrBIOfuture will create a series of promotional events, including train-the-trainer and train-the-student workshops.

In addition to the priorities set up in the SIRA, crucial crosscutting aspects for the transition to a sustainable bio-based economy are the zero-waste, circular and cascading approaches, which are embedded in BBI JU projects:

The **zero-waste approach** underlies the concept of a growing share of BBI JU projects, as they aim at using organic "waste", including residues, side-streams or industrial co-products, as a feedstock, thereby reducing the waste and enhancing the efficiency in the use of natural resources. This zero-waste approach is well exemplified by the projects converting urban biowaste, wastewater and OFMSW into valuable chemicals and compounds, such as DEEP PURPLE, URBIOFIN, AFTERLIFE, EMBRACED or PERCAL, among others.

A clear **circular approach** is present in several BBI JU projects, especially in those involving bio-based materials that can be recycled, reused and converted into other useful materials. For example, EFFECTIVE project produces advanced eco-designed fibres and films with bio-based polyamides and polyesters for large consumer products, including garments, sportswear, carpets or textiles for the automotive and fishing sectors. These fibres are eco-designed and enable the recycling of the different polymers at the end of the product's life.

The **cascading biorefinery approach** aims at maximising the conversion of the biomass feedstock and its by-products into higher added value chemical products, thereby

profiting from the molecular complexity of natural fibres and materials, using the organic residues to be burnt for energy only in the last steps of the biorefinery process. For example, MACRO CASCADE project has set up a marine macroalgal biorefinery to extract and separate multiple valuable compounds from brown and red seaweeds by enzyme-aided physicochemical methods, using the residues to produce fertilisers and bioenergy.

GEOGRAPHICAL COVERAGE OF BBI JU INNOVATION ACTION PROJECTS

The geographical distribution of demonstration and flagship projects, stemming from the first five BBI JU calls, is well balanced, with a good spread across the EU15, EU13 and associated countries (Figure 5)¹⁷.

Flagship biorefineries are well distributed across Europe, with three of them located in the EU13 (Slovakia, Romania and Estonia), five in the EU15 (Italy, France, Ireland and Belgium) and one in an associated country (Norway). The two new Flagship projects retained for funding from Call 2019 are expected to be located in the EU15 (France).

BBI JU DEMO plants have a wide coverage across the whole of Europe, with a good involvement of Eastern and Southern European countries and associated countries. The six new demonstration projects are expected to consolidate this positive trend.

The diversity of the geographical location of the Flagships mirrors the geographical variety of the used feedstock. More specifically, Flagship projects located in Northern Europe, such as Exilva (Norway) and SweetWoods (Estonia), are utilising wood and pulp industry side-streams, as this type of feedstock is abundantly available in those countries with well-established logistics. Projects based in Eastern Europe, Bioskoh (Slovakia) and LignoFlag (Romania), are instead focusing on the availability of a huge number of agricultural side-streams (e.g. wheat and barley straw, corn stover, rape seed, etc.) and opportunities to grow dedicated crops on marginal lands. The Flagship projects based in Western Europe are also quite diverse and use in different ways the agricultural and agro-food side-streams and by-products as feedstock. AgriChemWhey (Ireland) uses the dairy processing side-streams, while PEFerence (Belgium) valorises fructose from starch produced for non food use purpose, collected from wheat and corn processing industries. First2Run (Italy) is utilising a marginal and semi-arid land of Sardinia island to grow dedicated cardoon crops to be transformed in a local biorefinery. Plenitude (Belgium) will enable food-grade mycoprotein production within an integrated bioethanol refinery using sustainable cereal crops. FARMYNG (France) valorises agri-food waste to feed *Tenebrio molitor* (mealworm) larvae for the production of proteins.

¹⁷ The location of DEMO Plants for Call 2019 are not all full known at this stage. The information for the DEMO and Flagships for Call 2019 might change because the proposals are still in GAP phase at this stage.

The two Flagships retained for funding from BBI JU Call 2019¹⁸ will valorise sugar industry side-streams (beet pulp and molasses) into high-value organic acids and wood and wood biomass (from pulp and paper mill industries) into a non-toxic and high-performing solvent.

Based on the considerations above, the geographical distribution of IAs shows that BBI JU is progressing well towards the objectives in the SIRA, which is supporting the development of a bio-based economy across Europe and addressing its full potential of feedstock.

More detailed information on the BBI JU projects can be found on the BBI JU website¹⁹.

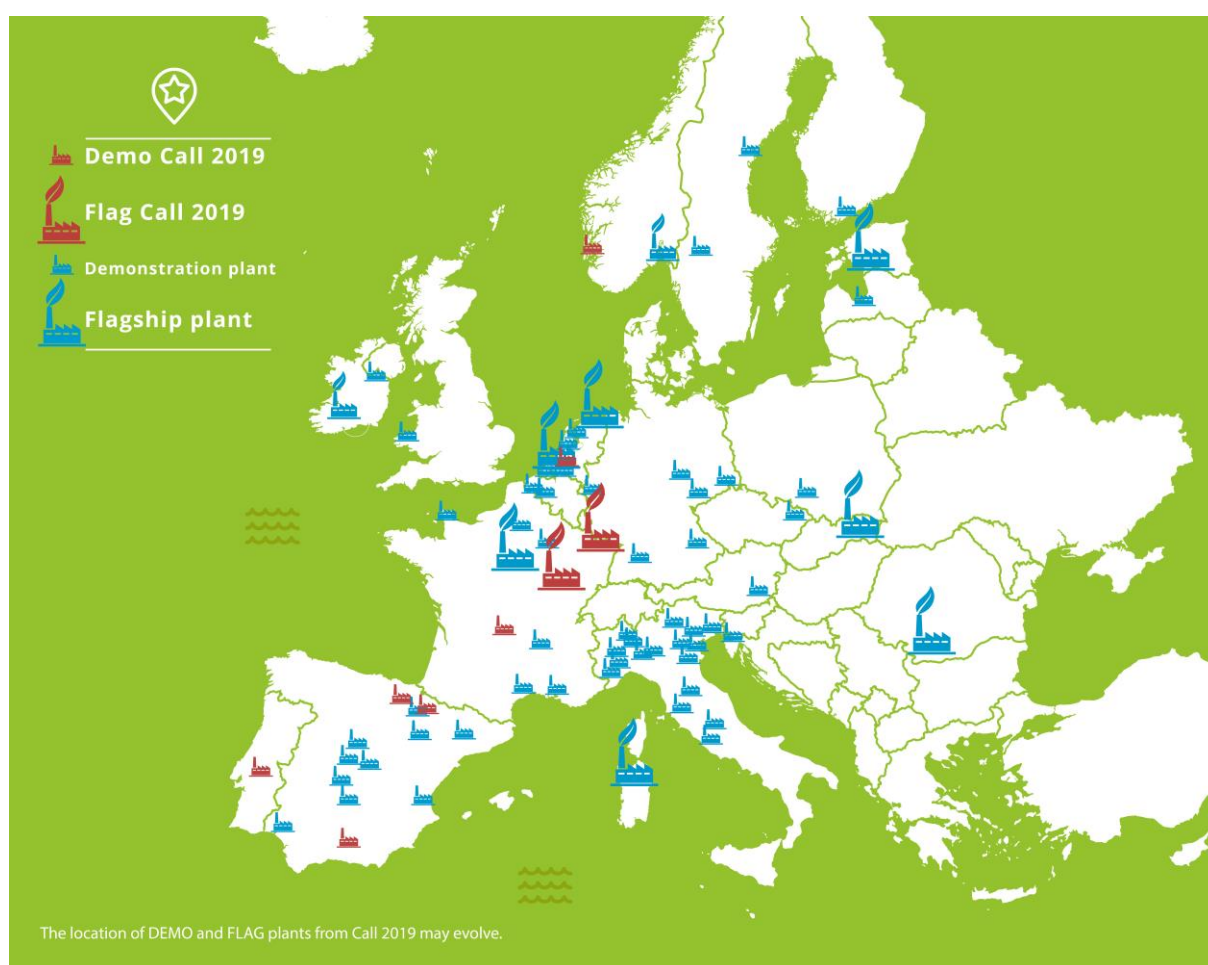


Figure 5: Geographical distribution of the Demo and Flagship plants

¹⁸ These two Flagship were in the GAP phase end December 2019 and their precise location can change.

¹⁹ <https://www.bbi-europe.eu/projects>

1.2.4. Project Monitoring Activities

Project monitoring encompasses all project management activities performed by BBI JU from the moment that the Grant Agreement (GA) is signed until the payment of the balance. In all project monitoring activities, BBI JU fully applies Horizon 2020 rules, procedures and IT tools²⁰. BBI JU-specific elements are further clarified in the 'Project Management' part of BBI JU's website²¹.

Kick-off meetings. In 2019, 19 kick-off meetings for the projects from Call 2018 took place between April and October 2019. BBI JU ensured participation in each of them.

Project reviews are carried out by external experts in order to monitor the implementation of on-going projects. In principle, BBI JU organises project reviews for all its projects after submission of the first periodic report (see below). In 2019, BBI JU organised 30 project reviews: 25 reviews of Call 2016 projects, 4 reviews of Call 2017 projects and 1 review of a Call 2015 project.

Periodic reporting and payments. In 2019, BBI JU completed 44 periodic report assessments and finalised 43 related interim payments within an average of 74 days (compared to 71.3 days in 2018). Furthermore, 98% (42/43) of the payments were finalised within the TTP deadline of 90 days, compared to 97% in 2018. These results show that the excellent performance obtained in 2018 in assessment and payment was maintained throughout 2019.

Amendments. Applying Horizon 2020 procedures²², BBI JU assessed and processed 53 GA amendment requests initiated by project coordinators in 2019, compared to 42 requests processed in 2018. 50 requests out of 53 were accepted.

Project finalisation. In 2019, the Programme Office processed 12 payments of the balance compared to only one in 2018.

1.2.5. Synergies with other initiatives

The main BBI JU objective is to maximise the impact of the BBI JU funding to support the growth of a sustainable and competitive bio-based industrial sector in Europe. According to the Council Regulation, BBI JU should develop close synergies with other EU programmes in areas such as education, environment, competitiveness and SMEs, and

²⁰ http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management_en.htm

²¹ <https://www.bbi-europe.eu/participate/project-management>

²² http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/amendments_en.htm

with the Cohesion Policy funds and Rural Development Policy as well as the European Structural and Investment Funds (ESIF). Such synergies can help to strengthen local, regional and national research and innovation capabilities in the area of the BBI JU.

During 2019, the BBI JU has taken actions to promote synergies, to identify complementarities and to avoid overlaps with other funding programmes. More specifically, the BBI JU work on synergies focused on the following:

- Synergies and complementarities with the contractual public-private partnership SPIRE²³.

Over the past years, BBI JU and the Sustainable Process Industry through Resource and Energy Efficiency (SPIRE) have been jointly exploring collaborative ways of maximising their impact. Since 2016, these two public-private partnerships (PPP) established a Joint Working Group with the objective of working at several levels: strategic (towards synergies at the level of SIRA, SPIRE road map and BBI/SPIRE work programmes); implementation (towards synergies between funded projects); and dissemination and stakeholders' networking (towards dissemination of information and promotion of networking between SPIRE and BBI communities). In 2019, the sixth and seventh meetings of the Joint Working Group were organised (on 18 March and 18 September respectively) and these were the main achievements:

- Full alignment in strategic agendas and work plans, emphasising further complementarity and striving for synergy between topics. SPIRE's 2050 Roadmap, its Innovation Areas and Programmes have been defined in a collaborative process in which BBI JU had an active role.
- Exchange of information on impact monitoring and potential links for cooperation among projects funded by both initiatives;
- Close coordination of communication activities and access to respective communication channels for promotional purposes. For example, during 2019 BBI JU participated in several related events such as the SusChem stakeholder event (27 November), and the SusChem event 'Towards a New SusChem SIRA Workshop' on 16 and 17 May.
- The last meeting of the year confirmed the effectiveness of the collaborative work towards the future of both initiatives under

²³<https://www.spire2030.eu/>

Horizon Europe, ensuring complementarities, coherence and mutual understanding. The commitment to work in cooperation has been demonstrated by its participants, enabling full alignment of the respective SIRAs & Road Maps of SusChem/BIC/SPIRE in order to avoid overlaps and maximise synergies.

- Develop synergies and complementarities with **ESIF** in order to strengthen national and regional research and innovation capabilities in the context of smart specialisation strategies (S3). Complementarities between the BBI JU funding programme and ESIF represent an important opportunity for these regions that have identified - among their S3 priorities - activities oriented to supporting the bio-based industries. In 2019, this was the main achievement:
 - Publication of the report “Joint Undertakings: analysis of collaboration mechanisms with ESI Funds in an S3 context”²⁴ in April 2019, including the results of the pilot event organised **by the European Commission’s Joint Research Centre (JRC) to promote synergies with ESIF/RIS3 in the context of the project Stairways for Excellence**²⁵ in 2018.
- Develop synergies and complementarities with other **European Partnerships**.
 - The Partnership for Research and Innovation in the Mediterranean Area (PRIMA) organised a Workshop on Synergies with EU and International Initiatives in Athens on 21-22 November 2019. This partnership funds Research and Innovation through competitive calls to build R&I capacities and to develop knowledge and common innovative solutions for agro-food systems, to make them sustainable, and for integrated water provision and management in the Mediterranean area, to make those systems and that provision and management more climate resilient, efficient, cost-effective and environmentally and socially sustainable, and to contribute to solving water scarcity, promoting food security, nutrition, health, well-being and addressing migration problems upstream. The focus

²⁴ Report available here: <https://s3platform.jrc.ec.europa.eu/-/joint-undertakings-analysis-of-collaboration-mechanisms-with-esi-funds-in-a-s3-context?inheritRedirect=true&redirect=%2Fstairway-to-excellence>

²⁵ <https://s3platform.jrc.ec.europa.eu/stairway-to-excellence>

of the event was on the adoption of innovation and alignment of research, as well as activities such as dissemination, scaling up of R&I actions, capacity development and technology transfer. BBI JU participated in the roundtable on “Exchange of experiences and practices towards the adoption of Innovation”. Concrete collaborative actions to explore synergies on widening participation and the projects impact assessment are expected in the course of 2020.

- Develop synergies and complementarities with other **Joint Undertakings**.
 - Clean Sky (the Joint Undertaking with the European aeronautics industry) is financing a Coordination and Support Action (Transcend²⁶) to generate an inventory of alternative fuels applicable to aircrafts complemented by a series of roadmaps to facilitate the transition to alternative fuels by 2050. BBI JU participated in the meeting organised by Clean Sky on 9 of December and was invited to participate in the Advisory Board of the Transcend project.

It should be noted that BBI JU and its partners EC and BIC have different possibilities to foster synergies based on their respective remits and competences. To this end, BBI JU works in close collaboration with them in order to maximise the outcomes. Further information on EU funding synergies can also be found on the BBI JU website²⁷.

An important achievement during 2019 was the implementation of the **“BBI JU Synergy Label” pilot**²⁸.

Following the mandate of the Governing Board (GB), BBI JU launched the “BBI Synergy Label” pilot in September 2019 during the “European Research and Innovation Days” organised by the European Commission²⁹. The “BBI Synergy Label” aims to ensure the uptake of excellent proposals that could not be financed under the BBI Call 2018 despite their excellent marks due to a lack of available budget. Consortia being awarded the Synergy Label can use it to access alternative/complementary funding at national and/or regional level. The BBI Synergy Label contributes to enhancing synergies between BBI JU

²⁶ <https://trimis.ec.europa.eu/project/technology-review-alternative-and-novel-sources-clean-energy-next-generation-drivetrains>

²⁷ <https://www.bbi-europe.eu/participate/other-funding>

²⁸ <https://www.bbi-europe.eu/participate/bbi-synergy-label>

²⁹ <https://ec.europa.eu/digital-single-market/events/cf/european-research-and-innovation-days/item-display.cfm?id=23558>

activities, Member States, regions and other funding organizations in the field of Bio-based Industries.

Launched in September 2019, the pilot initiative awarded 12 BBI JU proposals, recognising their value and excellence and supporting their search for alternative funding. During this pilot phase, the 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 implies a higher socio-economic and environmental impact in the territories.

In the framework of the BBI JU Synergy Label, BBI JU signed a Memorandum of Understanding with the European Bank for Reconstruction and Development (EBRD), developing a structured collaboration to maximise opportunities for access to finance by the applicant community. In addition, BBI JU is in ongoing exploratory discussions with other financing organisations such as the European Investment Bank (EIB) and the newly established European Circular Bioeconomy Fund (ECBF³⁰).

³⁰ <https://www.ecbf.vc/>

1.3. CALLS FOR PROPOSALS AND GRANT INFORMATION

In 2019, BBI JU operations included the conclusion of the Grant Agreement Preparation (GAP) for Call 2018, which resulted in the signature of 19 Grant Agreements, bringing the total number of projects in the BBI JU portfolio to 101 by the end of the year.

In addition, BBI JU successfully implemented Call 2019. The final ranking list was adopted by the BBI JU GB on 13 December 2019, the letter of information was sent to applicants on 17 December 2019, and the Grant Agreement Preparation process was initiated before the end of the year for 23 retained proposals

The two sections below are structured as follows:

- Section 1.3.1 describes the progress of the current project portfolio, including the ongoing projects from Calls 2014, 2015, 2016, 2017, 2018 and projects invited to GAP as a result of the Call 2019 evaluation. The description specifically covers the statistics and KPIs which are common to all Horizon 2020 programmes as well as indicators specific to BBI JU.
- Section 1.3.2 describes the Call 2019 statistics at the stage of submission and evaluation, the finalisation of Grant Agreement Preparation (GAP) for projects from Call 2018 and some key lessons learnt.

1.3.1. Progress against KPIs / Statistics

The BBI JU programme implementation is monitored at four levels:

- 1. Efficiency monitoring and cross-cutting issues** is based on Horizon 2020 KPIs common to all Joint Undertakings (JU)³¹ and further indicators linked to programme monitoring³² and cross-cutting issues, such as gender dimension, widening participation, SME participation and type of organisation. Achievements of objectives at the end of 2019 are presented in section 1.3.1.1 'Horizon 2020 KPIs and cross-cutting issues' and in the tables in annexes 7.5 and 7.6;
- 2. The leverage effect of private funding versus public funding** is monitored on a yearly basis. The difference between the total costs of the projects and the JU

³¹ Based on Annex II (PERFORMANCE INDICATORS) and Annex III (MONITORING) of Council Decision 2013/743/EU.

³² Indicators linked to monitoring of programme implementation, e.g. evaluation (time to inform the applicants, time to grant, etc.).

contribution for all beneficiaries and the in-kind contributions for the additional activities (IKAA) are used to calculate the leverage effect. Achievements of objectives at the end of 2019 are presented in section 1.3.1.2;

3. **Project outcomes** are monitored through BBI JU-specific KPIs described in the SIRA, measured against yearly project reporting and agreed objectives. Achievements of objectives at the end of 2019 are presented in section 1.3.1.3;
4. **Expected socio-economic and environmental** impact of the BBI JU projects. Achievements at the end of 2019 based on a yearly survey of projects are presented in section 1.3.1.4.

1.3.2. Horizon 2020 KPIs and cross-cutting issues

EFFICIENCY MONITORING

Under Horizon 2020, the BBI JU has a legal obligation to monitor its programme implementation, to report annually and to disseminate the results of this monitoring. The three main KPIs through which the performance of BBI JU is monitored are Time To Inform (TTI), Time to Grant (TTG) and Time to Pay (TTP) (part of the Horizon 2020 common KPIs - see section 7.5).

In 2019, the efficient performance of BBI JU in core operations was confirmed, continuing the positive trends observed in previous years. More specifically, all applicants of Call 2019 were informed about the evaluation results 102 days after the closure of the call, well in advance of the TTI target set for Horizon 2020 (153 days).

- ✓ TTI of 104 days against a target of 153 (100% on time);
- ✓ TTG of 235 days on average against a target of 245 days (95% on time);
- ✓ TTP of 9.9 days for pre-financing on average against a target of 30 days (100% on time)
- ✓ TTP of 73.8 days on average for periodic payments against a target of 90 days (98% on time).

With respect to TTG, all GAs from GAP 2018, except for one project, were signed on time. One project was signed after 308 days, because of a change in the consortium's partners.

All Grant Agreements were signed within an average of 235 days after the closure of the call, against a target of 245 days. The average time to pay (TTP) for pre-financing to

projects from GAP 2018 was 9.9 days, compared to the target of 30 days. All payments were performed on time.

Finally, in 2019, BBI JU assessed the periodic reports (technical and financial) submitted by the projects funded under Calls 2014, 2015, 2016 and 2017. The average time to pay of the cost claims derived from the periodic reporting was 73.8 days, compared to the target of 90 days. 98% of these payments were performed on time, only one of them was late.

Overall, BBI JU has operated efficiently and its average performance against the three main KPIs of Horizon 2020 exceeds the set targets.

In the next paragraphs a more detailed overview of the main Horizon 2020 cross-cutting issues is provided:

- geographical distribution of participants, widening participation;
- types of organisations participating in BBI JU actions;
- SME participation;
- gender dimension.

GEOGRAPHICAL DISTRIBUTION OF PARTICIPANTS, WIDENING PARTICIPATION

The geographical distribution of beneficiaries in BBI JU follows the trend also observed in Horizon 2020 in general, with most of the funding going to the EU15 (Figure 6). Similarly, EU13 participation rates in the BBI JU calls are lower than for the EU15, at the level of both proposals (Figure 7) and projects (Figure 8). Notably, the overall success rate of EU13 countries in BBI JU calls is 14% compared to an overall success rate of 19% for the EU15.

In spite of this, and although EU13 countries receive a lower share of the BBI JU contribution than EU15 ones, overall the former group performs better in BBI JU calls (10%) than in other programmes such as SC2 (8.05%) or the LEIT KET Biotechnology programme (4.0%)³³, as was also pointed out in the interim evaluation of the BBI JU³⁴.

³³ Based on Horizon 2020 dashboard, extracted on 31 January 2020. (<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/projects-results>)

³⁴ Interim Evaluation of the BBI JU (2014-2016) operating under Horizon 2020

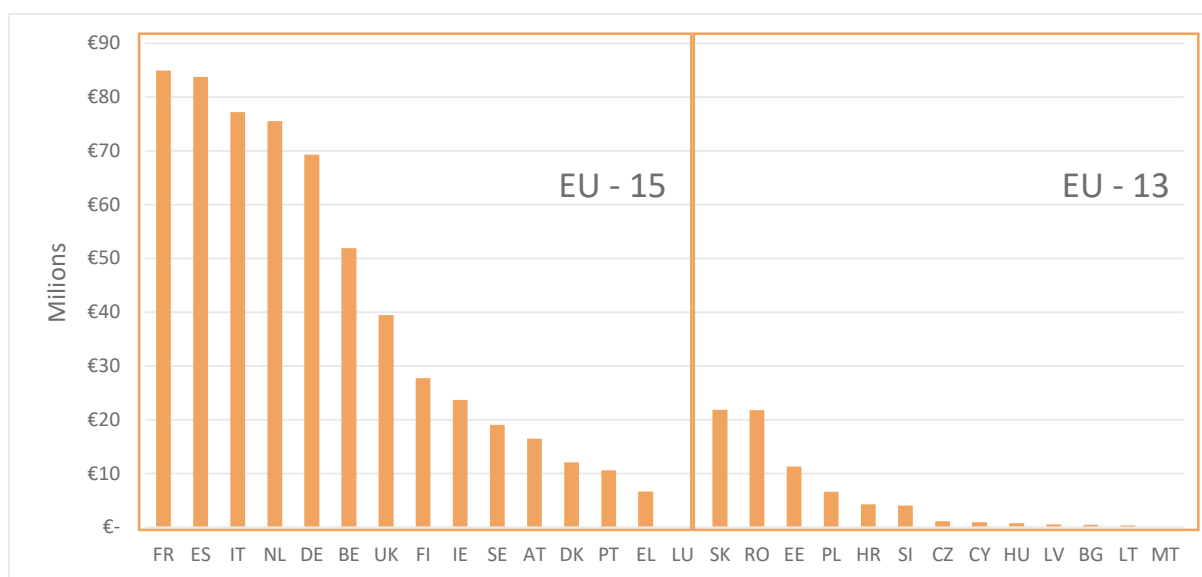


Figure 6: Grants (in EUR millions) per EU15 and EU13 Member States in Calls 2014-2019 (the data for the Call 2019 refers to retained proposals)

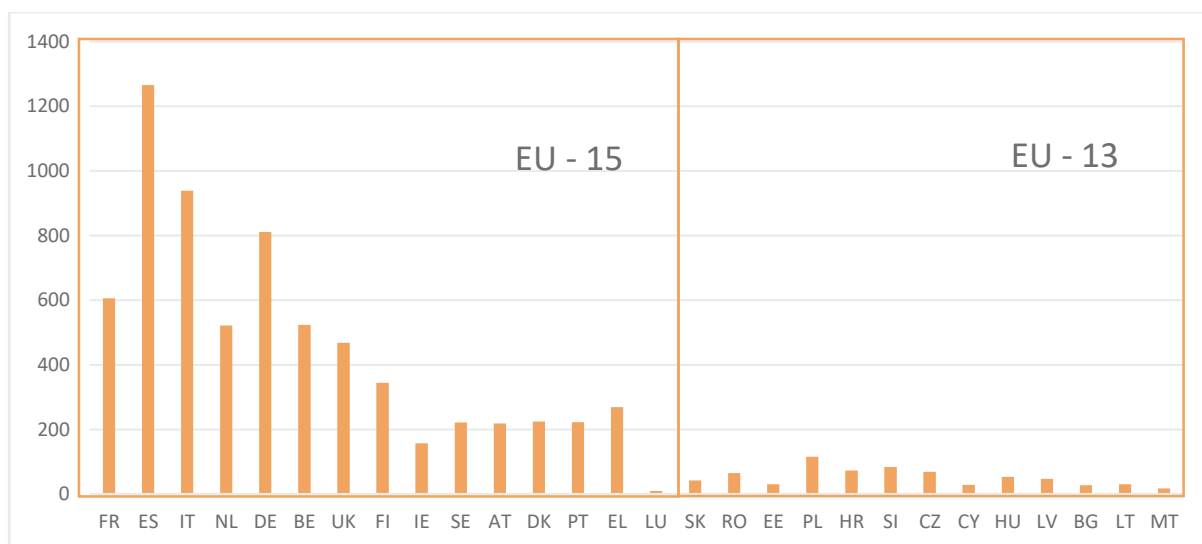


Figure 7: Distribution of applicants per country from EU15 and EU13 in Calls 2014-2019

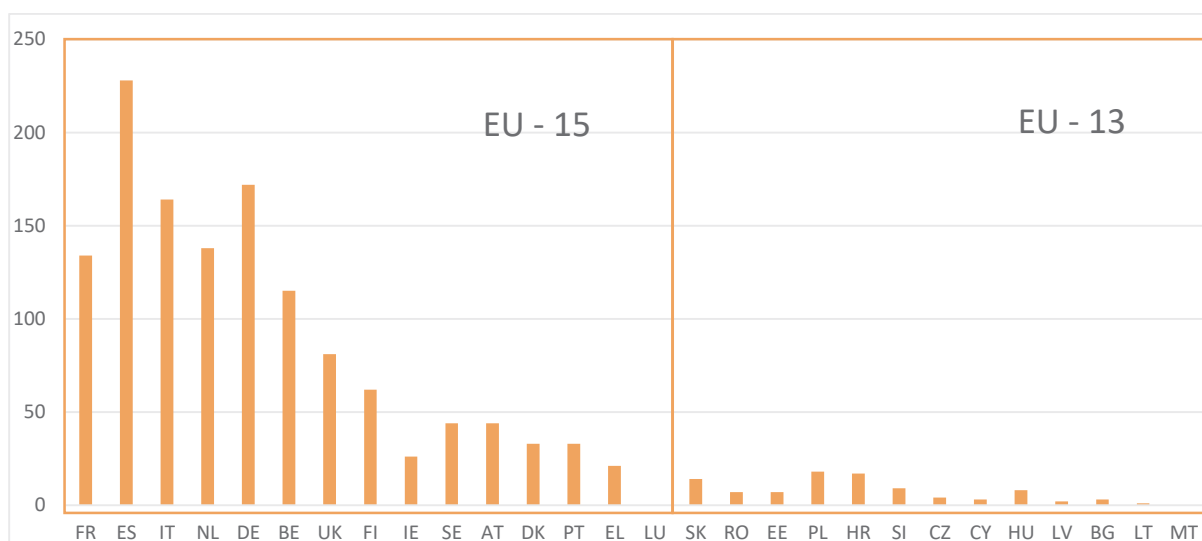


Figure 8: Distribution of beneficiaries per country from EU15 and EU13 in Calls 2014-2019 (the data for the Call 2019 refers to retained proposals)

The data presented in Figures 7-8 clearly demonstrate that there is a group of five countries that are the main actors in BBI JU projects. However, this presentation does not consider inherent differences between the countries, such as the size of the economy, the investment in research and development (R&D), and the population. These comparisons are performed in Figures 9-11, where the BBI JU funding allocated to the beneficiaries of each EU country is respectively normalised by the Gross Domestic Expenditure on R&D (GERD)³⁵, Gross Domestic Product (GDP)³⁶ and population³⁷, as extracted from the corresponding Eurostat databases on 21 August 2019. The blue lines in Figure 9 represent the normalised BBI JU funding (total) per category of countries, using the summation of the GERD of the countries belonging to the corresponding group. Similarly, the blue lines in Figures 10 and 11 represent the total normalised BBI JU funding per country group by GDP and population, respectively.

The normalisation of the BBI JU funding by GERD in Figure 9 shows that the highest success in obtaining BBI JU funding compared to the national investment in R&D comes from the EU13 countries Estonia, Slovakia and Romania, thanks to the respective Flagship projects SWEETWOODS, BIOSKOH and LIGNOFLAG. Other EU13 countries, such as Croatia, Slovenia and Cyprus, as well as some EU15 countries, such as Belgium and Ireland, also appear to perform well, although the absolute values of their BBI JU funding are not high. Conversely, some countries with high BBI JU funding in absolute values, such

³⁵ Intramural R&D expenditure (GERD) by sectors of performance and fields of science, as a summation of years 2009-2017

³⁶ Gross Domestic Product, as an average value between the years 2009-2018.

³⁷ Average value between the years 2009-2018.

as Germany, France and United Kingdom, seem to have a relatively low performance in obtaining BBI JU funding when compared to their overall investment in R&D. Moreover, the overall comparison between EU15 and EU13 demonstrates that despite the higher BBI JU funding received by EU15 countries in absolute terms (Figure 8), EU13 countries perform more than three times better than EU15 countries, when the investment in R&D is considered as the normalisation parameter in the analysis.

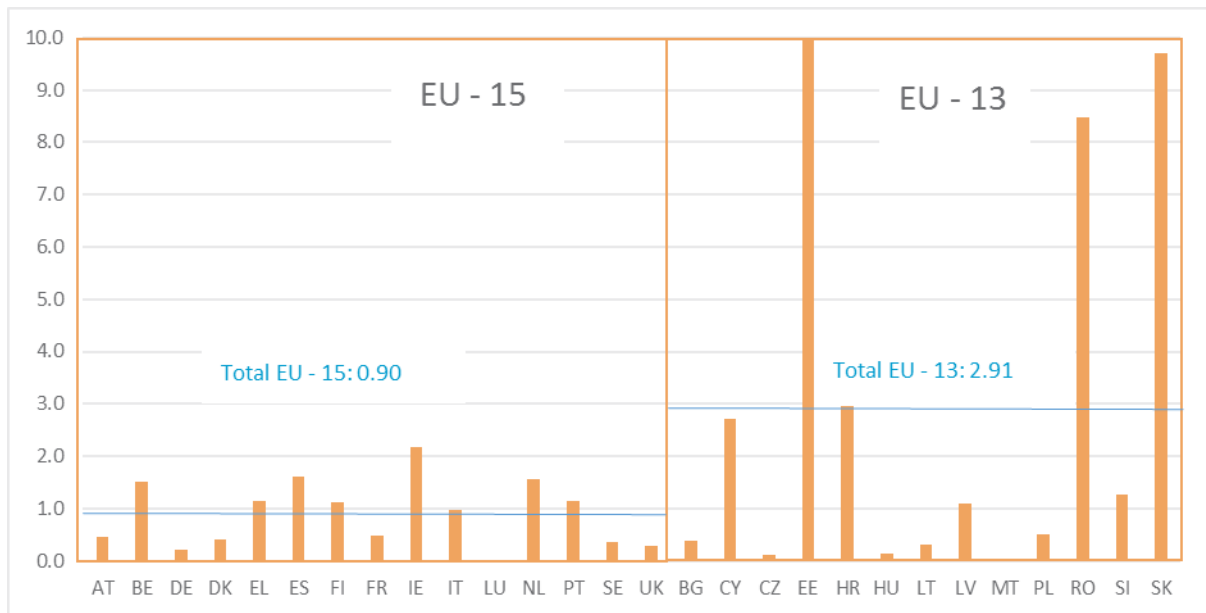


Figure 9: Distribution of funding per country from EU15 and EU13 in Calls 2014-2019 normalised by GERD (normalised performance index 0-10)

Similar conclusions for the countries' performance in obtaining BBI JU funding can be drawn for the normalised BBI JU funding based on the GDP, shown in Figure 10. In this case, however, the overall performance of EU13 countries is better compared to that of EU15. When the normalisation is instead performed based on the population of the country, the results show the opposite picture to those in figure 9. This data essentially represents the BBI JU funding per capita, and EU15 countries appear to perform better than EU13 countries, receiving EUR 0.7 more per capita. In particular, it is interesting to observe that, for the countries with the largest values in absolute funding (Germany, Italy, Spain, France), the funding per capita converges at around EUR 1 per capita, whereas certain countries (from both EU13 and EU15) which receive low levels of funding in absolute terms, have high BBI JU funding per capita. A case in point are Estonia, Slovakia and Slovenia, where the funding per capita ranges from around EUR 2 to EUR 8, as a result of the funding for Flagship and/or DEMO projects.

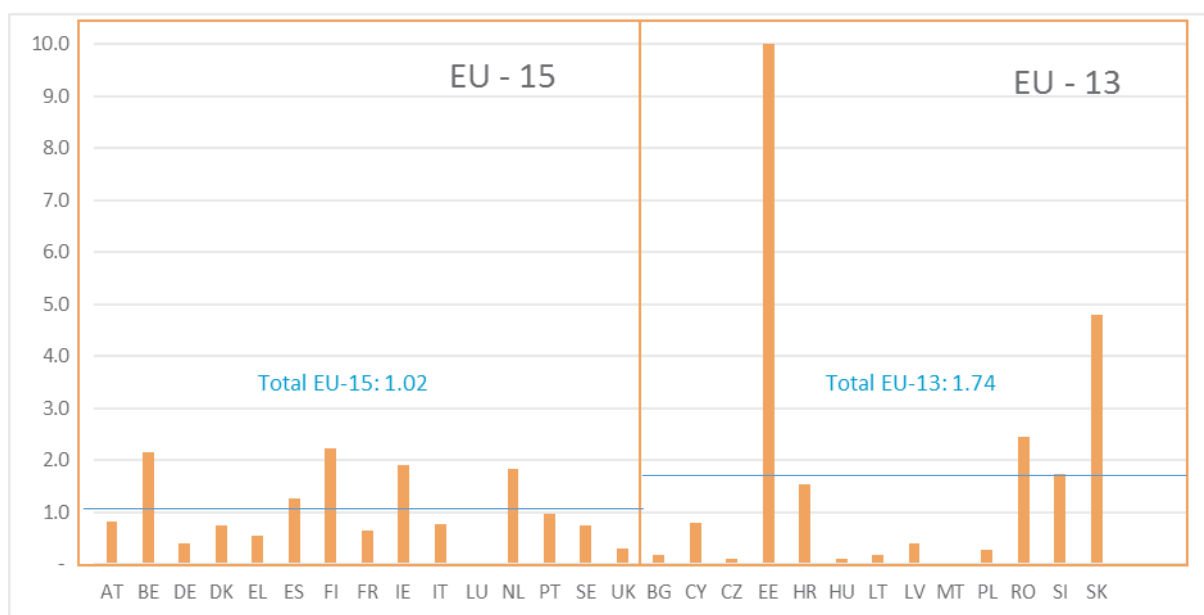


Figure 10: Distribution of funding per country from EU15 and EU13 in Calls 2014-2019 normalised by GDP (normalised performance index 0-10)

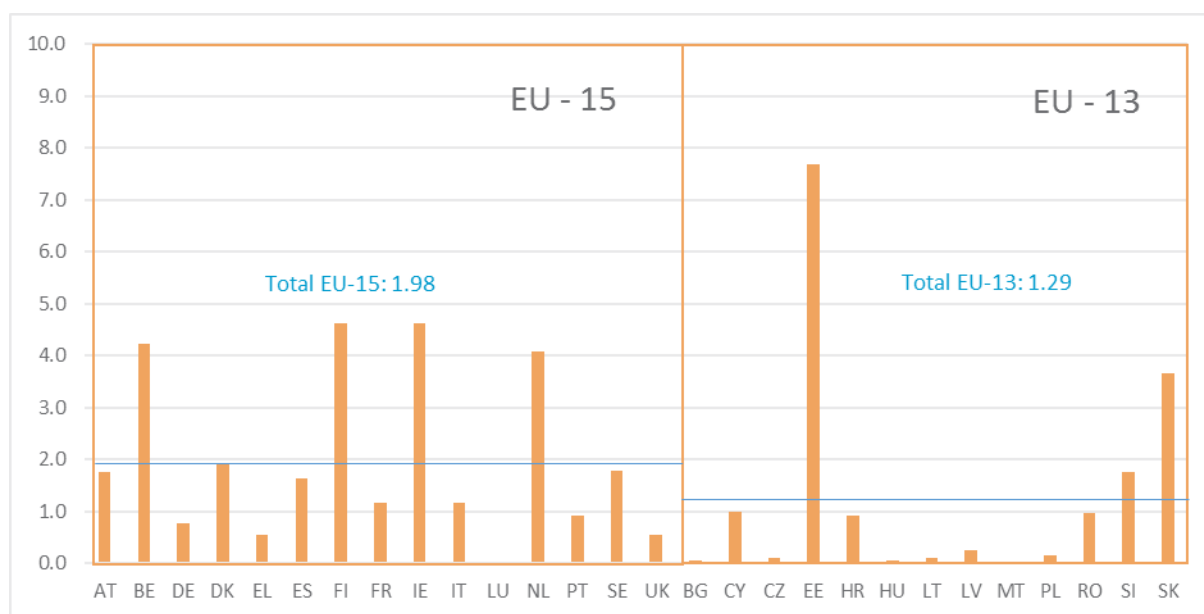


Figure 11: Distribution of funding per country from EU15 and EU13 in Calls 2014-2019 per capita

The normalised comparisons in Figures 9-11 provide an important perspective with respect to the overall performance of the various countries across Europe in the BBI JU portfolio, indicating that making reference solely to absolute values provides a picture of geographical unbalance, which is probably skewed, due to the inherent differences among the countries. Nevertheless, it should be taken into account that any conclusions drawn from these normalisations are only to be considered indicative.

Regarding the level of participation of associated and third countries in proposals (Figure 12) and projects (Figure 13), there is a clear indication of the consistently strong mobilisation from countries such as Switzerland, Norway, Turkey and Israel and the retained interest in the BBI JU Initiative from a broader set of countries such as Serbia, Iceland and The Faroe Islands. This is also reflected in success rates of applicants, as with respect to the funding going to associated and third countries, the budget distribution is generally aligned with the level of participation (Figure 14).

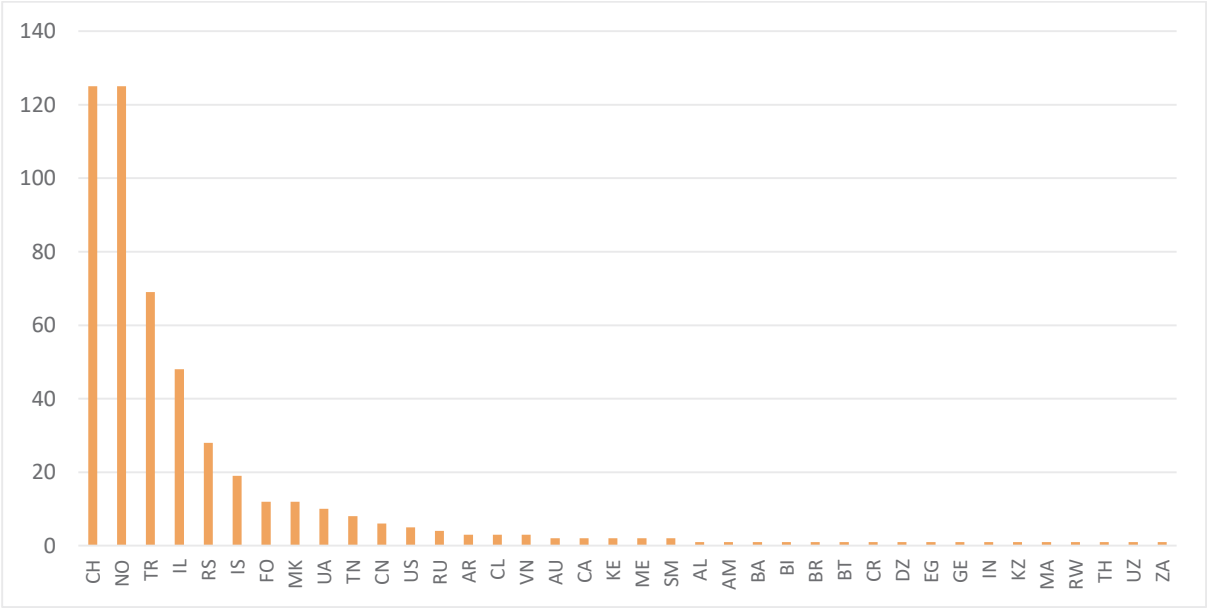


Figure 12: Distribution of applicants from associated and third countries, industrialised countries, and emerging economies and developing countries) in Calls 2014-2019 (the data for Call 2019 refers to retained proposals

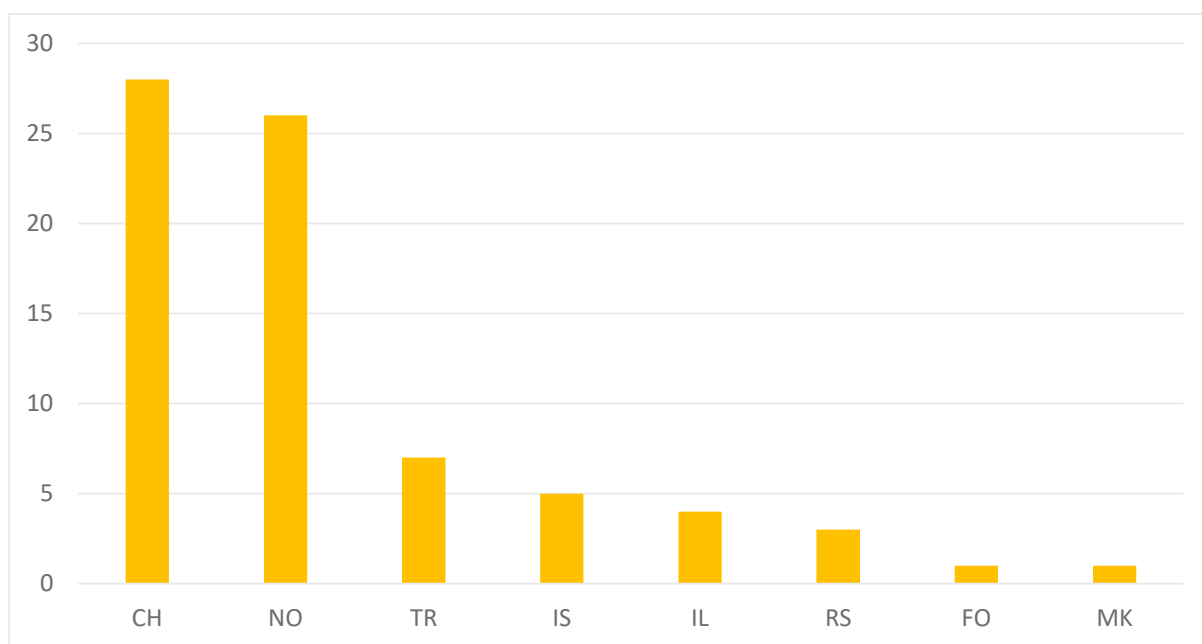


Figure 13: Distribution of beneficiaries from associated countries in Calls 2014-2019 (the data for Call 2019 refers to retained proposals)

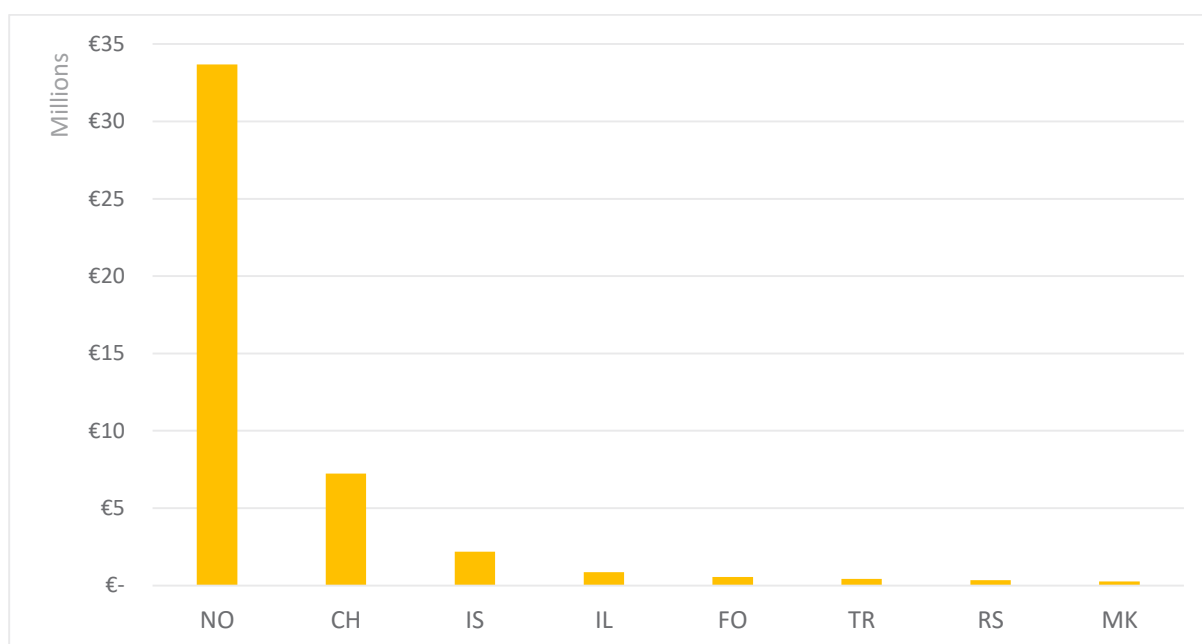


Figure 14: Grants (in EUR millions) per associated countries in Calls 2014-2019 (the data for Call 2019 refers to retained proposals)

In order to optimise the geographical distribution within the EU, BBI JU launched its widening participation strategy, developed with the support of the SRG. The actions to be taken forward by BBI JU, BIC, the European Commission and the SRG are grouped mainly around the following two pillars:

- promoting and raising awareness of the BBI JU programme at European and national levels;
- encouraging wider and more inclusive participation in the calls.

The actions undertaken in 2019 focused mainly on encouraging a renewed engagement vis-à-vis countries that are underrepresented in BBI JU calls.

FOCUS ON REGIONS AND UNDERREPRESENTED COUNTRIES

During 2019, BBI JU efforts were concentrated on bolstering the participation of decentralised regions and areas, thereby creating clusters of knowledge and technological innovation:

- At the event “Towards a circular bioeconomy in Navarra: regional challenges and European opportunities” (25 January 2019) in **Pamplona, Spain**, BBI JU introduced stakeholders to the opportunities and tools available to the local players in Navarra to innovate in the bioeconomy. As Navarra implements its Vision 2030 around the agri-food sector, the Circular Bioeconomy model could act as integrator of different policies and industrial initiatives.
- BBI JU participated in the Workshop “BIOPACKAGING – LET’S CREATE A FUTURE TOGETHER” held in Vienna on the 6th of March 2019. The objective of the workshop was to facilitate cross-border and cross-regional cooperation of clusters and SMEs for creation of a bio-based packaging value chain. The workshop helped to create project ideas/initiatives and a macro regional network. BBI JU presented its activities and opportunities for bio-based companies from Austria, Slovenia, Slovakia and Czech Republic.
- BBI JU co-organised the joint SCAR-SRG workshop “Advancing the creation of regional bioeconomy clusters in Europe” (held in **Brussels, Belgium**, on 14 March 2019), fostering interest in the creation of bioeconomy clusters in regions and countries which are less active in the bioeconomy and bio-based sectors. As existing studies published by the European Commission demonstrated the direct link between the high participation of a certain country in the BBI JU and the presence of clusters, the exchange of knowledge and experiences in developing such clusters represented an opportunity for actors with a focus on regions that could play a much more prominent role in the European bioeconomy.

- In March and April, BBI JU participated in tailored events in Central and Eastern European countries, with the aim of further progressing and developing the vision for their increased engagement in yearly calls. For example, info days were held in **Poland, Lithuania, Latvia, Croatia and Czech Republic**, providing participants with information about the BBI JU Initiative, explaining the rules and possibilities of applying for funds in the year's calls and presenting ongoing projects to showcase the Initiative.
- On April 5, 2019, BBI JU's Executive Director Philippe Mengal participated as a speaker in the panel "Challenges for Research and Innovation in Agriculture and Bio-economy in Central and Eastern Europe", organised in the context of the high-level conference on agricultural research and innovation. The event, held in Bucharest, provided an opportunity for a broad exchange of views on major challenges and opportunities in the context of the need for developing and expanding measures based on innovation. It aimed at showing trends and the way towards sustainability through agricultural research and biomass management.
- The European Network for Rural Development (ENRD) organised a conference in Brussels on 11 and 12 April 2019, with over 400 rural stakeholders. The conference aimed to recognize the value of networking for rural development, demonstrate the results of the past ten years of rural networking and proactively look at its future. The participation of BBI JU revolved around the theme of "networking for policy", with a specific focus on initiatives aimed at supporting the development of the rural bioeconomy.
- At the First Greek Bioeconomy Forum in **Thessaloniki** (10-11 May 2019), as well as other events and info days in the country, BBI JU promoted awareness on the advantages and opportunities offered by the bioeconomy sector in Europe, and by the BBI JU funding tool. The increasing participation of the BBI JU to Greek events were aimed at promoting its participation in future calls for proposals and to tackle its current underrepresentation in ongoing projects.
- Through its final event, the BBI JU project First2Run³⁸ in **Brussels, Belgium** (20 June 2019) demonstrated at industrial scale the technological, economic and environmental sustainability of a first-of-a-kind value chain using low input and underutilised oil crops, grown in arid and/or marginal lands and not in competition with food or feed. BBI JU participated to the roundtable

³⁸ For more information on the project and the final event, see <http://www.first2run.eu/final-event/>

discussion revolving around the project's implementation, to underline the importance of de-risking investments to accelerate the development of the bioeconomy and bridge the gap between less-developed areas and economic growth.

- BBI JU took an active part in a roundtable on opportunities for the Bio-based industries in **Croatia**, organised by the Croatian Ministry of Agriculture and hosted at the Faculty of Agriculture of the University of Zagreb on 4 July. The event focused on how to mobilise Croatian stakeholders in the sector, analysing the hurdles for business in developing the bio-based industries, and discussing how to create synergies between key EU financing instruments and policy initiatives relevant for development of the bioeconomy/bio-based industries, also bearing in mind the upcoming Croatian EU presidency.
- Between 19 and 22 September 2019, BBI JU presented the bio-based industries in Europe at the Balkan Clean Energy Transition Conference. The ambition of the conference was to accelerate the presence of the Balkan area on the global map, as a vibrant and vital area where innovative solutions for a cleaner, greener, smarter, safer, and better world are fostered. It aimed to serve as the institutional initiative to start preparing for a transition to the post coal era.
- The Blue Biotech Day Malta (1 October 2019) was the first dedicated event on Blue Biotechnology taking place in **Malta**. The event was part of the series of events organised across Europe to celebrate the emerging biotechnology sectors. The participants had the opportunity to be informed about the latest marine biotechnology projects and activities happening in Malta, to network and to discuss industry funding streams. BBI JU presented its activities and the funding opportunities for blue bioeconomy projects.
- On 24 October 2019, the European Initiative RUBIZMO organised the event "Supporting rural business success across Europe" in **Brussels, Belgium**. The objective of the event was to discuss recommendations to foster the large-scale deployment of innovative business models that can support sustainable growth and job creation in European rural areas. Along with the vision for the present and future rural development policy framework, the conference explored opportunities to develop supportive rural business environments and make collaboration the key to success for rural entrepreneurship. BBI JU's participation as chair of the bio-based value

chains section of the Rural Business Innovation Awards put the spotlight on the Initiative as the catalyst for a circular bioeconomy in Europe.

NATIONAL INFO DAYS

In 2019, BBI JU participated in 13 national info days organised by European Member States and associated countries with a broad geographical coverage, including EU13 Member States such as Poland, Czech Republic, Lithuania, and Latvia and associated countries such as Israel. The main purpose of national info days is to ensure effective dissemination of information on the annual call for proposals (in this case Call 2019) and improve the quality of proposals submitted. In addition, BBI JU communicates widely about its calls to stakeholders through its events and website. For more detailed information on the list of national info days, see table 15 in section 2.1.1 “Promoting BBI JU Call 2019: BBI JU Info Days”.

EVOLUTION OF PARTICIPATION OF MEMBER STATES AND ASSOCIATED COUNTRIES IN THE BBI JU

The widening participation strategy results are further reflected in the evolution of the participation of Member States and associated countries in Call 2019 as compared with previous calls. Figures 15 and 16 show the number of applicants in submitted proposals per country for the calls implemented thus far, for EU15 and EU13 respectively. An increased mobilisation is observed for a few countries in the EU15, especially from the Mediterranean region (e.g. Spain, Italy). Interestingly, the participation rates of EU13 countries increased for more than half of them in Call 2019 as compared to 2018 (e.g. Poland, Estonia, Latvia, Lithuania, Slovenia). However, at the level of the beneficiaries (absolute values), EU15 countries (Figure 17) appear to perform better than EU13 (Figure 18), rendering their overall success rates lower than those of EU15 applicants.

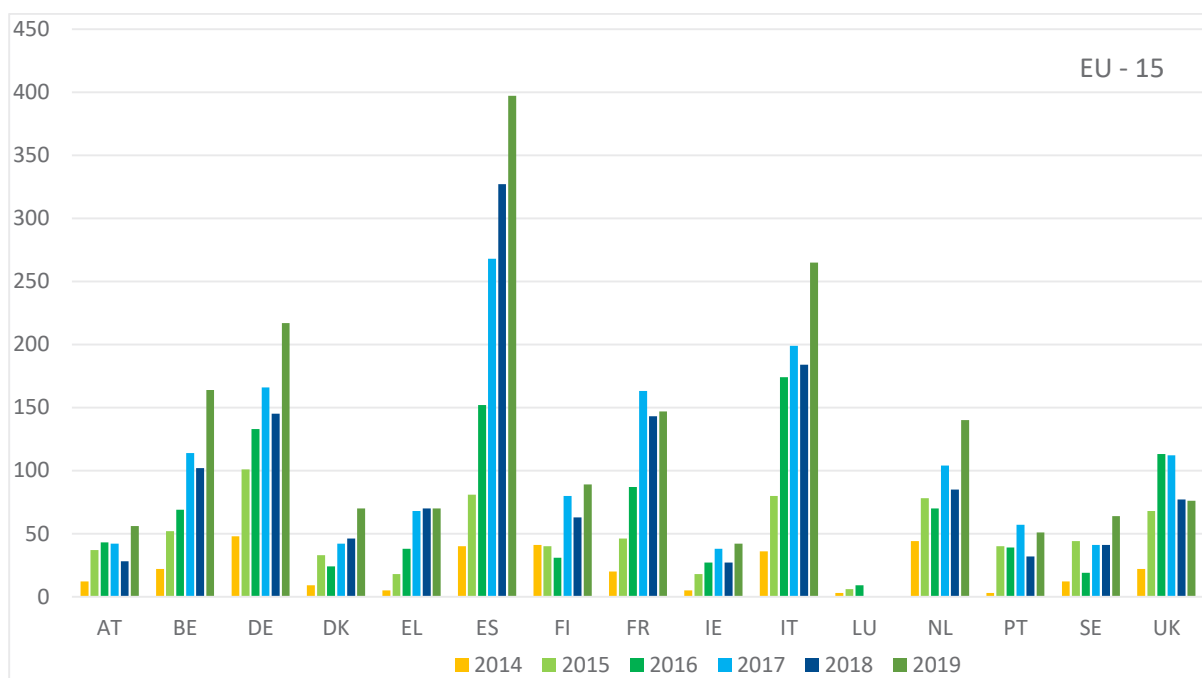


Figure 15: Distribution of applicants per country from EU15 in Calls 2014-2019

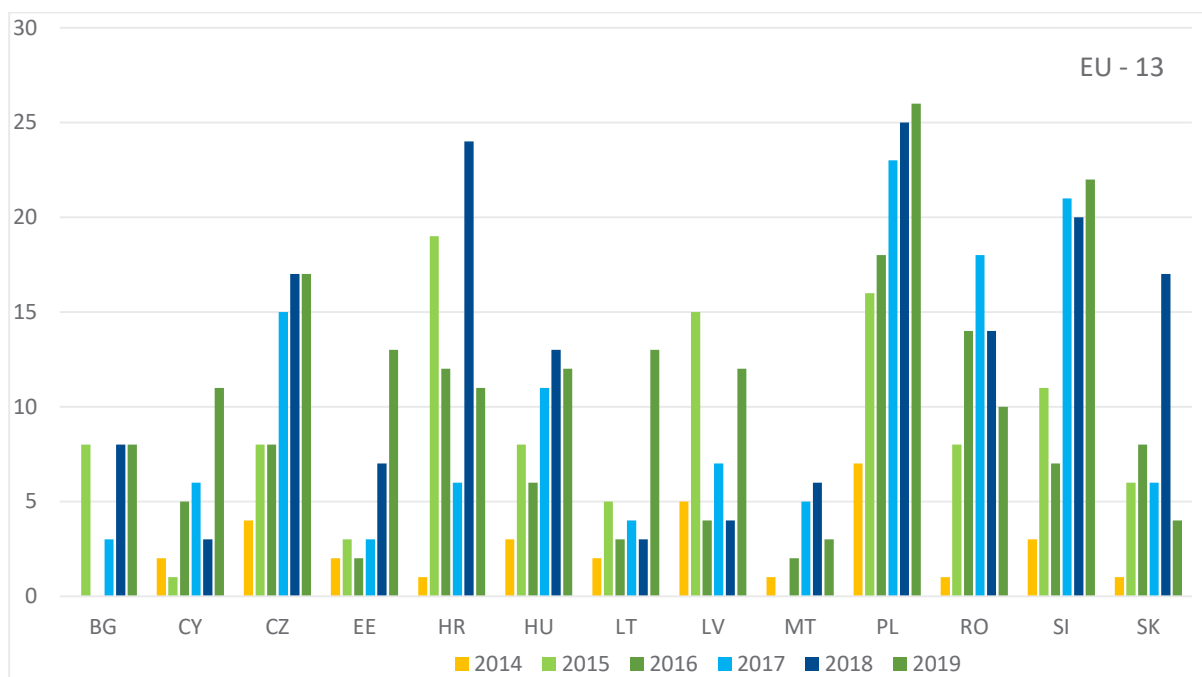


Figure 16: Distribution of applicants per country EU13 in Calls 2014-2019

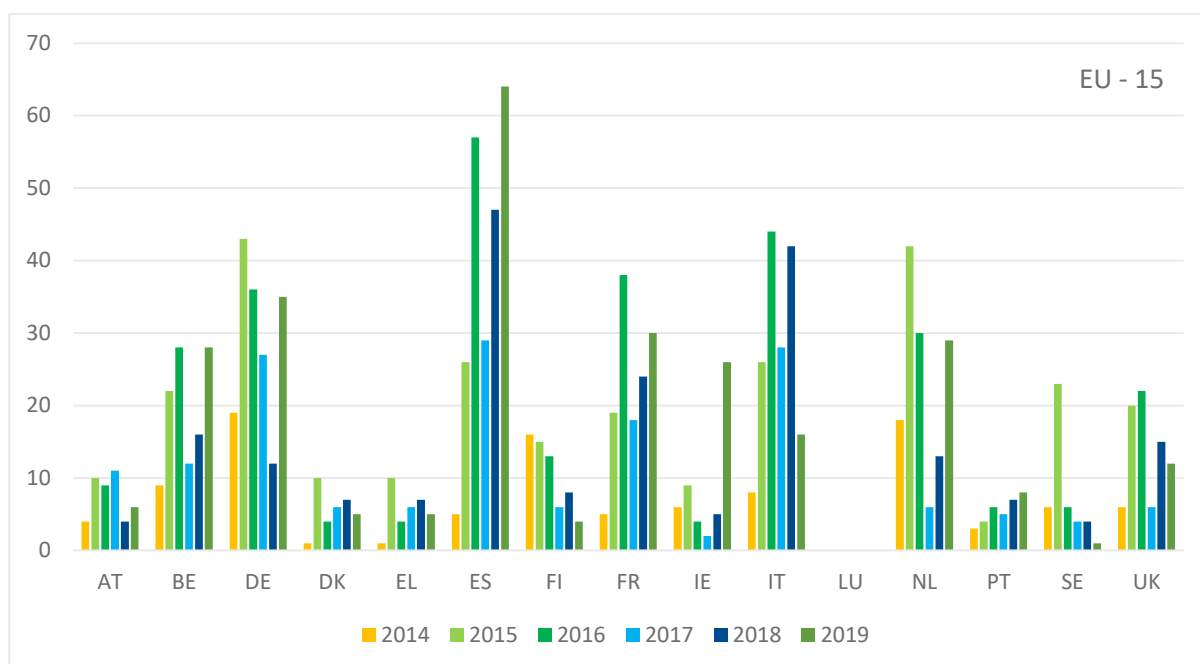


Figure 17: Distribution of beneficiaries per country from EU15 in Calls 2014-2018 and in proposals selected for funding in Call 2019

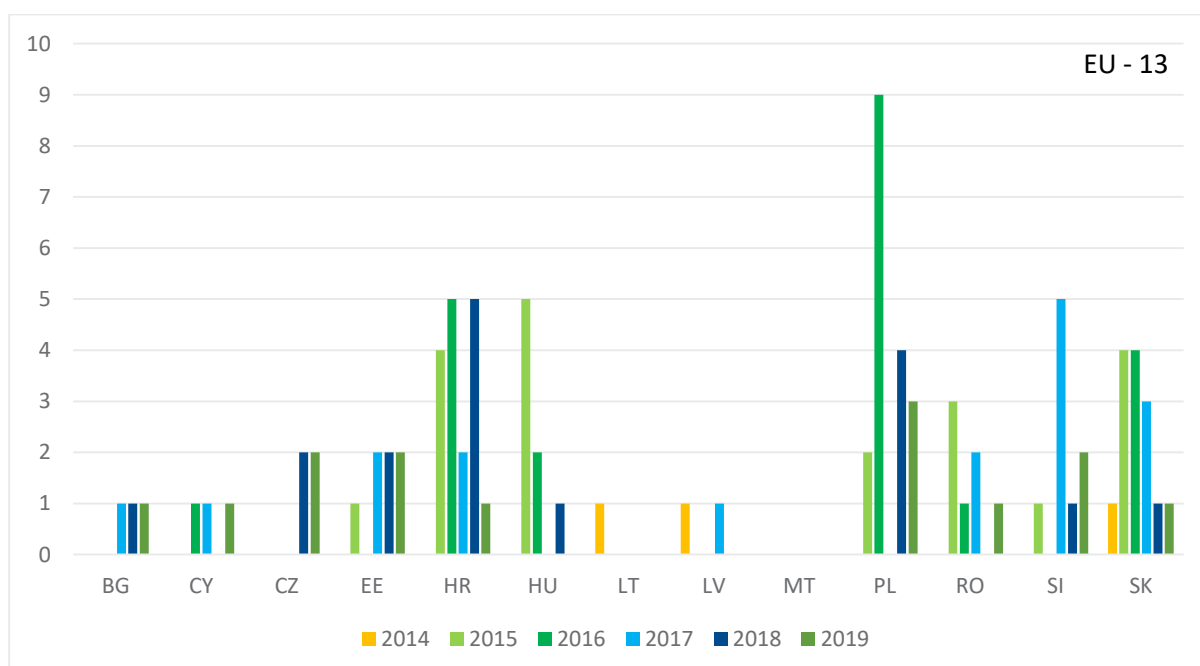


Figure 18: Distribution of beneficiaries per country from EU13 in Calls 2014-2018 and in proposals selected for funding in Call 2019

Considering the participation of EU15 and EU13 countries as a group (Figures 19 and 20 respectively), a stable number of EU13 applications can be observed over the last two years. This demonstrates the efforts made by the BBI JU Programme Office in raising

awareness about the calls throughout recent years, especially in underrepresented countries, via the participation in info days and other relevant events as previously described.

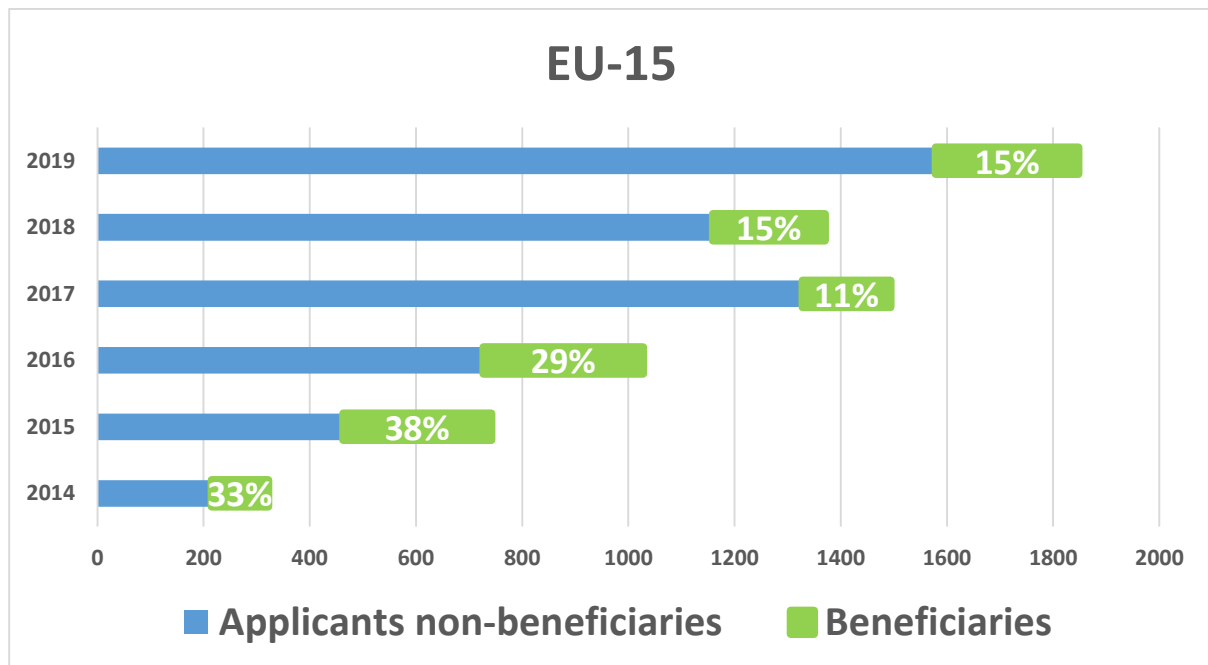


Figure 19: Distribution of applicants and beneficiaries from EU15 in Calls 2014-2018 and in proposals selected for funding in Call 2019

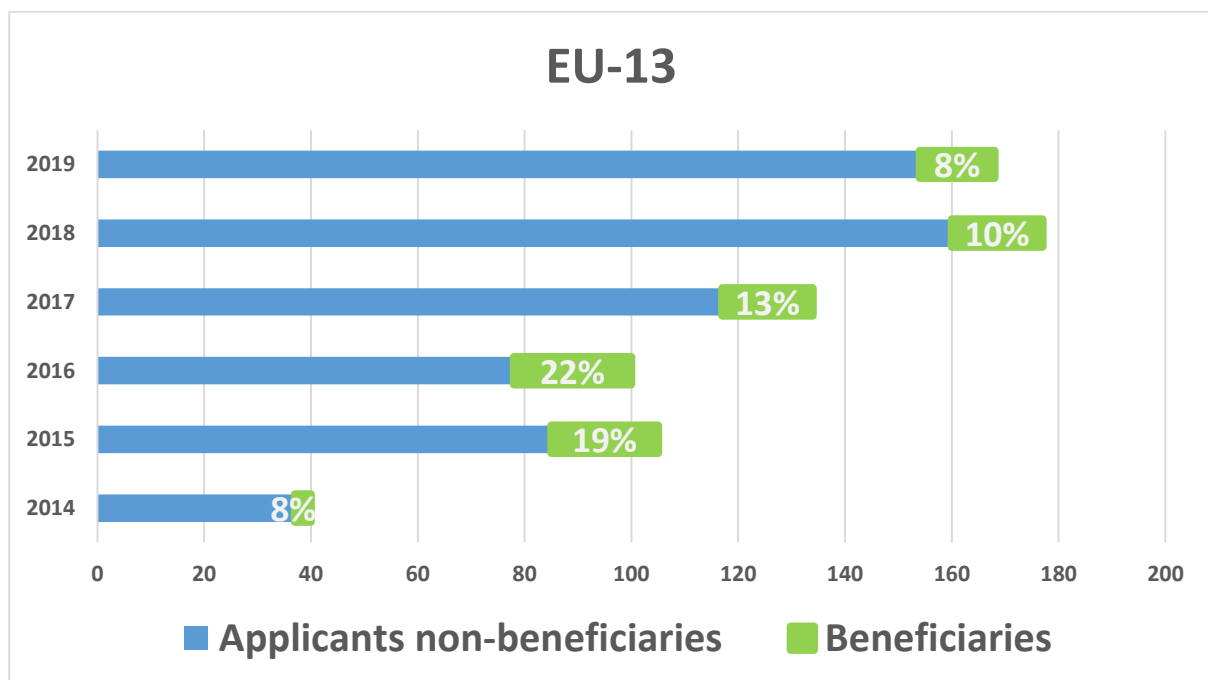


Figure 20: Distribution of applicants and beneficiaries from EU13 in Calls 2014-2018 and in proposals selected for funding in Call 2019

TYPES OF PARTICIPANTS IN BBI JU PROJECTS

Within the 101 funded projects from BBI JU Calls 2014, 2015, 2016, 2017 and 2018, as well as the 23 projects currently in GAP from Call 2019, 882 beneficiaries represent the private-for-profit sector, corresponding to 60.2% of all BBI JU beneficiaries. For Call 2019 in particular, this trend is confirmed with a good balance of industrial participation, representing 62% of the total number of participants in retained proposals. In terms of allocated funding, the total BBI JU contribution to the private-for-profit sector accounts for EUR 468 066 225, equivalent to 65.2% of the total BBI JU funding (Table 5). Within the private-for-profit entities, 55% are SMEs (Figure 21), and 36% are large industries³⁹, which corresponds to an almost even funding distribution between SMEs and large industries (Figure 22). It is important to highlight that this share is in line with the overall SME participation in the BBI JU portfolio, which is very high, and it corresponds to 39% of the total beneficiaries (see Figure 25). This confirms the pivotal role held by SMEs in the deployment of bio-based industries.

The high participation of the private sector in the BBI JU programme is consistent with the fact that BBI JU is an industry-driven initiative. However, the beneficiaries of BBI JU projects also include an important share of research organisations, representing 19.4% of the total, together with higher education establishments accounting for 12.7%. Therefore, together research organisations and higher education establishments represent a share of around 32% of the total participants. These organisations play a key role in driving innovation and technological advancement and therefore support the successful implementation of BBI JU's projects.

| Type of participants | Number of participants | Number of participants vs total participation | Received grant (in EUR) | Funding received vs total funding |
|----------------------------------|------------------------|-----------------------------------------------|-------------------------|-----------------------------------|
| Private-for-profit organisations | 882 | 60.2% | €468,066,224.64 | 65.2% |

³⁹ The remaining 9% are represented by private-for-profit legal entities with a currently undefined distinction between SMEs or large industry. This data is available in CORDA (extraction of 14/12/2018). The beneficiaries report on their type of legal entity (Public, private-for-profit, research organisation etc.), but it is not mandatory for them to report on SME/large industry status. The beneficiaries who have not reported on these specific parameters are regrouped in a separate category as "Unidentified PRCs".

| | | | | |
|---------------------------------|-------------|-------------|------------------------|-------------|
| Research organisations | 285 | 19.4% | €128,801,461.86 | 17.9% |
| Higher education establishments | 186 | 12.7% | €86,388,257.80 | 12.0% |
| Others | 10 | 0.7% | €1,285,155.25 | 0.2% |
| Public body | 103 | 7.0% | €33,069,201.57 | 4.6% |
| Total | 1466 | 100% | €717,610,301.12 | 100% |

Table 5: Calls 2014-2019 number/type of participants and attribution of BBI JU funding in selected proposals. *Call 2019 still under GAP.

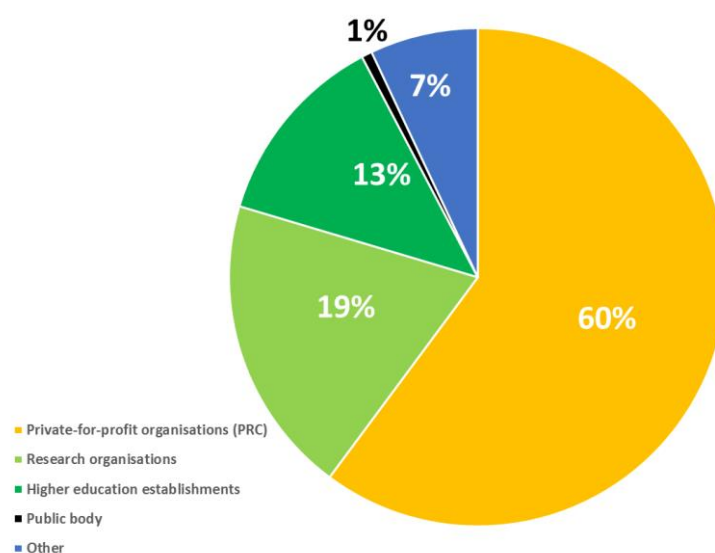


Figure 21: Calls 2014-2019 number/type of participants in selected proposals.

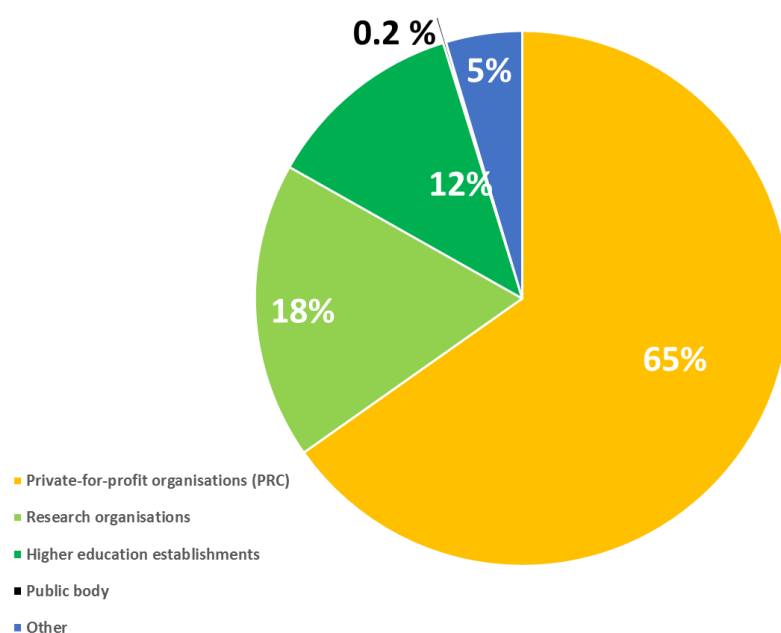


Figure 22: Calls 2014-2019 BBI JU funding/type of participants in selected proposals.

* For Call 2019 the BBI JU grant will be allocated to beneficiaries upon the finalisation of the GAP process

Moreover, the high participation of the private sector in the BBI JU programme as an industry-driven initiative is substantiated by the important share of funding that goes to BIC constituent entities, as well as the share in the number of beneficiaries, as shown in the figure below.

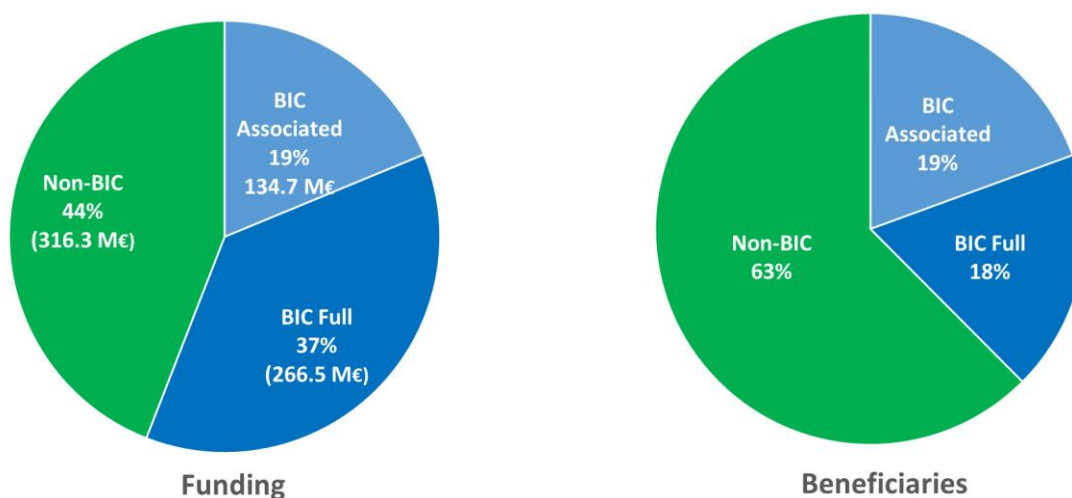
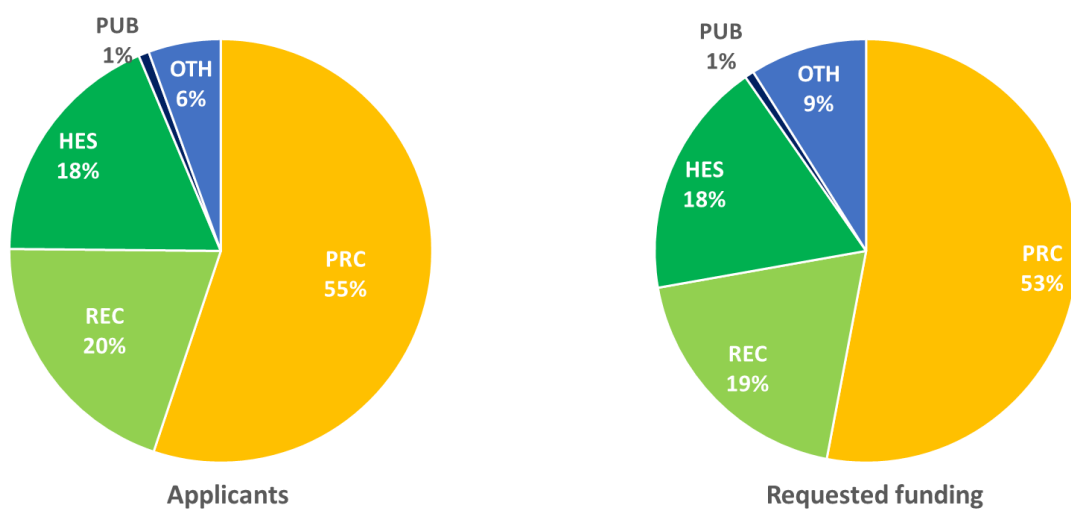


Figure 23: Distribution of funding and beneficiaries amongst BIC/non-BIC entities (non-unique) in Calls 2014-2019. (The data for the Call 2019 refers to retained proposals)

Similar patterns of participation are observed at the level of submission. The private-for-profit organisations represent about 55.1% of the total applications requesting 53% of the total budget (Table 6). Nevertheless, the types of applicants remain diverse with an important representation from research organisations (about 20%) and higher education establishments (about 19%) accounting for respectively 19.2% and 18.1% of requested funding (Figure 24).

| Type of participants | Number of applications | Number of applications vs total participation | Requested grant (in EUR) | Funding requested vs total funding |
|----------------------------------|------------------------|-----------------------------------------------|--------------------------|------------------------------------|
| Private-for-profit organisations | 4407 | 55.1% | €2,212,842,047.57 | 53.0% |
| Research organisations | 1598 | 20.0% | €802,994,749.52 | 19.2% |
| Higher education establishments | 1479 | 18.5% | €756,417,853.10 | 18.1% |
| Public body | 64 | 0.8% | €29,372,348.63 | 0.7% |
| Others | 443 | 5.5% | €374,551,338.50 | 9.0% |
| Total | 7991 | 100% | €4,176,178,337.32 | 100% |

Table 6: Calls 2014-2019 number/type of participants and attribution of BBI JU funding in submitted proposals.⁴⁰



⁴⁰ The table analyses total applications, therefore non-unique.

Figure 24: Calls 2014-2019 applicants and requested funding/type of applicants.

SMES PARTICIPATING IN BBI JU CALLS AND PROJECTS

BBI JU programme demonstrates an excellent SME participation through an effective and well-balanced portfolio that is creating unique opportunities for SMEs to cooperate, develop their knowledge and establish cross-sector interconnections to find new business opportunities in the bio-based sector. Their relevant participation in the different types of actions (RIAs, IAs and CSAs) and their unique contribution as enablers for the generation of new knowledge and products demonstrate their innovation-driven effect and their contribution to the bio-based sector structuring effect as well as to the development of the bio-based SMEs' landscape in Europe.

The high participation rate of SMEs was also recognised by the 2017 Interim Evaluation performed by the EC⁴¹ as one of the main achievements of BBI JU since its launch. Upon the request of BBI JU's Governing Board and advisory bodies, the BBI JU Programme Office undertook a thorough study to map the SME landscape in the BBI JU project portfolio in order to have a deeper understanding of the SMEs' role and impact on innovation in the BBI JU programme and their contribution to the structuring effect on the bio-based industrial sector. The results of this study were published in November 2019 in the report "The BBI JU landscape: driving impact and innovation"⁴².

The analysis shows that SMEs have a prominent and varied role in the bio-based industries, providing specific expertise, innovation and technology development, which makes them essential for the projects and the sector. The share of SME applicants⁴³ (32%), and the share of SME beneficiaries in retained proposals (39%) (Figure 25) demonstrate the vital role that SMEs play in the BBI JU programme and in the bio-based economy, and prove that BBI JU represents a valuable instrument for innovation.

This level of SME participation corresponds to an overall allocated funding of 35% (Figure 25) as well as an overall success rate of 32% (showing an increase of 33% as compared to previous call). The significant share of SME beneficiaries and funding allocated to SMEs is confirmed for 2019 data exceeding the target mentioned in the SIRA 2017, which is 20%.

⁴¹ Interim Evaluation of the Bio-based Industries Joint Undertaking (2014-2016) operating under Horizon 2020. Experts Group Report available here: <https://ec.europa.eu/research/evaluations/pdf/bbi.pdf>

⁴² Report available here: <https://www.bbi-europe.eu/sites/default/files/media/bbiju-sme-landscape.pdf>

⁴³ The share of SMEs is calculated based on the applicants' self-assessment done at the submission stage

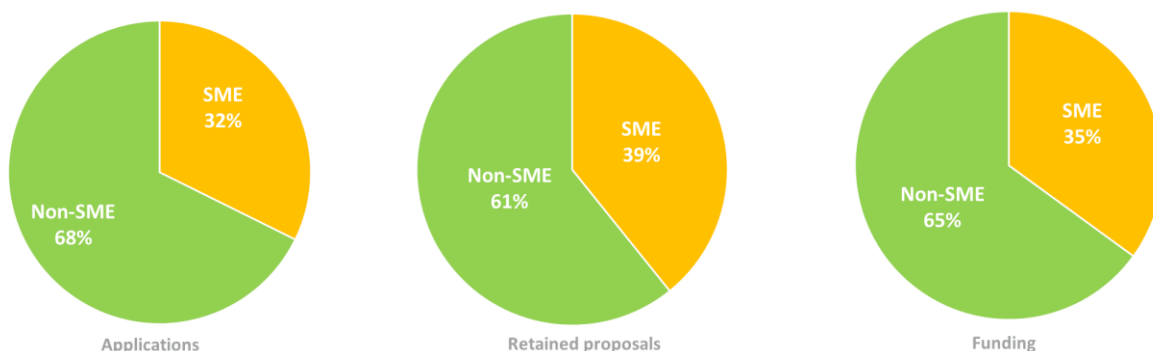


Figure 25: Calls 2014-2019 share of SME unique applicants, beneficiaries and share of funding (the data for Call 2019 refers to retained proposals)

Figure 26 shows the total SME participation in Horizon 2020 programmes in comparison with SME participation in BBI JU projects. Notably, BBI JU is attracting a significantly higher participation compared to the whole Horizon 2020 programme. Figure 27 shows the level of funding to SMEs in BBI JU projects (and retained proposals invited to GAP for Call 2019) in the six ongoing calls. This is also demonstrated by the level of funding to SMEs in BBI JU projects (and retained proposals invited to GAP for Call 2019) in the six ongoing calls, as shown in Figure 27.

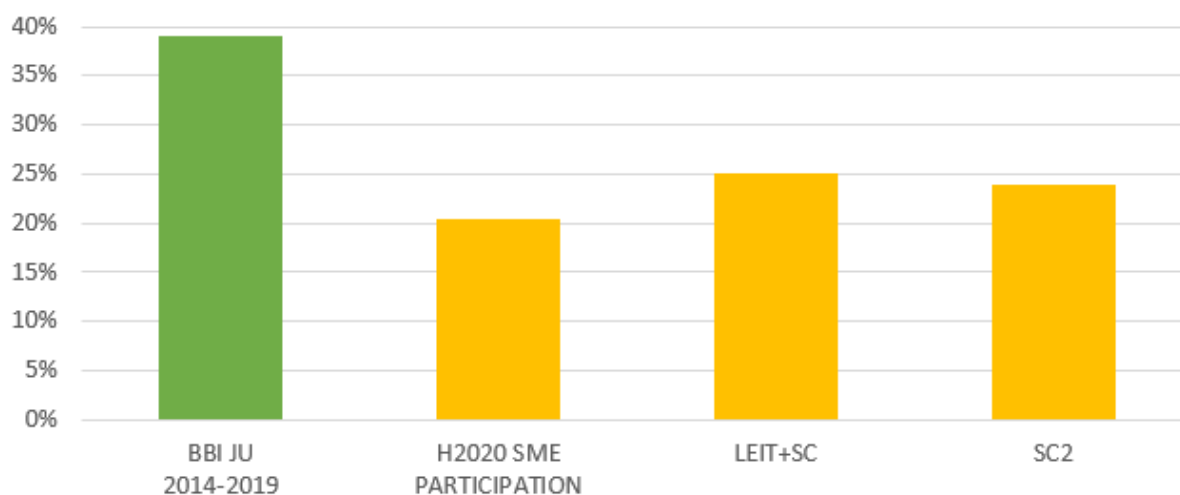


Figure 26: SME participation in BBI JU projects (Call 2014-2018) and retained proposals (Call 2019) in comparison with total Horizon 2020 SME participation as well as SME participation in SC and LEIT combined and SC2⁴⁴.

44 Source for Horizon 2020 SME participation: Horizon 2020 dashboard queried on 31/01/2020. <http://ec.europa.eu/research/participants/portal/desktop/en/projectresults/index.html>

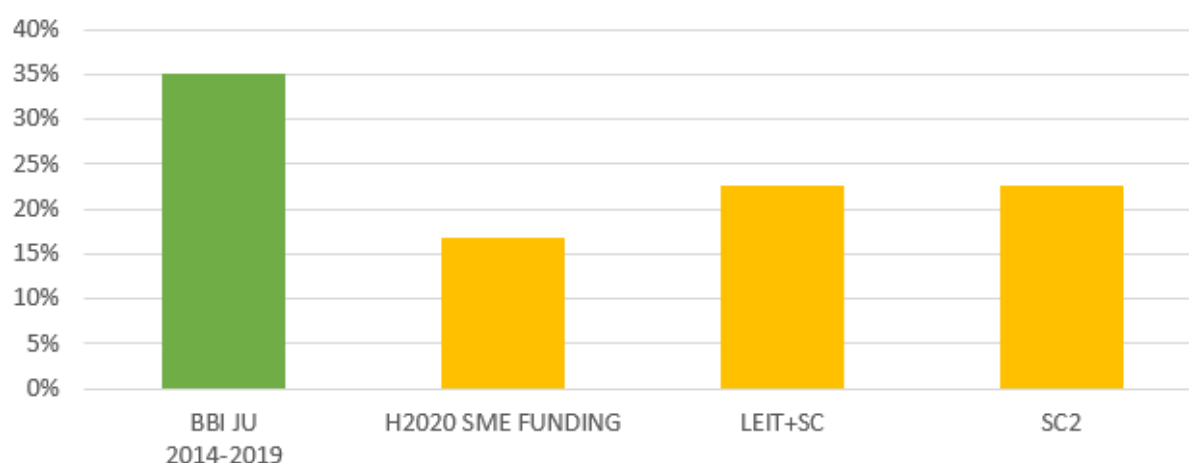


Figure 27: SME funding in BBI JU projects (Call 2014-2018) and retained proposals (Call 2019) in comparison with total Horizon 2020 SME funding as well as SME funding in SC2 and LEIT combined and SC2⁴⁵.

GENDER DIMENSION

In Horizon 2020, gender is a cross-cutting issue and is mainstreamed in each of the different parts of the programme, ensuring a more gender-balanced approach to research and innovation. Three objectives underpin the strategy on gender equality in Horizon 2020⁴⁶:

- fostering gender balance in research teams, in order to close the gaps in the participation of women versus men;
- ensuring gender balance in decision-making, in order to reach the target of 40% of the under-represented gender in panels and groups and of 50% in advisory groups;
- integrating the gender dimension in research and innovation (R&I) content helps improve the scientific quality and societal relevance of the produced knowledge, technology and/or innovation.

Table 7 shows data on the distribution of women and men in the different groups comprising BBI JU advisory bodies, expert evaluators (Call 2019) and project coordinators from all ongoing projects. The data demonstrates that gender balance is at the expected

⁴⁵ Source for Horizon 2020 SME funding: Horizon 2020 dashboard queried on 13/12/2018.
<http://ec.europa.eu/research/participants/portal/desktop/en/projectresults/index.html>

⁴⁶ <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/promoting-gender-equality-research-and-innovation>

levels with respect to all BBI JU groups, except for the Programme Office, following a recent restructuring of the team, and of its Governing Board, over which the BBI JU has no influence.

| Name of group | Total number of members | Percentage of women | Percentage of men |
|------------------------------|-------------------------|---------------------|-------------------|
| BBI JU Governing Board | 10 | 20% | 80% |
| Scientific Committee | 14 | 60% | 40% |
| States Representatives Group | 31 | 48% | 52% |
| BBI JU Programme Office | 23 | 70% | 30% |
| Expert-Evaluators Call 2019 | 140 | 46% | 54% |
| Project Coordinators | 101 | 44% | 56% |

Table 7: Percentage of women/men in BBI JU advisory groups, expert groups and project coordinators

Via the 'continuous reporting' module of the Funding and Tenders Portal, projects are requested to report on the gender of researchers and other workforce members involved in the project. Based on data collated up to 31 December 2019, 10717 female staff are involved in BBI JU projects, compared to 12389 male staff, resulting in a gender balance of 46% female – 54% male.

1.3.3. BBI JU project portfolio: BBI JU specific KPIs

MONITORING OF BBI JU SPECIFIC KPIs: PROCESS AND METHODOLOGY

The SIRA 2017⁴⁷ establishes **eight specific BBI JU KPIs** and their targets by 2020 as listed in the table 8 below.

| KPIs numbering and definition | KPI target in SIRA 2017 |
|-----------------------------------------------------------------|-------------------------|
| KPI 1 - New cross-sector interconnections in BBI JU projects | 36 |
| KPI 2 - New bio-based value chains created with BBI JU projects | 10 |

⁴⁷ The definition of the KPIs can be found in the SIRA 2017: <https://www.bbi-europe.eu/sites/default/files/sira-2017.pdf>

| KPIs numbering and definition | KPI target in SIRA 2017 |
|----------------------------------------------------------------------------------------------------------------|-------------------------|
| KPI 3 - Number of Grant Agreements signed between 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 RIA projects | 20 |

Table 8: BBI JU specific KPIs and their targets by 2020 as established in the SIRA 2017.

The BBI JU specific KPIs include both BBI JU project portfolio outputs (KPIs 3 and 7) and their outcomes (KPIs 1, 2, 4, 5, 6 and 8). The SIRA also addresses overall objectives for the broader socio-economic and environmental impact of the whole sector of the bio-based industries in Europe.

KPI 3 and KPI 7, respectively the number of BBI JU Grant Agreements (GAs) and number of BBI JU Flagship GAs, are figures reflecting the status of the BBI JU projects portfolio as reported at the end of 2019. Their contribution is based on the statistics from the calls' results.

For the purpose of the monitoring, and in common agreement with EC and BIC, the monitoring of KPIs 1, 2, 4, 5, 6 and 8 refers to the results of all BBI JU projects selected under the BBI JU calls between years 2014 and 2020, whose lifetimes may extend until 2024 or beyond. The results of the ongoing projects refer to expected results by the end of the project or by 2024 (the earliest date), while the results of the finalised projects refer to actual results as achieved by the end of the projects.

The **annual survey sent to project coordinators** aims at gathering information about the expected results of the BBI JU KPIs and the expected socio-economic and environmental impacts of BBI JU projects by 2024, or by the end of the project (the earliest date). This questionnaire requests information on both quantitative and qualitative aspects of BBI JU KPIs, the expected socio-economic impacts and the contribution to the UN Sustainable Development Goals (SDGs). The questionnaire is updated yearly in collaboration with BIC, EC and BBI JU Advisory Bodies, to ensure that it captures projects' contributions to the key aspects relating to the development of the bio-based industries and to current EU and global policies.

Coordinators of ongoing projects are requested to report their expected contributions by the end of the project or by 2024 (the earliest date), and coordinators of finalised projects are requested to provide information on the actual results at the end of the projects.

The 2019 questionnaire was distributed in September 2019 to 100 BBI JU project coordinators⁴⁸ of both ongoing (89) and finalised (11) projects⁴⁹, and they were requested to report their contributions by October 2019.

The interpretation of the results provided in this section is based on a critical analysis of the expected and actual results reported by the coordinators compared with the definitions and targets set in the SIRA, as well as the feedback obtained from discussions with a wide group of stakeholders, including DG RTD, DG AGRI, the BBI JU Advisory Bodies, the Scientific Committee and States Representatives Group, the BBI JU Governing Board, project beneficiaries, SCAR, FAO working group on the bioeconomy or the OECD, among others.

A validation of the actual results of projects finishing by April 2020 is underway, and the analysis will be published by the end of 2020 in the context of a broader study on the BBI JU project portfolio contribution to the BBI JU programme's objectives and expected environmental and socio-economic impacts.

OVERVIEW OF RESULTS

The number of GAs signed by BBI JU (KPI 3) amounts to 101. These projects resulted from the calls of the first five years (2014 -2018), out of a total of seven years. It corresponds to a total grant of EUR 599 million out of a total operational budget of EUR 805 million. In terms of types of action, at the beginning of 2019 the BBI JU project portfolio was composed of: 9 Flagships, 28 DEMOs, 52 RIAs and 11 CSAs. For more information on the composition and characterisation of the project portfolio, please see section 1.2.2 of this report.

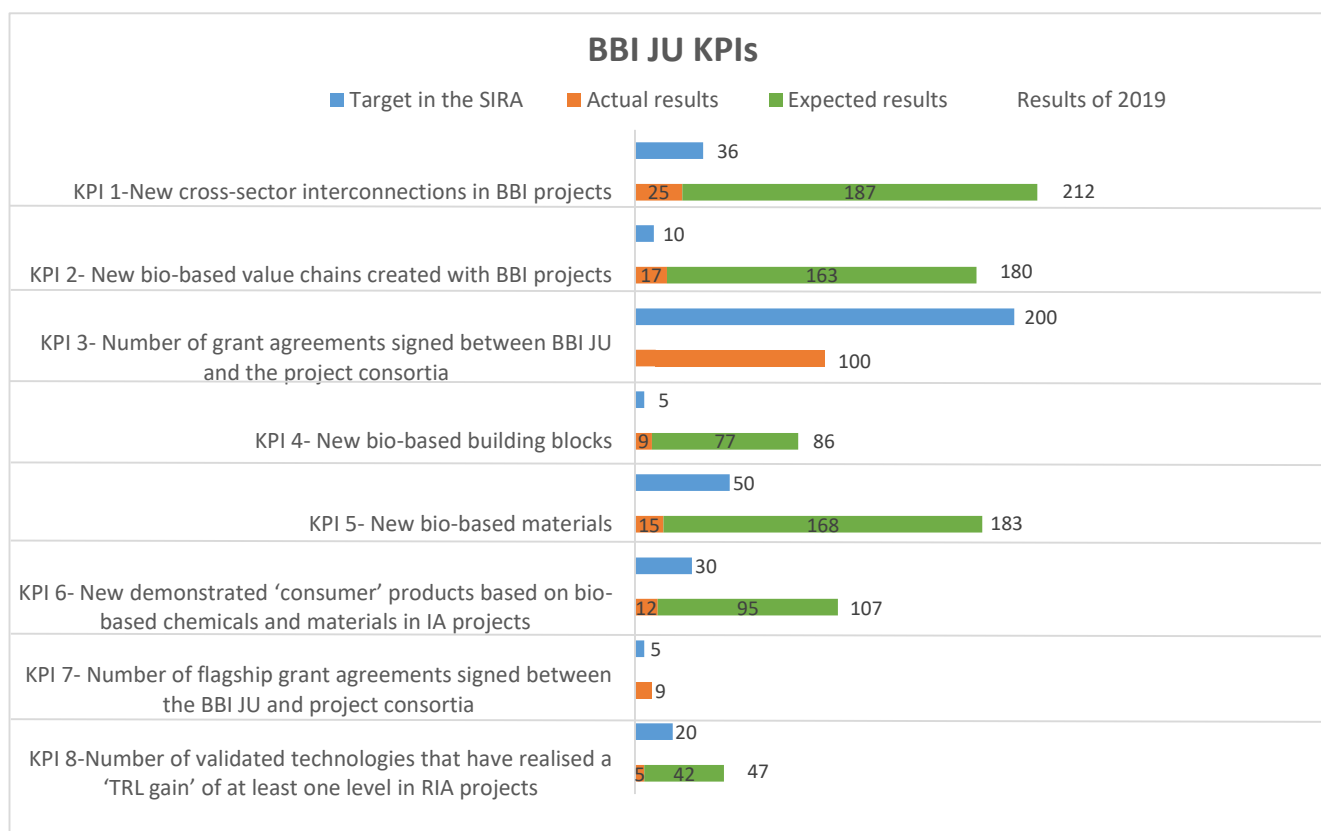
The following analysis is based on the feedback received from 91 projects, which represents an overall response rate of 91%:

- Ongoing projects: 82 out of 89, including 8 Flagships, 24 DEMOs, 43 RIAs and 7 CSAs

⁴⁸ One BBI JU project was terminated before the end of its duration and it is not considered for this analysis

⁴⁹ The group of finalised projects considers those that have finalised the whole reporting cycle by September 2019, that is to say, those that have finalised their activities by July 2019 the latest.

- Finalised projects: 9 out of 11, including 1 Flagship, 1 DEMO, 5 RIAs and 2 CSAs



The overall expected and actual results in 2019 with respect to BBI JU projects' contributions to KPIs are shown in figure 28.

Figure 28: KPIs expected and actual results reported by projects' coordinators in 2019 versus targets in the SIRA.

As explained above, KPIs 3 and 7 refer to actual outcomes at the end of 2019 resulting from Calls 2014 to 2018, and they amount to 100 successful GAs (KPI 3), of which nine refer to Flagships (KPI 7), "first-of-a-kind" biorefineries in Europe, already surpassing the initial SIRA target of five Flagships.

In the case of KPIs 1, 2, 4, 5, 6 and 8, figure 28 shows the actual results reported from finalised projects, the expected results reported by ongoing projects and the overall results of 2019 as the sum of both indicators. The actual results reported for KPI 2- new bio-based valued chains, and KPI 4- new bio-based building blocks, have already achieved and exceeded the SIRA targets, while KPIs 1, 5, 6 and 8 are progressing well towards their objectives.

The present section offers an overview of the main conclusions extracted from the expected results as well as the impacts reported by the projects in 2019. The analysis of the results regroups the KPIs by area of impact: KPIs 1-2 are indicators of the contribution to the structuring and mobilising effect, KPIs 4-5-6 refer to the creation of bio-based products that can replace their fossil-based counterparts and hence contribute to advancing the transition to a bio-based economy, and KPIs 7-8 show the potential for upscaling and commercialisation of the developed processes and technologies through the analysis of the advancement of their technological maturity and the establishment of “first-of-a-kind” biorefineries in Europe.

STRUCTURING AND MOBILISING EFFECT: KPIS 1 AND 2

The results reported in 2019 confirm the positive trend observed in previous years: altogether the expected and actual results for the new cross-sector interconnections (KPI 1) and new bio-based value chains (KPI 2) created by BBI JU projects significantly exceed the SIRA targets. Detailed figures and analyses are provided in the sections below. The BBI JU projects portfolio is systemically contributing to mobilising new actors and businesses and, consequently, to structuring the European bio-based industry.

KPI 1: NEW CROSS-SECTOR INTERCONNECTIONS IN BBI JU PROJECTS

This indicator monitors the number of new forms of cooperation in BBI JU value chains. It refers to cooperation between companies and other actors from different sectors, who interconnect/cooperate to build new value chains. These interconnections are new in the sense that the actors have never previously engaged with each other in cooperation or in a business context in a 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.

Projects are requested to report the number of new cross-sector interconnections they generated or expect to generate and to provide a description of each of them, as well as to indicate the new cross-sector interconnections among sectors in the three segments of the bio-based value chain: 1. feedstock sourcing, 2. processing and transformation and 3. end users.

Reported results

BBI JU ongoing and finalised projects reported overall 212 expected or actual new cross-sector interconnections: this is well beyond the initial target of 36 and represents almost six times the target defined in the SIRA 2017 for the BBI JU projects from Calls 2014-2020.

Interestingly, the results from seven finalised projects have confirmed the positive impact that the BBI JU Initiative has had in mobilising actors in the bio-industry, with an impressive 25 new cross-sector interconnections (around 80% of the SIRA target) already created.

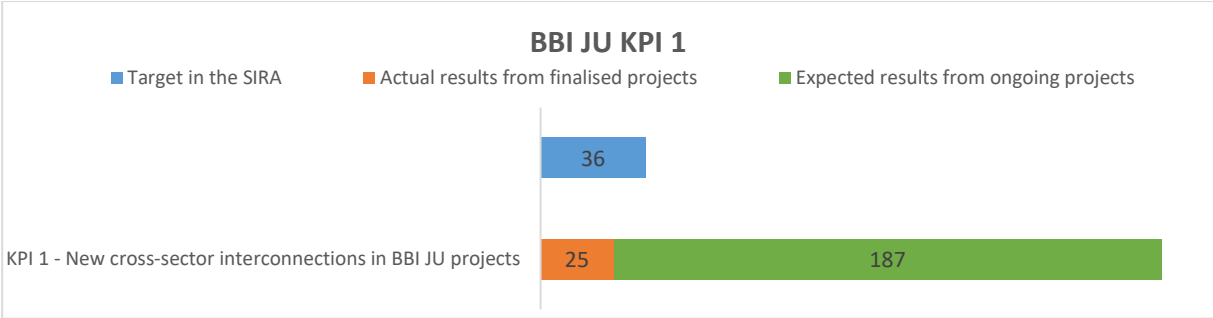


Figure 29: KPI 1 - New cross-sector interconnections in BBI JU projects for finalised and ongoing projects

The two finalised DEMO and Flagship projects reported respectively six and seven new forms of cross-sector cooperation, demonstrating the strong influence of the innovation actions in stimulating and attracting the participation of new actors in the bio-based economy. On the other hand, innovation actions cover the whole value chain and therefore require the involvement of different sectors, from the supply of the biomass to the final market uptake.

Figures 30, 31, and 32 show the number of expected and actual new interconnections in the three segments of the bio-based industries value chain: origin of feedstock, processing and transformation and end users’ sector.

Results are reported from both ongoing and finalised projects. Focusing on finalised projects, new interconnections are reported for all sources of feedstock except for the aquatic, and for all categories of processing and transformation, except for fishing and aquatic technologies, as the aquatic-based sources were only explicitly incorporated as a new feedstock in the updated version of the SIRA in 2017.

It is remarkable to see how the new expected and actual interconnections involve many different actors of the European bio-based value chains, showing the multi-sectoral nature of the bio-based economy: from the food and feed sectors to the automotive, from packaging to electronics, to name just a few. Therefore, although the BBI JU Initiative was only launched in 2014, it has played an important role as a catalyst in mobilising key relevant actors, who are creating the necessary new links across several sectors along new bio-based value chains.

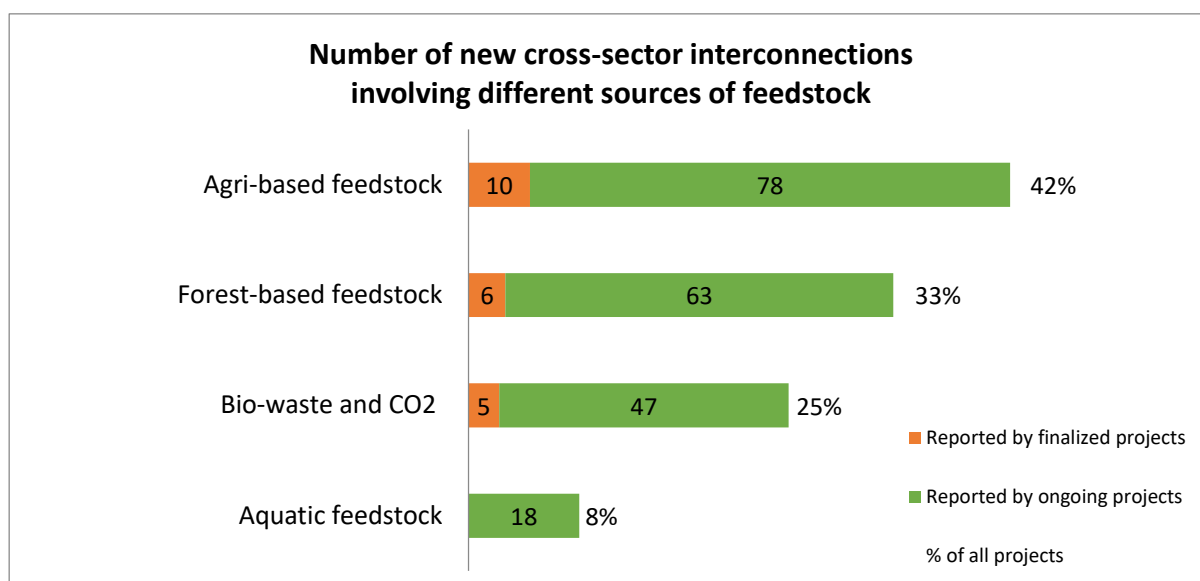


Figure 30: Expected and actual number of new cross-sector interconnections that involve sectors related to different origins of feedstock

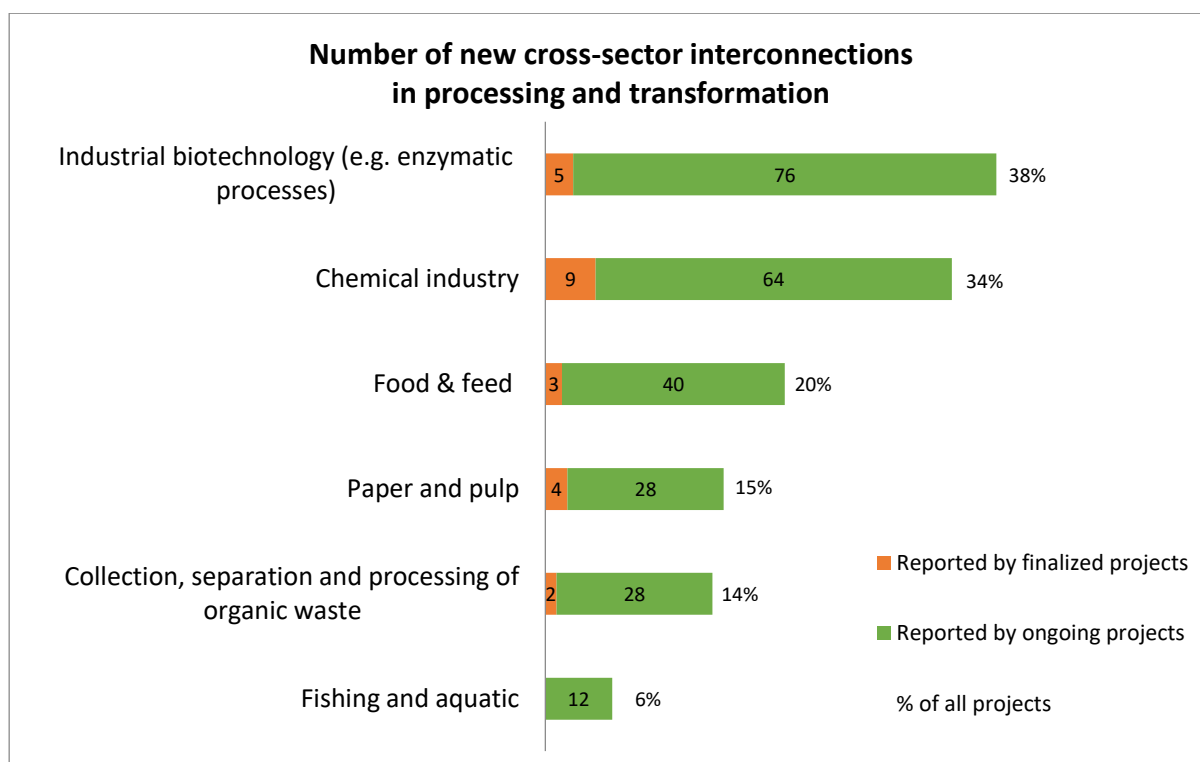


Figure 31: Expected and actual number of new cross-sector interconnections reported that involve different sectors related to processing and transformation

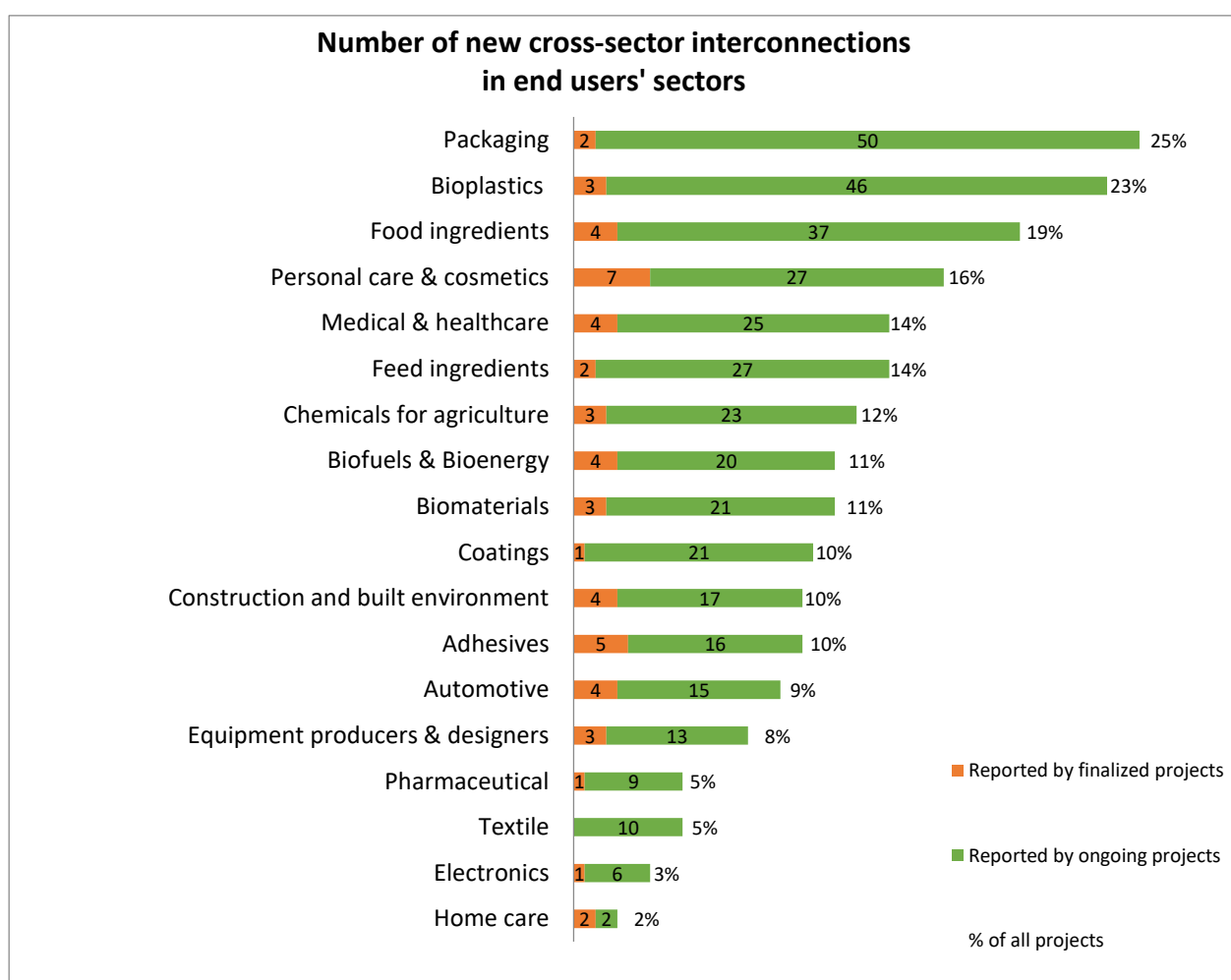


Figure 32: Expected and actual number of new cross-sector interconnections that involve different end users' sectors

A table mapping the expected and actual interconnections between feedstock origin and end users is shown below in Table 9. The colour grading indicates the frequency of interconnections reported across sectors. The highest number of interconnections is reported between agriculture and forestry sectors and the packaging and bioplastics end users. A high number of interconnections is established between the agri-based feedstock, the personal care and the food and feed ingredients. Considering that the aquatic feedstock was included in the SIRA only in 2017, this feedstock shows the lowest number of interconnections and a lesser involvement of end-user sectors: other potential uses of the aquatic feedstock for the bio-based industries still need to be exploited (e.g. in the textile and automotive sectors). On the other hand, new cross-sector interconnections appear more recurrent and robust between all the end users' sectors and the feedstock of different origins. These connections signal that the bio-based resources can replace the non-renewable fossil-based resources in many sectors to produce bio-based and sustainable products.

| | | | | |
|------------------------------------|---------------|-----------------------------|-------------------------------|--------------------------------------|
| Colours Code: | from 21 to 25 | | | |
| | from 16 to 20 | | | |
| | from 11 to 15 | | | |
| | from 6 to 10 | | | |
| | from 1 to 5 | | | |
| | 0 | | | |
| | | Agri-based feedstock | Forest-based feedstock | Aquatic feedstock |
| | | | | Bio- waste and CO₂ |
| Packaging | 24 | 22 | 1 | 11 |
| Medical & healthcare | 13 | 11 | 5 | 6 |
| Personal care & cosmetics | 22 | 6 | 4 | 5 |
| Home care | 0 | 1 | 0 | 0 |
| Pharmaceutical | 3 | 1 | 3 | 4 |
| Food ingredients | 23 | 6 | 9 | 9 |
| Feed ingredients | 19 | 7 | 4 | 5 |
| Textile | 5 | 4 | 0 | 4 |
| Automotive | 9 | 10 | 0 | 5 |
| Construction and built environment | 10 | 13 | 0 | 6 |
| Chemicals for agriculture | 13 | 6 | 0 | 11 |
| Equipment producers & designers | 6 | 6 | 1 | 3 |
| Adhesives | 7 | 11 | 1 | 6 |
| Coatings | 8 | 9 | 2 | 5 |
| Electronics | 2 | 4 | 0 | 2 |
| Biofuels & Bioenergy | 17 | 4 | 0 | 9 |
| Bioplastics | 22 | 18 | 2 | 14 |
| Biomaterials | 13 | 10 | 2 | 6 |
| Other sectors | 6 | 2 | 0 | 2 |

Table 9: Matrix showing expected and actual cross-sector interconnections between different origins of feedstocks and end users

Examples of new cross-sector interconnections

- Agriculture and chemicals for agriculture. In the RIA project BioRescue, mushroom producers have started a collaboration with research centres and biopesticide producers (at pilot scale) to produce bio-pesticides; the DEMO project B-FERST aims at producing fertilisers and bio-stimulants, starting from agricultural residues, where farmers are directly involved in the fertiliser manufacturing through modular equipment, to tailor the solution to their needs.
- Forestry sectors and food and feed ingredients. The iFermenter RIA project has established new interconnections between forestry-based feedstock and the food and feed sector. Thanks to fermentation processes that can fully exploit the biomass, antimicrobials as ingredients are produced for food and feed applications. BIOFOREVER, a DEMO project, aims to produce - among several new reported interconnections - specialty sugars using spruce as feedstock, thereby linking the forest sector with the food industry.
- Aquatic sector and pharmaceuticals. The RIA project AQUABIOPRO-FIT aims to valorise marine side-stream products to produce several ingredients for human and animal health. Starting from state-of-the-art disease models, the therapeutic and health-promoting properties of new extracts of selected ingredients will be assessed within the project.

Municipal organic waste and bioplastics. In the DEMO project DEEP PURPLE, the pre-treatment and conversion of urban biowastes into “Purple Phototrophic Bacteria” (PPB) biomass allows for bioplastics production. PPB biomass is a new type of biomass derived from the conversion of mixed biowaste streams by existing technologies and an innovative technology (PPB photobioreactor), representing a novel process which has not been addressed so far. The project links actors operating in the waste management and bio-plastics sectors.

KPI 2- NEW BIO-BASED VALUE CHAINS CREATED WITH BBI JU PROJECTS

This indicator monitors the number of new bio-based value chains (from raw materials to product application) realised within BBI JU projects. A value chain is considered new when at least one of its segments is new- either the biomass feedstock, the processing, the end product or its application(s). A new value chain is created when its resulting (new) product or service has been tested and validated, ready for a specified and accepted market application (IA projects).

The new value chains are economically viable and fulfil all relevant sustainability criteria, and each of them has business cases or commercialisation plans (if not already scaled up to Flagship projects - see KPI 7). These new bio-based value chains can thus result from innovative cooperation among several economic actors, which combine feedstock with innovative or traditional technologies and produce new bio-based products or market applications. They have the potential to be replicated across Europe and beyond, and to support the development and competitiveness of the European bio-based market and the creation of new bio-based products. RIA results aim at facilitating or creating a value chain, but alone they do not cover the whole value chain.

Projects are requested to report the number of expected and actual new bio-based value chains, including a description of each of them, specifying also their feedstock: agri-based, forest-based, aquatic or bio-based residues (incl. organic waste) and CO₂ from bio-based operations.

In addition, the questionnaire requests a description of the areas of innovation within the newly established value chain: feedstock, technologies, markets, supply chain management.

Reported results

Projects reported the intention to create a total **180 new bio-based value chains** by 2024, of which 17 are actual results from finalised projects and 163 are expected from ongoing projects. The target defined in the SIRA 2017 was to create 10 new value chains.

As mentioned above, the mobilisation of actors throughout all segments of the value chain is having a knock-on effect in producing systemic and structural changes in the European bio-based industry; these effects contribute to explaining the higher number of bio-based value chains than was initially predicted.

This situation leads to a strong conviction that valorising the European feedstocks and transforming them into high-value products using the bio-based model is the most valid and reliable path to follow in the transition to a post-petroleum economy.

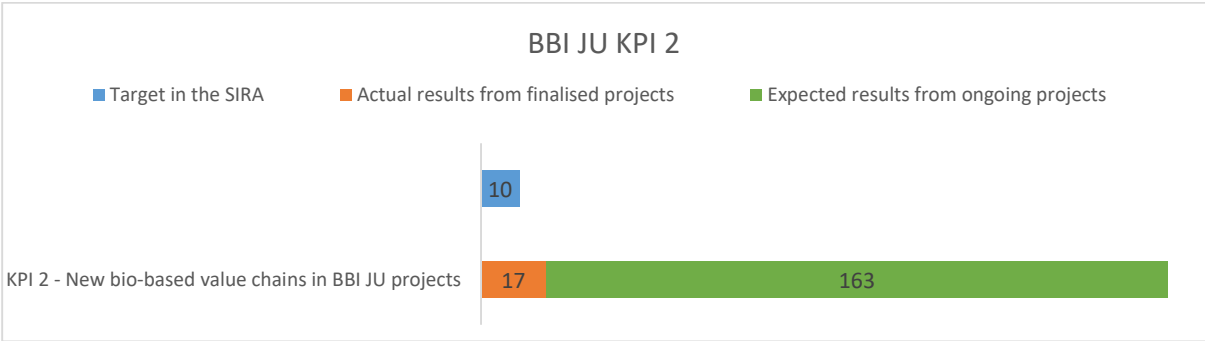


Figure 33: KPI 2- Expected and actual new bio-based value chains created by BBI JU projects

Originally a linear model was used for predicting the number of new bio-based value chains, considering a single value chain generated by processing a specific feedstock. The value chains stemming from the BBI JU projects are the results of non-linear connections and links, starting from various types of feedstocks, undergoing biorefinery processing and other industrial bio-technological processes, and ending up with a huge variety of renewable building blocks, materials and consumer products for a diverse range of market sectors and applications. The figures below (34 and 35) show two examples of new value chains generated from the use of forest-based and municipal waste biomass, which have been reported by BBI JU projects, where each coloured line corresponds to a granted project.

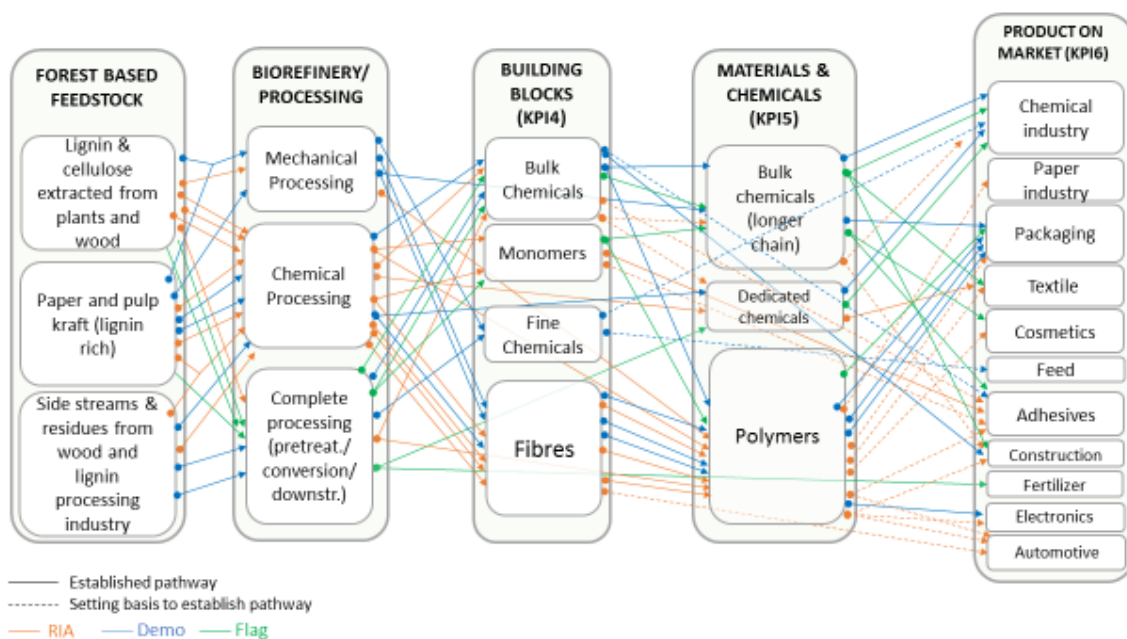


Figure 34 Example of forest-based value chains in BBI JU projects, showing the multiple links between feedstock, processing and bio-based building blocks (KPI 4), materials (KPI 5) and consumer products (KPI 6)

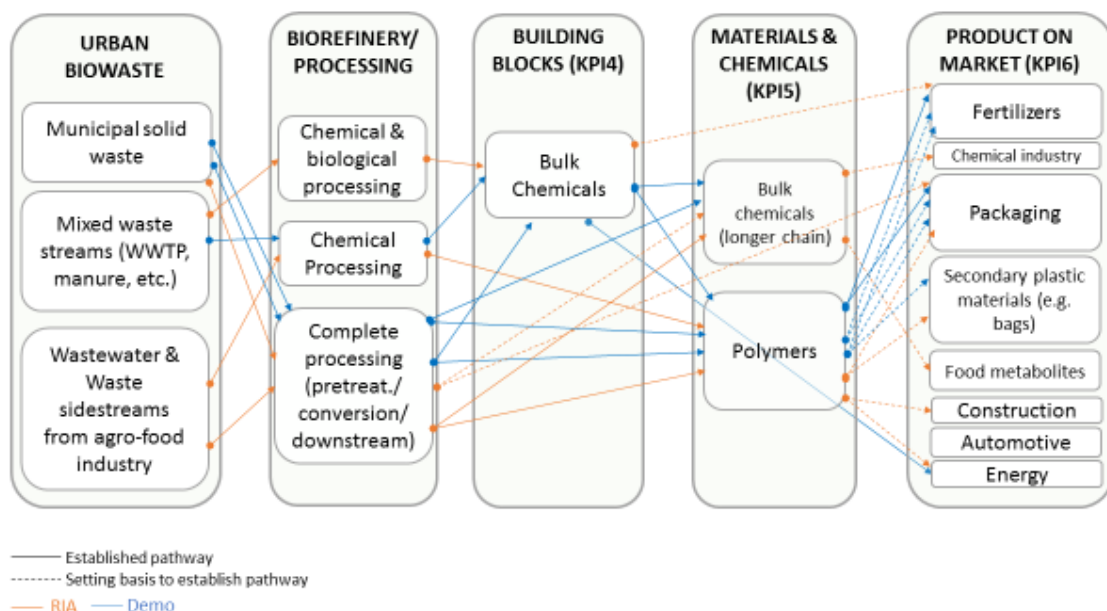


Figure 35 Example of urban-biowaste value chains in BBI JU projects, showing the multiple links between feedstock, processing and bio-based building blocks (KPI 4), materials (KPI 5) and consumer products (KPI 6)

When considering the origin of the feedstock, the more conventional agri-based feedstock still represents the dominant biomass used for the creation of new value chains (Figure 36). Yet an important number of the new bio-based value chains are using biowaste and CO2 and are transforming it into high value-added industrial products. Finally, the potential for new value chains from aquatic feedstock and its residues and side-streams still needs to be unlocked, as they are only used in 13% of the new bio-based value chains.

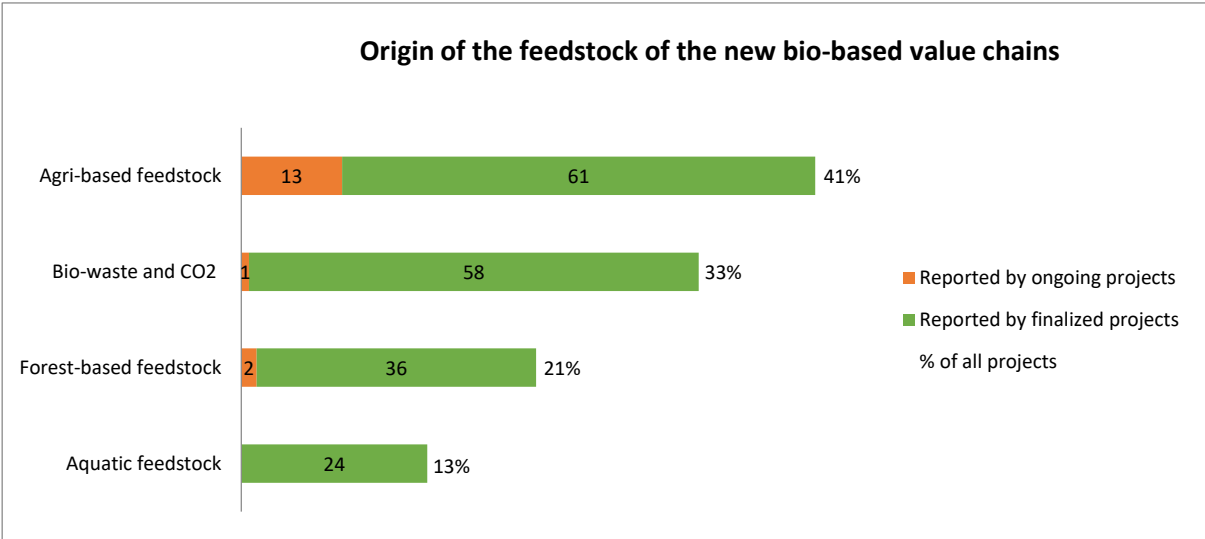


Figure 36: Percentage of the reported expected and actual new value chains indicating different origin of feedstock

Figure 37 shows the percentage of new bio-based value chains having a specific aspect of novelty. 69% of new value chains are expected to deliver new products and address new markets. The use of new technology and the combination of several existing technologies represent in both cases around 50% of the novelty of new value chains, showing the key role that technologies play in delivering new value chains. 44% of the value chains mobilise new sources of feedstock and 42% include a new eco design approach.

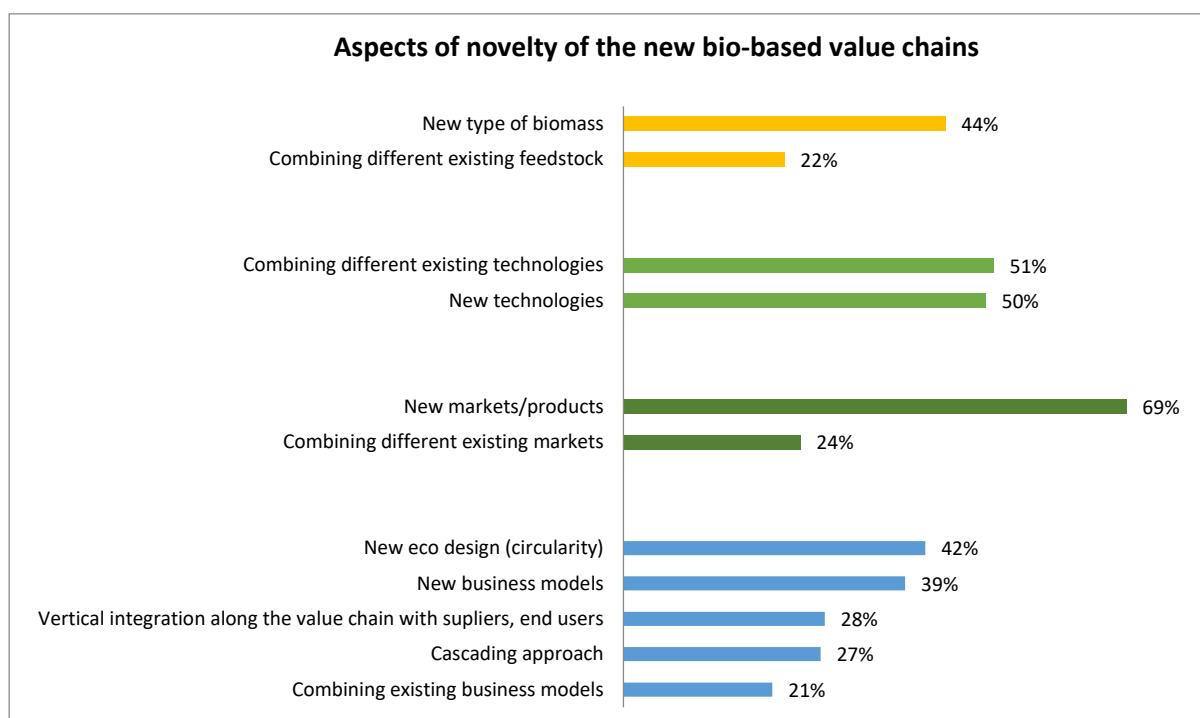


Figure 37: Percentage of the expected new bio-based value chains reporting a specific aspect of novelty

Examples of new bio-based value chains

The finalised Pulp2Value DEMO project reported the creation of 10 new value chains. Using an integrated cascading biorefinery system, the project aimed at refining sugar beet pulp and its conversion into high value products (microcellulose fibers, arabinose and galacturonic acid). Final applications are in detergents, personal care, oil & gas, paints & coatings, flavour & food or cosmetics, each new item corresponding to a new value chain. For instance, new additives isolated from sugar beet pulp for drilling fluids are produced via an innovative combination of the mechanical, physical and chemical (pre)treatment of biomass. The concept can be applied to all sugar beet growing regions. The value chain has been developed through strategic cooperation with service companies for the oil & gas industry.

In the DEMO project INGREEN, four new value chains are expected to be delivered. The project aims at producing functional innovative ingredients from paper and agro-food side-streams through sustainable and efficient tailor-made biotechnological processes for food, feed, pharma and cosmetics. In one of the new value chains, the waste from wheat and rye milling will be extracted to make pre-fermented ingredients, which will then be used to make bakery products and nutraceutical products. Both the use of the milling waste and the use of the ingredients represent an innovative aspect.

The DEMO project VAMOS aims at demonstrating the feasibility of producing and valorising second-generation sugars from Municipal Solid Waste (MSW). These low-value

residual waste sugars will be utilised in the production of three competitive, sustainable, affordable and high-performance bio-based products for non-food contact applications. The model can be replicated in all developed regions globally, with allowance made for any variations in the characteristics of the MSW feedstock. In total, eight value chains are expected to be validated by the project (e.g. starting from the organic lignocellulosic fraction of MSW to bio resins, polymer grade lactic acid (LA), textile grade fibres, packaging film, and others).

The finalised GreenLight RIA project already set the basis for the creation of one new value chain. The project converted kraft lignin, the new bio-based raw material, to carbon fibre using refining technologies. Low cost carbon fibre represents a new market for the automotive industry.

The BIOSEA RIA project aims at developing and validating innovative, cost-effective and environmentally friendly processes for the extraction of high value active ingredients for food, feed and cosmetic/personal care applications, from two microalgae and two macroalgae, through a biorefinery cascading approach. Two value chains are expected based on innovative mechanisms (cultivation, extraction, purification, product formulation and final application in new high-performance products) for obtaining the maximum profitability from the aquatic biomass.

The newly started Flagship FARMYNG aims at creating the world's first industrial process to breed and transform insects into safe proteins and lipids for fish feed and pet food end markets. As reported by the project, three value chains are expected to be created: 1) converting the by-products of wheat, corn and barley to fish feed; 2) converting the same by-products to pet food; 3) valorising insect manure, recovered during insect breeding, for organic fertiliser production.

TRANSITION TO BIO-BASED ECONOMY: KPIS 4-5-6

KPI 4- NEW BIO-BASED BUILDING BLOCKS BASED ON BIOMASS OF EUROPEAN ORIGIN

The bio-based building blocks are intermediate molecules or chemicals that can be processed for the production of other chemicals and materials. The building blocks are classified into three categories according to their level of innovation intensity: (1) those identical to non-renewable building blocks or so called 'drop-in' chemicals that have not yet been (successfully) made on a (pre)commercial scale, (2) those that perform better than fossil-based equivalents in comparable applications, and (3) those that are novel, breakthrough building blocks that have no fossil-based counterparts. The new building blocks should meet a clear (market) demand and fulfil specific technical requirements, be economically viable and match all relevant sustainability criteria, as defined in SIRA 2017. The new building blocks can be developed at TRL 3 and validated at TRL 4-5 in RIA projects,

demonstrated at TRL 6-7 in DEMOs or deployed at pre-commercial scale (TRL 8) in Flagships.

All BBI JU projects are requested to report the number of expected or existing new bio-based building blocks (if any) together with a description of each of them. They are also requested to explain the aspects of novelty, such as improvements in the functionality or performance, reduced production costs or a decrease in the negative impacts on the environment.

Reported results

As shown in figure 38, the creation of **86 new bio-based building blocks** has been reported by BBI JU projects; in particular, finalised projects reported the creation of **nine new building blocks**, which already surpasses the SIRA target of five, while ongoing projects are expected to create **77 new building blocks** by 2024 .

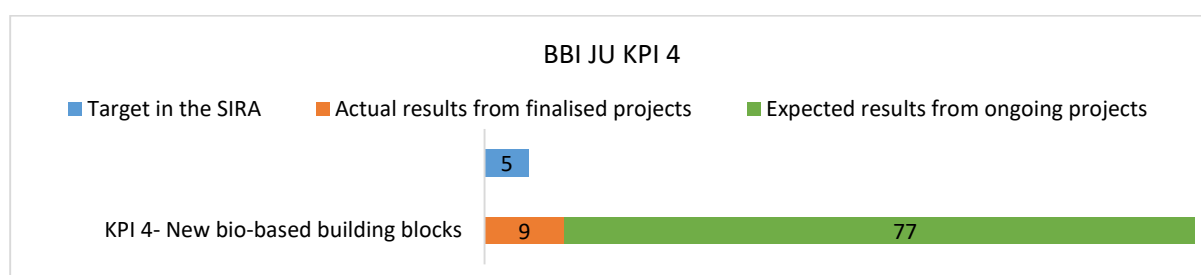


Figure 38: KPI 4- Expected and actual new bio-based building blocks

The SIRA targets, established in the initial SIRA drafted in 2013, were set based on the building blocks model used in the chemical industry, which is much more mature than the bio-based industry and widely dominated by a few molecules. On the other hand, the bio-based industry is more versatile and covers a wide range of chemicals regardless of their size and structure. Furthermore, the same molecule can be produced from very diverse feedstocks, using different processing technologies, thereby resulting in building blocks that are considered different, as they display different aspects of novelty.

In figure 39, the percentages of the new building blocks per level of innovation intensity have been reported.

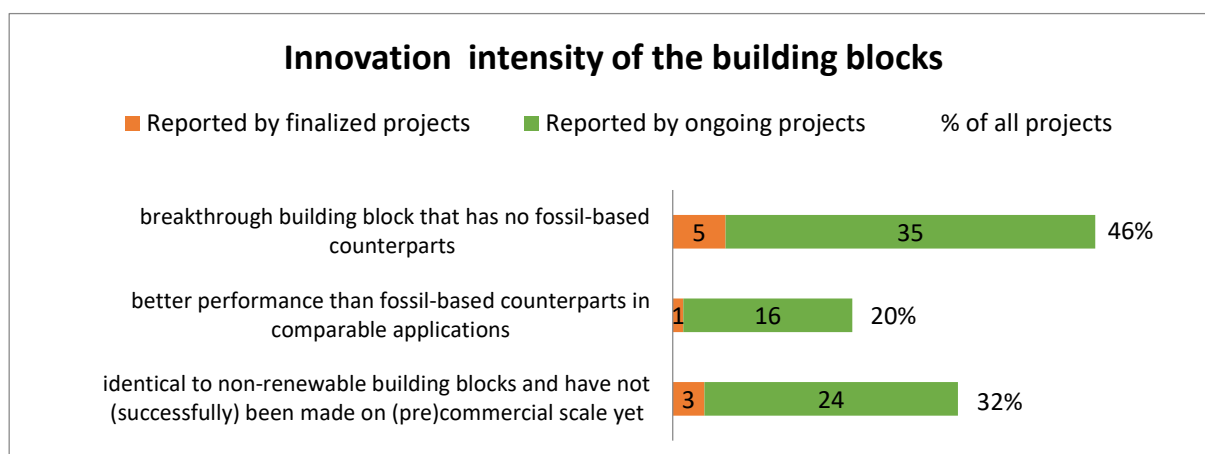


Figure 39: Percentages of new bio-based building blocks and their innovation intensity

The analysis shows that 46% of the reported new building blocks are breakthrough with no fossil-based counterparts; an example is represented by FDCA that can be used to make PEF (polyethylene furonate), a 100% bio-based polyester. On the other hand, 20% of the new reported building blocks demonstrate a better performance compared to their fossil-based equivalents, such as aminated β glycans, which are further converted into biodegradable polymers for food, cosmetics and medical device packaging. 32% are identical to non-renewable building blocks but are produced in a more sustainable way; among these are ethylene and isobutylene, which can be used either as chemicals or to produce lubricants, adhesives, flavours and fragrances.

The new building blocks are classified according to their aspects of novelty, which are related to the composition of the feedstock and the environmental, economic and product performance (Figure 40).

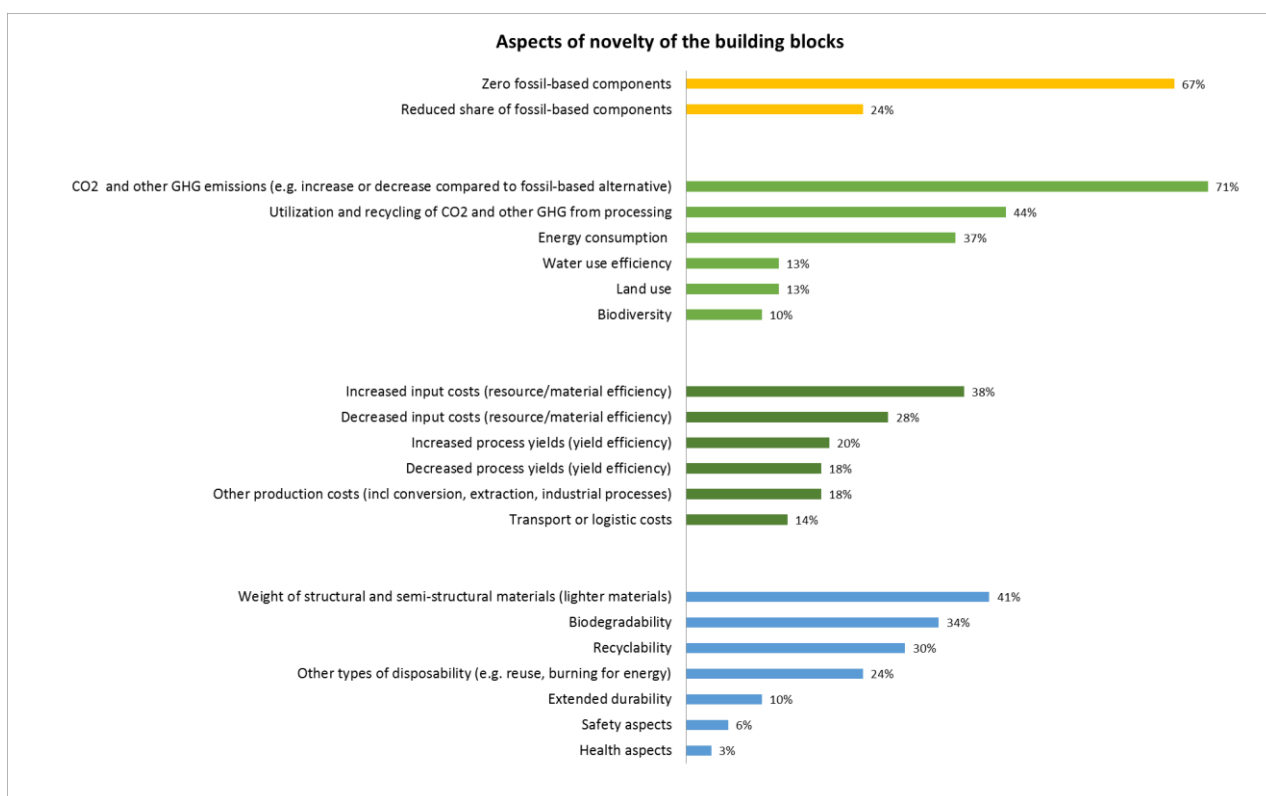


Figure 40: Percentages of new bio-based building blocks addressing different aspects of novelty: feedstock (yellow), environmental (light green), economic (dark green) and product performance (blue).

The results indicate that the main novelty aspect of the reported building blocks is related to the environmental performance and in particular that their production contributes to decreasing the utilisation of CO₂ and/or other GHG emissions as well as to optimise energy consumption. Other environmental aspects such as water use, land use and biodiversity preservation are reported by a small number of projects.

Regarding the characteristics of the products, the projects reported an improvement of the new building blocks in terms of their structure as well as in the biodegradability and recyclability aspects.

KPI 5: NEW BIO-BASED MATERIALS

The new bio-based materials are produced from biomass resources through sustainable processes. These materials are expected to display at least equal or overall better sustainability aspects compared to their fossil-based counterparts, assessed through a detailed LCA analysis. Moreover, they are expected to show improvements in material efficiency, biodegradability, recyclability or other functionalities. The new bio-based materials also need to meet a clear market demand and fulfil all technical requirements, have a proven economic viability and match all relevant sustainability criteria. The

newness can be in the selection of a particular biomass, in the integration of a novel technology for the material production or in the development of a specific product that will replace the fossil-based materials. The new bio-based materials can be developed at TRL 3 and validated at TRL 4-5 in RIA projects, demonstrated at TRL 6-7 in DEMOs or deployed at pre-commercial scale (TRL 8) in Flagships.

Reported results

As reported in figure 50, the creation of **183 new bio-based materials** has been reported by BBI JU projects; in particular, ongoing projects are expected to create **168 new materials** by 2024 while finalised projects already reported the creation of **15 new materials** compared to the defined target of 50 in the SIRA.

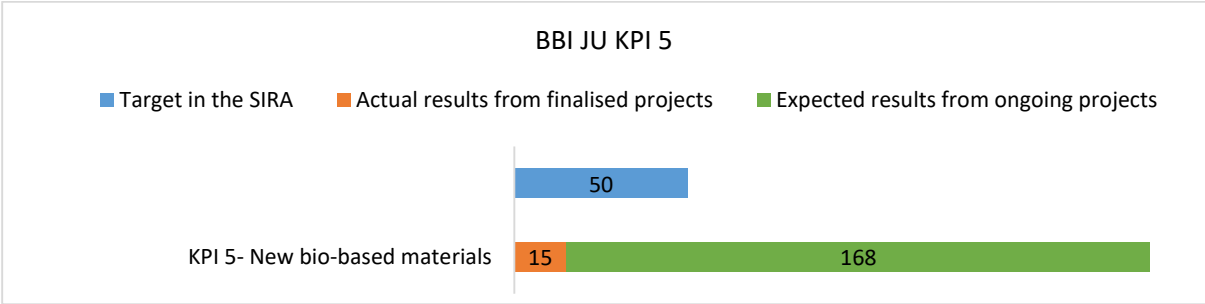


Figure 50: KPI 5- Expected and actual new bio-based materials

Altogether, the number of actual and expected new bio-based materials already substantially exceeds the SIRA target of 50 new bio-based materials. There are several factors contributing to the high number of expected new bio-based materials, such as the diversity of aspects to be considered in assessing a bio-based material as new. In this way, the same type of material can be reported by different projects, each of them involving different aspects which differentiate them one from the other. For example, in one project, the newness relies on the use of new technologies while in another project the novelty aspect is the use of a different feedstock.

Figure 51 presents the percentages of new bio-based materials at each of the three levels of innovation intensity described among the new bio-based materials reported by ongoing and finalised projects. As shown, 38% of the 183 new bio-based materials are ‘drop-in’, 28% have a better performance than fossil-based equivalents in comparable applications and 26% of the products are, or are expected to be, breakthrough bio-based materials.

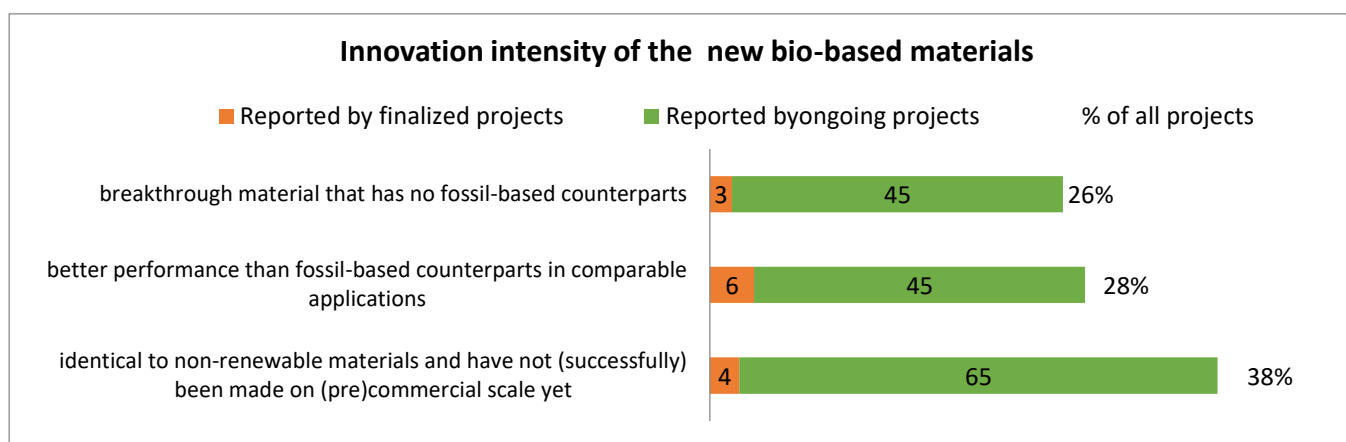


Figure 51: Percentages of new bio-based materials and their innovation intensity.

Some examples of new bio-based materials reported by ongoing and finalised projects are reported below:

- **AgriChemWhey** (ongoing Flagship): the project proposes an integrated biorefinery to convert food dairy processing residues into added value products, such as bio-based Lactic Acid (LA) and Poly Lactic Acid (PLA), which are used for the manufacture of recyclable bottles and packaging films.
- **Greenlight** (finalised RIA): is demonstrating the availability of the conversion of lignin, a 100% renewable raw material, into Carbon Fibres (CFs) and CF lighter composites for the automotive sector.
- **First2Run** (finalised Flagship): demonstrates the sustainability and profitability of an integrated biorefinery for the extraction of vegetable oils from crops grown in marginal lands and their conversion into building blocks. Thanks to the proposed process, biodegradable plastics have been produced for a further application in the lubricant, plastic and cosmetics industries.
- **Dendromass4Europe** (ongoing DEMO): establishes a Short Rotation Coppice system for the production of dendromass and its conversion into wood and bark-enriched - Wood Plastic Composite (WPC). The WPC will partially replace the Polyvinyl Chloride (PVC) as a material used in the furniture industry, reducing the input cost and the flammability of the final products.
- **WoodyZymes** (ongoing RIA): lignin-based polyols will be used in the substitution of over 50% of oil-based polyols as components of Polyurethane (PU) insulation materials, maintaining the high performance of the final product. The lignin-polyols' intrinsic flame-retardant property

will avoid the addition of harmful flame retardants in the PU foam manufacture.

The new materials are classified according to their aspects of novelty (Figure 52).

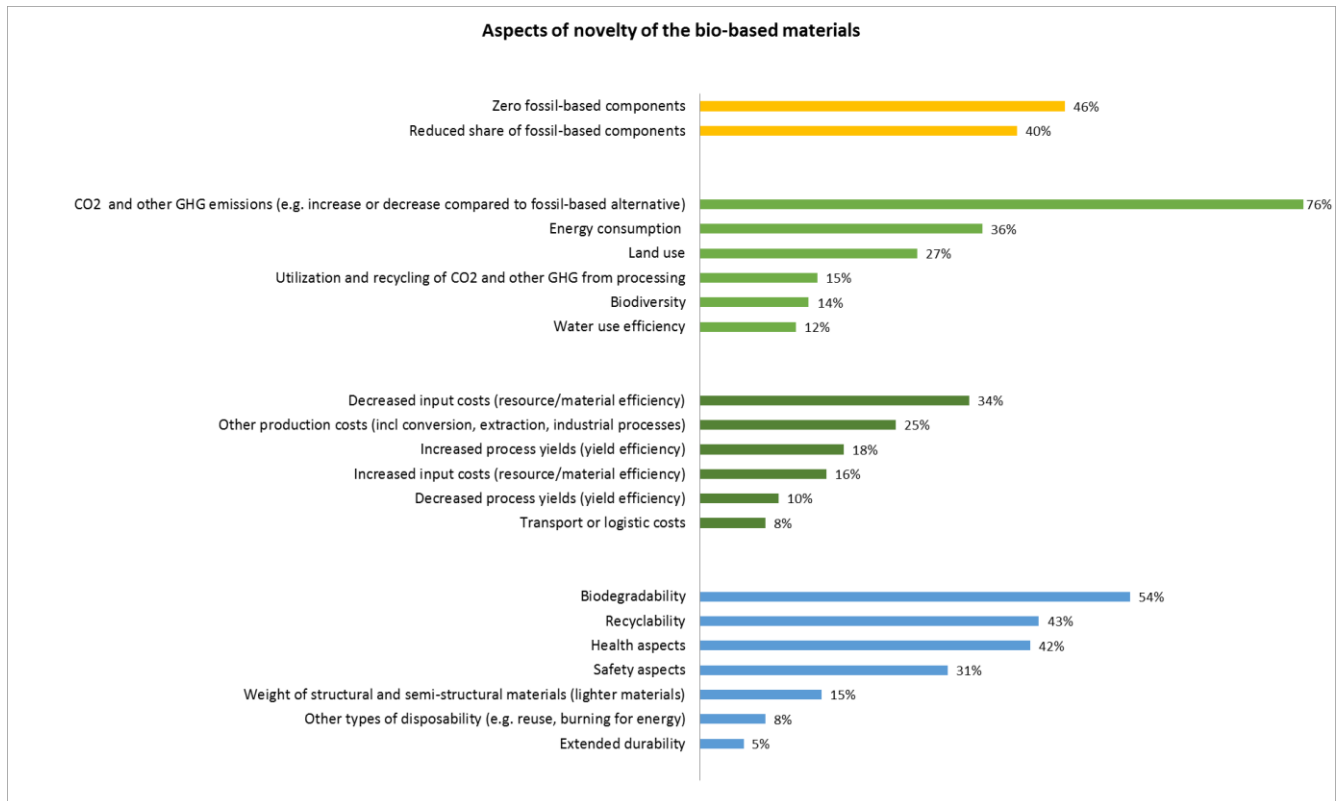


Figure 52: Percentages of new bio-based materials addressing different aspects of novelty: feedstock (yellow), environmental (light green), economic (dark green) and product performance (blue).

The most reported aspects of novelty in the new bio-based materials are the environmental aspects. In a similar ratio to the building blocks, the production of 76% of the new materials is expected to contribute to a reduction of CO₂ and other GHG emissions.

More than 30% of the new bio-based materials is novel with respect to the optimisation of energy consumption and a decrease in the production input costs. Moreover, enhanced performances at the level of biodegradability, recyclability, health and safety aspects are also reported by a consistent number of BBI JU projects. This indicates that the trend of the portfolio is directed towards improving the product performance and enlarging the portfolio of 'green label' materials and chemicals.

KPI 6: NEW BIO-BASED CONSUMER PRODUCTS

New bio-based consumer products (such as materials, chemicals, surfactants, biopolymers in packaging industries, additives in cosmetics, food and feed applications, fibres used in textile etc..) are expected to have a better overall sustainability capacity than their current alternatives. This is mainly due to improved material efficiency, reduced GHG emissions, higher biodegradability, recyclability or other effects during their use or reuse. The bio-based ‘consumer products’ meet a clear market demand and fulfil specific technical requirements, are economically viable and match all relevant sustainability criteria. KPI 6 targets products that are demonstrated at TRLs 6-7 (DEMOS) and TRL 8 (Flagships).

Reported results

Overall, the creation of **107 new bio-based consumer products** has been reported by BBI JU’s projects (DEMOS and Flagships); in particular, ongoing projects are expected to create **95 consumer products** by 2024 while finalised projects already reported the creation of **12 consumer products**, which represent 40% of the SIRA target (Figure 53).

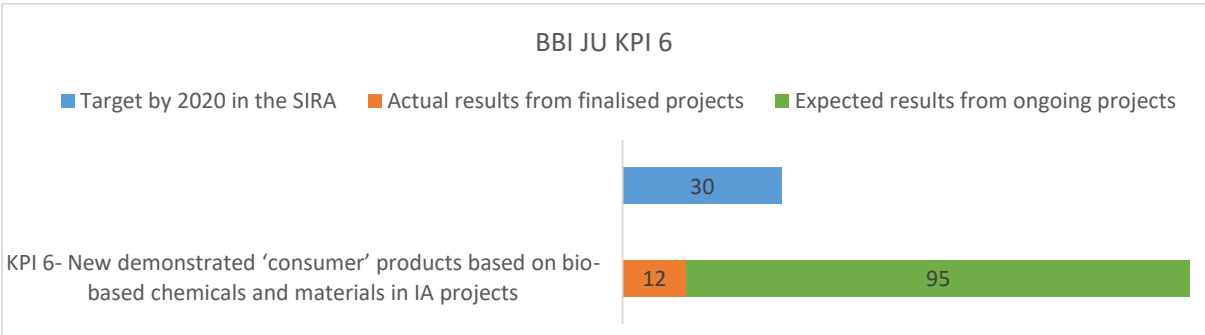


Figure 53: KPI 6- Expected and actual new bio-based consumer products (only for IAs)

The new bio-based products delivered by each project address diverse aspects of novelty, according to their different characteristics. Although several projects address the same type of product (e.g. bio-based food packaging), the different feedstock types used and the technology or the final functionalities make each of these products unique. The main aspects of novelty of the new bio-based consumer products are presented in figure 54.

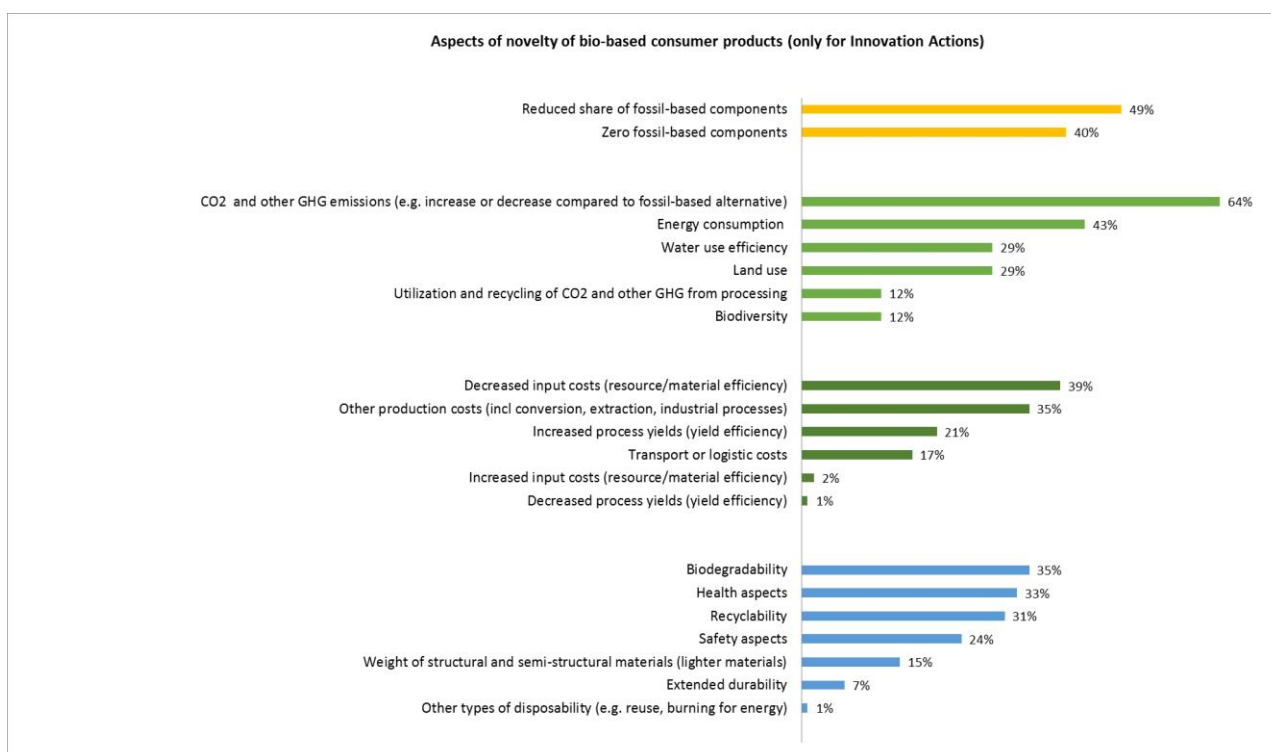


Figure 54: Percentages of new bio-based consumer products addressing different aspects of novelty: feedstock (yellow), environmental (light green), economic (dark green) and product performance (blue).

As for the previous KPIs, the most reported environmental aspects are the reduction of CO₂ and the GHG emission reduction, followed by energy consumption and land use reduction as well as an increase in the water resource efficiency. Overall, an improved product performance has been reported for the new consumer bio-products compared to their fossil counterparts; in particular, more than 30% perform better in terms of biodegradability, recyclability or a combination of all these aspects. On the other hand, the most relevant economical aspects are the decrease of input costs and the improvements in processing aspects related to the conversion and extraction phases.

Some examples of new consumer products reported by finalised and ongoing projects are listed below:

- **First2Run** (finalised Flagship): the project demonstrated the processing of underutilised crops (i.e. cardoon) into bio-monomers esters further transformed into high-value products, such as biodegradable rinse-off and leave-on bio-based cosmetics, biodegradable mulching films and bioplastic shoppers.
- **SWEETWOODS** (ongoing Flagship): SWEETWOODS developed a first-of-a-kind biofractionation Flagship plant in Estonia using sustainable hardwood

biomass that can be converted into high-value biomaterials. The project is expecting to produce several new consumer products such as insulation foams and panels for construction materials, plastic parts for loudspeakers, earphones, isobutene derivatives for cosmetics, sport mats, paint producers.

- **FARMYNG** (ongoing Flagship): FARMYNG process aims at producing safe proteins from breeding insects and transform them into animal nutrition sources on an industrial and automated scale. The project is expecting to produce insect-based meals and oils for both fish feed and pet food as well as insect-based organic fertilisers for soil.
- **Pulp2Value** (finalised DEMO): the project developed a cascading biorefinery system to refine sugar beet pulp and convert it into added value products such as Microcellulose fibers (MFCs). MFCs are used for several applications such as the production of detergents, coatings, adhesives, personal care and food products.
- **EMBRACED** (ongoing DEMO): EMBRACED developed an innovative process for the valorisation of Post-Consumers Absorbent Hygiene Products (AHPs) waste into bio-based building blocks and polymers. One of the applications of the bioplastics produced within the project is represented by the packaging of the AHPs, which will close a loop and promote a circular bioeconomy.
- **FRESH** (ongoing DEMO): is contributing to KPI 6 through the production of packaging composite materials, which are fully bio-based and biodegradable. These materials are cellulose-based alternatives to the existing fossil-based PET/CPET and are used to produce innovative ready-meal trays.

TOWARDS COMMERCIALISATION: UPSCALING, DEPLOYMENT AND INCREASING TECHNOLOGICAL MATURITY: KPIS 7-8

KPI 7: BBI JU FLAGSHIP PROJECTS

This indicator monitors the number of Flagship projects funded by the BBI JU.

Since the launch of the BBI JU Initiative, nine Flagship projects have been funded representing 80% more than the initial target of SIRA 2017 of five Flagships. The biorefineries, at the very heart of the Flagships, are well spread across Europe, in both the European Member States and associated countries. In fact, the bio-industry plants are

located (already realised or in the process of being built) in Norway, Ireland, Belgium, Slovakia, Italy, Romania, Estonia and France.

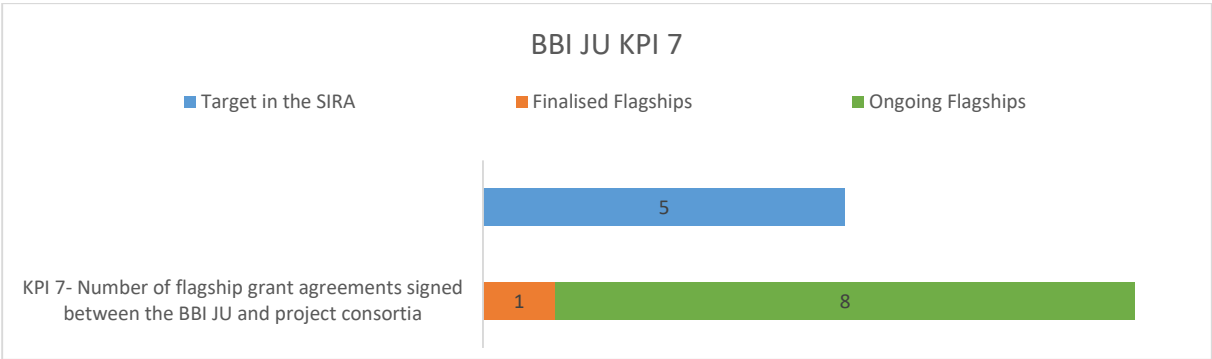


Figure 55: KPI 7- Number of BBI JU Flagships

The Flagships process different agri-based and forest-based feedstocks, such as agricultural residues, dedicated crops in underutilised lands, side-streams from the dairy industry, spruce wood pulp, etc. to deliver new chemicals, materials and ingredients. These bio-based chemicals and materials can be used for applications in a wide range of sectors, such as bioplastics, lubricants, cosmetics, adhesives, paintings, packaging materials and second-generation biofuels, among others, thereby producing added value bio-based products that have improved functionalities compared to their fossil-based alternatives. The ingredients (such as proteins) will find application in the food and feed sectors.

BBI JU Flagships are mobilising significant additional investments in facilities for the deployment of biorefineries in Europe. The funding from BBI JU is around EUR 195 million and based on a survey conducted by BBI JU programme office on each individual Flagship, in total, the nine Flagships are expected to trigger around EUR 1.2 billion of additional private investment, and to generate more than 3,300 direct jobs and more than 10,000 indirect ones, most of them in rural areas.

Flagships play a crucial role in the integration and deployment of demonstrated technologies and processes for the sustainable and efficient transformation of biomass in Europe. The setting-up of pre-commercial biorefineries in Europe results in a strong positive socio-economic impact and contributes to the creation of jobs, the diversification and income growth of primary producers, rural development, and reindustrialisation in depressed areas. They also play an important role in environmental impact, contributing to the mitigation of climate change. Further information on the socio-economic and environmental impact of the BBI JU projects is presented in section 1.3.

The nine Flagships are the following:

- **FIRST2RUN** (finalised): this biorefinery, located in Italy (Sardinia), demonstrates the techno-economic and environmental sustainability, at industrial scale, of an integrated biorefinery, in which oil crops grown in arid and marginal lands are valorised for the extraction of vegetable oils. These oils will be further converted into bio-monomers as building blocks for high added value bioproducts, such as biolubricants, cosmetics, bioplastics, pesticides and additives, through the integration of chemical and biotech processes. By-products from the process will be valorised and used to produce energy and animal feed.
- **EXILVA**: integrated plant located in Norway for the large-scale supply and market assessment of Microfibrillated Cellulose (MFC). By enhancing the rheological properties and replacing fossil-based compounds, the MFC has a huge potential to be used in a wide range of applications, such as home and personal care products, adhesives, construction materials, paints and coatings, among others. The use of MFC in these applications will both improve their functionalities and reduce the carbon footprint in relation to their fossil-based alternatives. The project targets the development of at least 10 new (or optimised) bio-based products by 2020.
- **BIOSKOH**: this is a biorefinery located in Slovakia producing second-generation bioethanol in Europe. This biorefinery uses agricultural residues biomass to produce cellulosic bioethanol with a yield 15 – 20% higher than current state-of-the-art processing. The ethanol can be used as biofuel or be further transformed into different chemical building blocks like ethylene. The project will use a brownfield site, thus minimising capital expenditure as compared to greenfield sites.
- **LIGNOFLAG**: commercial Flagship plant located in Romania for cellulosic second-generation bioethanol production involving a bio-based value chain built on lignocellulosic feedstock from a brownfield site. The project is expected to build and operate a commercial Flagship to convert lignocellulosic feedstock into cellulosic bioethanol, to be used as a sustainable transport fuel or a chemical building block.
- **PEference**: biorefinery Flagship plant located in Belgium producing FDCA (furan dicarboxylic acid), a bio-based building block that can be used to make PEF (polyethylene furanoate). PEF is a 100% bio-based polyester with excellent gas barrier properties, used to produce packaging, films and fibres, as well as to make a wide range of chemicals and polymers such as polyesters, polyamides, coating resins and plasticisers. The participation of brand owners such as LEGO and NESTEC confirms the high potential for

applications in consumer products. PEFerence aims to replace a significant share of fossil-based polyesters, such as polyethylene terephthalate (PET), and packaging materials like glass and metal, with 100% bio-based furanics polyesters.

- **AgriChemWhey:** first-of-a-kind, industrial-scale biorefinery located in Ireland, with integrated industrial and agricultural value chains to valorise whey permeate and de-lactosed whey permeate, side-streams of the dairy-processing industry. These side-streams will be transformed into several added value products, including lactic acid to produce PLA (polylactic acid), minerals for human nutrition and bio-based fertilisers.
- **SWEETWOODS:** first-of-a-kind Flagship biorefinery in Estonia for the processing of sugars and lignin from hardwood biomass. The process combines innovative pre-treatment technology with enzymatic solutions to produce sugars recovery levels of over 90% with exceptionally high-quality lignin. Sugars and lignin can be further processed and converted to high-value biomaterials capable of replacing fossil-based chemicals in a wide range of products.
- **PLENITUDE:** first-of-a-kind plant for large-scale production of proteins for food applications from alternative, sustainable sources using a zero-waste approach. The Flagship, located in Belgium, will use crop feedstock to produce food-grade proteins sustainably by integrating an aerobic fermentation plant with a conventional first-generation biorefinery. It is also considered as more cost effective than any of the emerging plant-based proteins and it is expected to improve the efficiency of the translation of crops to protein. This will generate significant new income for bioethanol refinery operators at a relatively low capital cost.
- **FARMYNG:** this first-of-a-kind industrial plant, located in France, aims at safely and efficiently producing protein sources from insect-breeding for animal nutrition. Insects will be used as an alternative source of protein-rich ingredients for feed and pet food. Insects multiply rapidly and are highly effective in converting organic matter from vegetal by-products. The solution proposed by the FARMYNG project displays several benefits, including environmental ones; in fact, insects also emit less greenhouse gases and ammonia and use less water and land than other animal protein value chains.

KPI 8: TECHNOLOGY READINESS LEVEL (TRL) GAIN

This indicator monitors the validated improved technologies that have realised a 'TRL gain', filling gaps in value chains and enabling new chemical building blocks, new materials, new consumer products or new applications. The KPI target in the SIRA 2017 is only defined for RIAs. The expected ending TRL for core technologies for RIAs is expected to be 5 - "Technology validated in relevant environment". However, the ongoing DEMOs and Flagships have been requested to report on the expected TRL gain as well.

Reported results

Ongoing and finalised RIA projects together reported a TRL gain of at least one level for 47 key technologies against the target of 20 in the SIRA 2017: an increase in the maturity of five core technologies was achieved by the finalised RIAs, while the ongoing RIA projects reported an advancement in the TRL scale for 42 technologies.

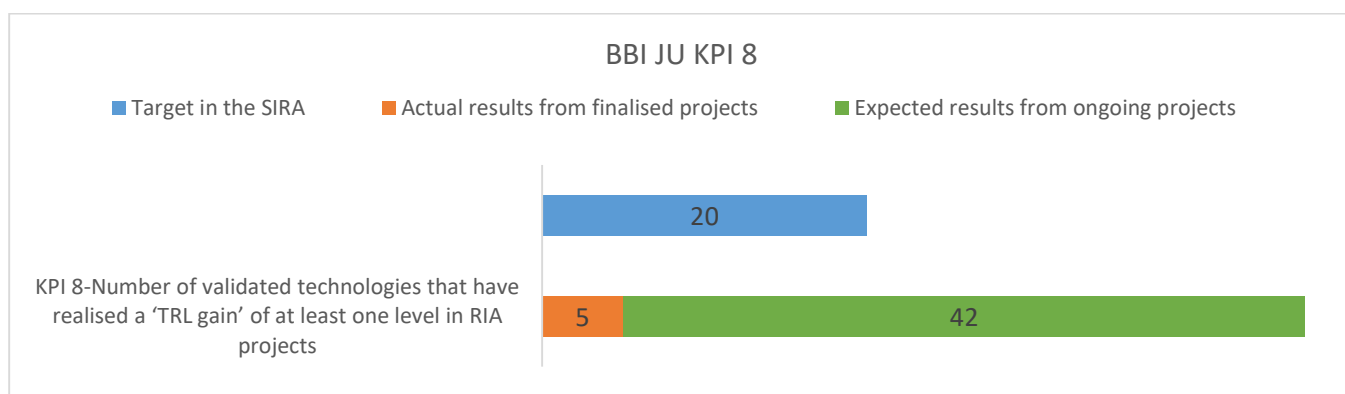


Figure 56: KPI 8 - Expected and actual number of validated technologies that have realised a TRL gain (RIAs)

For all RIA projects (ongoing and finalised), the figure 57 shows that the majority (57%) expect to progress two levels in the maturity of their technology (in general from TRL 3 - experimental proof of concept, to TRL 5 - validation of the technology). Six projects report a gain of only one level, from TRL 4 - technology validated in lab, to 5, while 14 projects report a TRL advancement of at least three levels, from TRL 2 - technology concept formulated, to 5. This assessment mirrors the positioning of the BBI JU RIAs at the beginning of their projects, many of them (around 87%) already starting at TRL 2 and 3.

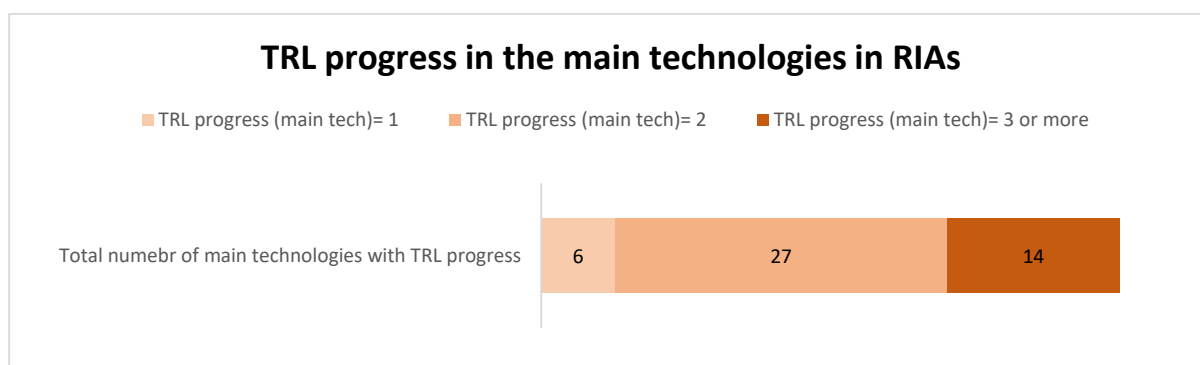


Figure 57: Number of technologies reporting a TRL gain of one, two or three levels in RIAs

Figure 58 shows the number of IAs, DEMOs and Flagships projects reporting an advancement in the readiness level of their core technologies. By 2024, 25 projects (almost $\frac{3}{4}$ of the total) expect to have a TRL improvement of two levels. Once again, this outcome reflects the “entry point” of the technology and process within IAs, which is very high (at least five for DEMOs and six - technology demonstrated in relevant environment - for Flagships).

Overall, the BBI JU Initiative provides opportunities for the development of processes and technologies ranging from the low level of maturity common to research projects to the higher levels seen in IAs where they are ready and qualified for their implementation and deployment.

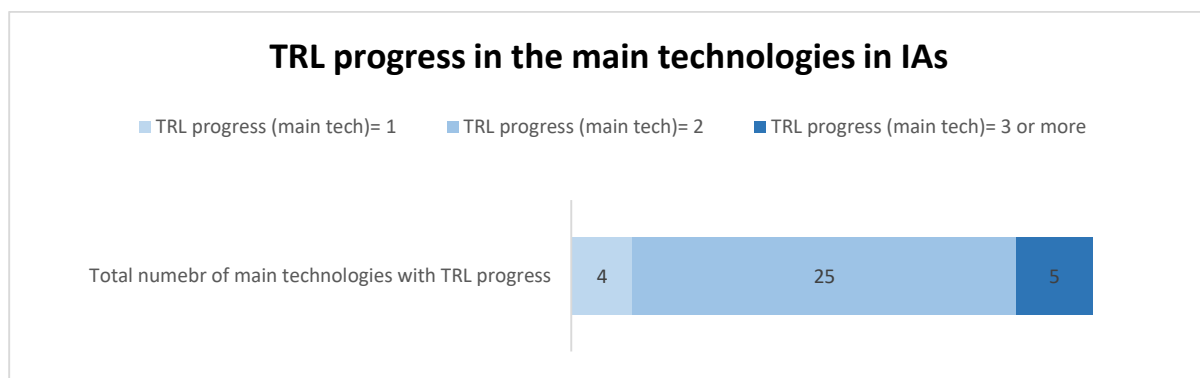


Figure 58: Number of technologies reporting a TRL gain of one, two or three levels in IAs.

Examples of technologies and processes experiencing TRL gains in RIAs

- SusBind:** the project starts from existing industrial feedstock and is supposed to deliver a bio-based binder for industrial existing applications. The starting TRL is around 2. Novel biochemical processes (such as enzymatic epoxidation) have the potential to be more environmentally sound. These will first be established at lab scale (TRL 4) and then at pilot scale to TRL5. The resulting resin will be converted to a binder system also

at TRL 5 and then be used for the pilot production of Particle Board and Medium Density Fibreboard, for testing by both the board production companies and then by Ikea, who apply furniture laminations, build small prototypes and publish the results.

- **BioSmart:** one of the main project objectives is to scale-up the existing laboratory-level active and smart functionality technologies at TRL 3 to TRL 5 for enhanced package performance. Yet, the project aims to provide an intelligent packaging system, with sensors included in the packages for a 100% control of food and food-processing quality.
- **SmartLi:** the project started at TRL 3 and worked on the development of lignin fractionation to produce sulphur-free lignin fractions with constant properties, to produce biomaterials tailored for different applications. This RIA project has already ended and developed a business plan for a demonstration scale.
- **NeoCel:** the project started at TRL 3 and developed technologies that have been verified at a large bench scale, and the whole value chain has been validated at an industrially relevant scale (TRL 5). The textile fibres produced with the novel processing technologies will be tested against state-of-the-art viscose fibres produced from the same raw material, in target fabrics and in final garments.

1.3.4. Monitoring the contribution to the expected environmental and socio-economic impacts of projects

The annual questionnaire sent out to project coordinators contains a section dedicated to the expected contributions of projects by 2024, to different social, economic and environmental impacts as set out in the SIRA 2017, the EU Bioeconomy Strategy and the Sustainable Development Goals (SDGs).

The socio-economic impacts cover, for example, markets and industry, the creation of jobs and primary producers and rural development. The environmental impact includes reduction of GHG emissions, waste reduction, reuse, recycling or valorisation, water and energy efficiency, land use and biodiversity.

In addition, the analysis addresses other impacts, such as contributions to science and knowledge and to education, citizens' understanding of the bio-based economy, the

creation of safer processes and healthier products, or the development of policies, regulations and standards.

Projects are requested to provide a qualitative description of their contributions, as well as quantitative information, if available. The percentages provided throughout this section refer to the total number of projects responding to the questionnaire (91). The monitoring and analysis follow the same methodology as the one described for the BBI JU specific KPIs (see section 1.1.1). Therefore, the results presented below include the expected results reported by ongoing projects (82 responses out of 89) and the actual results reported by finalised projects (9 responses out of 11).

JOB CREATION

Overall, a large percentage of projects (82%) report some kind of contribution to the creation of new jobs (figure 59). Among them, 70% of the projects expect to contribute to job creation in product development and engineering, while 54 % of the projects expect to create jobs in rural regions and 8% in coastal regions. The impact on job creation is especially important for Flagship projects, which estimate direct job creation in the range of 30-200 jobs and potentially thousands (1000- 4000) of long-term indirect jobs for each biorefinery.

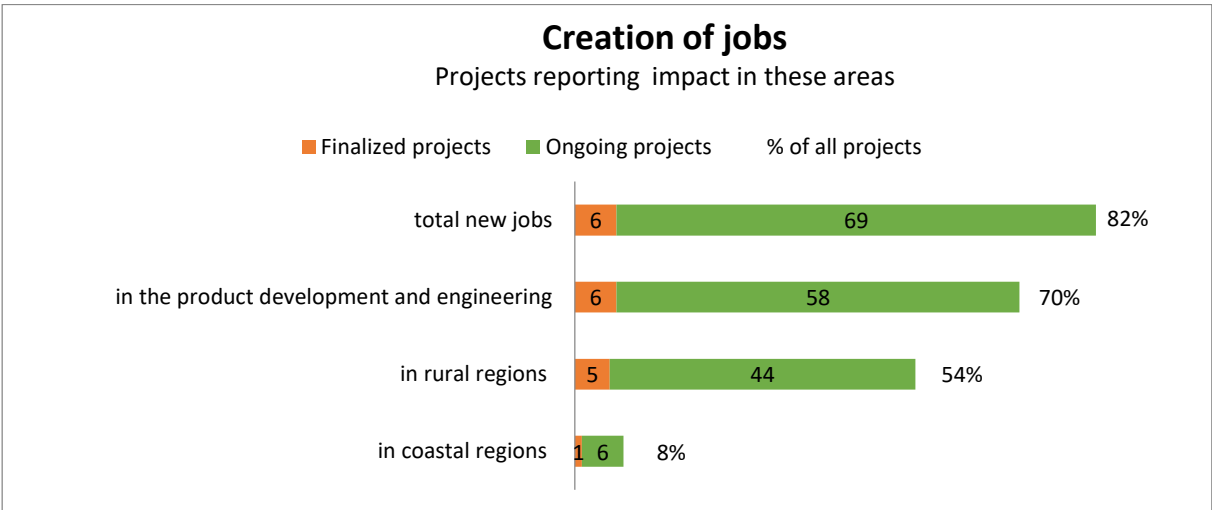


Figure 59: Number of projects reporting job creation in rural and coastal regions and in the area of product development and engineering, for different types of actions, as well as the overall percentage of projects creating jobs in these categories.

Examples

Biorefineries aiming at the sustainable production of proteins play an increasingly important role in the creation of jobs, especially in rural areas:

PLENITUDE Flagship produces food-grade proteins from sustainable cereal crops by integrating an aerobic fermentation plant with a conventional first-generation process. It is expected to create 200 direct and indirect jobs in the region already at the initial scale of production, which could increase up to around 3000 new jobs in the longer term.

FARMYNG Flagship uses mealworms fed with vegetable by-products as a source of proteins for animal feed, developing a model that it is easily replicable. It is estimated that the establishment of six factories of that kind in the next 10 years would deliver 300 direct jobs and 1000 indirect jobs.

The transformation of residues from forestry, agriculture and farming represent an important source of employment in Europe:

AgriChemWhey, FIRST2RUN and SWEETWOODS Flagship projects will produce bio-based chemicals for diverse market applications through the processing of residues from the dairy industry, marginal land crops and wood-based sugars, respectively, which are widely available and underutilised across Europe. For example, AgriChemWhey is expected to create around 1000 jobs in the next four years.

BIOSKOH and LIGNOFLAG Flagship projects produce second-generation bioethanol from agricultural residues, which in addition to being used as biofuel, can be further transformed in bio-based building blocks for different applications, thereby contributing to the creation of jobs in rural areas. BIOSKOH expects the creation of 160 direct and 500 indirect jobs, from feedstock production and processing, supply chain logistics to bioethanol production and side-stream valorisation.

The contribution to jobs creation in coastal areas is reported mainly by projects using marine biomass and integrating actors from the fisheries and aquaculture sectors. For example, AQUABIOPROFIT RIA project, which uses side-streams from fisheries and aquaculture for the production of nutritional and health products, reports the creation of 16 direct jobs.

Among the already finalised projects, FIRST2RUN Flagship reports contributing to the creation of 60 new skilled jobs for every 1kton of produced bioplastics, of which 5% are in R&D, 20% in building blocks production, 15% in polymers/bioplastics production, 25% in the agricultural sector and 35% in composting. PULP2VALUE DEMO project, which uses low value sugar beet pulp to produce added value products, reports to have created at least 70 new jobs related to the harvesting, collection, transport and storage of feedstock and to the processing of products.

IMPACT ON PRIMARY PRODUCERS AND RURAL DEVELOPMENT

Primary producers, including those related to forestry, agriculture and fisheries and aquaculture, play a decisive role in the development of the bio-based industries, ranging from the provision of the feedstock, to the consolidation of sustainable local bio-based value chains and inclusive business models that incentivise the modernisation of the primary sector and the diversification of its sources of income.

As shown in figure 60, nearly one third of the total projects expects to contribute to the diversification of the sources of income of primary producers, while at least one fifth of the projects reports a contribution to the creation of stable and transparent relations with primary producers, including them as partners in the projects and involving them in the decision-making processes.

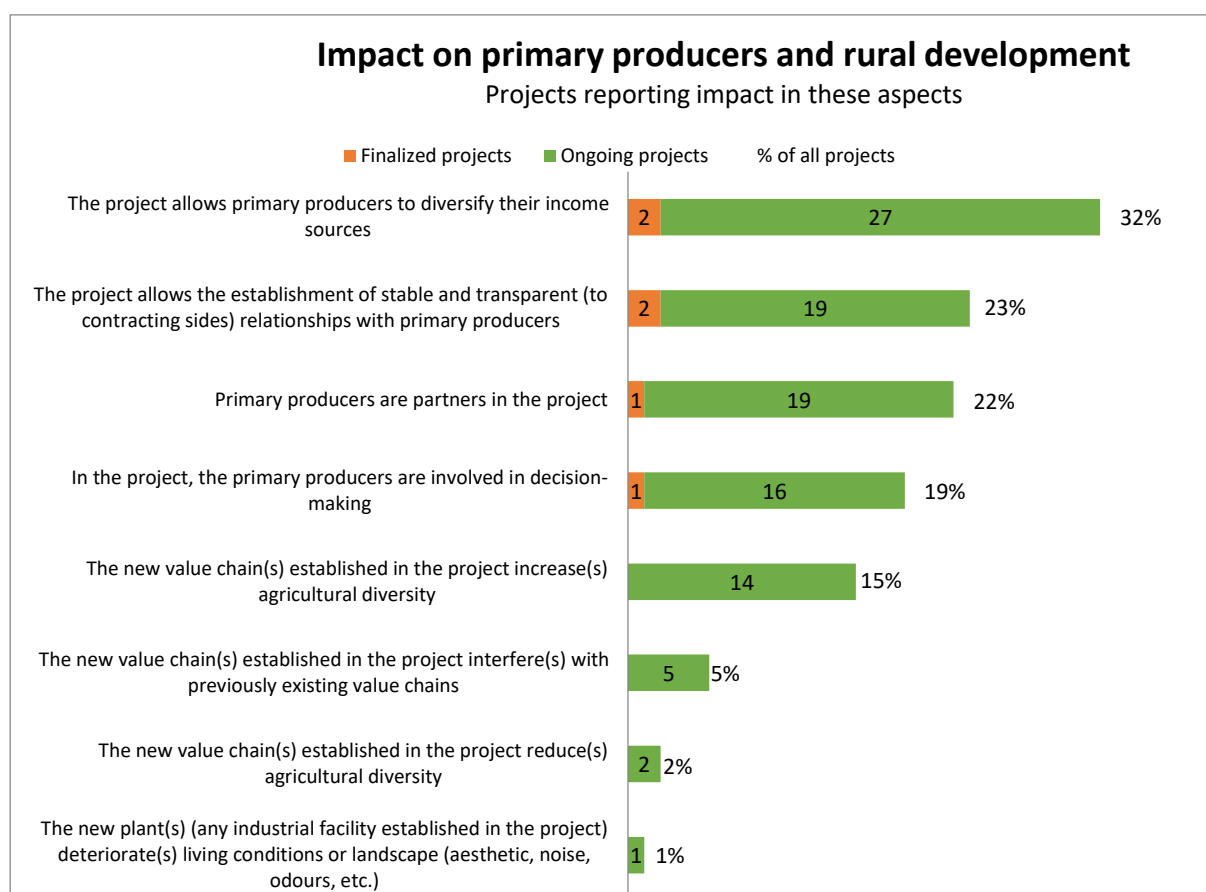


Figure 60: Number of projects reporting different types of impact on primary producers and rural development, as well as the overall percentage of projects addressing these areas

It should also be noted that several BBI JU projects are dealing with the transformation of municipal solid waste, wastewater and organic side-streams of industrial processes, which do not directly involve primary producers, and this partially explains why the reported impact on primary producers and rural impact is no higher than a third of the

respondents. Please see the section below on a BBI JU study dedicated to an in-depth analysis of the participation of the agricultural sector in BBI JU projects.

Examples

B-FERST DEMO project aims at **valorising biowaste** to produce different bio-based fertilisers, and their integration into sustainable agriculture management plans. These include long-term contracts between farmers and fertiliser companies, which are necessary to ensure the supply and logistics of the new raw materials. As a result, farmers will secure additional income sources resulting from the recycling of biowastes into fertilisers. In addition, the International Advisory Board, which includes farmers' associations, will participate in the validation tests at the demo sites.

Dendromass4Europe DEMO project's main objective is to establish Short-Rotation Coppice (SRC), a **sustainable regional cropping** system for agricultural dendromass production on at least 2500 ha of marginal land, which will also contribute to the production of new bio-based materials. This project promotes different types of long-term contracts with primary producers, which will result in additional income and new jobs for farmers and rural landowners.

EFFORTE and TECH4EEFFECT RIA projects work to improve the **sustainability and efficiency of forest management** and wood procurement, through the development of tools and applications. Both projects include forest owners and operators as beneficiaries and involve them in the decision-making process and in the development, testing and validation of tools, thereby ensuring that their knowledge, interests and needs are taken into consideration in the development of forest management solutions.

FIRST2RUN Flagship, which is already finalised, has worked on the processing of **crops from underutilised lands** (around 3000 ha), such as cardoon, grown on arid and marginal lands, which are exploited for the extraction of vegetable oils, to be further converted into bio-products such as bioplastics, cosmetics and lubricants. FIRST2RUN has put in place a business model that fully includes farmers, not only as biomass providers but also as a strategic partner in the whole integrated agro-industrial value chain. Contracts have been signed with approximately 270 farmers, who have the opportunity to develop innovative business models and spur the creation of new value chains. Project innovations have been developed in close cooperation with them and various roundtables and training sessions have been organised in the project to set up a low-input protocol for cardoon cultivation in marginal areas, targeting the reduction of water use and fertilisers. In addition, agronomic best practices are transferred to farmers via workshops, training, direct meetings and seminars.

Study on the participation of the agricultural sector in BBI JU

The BBI JU has an important potential to support the agricultural sector and contribute to rural development, providing new and diversified incomes to farmers as well as creating highly skilled jobs, and these are part of the BBI JU priorities. Agro-based value chains are a core part of the value chains envisioned in the SIRA.

However, the Governing Board identified in 2018⁵⁰ that there were still some questions concerning the agricultural sector's participation in the BBI JU Initiative as well as the extent of the actual impact on the agricultural sector and rural development. This is why in 2019, BBI JU, in collaboration with BIC and the EC, commissioned a study entitled "participation of the agricultural sector in the BBI JU: business models, challenges and recommendations to enhance the impact on rural development". Its ultimate goals were i) to contribute to enhancing and consolidating the participation of the European agricultural primary sector in the bio-based sector and its value chains, enabling it to enjoy the resulting benefits, and ii) to maximise the positive impact of the BBI JU on rural development.

The study was carried out between April and August 2019, and its analysis was based on input from relevant actors sourced through several different media actions: surveys, in-depth interviews, a focus group meeting with experts from the bioeconomy across Europe, and various related EU networks and initiatives related (EIP-AGRI, ENRD Thematic Group on Bioeconomy⁵¹, BIOEAST⁵², AGROinLOG⁵³). A task force composed of members of the European Commission (DG RTD and DG AGRI), BIC and BBI JU was responsible for following up the preparation and implementation of the study.

The study provided a detailed assessment of the agricultural sector's presence in the BBI JU portfolio, and identified the many challenges faced by the sector in participating in the bio-based sector and its value chains and benefiting from its participation in EU funded projects. A set of innovative business models was also analysed, and these provided several ideas for successful methods of fostering agricultural producers to participate with a meaningful role in the bio-based sector. Moreover, the study also delivered 28 recommendations addressed to BBI JU, BIC and EC, to improve the participation of the agricultural primary sector in BBI JU projects (both in numbers and relevance). It is

⁵⁰ BBI JU Governing Board Decision 1806-08: BBI JU to lead a Task Force, to undertake a detailed assessment of the participation of the primary sector in the BBI portfolio, and to identify challenges, best practices and actions to enhance the impact of BBI JU actions on rural development. DG AGRI and DG RTD to participate in the task force.

⁵¹ https://enrd.ec.europa.eu/enrd-thematic-work/greening-rural-economy/bioeconomy_en

⁵² <https://bioeast.eu/>

⁵³ <http://agroinlog-h2020.eu/en/home/>

expected that the implementation of these recommendations should also contribute generally to further enhancing and consolidating the agricultural primary sector's participation in the bio-based sector and its value chains.

In order to implement the 28 recommendations, the above-mentioned task force also prepared an Action Plan prioritising the recommendations in a coherent and effective way. The Action Plan was endorsed by the Governing Board on 4 December 2019.

Both the Study and the Action Plan are published on the BBI JU website⁵⁴.

REGIONAL AND LOCAL IMPACT

The local and regional impact in the context of the bio-based economy refers to socio-economic and environmental benefits that result from the “deployment of local biorefineries in Europe”, as described in the [EU Bioeconomy strategy 2018](#). The EU bio-based economy brings vast potential for rural, coastal, and urban areas development, which can be realised through the creation of new bio-based value chains and the deployment of local biorefineries that source the biomass sustainably and locally, valorize organic sides streams and residues, diversify primary producers income and involve local actors in its design and implementation. BBI JU projects are based on concepts that guarantee a sustainable sourcing of biomass, and that can be deployed making use of local and regional resources. In this context, nearly half of the projects (45%) reports the reutilisation of local residues and synergies with regional initiatives (figure 61). In addition, around 40% of the respondents reports to be supporting regional development and diversifying the local economy, involving local associations and stakeholders. Moreover, more than one quarter of the projects reports having established a collaboration with the local administration, with 15% making a contribution to reindustrialisation or reconversion in their regions, and to the valorisation of unexploited marginal land.

⁵⁴ Study on the participation of the agricultural sector in BBI JU, which can be found here: <https://www.bbi-europe.eu/news/new-study-out-participation-agricultural-sector-bbi-ju>

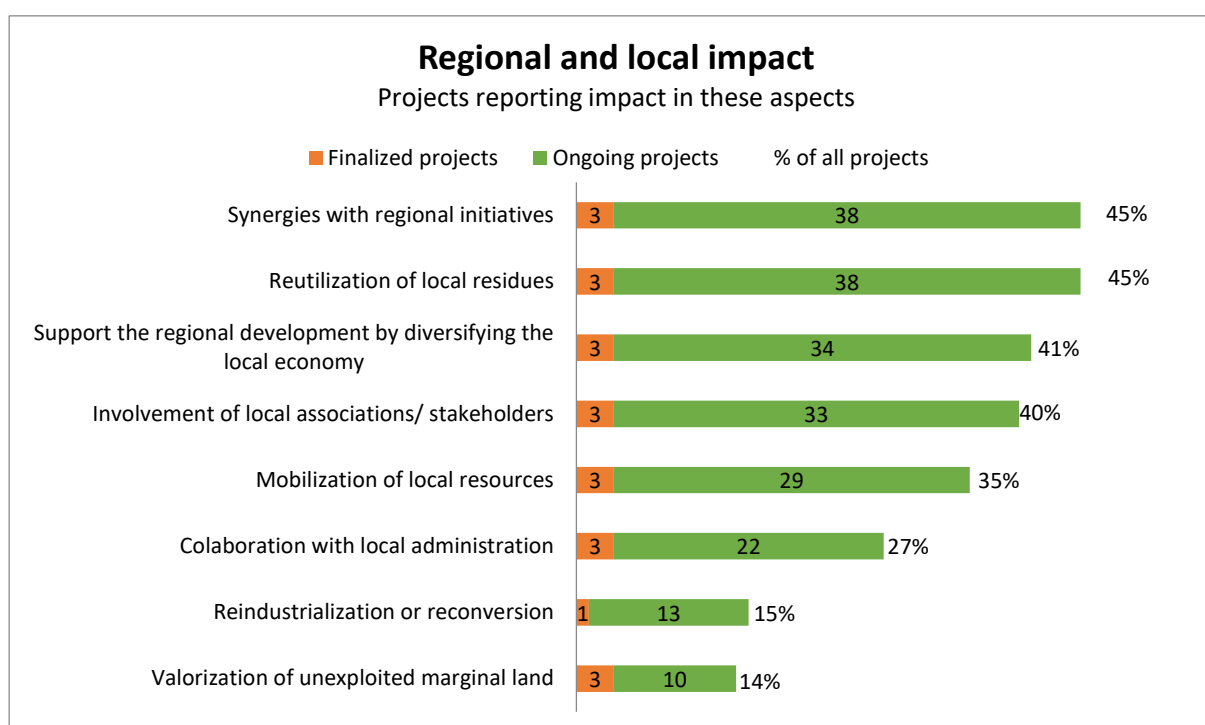


Figure 61: Number of projects reporting different types of regional and local impact, as well as the overall percentage of projects addressing these areas

Examples

The important positive impact of the bio-based industries in local and regional rural areas has already been partially illustrated in the previous sections dealing with job creation in rural areas and benefits to primary producers and rural development.

Dendromass4Europe project aims at establishing a sustainable, Short Rotation Coppice (SRC) based regional cropping system for dendromass production on marginal land, which increases the “industry-agriculture” cooperation across regions and countries between neighboured regions of eastern Central Europe. The nearly 2.500 ha of newly established SRC on marginal land creates a new biomass resource that will also persist after finalizing the project. By means of SRC, used as a new extensively managed perennial crop, the project is supporting the regional development, creating new business opportunities for the rural agricultural sector in a specific area of Slovakia (production site in Malacky, West Slovakia). Moreover, the consortium includes a large Slovak NGO for the nature conservation, which is promoting the protection of the Slovak living environment as well as the industrial- development of the country.

GRACE project is exploring the potential of the non-food industrial crops, such as Miscanthus, used as a raw material for the contribution to the growing of the European Bioeconomy. The cultivation of these relatively under-exploited crops on marginal and contaminated land, is greatly contributing to the valorisation and reindustrialisation of abandoned area in Croatia. All necessary permits for the Miscanthus cultivation as a

foreign species in the Croatian region, required a cooperation with the Ministries of environment and agriculture, which highlights the need of collaboration between the consortium and the local administration actors.

In addition to the impact on rural communities, biorefinery operations also have significant potential to **improve urban economies and waste management models**, e.g. by fostering the valorisation of urban biowaste and MSW. The establishment of these biorefineries requires a strong collaboration with municipalities and local authorities, as well as other local stakeholders. Examples of projects converting urban waste and OFMSW into high added value chemicals and materials and working in close cooperation with local actors and citizens, are VAMOS, PERCAL, URBIOFIN and EMBRACED.

VAMOS DEMO project recovers second-generation sugars from the MSW to generate new bio-based materials for the automotive sector and other consumer products, while developing a waste-processing solution to regional waste management planning. PERCAL RIA project valorises OFMSW to produce lactic acid, succinic acid and biosurfactants to be used in numerous applications, while URBIOFIN DEMO project uses the OFMSW to develop bio-based chemical building blocks, biopolymers or additives. In doing so, the project valorises local waste and develops a standard process that can be easily replicated and implemented in other municipalities and regions.

Alongside the involvement of local administration, the engagement of citizens in waste separation and recycling is also key for the success of these new models of waste management for a circular economy. A good example is the EMBRACED DEMO project, which valorises the cellulosic fraction of the post-consumer Absorbent Hygiene Products (AHP) waste, including post-consumers' nappies and adult incontinence products, etc., to produce super absorbent polymers, plastic fractions, deactivated cells, PHB and bio-based polyesters that can be used in multiple market applications (e.g. bio-based fertilisers or medical devices). The project has established a stakeholder group for the implementation of a strategy for social acceptance and contribution to the separation and collection of AHP waste.

IMPACT ON MARKETS AND INDUSTRY

The development of new innovative technologies and processes in the bio-based industries results in an increased competitiveness of European companies (as reported by almost 90% of the projects), helps reduce the dependence on imports of fossil resources (71%) and renewable resources (29%) and creates new markets (65%) based on new bio-based products (figure 62). These results are in line with the creation of new bio-based value chains (KPI 2), building blocks (KPI 4), materials (KPI 5) and consumer products

(KPI 6) and reveal the important impact of BBI JU on the advancement and consolidation of the bio-based economy in Europe.

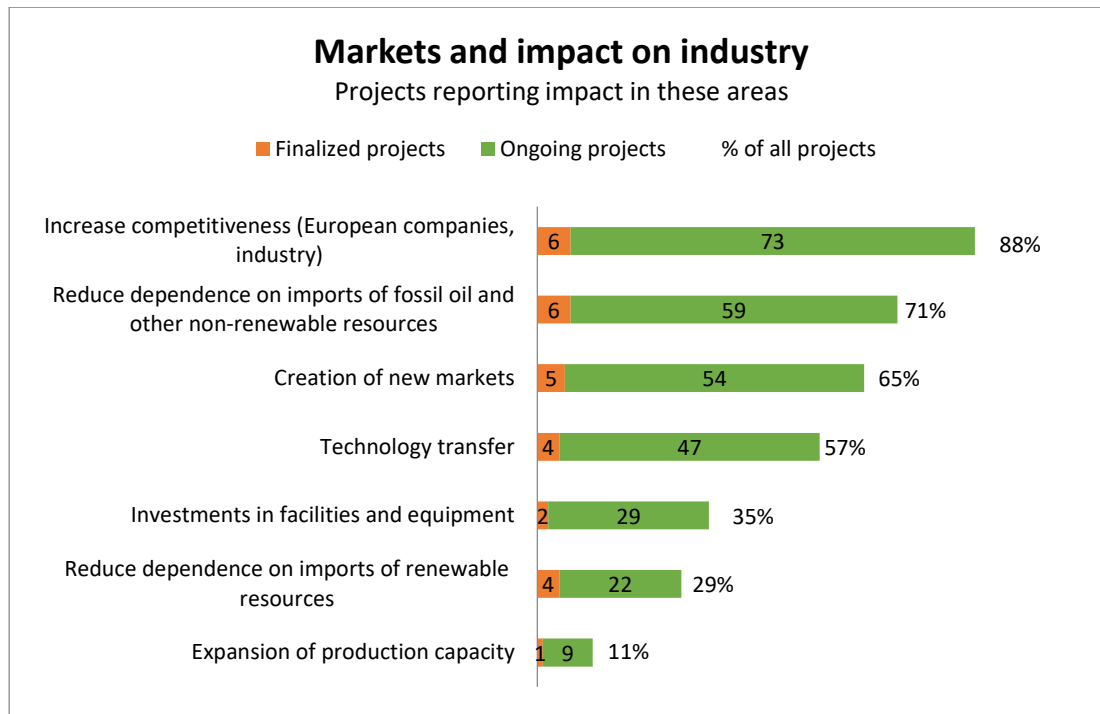


Figure 62: Number of projects reporting impacts on markets and industry in different aspects, as well as the overall percentage of projects addressing these aspects

Examples

EXILVA Flagship is a first-of-a-kind biorefinery for the industrial production of MicroFibrillated Cellulose (MFC), positioning its coordinator Borregaard at the forefront of the worldwide production of MFC, and increasing European competitiveness in the specialty cellulose markets. MFC can be used as an additive in multiple applications (adhesive, coatings, packaging, personal care products, among many others), enhancing the rheological properties of the materials and substituting different fossil-based additives.

Bio-based materials are also becoming more and more used in sectors that were not traditionally bio-based, such as for example the automotive sector. This industry is incorporating bio-based materials with improved mechanical properties, and which are lighter and have an improved end-of-life cycle, to substitute the widespread use of fossil-based plastics and composites. Examples of projects working in cooperation with the automotive industry are BARBARA, VAMOS, BIOMOTIVE, ECOXY, GreenLight or ReInvent, among others. For instance, the GreenLight RIA project, which has already ended, worked on the production of cost-effective lignin-based carbon fibres for innovative light-weight applications for vehicles, while ReInvent aims at producing new bio-based soft and semi-

rigid foams for the automotive industry, and BARBARA develops biopolymers with advanced functionalities, such as antimicrobial properties.

The BBI JU portfolio encompasses several projects that work to bridge the protein gap in Europe, reduce protein imports and achieve a sustainable protein production decoupled from animal farming. As described in the previous section on job creation, FARMYNG and PLENITUDE Flagships produce proteins for animal feed based on insects and food-grade proteins from sustainable cereal crops, respectively.

Additional models for sustainable protein production are developed in SYLFEED, Greenprotein or BIOSEA projects, among others. SYLFEED DEMO project works on the processing of wood biomass into single-cell proteins for feed for aquaculture. BIOSEA RIA project extracts proteins, lipids, carbohydrates and other valuable compounds from macro and micro algae to use them for different products and applications in cosmetics, food and feed products. GreenProtein DEMO project valorises vegetable processing industry remnants into high-value functional proteins and other food ingredients.

ENVIRONMENTAL IMPACT

BBI JU projects foster the development of sustainable bio-based industries with reduced environmental impact, in several respects: 84% contribute to lower GHG emissions in relation to the fossil-based counterparts; 75% of the projects report a contribution to waste reduction, reuse, recycling or valorisation; and nearly half of the projects report a reduced energy consumption and improved land use. In addition, 35% of the projects report improved water efficiency and more sustainable use of natural resources.

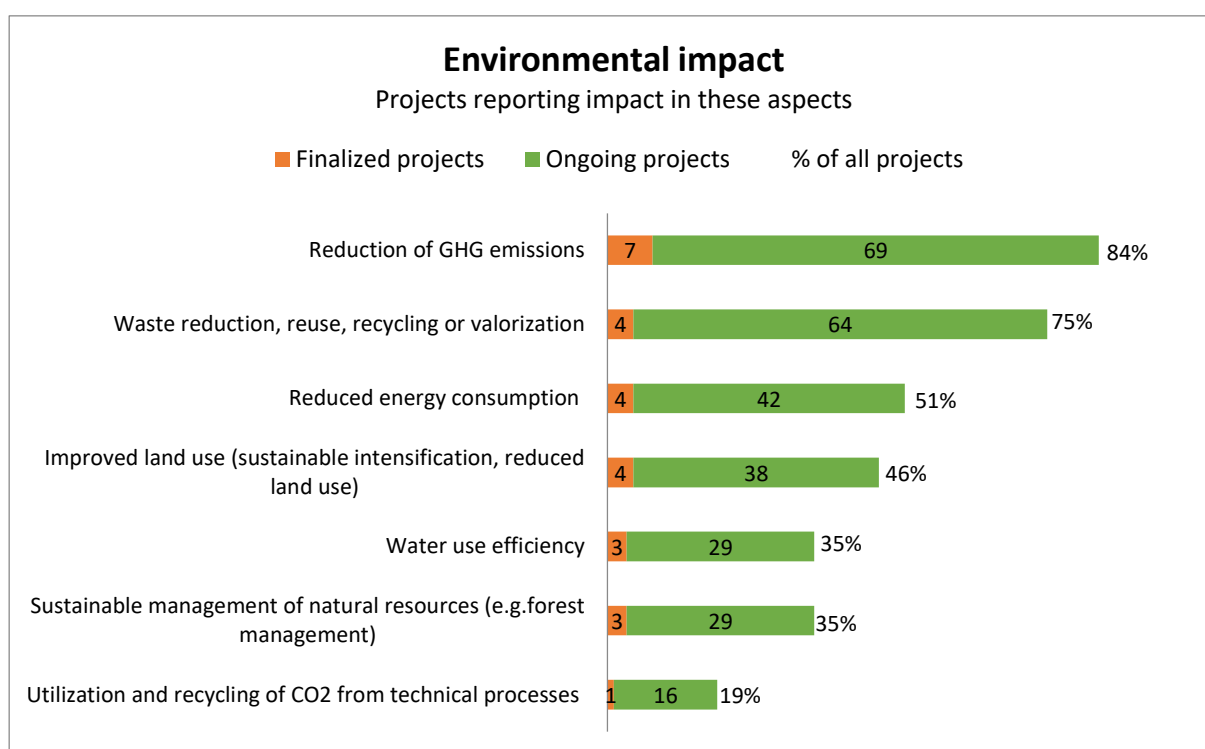


Figure 63: Number of projects reporting an expected positive environmental impact, as well as the overall percentage of projects addressing these aspects

Examples

As illustrated in the section on local and regional impact, many BBI JU projects work on the **valorisation of urban biowaste, wastewater and OFMSW**, reducing the amount of waste and creating more sustainable waste-management models. As an additional example, Deep Purple DEMO project transforms diluted urban biowastes, including mixed waste streams, the organic fraction of municipal solid waste, wastewater and sewage sludge into a sustainable source of feedstock for various bio-industries. By doing so, 58% of the primary sludge and 85% of the secondary sludge deriving from a wastewater treatment plant are valorised, also reducing the amount of landfilled organic waste by 60% compared to state-of-the art solutions (11,400 t/y).

The **use of side-streams of the food-processing** industry contributes to both the reduction of residues and the sourcing of useful organic compounds to be further transformed into products. For example, AFTERLIFE RIA project uses advanced filtration technologies to filter wastewater from food-processing industries (cheese, fruits and sweets) to recover organic compounds and transform them into PHAs, which can be used for bio-plastics production. In addition, more than 70% of the volume is recovered as ultrapure water that can be reused, thereby improving water use.

Plastic packaging is currently in most consumer applications and is responsible for a massive pollution of water and land ecosystems. Several BBI JU projects work on the

development of bio-based biodegradable packaging with equivalent or improved barrier properties, that can replace the fossil-based alternatives. For example, the FRESH DEMO project has developed a fully bio-based and biodegradable ready-meal packaging, which is home compostable. Preliminary LCA results show a carbon footprint reduction of 80%. These packaging solutions have already undergone several pre-commercial trials and have already reached the market. PULPACKTION DEMO project is working on the development of cellulose-based packaging for different applications (e.g. food and electronics) which is compostable, lighter and will achieve CO₂ emission reduction of approximately 50%. POLYBIOSKIN project develop of a fully biodegradable and bioactive facial beauty masks based on biopolymers provided with a skin-compatible surface. The Beauty masks is produced by electrospinning using water as solvent. The material is fully bio-based, biodegradable and soluble in water. This will help decreasing the impact on environment of cosmetic products that are currently still mainly produced using petrol-based substrates. Another example of targeting a sustainable end-of-life for packaging products is BIONTOP RIA project, which is developing bio-based recyclable-by-design polymers, coatings and composites for food and personal care packaging applications.

Many BBI JU projects contribute to **improving water and energy efficiency**. For example, Woodzymes RIA project transforms cellulosic residues into different bio-based building blocks through enzymatic processes, to valorise underutilised lignin and hemicellulose fractions of kraft pulp mills. As a result, reductions of up to 30°C in the temperature for the kraft pulp delignification stage, and up to 20% of the energy in enzyme-aided refining can be expected. The GRETE project objective is to improve the existing wood-to-textile value chains by developing new technologies for wood pulp modification, cellulose dissolution and generation of high-quality fibres, and which are expected to deliver a 20-30 % reduction in energy use.

The preservation and enhancement of biodiversity is a cross-cutting issue to be considered in all types of industrial developments and is a key aspect for the development of a sustainable bio-based economy. BBI JU projects report contributing to the preservation and/or enhancement of biodiversity in agricultural land (15%), forests (11%) or water ecosystems (8%). 5% of the projects also report possible risks for biodiversity (figure 64).

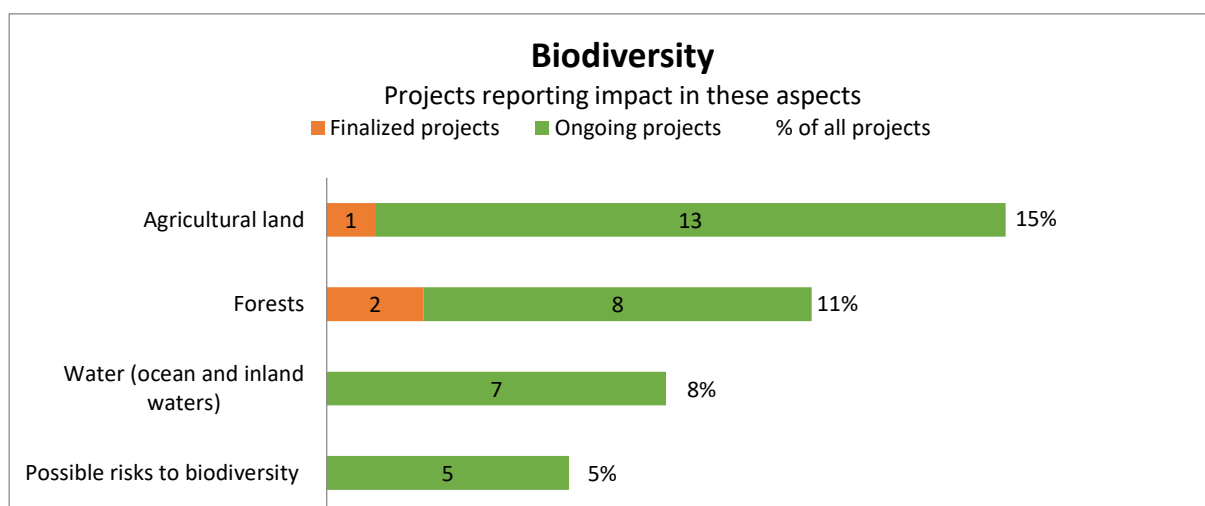


Figure 64: Number of projects reporting an expected positive impact on biodiversity in different ecosystems, as well as possible risks.

For example, the Dendromass4Europe DEMO project aims at establishing sustainable, Short Rotation Coppice (SRC), regional cropping systems for agricultural dendromass production on marginal land. Unlike other monocultural, annual agricultural crops (corn, potato, oilseed rape etc.), SRC provides habitats for ground vegetation and small animals and does not need the use of herbicides. In situations where SRC is implemented along trenches, or close to other moist habitats, the SRC is expanding the habitat, e.g. by providing winter hibernation niches for amphibians living within the water bodies (trenches, ponds etc.). Moreover, some SRC localities contain wetland *refugium* like terrain depressions, and surrounding poplar trees provide buffer zones for the protection of these micro-localities which are important for natural species' life cycles. In addition, as SRC is more a forest-like habitat (crown shelter, reduced irradiation on the ground vegetation), the SRC can provide an "extension" of habitats suitable for forest-dwelling species, and possibly also a bridging function between small forests in highly industrialised landscapes.

FARMYNG Flagship contributes to the biodiversity of marine ecosystems, as it replaces fish meal with mealworm meal in aquaculture and helps to prevent the overfishing of small pelagic fish. More than 20% of the fish caught all over the world is used to produce fish meal and fish oil, thus massively impacting ocean biodiversity. It is expected that an additional 6 insect protein plants in Europe could lead to a significant reduction of ocean pressure by avoiding 800 000 tons of fresh fish catch worldwide, producing 200 000 tonnes of fish meal.

IMPACT ON SCIENCE AND KNOWLEDGE

BBI JU's programme is characterised by a strong and close cooperation between academia and industry, which work together across different TRLs for the development and deployment of technologies with concrete market applications. In this context, nearly 80% of the projects report an increased cooperation between industry and academia, strengthening collaboration across regions and countries and contributing to knowledge creation (figure 65).

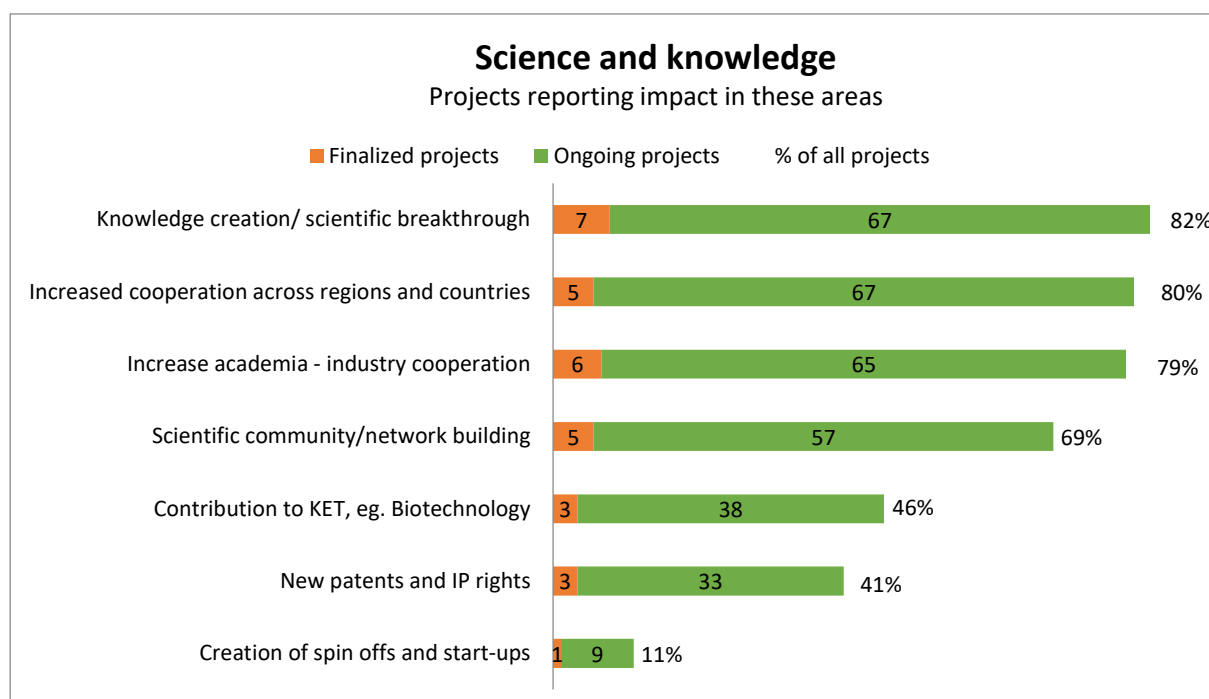


Figure 65: number of projects reporting contributions to different aspects of scientific impact, as well as the overall percentage of projects addressing these aspects

Examples

Most of the BBI JU project consortia have a balanced composition of partners coming from academia, research organisations, industry, primary producers or other different types of organisations. For example, BIOrescue consortium, which aims at valorising the residues of the mushroom industry for the extraction of valuable bioactive compounds, includes universities, research organizations, a large mushroom producer and technology developers. EFFORTE consortium, which works for the development of tools and methods to improve the sustainability operations, is composed of forest owners, forest operators, the forestry industry, research and technology centres, and an association of paper industries, among others.

MANDALA RIA project is addressing the challenges related to the recyclability of plastics by i) creating innovative functional adhesives that allow easier separation of multilayer materials and ii) developing mono-material bio-based plastics. By doing so, it is advancing

the state of the art in several aspects, such as delamination technologies, advanced materials (thermoreversible adhesives), or the use of nanotechnology to enhance barrier properties and to act as radiation absorbers to make delamination more effective.

InDirect and Zelcor RIA projects work on different processes for the transformation of organic residues and lignocellulosic materials through insect-based bioconversion, thereby advancing the knowledge on biorefinery processes based on insects, insect physiology on industrial substrates and biotechnological routes for lignin conversion.

Among the already finalised projects, there are several important contributions to knowledge creation and the development of new processes and materials, such as lignin-based fibres and composites for different applications (GreenLight, SmartLi), bio-based biosurfactants (Carbosurf), processes and technologies for Combined Ultrasonic and Enzyme treatment of lignocellulosic materials (US4GreenChem), and chemical and enzymatic processes (FIRS2RUN), among others.

EDUCATION AND SOCIETY

A successful transition to a circular bio-based Europe requires the informed collaboration of citizens and a high level of awareness on the benefits of bio-based products compared to their fossil-based counterparts. BBI JU projects recognise the importance of engaging citizens. 64% report contributing to increasing the awareness and understanding of the bio-based economy, more than half of them carry out training or education activities and almost 30% foster gender balance and inclusion (figure 66).

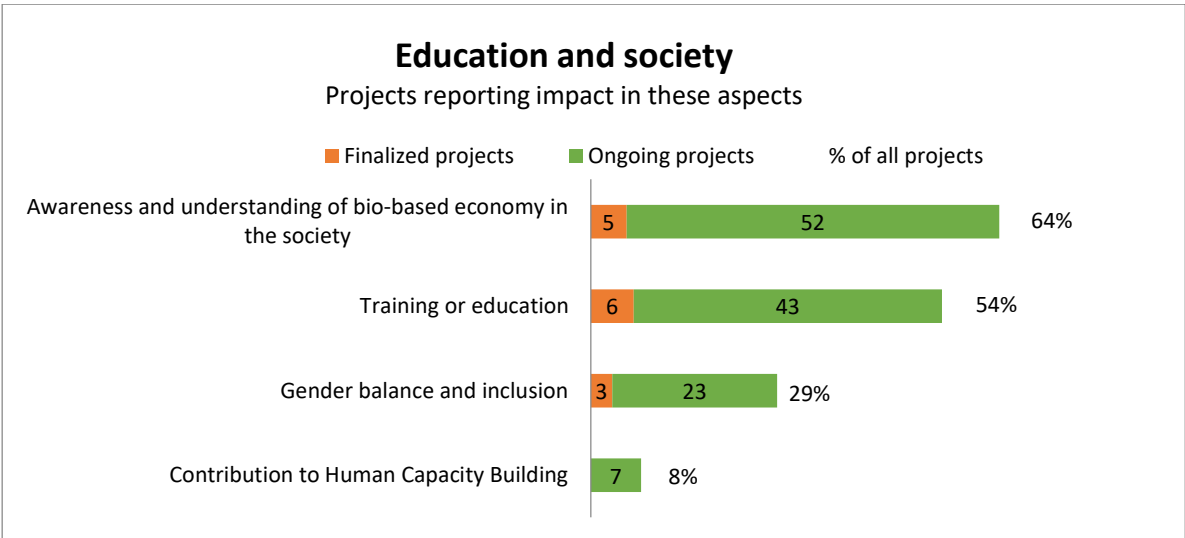


Figure 66: Number of projects reporting an impact on education and society, as well as the overall percentage of projects addressing these areas.

Examples

Some BBI JU projects organise activities focused on the interaction with citizens. The BIONtop RIA project is developing a range of bio-based plastics and coatings with improved biodegradability properties. Its consortium includes a consumer organisation, whose main role is to evaluate society’s awareness and understanding of the bio-based economy. The BIOBRIDGES CSA project develops communication and co-creation activities such as videos and games, to increase and improve consumers’ awareness, confidence and trust around the benefits of bio-based products compared to the fossil-based counterparts. The BioCannDo CSA project has also produced several dissemination materials for the general public, including a series of videos explaining the benefits of different bio-based products for daily use.

Education and training programmes are also part of BBI JU project activities. For example, in the ECOAT RIA project universities and RTOs organise training courses for university students and industry partners and carry out seminars in public secondary schools. The EFFECTIVE DEMO project also organises training sessions for undergraduate and graduate students, researchers and professionals, and open demonstration days at the facilities of the industrial partners.

IMPACT ON SAFETY AND HEALTH

Nearly half of BBI JU projects report producing healthier products and 40% expect to develop safer processes (figure 67).

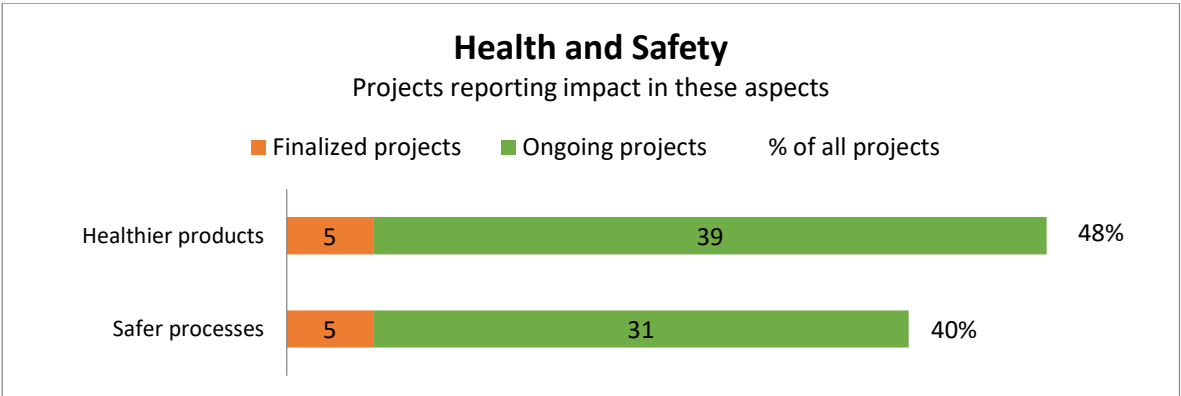


Figure 67: Number of projects reporting a positive impact on health and safety.

Examples

Some examples of projects producing healthier products are: BIOSMART (innovative package functionalities tailored to drastically reduce food fungal and microbial proliferation and enhance freshness preservation), AQUABIOPROFIT (valorisation of fisheries and aquaculture side-streams into health supplements), WASEABI (use of

seafood side-streams for the extraction of bioactive molecules for the production of food and feed products) and ReSolve (replacement of hazardous with safer alternatives derived from non-food carbohydrates).

Additional examples of projects developing safer processes are: VIPRISCAR (synthesis of polyurethanes without isocyanates, whose presence in the work atmosphere is toxic, or use of polymerization waterborne processes to avoid toxic solvents), Neocel (the production of the targeted bio-based textiles does not use hazardous solvents and does not produce toxic effluents) and TECH4EFFECT (introduction of new mechanised processes in forest operations to avoid accidents and reinforce safety practices at work).

IMPACT ON STANDARDS AND REGULATIONS

The role of standards and regulations in the development and uptake of bio-based products is crucial and as such remains an integral part of the BBI JU portfolio. To this end, 26% of the projects expect to contribute to policy recommendations and 21% expect to contribute to the development or improvement of standards and regulations, as shown in Figure 68. The concrete outcome of the corresponding projects and in particular LIFT will be further exploited with BIC and Commission in 2020.

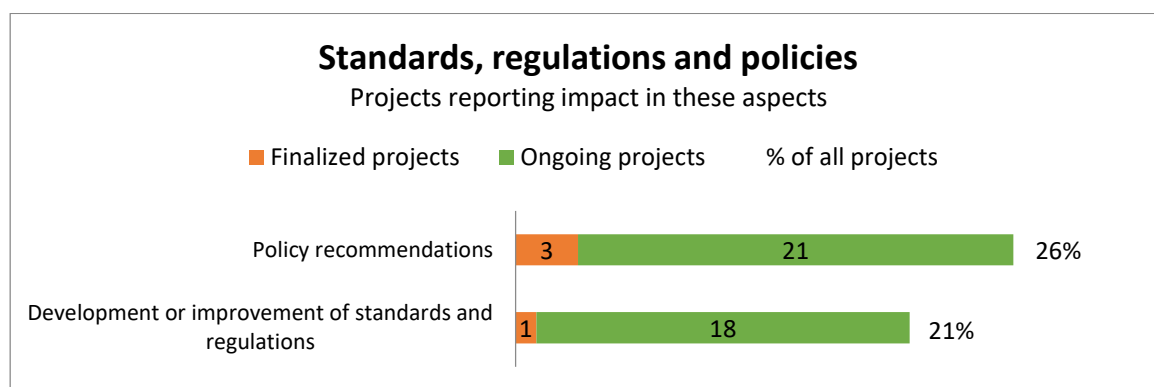


Figure 68: number of projects reporting a contribution to the development of standards, regulations and policies.

Examples

BBI JU CSAs greatly contribute to the development of policy recommendations to facilitate the market uptake and acceptance of bio-based products, and to foster the development of the bio-based industries across Europe. BIOWAYS has delivered a set of recommendations for future activities and supports measures to improve consumers' awareness of bio-based products, to increase their public acceptance and to contribute to their better market uptake.

Several EU projects will produce analyses and **policy recommendations** on current hurdles for the deployment of the bio-based economy. For example, the URBIOFIN DEMO project, which processes the organic fraction of municipal solid waste into different bio-based chemicals, will identify regulatory constraints for the deployment of its biorefinery and provide policy recommendations to overcome these limitations. B-FERST will deliver policy recommendations on fertiliser regulation, quality requirements and end of waste criteria, and EMBRACED will provide recommendations on the end-of-life criteria for AHP.

FIRST2RUN Flagship project, which uses vegetable oils cultivated in marginal lands to produce chemicals for diverse applications such as biolubricants, cosmetics and bioplastics, is working on the LCA, S-LCA and analysis of standardisation schemes of the targeted bio-based chemicals and materials, in order to facilitate its market uptake and increase the understanding and awareness of customers and stakeholders.

Many BBI JU projects report contributing to the definition of strategies towards the standardisation of the developed bio-based processes and products. For example, the EFFECTIVE DEMO project works on the production of bio-based films and fibres that enable a sustainable end-of-life for products, in applications ranging from garments, carpets and sportswear to automotive parts, packaging materials, fishing products, electric and electronic components, and it also contributes to the definition of strategies towards the standardisation of the developed bio-based processes and products. STAR4BBI CSA project supports the adaption of the regulatory framework and of relevant standards for selected existing value chains and the development of new value chains based on biomass from forests, agriculture and organic waste.

BBI JU PROJECTS' CONTRIBUTION TO THE UN SUSTAINABLE DEVELOPMENT GOALS

The development and deployment of a sustainable bioeconomy can greatly contribute to the achievement of the UN's SDGs. The close connection between the SDGs and BBI JU's portfolio was confirmed, with more than half of the projects reporting contributions to the SDGs: SDG 12 - Responsible consumption and production, SDG 13 - Climate action, and SDG 9 - Industry, innovation and infrastructure. In addition, about one third of the projects contributes to SDGs 8 - Decent work and economic growth, and 3 - Good health and well-being (figure 69). A more detailed analysis can be found in a BBI JU dedicated study⁵⁵ on the contribution of BBI JU projects to SDGs, which considers projects funded under Calls 2014 to 2017, inclusive.

⁵⁵ <https://www.bbi-europe.eu/news/new-report-bbi-ju-shows-contribution-its-projects-sdgs>

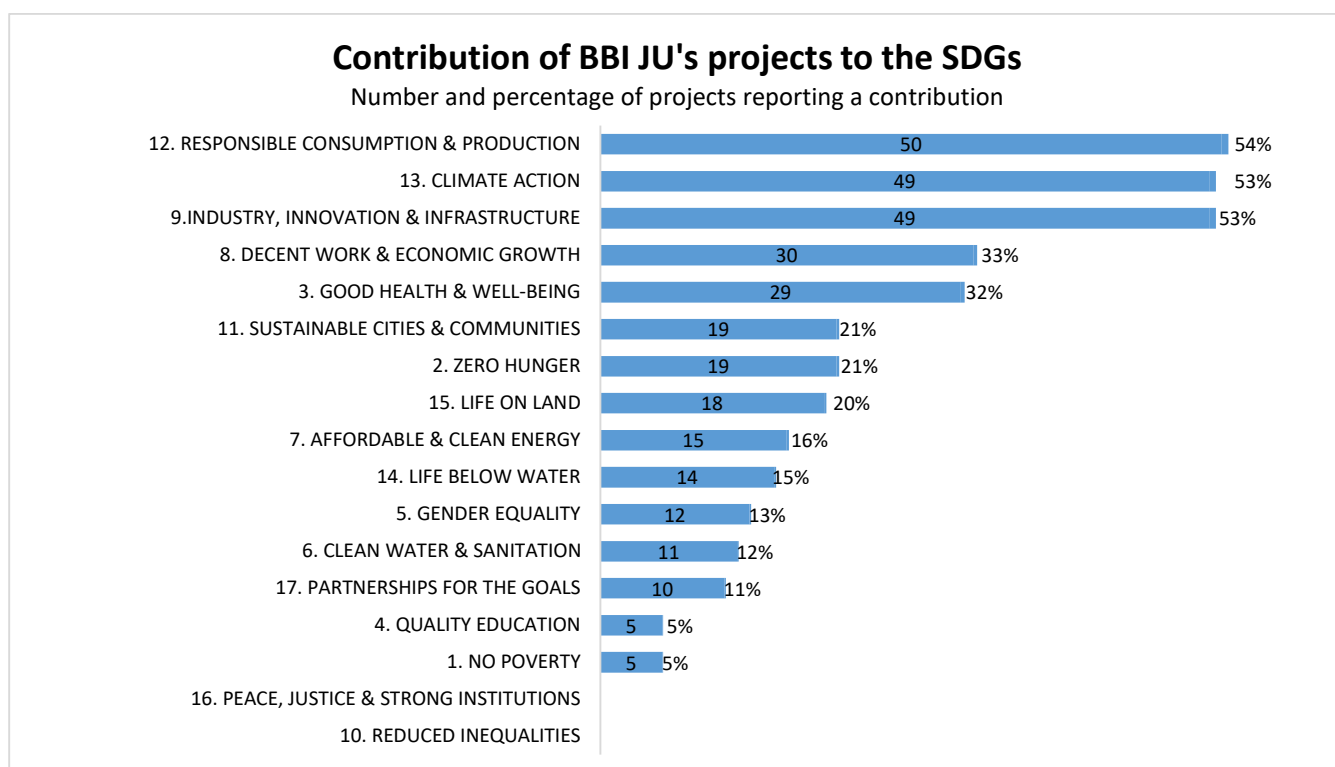


Figure 69: number of projects reporting a contribution to the Sustainable Development Goals.

Examples

SDG 12 - Responsible consumption and production

BIOMOTIVE DEMO project aims to demonstrate, in relevant industrial environments, the production of innovative and advanced bio-based materials specifically for the automotive industry. The project is in line with two goals: a) achieve the sustainable management and efficient use of natural resources; b) achieve the environmentally sound management of all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce the chemicals' release to air, water and soil in order to minimise their adverse impacts on human health and the environment.

SDG 13 - Climate action

SPIRALG DEMO project will set up an algal biorefinery to produce phycocyanin and other valuable components from the spirulina to use them in different applications. Since algae are primary biomass material which require sun, water and nutrients, their carbon capture capability is highly valued throughout the world. Capturing carbon through high-rate algae production systems along with the use of the bio-pigments as alternatives to petrol-based synthetic dyes can be considered an attractive way to act against climate change.

SDG 9 - Industry, innovation and infrastructure

POLYBIOSKIN RIA project develops skin contact biopolymer-based products commonly used in the cosmetics, biomedical and sanitary industries with an increased performance and functionality. The adaptation and combination of processing technologies is expected to economically impact these sectors and to create an environmental-friendly manufacturing of bio-based products. A high innovation potential is also associated with boosting the use of biopolymers that offer unprecedented antimicrobial, absorbency and skin-compatibility features in order to deliver new high-performance products

1.3.5. 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 takes into account not only the contributions from JU members other than the EU, but also those from other beneficiaries, which represents 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. Its total value for the period 2014-2019 attained EUR 337 229 844.

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 Undertaking⁵⁶. In 2017, the calculation method was formally adopted by the BBI JU Governing Board⁵⁷. It provides an indication of the total leverage effect of the initiative over a given period of time. The formula is the following:

⁵⁶ Excluding the contribution to the administrative costs of BBI JU, the final target leverage effect amounts to EUR 2.85 instead of EUR 2.8

⁵⁷ BBI JU governing board meeting of 28 June 2017.

(Total) leverage = Operational leverage + additional leverage:

$$\text{Operational leverage} = \frac{\sum APIK^{58} + \sum FC^{59}}{\sum EU \text{ contribution}^{60}}$$

$$\text{Additional leverage} = \frac{\sum IKAA^{61}}{\sum EU \text{ contribution}}$$

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 2019, the value of the leverage effect of the BBI JU Initiative is:

$$\text{Operational leverage} = (337\,229\,844 + 3\,250\,000^{62}) / 596\,169\,910 = 0.57$$

$$\text{Expected additional leverage} = 916\,064\,000^{63} / 596\,169\,910 = 1.54$$

$$\text{(Total) expected leverage by end 2019} = 0.57 + 1.54 = 2.11$$

The reported operational leverage is growing compared to the past. The additional leverage is reported as “expected” because the IKAA certification process was not possible due to the COVID-19 outbreak. The expected leverage value – considering the planned IKAA value for 2020 - is in line with expectation over the reporting period, but based only on the partial reporting of in-kind additional activities.

⁵⁸ 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.

⁵⁹ Total amount of financial 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.

⁶⁰ Total amount of EU funding committed in grant agreements signed by the cut-off date of the data reported in the AAR.

⁶¹ 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.

⁶² This amount includes the financial contribution from the member other than the Union and its constituent entities at programme and project level.

⁶³ This figure includes the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members.

The following figure 70 shows the evolution of the leverage effect and the table 10 details each component of the leverage effect calculation over the first years of the initiative.

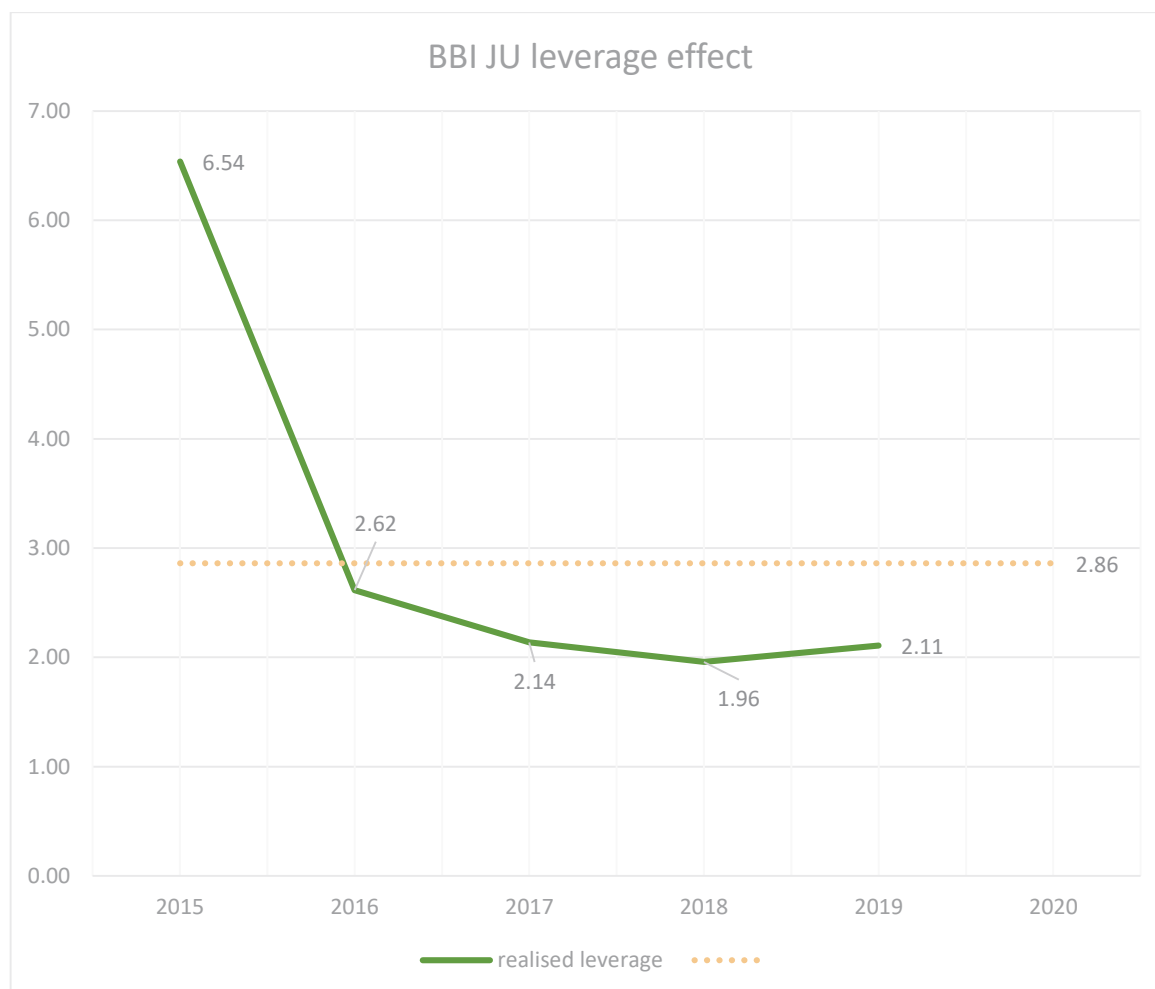


Figure 70: the evolution of the leverage effect over the first years of the initiative.

| Year | In Kind Additional Activities (IKAA - cumulative in EUR) | Financial contributions (cumulative in EUR) | Difference between the total costs and the BBI JU contribution of the projects (cumulative in EUR) | Total (cumulative in EUR) | EU contribution (cumulative in EUR) | Total Leverage |
|------|----------------------------------------------------------|---------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------|-------------------------------------|----------------|
| 2015 | 291,482,000 | 0 | 33,107,991 | 319,577,244 | 49,653,708 | 6.54 |
| 2016 | 477,342,000 | 750,000 | 119,475,848 | 580,053,334 | 227,753,235 | 2.62 |
| 2017 | 663,589,000 | 1,250,000 | 213,997,731 | 848,473,711 | 410,126,324 | 2.14 |
| 2018 | 699,879,000 | 3,250,000 | 268,068,173 | 932,839,558 | 493,288,316 | 1.96 |

| | | | | | | |
|------|---------------------------|-----------|-------------|---------------|-------------|------|
| 2019 | 916,064,000 ⁶⁴ | 3,250,000 | 337,229,844 | 1,256,543,844 | 596,169,910 | 2.11 |
|------|---------------------------|-----------|-------------|---------------|-------------|------|

Table 10: Components of the leverage effect calculation over the first years of the initiative.

1.3.6. Evaluation: procedures and global evaluation outcome, redress, statistics

CALL 2019 EVALUATION: KEY STATISTICS AND INFORMATION ON TOPICS

The 2019 Call for Proposals covered Research and Innovation Actions (RIA), Innovation Actions (IA) – comprising Demonstration Actions (DEMO) and Flagships, and Coordination and Support Actions (CSA). The call contained 21 topics (three Flagships, four DEMO, ten RIA, and four CSA). The initial indicative budget for the call was EUR 135 million (the breakdown per type of action is shown in Table 11 below).

The call was published in the Funding and Tenders Portal and in the Official Journal on 4 April 2019 with a submission deadline of 4 September 2019. 184 proposals were submitted under this call: during the admissibility and eligibility checks, two proposals were declared inadmissible, and three were declared ineligible; additionally, one duplicate proposal was withdrawn from the respective applicant. 52% of the proposals were evaluated above threshold, and 23 proposals out of 178 eligible proposals were retained for funding, corresponding to a 13% success rate. Prioritisation according to H2020 rules was performed in cases of proposals with the same overall score. The retained proposals showcased high-quality in all three criteria of evaluation, as well as an important commitment in terms of IKOP, IKAA and financial contributions. Several proposals with high scores were not retained for funding due to budgetary limitations for specific budget lines (CSA and RIA). The considerable increase in participation to the call, as well as the widening geographical coverage of applicants, confirm a significant mobilisation of the BBI sector.

The evaluation of all proposals was completed in November 2019 and the resulting ranking list was adopted by the BBI JU Governing Board on 13 December 2019. All applicants were informed about the evaluation results on 17 December 2019 and, on the same date, the Grant Agreement preparation (GAP) for the 23 retained proposals was officially launched for an amount of EUR 118 847 602. After the declining by the consortium of one selected Flagship proposal to continue in the Grant Agreement Preparation, the respective process was terminated. Another Flagship proposal was

⁶⁴ This figure includes the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members.

promoted from the reserve list to the main list and received the invitation to the Grant Agreement Preparation on 20 December 2019. The updated funding amount has thus become EUR 118 190 391.

The Call 2019 GAP is expected to be finalised by 4 May 2020.

Figure 71 shows the annual evolution of the mobilisation of the bio-based community through the calls over the years 2014 to 2019. Between 2018 and 2019, the number of topics remained stable at 21. The significant growth in the number of proposals testifies to an increasing mobilisation created by the initiative, reaching 184 proposals and an average of 8.8 proposals per topic.

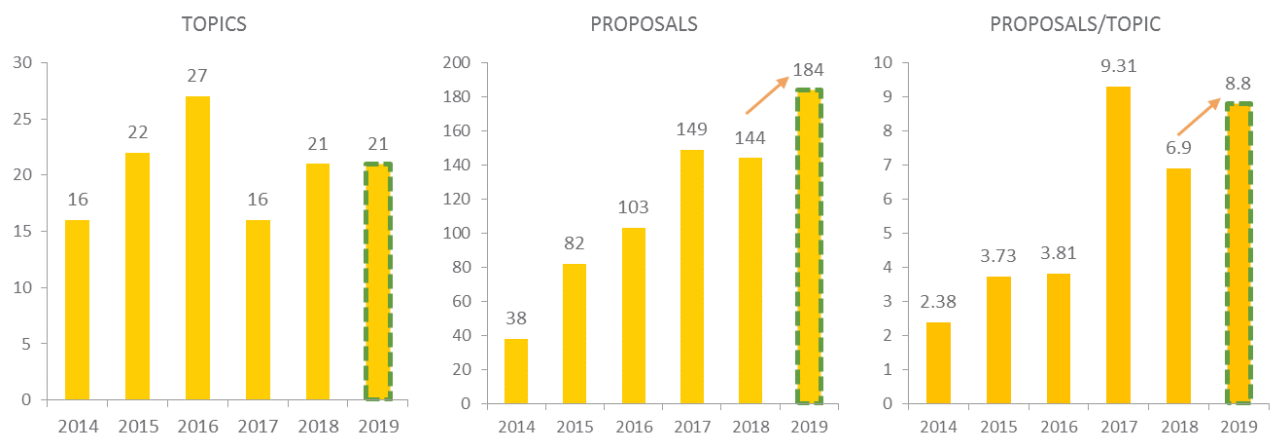


Figure 71: Overview of the evolution of submissions in BBI JU Calls (2014-2019).

In the sections below, more detailed information is provided on the submission statistics as well as on the outcome of the evaluation. In particular, the following information is included:

- number of proposals submitted per topic and success rates;
- types of participants (submissions and retained for funding);
- country distribution of applicants in proposals submitted and retained for funding;
- share of SMEs in submitted and retained proposals;
- share of SME funding in retained proposals.

EVALUATION PROCESS

The evaluation was carried out with the assistance of 140 independent experts and one independent observer, in accordance with the procedures laid down in the guide for proposal submission and evaluation of Horizon 2020. Two independent experts were selected and appointed to conduct an ethical screening, uniquely for proposals above the thresholds. The ethical screening for the majority of the retained proposals was finalised during the central evaluation.

In selecting experts, the primary objective of the Programme Office in respect of the composition of the evaluation panels was to ensure a high level of expertise in the areas of the call, taking also into consideration an appropriate gender balance and geographical diversity, as well as the participation of experts with relevant industrial expertise. These considerations were reflected across the selection of 140 experts, giving a gender balance of 75 men (54%) and 65 women (46%). 39% of invited experts had no previous experience with BBI JU evaluations, well above the Horizon 2020 target of min. 25%. The regional balance considerations also ensured the representation of 31 different countries (68% EU15, 24% EU13, 4% associated countries, 4% other).

Hearings were organised for Flagship actions for all submitted proposals. The hearings were intended to clarify the business plan and the technology maturity to help the panel establish their final assessment or improve the experts' understanding of the proposal.

All applicants were informed about the evaluation outcome on 17 December 2019, no later than five months after the proposal submission deadline (see section 1.3.2. Horizon 2020 KPIs and cross-cutting issues on specific details with respect to TTI). One redress was submitted in January 2020.

CALL OUTCOME

The budget available for the call according to the 2019 AWP was EUR 135 million, 17% higher than the EUR 115 million budget allocated for Call 2018. Given a corresponding increase of applications, the higher budget availability did not result in a higher overall success rate. The success rate thus remained stable between Call 2018 (13.6%) and Call 2019 (13%).

For Call 2019 the overall quality of the proposals was high and made the call very competitive. A good topic coverage was accomplished, and all proposals received submissions.

In total, 23 out of 178 eligible proposals were selected for funding, consuming 87.6% of the overall budget, corresponding to an 81% overall topic coverage, with four topics not covered by proposals retained for funding (topics D1, R4, F1, and S2). Table 11 provides a breakdown of the proposals submitted and retained per topic as well as the success rate and budget allocated per type of action.

| | Topic code | Total number proposals received | Retained Proposals | Success rate (%) | Topic Title | Indicative budget (in EUR) |
|------|------------|---------------------------------|--------------------|------------------|-------------------------------------------------------------------------------------------------------------------|----------------------------|
| DEMO | 1 | 4 | 0 | 9% | Scale up conversion of lignin into valuable compounds for application in specific market sectors | 31,000,000 |
| | 2 | 21 | 1 | | Produce components for various materials, including for food and feed, from microalgae | |
| | 3 | 15 | 2 | | Produce bio-based functional ingredients and additives for high-end markets | |
| | 4 | 17 | 2 | | Demonstrate bio-based pesticides and/or biostimulant agents for sustainable increase in agricultural productivity | |
| | 1 | 2 | 1 | | Use tree species and/or varieties to create new bio-based value chains | 52,000,000 |

| | | | | | | |
|-----|---|----|---|-----|---------------------------------------------------------------------------------------------------------------------------------------------|--|
| RIA | 2 | 10 | 1 | 12% | Develop breakthrough technologies to improve the cost-effectiveness and sustainability of pre-treatment steps within biorefining operations | |
| | 3 | 10 | 3 | | Apply microorganisms and/or enzymes to resolve end-of-life issues of plastics | |
| | 4 | 7 | 0 | | Develop surface or bulk treatments for improved wood-based materials | |
| | 5 | 5 | 1 | | Convert plant oils and fats into safe high added value products for various applications including food and personal care | |
| | 6 | 6 | 1 | | Improve biorefinery operations through process intensification and new end products | |
| | 7 | 4 | 1 | | Model the composition of bio-based residual streams and its evolution to optimise its management and processing | |
| RIA | | | | | | |

| | | | | | | |
|------|----|----|---|-----|------------------------------------------------------------------------------------------------------------------------------------------|------------|
| | 8 | 18 | 1 | | Develop sustainable bio-based materials for high-volume consumer products | |
| | 9 | 11 | 1 | | Develop bio-based fibres and/or functional molecules to improve the performance of textile products | |
| | 10 | 26 | 2 | | Develop bio-based high-performance materials for various and demanding applications | |
| FLAG | 1 | 2 | 0 | 0% | Valorise the organic fraction of municipal solid waste through an integrated biorefinery at commercial level | 15,000,000 |
| | 2 | 2 | 1 | 50% | Apply technological combinations to valorise all components of biomass feedstock | 20,000,000 |
| | 3 | 5 | 1 | 20% | Produce high-performance bio-based alternatives to harmful products or processes to protect and enhance human health and the environment | 12,000,000 |

| | | | | | | |
|-----|---|---|---|-----|------------------------------------------------------------------------------------------------------------------------|-----------|
| CSA | 1 | 3 | 1 | 23% | Assist brand owners to 'switch to bio-based' | 5,000,000 |
| | 2 | 1 | 0 | | Establish methods and communication for applying mass balance principles to attribute biomass co-feedstock to products | |
| | 3 | 4 | 1 | | Shaping the bio-based economy through a participatory approach | |
| | 4 | 5 | 1 | | Empower SME clusters to bring SMEs 'across the valley of death' | |

Table 11: Call 2019 Number of proposals submitted and retained per AWP topic.

Participants in submitted and retained proposals. These fall under the five following categories (Figure 72):

- Private-for-Profit (PRC);
- Research Organisation (REC);
- Higher or Secondary Education (HES);
- Public Body (excluding research and education) (PUB);
- Other types of organisation (OTH)

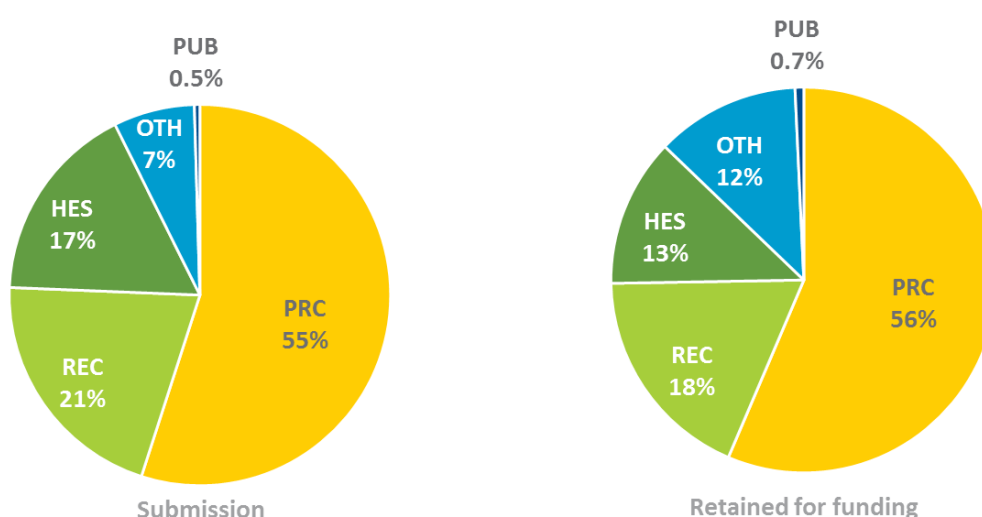


Figure 72: Type of participants in submitted or retained for funding proposals in Call 2019.

Figure 73 shows the distribution of applicants and beneficiaries per country, indicating that EU13 participation, as well as the success rate, are considerably lower than those of EU15. Overall, the 2019 call attracted applicants from all Member States. From EU28, only two EU15 countries (Sweden and Luxembourg) and nine EU13 countries do not have participants in the retained proposals.

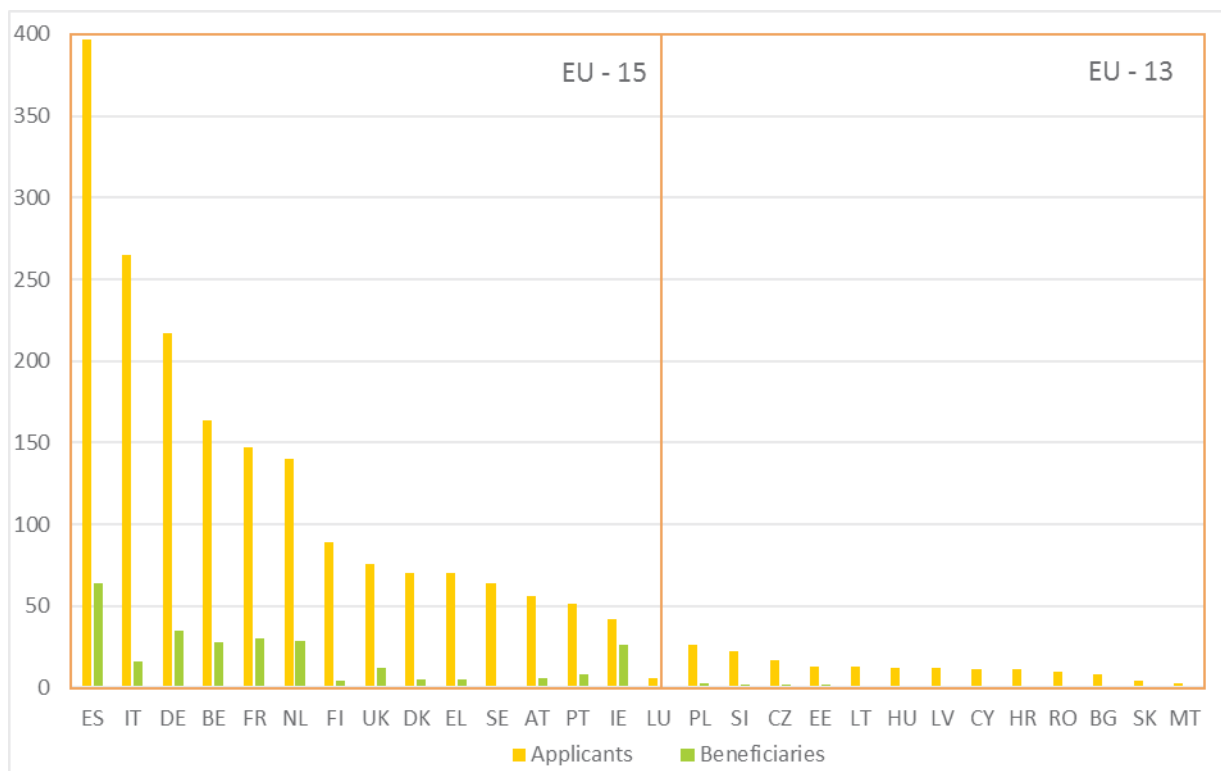


Figure 73: Distribution of applicants and beneficiaries per country from EU15 and EU13 in Call 2019.

Figure 74 shows the distribution of applicants and beneficiaries per country from associated and third countries. In Call 2019, five associated countries are receiving funding. The highest number of successful applicants is from Switzerland. No third country is participating in retained proposals.

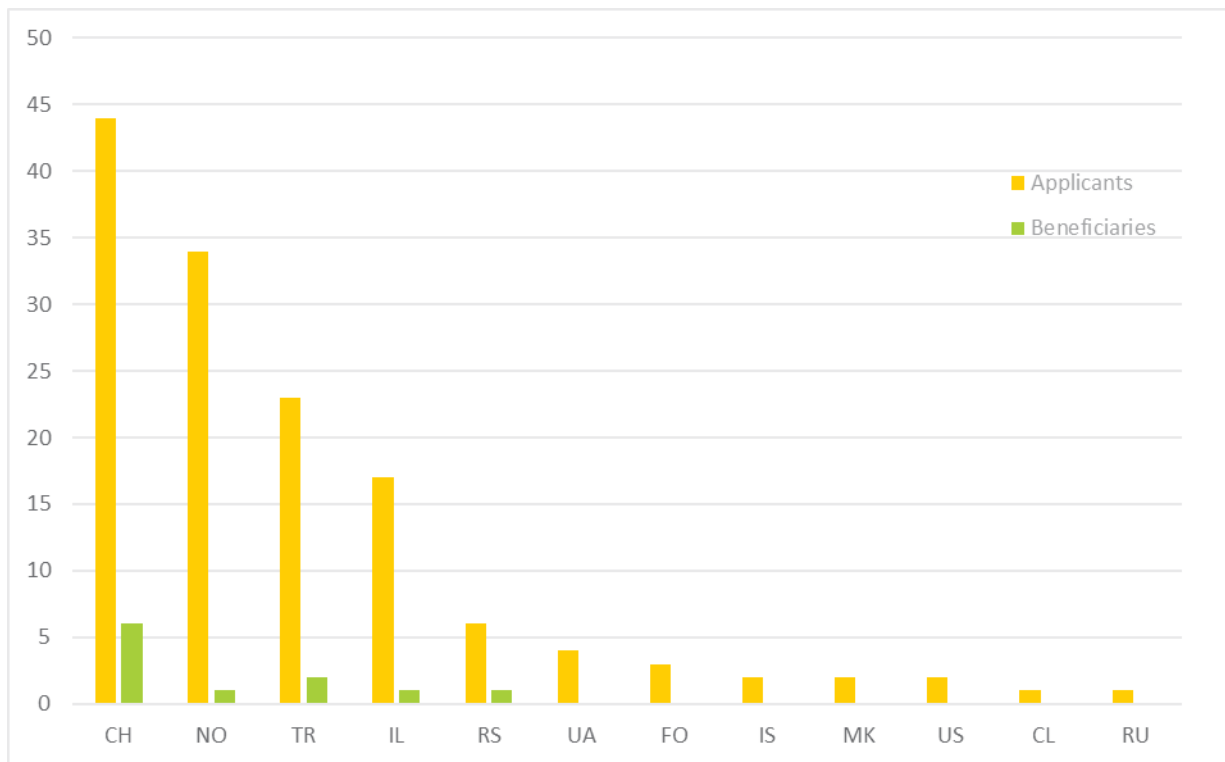


Figure 74: Distribution of applicants and beneficiaries per country from associated countries and third countries (industrialised countries and emerging economies and developing countries) in Call 2019.

With respect to SMEs, in Call 2019, 773 participants out of 2 163 were self-declared as SMEs, thus representing 36% of the total number of participants (Figure 75). In retained proposals, SMEs represented 40% of all participants, corresponding to 35% of the total funding. For more details on the overall SME participation and funding allocation see section 1.3.2.

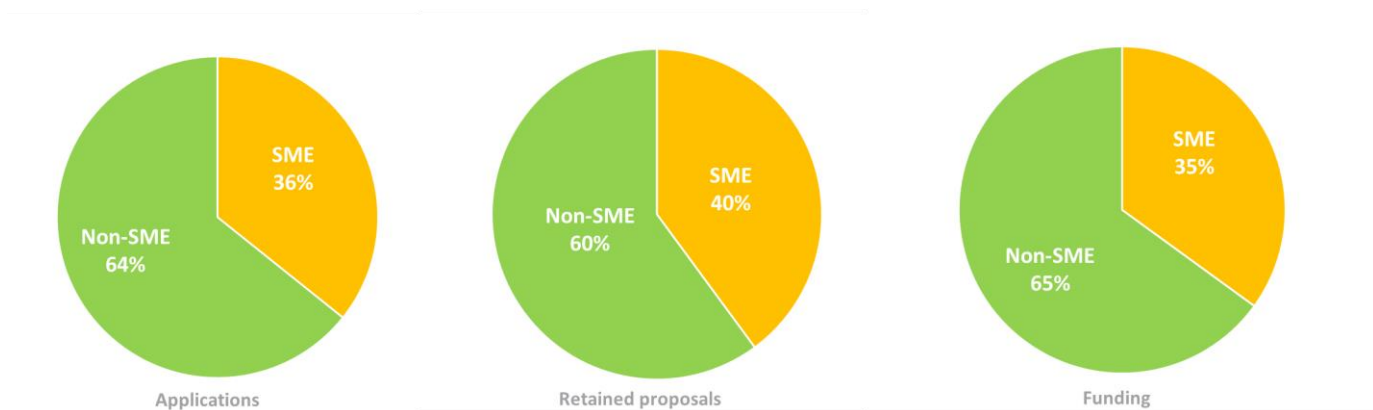


Figure 75: Call 2019 share of SME unique applicants, beneficiaries and share of funding (in retained proposals)

1.4. CALLS FOR TENDERS

No calls for tenders were planned in the AWP 2019, 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 ON PROJECTS' RESULTS

In 2019, the BBI JU project portfolio reached 101 projects at different stages of their implementation. Because of this variety, the dissemination activities of ongoing projects were very heterogeneous in 2019. By the end of the year, only projects from Calls 2014-2017 had made considerable progress and disseminated intermediate results.

The data made available by projects so far via the 'continuous reporting' includes the following elements:

- Number of dissemination and communication activities: concerns activities in 18 categories such as organisation of a conference; press release, flyer, etc.;
- Estimated number of persons reached: concerns persons in nine categories such as scientific community, industry, policy makers, etc.

Tables 12 and 13 below - part of the standard Horizon 2020 reporting via the Funding and Tenders Portal - provide an overview of dissemination and communication activities of all BBI JU projects that had indicated such activities via the 'continuous reporting' module of the Funding and Tenders Portal. According to the available information, BBI JU projects have engaged in numerous dissemination and communication activities throughout the year in the form of conferences, publications, exhibitions etc. In addition, these activities had a wide estimated outreach. The comparison with 2017 and 2018 shows that in 2019, there was a significant increase in dissemination and communication activities, and that both 'physical' (conferences, workshops etc.) and digital (social media, video/film etc.) activities grew extensively. It also needs to be noted that the 2019 figures are based on:

- reported (raw) data; (high) data outliers in the dataset were kept in the tables below. This explains the high growth in e.g. the amount of press releases and social media.
- data provided by 65 projects; 36 of the 101 BBI JU projects will only report their first dissemination and communication data in 2020 at the earliest.

| Type of dissemination & communication activities | 2017 | 2018 | 2019 |
|--------------------------------------------------|------|------|------|
| Organisation of a Conference | 5 | 39 | 41 |
| Organisation of a Workshop | 14 | 36 | 49 |

| | | | |
|--------------------------------------------------------------------------------|-----|------|-------|
| Press release | 59 | 164 | 1209 |
| Non-scientific and non-peer-reviewed publication (popularised publication) | 111 | 487 | 592 |
| Exhibition | 23 | 96 | 119 |
| Flyer | 24 | 5553 | 5574 |
| Training | 20 | 62 | 82 |
| Social media | 45 | 2735 | 59566 |
| Website | 86 | 230 | 314 |
| Communication campaign (e.g. radio, TV) | 14 | 37 | 51 |
| Participation at a conference | 159 | 550 | 686 |
| Participation at a workshop | 59 | 128 | 178 |
| Participation at an event other than a conference or a workshop | 51 | 179 | 222 |
| Video/film | 12 | 59 | 70 |
| Pitch event | 5 | 9 | 14 |
| Trade Fair | 19 | 66 | 84 |
| Participation in activities organised jointly with other Horizon 2020 projects | 13 | 71 | 80 |
| Other | 34 | 157 | 189 |

Table 12: dissemination and communication activities of all BBI JU projects reported in the Funding and Tenders Portal (2017-2019; cumulative amounts)

| Category / target group | Estimated number of persons reached | | |
|---------------------------------------------------|-------------------------------------|-----------|------------|
| | 2017 | 2018 | 2019 |
| Scientific Community (Higher Education, Research) | 124 007 | 450 043 | 989 124 |
| Industry | 231 388 | 414 702 | 2 975 462 |
| Civil Society | 9 141 | 2 935 852 | 454 8619 |
| General Public | 945 855 | 8 173 203 | 18 749 257 |
| Policy Makers | 15 489 | 62 034 | 108 457 |
| Media | 15 371 | 1 577 383 | 1 797 584 |
| Investors | 6 845 | 39 195 | 51 425 |
| Customers | 104 997 | 365 529 | 5 757 952 |

Table 13: estimated number of persons reached, in the context of all dissemination and communication activities (2017-2019; cumulative amounts).

PUBLICATIONS AND PATENTS FROM BBI JU PROJECTS

Data on publications and patents are gathered through the continuous reporting module of the Funding and Tenders Portal. A detailed overview of this data is provided in Annexes 7.3 and 7.4 respectively. The number of scientific publications produced by BBI JU projects grows year on year: 129 publications were published in 2019 (compared to 75 in 2018). Similarly, as the projects from the first calls of the programme (2014-2017) start producing exploitable results, the number of patent applications grew to 47 by the end of 2019 (compared to 31 by the end of 2018).

BBI JU ACTIVITY IN SUPPORT TO DISSEMINATION OF PROJECT RESULTS

BBI JU also actively supports the dissemination of project results via three principles: using IT tools to disseminate project results, providing information about ways to increase and professionalise dissemination, and participating in meetings and events. Each of these three methods is described in further detail below.

The main IT tools used by BBI JU to disseminate project information and results are:

- A dedicated webpage⁶⁵ where all ongoing BBI JU projects are featured. This webpage provides project-specific information, as well as a link to each project-specific Uniform Resource Locator (URL), where additional dissemination materials can be found.
- CORDIS⁶⁶, the official results repository of EU-funded research and innovation projects. On CORDIS, all public project deliverables that are approved by the BBI JU project officers are published on each project page.
- The quarterly BBI JU newsletter which facilitates - among other things - the dissemination of project results.

BBI JU provides dissemination-supporting information using a webpage⁶⁷ dedicated to project management, which includes the following information:

- Communication guidelines for projects, including texts and logos which acknowledge EU funding;

⁶⁵ <https://www.bbi-europe.eu/projects>

⁶⁶ http://cordis.europa.eu/home_en.html

⁶⁷ <https://www.bbi-europe.eu/participate/project-management>

- A 'FAQ for coordinators' document which includes a specific section on dissemination, communication and exploitation.

BBI JU also has actively participated in dissemination-related meetings and events, such as:

- Meetings within the EU research family about knowledge sharing where best practices about dissemination are discussed. For example, in 2019 BBI JU took into account new insights gathered from the Dissemination and Exploitation Network⁶⁸ meetings, and implemented best dissemination practices via the IT tools and information sources described in the two previous paragraphs.
- External meetings giving BBI JU project representatives opportunities to disseminate their results and share best practices. All events organised by BBI JU or where BBI JU is one of the speakers are available on <https://www.bbi-europe.eu/events>.

On 4 December 2019, BBI JU organised its second Stakeholder Forum, which included an exhibition area where 100 BBI JU projects were able to disseminate their project objectives and results. On 3 December 2019, BBI JU also organised a so-called 'Projects Day', which allowed projects representatives to interact further and share knowledge.

Finally, BBI JU also disseminates information actively via social media. This activity is described in more detail in section 2.1.

⁶⁸ a community of practice supporting the exchange of information and best practices on dissemination and exploitation at the level of the EU's Research and Innovation Family.

1.6. OPERATIONAL BUDGET EXECUTION

COMMITMENT APPROPRIATIONS

In April 2019 BBI JU published a call for proposals for a total maximum indicative funding amount of EUR 135 000 000 covered by a budgetary commitment (L1 global) of current year's credits. The actions covered by the call were RIAs, DEMOs, Flagships and CSAs.

23 proposals were selected for a requested total funding of EUR 118 847 602, amounting to a foreseen consumption of 87.4% of the total call budget. The difference between the call amount and the total requested funding will be de-committed and is intended to be reactivated during the 2020 financial year to supplement the 2020 call, in line with the provision included in Article 6(5) of the BBU JU Financial Rules.

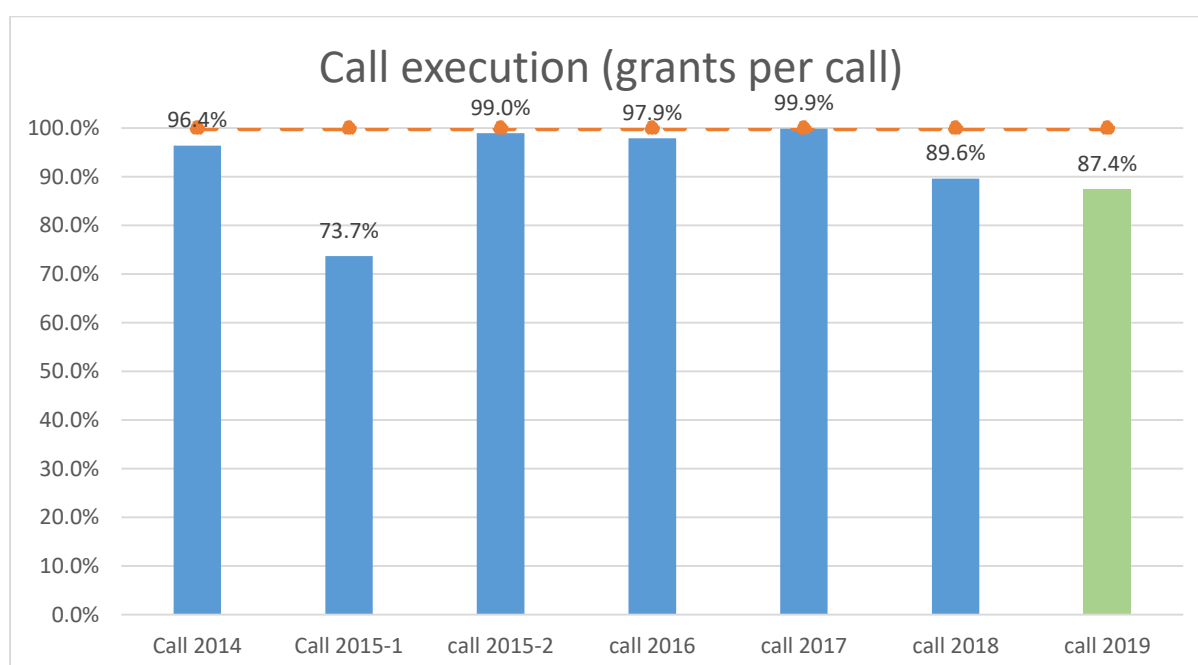


Figure 76: Call budget execution.

For what concerns Call 2018, except for one case, all 19 grants awarded were signed by May 2019 within the given deadline of eight months from the call closure. One grant was signed after the TTG deadline due to some delays on the side of the consortium during the grant agreement preparation phase. The totality of grants signed amounted to EUR 102 881 595 and the average TTG was 235 days.

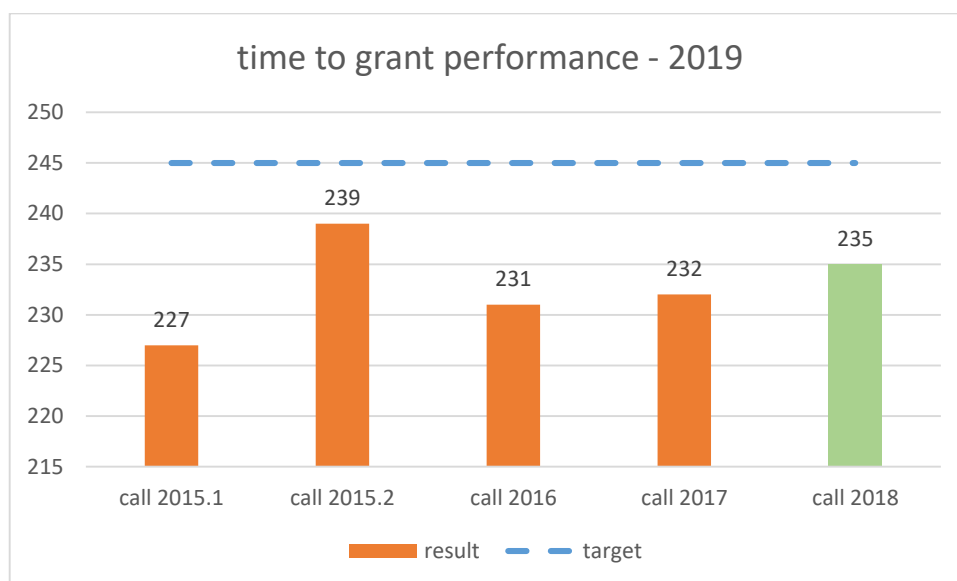


Figure 77: Time to grant performance in 2019

PAYMENT APPROPRIATIONS

Pre-financings were paid with an average time to pay of 9.9 days (against a target of 30 days). All payments for a total amount of EUR 82 305 276 were made on time.

Regarding the payment of the periodic reports, the BBI JU Programme Office dealt with 44 interim and final cost claims in 2019. The average time to pay was 74 days (against a target of 90 days) for a total of EUR 51 111 593. Only one payment was late.

The overall execution of payment appropriations (included in the amended budget – total EUR 176 006 622) for the operational expenditure was for a total amount of EUR 133 417 722. The remaining EUR 42 589 752 was budgeted for payments of periodic reports in 2019 which were either delayed until 2020 or the amount claimed was much less than anticipated. Part of this surplus will be reactivated in the 2020 BBI JU budget according to the provision included in Article 6(5) of the BBI JU Financial Rules and will be used for future needs.

1.7. IN-KIND AND FINANCIAL CONTRIBUTIONS

GLOBAL LEVEL

Under the Council Regulation establishing the BBI JU, by the end of the initiative in 2024 the total contribution by the members other than the Union⁶⁹ or their constituent entities shall be at least EUR 2.73 billion. The EU contribution to the BBI JU shall be up to EUR 975 million.⁷⁰

Within the global target of the contributions of the members other than the Union to be reached by 2024, the Council Regulation also includes well-defined objectives: at least EUR 1 755 million as in-kind contributions for additional activities (IKAA)⁷¹ and at least EUR 182.5 million as financial contributions to operational costs. Regarding the in-kind contribution to the operational costs (IKOP), there is no defined objective in the Council Regulation, but an indicative target value of EUR 763.25 million can be calculated, while indicative expected values are included in the respective AWP.

IN-KIND CONTRIBUTION TOWARDS 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 concretisation of costs (1) expected/committed; (2) estimated/reported; (3) certified.

The table below shows the values of expected IKOP resulting from the difference between the grant amount and the total costs to be incurred by BIC constituent entities during the execution of the actions, as calculated by the BBI JU.

| Call | Granted amount (in EUR) to BIC constituent entities | Total expected costs (in EUR) of BIC constituent entities | IKOP (in EUR) |
|--------|--------------------------------------------------------------|--------------------------------------------------------------------|---------------|
| 2014 | € 42,186,855 | € 68,654,652 | € 26,467,797 |
| 2015.1 | € 64,253,258 | € 98,631,760 | € 34,378,502 |
| 2015.2 | € 53,919,895 | € 75,232,522 | € 21,312,627 |
| 2016 | € 105,663,320 | € 153,538,492 | € 47,875,173 |

⁶⁹ 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.

⁷⁰ Including contribution towards administrative costs.

⁷¹ Additional activities are outside the work plan of the BBI Joint Undertaking contributing to the objectives of the BBI Initiative.

| | | | |
|-------|---------------|---------------|---------------|
| 2017 | € 50,852,300 | € 88,505,426 | € 37,653,126 |
| 2018 | € 48,535,233 | € 84,571,462 | € 36,036,228 |
| TOTAL | € 365,410,860 | € 569,134,314 | € 203,723,453 |

Table 14: value of IKOP committed in running grants by BIC beneficiaries, per call

In line with Article 4(3) of the Council Regulation, BIC submitted the 2019 IKOP report via the BBI Programme Office to the GB. It is based on figures given by BIC beneficiaries participating in BBI JU's projects, relating to costs incurred during the implementation of projects in the year 2019. On the basis of this and earlier reports, in the table below, BBI JU is able to report on the values of IKOP from 2016 until 2019⁷² and detail the information per call.

| Grants from Call for proposal | Estimated IKOP incurred in 2016 as reported by BIC (in EUR) | Estimated IKOP incurred in 2017 as reported by BIC (in EUR) | Estimated IKOP incurred in 2018 as reported by BIC (in EUR) | Estimated IKOP incurred in 2019 as reported by BIC (in EUR) |
|--------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| 2014 | 2,438,785 | 4,494,436 | 4,279,317 | 2,344,886 |
| 2015.1 | 2,973,000 | 3,627,843 | 6,813,094 | 7,653,851 |
| 2015.2 | 139,517 | 2,278,318 | 2,964,681 | 3,755,574 |
| 2016 | | 1,726,419 | 5,935,905 | 5,793,864 |
| 2017 | | | 692,526 | 1,940,921 |
| 2018 | | | | 1,641,766 |
| TOTAL per year | 5,551,302 | 12,127,016 | 20,685,523 | 23,130,862 |
| TOTAL by end 2019 | 61,494,703 | | | |

Table 15: Values of estimated IKOP incurred in 2016, 2017, 2018 and 2019, per Call.

Compared to the total amount of EUR 61,5 million of IKOP estimated by BIC constituent entities, EUR 16 776 318 has been certified and is included in the BBI JU accounts as net assets. The IKOP certification was done via certificates of financial statements submitted

⁷² In 2015, the incurred costs have been calculated on a pro-rata basis only and are not shown here.

in the context of the first concluded project and via the submission by some BIC constituent entities of IKOP certificates⁷³ 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 member 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 contributing to the objectives of the BBI JU Initiative.

According to the Additional Activities Plan 2019 submitted by BIC and approved by the GB at the beginning of 2019, up to EUR 216 185 000 of additional activities were expected to be invested in 2019 by BIC's constituent entities. The certified values of IKAA will be provided by BIC for the final version of the AAR 2020.

The in-kind contributions are linked to those reflected in the IKAA plan over the same period and are certified by the independent external auditors in compliance with Article 4.4 of the Council Regulation.

The certified⁷⁴ IKAA provided by BIC for the year 2019 amounts to EUR 216,185,000⁷⁵. The certified additional investments by the end of 2019 reach a total of EUR 916,064,000. Below is the detailed breakdown of certified IKAA by year and its graphical evolution against target and projections:

| Year | Certified IKAA (in EUR) |
|--------------|--------------------------------|
| 2014-2015 | 291,482,000 |
| 2016 | 185,860,000 |
| 2017 | 186,247,000 |
| 2018 | 36,290,000 |
| 2019 | 216,185,000 (planned value) |
| TOTAL | 916,064,000 |

⁷³ According to the BBI Guidance for the implementation of in-kind contributions certificates are issued by independent external auditors.

⁷⁴ IKAA is certified by independent external auditors according to the IKAA guidance approved by the BBI JU Governing Board.

⁷⁵ This figure is the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members.

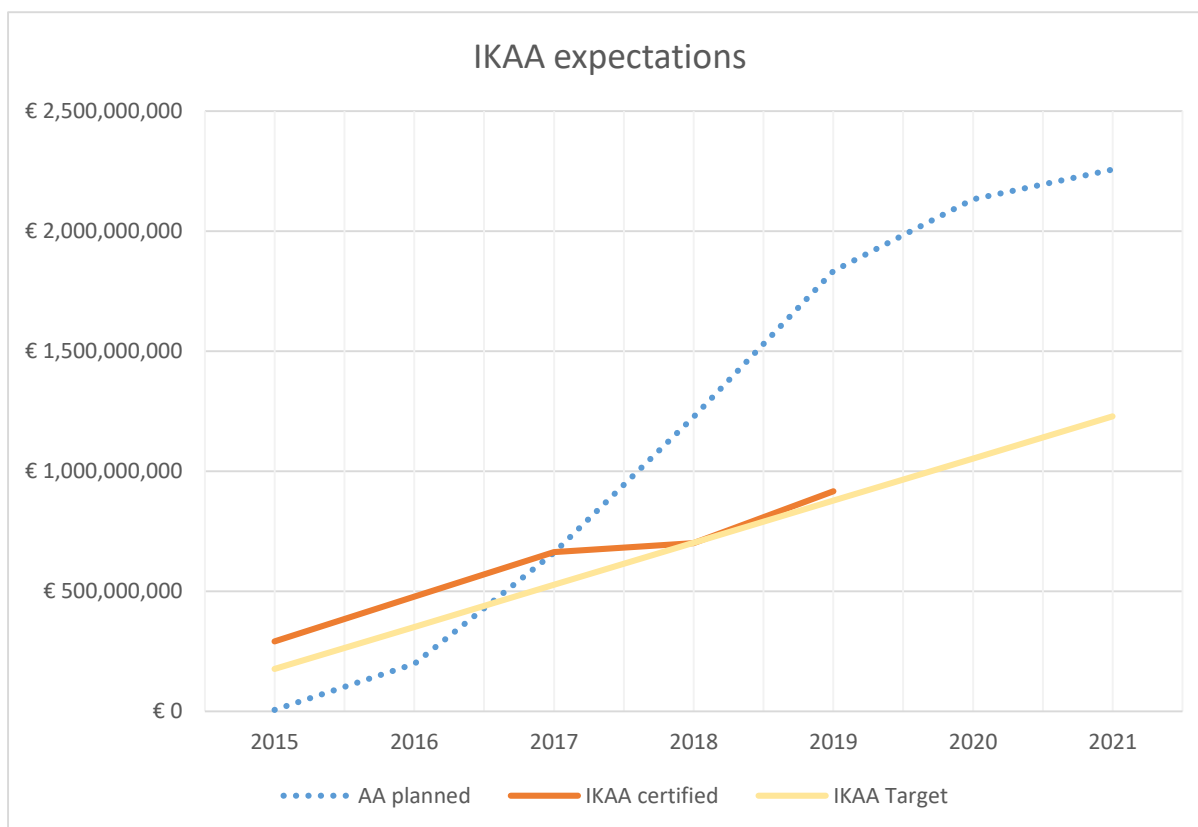


Figure 78: Value of planned additional activities, IKAA target and certified IKAA (2015-2019⁷⁶)

FINANCIAL CONTRIBUTION IN THE IMPLEMENTATION OF OPERATIONAL ACTIVITIES

The Council Regulation 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 2019, the financial contribution committed to 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 amount committed to (see table below).

After the Council Regulation has been amended, it has been possible for the members other than the Union and their constituent entities to have their financial contributions at project level counted towards the EUR 182.5 million target. However, in Call 2018, in spite of the additional eligibility condition in order to favour BIC commitments in the RIA

⁷⁶ This figure includes the planned value of IKAA for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC members.

B topics, BIC constituent entities committed to only EUR 400 000 in the retained proposals.

For this reason, the European Commission decided to address the shortcoming by reducing the EU contribution to the BBI JU for its final call in 2020. This decision will not endanger the achievement of the overall strategic objectives of the BBI JU Initiative by 2024, which are for the most part already well on track.

OVERALL INDUSTRY CONTRIBUTION TO THE BBI JU INITIATIVE

The total level of the contribution by BIC and its constituent entities at the end of 2019, remains below the expected values. The certified IKAA are at the expected level, committed IKOP is lower than the expected value, and the financial contribution is far below.

| Year | IKOP (EUR committed) | Financial contribution (EUR committed) | IKAA (EUR) | Total (EUR) |
|-------------------------------------------------------------|----------------------------|-------------------------------------------------|---------------------------|----------------|
| 2015 | 26,467,797 | | 291,482,000 | 317,949,797 |
| 2016 | 55,691,129 | 750,000 | 185,860,000 | 242,301,129 |
| 2017 | 47,875,173 | 500,000 | 186,247,000 | 234,622,173 |
| 2018 | 37,653,126 | 2,000,000 | 36,290,000 | 75,943,126 |
| 2019 | 36,036,228 | | 216,185,000 ⁷⁷ | 252,221,228 |
| Total | 203,723,453 | 3,250,000 | 916,064,000 | 1,123,037,453 |
| Percentage of the expected value by end of initiative | 27% | 2% | 54% | 45% |
| Expected value by end of initiative | 763,250,000 ⁷⁸ | 182,500,000 | 1,700,000,000 | 2,505,750,000 |

Table 17: financial contribution from Members other than the EU against objectives and indicative targets included in the basic act.

⁷⁷ This is the planned value for 2019: due to the COVID-19 outbreak, it was not possible to proceed with the certification of the IKAA from BIC

⁷⁸ The value of IKOP has been calculated as an indicative target

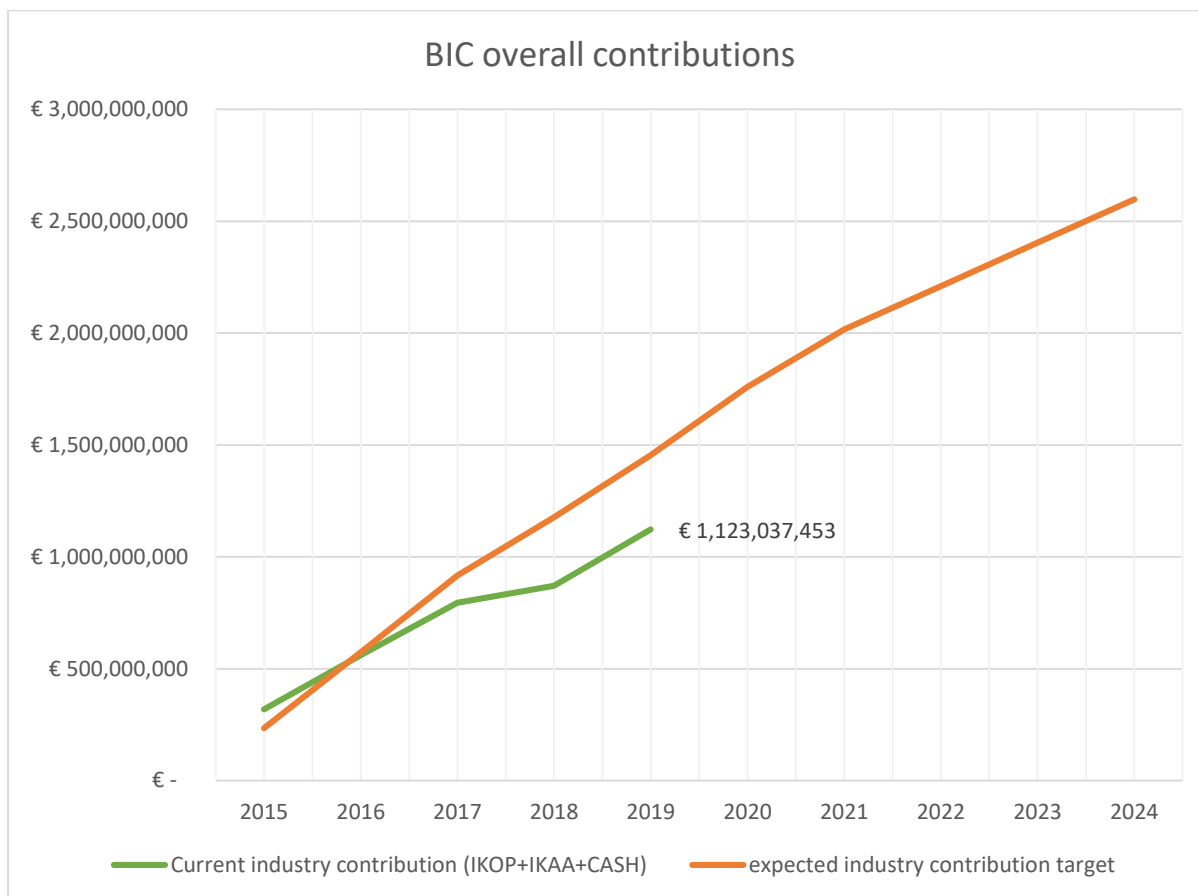


Figure 79: Total amount of contribution by BIC and its constituent entities to BBI JU (committed IKOP, committed financial contributions, certified IKAA)⁷⁹.

For the calculation of the related leverage effect, please refer to section 1.3.5. above.

⁷⁹ This graphs will be updated on the basis of the IKAA certificates received by May 2020



2

Support to operations

2.1. COMMUNICATION ACTIVITIES

Communication and stakeholder management activities during 2019 focused on consolidating the transition of BBI JU from recognition to reputation building. In particular, communication built on project achievements and impacts, with a specific focus on the scientific advancements and their market uptake potential. Different communication products contributed to the on-going campaign on the vision of the BBI JU programme and the BBI JU itself, highlighting its added value in the lives of EU citizens.

Similar to the previous year, the communication and stakeholder management strategy was carried out following the roadmap already developed in cooperation with BIC and the EU represented by the EC and aimed at achieving BBI JU's long-term communication goals.



The communication team and the Programme Unit ensured the presence of BBI JU in numerous high-level events and continued the production of strategic communication tools that facilitated the communication of the BBI JU activities to the wider public as well as key stakeholders.

BBI JU continued to exploit the following communication channels established during prior years, as presented in the following sections:

- press and other media;
- champions, multipliers and intermediaries;
- communication events;
- website & social media;
- public relations.

Priority actions

The Communication and Stakeholder Management Action Plan 2018 was carried out in five priority areas in order to successfully allow the transition of the communication activities from recognition to reputation building:

- Promote the BBI calls with a particular emphasis on underrepresented countries or macro-regions in synergy with other EU and BIC initiatives;
- Communicate about the results and achievements of BBI JU's completed projects, with a specific focus on the scientific advancements and the market uptake potential;
- Develop communication on the added value of the BBI Initiative in the daily lives of EU citizens, as specifically requested by several EU institutions;
- Organise in December 2019 the second BBI JU Stakeholder Forum keeping the successful format of 2017, with a specific focus on output, impact and benefits for the EU citizens;
- Consolidate the relationship built with priority stakeholders (institutional, governmental and NGOs) to reinforce and support their role as ambassadors.

Outreach activities

2.1.1. Promoting BBI JU Call 2019: BBI JU Info Day & Brokerage event 2019

The BBI JU Info Day and Brokerage event on the BBI Call 2019 took place on 12 April, keeping the format of the previous years. Alongside the main event in Brussels, which was also web-streamed, a social media campaign (Twitter and LinkedIn) was organised in order to further promote and disseminate information to potential applicants. Printed supporting material (2019 call brochure) was made available both during the day of the event and via the BBI JU dedicated webpage.

Over 700 participants coming from 37 different countries registered for the event in the European Commission's Charlemagne building, and there were 1 400 connections via live streaming. This year, 21% of participants came from SMEs, 19% from academic and higher education institutions, and another 15% came from non-profit research organisations.

In addition to informal networking during the breaks, BBI JU's brokerage event gave attendees a formal opportunity to expand their contacts by scheduling 820 face-to-face meetings from a total of 1 324 meeting requests, through the BBI JU Partnering Platform, allowing the participants to expand their professional networks and discuss potential collaborations.

In parallel to the plenary session and brokerage event, BBI JU invited six⁸⁰ organisations with shared links and synergies to host InfoBooths. These InfoBooths offered visibility to other important initiatives relevant and complementary to BBI JU's own funding activities. The social media campaign of the event potentially reached over 230 000 people in total and in detail:



Figure 71: Twitter activities during the BBI JU Info Day and Brokerage event for the promotion of the 2019 call

98% of participants were satisfied with the event, according to the participant survey.

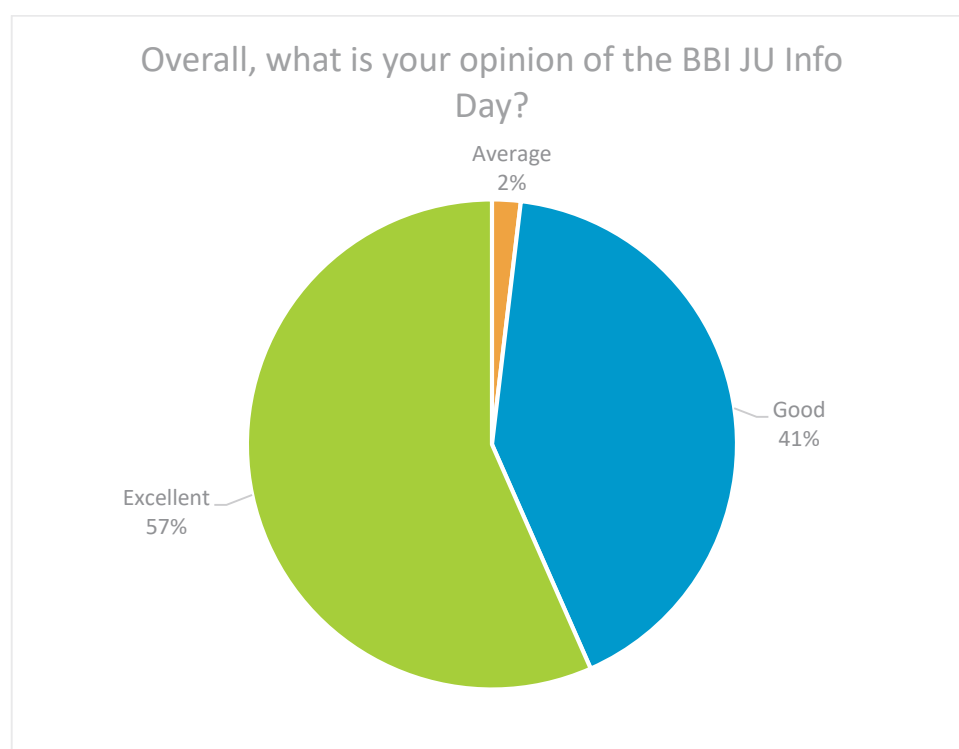


Figure 81: BBI JU Info Day 2019 satisfaction survey

Similarly to previous years, the promotion of the call was not limited to the BBI JU Info Day. The BBI JU Programme Office promoted the call to numerous external stakeholders, particularly - but not exclusively - during national info days. Dedicated information was also disseminated via the SRG, the SC and the NCPs network.

⁸⁰ Directorate-General for Environment, Blue Bioeconomy Forum DG MARE, Research Enquiry Service (RES), Executive Agency for SMEs (EASME), Bio-based Industries Consortium (BIC), BioHorizon National Contact Points (NCPs), and the Enterprise Europe Network (EEN)

14 national info days took place in EU MS and associated countries (two more than in 2018):

| National Info Days | |
|--------------------|----------------------------|
| Date | City, Country |
| 22 March 2019 | Łódź, Poland |
| 2 April 2019 | Kongens Lyngby, Denmark |
| 15 April 2019 | Riga, Latvia |
| 16 April 2019 | Vilnius, Lithuania |
| 25 April 2019 | Prague, Czech Republic |
| 29 April 2019 | Tel Aviv, Israel |
| 30 April 2019 | Germany (webinar) |
| 2 May 2019 | Manchester, United Kingdom |
| 10 May 2019 | Thessaloniki, Greece |
| 14 May 2019 | Rome, Italy |
| 22 May 2019 | Madrid, Spain |
| 22 May 2019 | Limerick, Ireland |
| 28 May 2019 | Lisbon, Portugal |
| 19 June 2019 | Gembloux, Belgium |

Table 18: Participation of BBI JU staff at National Info Days in 2019

2.1.2. Communicating the impact of BBI JU

In 2019, BBI JU paid particular attention to showcasing the impact of the bio-based products in the daily lives of the EU citizens. To this end, BBI JU organised and participated in 63 meetings, events and conferences. Figure 82 shows the map with the location of all the events that BBI JU attended throughout 2019. The colour code of the dots links the event with the communication objective. Annex 7.11 presents the whole list of events.



Figure 82: Map of meetings, events and conferences where BBI JU participated or organised in 2019

BBI JU STAKEHOLDER FORUM 2019

The BBI JU Stakeholder Forum took place on 3-4 December in Brussels at the Egg Congress and Meeting Centre with the aim of engaging with BBI JU's projects and stakeholders.

On 3 December, BBI JU welcomed its projects' representatives during a day dedicated to the exchange of ideas, finding potential areas of common interest and synergies, as well as networking.

Projects were grouped by thematic area – consumer products, food, feed & health products, intermediate products, aquatic biomass, waste as biomass, CSAs, Flagships and synergies. Representatives had the opportunity to talk about their work. Afterwards, participants attended different breakout sessions, where project representatives were invited to take the floor and make a pitch presentation of their activities.

On 4 December, the BBI JU welcomed nearly 600 participants for a conference with 30 speakers and expert panellists discussing the strategic importance of the bio-based economy in Europe and BBI JU's key role in implementing it.

Participants represented a wide range of industries and sectors, SMEs, academic and research organisations, local and national government, EU institutions, projects and the bio-based industries community as a whole.

The participant survey obtained very positive feedback regarding the content and the overall organisation of the event. It also mentioned some improvements as compared to the first BBI JU Stakeholder Forum in 2017.

BBI JU ran unpaid social media campaigns on Twitter and LinkedIn to promote the event in September and November. Articles in POLITICO.eu, POLITICO's newsletter EU Influence and ScienceBusiness featured the event.

The event's coverage on social media was a success, reaching 52 961 views on Twitter on 4 December 2019, BBI JU's record of impressions in one day. Moreover, the event's hashtag #BBISF19 was a trending topic in Belgium for most of the day. #bioeconomy and #biobased also appeared at the top of the trending topics in Belgium that day. On 2-5 December, BBI JU's messages were seen more than 115 000 times on Twitter, and more than 13 000 times on LinkedIn.

#BBIIMPACT CAMPAIGN

The campaign consisted of three waves: 8-18 July 9-27 September and 12-29 November. 24 videos and three images were created to illustrate 185 messages on Twitter and 38 posts on LinkedIn. The waves in September and November also included messages promoting the BBI JU Stakeholder Forum 2019. None of the campaign's material was paid; a network of multipliers supported the promotion.

On Twitter, the messages generated more than 570 000 views, 2 400 likes, 1 200 retweets and 28 600 video views. On average they received 33% more likes and 42% more retweets than regular messages. The two most-viewed messages reached 35 000 and 28 000 views respectively, while many posts reached 10 000 impressions.

On LinkedIn, the #BBIimpact campaign generated 55 000 views, 1 000 likes, 190 shares and 1 500 link and user clicks. The messages on this social network also outperformed the average messages not related to the campaign: 44% more likes, 80% more shares and 40% more views per post. The two most-viewed messages on LinkedIn reached 3 100 and 2300 views each.

The campaign communicating about the achievements and impact of BBI JU also included articles in four different outlets: POLITICO.eu⁸¹ (over 320 000 views),

⁸¹ <https://www.politico.eu/sponsored-content/high-impact-bio-based-initiative-for-a-circular-europe/>

ScienceBusiness⁸² (180 reads), [Parliament Magazine](#)⁸³ and BioMarketInsights that featured a [first article](#)⁸⁴ about BBI JU impact, a [second](#)⁸⁵ about the models of circular economy that BBI JU is helping to build, a [third article](#)⁸⁶ focused on our projects developing the blue bioeconomy and a [fourth](#)⁸⁷ about the high number of SMEs participating in the BBI JU programme. The four stories in BioMarketInsights combined generated more than 6,000 views.

Publications and videos

BBI JU's publications in 2019 focused on tangible impact and the results of the BBI JU projects.

BBI JU 2014 – 2019. ACHIEVEMENTS OF A HIGH-IMPACT INITIATIVE FOR THE BIOECONOMY IN EUROPE

This brochure was widely disseminated to all EU-level policymakers and stakeholders and will be used as a reference document in the coming years. It was also the basis for the #BBlimpact campaign on social media.

OTHER PUBLICATIONS, STUDIES, ARTICLES AND VIDEOS

Besides the yearly call brochure, in 2019 the Programme Office published brochures focusing on the Call 2019 and BBI JU projects portfolio. Moreover, BBI JU published three thematic studies during this year.

| BBI JU Publications 2019 | |
|--------------------------|------|
| Title | Link |

⁸² <https://sciencebusiness.net/sponsored-report/achievements-high-impact-initiative-circular-europe>

⁸³ <http://library.myebook.com/theparliament/the-parliament-magazine-issue-501-23-september-2019-1/1993/#page/27>

⁸⁴ <https://biomarketinsights.com/project-focus-how-bbi-ju-has-built-the-model-for-the-successful-expansion-of-europes-growing-bioeconomy/>

⁸⁵ <https://biomarketinsights.com/project-focus-how-bbi-ju-is-helping-businesses-to-repurpose-waste-to-drive-new-circular-economic-models/>

⁸⁶ <https://biomarketinsights.com/meet-three-european-pioneers-leading-the-blue-bioeconomy-revolution/>

⁸⁷ <https://biomarketinsights.com/project-focus-how-the-bbi-ju-empowers-smes-across-europe-to-innovate-and-grow/>

| | |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contribution of the BBI JU's projects to the Sustainable Development Goals | https://www.bbi-europe.eu/sites/default/files/media/bbi-ju-contribution-to-sdgs.pdf |
| The BBI JU SME landscape: driving impact and innovation | https://www.bbi-europe.eu/sites/default/files/media/bbiju-sme-landscape.pdf |
| Study on the participation of the agricultural sector in the BBI JU | https://www.bbi-europe.eu/sites/default/files/media/Action%20Plan%20and%20Study%20Primary%20Sector_publication.pdf |
| Call for proposals 2019 brochure | https://www.bbi-europe.eu/sites/default/files/media/bbi-ju-call-for-proposals-2019.pdf |
| BBI JU projects brochure | https://www.bbi-europe.eu/sites/default/files/media/bbiju-projects-2019.pdf |
| BBI JU 2014-2019. Achievements of a high-impact initiative for the bioeconomy in Europe | https://www.bbi-europe.eu/sites/default/files/media/bbi-ju-high-impact-initiative.pdf |

Table 19: BBI JU Publications in 2019

| Commissioned articles and publications 2019 | |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Title, Publication | Link |
| Project focus: How BBI JU has built the model for the successful expansion of Europe's growing bioeconomy. Bio Market Insights | https://biomarketinsights.com/project-focus-how-bbi-ju-has-built-the-model-for-the-successful-expansion-of-europes-growing-bioeconomy/ |
| High-impact bio-based initiative for a circular Europe POLITICO Europe | https://www.politico.eu/sponsored-content/high-impact-bio-based-initiative-for-a-circular-europe/ |
| BBI JU 2014-2019: achievements of a high-impact initiative for the bioeconomy in Europe Parliament Magazine | http://library.myebook.com/theparliament/the-parliament-magazine-issue-501-23-september-2019-1/1993/#page/27 |

| | |
|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Achievements of a high-impact initiative for a circular Europe SciencenBusiness | https://sciencebusiness.net/sponsored-report/achievements-high-impact-initiative-circular-europe |
| Project focus: How BBI JU is helping businesses to repurpose waste to drive new circular economic models. Bio Market Insights | https://biomarketinsights.com/project-focus-how-bbi-ju-is-helping-businesses-to-repurpose-waste-to-drive-new-circular-economic-models/ |
| Meet three European pioneers leading the blue bioeconomy revolution. Bio Market Insights | https://biomarketinsights.com/meet-three-european-pioneers-leading-the-blue-bioeconomy-revolution/ |
| Project focus: How the BBI JU empowers SMEs across Europe to innovate and grow. Bio Market Insights | https://biomarketinsights.com/project-focus-how-the-bbi-ju-empowers-smes-across-europe-to-innovate-and-grow/ |

Table 20: Commissioned articles and publications in 2019

In addition to publications, BBI JU continued the development of videos presenting the BBI JU impact and the Stakeholder Forum 2019 (Table 21).

| | |
|---------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Videos published in 2019 | <p>24 short videos for the #BBlimpact campaign videos on expected socio-economic and environmental impact; key figures; geographical distribution; results vs. KPIs; and, types of projects</p> <p>15 videos for the BBI JU Stakeholder Forum 2019 promotion of the registration, the sessions and exhibition</p> <p>BBI JU Stakeholder Forum 2019 highlights</p> <p>Synergy labels: a catalyst for additional funding opportunities, recording of the session during the R&I Days</p> |
| Videos initiated in 2019 (to be published in 2020) | <p>BBI JU animated video</p> <p>BBI JU Stakeholder Forum 2019 short interviews</p> |

Table 21: Videos developed and published in 2019

Website, media monitoring, social media and e-newsletter

BBI JU WEBSITE

The BBI JU [website](#) continued to be the key reference point for BBI JU's activities. In 2019, 157 000 (+30% compared to 2018) and 91 000 unique visitors (+51% compared to 2018) accessed the website, generating total traffic of 693 000 page views (+116% compared to 2018). The most visited page, besides the home page, was on the calls, followed by the page about the BBI JU projects. It is noteworthy that the majority of visitors arrived on the website firstly via organic search, secondly via direct search, and thirdly via referral from third websites. As expected, peaks in the online activity were notable during key BBI JU events such as the Info Day and after the Stakeholder Forum 2019.

Belgium, Italy, Spain, France, Germany, the UK and the US were the countries from which we received most visits. There was an 89% increase of visitors from the US, which demonstrates a growing interest in BBI JU's activities overseas.

During 2019, the website was updated with a new [Success Stories](#) section featuring achievements of BBI JU projects. It has received more than 3 000 views since it was launched in April. The [BBI in the media](#) webpage was added to the News section attracting over 200 visitors since it was created in June. Finally, the project pages have been improved with a Project achievements & milestones section showcasing relevant project results.

A website user satisfaction survey of 100 BBI JU stakeholders was carried out in 2019. Its results show positive feedback, scoring 3.7 on the scale of 5. Most of the users agreed that the website is readable and contains the information they need. The survey results will feed into the website revamp project in 2020.

MEDIA MONITORING

During 2019, BBI JU started using the Europe Media Monitor by the Joint Research Centre to track the mentions on both BBI JU and its projects in the digital media. Initially, the tool has been set up to look for mentions in English. The set-up of the tool in other languages has also started.

The results of the monitoring tool have been used for internal control and reports, creation of content on social media and the 'BBI in the media' webpage.

LINKEDIN CORPORATE PAGE & GROUP

BBI JU's increased the frequency of publication of news, events and stories in the BBI JU LinkedIn profile and group, providing an open forum for discussion and dissemination. The LinkedIn profile page and group were also two of the channels used to promote the 2018 call and open vacancies.

Currently, the BBI JU profile has over 3 000 followers, which means an increase of more than 1 900 followers in 2019. The geographical spread of our followers improved from last year, even though the area of Brussels is still the most represented:

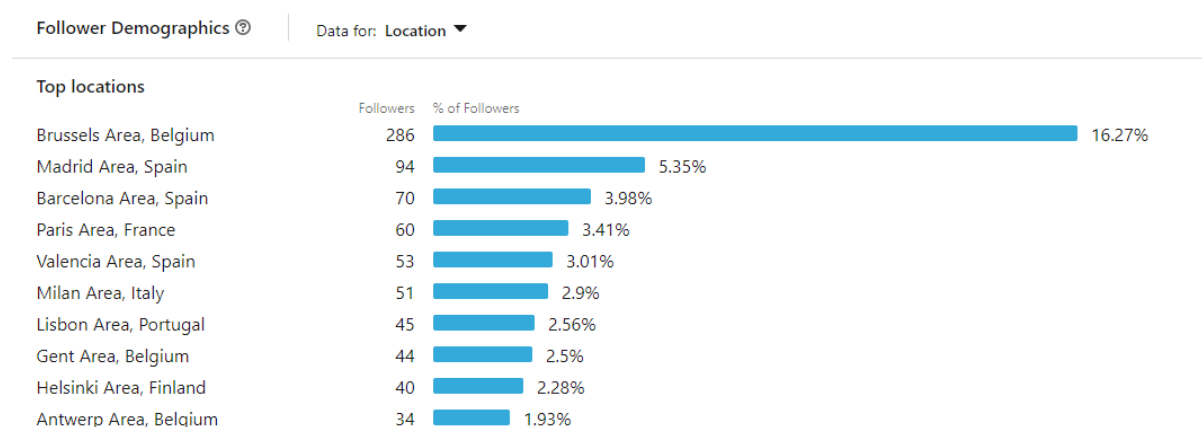


Figure 83: BBI JU LinkedIn followers' locations

In 2019, BBI JU LinkedIn profile posts reached more than 236 000 views, which means 12 times more views than in 2018. The growth in traffic and followership during the years proved the effectiveness of the growth strategy on LinkedIn based on the increasing publication of relevant messages for the bio-based community.

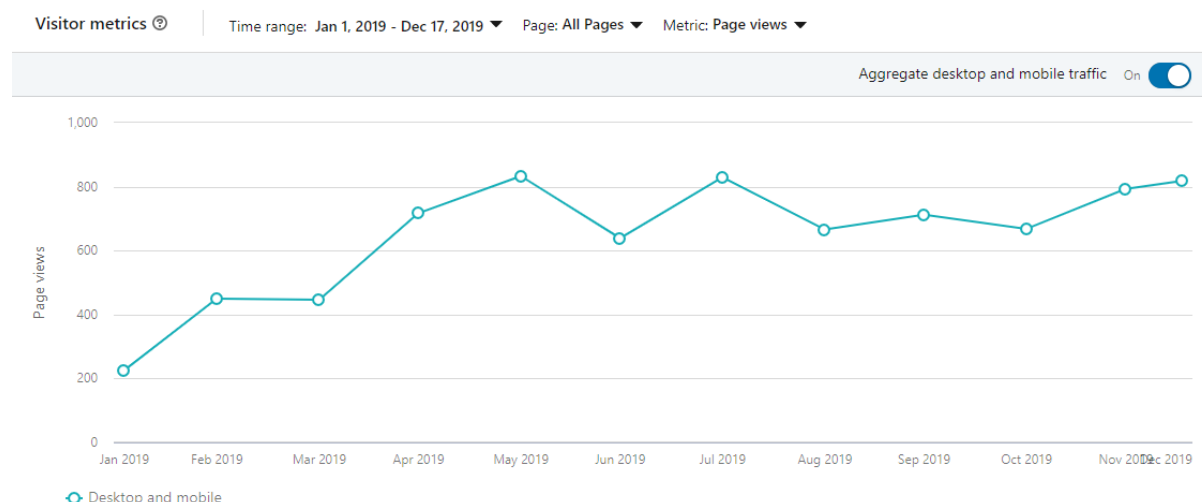


Figure 84: BBI JU LinkedIn visitor metrics

TWITTER

Following the 2018 trend, the BBI JU [Twitter](#) followers base continued growing in 2019, reaching 5 000 in December 2019, a 42% increase compared to 2018.

@BBI2020 posted 661 original tweets in addition to several retweets, which resulted in more than 2 444 100 views, a 65% increase compared to 2018. BBI JU Twitter account received 4 329 retweets (an 86% increase from 2018). This number represents a very significant increase in engagement on this social network.

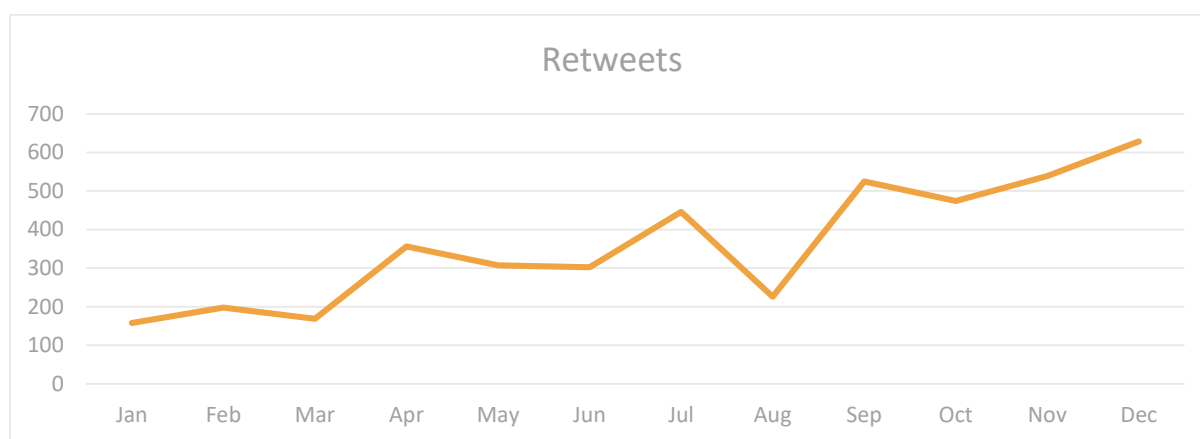


Figure 85: Number of BBI JU Twitter posts retweeted by the account followers

Many original videos have been produced to be posted on social media, for the first time, leading to increased engagement and followership, which shows the usefulness of this content strategy.

As expected, there were peaks in BBI JU's Twitter activity around the Info Day 2019 and the BBI JU Stakeholder Forum 2019, as well as during other relevant events (i.e. EU R&I Days 2019 and EFIB 2019).

YOUTUBE

The BBI JU YouTube account has reached 164 subscribers and registered more than 4 400 video views in 2019. The [playlist](#) dedicated to the BBI JU projects has been regularly updated and now 47 project videos are included in it. Another [playlist](#) was created to add all the videos related to the BBI JU Stakeholder Forum 2019, which will be updated to include all the videos produced during the event.

NEWSLETTER

The BBI JU e-newsletter includes information about BBI JU news and activities, highlights from its projects, new publications, upcoming events and articles. 13 messages were sent in 2019 reaching 3 000 subscribers.

The average open rate of the newsletters is 27.5% and the countries with the highest numbers of subscribers are Belgium (9.8%), Spain (9.1%), Italy (6.9%) and Germany (6.2%).

2.2. LEGAL AND FINANCIAL FRAMEWORK

BBI JU is a Joint Undertaking within the meaning of Article 187 of the Treaty on the Functioning of the European Union, set up by the Council Regulation (EC) No 560/2014 of 6 May 2014.

On 13 March 2019 the Commission adopted the Model Financial Regulation⁸⁸ (MFR) for public-private partnership bodies (PPP bodies) falling under Article 71 of the Financial Regulation 2018.

In line with Article 60(2) of the MFR 2019, BBI JU revised its financial rules to ensure compliance with this Regulation and requested derogations and clarifications when pertinent. The derogations were not granted by DG BUDG and the new financial rules were adopted at the Governing Board meeting of 12 December 2019. They entered into force on 1 January 2020, applying to the calls for proposals published in 2020 onwards.

⁸⁸ Commission Delegated Regulation 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, C(2019)1875.

2.3. BUDGETARY AND FINANCIAL MANAGEMENT

OVERVIEW

The Governing Board adopted the original 2019 budget for the BBI JU for the global amount of EUR 141 297 325 in commitment appropriations (CA) and EUR 199 241 275 in payment appropriations (PA) in December 2018. In March 2019, the budget was amended in order to (i) enter the unused CA and PA of administrative expenditure in the estimate of revenue and expenditure of up to the following three financial years, and to (ii) to reduce the PA amount of the operational expenditure. The amended budget amounted to EUR 141 624 199 million in CA and EUR 182 113 587 million in PA.

The overall budget implementation of the total BBI 2019 budget was very good, 87% in CA and 76% in PA.

The management of BBI JU's 2019 administrative budget was characterised by the fact that it was half constituted by appropriations related to the budget year and half by unused appropriations from previous years.

In contrast to 2018, the BBI JU administrative budget included a relatively large surplus of unused budget from prior years (mainly 2017 and 2018). Of these unused appropriations, amounting to EUR 3 022 640 in administrative CA as well as EUR 25 486 657 in operational and EUR 3 081 421 in administrative PA, part were reactivated in the original voted budget and part via an amendment to the annual work plan and budget in March 2019. These reactivated appropriations were consumed in priority in line with BBI's Financial Rules art. 6(5), and reached almost 100% consumption by year end.

At the end of 2019, there was a surplus of unused CA and PA of around kEUR 494 in administrative CA and EUR 1.3 million in administrative PA as well as around EUR 17 million in operational CA and EUR 43 million in operational PA. A Governing Board decision was taken at the end of 2019 to reactivate EUR 1 million in administrative CA and EUR 1.2 million in administrative PA (both from 2018) as well as EUR 20.4 million in operational CA and EUR 28.8 million in operational PA in the 2020 budget. The operational CA include EUR 13.4 million from 2017 and 2018 and the operational PA EUR 7.8 million from 2018. Further reactivations (covering 2018 and 2019 surpluses) are to be envisaged in 2020 via a budgetary amendment.

| Statement of Revenue | Voted budget 2019 | | Amended budget 2019 | |
|---------------------------------------------------------------------------------|------------------------------------|---------------------------------|------------------------------------|---------------------------------|
| Heading | Commitment appropriations (in EUR) | Payment appropriations (in EUR) | Commitment appropriations (in EUR) | Payment appropriations (in EUR) |
| EU contribution excl. EFTA | 133 608 895 | 163 833 500 | 133 608 895 | 145 833 500 |
| Of which Administrative ⁸⁹ | 1 184 579 | 1 184 579 | 1 184 579 | 1 184 579 |
| Other administrative revenue ⁹⁰ | 5 234 | 5 234 | 5 234 | 5 234 |
| Of which Operational | 132 424 316 | 162 648 921 | 132 424 316 | 144 648 921 |
| EFTA | 3 479 892 | 4 199 237 | 3 479 892 | 4 199 237 |
| Of which Administrative | 28 193 | 28 193 | 28 193 | 28 193 |
| Of which administrative third countries excluding EFTA | 300 000 | 300 000 | 300 000 | 300 000 |
| Of which Operational | 3 151 699 | 3 871 044 | 3 151 699 | 3 871 044 |
| Industry financial (cash) contribution | 1 512 772 | 3 512 772 | 1 512 772 | 3 512 772 |
| Of which Administrative | 1 512 772 | 1 512 772 | 1 512 772 | 1 512 772 |
| Of which Operational | 0 | 2 000 000 | 0 | 2 000 000 |
| SUB-TOTAL REVENUES | 138 606 793 | 171 550 743 | 138 606 793 | 153 550 743 |
| C2 reactivation of unused appropriations from administrative expenditure | 2 695 766 | 2 695 766 | 3 022 640 | 3 081 421 |

89 Received EUR 514 632 inc. EFTA and admin third countries excl. EFTA - net of EUR 998 140 retained by the EC for the REA payment of expert-evaluators of BBI JU's 20198 Call. Of the retained amount, EUR 955 000 was informed as being executed by REA as of beginning 2020.

90 This figure relates to the recovery by BBI, from the other JUs, of costs relating to the inter-joint undertakings' procedure for Confidential Counsellors, in 2019. It was used to boost the budget line for telecommunications (chapter 24)

| | | | | |
|-----------------------------------------------------------------------|--------------------|--------------------|--------------------|--------------------|
| Of which from 2017 | 2 395 766 | 2 395 766 | 2 564 292 | 2 781 421 |
| Of which from 2018 | 300 000 | 300 000 | 458 348 | 300 000 |
| C2 reactivation of unused appropriations from operational expenditure | 0 | 25 000 000 | 0 | 25 486 657 |
| Of which from 2017 | 0 | 0 | 0 | 0 |
| Of which from 2018 | 0 | 25 000 000 | 0 | 25 486 657 |
| SUB-TOTAL REACTIVATIONS | 2 695 766 | 27 695 766 | 3 022 640 | 28 568 078 |
| GRAND TOTAL | 141 302 559 | 199 246 509 | 141 629 433 | 182 118 821 |

Table 22: BBI JU 2019 budget – Statement of Revenue.

| Statement of Expenditure (Commitment appropriations) | Amended budget 2019 (AWP) | Amended budget 2019 after transfers | Executed Budget 2019 | % | Carry over to 2020 (C8) | Available for future use (N+3 rule) (C2) |
|-----------------------------------------------------------|---------------------------------|----------------------------------------------|----------------------------|---------------|----------------------------|---------------------------------------------------|
| Title 1 - Staff expenditure | 3 053 852 | 3 053 852 | 2 787 833 | 91.30% | 255 812 | 266 020 |
| 11 Salaries & allowances | 2 611 934 | 2 611 695 | 2 454 464 | 93.98% | 171 432 | 157 232 |
| 12 Expenditure relating to Staff recruitment | 107 508 | 105 508 | 10 906 | 10.40% | 5 000 | 94 602 |
| 13 Mission expenses | 71 025 | 73 026 | 73 026 | 100.00% | 7 154 | 0 |
| 14 Socio-medical infrastructure (incl. training) | 246 953 | 246 953 | 232 767 | 94.26% | 69 588 | 14 186 |
| 15 Receptions, events and representation | 16 432 | 16 670 | 16 670 | 100.00% | 2 638 | 0 |
| Title 2 - Infrastructure and operating expenditure | 2 999 566 | 2 998 714 | 2 770 969 | 92.41% | 816 544 | 227 745 |
| 20 Rental of buildings and associated costs | 318 974 | 326 588 | 314 087 | 96.17% | 10 023 | 12 501 |
| 21 Information, communication technology and data | 254 721 | 306 493 | 293 221 | 95.67% | 108 970 | 13 272 |
| 22 Movable property and associated costs | 5,000 | 5 000 | 4 172 | 83.40% | 0 | 828 |
| 23 Current administrative expenditure | 38 347 | 22 245 | 21 155 | 95.10% | 6 239 | 1 090 |
| 24 Postage / Telecommunications | 22 755 | 22 686 | 20 225 | 89.15% | 6 737 | 2 461 |
| 25 Expenditure on formal meetings | 160 104 | 118 899 | 43 821 | 36.85% | 1 500 | 75 079 |
| 26 External communication information and publishing | 853 210 | 797 207 | 733 155 | 91.97% | 588 101 | 64 052 |

| | | | | | | |
|----------------------------------------------------|--------------------|--------------------|--------------------|---------------|--------------------|-------------------|
| 27 Service contracts | 155 000 | 155 000 | 96 538 | 62.28% | 24 120 | 58 462 |
| 28 Experts contracts and evaluations ⁹¹ | 900 000 | 998 140 | 998 140 | 100.00% | 0 | 0 |
| 29 Expert reviewers | 291 455 | 246 455 | 246 455 | 100.00% | 70 854 | 0 |
| Title 3 - Operational expenditure | 135 576 015 | 135 576 867 | 118 229 682 | 87.20% | 0 | 0 |
| 30 Previous years' Calls | | | | | 197 442 860 | 20 443 582 |
| 31 Current year's Call | 135 576 015 | 135 576 867 | 118 229 682 | 87.20% | 139 145 888 | 17 347 185 |
| TOTAL | 141 629 433 | 141 629 433 | 123 788 484 | 87.40% | 337 661 104 | 38 284 532 |

Table 23: BBI JU 2019 budget – Statement of Expenditure (commitment appropriations).

⁹¹ For chapter 28, the commitment of EUR 998 140 relates to the total amount retained by RTD (from its contribution to the administrative expenditure of the BBI JU) and co-delegated to the REA for its contracting and payment of the expert-evaluators of BBI's 2019 call for proposals. The most recent estimate of the payment execution on this commitment was only notified by the REA in early January and amounts to around EUR 955 000. Taking this into account, the execution of the chapter becomes 95.68%, the total Title 2 % is 90.97% and the overall execution is reduced to 87.37%.

| Statement of Expenditure | Amended Budget 2019 | Amended budget 2019 after transfers | Executed Budget 2019 | % | Available for future use (N+3 rule) (C2) |
|--------------------------------------------------------------|---------------------|-------------------------------------|----------------------|---------------|------------------------------------------|
| (Payment appropriations) | | | | | |
| Title 1 - Staff expenditure | 3 154 012 | 3 154 012 | 2 575 348 | 81.65% | 578 664 |
| 11 Salaries & allowances | 2 758 350 | 2 739 113 | 2 294 334 | 83.76% | 444 779 |
| 12 Expenditure relating to Staff recruitment | 92 471 | 92 471 | 5 986 | 32.29% | 86 485 |
| 13 Mission expenses | 60 000 | 70 000 | 67 490 | 96.41% | 2 510 |
| 14 Socio-medical infrastructure (incl. training) | 233 191 | 237 691 | 193 505 | 81.41% | 44 186 |
| 15 Receptions, events and representation | 10,000 | 14 737 | 14 033 | 95.22% | 704 |
| Title 2 - Infrastructure and operating expenditure | 2 958 187 | 2 957 335 | 2 175 051 | 73.55% | 782 284 |
| 20 Rental of buildings and associated costs | 316 184 | 327 131 | 312 373 | 95.49% | 14 758 |
| 21 Information, communication technology and data processing | 256 369 | 298 055 | 249 428 | 83.62% | 48 627 |
| 22 Movable property and associated costs | 11 319 | 10 820 | 7 329 | 67.74% | 3 491 |
| 23 Current administrative expenditure | 40 620 | 40 658 | 29 698 | 65.66% | 10 960 |
| 24 Postage / Telecommunications | 20 034 | 20 054 | 19 181 | 95.65% | 873 |
| 25 Expenditure on formal meetings | 113,000 | 101 553 | 43 560 | 42.89% | 57 993 |
| 26 External communication information and publishing | 838 572 | 748 834 | 174 480 | 23.30% | 574 354 |

| | | | | | |
|----------------------------------------------------|--------------------|--------------------|--------------------|---------------|-------------------|
| 27 Service Contracts | 155 000 | 155 000 | 124 918 | 80.59% | 30 082 |
| 28 Experts contracts and evaluations ⁹² | 900 000 | 998 140 | 998 140 | 100.00% | 0 |
| 29 Expert reviewers | 307 089 | 257 090 | 215 944 | 84.00% | 41 146 |
| Title 3 - Operational expenditure | 176 006 622 | 176 007 474 | 133 417 722 | 75.80% | 42 589 752 |
| 30 Previous years' Calls | 176 006 622 | 176 007 474 | 133 417 722 | 75.80% | 42 589 752 |
| TOTAL | 182 118 821 | 182 118 821 | 138 168 121 | 75.87% | 43 950 700 |

Table 24: BBI JU 2019 budget – Statement of Expenditure (payment appropriations).

⁹² See note 58 to the commitment appropriations table. Per late communication from REA the payment execution was EUR 707,735. This would make the execution of the budget line 68.90%, of the total Title 2, 62.71% and of the overall total, 70.55%

ADMINISTRATIVE COSTS

The total consumption of the (amended) administrative budget was 92% in CA and 78% in PA.

Title 1: Staff related costs such as salaries, other staff costs and missions showed a strong execution in CA (94%, 90% and 100% respectively) representing a significant amount of around EUR 2.8 million. Overall the execution of CA in Title 1 is 91% and in PA 82% of the amended administrative budget.

Title 2: The infrastructure budget achieved an execution of 92% in the CA of the amended 2019 budget. Communication, building costs and contracting of experts incurred the highest costs in 2019, amounting to EUR 733k, EUR 314k and EUR 998k respectively. The budget related to the evaluators' contracting and payment was executed by the Research Executive Agency on behalf of BBI JU.⁹³ Underspensing was recorded for formal meetings (37%), for which the reimbursements were much lower than anticipated and studies/consultancy (62%) for which a large amount was budgeted for a study, and the actual costs was half the forecast amount. The overall PA consumption in Title 2 is 74% of the amended 2019 budget. The following graph of the voted budget over the last three years demonstrates a clear progression in consumption levels, confirming also a more accurate budgeting process.

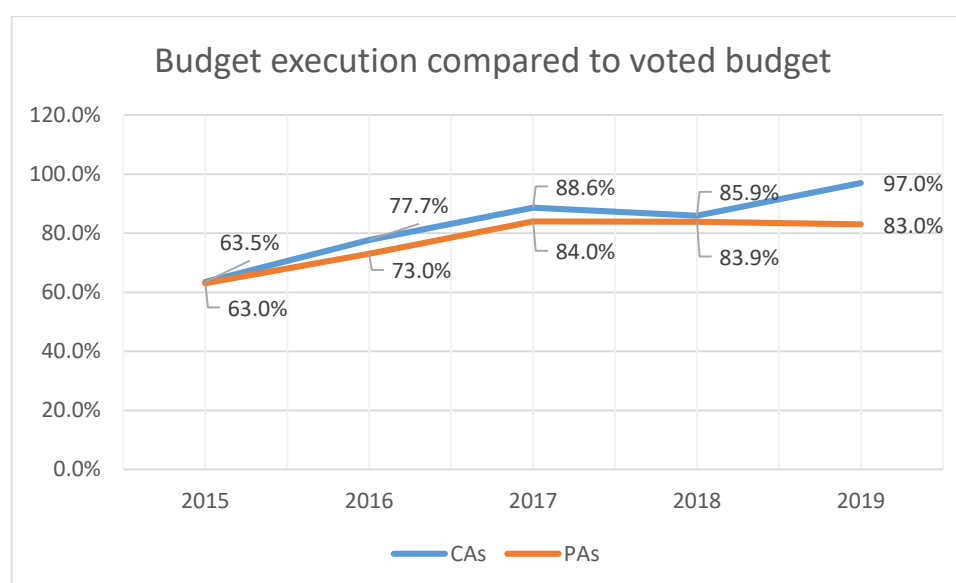


Figure 86: budgetary consumption against the voted budget (2015-2019).

In terms of the time to pay on the administrative budget, the Programme Office executed 836 payments of which 91% were within the time limit. An analysis of the delayed payments has been carried out and most of them are due to the learning curve of newcomers; a corrective action has been put in place and in the second part of the year, the delays decreased dramatically. The average time to pay on these transactions was 17.3 days, against a target of 30 days, showing some progress compared to the previous year.

OPERATIONAL COSTS

⁹³ EUR 998 140 was committed by the REA in 2019, transferred by the EC on behalf of BBI JU for the management and payment of the BBI JU experts-evaluators for its Call for proposals 2019. The provisional execution to date of these appropriations was notified by REA in mid-January 2019, is EUR 945 082 with further payments possibly due.

Concerning the CA of the operational budget, the Programme Office concluded 19 grant agreements from Call 2018 for a total grant value of EUR 102 881 595 resulting in a 89% execution of CA envisaged for this Call (EUR 115 597 298).

The 2019 call was committed for EUR 118 229 682. The evaluation was successfully concluded by the end of 2019, resulting in a potential consumption of 87% if all grants are signed in 2020.

In respect of the PA, the Programme Office achieved a 76% execution of the 2019 budget, with pre-financing payments for the grants of Call 2018 together with payments of periodic reports for grants from the previous BBI JU Calls. The execution progressed compared to the previous year despite delays with some periodic reports and the amounts of certain cost claims being below the anticipated level.

19 pre-financings were paid for a total amount of EUR 82 305 276. The pre-financing rates were increased to 80% of the maximum grant amount in order to maximise the budget execution and utilise the large cash surplus remaining at year end.

Regarding the payment of the periodic reports, BBI JU Programme Office dealt with 44 periodic reports claiming a total contribution of EUR 70 429 265, which led to 43 payments in 2019 for a total of EUR 51 111 593.

Additional information is available under section 1.6 Operational budget execution.

2.4. PROCUREMENT AND CONTRACTS

In 2019, BBI JU continued its policy of 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 contracts jointly managed with the other JUs present in the White Atrium, namely for common IT services and for the hiring of interim staff.

In addition, throughout 2019, BBI JU used Service Level Agreements (SLAs) in force with the European Commission for purchasing supplies and services, notably through OIB and DG HR.

Several other contracts were concluded for less than EUR 15 000 each, while the following table shows contracts concluded in 2019 for single amounts higher than EUR 15 000:

| Contractor | Framework contract Y/N | Tender procedure | Subject of the contract | Signature date | Amount (in EUR) |
|----------------|------------------------|-------------------------------------------------------|------------------------------------|----------------|------------------------------------|
| PharmaABC | N | Negotiated procedure with three contractors | Partnering Platform | 01/03/2017 | 15,000 |
| Start People | Y | Various specific contracts under a framework contract | Interim Staff | various | 78986 |
| Randstad | Y | Various specific contracts under a framework contract | Interim Staff | various | 212,883 |
| PKF Littlejohn | Y | Specific contract under framework contract | Audit of BBI JU accounts 2018-2019 | 13/12/2018 | 31,500 paid in 2018 (Total 52,500) |

| | | | | | |
|----------------------------|---|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|---------|
| Innovarum (Eurizon S.L) | N | Negotiated procedure with three contractors | Study on the participation of the Agricultural Sector in the BBI JU: business models, challenges and recommendation s to enhance the impact on rural development | 22/03/2019 | 92,038 |
| VO event | Y | Specific contract under framework contract | Venue and Organisation BBI JU Stake Holder Forum 2019 | 15/05/2019 | 390,220 |

Table 25: Contracts over EUR 15 000 made in 2019.

2.5. IT AND LOGISTICS

IT TOOLS

In 2019 the Programme Office implemented the European Commission's mission management tool 'MIPS', as well as the online booking tool 'NEO', with the aim of having comprehensive and efficient tools supporting business travel, in line with the European Commission's standards and regulations.

The BBI JU also implemented the European Commission's e-Invoicing solution. This platform enables suppliers to submit electronic invoices in a secure and reliable way. The system is also linked with the financial tool, reducing the work of the team to encode the invoices, helps respect deadlines imposed by the Financial Regulations and also eliminates the risk of human error.

ICT INFRASTRUCTURE

Two meeting rooms were equipped with a high-quality audio-visual and conferencing platform. This flexible system permits the joining/merging of meeting spaces. New projectors and portable monitors, wireless conference devices were also added. The new facilities have been very well appreciated and extensively used. It has resulted in a big reduction in the cost and disruption of frequently renting such equipment. The project has been such a success that a new upgrade is already planned to extend the system to the other meeting rooms.

The BBI JU and the other JUs located in the White Atrium building have launched a project to renew the now obsolete and out-of-support wired and wireless network infrastructure currently installed in the building. In the last quarter of 2019, the orders were signed with the aim of having the new system operational by the end of the Easter holidays. The new platform will facilitate a smoother user experience both for staff members and visitors, while improving the security of the overall ICT infrastructure.

LOGISTICS

Thanks to the good collaboration established with the Commission services, the Programme Office increased the use of tools and services provided by the Office for Infrastructure and Logistics (OIB). Following the trend established in 2017, the Programme Office also used a greater number of corporate framework contracts for example for office supplies, catering and furniture.

2.6. HUMAN RESOURCES

STAFF AND RECRUITMENT

By the end of 2019, the BBI JU Programme Office comprised 22 staff members. Two recruitment procedures were launched in 2019 for the post of Financial Assistant (CA) and for the post of Assistant Call Coordinator (TA).

The BBI JU Programme Office was reinforced with one Communication Officer (TA) and two Financial Assistants in 2019. In addition, following the resignation of three staff members, candidates for the position of Communication officer (TA), Assistant Call Coordinator (TA) and Project Officer (CA) were appointed at the end of 2019 and will take up their duties in the first quarter of 2020.

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

BBI JU also gave the opportunity to two trainees to acquire a first-hand experience in the BBI 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 BBI JU. One trainee joined the Programme Unit for a period of 6 months and another one joined the Communication team for a period of 6 months.

The two graphs below show both the gender and geographical balance within BBI JU on 31/12/2019. The Programme Office pays attention to ensuring the widest representation of EU countries among its staff.

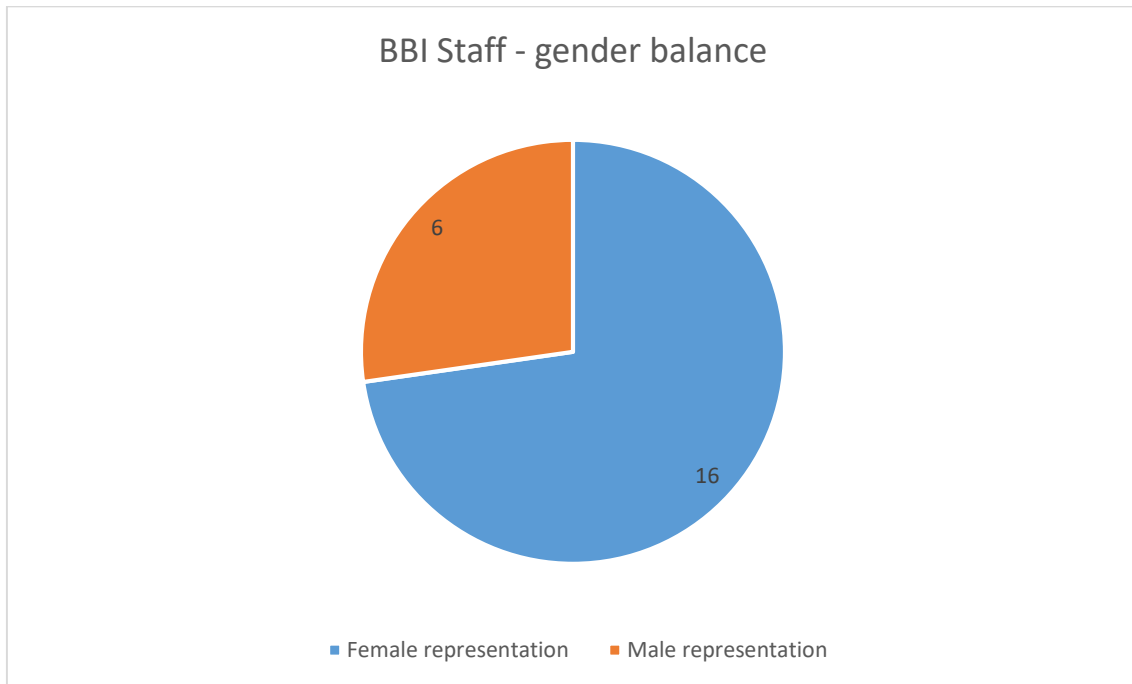


Figure 87: gender balance of the BBI JU programme team by 31/12/2019.

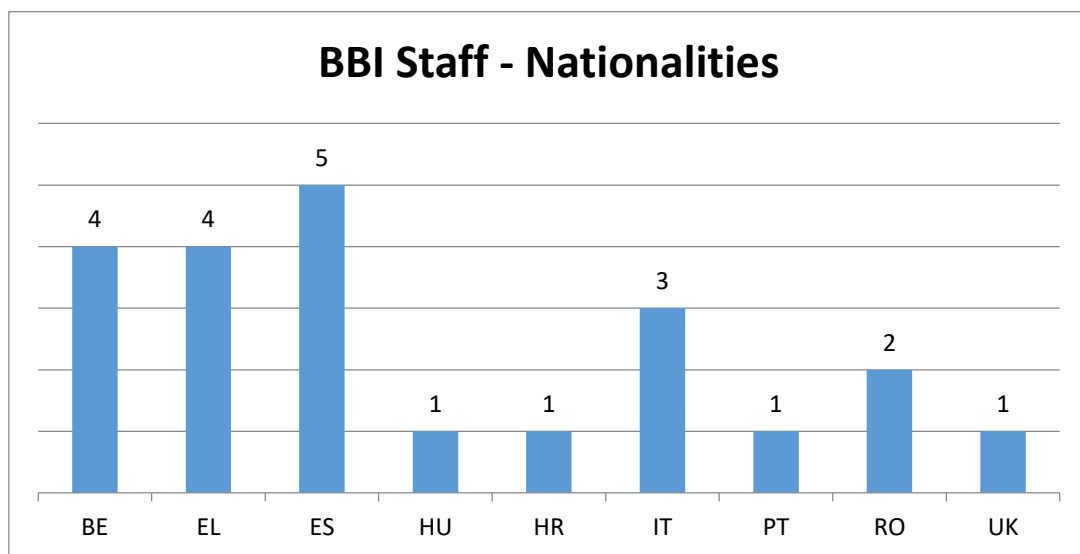


Figure 88: EU countries represented among BBI JU staff by 31/12/2019.

LEGAL FRAMEWORK

In 2019, the HR function continued to strengthen the legal framework of the BBI JU, focusing on how implementing rules of the European Commission shall apply to BBI JU. In that respect, in 2019 the BBI JU Governing Board adopted the implementing rules listed below:

- Employment of contract agents;

- Outside activities;
- Types of post and post titles.

In addition, the BBI JU officially joined the EU “Back to School” and “Back to University” initiatives. These are pan-European initiatives whereby European Union staff go back to secondary schools or universities in their home country and talk about their work and experiences within the EU. It aims to give young people the chance to learn about first-hand experiences of the European project and for EU staff to become the 'face' of Europe for a day.

EU officials share their personal experience with students and discuss a variety of topics related to the European Union. It offers young people an opportunity to openly discuss cross-border topics with someone “on the inside” of the EU institutions, to take part in a debate about the European project, to freely express their views and to be heard. The positive feedback from students and teachers after visits from EU staff shows the tremendous value of this face-to-face approach in raising awareness about how the EU is present in our daily lives.

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

LEARNING AND CAREER DEVELOPMENT

The BBI JU values the continuous development of its staff in order to ensure that staff members are competent in their roles and can cope with the demanding working environment. In 2019 the HR function developed a Learning and Development Framework taking into consideration the BBI JU's annual objectives.

A Service Level Agreement in force with the European Commission provided access to a wide catalogue of training courses and ad hoc learning opportunities have been constantly communicated to staff members across the year. In addition, several in-house training activities and workshops were organised as well as teambuilding activities.

Team coaching and highly recommended trainings for key functions have been also organised.



3

Governance

3.1. GOVERNING BOARD

The Governing Board has overall responsibility for the strategic orientation and the operations of the BBI JU and shall supervise the implementation of its activities, in accordance with Article 7 of the BBI JU Statutes⁹⁴.

The Governing Board includes five representatives of the BIC and five representatives of the EC.

During 2019, there were several changes of positions in both the EC and BIC memberships. As of the last meeting in 12 December 2019, the composition of the Governing Board 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 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Wolfgang BURTSCHER, Deputy Director-General, DG RTD (Chair) | Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Vice-Chair) |
| John BELL, Director for "Healthy Planet", DG RTD/C | Gloria GAUPMANN, Head of Public Affairs, Technology and Innovation, CLARIANT |
| Carlo PETTINELLI, Director for "Chemicals and Consumer Industries", DG GROW/D | Hans KEUKEN, CEO Process Design Center |
| Peter DROELL, Director for "Industrial Technologies", DG RTD/F | Alex MICHINE, CEO METGEN |
| Nathalie SAUZE-VANDEVYVER, Director for "Quality Policy, Research & Innovation, Outreach", DG AGRI/B | Bill MORRISSEY, Bioeconomy programme manager, GLANBIA |

Table 26: Members of the Governing Board as at 12/12/2019.

In 2019, four ordinary meetings took place: 28 March, 20 June, 10 October and 12 December.

⁹⁴ Annex to the Council Regulation.

The decisions taken by the GB during 2019 respected the indicative timetable set out in the AWP and were the following:

- Decision approving the guidance for the planning, reporting and certification of the in-kind contributions for Additional Activities within the BBI Initiative.
- Decision adopting the IKA plan 2019;
- Decision adopting the amendment to the AWP and Budget 2019
- Decision amending the Governing Board Decision BBI-GB-03/15 on the adoption by analogy of rules on outside activities and assignments and on occupational activities after leaving Service.
- Decision on the types of post and post titles in BBI JU.
- Decision approving the Annual Activity Report 2018;
- Opinion on BBI JU Annual Accounts 2018;
- Decision nominating the reporting officers in charge of the annual appraisal of the Executive Director;
- Decision on the general provisions for implementing Article 78(2) of the Conditions of Employment of Other Servants of the European Union, governing the conditions of employment of contract staff employed under the terms of Article 3a thereof;
- Decision on the request for the Commission agreement to the non-application by analogy of Commission Decision C(2019)4231 of 12 June 2019 laying down the general implementation provision on the conduct of administrative inquiries and disciplinary proceedings;
- Decision adopting the AWP and Budget 2020;

- Decision on approving the ranking list of the proposals selected for funding, to be placed on a reserve list and to be rejected pursuant to the 2019 call for proposals.
- Decision adopting the Financial Rules of the BBI JU

UPDATE ON THE STATUS OF THE IMPLEMENTATION OF THE ACTION PLAN ON THE RECOMMENDATION 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 report⁹⁵ of BBI JU was published in October 2017.

The interim evaluation report provided a set of recommendations aiming 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 was drafted in close cooperation between the responsible Commission services, the Bio-based Industries Consortium (BIC) and the BBI JU. On 21 March 2018 the Governing Board of the BBI JU adopted the ‘Action Plan in response to the recommendations of the interim evaluation of the BBI JU’⁹⁶ which includes a set of specific action points that correspond to the recommendations provided by the interim evaluation report as well as the status for each of the actions.

BBI JU is monitoring the implementation of the action plan, confirming that the majority of actions were followed up according to the agreed deadlines whereas others were still ongoing

⁹⁵<https://op.europa.eu/en/publication-detail/-/publication/eebcfc39-ae32-11e7-837e-01aa75ed71a1/language-en>

⁹⁶https://www.bbi-europe.eu/sites/default/files/action_plan_in_response_to_the_recommendations_of_the_interim_evaluation_of_the_bbiju.pdf

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 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 SMART⁹⁷ principles.

For 2019, the priorities and objectives were presented to the BBI JU Governing Board at the meeting held on 13 June 2018. The priorities were mainly about consolidating the project portfolio whilst maintaining the highest standards of quality and implementing the adjustments recommended following the BBI JU interim evaluation. Another important priority of 2019 was to contribute to the discussion on Horizon Europe, by building on the lessons learnt from both the implementation of Horizon 2020 and the impact of the initiative as an iPPP.

The 2019 objectives were organised around four priorities detailed below:

- Keep BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of workload;
- Analyse and communicate the impact and the added value of the BBI JU iPPP and its project portfolio to a wide audience of stakeholders;
- Implement the adjustments to the project portfolio following the recommendations of the BBI JU interim evaluation, while maintaining all its recognised key strengths;
- Contribute to the discussions on Horizon Europe in terms of Missions and Objectives, and in terms of the operational functioning of BBI JU as implementing body, by building on the lessons learnt from the implementation of Horizon 2020.

For 2020, the Executive Director and his management team proposed four priorities to the Governing Board meeting held on 20 June 2019. They were identified by the management team taking into account the following considerations:

⁹⁷ Specific, Measurable, Accepted, Realistic and Time-related

- The future of the initiative under CBE will have a great impact on the further definition of 2020 objectives
- Considering BBI JU has one more call to implement and the fact that 2021 will be the first year of Horizon Europe implementation, whatever the form of the future partnership around bio-based industries, 2020 will be an important year of transition.
- BBI JU continues to be faced with the challenge of absorbing a growing workload while keeping high-quality standards. 2020 is expected to be the peak of the workload under the current mandate of BBI JU.
- BBI JU is a mature organisation. Consolidating the current strengths remains a challenge, while maintaining the performance level during the transition phase.
- Throughout a culture of continuous improvement, the Programme Office continues to consolidate some processes while implementing corrective actions where needed. In addition, the reporting landscape is further elaborated to ensure effective demonstration and communication about the achievements and overall impact of the initiative.

The four priorities for 2020 are as follows:

- Keep BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of workload;
- Prepare the transition of BBI JU towards Horizon Europe (HEU) whatever is the future of a partnership around bio-based industries;
- Continue to analyse and amplify the communication on the actual and expected impact of BBI JU and its project portfolio to a wide audience of stakeholders;
- Contribute to the discussions on Horizon Europe from the perspective of the operational functioning of BBI JU as implementing body by building on the lessons learnt from the implementation of H2020.

The Executive Director and his management team have incorporated these priorities in the AWP 2020 as a basis for the non-topic text and the administrative budget. They will be cascaded into BBI JU Programme Office objectives and further into individual objectives for the Programme Office staff by the end of February 2020.

3.3. STATES REPRESENTATIVES GROUP

The SRG is an advisory body of the BBI JU established in accordance with the BBI JU Regulation⁹⁸ and it represents the interests of Member States and associated countries under Horizon 2020. Its members provide advice to the Governing Board on the programme progress and achievement of its targets. It also provides advice on the definition of the SOs for the programme and the AWP. The SRG also has 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 programme, which operates at European level.

Figure 89 shows the status of the representation of Member States and associated countries linked to Horizon 2020 in the SRG as of 31/12/2019. The SRG covers a broad geographical area, in spite of the fact that currently two Member States and eight associated countries have not yet nominated a representative. The current members of the States Representatives Group were published in the BBI JU website⁹⁹.

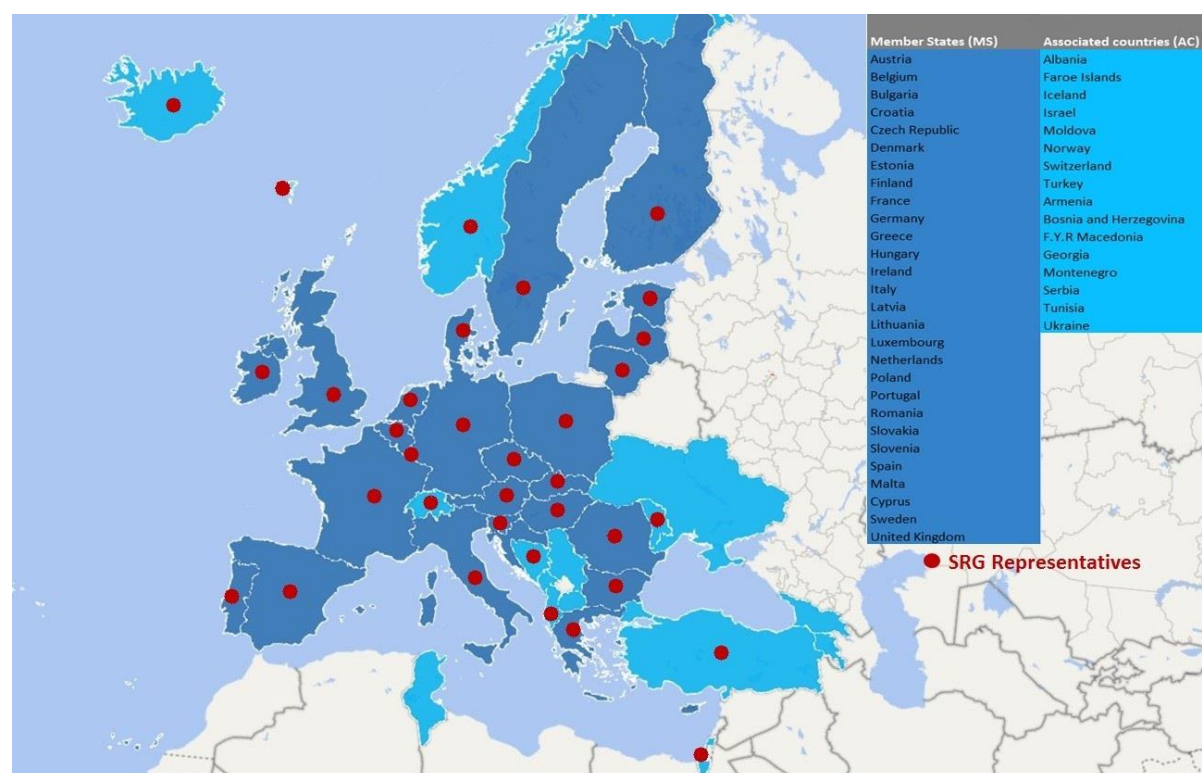


Figure 90: SRG members from EU MS (dark blue) and associated countries (light blue) as of 31/12/2019.

⁹⁸ For the role of the SRG see art 11 of the Statutes of the BBI JU annexed to Council Regulation.

⁹⁹ <https://www.bbi-europe.eu/about/states-representatives-group>

STATES REPRESENTATIVES GROUP MEETINGS IN 2019

During 2019, two ordinary meetings of the SRG were organised by the Programme Office, on 16 May 2019 and 3 October 2019. In addition, an extraordinary meeting was organised on 7 February 2019 via video conference.

The meetings were chaired by Fabio Fava (Chair of the SRG and representative of Italy) and they were also attended by the Chair of the Scientific Committee, the BBI JU Executive Director, BIC, the European Commission and by some BBI JU staff. The Chair of the Governing Board participated in the first ordinary meeting of the year.

The extraordinary meeting that took place on 7 February 2019 was organised upon request of the SRG Chair having first informed the BBI JU Governing Board. The meeting addressed the role and needs of the SRG members as ambassadors in supporting the continuation of BBI JU under Horizon Europe.

During 2019, the SRG made valuable contributions to the strategic orientation of the programme and the development of the AWP 2020, providing recommendations on both the preliminary and final drafts of the 2020 AWP. The SRG also supported other programme-related activities by issuing concrete recommendations on various issues such as the monitoring of impacts and achievements, good practices to enhance participation in the BBI JU Initiative, communication and information activities to improve the information received by applicants as well as synergies and complementarities.

During 2019, the SRG was very active in performing actions to support the deployment of the programme at national level. Information about national activities was shared among SRG members and with BBI JU and its members during both meetings.

Since the establishment of the BBI JU in 2014, a questionnaire has been used to gather information in advance of the meetings and to facilitate the exchange of information between SRG members and with BBI JU and its partners (the EC and the BIC). Since 2017, this practice has been integrated into a broader initiative, and the SRG reports this information through a joint initiative coordinated by the JRC as the coordinator of the European Commission's Knowledge Centre for Bioeconomy (BKC). In the context of this joint initiative, JRC, the International Energy Agency (IEA) and the BBI JU joined forces to launch a survey to understand the status of policies and strategies and other activities taken at a national level on the bioeconomy. In 2019, SRG members contributed to the survey, providing examples of good practices and lessons learnt by the SRG in supporting the deployment of the BBI JU programme and enhancing its impact at national level.

Finally, in 2019 the SRG played a pivotal role as BBI JU's ambassador towards the future of the partnership under Horizon Europe. In particular, SRG members have provided relevant information, when needed, to national authorities, including the national delegates dealing with Horizon Europe and the future partnerships in the Council and

other stakeholders. Moreover SRG members have continued mobilising national stakeholders to ensure their maximum involvement with the BBI JU and its impact. The SRG has also provided advice to BIC in the preparation of the strategic documents for the future of BBI JU under Horizon Europe, including BIC Vision 2050 and SIRA 2030.

The main items addressed during the three SRG meetings are presented below:

EXTRAORDINARY MEETING OF THE SRG ORGANISED ON 7 FEBRUARY 2019

- Role and needs of the SRG members in supporting the continuation of BBI JU under Horizon Europe. The Chair of the SRG consulted the SRG in advance of the meeting, via a questionnaire, about the SRG's needs and expectations for the extraordinary meeting and its expectations for a future potential partnership. The outcomes of the survey were used to prepare the agenda of the meeting and to identify in advance the main areas of support needed to perform their role as BBI JU ambassadors under Horizon Europe preparations.
- Status and next steps of the decision-making process for Horizon Europe, including relevant aspects for the future of the BBI JU, as well as a summary of the BBI JU's main achievements and impacts obtained so far.
- Discussion on information needs, including periodic updates on the status of the Horizon Europe progress and "information packs" per country (country-based information) to be used to efficiently advise national representatives involved in the Horizon Europe negotiations and other relevant national industrial stakeholders, as and when needed.
- The SRG also shared its preliminary ideas on its vision towards the future of the BBI JU under Horizon Europe, including lessons learnt and areas of improvement to be considered in the potential future partnership.

10TH MEETING OF THE SRG HELD ON 16 MAY 2019:

- Election of a new Vice Chair, Agata Foks (representative from Poland), for the forthcoming two years. The Vice Chair, Niels Götke (representative from Denmark) finished his mandate after serving the SRG for the maximum time allowed (two years of regular mandate plus two years of extension).
- Information to the SRG on the programme progress towards the achievement of its targets, including information on: the Call 2018 evaluation results; presentation of outputs, achievements and impacts

between 2014-2018; the status of BBI JU horizontal activities (including the outcomes of the study on the participation of SMEs; the synergy label pilot project; the activities taken to support synergies with SPIRE and other initiatives, and the preparation of a study on the participation of the agricultural sector); and the overview of important communication and dissemination activities, including presentation of the preparatory actions towards the Stakeholder Forum organised in December 2019.

- Update from European Commission on Horizon Europe preparations, including the procedure on the impact assessment on potential institutionalised European partnerships as well as the status of the Circular Bioeconomy thematic investment platform (TIP¹⁰⁰).
- Update from BIC on BBI JU related activities, including information on the BIC Vision 2050 and the status of the SIRA development; status of BIC membership and BIC board composition; presentation of analysis on end-user participation in projects; status of preparation of country reports; and presentation of the development of a bioeconomy investment platform.
- Discussion with the SRG on the first draft of the 2020 AWP (core of the topics) presented by BIC. The SC Chair shared with the SRG the summary of the discussions held during the SC meeting. The recommendations of the SRG were delivered in due time after the meeting according to the planning.
- EC, BIC and BBI JU presented their points of view and proposed activities towards the future of the BBI JU in the context of the Horizon Europe preparations. The SRG also shared informally its points of view on the national positions towards a European Partnership.
- The SRG shared information on national activities to deploy and support the development of the bio-based industrial sector.
- Areas of cooperation SCAR-BBI JU, including presentation of the outcomes of the workshop organised on clusters on March 2019.

11TH MEETING OF THE SRG HELD ON 3 OCTOBER 2019:

- The SRG received updates on the progress and achievements of the BBI JU programme since the previous meeting, including: information on the 2020 BBI JU objectives, impacts and achievements since the beginning of the initiative; activities on synergies with other related programmes; update on

¹⁰⁰ European Circular Bioeconomy Fund (ECBF)

the synergy label project; outcomes of the study on the agricultural sector and the action plan; updates on the SME report; presentation of the report on the contribution of BBI JU projects to sustainable development goals (SDGs); activities related to the digital agenda; and the update on the last and upcoming communication and dissemination activities.

- The SRG received information on the submission statistics of Call 2019 and funded projects since the first call.
- The SRG discussed the third draft of the 2020 AWP. The draft was presented by BIC. The SC Chair shared with the SRG the summary of the discussions held during the SC meeting. The recommendations were delivered promptly by the SRG after the meeting.
- The EC provided SRG members with information on BBI JU-related activities: Horizon Europe preparations update, including the status of the impact assessment on potential institutionalised partnerships, and the status of the Circular Bioeconomy thematic investment platform (TIP).
- BIC provided SRG members with information on BBI JU-related activities: information on the evolution of BIC membership; situation of country reports; status of SIRA 2030 and Vision 2050; status of bioeconomy investment platform.
- EC, BIC and BBI JU presented their points of view and proposed activities towards the future of the BBI JU in the context of the Horizon Europe preparations.
- SRG members shared information about national activities on deployment, communication and dissemination at national level.
- Activities taken to explore areas of cooperation within Bioeconomy Strategy Working Group (BSW) under SCAR and BBI JU, including the organisation of thematic workshops in 2020.

A secure dedicated member area for the States Representatives Group has been used throughout 2019 to distribute and archive all related background documents, agendas and presentations as well as meeting minutes and recommendations.

3.4. SCIENTIFIC COMMITTEE

The Scientific Committee (SC) is an advisory body of the BBI JU, established in accordance with the BBI JU Regulation and supporting the BBI JU by providing scientific advice on the areas of work undertaken by the BBI JU, such as the scientific priorities to be addressed in the AWP, as well as providing guidance to the programme implementation.

The SC is currently composed of 14 members - listed in Table 27 - who have 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.

Ms. Johanna Buchert informed BBI JU that due to other professional commitments she would no longer be able to be a member of the SC. The SC members will be replaced and renewed following the rules established in the BBI JU Council Regulation.

| Name | Role in SC | Position |
|---------------------------|------------|--------------------------------------------------------------------------------------------------------------|
| Kevin O'Connor | Chair | Director Bioeconomy Research Centre (UCD), Ireland |
| Lene Lange | Vice-Chair | Research Leader Head of Enzyme Discovery Technical University of Denmark (DTU) |
| 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 Director of Knowledge Exchange and Commercialisation, Aberystwyth University |
| Helena Vieira | Member | Invited Associated Professor Faculty of Sciences of University of Lisbon |

| | | |
|---------------------------------|--------|----------------------------------------------------------------------------------------------------------------|
| Lígia Rodrigues | Member | Professor / Assistant professor University of Minho, Portugal |
| Lígia O. Martins | Member | Assistant Professor Instituto de Tecnologia Química e Biológica – Universidade Nova de Lisboa |
| Mariya Marinova | Member | Ph.D., P.Eng. Adjunct Professor Department of Wood and Forest Sciences, Laval University, Quebec, Canada |
| Sigurjon Arason | Member | Professor / chief engineer University of Iceland / Matis Ohf |
| Uffe Bundgaard-Jørgensen | Member | CEO InvestorNet-Gate2Growth, Ph.D |
| Yvonne Van der Meer | Member | Dr. ir. Associate / Professor Maastricht University |

Table 27: Members of the BBI JU SC¹⁰¹

SCIENTIFIC COMMITTEE MEETINGS IN 2019

The SC met twice during 2019, on 15 May and 2 October. Kevin O'Connor, Chair of the SC, chaired both meetings. Different members from the BBI JU Governing Board, BIC and the EC, BBI JU's Executive Director and staff attended both meetings.

The SC provided valuable advice on the first and third drafts of the AWP 2020, and both general and topic-specific recommendations were presented to the BBI JU Programme Office, BIC and EC. As a follow-up, BIC and EC, responsible for the definition of the AWP 2020, provided feedback to the Programme Office and the SC members on how these recommendations would be included in the final version of the AWP 2020.

BBI JU presented all the activities related to the BBI programme implementation, such as call submission and evaluation results, analysis of BBI JU's projects portfolio, KPI & impact monitoring and assessment, communication activities or synergies with other programmes. BBI JU informed and consulted the SC on different studies, such as the study on the participation of primary producers in the BBI JU programme, the participation of SMEs in BBI JU projects or the contribution of BBI JU projects to the Sustainable Development Goals (SDGs), among others.

¹⁰¹ SC members' CV can be found here: <https://www.bbi-europe.eu/about/scientific-committee>

SC members discussed the information provided by EC and BIC on the BBI JU- related activities:

- BIC informed the SC members on the development state of play of Vision 2050 and the SIRA 2030 and involved them in consultations to provide feedback on these strategic documents. In addition, BIC provided updates on the other activities, such as country reports, regional platforms and the evolution of BIC membership.
- The EC updated the SC members about the preparatory activities for Horizon Europe, the impact assessment of the potential European partnerships within Horizon Europe and information on the Circular Bioeconomy Thematic Investment Platform (TIP), among other BBI JU related activities. The Joint Research Centre (JRC) joined one of the SC meetings and provided an update on the ongoing activities of the JRC Knowledge Centre for the Bioeconomy, as a starting point for a potential future collaboration with JRC in matters of common interest.
- SC members had a crucial role in the discussion about the future of BBI JU within the Horizon Europe programme, and identified the institutional public-private partnership as the most suitable instrument to continue contributing to the development of sustainable and competitive bio-based industries in Europe.

The main subjects discussed during both meetings are presented below.

10TH MEETING OF THE SC HELD ON 15 MAY 2019

- Presentation of the BBI programme progress and achievements. These include: Call 2018 evaluation results; outputs, achievements and impacts so far (2014-2018); follow-up on horizontal activities (i.e. study on the participation of SMEs; synergy label pilot project; synergies with SPIRE and other initiatives, study on the participation of the agricultural sector); communication and dissemination activities, including debriefing on the Info Day 2019 and presentation of the forthcoming Stakeholder Forum in December 2019.
- Update from EC on the status of Horizon Europe, the impact assessment on potential institutionalised European partnerships under Horizon Europe and the Circular Bioeconomy TIP.

- Update from BIC on BBI JU related activities, including information on the Vision 2050 and the status on the SIRA development, BIC membership, BIC board composition, end-user participation in projects, update on country reports and presentation of the development of a regional platform.
- Presentation of the first draft of the AWP 2020 in relation to the Priority Paper 2020.
- Discussion of the consolidated feedback from SC to the first draft of the AWP 2020 topic text.

11TH MEETING OF THE SC HELD ON 2 OCTOBER 2019

- Presentation of BBI JU on the programme progress and achievements since the previous meeting. The presentation contained information on outputs and impacts, status of project portfolio, submission statistics from Call 2019, communication activities, and horizontal activities (study on the agricultural sector, SME report, Sustainable Development Goals (SDGs) report, synergies and digital agenda).
- Presentation of the third draft of AWP 2020; discussion of the feedback provided by SC members to the AWP 2020 draft 3.
- Update from EC on the status of Horizon Europe, the impact assessment on potential institutionalised European partnerships under Horizon Europe and the status of the Circular Bioeconomy TIP.
- Update from BIC on BBI JU related activities, including information on the evolution of BIC membership, situation of country reports, status of the SIRA 2030 and the Vision 2050
- Update on the current activities of the JRC Knowledge Centre for the Bioeconomy by JRC colleagues.



4

Internal control framework

BBI JU adopted its Internal Control Framework in September 2015 in order to provide reasonable assurance to the Governing Board regarding the achievement of its objectives. This framework involves all the measures taken to ensure that:

- The BBI JU meets its objectives defined in the AWP using the adequate human and financial resources and avoiding misuse.
- The BBI JU operates fully in accordance with all legal and regulatory requirements.
- The Programme Office management produces regular, reliable and easily accessible management information on financial management, use of resources and progress on the achievement of operational objectives.
- The Programme Office management takes the necessary measures to ensure the completeness and preserve the integrity of the data on which management decisions are taken and reports are issued.
- All Programme Office management processes and functions meet these four objectives, meaning that the largest possible preventive, detective and corrective controls are in place.

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 in order to take into account the new operations BBI JU has 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 about the business continuity of the Authorising Officer's function.

At the beginning of 2018, the Programme Office implemented a fine-tuning of the internal procedure for tendering and signing procurement contracts, aimed in particular at the accountability of financial actors, the decrease in the administrative burden and the efficiency of the payment process.

In 2019 further improvements and simplification have been implemented thanks to the deployment of paperless workflows by using ARES, the European Commission document management tool.

4.2. EX-ANTE CONTROLS ON OPERATIONAL EXPENDITURE

The 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 BBI 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 BBI'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 2020 IT tools (SYGMA/COMPASS), which assures a high degree of automation, and controls are embedded in each workflow. In addition to this, the Programme Office has established additional internal step-by-step procedures for financial and operational verification, in order to ensure coherence in controls and to facilitate the learning curve of newly recruited staff, in particular for the payment of the cost claims linked to the periodic reporting of ongoing BBI JU grants.

During 2019 the operational expenditure was implemented by means of pre-financing payments as well as periodic and final payments of ongoing grants.

In 2019 the BBI JU Programme Office processed a large number of periodic reports (44) and payments (43). 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 about the possible financial issues related to the periodic reporting.

In order 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 2019 the BBI JU Programme Office dealt with a much higher number of requests compared to prior years: 53 amendment requests were initiated by project coordinators in 2019, compared to 42 requests processed in 2018. This increase is due to the growth in the project portfolio but remains proportionally in line with the number of grants.

With respect to the controls related to fraud detection and prevention, BBI JU's Programme Office follows 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, BBI JU's 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 CONTROLS 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.

BBI 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 on the common audit effort. The efficiency gains should reduce the audit costs and the administrative burden on auditees, always in line with the specific objectives for ex-post controls explained above.

In 2019, the main results were:

1. The selection and launch of the third wave of audits on beneficiaries of BBI JU grants;
2. The completion of the first two waves of audits on beneficiaries of BBI JU grants;
3. The progressive increase of audit results on the overall Horizon 2020 expenditure.

SAMPLING METHODOLOGY

The Audit Strategy provides audit coverage at two layers of sampling:

1. **The corporate layer** that covers the entire Horizon 2020 expenditure;
2. **The additional layers** that cover the Horizon 2020 expenditure of entities with specific Grant Agreements or a separate discharge procedure, the latter being the case for BBI JU.

For the selection of the audits, representative samples are implemented at both layers and these exercises are complemented by risk-based selections. In particular:

- In the corporate layer, every two years a random Common Representative Sample (CRS) is implemented. The objective of the exercise is to provide an estimate of the overall level of error in the Horizon 2020 expenditure, across all services involved in its management, via a representative sample of cost claims across the Research and Innovation family.
- In the additional layer¹⁰², every year a random JU Representative Sample (JURS) is implemented. This was performed for the third time in 2019 for BBI JU expenditure. The objective of the exercise is to obtain a certain level of direct audit coverage of that part of the Horizon 2020 expenditure managed by the JU, via a representative sample of its cost claims.
- To complement this information, corporate and JU-specific 'risk-based' audits are selected according to one or more risk criteria. These audits are intended to detect and correct as many errors as possible by targeting, for instance, the larger beneficiaries and possibly fraudulent operators. These audits are also referred to as 'corrective' audits;

In order to ensure effective synchronisation of the two representative exercises, working arrangements and sampling procedures implemented in 2019 dealt with possible clashes between audits and optimised the audit effort wherever this was possible.

AUDIT COVERAGE IN 2019

The Horizon 2020 audit campaign started in 2016. As of end 2019, three Common Representative Samples (CRS) (with a total of 467 expected results) have been selected. By the end of 2019, cost claims amounting to EUR 16.2 billion were submitted by the beneficiaries to the services.

By the end of 2019, in its own local layer, BBI JU validated and paid cost claims totalling EUR 151 million. In total, 46 participations with 49 validated cost claims had been selected for audit and directly covered EUR 38 million of BBI JU expenditure (24.6%).

¹⁰² Selections done in this layer by entities with specific Grant Agreements follow different procedures and are reported in the AAR of the European Commission

The detailed view of the audit coverage of BBI JU expenditure is presented in the following table:

| BBI JU expenditure | Audit coverage | | |
|---------------------------------------|--------------------|-------------|----------------------------------------------------|
| | Values (in EUR) | Percentages | Number of cost claims selected for audits |
| Validated and paid by BBI JU | 150,914,010 | 100% | |
| Covered by risk audits | 1,104,819 | 0.73% | 3 |
| Covered by top ups on selected audits | 1,963,430 | 1.3% | 5 |
| Covered by representative audits | 33,765,259 | 22.37% | 41 |
| Total direct audit coverage | 37,833,507 | 24.41% | 49 |

Table 28: Audit coverage as of 31/12/2019

INDICATORS ON THE RESULTS OF AUDITS AND ON CORRECTIVE MEASURES

Different indicators are calculated to provide a comprehensive view of legality and regularity. They can provide estimations about error rates on operational expenditure for the whole Research and Innovation family and for the part of the expenditure managed by BBI JU. This approach is justified by the fact that the Horizon 2020 implementing rules are common and all implementing entities are requested to operate within the same ex-ante control system¹⁰³.

Starting from the first audit results of 2017 on the overall Horizon 2020 expenditure, BBI JU will be progressively reporting on the following cumulative indicators:

- **Representative Detected Error Rate for Horizon 2020:** this is the error rate derived solely from the results of the CRS, extrapolated to the overall population and calculated for the Framework Programme as a whole. This error rate provides an estimate of the level of error in the Framework Programme at the time of the audits;

¹⁰³ BBI JU reported on the implementation of ex-ante controls in section 4.2 above.

- **Representative Detected Error Rate for BBI JU:** this is the error rate derived solely from the results of the JURS, extrapolated to the overall population of cost claims paid by BBI JU. This error rate provides an estimate of the level of error in that part of the Horizon 2020 expenditure managed by BBI JU at the time of the closure of the audits selected under the JURS.

Therefore, the two representative error rates do not factor in the follow-up and corrections/recoveries undertaken by the services of the Research and Innovation family after the audit, nor do they provide information on the net final financial impact of errors. The following indicator provides this information:

- **Cumulative Residual Error Rate:** the residual error rate, on a multi-annual basis, is the extrapolated level of error remaining after corrections/recoveries have been undertaken by the services of the Research and Innovation family following the audits.

The calculation of the Residual Error Rate for Horizon 2020 is detailed in the AAR of the European Commission and is based on the following assumptions:

- all errors detected will be corrected;
- all non-audited expenditure of audited beneficiaries is clear of systematic material errors, so that the residual error rate in this expenditure can be estimated to be equal to the non-systematic part of the representative error rate (for expenditure subject to extension of audit findings this is only assumed when the respective extension procedures have been closed).

BBI JU applies the same approach in calculating the residual error rate of its own part of the Horizon 2020 expenditure (**Cumulative Residual Error Rate for BBI JU**) as shown in annex 7.9.

The residual error rate develops over time and depends on the assumptions set out above. This indicator is reliable and acceptable for the purposes for which it was intended, i.e. as a legality and regularity indicator on the progress made, through its ex-post audit strategy, in dealing with errors on a multi-annual basis. However, it remains an estimate as long as not all cost claims have been received and not all cases of extension of audit findings have yet been fully implemented.

RESULTS OF THE EX-POST AUDITS AND EXPECTATIONS FOR HORIZON 2020

The error rates reported by CAS for Horizon 2020 are:

- **The Representative Detected Error Rate for Horizon 2020 is 2.78%** and is based on 298 representative results out of the 467 expected in the three Common Representative Samples, expected to rise to 3.30% taking into account the results of draft audit reports;
- **The Cumulative Residual Error Rate for Horizon 2020 is 2.15 %**, expected to rise to around 2.31% when taking into account the results of the draft audit reports.

At the level of BBI JU, all 10 audits planned for 2018 and all 11 planned for 2019 were finalised by the publication of the present report. The closed representative audits cover EUR 26.16 million, which represents 17.33% of the project costs paid by BBI JU by the end of 2019.

The error rates that can be calculated on that basis for BBI JU are the following:

- **The Representative Detected Error Rate in the JURS is 0.6%** and is based on 24 out of 41 cost claims selected for representative audits;
- **The Cumulative Residual Error Rate for BBI JU is 0.47%.**

As stated in the AAR 2018, the error rates set out above must still be treated with caution. The three first waves of representative audits - both at corporate level and at BBI JU level - are not yet fully implemented. Therefore, the error rate is not yet fully representative of the expenditure under assessment.

As H2020 is a multi-annual 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.

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 on different aspects of the Model Grant Agreement, and its accompanying annotations) and taken stock of lessons learnt from the results of the first audit in order to improve ex ante controls.

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 multi-annual programme¹⁰⁴.

In conclusion, BBI JU does not consider that a reserve is needed for Horizon 2020 expenditure this year.

¹⁰⁴ 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 14 November 2019 the European Court of Auditors (ECA) published its report on BBI JU's annual accounts for the financial year 2018¹⁰⁵, in which 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.

¹⁰⁵ <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did={7DB1873E-552A-42A7-9746-1777B2D045E9}>

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.

- In the course of 2019, the IAS audited the H2020 grant processes (from the identification of the call topics to the signature of the grant agreement) that are implemented in BBI JU. In the final audit report, the IAS observed a number of good practices throughout the audited processes and concluded that, in general, the BBI JU has set up an effective and efficient internal control system for the audited processes. Additionally, the report provided valuable recommendations in order to: improve the effectiveness of existing controls, notably on the management of Conflict of Interests of the members of the Governing Board; streamline efficiencies, notably in the topic definition processes; and to address some bottlenecks, notably in the submission and evaluation of proposals. BBI JU accepted all recommendations and agreed on an adequate action plan with the IAS.

The IAS has an obligation to report to the Director and to the Governing Board if critical risks and recommendations have not been addressed and if there are significant delays in the implementation of recommendations made in previous years. By the end of 2019 none of this was reported by the IAS.

Finally, in November 2019 the IAS launched its second risk assessment of BBI JU in order to identify and prioritize the audit topics that will constitute the Strategic Internal Audit Plan (SIAP) 2021-2023 for BBI JU. The finalisation of the SIAP is expected by the beginning of 2020.

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. 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 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.

The management regularly performs risk reviews and assesses any emerging ones. In each exercise the risk identification and assessment evaluate the root causes of each risk and their potential consequences. The existing controls and the experience gained by the Programme Office in the core activities are taken into due consideration. 'Lost opportunities', convergences and inter-dependencies between risks are also considered during the assessment. The risk management action plan is realistic and considers the material significance of the risks in order to provide appropriate responses. The management monitors and reports on possible threats as needed and ensures an effective implementation of the agreed responses to risks.

ASSESSMENT STEPS FOR 2020 PRIORITIES

The annual risk assessment started in September 2019 with a risk collection exercise that re-assessed the risks identified in the previous year and assessed any new or emerging threats to the achievement of priorities and objectives formulated in the AWP 2020. However, some initial assumptions needed to be verified and the assessment was updated in January 2020 with the support of newly available information.

The Programme Office has planned actions in order to reduce the likelihood of occurrence of identified risks and/or their impact should they materialise. Risk responses are proportionate to the risk level and with due consideration of the priorities and capacity of the Programme Office.

ASSESSMENT CONCLUSIONS

In line with the trend of previous years, the risk responses planned for 2019 were adequately implemented in a timely manner and/or were updated according to the relevant priorities of the organisation. These results further increased the control of the Programme Office over the identified threats and the relevant information was used to reassess the risk exposure of the organisation. The periodic review of well-established and tested business policies, processes and procedures is ensuring an improved reliability of existing internal controls. Standardised procedures are also dealing with

exceptional events, and the timeliness of communications is ensured through well-established reporting lines

The same threats identified for 2019 will continue to be addressed in 2020, but with updated mitigating actions and, in one case, with a different degree of significance. The only risk that continues to be assessed as significant challenges the management of human resources and, in particular, the objective to ensure that the necessary and competent resources are timely available at the right time to cope with an increasing workload for the organisation, while keeping high-quality operational standards in its operations. In previous years, the management team adopted preventive and mitigating measures that proved to be effective in managing this critical issue. The progressive growth of the workload has been well anticipated and accompanied by the adoption of different management strategies (inter alia: prioritisation of activities; detailed planning and allocation of resources; implementation of retention and motivation policies for staff; consolidation and standardisation of core business activities around efficiency gains). In 2020, the Programme Office will reach the peak of its activities and the management of human resources will likely be challenged by a growing turnover rate (already experienced in 2019) and, notably in the second semester of the year, by new instances associated with the implementation of Horizon Europe. Mitigating actions in the action plan 2020 are conceived around these two elements.

Concerning the other four risks, they are all assessed with a lower significance, notably because of mitigating actions planned in the past.

Two other sensitive topics have been assessed as being effectively and efficiently addressed through the controls already implemented at BBI JU:

1. Management of potential conflicts of interest:

The Implementing Rules on Conflict of Interest for all the staff and bodies of BBI JU (GB, SRG, SC and ED) were adopted by the Governing Board on 13 December 2017 following the model agreed by the European Commission.

The 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 Programme Office team, each staff member agrees on 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 BBI JU.

- Conflict of interest procedures for the members of both the Governing Board and the advisory boards of BBI JU are in place.
- Specific measures have been implemented for the prevention and management of conflicts of interest of experts in charge of the evaluation of grant applications, and of the review of projects and tenders.

In 2019, part of this framework was audited by the IAS as being reported in section 4.5.

2. Data protection

The Programme Office has continued to ensure that appropriate data protection measures are in place and adequately communicated to all staff through training sessions and through continuous support and monitoring by the Local Informatics Security Officer (LISO) and by the Data Protection Officer (DPO).

BBI JU shares an ICT infrastructure with other Joint Undertakings located in the same building. In 2016, BBI JU adopted the Common IT Security Policy, which sets out the security and data protection requirements and principles to be applied by data processors on outsourced activities.

Preservation of internal information security is covered under the Security Plan of Managed Services. Preservation of data integrity, legibility and accessibility is assured in the IT infrastructure of BBI JU and relevant elements of assurance are addressed in the Business Continuity Plan and in the Disaster Recovery Plan.

In 2019, the Programme Office continued the implementation of Regulation (EC) 2018/1725 on the protection of natural persons with regard to the processing of personal data by the EU institutions, bodies, offices and agencies. The privacy statements were updated and a Memorandum of Understanding over the joint controllership for the H2020 IT tools was defined in collaboration with all EU implementing bodies. Additionally, the working group of the Joint Undertakings consulted the European Data Protection Supervisor (EDPS) on a model decision to adopt the internal rules regarding the access to data protection.

4.7. COMPLIANCE AND EFFECTIVENESS OF INTERNAL CONTROL

In line with the provisions of the BBI JU Financial Rules, on 16 September 2015 the Governing Board adopted 16 Internal Control Standards (ICS) based on the equivalent standards laid down by the European Commission for its own departments. On 30 November 2017 the Governing Board amended the ICS in order to ensure that they adequately reflect the context of BBI JU.

As planned in the AWP 2019, between June and September 2019 the Programme Office performed a self-assessment of the level of implementation of its ICS. The overall objectives of the exercise were to provide the Programme Office with an updated picture of the state of implementation of the ICS and to continue the analysis initiated in 2017 on the degree of maturity of the current Internal Control Framework. Moreover, these conclusions were taken into consideration by the Programme Office in order to prepare the transition to a new principle-based internal control framework in line with the most recent practice of the EU Institutions.

In order to achieve these objectives, the assessment considered the specific criteria of compliance, effectiveness and efficiency of the ICS' implementation. In coherence with previous reporting and with the objectives of the year, the conclusions were then drawn on the basis of the maturity model matrix as provided by the Global Institute of Internal Auditors¹⁰⁶.

ASSESSMENT CONCLUSIONS

The assessment process ran smoothly, confirming that the staff involved in the implementation of ICS had acquired a good understanding of the assessment objectives, methodology and criteria. As also mentioned by the IAS in a dedicated review of the ICS implementation at BBI JU in 2017, striving for full implementation of the ICS is a continuous process, which has been well embedded in the management routine of the BBI JU.

BBI JU enjoys a very good maturity level for the implementation of the 16 ICS, as demonstrated in the table below, which reports additional improvements as compared to the 2018 conclusions. The scores in the maturity column clearly show the following attributes of a maturity model grid as provided by the Global Institute of Internal Auditors¹⁰⁷ and assessed by the accountable functions for each ICS in a scale 0 to 5:

¹⁰⁶ IPPF – Practice Guide: Selecting, Using, and Creating Maturity Models: A Tool for Assurance and Consulting Engagements. Global Institute of Internal Auditors, July 2013

¹⁰⁷ Ibi idem

3 ICS score 3 = Defined – Standardised: controls are in place and documented, and employees have received formal communications about them. Undetected deviations from controls may occur;

13 ICS score 4 = Managed – Monitored: standardised controls are in place and undergo periodic testing to evaluate their design and operation; test results are communicated to management. Limited use of automated tools may support controls.

For proper reference, level 0 is usually some variation of a non-existent or ad hoc execution of controls, while level 5 is usually considered a high maturity, sustainable, and/or optimised process. Achieving level 5 may not be an organisation's goal, as the cost to achieve that level may at times exceed the benefits. In other words, management's risk tolerance may be high enough to allow the process to be less exact or consistent, or it may not be strategically important enough to invest in certain processes to consistently achieve level 5.

| Internal Control Standards | Maturity (0 to 5) | |
|--------------------------------------------|----------------------|------|
| | 2018 | 2019 |
| ICS 1: Mission | 4 | 4 |
| ICS 2 Ethical and organisational values | 3 | 3 |
| ICS 3 Staff allocation and flexibility | 4 | 4 |
| ICS 4 Staff evaluation and development | 4 | 4 |
| ICS 5 Objective and performance indicators | 4 | 4 |
| ICS 6 Risk management process | 4 | 4 |
| ICS 7 Operational structure | 3 | 4 |
| ICS 8 Processes and procedures | 4 | 4 |
| ICS 9 Management supervision | 4 | 4 |
| ICS 10 Business continuity | 4 | 4 |
| ICS 11 Document management | 4 | 4 |
| ICS 12 Information and communication | 3 | 4 |
| ICS 13 Accounting and financial reporting | 4 | 4 |

| | | |
|-----------------------------------------------|---|---|
| ICS 14 Evaluation activities | 4 | 4 |
| ICS 15 Assessment of internal control systems | 4 | 4 |
| ICS 16 Internal audit function | 4 | 4 |

Table 29: Degree of maturity of Internal Control Standards implemented at BBI JU as assessed in 2018 and in 2019.

The overall good implementation of actions planned for 2019 has either further improved the level of maturity of all ICS or confirmed the positive results of previous assessments. A few new instances have been identified and the most important ones relate to findings of the IAS where corrective actions were duly prioritised. The action plan for the relevant ICS has been updated accordingly and with due consideration to both the urgency and importance to intervene as well as the capacity of BBI JU in terms of resources.

On this basis, it is also reasonable to conclude that no critical risks emerge in the context of the compliance, effectiveness and efficiency of BBI JU ICF as a whole.

STEPS TAKEN TO PREPARE THE TRANSITION TO A NEW PRINCIPLE-BASED INTERNAL CONTROL FRAMEWORK

In the course of 2019, the Programme Office prepared the condition for an effective transition to a new Internal Control Framework in line with the most recent practice of the EU bodies. The text of the principles in use at the European Commission has been adapted to the specific characteristics of BBI JU and taking as examples similar texts that are already in force in some other JUs.

The new Framework shall enter into force as from 1st January 2020 in order to facilitate consistent reporting in the Annual Activity Report of 2020.



5

Management assurance

5.1. ASSESSMENT OF THE ANNUAL ACTIVITY REPORT BY THE GOVERNING BOARD

INTRODUCTION

The Bio-based Industries Joint Undertaking (BBI JU) programme office submitted the 2019 Annual Activity Report (AAR) to its Governing Board on 28 February 2020.

On 26 March 2020, the Governing Board appointed a working group to carry out all the preparatory work required for the assessment of the 2019 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 15(3) of the Governing Board's rules of procedure, the working group reported to the Governing Board on 18 June 2020 by providing a draft assessment of the AAR. This forms the basis for the Governing Board's current assessment.

ANALYSIS

The Governing Board adopted the 2019 Annual Work Plan (AWP) on 14 December 2018 and subsequently amended it on 28 March 2019. 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 2019, the efficient performance of BBI JU in core operations was confirmed, continuing the positive trends observed in previous years. More specifically, all applicants of Call 2019 were informed about the evaluation results 102 days after the closure of the call, well in advance of the TTI target set for Horizon 2020 (153 days).
- With respect to TTG, all GAs from GAP 2018, except for one project, were signed on time. One project was signed after 308 days, because of a change in the consortium's partners.
- All Grant Agreements were signed within an average of 235 days after the closure of the call, against a target of 245 days. The average time to pay (TTP) for pre-financing to projects from GAP 2018 was 9.9 days, compared to the target of 30 days. All payments were executed on time.
- In 2019, BBI JU assessed the periodic reports (technical and financial) submitted by the projects funded under Calls 2014, 2015, 2016 and 2017. The average time to pay of the cost claims derived from the periodic reporting was

73.8 days, compared to the target of 90 days. 98% of these payments were performed on time, only one of them was late.

- In terms of types of action, at the beginning of 2019 the BBI JU project portfolio was composed of: 9 Flagships, 28 DEMOs, 52 RIAs and 11 CSAs. The Governing Board appreciates that the different types of feedstock are now even better covered than in the year before.
- Call 2019 was published in the Funding and Tenders Portal and in the Official Journal on 4 April 2019 with an indicative budget of 135 million and with a submission deadline of 4 September 2019. 184 proposals were submitted under this call: during the admissibility and eligibility checks, two proposals were declared inadmissible, and three were declared ineligible; additionally, one duplicate proposal was withdrawn by the respective applicant. 52% of the proposals were evaluated above threshold, and 23 proposals out of 178 eligible proposals were retained for funding, corresponding to a 13% success rate. The evaluation was carried out in the period provided for, with an excellent time-to-inform.
- In line with Article 60(2) of the MFR 2019, BBI JU revised its financial rules to ensure compliance with this Regulation and requested derogations and clarifications when pertinent. The derogations were not granted by DG BUDG and the new financial rules were adopted at the Governing Board meeting of 12 December 2019. They entered into force on 1 January 2020, applying to the calls for proposals published in 2020 onwards.
- BIC's and the Union's contribution to the BBI Initiative is shown in the amounts of funding provided in the first 6 years¹⁰⁸ to fulfil the commitments set out in the Council Regulation:
 - The members paid around EUR 10 369 792 each in **administration costs** to the BBI JU programme office up to 2019, and an additional EUR 1 320 658 as the first instalment from BIC in February 2020. This accounts for only around 38 % 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.
 - Up until now, BIC has paid EUR 3 250 000 in programme-level **operational financial** contributions. This is less than 2 % of the minimum target of EUR 182 500 000 provided for under Article 4(2)(a),

¹⁰⁸ Out of 7 years for operational budget commitments for calls (2014-2020), and 10 years for the administrative budget (2015-2024).

Article 12(3)(b) and Article 12(4) of the Statutes. In response to this, and in accordance with Article 4(5) of the Council Regulation, in 2018 the Commission decided to reduce the planned Union contribution of EUR 205 million to BBI JU's 2020 operational costs by EUR 140 million. This means that the Union's 2020 contribution amounts to EUR 65 million.

- The committed total **in kind contributions** made by BIC's constituent entities towards **operational activities** amounted to EUR 216,185,000. BIC has reported that the estimated total in-kind contributions made by its constituent entities towards operational activities (estimated total IKOP) is EUR 55 140 159 (estimated and reported by BIC for 2015, 2016, 2017, 2018 and 2019)^{109,110}. BIC reported that certified in-kind contributions made by its constituent entities towards operational activities (certified IKOP) amounted to EUR 16 776 318¹¹¹.
- In 2019, BIC's constituent entities contributed EUR 216,185,000¹¹² in kind to **additional activities**, leading to an amount of EUR 916,064,000 certified for the years 2014 to 2019 in total. This is nearly 75 % of the amount expected over 11 years under Article 4(2)(b) of the Council Regulation and is therefore slightly below expectations.
- BIC and its constituent entities have therefore delivered a reported EUR 730 275 110 in total¹¹³. After 5 out of 11 years, this is only 27 % of the total expected amount of at least EUR 2 730 million (Article 4(1) of the Council Regulation). This is below expectations, but many additional activities are planned for the later phases and will be certified several years after the grant is considered as additional investments spread over a period of years.

109 Beneficiaries that receive 100 % funding are usually excluded from this calculation and from reporting, except in cases of ineligible costs incurred within a project, which could also be reported and certified as IKOP.

110 Sum of the figures for 2015/2016 (EUR 5 551 302), 2017 (EUR 12 127 016), 2018 (EUR 20 685 523) and 2019 (16 776 318).

111 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. 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.

112 This amount only comprises those parts of the 2018 IKAA that were certified by 27 May 2019, and NOT the certified IKAA of 2019. Due to the impact of the COVID-19 crisis, these certificates were not available in May as usually, but will only be available during the second semester of 2020.

113 EUR 8 857 020 (administrative) + EUR 3 250 000 (financial contribution at programme level) + EUR 12 102 972 (IKOP certified) + EUR 699 879 000 (certified IKAA).

- Taken together, the efforts described in the above points are less than positive steps towards fulfilling the commitments, and more work is needed.
 - 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 2017¹¹⁴. Only the signed grant agreements up to Call 2018 can be considered, as the Call 2019 grant agreements had not yet been signed by 31 December 2019.
 - Although this leverage factor comprises both committed (difference between the total costs and the JU contribution of the grant agreements signed, the Union contribution, BIC's financial contribution at programme and project level) and certified (IKAA) amounts, it is a positive step towards the initiative achieving significant leverage by 2024.
 - The Governing Board appreciates that the 2019 AAR shows the value of the initiative's overall operational leverage together with the underlying figures.
- The BBI JU's efficiency is monitored by 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 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 they play 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

¹¹⁴ 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.

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 six new demonstration projects are expected to consolidate this positive trend.

- The finalised projects - numbering 12 by the end of 2019 – 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 show a trend of outperforming the set out KPIs.
- The Governing Board takes note of BBI JU's efforts to increase its available payment appropriations in time to provide pre-financing for the newly signed grants.
- The Governing Board appreciates the BBI JU's work on communication and outreach, which helped it gain recognition. The BBI JU programme office organised a very successful info day and participated in 14 national info days, BBI JU organised and participated in 63 meetings, events and conferences. It published several brochures describing the results and impact of BBI projects. The BBI JU also organised a very successful stakeholder forum that welcomed a great number of participants and facilitated insightful discussions.
- The Governing Board acknowledges that the programme office management processes and functions meet the four objectives of its internal control framework. It also appreciates the revision of the decision laying down internal rules concerning restrictions of certain rights of data subjects in relation to processing of personal data in the framework of the functioning of the BBI JU.

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 2019 AAR reflects the situation at the end of 2019. It believes that the 2019 AAR provides a complete and accurate report of the progress made by the BBI JU in 2019, in

particular on the objectives set in the 2019 AWP as amended on 26 March 2019. 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 Governing Board draws the BBI JU's attention to a number of issues that require improvement, as listed above.

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 2019 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, the Governing Board confirms that, in general, suitable internal control standards either have been put in place and 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 2019.

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.



6

Declaration of assurance

6.1 DECLARATION OF ASSURANCE

I, the undersigned, Philippe Mengal, Executive Director of the Bio-Based Industries Joint Undertaking,

In my capacity as authorising officer

Declare that the information contained in this report gives a true and fair view¹¹⁵.

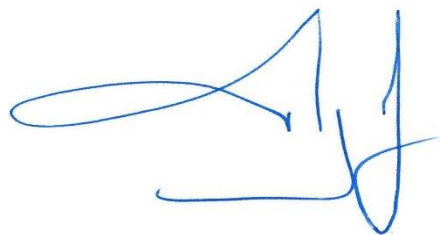
State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning 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 Joint Undertaking.

Place: Brussels

Date: 28/02/2020



Philippe MENGAL
Executive Director

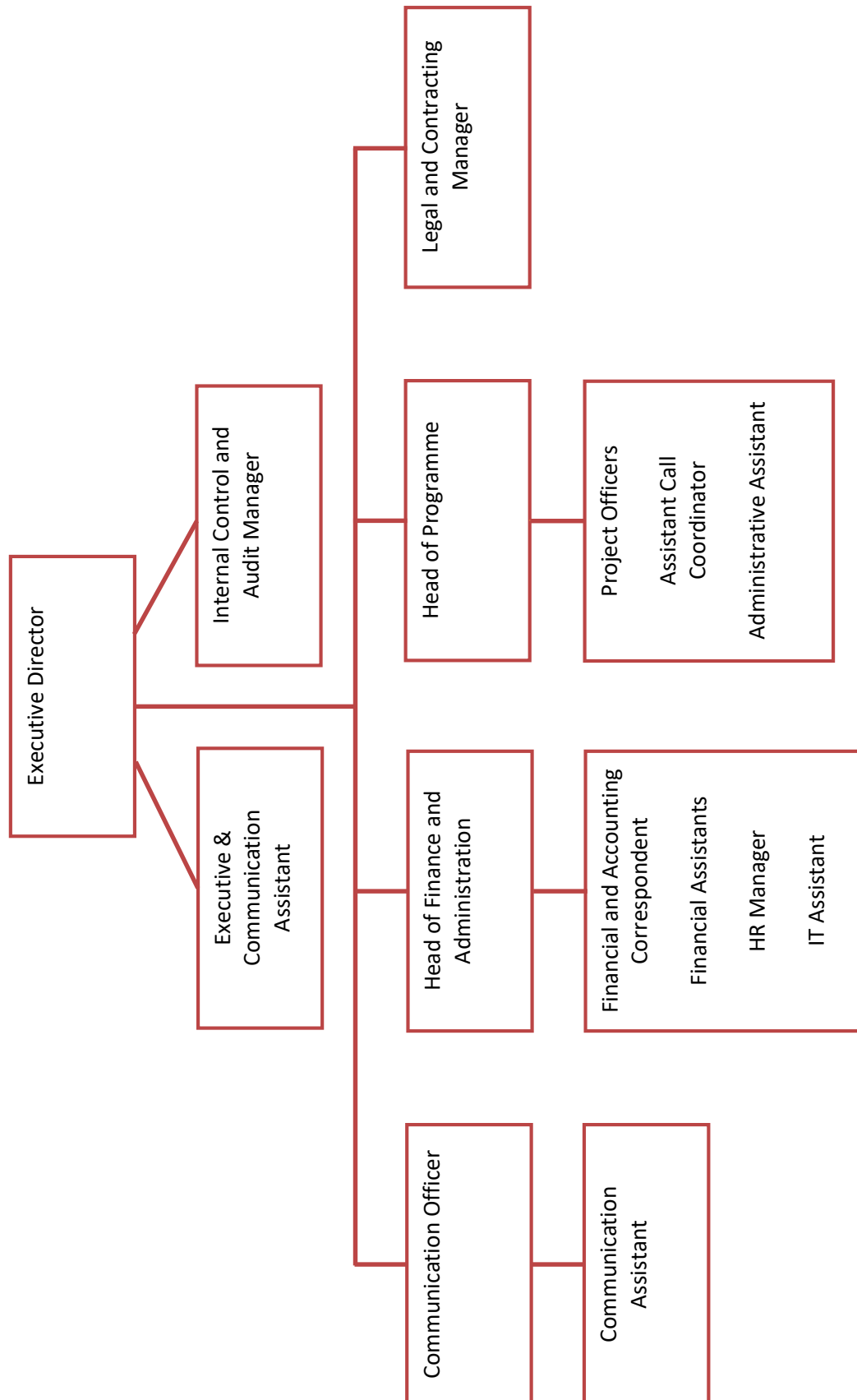
¹¹⁵ True and fair in this context means a reliable, complete and correct view on the state of affairs in the Joint Undertaking.



7

Annexes

7.1. ORGANISATIONAL CHART



7.2. STAFF ESTABLISHMENT PLAN

| Function group and grade | 2018 | | | | 2019 | | | |
|--------------------------|-------------------|-----------------|-------------------------------------|-----------------|-------------------|-----------------|-------------------------------------|-----------------|
| | Authorised budget | | Filled in position as of 31/12/2018 | | Authorised budget | | Filled in position as of 31/12/2019 | |
| | 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 | | | | | | 1 | | 1 |
| AD 11 | | 2 | | 2 | | 1 | | 1 |
| AD 10 | | | | | | | | |
| AD 9 | | | | | | | | |
| AD 8 | | 2 | | 2 | | 3 | | 3 |
| AD 7 | | 5 | | 5 | | 4 | | 4 |
| AD 6 | | | | | | | | |
| AD 5 | | | | | | | | |
| AD total | | 10 | | 10 | | 10 | | 10 |
| AST 11 | | | | | | | | |
| AST 10 | | | | | | | | |
| AST 9 | | | | | | | | |
| AST 8 | | | | | | | | |
| AST 7 | | | | | | | | |
| AST 6 | | | | | | | | |
| AST 5 | | 1 | | | | 1 | | |
| AST 4 | | 1 | | 2 | | 1 | | 1 |
| AST 3 | | | | | | | | |
| AST 2 | | 1 | | 1 | | 1 | | 1 |
| AST 1 | | | | | | | | |

| Function group and grade | 2018 | | | | 2019 | | | |
|--------------------------|-------------------|-----------------|-------------------------------------|-----------------|-------------------|-----------------|-------------------------------------|-----------------|
| | Authorised budget | | Filled in position as of 31/12/2018 | | Authorised budget | | Filled in position as of 31/12/2019 | |
| | Permanent Posts | Temporary Posts | Permanent Posts | Temporary Posts | Permanent Posts | Temporary Posts | Permanent Posts | Temporary Posts |
| AST total | | 3 | | 3 | | 3 | | 2 |
| 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 2018 | Recruited as of 31/12/2018 | Authorised 2019 | Recruited as of 31/12/2019 |
|--------------------|-----------------|----------------------------|-----------------|----------------------------|
| Function group IV | 5 | 5 | 5 | 5 |
| Function group III | 5 | 5 | 5 | 5 |
| Function group II | | | | |
| Function group I | | | | |
| TOTAL | 10 | 10 | 10 | 10 |

7.3. PUBLICATIONS FROM PROJECTS

The tables for the publications below were generated based on data provided by BBI JU funded projects via the 'continuous reporting' module¹¹⁶ of the Funding and Tenders Portal. The category "other" includes mainly congress presentations and public reports that do not strictly fit into any of the other categories. In the AAR 2018 the table below was included, and 75 publications from 2018 were reported by BBI JU projects.

| Project | 2015 | 2016 | 2017 | 2018 |
|-------------------------------|------|------|------|------|
| Article | - | - | 2 | - |
| Book chapter | - | - | 1 | 4 |
| Conference proceedings | - | 4 | 18 | 12 |
| Monographic book | - | - | 1 | 1 |
| Other | - | 1 | 21 | 2 |
| Peer reviewed article | 1 | 5 | 26 | 47 |
| Thesis dissertation | 1 | 2 | 2 | 9 |
| Total | 2 | 12 | 71 | 75 |

In the AAR 2018 it was stated that this 2018 amount was most likely an underestimation, since some 2018 publications were not yet added in the Funding and Tenders Portal by the end of 2018. In the table below, an update of this table is provided based on the data encoded in the Funding and Tenders Portal by 31/12/2019. Whereas the results for 2015-2017 only included minor modifications, the 2018 data increased from 75 to 120 publications. Therefore, it is to be expected that the amounts reported for 2019 are also underestimations. In total, BBI JU projects have produced 341 publications between the years 2015-2019.

| Project | 2015 | 2016 | 2017 | 2018 | 2019 |
|---------------------|------|------|------|------|------|
| Article | | | 2 | 5 | 2 |
| Book chapter | | | 1 | 5 | 2 |

¹¹⁶ https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/reports/continuous-report_en.htm

| | | | | | |
|-------------------------------|----------|-----------|-----------|------------|------------|
| Conference proceedings | 1 | 7 | 19 | 18 | 23 |
| Monographic book | | | 1 | | 0 |
| Other | 1 | 1 | 21 | 16 | 20 |
| Peer reviewed article | | 5 | 26 | 59 | 73 |
| Thesis dissertation | 1 | 2 | 4 | 17 | 9 |
| Total | 3 | 15 | 74 | 120 | 129 |

The publications produced by BBI JU projects in 2019 are listed in the table below, being grouped per project. It is important to mention that the BBI JU projects followed the Horizon 2020 guidelines¹¹⁷ for Open Access (OA) publications: 26 40 are in Green OA and 28 64 are in Gold OA. Out of the 2125 remaining publications that are not in OA, only four two of them are peer-reviewed Journal articles, which in practice means that 71 of 73 (more than 970%) of the peer-reviewed journal publications from BBI JU followed the Horizon 2020 guidelines for Open Access to scientific publications, which is considered a very good outcome.

¹¹⁷ http://ec.europa.eu/research/participants/data/ref/h2020/grants_manual/hi/oa_pilot/h2020-hi-oa-pilot-guide_en.pdf

| Project Acronym | Publication Title | Authors | Journal Title | Publisher |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------|
| ABACUS | Development of a Green Downstream Process for the Valorization of Porphyridium cruentum Biomass | Rocío Gallego, Marina Martínez, Alejandro Cifuentes, Elena Ibáñez, Miguel Herrero | Molecules | Multidisciplinary Digital Publishing Institute (MDPI) |
| ABACUS | Microalgal Carotenoids: A Review of Production, Current Markets, Regulations, and Future Direction | Lucie Novoveská, Michael E. Ross, Michele S. Stanley, Rémi Pradelles, Virginie Wasiolek, Jean-François Sassi | Marine Drugs | Multidisciplinary Digital Publishing Institute (MDPI) |
| ABACUS | Sub- and supercritical fluid extraction of bioactive compounds from plants, food-by-products, seaweeds and microalgae – An update | Rocío Gallego, Mónica Bueno, Miguel Herrero | TrAC Trends in Analytical Chemistry | Elsevier BV |
| AgriChemWhey | Advanced Separation Processes for Recovery of Critical Raw Materials From Renewable and Waste Resources | Saranya Rameshkumar, Mukesh Pednekar, Sarat Chandra T, James J. Doyle, Ramesh Babu P | Reference Module in Materials Science and Materials Engineering | Elsevier |
| AgriMax | Evaluation of Mechanical and Interfacial Properties of Bio-Composites Based on Poly(Lactic Acid) with Natural Cellulose Fibers | Laura Aliotta, Vito Gigante, Maria Coltelli, Patrizia Cinelli, Andrea Lazzeri | International Journal of Molecular Sciences | Multidisciplinary Digital Publishing Institute (MDPI) |
| AQUABIOPROFIT | Innovative Green Technologies of Intensification for Valorization of Seafood and Their By-Products | Fadila Al Khawli, Mirian Pateiro, Rubén Domínguez, José M. Lorenzo, Patricia Gullón, Katerina Kousoulaki, Emilia Ferrer, Houda Berrada, Francisco J. Barba | Marine Drugs | Multidisciplinary Digital Publishing Institute (MDPI) |

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|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| BIOFOREVER | Fast screening of optimal acid-pretreatment conditions in the conversion of wood to lignocellulosic sugars | Jan Smits, Loes Bevers, Marco van Haastert, Roel Wiertz, Hans Kroon | Bioresource Technology Reports | Elsevier |
| BIOMOTIVE | Biomotive anunta o revolutie in productia de materiale plastice pentru industria auto | Gabriel Kolbay | Ziare | Ziare |
| BIOMOTIVE | BIOMOTIVE: project taking a different approach to sustainability | Umberto Guida, Senior Director Knowledge and Innovation Department, UITP | Intelligent Transport Magazine (web magazine) | Intelligent Transport Magazine (web magazine) |
| BIOMOTIVE | Car parts from weeds: The future of green motoring? | Chris Baraniuk (Technology of Business reporter) | BBC News Services | BBC |
| BIOrescue | From Compost to Colloids—Valorisation of Spent Mushroom Substrate | Sebastian J. Beckers, Irantzu Alegria Dallo, Inés del Campo, Christine Rosenauer, Katja Klein, Frederik R. Wurm | ACS Sustainable Chemistry & Engineering | American Chemical Society |
| BIOrescue | Targeted Drug Delivery in Plants: Enzyme-Responsive Lignin Nanocarriers for the Curative Treatment of the Worldwide Grapevine Trunk Disease Esca | Jochen Fischer, Sebastian J. Beckers, Dounporn Yiamsawas, Eckhard Thines, Katharina Landfester, Frederik R. Wurm | Advanced Science | Wiley; Advanced Science |
| Dendromass4Europe | Identification of fungicidal components in poplar bark from short rotation plantations. | Daniela Einer, Martina, Bremer, Javane Oktaee, Steffen Fischer, André Wagenführ | holztechnologie | Inst. für Holztechnologie |
| Dendromass4Europe | Efficiency of Different Machine Layouts for Chain Flail Delimbing, Debarking and Chipping | Andrew McEwan, Michal Brink, Raffaele Spinelli | Forests | MDPI Open Access Publishing |

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|---------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| EFFORTE | Improved forest regeneration operations in Latvia – transfer and adaption of Nordic technologies - mechanised planting | Lazdina, D.*, Dumins, K., Arturs Stals, T., Makovskis, K. & Saksa, T. | Proceedings of the Nordic-Baltic Conference on Operational Research (NB-NORD), Forest Operations in Response to Environmental Challenges, June 3-5 2019, Honne, Norway | Nibio |
| EFFORTE | Simulating concepts for fully mechanised stand regeneration | Manner, J., Bergkvist, I., Andersson, G.*, Jönsson, P., Sundblad, L-G, & Ersson, B T. | regeneration Proceedings of the Nordic-Baltic Conference on Operational Research (NB-NORD), Forest Operations in Response to Environmental Challenges, June 3-5 2019, Honne, Norway | Nibio |
| EFFORTE | Decision support for proposing main extraction routes in final felling | Willén, E., Davidsson, A. | | Skogforsk |

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|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------|-------------------------------------------|
| EFFORTE | Regeneration planning using harvester information and geodata | Friberg, G., Möller, J.J., Willén, E., Jacobsson, S., Bhuiyan, N. | | Skogforsk |
| EFFORTE | Scheduling of harvesters | Willén E., Frisk, M. Flisberg, P. | | Skogforsk |
| EFFORTE | Site index predictions for precision forest planting combining harvester data and auxiliaries derived from airborne laser scanning | Rasmus Sörensen, Liviu Theodor Ene, Jon Söderberg, Lars Wilhelmsson | Abstracts for the NoRSC'19 Conference at AIAS | Aarhus University |
| EFFORTE | Täsmätietoa taimikonhoitoon | Saksa, T | Metsälehdien tiedeliite 15.8.2019 | Metsälehti |
| EFFORTE | Brève approvisionnement n°15 (2019-06) Ateliers de dialogue sur la praticabilité https://www.fcba.fr/sites/default/files/files/Approvisionnement15.pdf | Morgan VUILLERMOZ, Philippe RUCH | | FCBA |
| EFFORTE | Journée mécanisation forestière et protection des sols (2019-07-09) www.fcba.fr/actualite/journee-mecanisation-forestiere-et-protection-des-sols | Philippe RUCH | | FCBA |
| EFFORTE | Cost Analysis of Innovative Biomass Harvesting Systems for Young Dense Thinnings | Dan Bergström | Croatian journal of forest engineering | Faculty of Forestry, University of Zagreb |
| EFFORTE | Modelling soil moisture – soil strength relationship of fine-grained upland forest soils | Jori Uusitalo, Jari Ala-Ilomäki, Harri Lindeman, Jenny Toivio, Matti Siren | Silva Fennica | Finnish Society of Forest Sciences |

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|---------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|------------------------------------|
| EFFORTE | Soil disturbance by cut-to-length machinery on mid-grained soils | Matti Sirén, Jari Ala-Ilomäki, Harri Lindeman, Jori Uusitalo, Kalle Kiilo, Aura Salmivaara, Ari Ryyänen | Silva Fennica | Finnish Society of Forest Sciences |
| EFFORTE | The efficacy of <i>Chondrostereum purpureum</i> in sprout control of birch during mechanised pre-commercial thinning | Tiina Laine, Leena Hamberg, Veli-Matti Saarinen, Timo Saksa | BioControl | Kluwer Academic Publishers |
| EFFORTE | The efficacy of <i>Chondrostereum purpureum</i> against sprouting of deciduous species after mechanised pre-commercial thinning | Tiina Laine, Leena Hamberg, Veli-Matti Saarinen, Timo Saksa | Silva Fennica | Finnish Society of Forest Science |
| EFFORTE | Variable corridor thinning – a cost-effective key to provision of multiple ecosystem services from young boreal conifer forests? | Johanna Witzell, Dan Bergström, Urban Bergsten | Scandinavian Journal of Forest Research | Taylor & Francis |
| EnzOx2 | Binding and Catalytic Mechanisms of Veratryl Alcohol Oxidation by Lignin Peroxidase: A Theoretical and Experimental Study | Jefferson O. Romero, Elena Fernández-Fueyo, Fabián Avila-Salas, Rodrigo Recabarren, Jans Alzate-Morales, Angel T. Martínez | Computational and Structural Biotechnology Journal | Elsevier |
| EnzOx2 | Complete oxidation of hydroxymethylfurfural to furandicarboxylic acid by aryl-alcohol oxidase | Ana Serrano, Eva Calviño, Juan Carro, María I. Sánchez-Ruiz, F. Javier Cañada, Angel T. Martínez | Biotechnology for Biofuels | BioMed Central |

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|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|------------------------------|
| EnzOx2 | Energising the E-factor: The E+-factor | Florian Tieves, Fabio Tonin, Elena Fernández-Fueyo, John M. Robbins, Bettina Bommarius, Andreas S. Bommarius, Miguel Alcalde, Frank Hollmann | Tetrahedron | Pergamon Press Ltd. |
| EnzOx2 | Formate Oxidase (FOx) from <i>Aspergillus oryzae</i> : One Catalyst Enables Diverse H ₂ O ₂ - Dependent Biocatalytic Oxidation Reactions | Florian Tieves, Sébastien Jean-Paul Willot, Morten Martinus Cornelis Harald van Schie, Marine Charlène Renée Rauch, Sabry Hamdy Hamed Younes, Wuyuan Zhang, JiaJia Dong, Patricia Gomez de Santos, John Mick Robbins, Bettina Bommarius, Miguel Alcalde, Andreas Sebastian Bommarius, Frank Hollmann | Angewandte Chemie International Edition | John Wiley & Sons Ltd. |
| EnzOx2 | Increase of Redox Potential during the Evolution of Enzymes Degrading Recalcitrant Lignin | Iván Ayuso-Fernández, Antonio L. De Lacey, Francisco J. Cañada, Francisco J. Ruiz-Dueñas, Angel T. Martínez | Chemistry - A European Journal | John Wiley & Sons Ltd. |
| EnzOx2 | Peroxidase evolution in white-rot fungi follows wood lignin evolution in plants | Iván Ayuso-Fernández, Jorge Rencoret, Ana Gutiérrez, Francisco Javier Ruiz-Dueñas, Angel T. Martínez | Proceedings of the National Academy of Sciences | National Academy of Sciences |

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|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------|
| EnzOx2 | Selective synthesis of 4-hydroxyisophorone and 4-ketoisophorone by fungal peroxygenases | Carmen Aranda, Martí Múnicoy, Víctor Guallar, Jan Kiebitz, Katrin Scheibner, René Ullrich, José C. del Río, Martín Hofrichter, Ángel T. Martínez, Ana Gutiérrez | Catalysis Science & Technology | Royal Society of Chemistry |
| EnzOx2 | Structure-Guided Immobilization of an Evolved Unspecific Peroxygenase | Patricia Molina-Espeja, Paloma Santos-Moriano, Eva García-Ruiz, Antonio Ballesteros, Francisco Plou, Miguel Alcalde | International Journal of Molecular Sciences | Multidisciplinary Digital Publishing Institute (MDPI) |
| EnzOx2 | Biotechnology platforms for aryl-alcohol oxidases by directed evolution | Javier Viña | | ICP-CSIC/Universidad Autónoma de Madrid |
| EnzOx2 | Biotransformations of industrial interest catalysed by fungal peroxygenases | Carmen Aranda | | IRNAS-CSIC/Universidad de Sevilla |
| EnzOx2 | Evolución dirigida de la peroxigenasa inespecífica de <i>Agrobacterium aegerita</i> : tolerancia a disolventes orgánicos mediante deriva genética neutral y evolución adaptativa | Javier Martín | | ICP-CSIC/Universidad Autónoma de Madrid |
| EnzOx2 | Resurrection of ancestral ligninolytic peroxidases Resurrección de peroxidasas ligninolíticas ancestrales | Ivan Ayuso | | CIB-CSIC/Universidad Complutense de Madrid |

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|-------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------|
| EXILVA | Towards optimised size distribution in commercial microfibrillated cellulose: a fractionation approach | Per A. Larsson, Anastasia V. Riazanova, Goksu Cinar Ciftci, Ramiro Rojas, Hans Henrik Øvrebø, Lars Wågberg, Lars A. Berglund | Cellulose | Blackie Academic & Professional |
| FUNGUSCHAIN | Agaricus bisporus and its by-products as a source of valuable extracts and bioactive compounds | Marina Ramos, Nuria Burgos, Almero Barnard, Gareth Evans, James Preece, Michael Graz, Andrea Caroline Ruthes, Amparo Jiménez-Quero, Antonio Martínez-Abad, Francisco Vilaplana, Long Pham Ngoc, Abraham Brouwer, Bart van der Burg, María del Carmen Garrigós, Alfonso Jiménez | Food Chemistry | Elsevier BV |
| FUNGUSCHAIN | Identification of PPAR-activating compounds in herbal and edible plants and fungi from Vietnam | Long Pham Ngoc, Hai-yen Man, Harry Besselink, Ha Dang Thi Cam, Abraham Brouwer, Bart van der Burg | Industrial Crops and Products | Elsevier BV |
| GreenLight | Life Cycle Assessment of lignin-based carbon fibres | Matty Janssen*,†, Eva Gustafsson‡, Linda Echardt‡, Johan Wallinder§ and Jens Wolf§ | | --- |

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|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------|
| GreenLight | Lignin-based Carbon fiber: effect of softwood kraft lignin separation method on multifilament melt-spinning performance and conversion Overview of GL project and main achievements at ISWFPC 2019 conference | Omid Hosseinaei, Darren Baker, , Ewellyn Capanema, Maria Sedin. RISE Bioeconomy (Innventia), Box 5604, SE-114 86 Stockholm, Sweden Linda Echardt. Södra Skogsägarna ekonomisk förening, Södra Innovation & Nya Affärar, 43286 Väröbacka, Sweden | Proceedings of the 20th International Symposium on Wood Fiber and Pulping Chemistry | --- |
| GreenLight | Lignin-based carbon fibre for lighter cars – GreenLight Project | Birgit Backlund | BE sustainable | Samuele Nannoni |
| GreenLight | The continuous precursor spinning of lignin carbon fibre | Lars Bostan, Omid Hosseinaei | Carbon - Journal | --- |
| GreenSolRes | Hydrogenation of Polyesters to Polyether Polyols | Bernhard M. Stadler, Sandra Hinze, Sergey Tin, Johannes G. Vries | ChemSusChem | Wiley - V C H Verlag GmbbH & Co. |
| GreenSolRes | Properties of Novel Polyesters Made from Renewable 1,4-Pentenediol | Bernhard M. Stadler, Adrian Brandt, Alexander Kux, Horst Beck, Johannes G. Vries | ChemSusChem | Wiley - V C H Verlag GmbbH & Co. |
| iFermenter | EXTENDED KALMAN FILTER FOR SUGAR ESTIMATION USING COMBINED FREQUENT AND INFREQUENT MEASUREMENTS | Andrea Tuveri, Pedro Llra, Fernando Perez-Garcia, Nadav Bar | IFAC FOSBE 19 | Elsevier |

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|------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------|
| iFermenter | Model-based Analysis and Optimisation of a Continuous <i>Corynebacterium glutamicum</i> Bioprocess Utilizing Lignocellulosic Waste | Peter Sinner, Julian Kager, Sven Daume, Christoph Herwig | IFAC-PapersOnLine | Elsevier |
| iFermenter | The Increasing Issue of Vancomycin-Resistant Enterococci and the Bacteriocin Solution | | Probiotics and Antimicrobial Proteins | Springer Pub. Co., |
| InDIRECT | Allergenicity assessment of edible insects and their protein hydrolysates. | Giulia Leni, Tullia Tedeschi, Claudia Folli, Augusta Caligiani, Martina Cirlini, Natasja Gianotten, Stefaan Depraetere, Stefano Sforza. | Insecta 2019 | Leibniz-Institut für agrartechnik und Bioökonomie |
| InDIRECT | Biorefinery approach for conversion of organic side-streams into multiple marketable products using insects – InDIRECT project | L. Bastiaens & InDIRECT consortium | Insecta 2019 | Leibniz-Institute für agrartechnik und Bioökonomie |
| InDIRECT | Comparing different defatting methods to extract protein and fat from the lesser mealworm | Lise Soetemans, Stefano Sforza, Leen Bastiaens | Insecta 2019 | Leibniz-Institut für agrartechnik und Bioökonomie |
| InDIRECT | Evaluation of insect derived functional feed ingredients in poultry diets | Stefanie Verstringe, Geert Bruggeman & Leen Bastiaens. | Insecta 2019 | Publisher proceedings: Leibniz-Institut für agrartechnik und Bioökonomie |

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| InDIRECT | Fractionation of insect biomass – BBI-InDIRECT project | Leen Bastiaens, Lise Soetemans, Giulia Cantero, Queenie Simons, Van Roy Sandra, Augusta Caligiani, Stefano Sforza | Insecta 2019 | Leibniz-Institut für agrartechnik und Bioökonomie |
| InDIRECT | IDENTIFICATION OF TROPOMYOSIN AS THE MOST RELEVANT ALLERGEN IN EDIBLE INSECTS | Giulia Leni, Federico Pratesi, Tullia Tedeschi, Claudia Folli, Augusta Caligiani, Ilaria Puxeddu, Martina Cirlini, Natasja Gianotten, Stefaan Depraetere, Stefano Sforza | 9th International Symposium on 'RECENT ADVANCES IN FOOD ANALYSIS' | University of Chemistry and Technology |
| InDIRECT | • Impact of naturally contaminated substrates on Alphitobius diaperinus and Hermetia illucens: uptake and excretion of mycotoxins | C. Dall'Asta, G. Leni, M. Cirlini, J. Jacobs, S. Depraetere, N. Gianotten, S. Sforza. 2019 | 9th International Symposium on 'RECENT ADVANCES IN FOOD ANALYSIS' | University of Chemistry and Technology |
| InDIRECT | Impact of side-stream based feed on the composition of the lesser mealworm larvae | Lise Soetemans, Natasja Gianotten, Leen Bastiaens | Insecta 2019 | Leibniz-Institut für agrartechnik und Bioökonomie |
| InDIRECT | Insects as an alternative source for chitin or chitosan | Lise Soetemans, Miet van Dael, Stefano Sforza, Leen Bastiaens | Insecta 2019 | Publisher proceedings: Leibniz-Institut für agrartechnik und Bioökonomie |
| InDIRECT | Optimal rearing of Alphitobius diaperinus on organic side-streams in the InDIRECT project | N. Gianotten, J. Roels, M. Lopez, S. Sforza, L. Bastiaens | insecta 2019 | Leibniz-Institut für agrartechnik und Bioökonomie |

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| InDIRECT | Impact of Naturally Contaminated Substrates on <i>Alphitobius diaperinus</i> and <i>Hermetia illucens</i> : Uptake and Excretion of Mycotoxins | Giulia Leni, Martina Cirlini, Johan Jacobs, Stefaan Depraetere, Natasja Gianotten, Stefano Sforza, Chiara Dall'Asta | Toxins | Multidisciplinary Digital Publishing Institute (MDPI) |
| InDIRECT | Use of organic acids to improve fractionation of the black soldier fly larvae juice into lipid- and protein-enriched fractions | Lise Soetemans, Maarten Uyttebroek, Els D'Hondt, Leen Bastiaens | European Food Research and Technology | Springer Verlag |
| LIBBIO | Genetics and Breeding of <i>Lupinus mutabilis</i> : An Emerging Protein Crop | Agata Gulisano, Sofia Alves, João Neves Martins, Luisa M. Trindade | Frontiers in Plant Science | Frontiers Media S. A. |
| LIBRE | Bio-derived carbon nanofibers from lignin as high-performance Li-ion anode materials | Mario Culebras, Hugh Geaney, Anne Beaucamp, Prathviraj Upadhyaya, Eric Dalton, Kevin M Ryan[, Maurice N Collins | ChemSusChem | Wiley - V C H Verlag GmbbH & Co. |
| LIBRE | Biopolymer blends from hardwood lignin and bio-polyamides: Compatibility and miscibility | R. Muthuraj, M. Hajee, A.R. Horrocks, B.K. Kandola | International Journal of Biological Macromolecules | Elsevier BV |
| LIBRE | Carbon fibres from renewable resources: the role of the lignin molecular structure in its blendability with bio-based poly(ethylene terephthalate) | Anne Beaucamp, Yan Wang, Mario Culebras, Maurice N. Collins | Green Chemistry | Royal Society of Chemistry |
| LIBRE | Prospective study of lignin-based and recycled carbon fibers in composites through meta-analysis of life cycle assessments | Frida Hermansson, Matty Janssen, Magdalena Svanström | Journal of Cleaner Production | Elsevier BV |

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| LIBRE | Thermoelectric properties of electrospun carbon nanofibres derived from lignin | Niall Dalton, Robert P. Lynch, Maurice N. Collins, Mario Culebras | International Journal of Biological Macromolecules | Elsevier BV |
| LIBRE | Valorization of lignin in polymer and composite systems for advanced engineering applications – A review | Maurice N. Collins, Mărioara Nechifor, Fulga Tanasă, Mădălina Zănoagă, Anne McLoughlin, Michał A. Stróżyk, Mario Culebras, Carmen-Alice Teacă | International Journal of Biological Macromolecules | Elsevier BV |
| LigniOx | LigniOx lignins – A new type of high-performance concrete plasticizer | Kalliola, A., Vehmas, T., Liitiä, T., Baumann, R. Schmitz, M. | | Springer |
| LigniOx | Lignin and hemicellulose in dispersions – as surfactants and functional materials | Patrik Borenus | | Tampere University |
| LigniOx | Post-treatment of oxidised organosolv lignin for versatile dispersant applications using membrane filtration -Evaluating the significance and feasibility of a two-stage membrane filtration | Adam Aryo Wibowo | | KU Leuven |
| LIGNOFLAG | Comparison of advanced fuels— Which technology can win from the life cycle perspective? | Daniel C. Rosenfeld, Johannes Lindorfer, Karin Fazeni-Fraisl | Journal of Cleaner Production | Elsevier BV |
| LIPES | STC-Engineering mit Forschungsprojekt LIPES | Patrick Jobst (STC-Engineering GmbH) | Verfahrenstechnik | Vereinigte Fachverlage GmbH |

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|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------|
| LIPES | S-Gamma Model: Fitting of coalescence and break parameters with STAR CCM+ | Podlecki, M. | | TU Berlin |
| LIPES | Enzyme deactivation through hydrodynamic forces in stirred tank reactors | Li, B. | | TU Berlin |
| LIPES | Modelling of enzymatic hydrolysis kinetics in multiphase systems | Grabowski, J. | | TU Berlin |
| MACRO CASCADE | Cultivation technology development of Rhodothermus marinus DSM 16675 | Emanuel Y. C. Ron, Roya R. R. Sardari, Richard Anthony, Ed W. J. van Niel, Gudmundur O. Hreggvidsson, Eva Nordberg-Karlsson | Extremophiles | Springer Verlag |
| MACRO CASCADE | Proteomic enzyme analysis of the marine fungus Paradendryphiella salina reveals alginate lyase as a minimal adaptation strategy for brown algae degradation | Bo Pilgaard, Casper Wilkens, Florian-Alexander Herbst, Marlene Vuillemin, Nanna Rhein-Knudsen, Anne S. Meyer, Lene Lange | Scientific Reports | Nature Publishing Group |
| MAGNIFICENT | CRISPR-Cas ribonucleoprotein mediated homology-directed repair for efficient targeted genome editing in microalgae Nannochloropsis oceanica IMET1 | Mihris Ibnu Saleem Naduthodi, Prarthana Mohanraju, Christian Südfeld, Sarah D'Adamo, Maria J. Barbosa, John van der Oost | Biotechnology for Biofuels | BMC |
| NewFert | Understanding nitrogen recovery from wastewater with a high nitrogen concentration using microbial electrolysis cells | M. Isabel San-Martín, Raúl Mateos, Adrián Escapa, Antonio Morán | Journal of Environmental Science and Health, Part A | Marcel Dekker Inc. |

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|-------------|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------|
| NEWPACK | Incorporation of Waste Orange Peels Extracts Into PLA Films | Bassani, A., Montes, S., Jubete, E., Palenzuela, J., Sanjuan, A. P., & Spigno, G. | Chemical Engineering Transactions | The Italian Association of Chemical Engineering |
| NEWPACK | Piezoresistive Carbon Foams in Sensing Applications | Krisztian Kordas, Olli Pitkänen | Frontiers in Materials | Frontiers Media SA |
| PERCAL | Assessing the organic fraction of municipal solid wastes for the production of lactic acid | J. Pablo López-Gómez, Marcos Latorre-Sánchez, Peter Unger, Roland Schneider, Caterina Coll Lozano, Joachim Venus | Biochemical Engineering Journal | Elsevier BV |
| POLYBIOSKIN | Baby Diapers Past and Present: A Critical Review | Pietro Febo and Alessandro Gagliardini (edited by Pierfrancesco Morganti) | Bionanotechnology to save the environment. Plants and fishery's biomass as alternative to petrol | MDPI |
| PROVIDES | A Search for Natural Hydrophobic Deep Eutectic Solvents Based on Natural Components | Dannie J. G. P. van Osch, Carin H. J. T. Dietz, Jaap van Spronsen, Maaïke C. Kroon, Fausto Gallucci, Martin van Sint Annaland, Remco Tuinier | ACS Sustainable Chemistry & Engineering | American Chemical Society |
| ReInvent | Improving the sustainability of bio-based polyurethane foam through the addition of a reactive food waste: walnut shell | L. Verdolotti, F. De Luca Bossa, P. Campaner, M. Oliviero, M. Lavorgna, S. Iannace, G.G. Buonocore | SLIM 2019. 9° Shelf life International Meeting | SLIM |
| ReInvent | Modification of Nanocrystalline Cellulose As Bio-reinforcement For Polyurethanes Foams | Francesca Coccia | | World Forum on Advanced Materials, Polychar 27 |

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| ReSolve | A comparison of the solvation power of the green solvent 2,2,5,5-tetramethyloxolane versus toluene via partition coefficients | Fergal P. Byrne, William M. Hodds, Seishi Shimizu, Thomas J. Farmer, Andrew J. Hunt | Journal of Cleaner Production | Elsevier BV |
| ReSolve | A Method of Calculating the Kamlet–Abboud–Taft Solvatochromic Parameters Using COSMO-RS | James Sherwood, Joe Granelli, Con R. McElroy, James H. Clark | Molecules | Multidisciplinary Digital Publishing Institute (MDPI) |
| ReSolve | Safer bio-based solvents to replace toluene and tetrahydrofuran for the biocatalysed synthesis of polyesters | Alessandro Pellis, Fergal P. Byrne, James Sherwood, Marco Vastano, James W. Comerford, Thomas J. Farmer | Green Chemistry | Royal Society of Chemistry |
| RoadToBio | Paving the way to a bio-based future for the European chemical industry | Christopher vom Berg | Portal for bio-based economy and industrial biotechnology (Link: http://news.bio-based.eu/) | nova-Institut GmbH |
| RoadToBio | Roadmap soll helfen Anteil biobasierter Chemikalien zu steigern | Ruebberdt, Kathrin Koenig, Lea | | Vogel Communications Group GmbH & Co. KG |

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|-------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------------------------|
| SSUCHY | Permeability characterisation of braided fabrics made of hemp fibers | Felice Rubino, Anne-Clémence Corbin, Manuela Ferreira, Ahmad Rashed Labbanieh, Luigi Sanguigno, Damien Soulat, Angelo Maligno | PROCEEDINGS OF THE 22ND INTERNATIONAL ESAFORM CONFERENCE ON MATERIAL FORMING: ESAFORM 2019 | AIP Publishing |
| SSUCHY | About the fatigue endurance of unidirectional flax-epoxy composite laminates | Thomas Jeannin, Xavier Gabrion, Emmanuel Ramasso, Vincent Placet | Composites Part B: Engineering | Pergamon Press Ltd. |
| SSUCHY | Improving moisture durability of flax fibre composites by using non-dry fibres | Maria Morissa Lu, Aart Willem Van Vuure | Composites Part A: Applied Science and Manufacturing | Pergamon Press Ltd. |
| SSUCHY | New Reactive Isoeugenol Based Phosphate Flame Retardant: Toward Green Epoxy Resins | Sylvie Pourchet, Rodolphe Sonnier, Marwa Ben-Abdelkader, Yves Gaillard, Quentin Ruiz, Vincent Placet, Laurent Plasseraud, Gilles Boni | ACS Sustainable Chemistry & Engineering | American Chemical Society |
| SusBind | Modulating Fatty Acid Epoxidation vs Hydroxylation in a Fungal Peroxygenase | Juan Carro, Alejandro González-Benjumea, Elena Fernández-Fueyo, Carmen Aranda, Victor Guallar, Ana Gutiérrez, Angel T. Martínez | ACS Catalysis | American Chemical Society |
| TECH4EFFECT | Assessing Cable Tensile Forces and Machine Tilt of Winch-Assisted Forwarders on Steep Terrain under Real Working Conditions | Thomas Holzfeind, Christian Kanzian, Karl Stampfer, Franz Holzleitner | Croatian journal of forest engineering | Faculty of Forestry, University of Zagreb |

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| TECH4EFFECT | Decreasing the Fuel Consumption and CO ₂ Emissions of Excavator-Based Harvesters with a Machine Control System | Raffaele Spinelli, Angelo de Arruda Moura | Forests | MDPI Open Access Publishing |
| TECH4EFFECT | Effects of intensified silviculture on timber production and its economic profitability in boreal Norway spruce and Scots pine stands under changing climatic conditions | J Routa, A Kilpeläinen, V -P Ikonen, A Asikainen, A Venäläinen, H Peltola | Forestry: An International Journal of Forest Research | Oxford University Press |
| TECH4EFFECT | Productivity in Mechanizing Early Tending in Spruce Seedling Stands | Johanna Routa, Yrjö Nuutinen, Antti Asikainen | Croatian journal of forest engineering | Faculty of Forestry, University of Zagreb |
| TECH4EFFECT | Spatial distribution of the potential forest biomass availability in Europe | Pieter Johannes Verkerk, Joanne Brighid Fitzgerald, Pawan Datta, Matthias Dees, Geerten Martijn Hengeveld, Marcus Lindner, Sergey Zudin | Forest Ecosystems | Springer Open |
| US4GREENCHEM | Valorisation of Lignin Enriched Products obtained at Ultrasonic Pretreatment and Hydrolysis of Pre-treated Wheat Straw as Polyols for Obtaining Polyurethane. | Alexander Arshanitsa | The Conference on Green Chemistry and Nanotechnologies in Polymeric Materials | The Conference on Green Chemistry and Nanotechnologies in Polymeric Materials |

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| US4GREENCHE M | Cavitation treatments for wheat straw valorisation | Liga Lauberte, Galina Telysheva*, Giancarlo Cravotto, Tatiana Dizhbite, Alexandr Arshanitsa, Laima Vevere, Vilhelmine Jurkjane, Anna Andersone, Giorgio Grillo, Emanuela Calcio Gaudino, Silvia Tabasso | Industrial Crops and Products" | Industrial Crops and Products |
| US4GREENCHE M | Communication and flyers | Prof. Dr. Schories, Gerhard | BBi JU event Brussels | TTZ Bremerhaven |
| US4GREENCHE M | Lignocellulosic biomass valorisation by reductive depolymerization in supercritical ethanol | Dr. Eduardo J. Garcia-Suarez | Symposium on Green Chemistry | Symposium on Green Chemistry |
| US4GREENCHE M | Microwave technology towards a greener chemistry | Msc. Giorgio Grillo | Workshop at university of Timisoara | University of Timisoara |
| US4GREENCHE M | Two approaches for valorisation of lignin enriched products from GreenChem wheat straw processing | Alexander Arshanitsa, Laima .Vevere, Matis Pals; GalinaTelysheva, Gian carlo Cravotto, Anu Koivula. | Journal of Renewable Materials | Journal of Renewable Materials |
| US4GREENCHE M | Purification and characterization of fungal β -glucosidase enzymes | Sara Kataja | Master Thesis | University of Helsinki |
| ValChem | Reactivity of Isocyanate-Functionalised Lignins: A Key Factor for the Preparation of Lignin-Based Polyurethanes | Mareike Zieglowski, Simon Trosien, Jochen Rohrer, Sabrina Mehlhase, Simone Weber, Kerstin Bartels, Gregor Siegert, Taina Trellenkamp, Karsten Albe, Markus Biesalski | Frontiers in Chemistry | Frontiers in Chemistry |

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| VALUEMAG | Birth of a Serious Escape Game for Chemical Engineering Labs | Casella, Patrizia; Rimauro, Juri; Iovine, Angela; Mehariya, Sanjeet; Musmarra, Dino; Molino, Antonio | Characterization of extracts from <i>Haematococcus pluvialis</i> red phase by using Accelerated solvent extraction | Chemical engineering transaction |
| VALUEMAG | Extraction of carotenes and lutein from <i>dunaliella salina</i> microalgae using pressurised liquid extraction | Sharma, N.; Mehariya, S.; Martino, M.; Larocca, V.; Sanzo, G. D.; Balducchi, R.; Iovine, A.; Karatza, D.; Marino, T.; Musmarra, D.; Molino, A. | | 27th European Biomass Conference and Exhibition |
| VALUEMAG | Bench-Scale Cultivation of Microalgae <i>Scenedesmus almeriensis</i> for CO ₂ Capture and Lutein Production | Antonio Molino, Sanjeet Mehariya, Despina Karatza, Simeone Chianese, Angela Iovine, Patrizia Casella, Tiziana Marino, Dino Musmarra | Energies | Multidisciplinary Digital Publishing Institute (MDPI) |
| VALUEMAG | Characterization of Extracts from <i>Haematococcus pluvialis</i> Red Phase by using Accelerated Solvent Extraction | Casella, P.; Rimauro, J.; Iovine, A.; Mehariya, S.; Musmarra, D.; Molino, A. | Chemical engineering transaction - CET | AIDIC |
| VALUEMAG | Effect of mechanical pretreatment on <i>Nannochloropsis gaditana</i> on the extraction of omega-3 by using accelerated solvent extraction technology | Iovine, A.; Cerbone, A.; Mehariya, S.; Musmarra, D.; Casella, P.; Molino, A. | Chemical engineering transaction CET | The Italian Association of Chemical Engineering Online at www.cetjournal.it |

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| VALUEMAG | Eicosapentaenoic Acid Extraction from <i>Nannochloropsis gaditana</i> using Carbon Dioxide at Supercritical Conditions | Antonio Molino, Maria Martino, Vincenzo Larocca, Giuseppe Di Sanzo, Anna Spagnoletta, Tiziana Marino, Despina Karatza, Angela Iovine, Sanjeet Mehariya, Dino Musmarra | Marine Drugs | Multidisciplinary Digital Publishing Institute (MDPI) |
| VALUEMAG | Extraction of Bioactive Compounds Using Supercritical Carbon Dioxide | Antonio Molino, Vincenzo Larocca, Giuseppe Di Sanzo, Maria Martino, Patrizia Casella, Tiziana Marino, Despina Karatza, Dino Musmarra | Molecules | Multidisciplinary Digital Publishing Institute (MDPI) |
| VALUEMAG | <i>Scenedesmus almeriensis</i> solutions dewatering by using PVDF membrane | Marino, T.; Figoli, A.; Chianese, E.; Rimauro, J.; Mehariya, S.; Musmarra, D.; Molino, A. | Chemical Engineering transaction CET | AIDIC |
| VALUEMAG | Selective Extraction of ω -3 Fatty Acids from <i>Nannochloropsis</i> sp. Using Supercritical CO ₂ Extraction | Gian Paolo Leone, Roberto Balducchi, Sanjeet Mehariya, Maria Martino, Vincenzo Larocca, Giuseppe Di Sanzo, Angela Iovine, Patrizia Casella, Tiziana Marino, Despina Karatza, Simeone Chianese, Dino Musmarra, Antonio Molino | Molecules | Multidisciplinary Digital Publishing Institute (MDPI) |

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| VALUEMAG | Supercritical Fluid Extraction of Lutein from <i>Scenedesmus almeriensis</i> | Sanjeet Mehariya, Angela Iovine, Giuseppe Di Sanzo, Vincenzo Larocca, Maria Martino, Gian Leone, Patrizia Casella, Despina Karatza, Tiziana Marino, Dino Musmarra, Antonio Molino | Molecules | Multidisciplinary Digital Publishing Institute (MDPI) |
| VIPRISCAR | Catalyst screening to produce isosorbide bis(methyl carbonate), a green monomer for non-isocyanate polyurethanes and polycarbonates manufacturing. | JR Ochoa-Gómez | | Global Chemical Engineering and Chemistry Conference Expo |
| WoodZymes | Engineering of a fungal laccase to develop a robust, versatile and highly-expressed biocatalyst for sustainable chemistry | Felipe de Salas, Pablo Aza, Joan F. Gilabert, Gerard Santiago, Sibel Kilic, Mehmet E. Sener, Jesper Vind, Víctor Guallar, Angel T. Martínez, Susana Camarero | Green Chemistry | Royal Society of Chemistry |
| WoodZymes | Structural and biochemical insights into an engineered high-redox potential laccase overproduced in <i>Aspergillus</i> | Felipe de Salas, Rubén Cañadas, Gerard Santiago, Alicia Virseda-Jerez, Jesper Vind, Patrizia Gentili, Angel T. Martínez, Víctor Guallar, Inés G. Muñoz, Susana Camarero | International Journal of Biological Macromolecules | Elsevier BV |
| Zelcor | Chemo-enzymatically prepared lignin nanoparticles for value-added applications | Alexander Henn, Maija-Liisa Mattinen | World Journal of Microbiology and Biotechnology | Kluwer Academic Publishers |

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| Zelcor | Enhancing the Antioxidant Activity of Technical Lignins by Combining Solvent Fractionation and Ionic-Liquid Treatment | Amel Majira, Blandine Godon, Laurence Foulon, Jacinta C. Putten, Laurent Cézard, Marina Thierry, Florian Pion, Anne Bado-Nilles, Pascal Pandard, Thangavelu Jayabalan, Véronique Aguié-Béghin, Paul-Henri Ducrot, Catherine Lapierre, Guy Marlair, Richard J. A. Gosselink, Stephanie Baumberger, Betty Cottyn | ChemSusChem | Wiley - V C H Verlag GmbbH & Co. |
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7.4. PATENTS FROM PROJECTS

Based on data provided by the 101 funded BBI JU projects via the ‘continuous reporting’ module of the Funding and Tenders Portal, 47 patent applications were submitted by the end of 2019 (compared to 31 reported submitted patents by the end of 2018). The table below shows the number of patent applications reported by the projects. Summarising, 19 patent applications were submitted by RIA projects, 16 by DEMO projects and 12 by FLAG projects.

| Project Acronym | Number of Patent Applications until end of 2019 | Type of Action |
|-----------------|-------------------------------------------------|----------------|
| BIOFOREVER | 1 | DEMO |
| BIOMOTIVE | 4 | DEMO |
| CARBOSURF | 1 | RIA |
| EFFECTIVE | 1 | DEMO |
| EMBRACED | 2 | DEMO |
| EnzOx2 | 4 | RIA |
| EXILVA | 10 | FLAG |
| FRESH | 2 | DEMO |
| GreenLight | 1 | RIA |
| HYPERBIOCOAT | 2 | RIA |
| InDIRECT | 2 | RIA |
| LIBRE | 3 | RIA |
| LigniOx | 1 | DEMO |
| MACRO CASCADE | 1 | RIA |
| NewFert | 1 | RIA |
| PULP2VALUE | 4 | DEMO |
| SHERPACK | 1 | RIA |
| SusBIND | 1 | RIA |
| SWEETWOODS | 2 | FLAG |
| US4GREENCHEM | 2 | RIA |
| ValChem | 1 | DEMO |

7.5. SCOREBOARD OF HORIZON 2020 COMMON KEY PERFORMANCE INDICATORS

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
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| 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); | Based on Community Innovation Survey (?). Number and % of participating SMEs that have introduced innovations to the company or to the market; | Number of SMEs that have introduced innovations ; | Cumulative figures ¹¹⁸ : 97 innovations introduced by SMEs in the company 119 innovations introduced by SMEs in the market | | | | | | na |

¹¹⁸ Based on input from 82 projects from calls 2014-2017, and as per information available in CORDA. (Data is reported globally per project with no indication of SME share)

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|---------------------|----|-----------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| | 13 | SME - Growth and job creation in participating SMEs | Turnover of company, number of employees | Turnover of company, number of employees; | Cumulative figures ¹¹⁹ : Turnover: EUR 1 403 913 211 Employees: 7 873 | | | | | | na |
| 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 | See Section 7.3 | | | | | | |

¹¹⁹ Based on input from 75 projects out of 82. Number of SMEs (unique beneficiaries) providing data: 267 out of 295

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--|----|----------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| | | | | collected by commercially available bibliometric databases. | | | | | | | |
| | 15 | Patent applications and patents awarded in the area of the JTI | Number of patent applications by theme; Number of awarded patents by theme | Patent application number | Section 7.4 | | | | | | |
| | 16 | Number of prototypes testing activities | Number of prototypes, testing (feasibility/demo) activities | Reports on prototypes, and testing activities, | 126 | 2 | 266 | 214 | 95 | 91 | N.A. |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--|----|---------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| | 17 | Number of joint public-private publications in projects | Number and share of joint public-private publications out of all relevant publications. | Properly flagged publications data (DOI) from relevant funded projects | 21 | 0 | 21 | 6 | 0 | 0 | N.A. |
| | 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, | 20 | 6 | 34 | 36 | 21 | N.A. | N.A. |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|------------|----|------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|----------------------------------------------|------------------------------------------------|-----------------------------------------------|-----------------------------------------------|------------------------------------------------|------------------------------------------------|
| EVALUATION | NA | Time to inform (TTI) <u>all applicants</u> of the outcome of the evaluation of their application from the final date for submission of completed proposals | To provide applicants with high-quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process | Number and % of information letters sent to applicants within target Average TTI (calendar days) Maximum TTI (calendar days) | 38 letters (100%) Average : 146 Max: 153 | 9 letters (100%) Average : 86 Max: 153 | 73 letters (100%) Average : 141 Max: 153 | 103 letters (100%) Average: 99 Max: 153 | 149 letters (100%) Average: 99 Max: 153 | 144 letters (100%) Average: 102 Max: 153 | 184 letters (100%) Average: 104 Max: 153 |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--|----|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| | NA | Redress after evaluations | To provide applicants with high-quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process | Number of redresses requested | 0 | 0 | 0 | 2 ¹²⁰ | 1 ¹²¹ | 2 ¹²² | 1 ¹²³ |

¹²⁰ The result of the evaluation review concluded that the two complaints were unfounded.

¹²¹ The result of the evaluation review concluded that the complaint was unfounded.

¹²² The result of the evaluation review concluded that the two complaints were unfounded.

¹²³ No results yet, still being processed.

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--------|----|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|----------------------------------------------------|--------------------------------------------|
| 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 | Number and % of grants signed within target Average TTG in calendar days Maximum TTG in calendar days | 10 Grants (100%) Average : 240.8 Maximum: 245 | 3 Grants (100%) Average : 227 Maximum: 245 | 23 Grants (100%) Average : 239 Maximum: 245 | 29 Grants (100%) Average: 231 Target: 245 | 17 Grants (100%) Average: 231 Target: 245 | 19 Grants (98%) Average: 235 Target: 245 | N.A. |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--|----|------------------------------------------------------------------------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|--------------------------------------------------|-------------------------------------------------|--------------------------------------------|
| | NA | Time to sign (TTS) grant agreements from the date of informing successful applicants (information letters) | preparation process | Number and % of grants signed within target Average TTG in calendar days Maximum TTG in calendar days | 10 Grants (100%) Average : 94 Maximum: 126 | 3 Grants (100%) Average : 141 Maximum: 155 | 23 Grants (100%) Average : 98 Maximum: 103 | 29 Grants (100%) Average: 132 Maximum: 143 | 17 Grants (100%) Average: 132 Maximum: 140 | 19 Grants (98%) Average: 133 Maximum: 140 | N.A. |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----------|----|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------|
| 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; | 14.3 days for pre-financing; no interim and final payments yet; Experts: 31 | 16 days for pre-financing; no interim and final payments yet; Experts: 13 | 23 days for pre-financing; no interim and final payments yet; Experts: 63 | 10.4 days for pre-financing; no interim and final payments yet; Experts: 84 | 11.4 days for pre-financing; no interim and final payments yet; Experts: 109 | 9.9 days for pre-financing; no interim and final payments yet; Experts: 100 | No pre-financing, interim and final payments Experts: 140 |
| | | | | | Administrative time to pay for year 2019: 17.5 days | | | | | | |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|----|---------------------------|-----------------------------------|---------------------------------------------------|------------------------------------------------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| HR | NA | Vacancy rate (%) | | % of posts filled in, composition of the JU staff | 95% Posts filled in: 22 posts out of 23 were filled at the end of 2019 | | | | | | |

| 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 | CA: 96.4% PA: No payments executed in 2014 | CA: 73.7% PA: 98.18% (pre-financing of the 2014 projects) | CA: 99% PA: No payments executed in 2015 | CA: 97.9% PA: 99.4% (pre-financing of the 2016 call and 10 payments of periodic reports of call 2014) | CA: 99.9% PA: 70.4% (pre-financing of the 2017 call and 32 payments of periodic reports of previous calls) | CA: 87.2% PA: 75.8% (pre-financing of the 2018 call and 43 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 | Number of delayed payments % of delayed payments | Not Applicable (pre-autonomy phase). | 49 Late Payments in 2016 10% of delayed payments | | 49 Late Payments in 2017 | 66 Late Payments in 2018 10% of delaye | 65 Late Payments in 2019 9% of delayed | |

| | | Key Performance Indicator | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|--|--|---------------------------|-------------------------------------------------------------|-----------------------|------------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| | | | execution in line with sound financial management principle | (of the total) | All payments executed by EC/DG RTD | | | 9% of delayed payments | d payments | payments | |

7.6. INDICATORS FOR MONITORING CROSS-CUTTING ISSUES

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|----------------------------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------------------|------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 2 | Widening the participation | 2.1 Total number of participations by EU28 Member State | Nationality of Horizon 2020 applicants & beneficiaries (number of) | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 |
| | | 2.2 Total amount of EU financial contribution by EU28 Member State (EUR millions) | Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 |
| NA | | Total number of participations by associated countries | Nationality of Horizon 2020 applicants & beneficiaries (number of) | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 2 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 | Cumulative figures provided in section 1.3.1.1 and Call specific figures provided in section 1.3.2 |
| NA | | Total amount of EU financial contribution by associated country (EUR millions) | Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 |

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|---|-------------------------|----------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| 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 | 25 flagged as SME (24.5%) 20% of EU contribution going to SME | 9 flagged as SME (36%) 8.41% of EU contribution going to SME | 110 flagged as SME (40.14%) 37.3% of EU contribution going to SME | 131 flagged as SME (40.18%) 25.8% of EU contribution going to SME | 75 flagged as SME (39%) 38% of EU contribution going to SME | 74 flagged as SME (34%) 42% of EU contribution going to SME | 93 flagged as SME (41%) 54% of EU contribution going to SME |
| 6 | Gender | 6.1 Percentage of women participants in Horizon 2020 projects | Gender of participants in Horizon 2020 projects | Not available | | | | | | |
| | | 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 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in 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. | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 | Cumulative figures provided in section 1.3.1.1 |
| 7 | International cooperati | 7.1 Share of third-country participants in Horizon 2020 | Nationality of Horizon 2020 beneficiaries | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------------------------------|-------------------------------------------------|--------------------------------------------------|----------------------------------------------------|----------------------------------------------------|---------------------------------------------------|----------------------------------------------------|
| | | 7.2 Percentage of EU financial contribution attributed to third country participants | Nationality of Horizon 2020 beneficiaries and corresponding EU financial contribution | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | Bridging from discovery to market ¹²⁴ | 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. | Number of proposals: 18 Number of projects: 3 | Number of proposals: 9 Number of projects: 3 | Number of proposals: 24 Number of projects: 9 | Number of proposals: 26 Number of projects: 11 | Number of proposals: 69 Number of projects: 5 | Number of proposals: 68 Number of projects: 7 | Number of proposals: 67 Number of projects: 8 |
| | | 9.2 Within the innovation actions, share of EU financial contribution focused on demonstration and first-of-a-kind activities | Topics properly flagged in the WP; follow-up at grant level | 1 FLAG (34%) 2 DEMO (39.7%) | 3 FLAG (100%) | 9 DEMO (59.5%) | 2 FLAG (25.3%) 9 DEMO (43.7%) | 1 FLAG (24%) 4 DEMO (29%) | 2 FLAG (36%) 5 DEMO (32%) | 2 FLAG (27%) 6 DEMO (27%) |
| NA | | Scale of impact of projects (High Technology Readiness Level) | Number of projects addressing TRL ¹²⁵ between (4-6, 5-7)? | 7 RIA TRL 3-5 2 DEMO TRL 6-7 1 FLAG TRL 8-9 | 3 FLAG TRL 8-9 | 11 RIA TRL 3-5 9 DEMO TRL 6-7 | 11 RIA TRL 3-5 9 DEMO TRL 6-7 2 FLAG TRL 8-9 | 10 RIA TRL 3-5 4 DEMO TRL 6-7 1 FLAG TRL 8-9 | 9 RIA TRL 3-5 5 DEMO TRL 6-7 2 FLAG TRL 8-9 | 12 RIA TRL 3-5 6 DEMO TRL 6-7 2 FLAG TRL 8-9 |

¹²⁴ This indicator (9.2) is initially intended to monitor the Digital Agenda (its applicability could be only partial)

¹²⁵ TRL: Technology Readiness Level

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------------|
| 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 | 66 beneficiaries 64% | 18 beneficiaries 72% | 168 beneficiaries 61% | 190 BBI JU beneficiaries 58.2% | 120 BBI JU beneficiaries 62% | 147 BBI JU Beneficiaries 62% | 154 BBI JU Beneficiaries 56% |
| | | 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 | 73.6% | 94.2% | 58% | 67.6% | 61% | 68% | 65.2% |
| 12 | Funding for PPPs | 12.1 EU financial contribution for PPP (Art 187) | EU contribution to PPP (Art 187) according to the respective AWP | EUR 50,000,000 | EUR 100,000,000 | EUR 106,000,000 | EUR 187,900,000 | EUR 81,000,000 | EUR 115,000,000 | EUR 135,000,000 |
| | | 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) | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 | Figures provided in sections 1.3.1.3 |

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|--------------------------------------------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------------|
| 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, websites, 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 | Information is provided in section 1.5 | information is provided in section 1.5 | information is provided in section 1.5 | information is provided in section 1.5 | information is provided in section 1.5 | Not available yet (some information is provided in section 1.5) | Not available yet (some information is provided in section 1.5) |
| 14 | Participation patterns of independent experts | 14.2 Proposal evaluators by country | Nationality of proposal evaluators | EU28: 15F/16M | EU28: 4F/6M | EU28: 26F/28M AC: 1F/3M Other: 0F/1M | EU28: 31F/44M AC: 1F/1M Other: 1F/2M | EU28: 38F/61M AC: 2F/4M Other: 4M | EU28: 46F/48M AC: 2F/2M Other: 0F/2M | EU28: 63F/ 66M AC: 1F/4M Other: 1F/5M |
| | | 14.3 Proposal evaluators by organisations' type of activity | Type of activity of evaluators' organisations | Not available ¹²⁶ | Not available | Not available | Not available | Not available | Not available | Not available |

¹²⁶ Data collected via the Expert Management system are too scattered and unstable, thus an in-depth analysis is too resource consuming and unreliable.

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|----------------------------------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| NA | Participation of RTOs and Universities | Participation of RTO ¹²⁷ s 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 | RTO: 22; 21.36% participation HES: 9; 8.74% participation RTO:15% of the budget HES: 6.6% of the budget | RTO: 4; 16% participation HES: 2; 8% participation RTO:2.8% of the budget HES: 2% of the budget | RTO: 55; 20.07% participation HES: 36; 13.14% participation RTO: 26.86% of the budget HES:12.21% of the budget | RTO: 63; 19.27% participation HES: 45; 13.76% participation RTO: 15.54% of the budget HES: 14.35% of the budget | RTO 41: = 21% HES: 24 = 12% RTO: 22 % of budget HES: 13% of budget | RTO: 42 = 18% HES: 31 = 13% RTO: 14% of budget HES: 13% of budget | RTO: 50 = 18% HES: 34 = 12% RTO: 20% of budget HES: 13% 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) ¹²⁸ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| NA | Audit | Error rate | % of common representative error; % residual error | Representative Detected Error rate: 0.96% Residual Error Rate for BBI JU: 0.82% | | | | | | |

127 RTO: Research and Technology Organisation

128 Data relates to pre-granting ethics review. This time span runs in parallel to granting process.

| | Cross-cutting issue | Definition/Responding to Question | Type of Data Required | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-JTI-2016 | Call Horizon 2020-BBI-JTI-2017 | Call Horizon 2020-BBI-JTI-2018 | Call Horizon 2020-BBI-JTI-2019 (under GAP) |
|----|---------------------|-----------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| NA | | Implementation of ex-post audit results | Number of cases implemented; in total EUR million; ' of cases implemented/total cases | 20 cases implemented out of 21 launched audits Negative adjustments: 0.155 EUR million | | | | | | |

Notes:

Horizon 2020 applicants - all those who submitted Horizon 2020 proposals

Horizon 2020 beneficiaries - all those who have signed a Horizon 2020 Grant Agreement

Responsible Directorate - DG RTD Directorates and R&I DGs family in charge of the management of Horizon 2020 activities

Services -Executive Agencies and other external bodies in charge of Horizon 2020 activities

Project officer - in charge of managing Horizon 2020 projects in Responsible Directorate/Service including Executive Agencies

7.7. SCOREBOARD OF KEY PERFORMANCE INDICATORS SPECIFIC TO BBI JU

| Key Performance Indicator ¹²⁹ | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-PPP-2016 | Call Horizon 2020-BBI-PPP-2017 | Call Horizon 2020-BBI-PPP-2018 | Call Horizon 2020-BBI-PPP-2019 (under GAP) |
|--------------------------------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| KPI 1 Number of new cross-sector interconnections | 212 | | | | | | NA |
| KPI 2 Number of new bio-based value chains realised | 180 | | | | | | NA |
| KPI 3 Number of BBI JU Grant Agreements signed | 10 | 3 | 23 | 29 | 17 | 19 | NA |

¹²⁹ 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 2017. These figures refer to the expected results of the projects by 2020 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.

| Key Performance Indicator ¹²⁹ | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-PPP-2016 | Call Horizon 2020-BBI-PPP-2017 | Call Horizon 2020-BBI-PPP-2018 | Call Horizon 2020-BBI-PPP-2019 (under GAP) |
|--------------------------------------------------------------------------------------------------------------|--------------------------------|----------------------------------|----------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------------------|
| KPI 4 Number of new bio-based building blocks | 86 | | | | | | NA |
| KPI 5 Number of new bio-based materials | 183 | | | | | | NA |
| KPI 6 Number of new bio-based consumer products | 107 | | | | | | NA |
| KPI 7 Number of Flagship biorefinery plants | 1 | 3 | 0 | 2 | 1 | 2 | NA |
| KPI 8 Number of validated technologies that have realised a TRL gain of at least one level (RIA projects) | 47 | | | | | | NA |

| Key Performance Indicator ¹²⁹ | Call Horizon 2020-BBI-PPP-2014 | Call Horizon 2020-BBI-PPP-2015.1 | Call Horizon 2020-BBI-PPP-2015.2 | Call Horizon 2020-BBI-PPP-2016 | Call Horizon 2020-BBI-PPP-2017 | Call Horizon 2020-BBI-PPP-2018 | Call Horizon 2020-BBI-PPP-2019 (under GAP) |
|-----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|----------------------------------|----------------------------------------------------|---------------------------------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------------------|--------------------------------------------|
| PPP leverage: - financial contribution already committed by private members in projects selected for funding | | | | EUR 750,000 | EUR 500,000 | EUR 2,000,000 | |
| Balance (%) of R&D, demonstration and supporting projects | Funding: DEMO: 39.7% RIA: 26.08% FLAG: 34.2% | Funding: FLAG: 73.7% | Funding: RIA: 37.7% DEMO: 59.5% CSA: 2.9% | Funding: DEMO: 43.75% RIA: 29.35% CSA: 1.5% FLAG: 35.3% | Funding: DEMO: 28.62% RIA: 44.65% CSA: 2.27% FLAG: 24.47% | Funding: DEMO: 32% RIA: 31% CSA: 2% FLAG: 36% | EUR X |

**Annual accounts of the
Bio-based Industries
Joint Undertaking

Financial year 2019**

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CERTIFICATION OF THE ACCOUNTS

I acknowledge my responsibility for the preparation and presentation of the annual accounts of the Bio-based Industries Joint Undertaking in accordance with Article 52 of the Model Financial Regulation ('MFR')¹³⁰ and I hereby certify that the annual accounts of the Bio-based Industries Joint Undertaking for the year 2019 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 Bio-based Industries 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 Bio-based Industries Joint Undertaking.

Rosa ALDEA BUSQUETS

Accounting Officer of the BBI JU

¹³⁰ 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 ON THE BBI JU

The Bio-based Industries Joint Undertaking (BBI JU) was established by the Council Regulation (EU) 560/2014¹³¹. The BBI JU is a public-private partnership between the European Union (EU) and the Bio-based Industries Consortium (BIC) and is based in Brussels. BBI JU is funded by the Members contributing either in cash or in-kind to the administrative and operational costs of the JU. It aims to bring together all relevant stakeholders and contribute to establishing Europe as a key player in the research, demonstration and deployment of advanced bio-based products and biofuels.

BBI JU's mission is to implement, under Horizon 2020 rules, the Strategic Innovation and Research Agenda (SIRA) developed by the industry, by organizing 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.

The objectives of BBI JU are to contribute to a more resource efficient and sustainable low-carbon economy and to increase economic growth and employment, in particular in rural areas, by developing sustainable and competitive bio-based industries in Europe. This is based on advanced biorefineries that source their biomass sustainably and in particular aims to:

- Demonstrate technologies that enable new chemical building blocks, new materials and new consumer products from European biomass, that replace the need for fossil-based inputs;
- Develop business models that integrate economic actors along the value chain from supply of biomass to biorefinery plants to consumers of bio-based materials, chemicals and fuels, including the creation of new cross-sector interconnections and supporting cross-industry clusters;
- 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.

Annual accounts

Following Article 25 of the Model Financial Regulation (MFR)¹³², the Governing Board of the Joint Undertaking appoints the Accounting Officer who is, amongst other tasks, responsible for the preparation of the annual accounts.

In accordance with Article 47 of the MFR, 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). 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 based on principles of accrual accounting adapted to the specific environment of the European Union, the budget implementation reports are primarily based on movements of cash.

Following the decision of the BBI JU's Governing Board of 14 October 2014, the Accounting Officer of the Commission acts as the Accounting Officer of BBI JU.

Highlights of the year

BBI JU is in a peak period of its activity, focused mainly on the grant management side. This aspect of BBI's activities consumes the largest part of the budget and in 2019 involved the launching of the 2019 call for proposals for EUR 118 million, the signature of 17 grant agreements from the previous year's call for nearly EUR 103 million and the payment of 19 pre-financing and 43 periodic payments for over EUR 133 million. In 2019 BBI managed 44 cost claims from ongoing grant agreements for a total of EUR 70 million, so a larger number compared to 2018 (33). The overall budget implementation of the total BBI 2019 budget was 87% in commitment appropriations and 76% in payment appropriations.

¹³¹ Council Regulation (EU) No 560/2014 of 6 May 2014 establishing the Bio-based Industries Joint Undertaking.

¹³² 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.

A certain number of the cost claims were either lower than expected or delayed, resulting in an underexecution of the 2019 budget on the payment appropriations side, but nevertheless an improvement compared to 2018.

With respect to the in-kind contribution from the JU Members other than the EU, and following a transfer of over EUR 12 million to net assets in 2018, another substantial amount (around EUR 4.7 million) has been transferred to net assets in 2019.

As for the administrative expenditure, the consumption of both commitment and payment appropriations is high, while BBI JU ensures an optimal use of appropriations carried forward from previous years, in accordance with the BBI JU financial rules. There was a highly successful Stakeholder Forum in December 2019 (which usually takes place every two years) meaning that the communication costs were higher than for 2018 (kEUR 733 compared to kEUR 218).

The major impacts in the 2019 financial statements for BBI JU are the following:

Balance Sheet

Pre-financing: The amounts of pre-financing paid to the beneficiaries for project implementation increased in 2019 to a total of EUR 187 million (2018: EUR 140 million).

Exchange receivables: The balance of the liaison/intercompany account related to funds which are to be used for future activities increased by 2019 year-end from EUR 37 million to EUR 53 million due to the impact of large projects for which the cost claims were delayed (because of suspensions or technical issues) or were much lower than forecast. The balance will be redressed in the coming years, as larger cost claims arrive. The prefinancing rate for the projects of call 2018 was also maintained at a high level (80%).

Payables and Other liabilities: The significant increase of liabilities related to the in kind contributions to be validated is due to new projects launched or ongoing in the course of 2019 for which no IKOP declarations were validated at the year-end and the 2019 amounts had thus to be estimated during the closure (cut-off) exercise. The increase in payables to Vendors and to Public bodies relates to cost claims received but not yet validated at the year-end. The underlying cut-off expenses have been recorded under operational expenses.

Statement of Financial Performance

Operational costs: The increase of the operational costs is due to the higher number of cost claims validated for the BBI projects in 2019.

Other expenses: The increase in expenses related to experts' fees is due to the amount of proposals received for the 2019 call. Experts' expenses mainly consist of the costs of the expert-evaluators used by the Research Executive Agency (REA) for the BBI call evaluations and some external project reviewers paid by BBI JU. As mentioned above, communication costs were higher due to the organising of the Stakeholder Forum in December 2019.

BIO-BASED INDUSTRIES JOINT UNDERTAKING
FINANCIAL YEAR 2019

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.

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BALANCE SHEET

EUR '000

| | Note | 31.12.2019 | 31.12.2018 |
|-----------------------------------------------------------|------|------------------|------------------|
| NON-CURRENT ASSETS | | | |
| <i>Property, plant and equipment</i> | 2.1 | 49 | 40 |
| <i>Pre-financing</i> | 2.2 | 116 919 | 107 972 |
| | | 116 968 | 108 012 |
| CURRENT ASSETS | | | |
| <i>Pre-financing</i> | 2.2 | 69 961 | 31 714 |
| <i>Exchange receivables and non-exchange recoverables</i> | 2.3 | 53 031 | 38 386 |
| | | 122 992 | 70 100 |
| TOTAL ASSETS | | 239 960 | 178 112 |
| CURRENT LIABILITIES | | | |
| <i>Payables and other liabilities</i> | 2.4 | (72 121) | (47 803) |
| <i>Accrued charges and deferred income</i> | 2.5 | (95 078) | (91 334) |
| | | (167 199) | (139 138) |
| TOTAL LIABILITIES | | (167 199) | (139 138) |
| NET ASSETS | | 72 762 | 38 974 |
| <i>Contribution from Members</i> | 2.6 | 444 489 | 285 770 |
| <i>Accumulated deficit</i> | | (246 795) | (126 103) |
| <i>Economic result of the year</i> | | (124 932) | (120 692) |
| NET ASSETS | | 72 762 | 38 974 |

STATEMENT OF FINANCIAL PERFORMANCE

| | | EUR '000 | |
|-----------------------------------------------|------|------------------|------------------|
| | Note | 2019 | 2018 |
| REVENUE | | | |
| Revenue from non-exchange transactions | | | |
| <i>Recovery of expenses</i> | | 3 | 1 |
| | | 3 | 1 |
| Revenue from exchange transactions | | | |
| <i>Financial revenue</i> | | – | 8 |
| <i>Other</i> | | 1 | 6 |
| | | 1 | 14 |
| Total revenue | | 4 | 15 |
| EXPENSES | | | |
| <i>Operational costs</i> | 3.1 | (119 511) | (116 544) |
| <i>Staff costs</i> | 3.2 | (2 222) | (2 043) |
| <i>Finance costs</i> | 3.3 | 90 | (91) |
| <i>Other expenses</i> | 3.4 | (3 293) | (2 029) |
| Total expenses | | (124 936) | (120 707) |
| ECONOMIC RESULT OF THE YEAR | | (124 932) | (120 692) |

CASHFLOW STATEMENT¹³³

| | EUR '000 | |
|-----------------------------------------------------------------------------------|-----------|-----------|
| | 2019 | 2018 |
| <i>Economic result of the year</i> | (124 932) | (120 692) |
| Operating activities | | |
| <i>Depreciation and amortization</i> | 14 | 15 |
| <i>(Increase)/decrease in pre-financing</i> | (47 195) | (6 777) |
| <i>(Increase)/decrease in exchange receivables and non-exchange recoverables</i> | (14 644) | (34 306) |
| <i>Increase/(decrease) in payables</i> | 24 318 | 12 381 |
| <i>Increase/(decrease) in accrued charges & deferred income</i> | 3 743 | 20 880 |
| <i>Increase/(decrease) in cash contributions</i> | 154 046 | 116 404 |
| <i>Increase/(decrease) in in-kind contributions</i> | 4 674 | 12 103 |
| Investing activities | | |
| <i>(Increase)/decrease in intangible assets and property, plant and equipment</i> | (24) | (8) |
| NET CASHFLOW | - | - |
| <i>Net increase/(decrease) in cash and cash equivalents</i> | - | - |
| <i>Cash and cash equivalents at the beginning of the year</i> | - | - |
| <i>Cash and cash equivalents at year-end</i> | - | - |

¹³³ Following the appointment of the Accounting Officer of the Commission as the Accounting Officer of BBI JU, the treasury of BBI JU was integrated into the Commission's treasury system. Therefore, BBI 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 31.12.2017 | 157 264 | (39 534) | (86 569) | 31 160 |
| <i>Allocation 2017 economic result</i> | – | (86 569) | 86 569 | – |
| <i>Cash contribution</i> | 116 404 | – | – | 116 404 |
| <i>Contribution in-kind</i> | 12 103 | – | – | 12 103 |
| <i>Economic result of the year</i> | – | – | (120 692) | (120 692) |
| BALANCE AS AT 31.12.2018 | 285 770 | (126 103) | (120 692) | 38 974 |
| <i>Allocation 2018 economic result</i> | – | (120 692) | 120 692 | – |
| <i>Cash contribution</i> | 154 046 | – | – | 154 046 |
| <i>Contribution in-kind</i> | 4 674 | – | – | 4 674 |
| <i>Economic result of the year</i> | – | – | (124 932) | (124 932) |
| BALANCE AS AT 31.12.2019 | 444 489 | (246 795) | (124 932) | 72 762 |

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 users.

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 | 31.12.2019 | 31.12.2018 | Currency | 31.12.2019 | 31.12.2018 |
|------------|-----------------|------------|------------|-----------------|------------|
| BGN | 1.9558 | 1.9558 | PLN | 4.2568 | 4.3014 |
| CZK | 25.4080 | 25.7240 | RON | 4.783 | 4.6635 |
| DKK | 7.4715 | 7.4673 | SEK | 10.4468 | 10.2548 |
| GBP | 0.8508 | 0.8945 | CHF | 1.0854 | 1.1269 |
| HRK | 7.4395 | 7.4125 | JPY | 121.9400 | 125.8500 |
| HUF | 330.5300 | 320.9800 | USD | 1.1234 | 1.145 |

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, accrued and deferred revenue and charges, provisions, financial risk on accounts receivable, contingent assets and liabilities, and degree of impairment of assets. 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.

1.3. BALANCE SHEET

1.3.1. Intangible assets

An intangible asset is an identifiable non-monetary asset without physical substance. An asset is identifiable if it is either separable (i.e. it is capable of being separated or divided from the entity, e.g. by being sold, transferred, licensed, rented, or exchanged, either individually or together with a related contract, identifiable asset or liability, regardless of whether the entity intends to do so), or arises from binding arrangements (including rights from contracts or other legal rights), regardless of whether those rights are transferable or separable from the entity or from other rights and obligations).

Acquired intangible assets are stated at historical cost less accumulated amortisation and impairment losses. Internally developed intangible assets are capitalised when the relevant criteria of the EU accounting rules are met and the expenses relate solely to the development phase of the asset. The capitalisable costs include all directly attributable costs necessary to create, produce, and prepare the asset to be capable of operating in the manner intended by management. Costs associated with research activities, non-capitalisable development costs and maintenance costs are recognised as expenses as incurred.

Intangible assets are amortised on a straight-line basis over their estimated useful lives (3 to 11 years). The estimated useful lives of intangible assets depend on their specific economic lifetime or legal lifetime determined by an agreement.

1.3.2. 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 |
|-------------------------------|---------------------------------|
| <i>Buildings</i> | <i>4 % to 10 %</i> |
| <i>Plant and equipment</i> | <i>10 % to 25 %</i> |
| <i>Furniture and vehicles</i> | <i>10 % to 25 %</i> |
| <i>Computer hardware</i> | <i>25 % to 33 %</i> |
| <i>Other</i> | <i>10 % to 33 %</i> |

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. When entering a finance lease as a lessee, the assets acquired under the finance lease are recognised as assets and the associated lease obligations as liabilities as from the commencement of the lease term. The assets and liabilities are recognised at amounts equal to the fair value of the leased property or, if lower, the present value of the minimum lease payments, each determined at the inception of the lease. Over the period of the lease term, the assets held under finance leases are depreciated over the shorter of the asset's useful life and the lease term. The minimum lease payments are apportioned between the finance charge (the interest element) and the reduction of the outstanding liability (the capital element). The finance charge is allocated to each period during the lease term so as to produce a constant periodic rate of interest on the remaining balance of the liability, which is presented as current/non-current, as applicable. Contingent rents shall be charged as expenses in the period in which they are incurred.

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 a leased asset nor a leasing liability presented in the statement of financial position.

1.3.3. 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.

1.3.4. Financial assets

Financial assets are classified in the following categories: 'financial assets at fair value through surplus or deficit', 'loans and receivables', 'held-to-maturity investments' and 'available for sale financial assets'. The classification of the financial instruments is determined at initial recognition and re-evaluated at each balance sheet date.

(i) Financial assets at fair value through surplus or deficit

A financial asset is classified in this category if acquired principally for the purpose of selling in the short term or if so designated by the entity. Derivatives are also presented in this category. Assets in this category are classified as current assets if they are expected to be realised within 12 months of the balance sheet date. During this financial year, the entity did not hold any investments in this category.

(ii) Loans and receivables

Loans and receivables are non-derivative financial assets with fixed or determinable payments that are not quoted in an active market. They arise when the entity provides money, goods or services directly to a debtor with no intention of trading the receivable. They are included in non-current assets, except for maturities within 12 months of the balance sheet date. Loans and receivables include term deposits with the original maturity above three months.

(iii) Held-to-maturity investments

Held-to-maturity investments are non-derivative financial assets with fixed or determinable payments and fixed maturities that the entity has the positive intention and ability to hold to maturity. During this financial year, the entity did not hold any investments in this category.

(iv) Available for sale financial assets

Available for sale financial assets are non-derivatives that are either designated in this category or not classified in any of the other categories. They are classified as either current or non-current assets, depending on the period of time the entity expects to hold them, which is usually the maturity date. During this financial year, the entity did not hold any investments in this category.

Initial recognition and measurement

Purchases and sales of financial assets at fair value through surplus or deficit, held-to-maturity and available for sale are recognised on their trade date, i.e. the date on which the entity commits to purchase or sell the asset. Cash equivalents and loans are recognised when cash is deposited in a financial institution or advanced to borrowers. Financial instruments are initially recognised at fair value. For all financial assets not carried at fair value through surplus or deficit, transaction costs are added to the fair value at initial recognition.

Financial instruments are derecognised when the rights to receive cashflows from the investments have expired or the entity has transferred substantially all risks and rewards of ownership to another party.

Subsequent measurement

Financial assets at fair value through surplus or deficit are subsequently carried at fair value, with gains and losses arising from changes in the fair value being included in the statement of financial performance in the period in which they arise.

Loans and receivables and held-to maturity investments are carried at amortised cost using the effective interest method.

Available for sale financial assets are subsequently carried at fair value. Gains and losses arising from changes in the fair value are recognised in the fair value reserve. Interest on available for sale financial assets, calculated using the effective interest method, is recognised in the statement of financial performance.

The entity assesses at each balance sheet date whether there is objective evidence that a financial asset is impaired and whether an impairment loss should be recorded in the statement of financial performance.

1.3.5. 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 presented 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.

1.3.6. Receivables and recoverables

The EU accounting rules require a 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 and are thus classified as loans and receivables and measured accordingly (see 1.3.4 above).

Recoverables from non-exchange transactions are carried at original amount (adjusted for interests and penalties) 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.

1.3.7. Cash and cash equivalents

Cash and cash equivalents are financial instruments and include cash at hand, deposits held at call or at short notice with banks, and other short-term highly liquid investments with original maturities of three months or less.

1.3.8. Provisions

Provisions are recognised when the entity has a present legal or constructive obligation towards third parties as a result of past events, it is more likely than not that an outflow of resources will be required to settle the obligation, and the amount can be reliably estimated. Provisions are not recognised for future operating losses. The amount of the provision is the best estimate of the expenditure expected to be required to settle the present obligation at the reporting date. Where the provision involves a large number of items, the obligation is estimated by weighting all possible outcomes by their associated probabilities ('expected value' method).

Provisions for onerous contracts are measured at the present value of the lower of the expected cost of terminating the contract and the expected net cost of continuing with the contract.

1.3.9. 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 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 and corresponding expenses are entered in the accounts when the supplies or services are delivered and accepted by the entity.

1.3.10. 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, 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 which 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 it 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. 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 (pre-financing received).

(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 incurrence of liabilities that result in decreases in net assets/equity. 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 a possible obligation 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; or a present obligation that arises from past events but is not recognised because it is not probable that an outflow of resources embodying economic benefits or service potential will be required to settle the obligation or, in the rare circumstances where the amount of the obligation cannot be measured with sufficient reliability. A contingent liability is 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 (no shares are issued) of the JU 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. The financial contributions are recognised in the net assets in the period in which the 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 the net assets of the JU in the period when the conditions for Members' contributions stipulated by the Regulation were 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.

2. NOTES TO THE BALANCE SHEET

ASSETS

2.1. PROPERTY, PLANT AND EQUIPMENT

EUR '000

| | Furniture and vehicles | Computer hardware | Other | TOTAL |
|-----------------------------------------------|---------------------------|----------------------|------------|-------------|
| <i>Gross carrying amount at 31.12.2018</i> | 33 | 42 | 7 | 82 |
| <i>Additions</i> | 1 | 15 | 8 | 24 |
| Gross carrying amount at 31.12.2019 | 34 | 56 | 15 | 105 |
| <i>Accumulated depreciation at 31.12.2018</i> | (9) | (28) | (4) | (41) |
| <i>Depreciation charge for the year</i> | (4) | (9) | (2) | (14) |
| Accumulated depreciation at 31.12.2019 | (13) | (37) | (7) | (56) |
| NET CARRYING AMOUNT AT 31.12.2019 | 22 | 19 | 8 | 49 |
| <i>NET CARRYING AMOUNT AT 31.12.2018</i> | 24 | 13 | 2 | 40 |

2.2. PRE-FINANCING

EUR '000

| | 31.12.2019 | 31.12.2018 |
|----------------------------------|----------------|----------------|
| <i>Non-current pre-financing</i> | 116 919 | 107 972 |
| <i>Current pre-financing</i> | 69 961 | 31 714 |
| Total | 186 881 | 139 686 |

For all pre-financing amounts open at 31 December 2019 a case-by-case assessment has been performed and all pre-financing that was considered unlikely to be cleared in the course of 2020 was classified as non current pre-financing.

The overall high amount of the open pre-financing can be explained by the fact that according to the Horizon 2020 rules the incurred costs (both actual and estimated) are cleared against pre-financing when the 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 life there is significant open pre-financing that will only be cleared in later years. The outstanding pre-financing, presented under this heading, is net of estimated (cut-off) expenses for on going projects without validated cost claims on 31 December 2019. The remaining portion of the cut-off expenses is recorded in accrued charges (see note 2.5).

In 2019, a total pre-financing amount of kEUR 82 305 was paid.

2.3. EXCHANGE RECEIVABLES & NON-EXCHANGE RECOVERABLES

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

| | EUR '000 | |
|------------------------------------------|---------------|---------------|
| | 31.12.2019 | 31.12.2018 |
| <i>Central treasury liaison accounts</i> | 52 880 | 37 002 |
| <i>Customers</i> | 140 | 1 364 |
| <i>Other</i> | 10 | 21 |
| Total | 53 031 | 38 386 |

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

The heading 'Customers' up to 2018 was largely composed of receivables related to the Research Executive Agency (REA) for costs incurred in 2017 and 2018 for expert evaluations related to the BBI JU's calls for proposals and of the contribution of the industry Member (BIC) to the administrative and operational costs of BBI JU. In 2019 the amount was adjusted and represents only the open RAL on REA commitments for the BBI evaluations.

The increase is in line with the increase of activities of BBI JU and thus bigger needs for the experts' evaluations (see also note 3.4).

LIABILITIES

2.4. PAYABLES AND OTHER LIABILITIES

| | EUR '000 | |
|---------------------------------------------|---------------|---------------|
| | 31.12.2019 | 31.12.2018 |
| <i>Contribution in kind to be validated</i> | 51 999 | 36 841 |
| <i>Public Bodies</i> | 12 377 | 5 214 |
| <i>Vendors</i> | 7 745 | 5 249 |
| <i>Other</i> | – | 500 |
| Total | 72 121 | 47 803 |

Included under the heading Contributions in-kind to be validated are the in-kind contributions from 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 2019. The estimated cash contribution to the operational cost of those projects is included under accrued charges (see note 2.5). The significant increase relates to new projects launched or ongoing in the course of 2019 for which the IKOP declarations were not certified by an auditor and validated by the BBI Executive Director and the amounts related to 2019 had thus to be estimated during the closure (cut-off) exercise.

The increase in payables to Vendors and to Public bodies relates to cost claims received but not yet validated at the year end. The underlying cut-off expenses have been recorded under operational expenses.

2.5. ACCRUED CHARGES

| | EUR '000 | |
|------------------------|------------|------------|
| | 31.12.2019 | 31.12.2018 |
| <i>Accrued charges</i> | 95 078 | 91 334 |

Accrued charges are the amounts estimated by the Authorising Officer of costs incurred for services and goods delivered in year 2019 but not yet invoiced or processed by the end of the year. They are largely composed of estimated operational costs of kEUR 94 396 for on-going projects without a validated cost statement where the 2019 expense was estimated on a case-by-case basis using the best available information about the projects at 31 December 2019. The portion of the estimated accrued charges which relates to pre-financing paid has been recorded as a reduction of the pre-financing amounts in line with the H2020 rules (see note **2.2**).

Also included under this heading are accrued administrative expenses of kEUR 641 relating mainly to other external services (kEUR 192), communication and publication costs (kEUR 163), IT costs covering the operational phase of IT projects (kEUR 112) and training costs (kEUR 45). The accrued staff expenses for untaken leave is kEUR 40.

NET ASSETS

2.6. CONTRIBUTIONS FROM MEMBERS

| Programme | 2019 | | | 2018 | | |
|-----------|---------|---------|---------|---------|---------|---------|
| | Cash | In kind | Total | Cash | In kind | Total |
| H2020 | 427 713 | 16 776 | 444 489 | 273 667 | 12 103 | 285 770 |

EUR '000

With regard to the Horizon 2020 programme, Council Regulation (EC) No 560/2014 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 BBI JU are considered in-kind contribution. Estimated in-kind contributions, i.e. contributions for which no certifications has been received and/or this certification has not been validated by the Executive Director are reported under other liabilities (see note 2.4).

| Member | EU | | Industry Grouping | | Total | |
|----------------------------------------------------|----------------|--|-------------------|---------------|---------------|----------------|
| | Cash | | Cash | In kind | Total | |
| Running costs contributions at 31.12.2018 | 7 815 | | 8 311 | – | 8 311 | 16 126 |
| Current year contributions | 1 513 | | 1 513 | – | 1 513 | 3 026 |
| Running costs contributions at 31.12.2019 | 9 328 | | 9 824 | – | 9 824 | 19 152 |
| Operating costs contributions at 31.12.2018 | 256 791 | | 750 | 12 103 | 12 853 | 257 541 |
| Current year contributions | 148 520 | | 2 500 | 4 674 | 7 174 | 151 020 |
| Operating costs contributions at 31.12.2019 | 405 311 | | 3 250 | 16 776 | 20 026 | 408 561 |
| TOTAL contributions at 31.12.2018 | 264 606 | | 9 061 | 12 103 | 21 164 | 273 667 |
| TOTAL contributions at 31.12.2019 | 414 638 | | 13 074 | 16 776 | 29 850 | 427 713 |

EUR '000

| | | | | | |
|------------------------------------|--------|-------|---------|---------|---------|
| % of total contributions (by type) | | 3.06% | 100.00% | 100.00% | 100.00% |
| Total contribution in % | 93.28% | | 6.72% | 100.00% | |
| Voting rights % | 50.00% | | 50.00% | 100.00% | |

The increase in the cash contributions from owners is explained by the total operational and administrative contributions from the EC and the Members other than the EU for 2019 (kEUR 151 020 in operational contributions and kEUR 3 026 in administrative contributions).

3. NOTES TO THE STATEMENT OF FINANCIAL PERFORMANCE

EXPENSES

3.1. OPERATIONAL COSTS

Included under this heading are operational costs related to projects that were carried out in 2019. A part of the operational costs, related to on-going or ended projects without any validated cost claims (or equivalent) available at 31 December, was estimated using the best information available at the time of the preparation of the annual accounts. The estimation is based on the case-by-case assessment of completion which ensures that only costs that reflect the services or work performed by 31 December are included in the operational costs of the year. 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 costs incurred to date as a proportion of the estimated total costs of the projects ('pro-rata temporis').

The break-down of the operational costs between operational costs incurred on the basis of validated cost claims (or equivalent) and estimated operational costs, is given in the table below.

| | EUR '000 | |
|-----------------------------------------------------------|----------------|----------------|
| | 2019 | 2018 |
| <i>Operational costs: validated in-kind contributions</i> | 4 674 | 12 103 |
| <i>Operational costs: estimated in-kind contributions</i> | 15 157 | 10 882 |
| Total operational costs from in-kind contributions | 19 830 | 22 985 |
| <i>Operational costs: validated EU contributions</i> | 69 649 | 58 376 |
| <i>Operational costs: estimated EU contributions</i> | 30 032 | 35 183 |
| Total operational costs: from EU contributions | 99 680 | 93 559 |
| Total | 119 511 | 116 544 |

3.2. STAFF COSTS

| | EUR '000 | |
|--------------------|----------|-------|
| | 2019 | 2018 |
| <i>Staff costs</i> | 2 222 | 2 043 |

Included under this heading are salary expenses and other employment-related allowances and benefits. Calculations related to staff costs are, based on the service level agreement, entrusted to the European Commission's Office for administration and payment of individual entitlements (also known as the Paymaster's Office-PMO).

The pensions of the BBI 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 factors such as age and years of service. Both the BBI JU staff and the Commission contribute to the pension scheme and the contribution percentage is revised yearly to reflect the changes in the Staff Regulation. The cost to the Commission is not reflected in the BBI JU accounts. Similarly, the future benefits, payable to the BBI JU staff, are accounted for in the liabilities of the Commission, as it is the Commission who will pay out these benefits. No provisions related to the future pensions are made in these accounts.

3.3. FINANCE COSTS

Included under this heading is the reversal of a 2018 posting related to expenses concerning the write down of the pre-financing of one of the beneficiaries. The pre-financing amounts related to beneficiaries declared in bankruptcy are covered by the Participants Guarantee Fund.

3.4. OTHER EXPENSES

| | EUR '000 | |
|-------------------------------------------------------|--------------|--------------|
| | 2019 | 2018 |
| <i>Experts' fees</i> | 1 222 | 907 |
| <i>Communications and publications</i> | 752 | 155 |
| <i>External non IT services</i> | 492 | 324 |
| <i>External IT services</i> | 307 | 159 |
| <i>Operating lease expenses</i> | 297 | 283 |
| <i>Training costs</i> | 91 | 32 |
| <i>Missions</i> | 68 | 70 |
| <i>Office supplies and maintenance</i> | 41 | 19 |
| <i>Property, plant and equipment related expenses</i> | 18 | 34 |
| <i>Other</i> | 6 | 45 |
| Total | 3 293 | 2 029 |

The increase in expenses related to experts' fees is due to the amount of proposals received for the 2019 call. These expenses consist mainly of the costs of the experts used by REA for the evaluation of BBI calls. The consumption reported by REA for 2019 was around kEUR 955 (2018: kEUR 700). The heading also includes the costs of external project reviewers paid by BBI.

In 2019 communication and publication costs were higher than 2018 because of:

- The impact of the 2019 SH Forum Event (it occurs once every two years) which cost a total of over kEUR 400.
- Reversals of large accruals for the 2017 Stakeholder Forum Event (SH Forum). The travel costs due to Amex were much lower than quoted.

External non-IT service provider costs increased in 2019 because of a higher number of interim staff needed by BBI JU in order to manage the workload. The underlying accruals increased with kEUR 105 and thus almost doubled compared to 2018 (see note **2.5**).

The increase in External IT services is due to new IT tools introduced in 2019 (ARES, MIPS, NEO, e-invoicing) as well as a new audio-visual and conferencing platform for the meeting rooms.

Operating lease expenses were slightly higher in 2019 due to rental indexation, a regularisation of the 2018 service charges and extra costs relating to the construction of a kiosk in the reception of the White Atrium.

Operating lease expenses concern the BBI 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 |
| <i>Buildings</i> | 302 | 1 270 | – | 1 572 |

4. OTHER SIGNIFICANT DISCLOSURES

4.1. OUTSTANDING COMMITMENTS NOT YET EXPENSED

| | EUR '000 | |
|-------------------------------------------------|------------|------------|
| | 31.12.2019 | 31.12.2018 |
| <i>Outstanding commitments not yet expensed</i> | 223 817 | 269 907 |

The amount of outstanding commitments not yet expensed comprises the budgetary RAL ('Reste à Liquider') less related amounts that have been included as expenses in the 2019 statement of financial performance. The budgetary RAL is an amount representing the open 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.

4.2. RELATED PARTIES

The related parties of the BBI JU are the members, other EU entities and BBI JU key management personnel. Transactions between these parties take place as part of the normal BBI JU operations and as this is the case, no specific disclosure requirements are necessary for these transactions in accordance with the EU accounting rules.

4.3. KEY MANAGEMENT ENTITLMENTS

The highest ranking civil servant of BBI JU is the Executive Director, who executes the role of Authorising Officer.

| | 31.12.2019 | 31.12.2018 |
|---------------------------|------------|------------|
| <i>Executive Director</i> | 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.

4.4. EVENTS AFTER REPORTING DATE

During the first half of 2020, the coronavirus outbreak has had huge impacts on the EU economy. As a non-adjusting event, the outbreak of the coronavirus does not require any adjustments to the figures reported in these annual accounts. For subsequent reporting periods, COVID-19 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 information available at the date of signature of these annual accounts, the financial effects of the coronavirus outbreak cannot be reliably estimated.

5. FINANCIAL RISK MANAGEMENT

5.1. TYPES OF RISK

Market risk is the risk that the fair value or future cashflows 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 BBI JU has no significant other price risk).

(1) Currency risk is the risk that the BBI JU operations or its investments' value will be affected by changes in exchange rates. This risk arises from the change in 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. BBI JU 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/borrower's non-payment of a loan or other line of credit (either the principal or interest or both) or other failure to meet a contractual obligation. The default events include a delay in repayments, restructuring of borrower repayments and bankruptcy.

Liquidity risk is the risk that arises from the difficulty in selling an asset; for example, the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss or meet an obligation.

5.2. CURRENCY RISKS

Exposure to currency risk at year-end

At 31 December 2019 the financial assets are entirely composed of exchange receivables. The financial liabilities are entirely composed of accounts payable. The ending balances of both financial liabilities and financial assets are quoted in EUR. At the year end BBI thus does not have any exposure to currency risks.

5.3. CREDIT RISK

Financial assets that are neither past due nor impaired

The financial assets that are neither past due nor impaired entirely compose of receivables and recoverables that amounted to kEUR 53 031 at 31 December 2019.

Financial assets by risk category

The exchange receivables relate with kEUR 52 880 to entities with prime grade and with kEUR 150 to counterparties without external credit rating that have never defaulted in the past.

5.4. LIQUIDITY RISK

Maturity analysis of financial liabilities by remaining contractual maturity

Financial liabilities entirely consist of accounts payable. All the accounts payable have a remaining contractual maturity of less than 1 year.

At 31 December 2019, the financial liabilities amounted to kEUR 167 199. They are mainly composed of current payables (kEUR 20 122), in-kind contributions to be validated (kEUR 51 999) and accrued charges (kEUR 95 078). All the financial liabilities have an expected remaining maturity of less than one year.

BIO-BASED INDUSTRIES JOINT UNDERTAKING
FINANCIAL YEAR 2019

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.

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1. BUDGETARY PRINCIPLES, STRUCTURE AND HIGHLIGHTS OF THE BUDGETARY IMPLEMENTATION

1.1. BUDGETARY PRINCIPLES

The establishment and implementation of the budget of BBI JU is governed by the following basic principles set out in the Chapter 2 of the Financial Rules of BBI 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 BBI 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, BBI 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 BBI 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 01 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 BBI 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 relate to staff expenditure such as salaries and allowances for personnel working with BBI 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 BBI JU in accordance with its establishing Council Regulation (EC) No 560/2014.

1.3. HIGHLIGHTS OF THE BUDGETARY IMPLEMENTATION

The Governing Board adopted the original 2019 budget for the BBI JU for the global amount of EUR 141.3 million in commitment appropriations (CA) and EUR 199.2 million in payment appropriations (PA) in December 2018. In March 2019, the budget was amended in order to (i) enter the unused CA and PA of administrative expenditure in the estimate of revenue and expenditure of up to the previous three financial years, and to (ii) to reduce the PA amount of the operational expenditure. The amended budget amounted to EUR 141.6 million in CA and EUR 182.1 million in PA.

The overall budget implementation of the total BBI 2019 budget was very good, 87% in CA and 76% in PA.

The management of BBI JU's 2019 administrative budget was characterised by the fact that it was half constituted by appropriations related to the budget year and half by unused appropriations from previous years.

In contrast to 2018, the BBI JU administrative budget included a relatively large surplus of unused budget from prior years (mainly 2017 and 2018). Of these unused appropriations, amounting to EUR 3 million in administrative CA as well as EUR 25.5 million in operational and EUR 3 million in administrative PA, part were reactivated in the original voted budget and part via an amendment to the annual work plan and budget in March 2019. These reactivated appropriations were consumed in priority in line with BBI's Financial Rules art. 6(5), and reached almost 100% consumption by year end.

At the end of 2019, there was a surplus of unused CA and PA of around kEUR 494 in administrative CA and of EUR 1.4 million in administrative PA. In operational CA this was around EUR 17.3 million and in operational PA EUR 43 million.

A Governing Board decision was taken at the end of 2019 to reactivate EUR 1 million in administrative CA and EUR 1.2 million in administrative PA (both from 2018) as well as EUR 20.4 million in operational CA and EUR 28.8 million in operational PA in the 2020 budget. The operational CA include EUR 13.4 million from 2017 and 2018 and the operational PA EUR 7.8 million from 2018. Further reactivations (covering 2018 and 2019 surpluses) are to be envisaged in 2020 via a budgetary amendment.

Administrative expenditure

The total consumption of the (amended) administrative budget was 92% in CA and 78% in PA.

Title 1: Staff related costs such as salaries, other staff costs and missions showed a strong execution in CA (94%, 90% and 100% respectively) representing a significant amount of over EUR 2.8 million. Overall the execution of CA in Title 1 is 91% and in PA 82% of the amended administrative budget.

Title 2: The infrastructure budget achieved an execution of 92% in the CA of the amended 2019 budget. Communication, building costs and contracting of experts incurred the highest costs in 2019, amounting to kEUR 733, kEUR 314 and kEUR 998 respectively. The budget related to the evaluators' contracting and payment was executed by the Research Executive Agency on behalf of BBI JU.¹³⁴ Underspensing was recorded for formal meetings (37%), for which the reimbursements were much lower than anticipated and studies/consultancy (62%) for which a large amount was budgeted for a study, and the actual costs was half the forecast amount. The overall PA consumption in Title 2 is 73% of the amended 2019 budget.

Operational expenditure

Concerning the CA of the operational budget, the Programme Office concluded 17 grant agreements from Call 2018 for a total grant value of EUR 102.9 million resulting in a 89% execution of CA envisaged for this Call (EUR 85.8 million).

The 2019 call was committed for EUR 118.2 million. The evaluation was successfully concluded by the end of 2019.

In respect of the PA, the Programme Office achieved a 76% execution of the 2019 budget, with pre-financing payments for the grants of Call 2018 together with payments of periodic reports for grants from the previous BBI JU Calls. The execution progressed compared to the previous year despite delays with some periodic reports and the amounts of certain cost claims being below the anticipated level.

19 pre-financings were paid for a total amount of EUR 82.3 million. The pre-financing rates were increased to 80% of the maximum grant amount.

Regarding the payment of the periodic reports, BBI JU Programme Office dealt with 44 periodic reports claiming a total contribution of EUR 70.4 million, which led to 43 payments in 2019 for a total of EUR 51.1 million.

¹³⁴ EUR 998 140 was committed by the REA in 2019, transferred by the EC on behalf of BBI JU for the management and payment of the BBI JU experts-evaluators for its Call for proposals 2019. The provisional execution to date of these appropriations was notified by REA in mid-January 2019, is EUR 945 082 with further payments possibly due.

2. RESULT OF THE IMPLEMENTATION OF THE BUDGET

| | | EUR '000 | |
|----------------------------------------------------------------|-------|------------------|-----------------|
| | Title | 2019 | 2018 |
| Revenue | | 154 053 | 116 411 |
| of which: | | | |
| EU (incl. EFTA) contribution to administrative | 1 | 1 513 | 2 476 |
| EU (incl. EFTA) contribution to operational | 1 | 148 520 | 111 452 |
| Bio-based Industries Consortium contribution to administrative | 1 | 1 513 | 2 476 |
| Bio-based Industries Consortium contribution to operational | 1 | 2 501 | – |
| JU revenues | 1 | 6 | 8 |
| Expenditure | | (138 163) | (83 396) |
| of which: | | | |
| Staff expenditure | 1 | (2 575) | (2 372) |
| Administrative expenditure | 2 | (2 170) | (1 851) |
| Operational expenditure | 3 | (133 418) | (79 173) |
| Exchange rate differences | | 0 | (0) |
| Budget result | | 15 890 | 33 015 |

3. RECONCILIATION OF ECONOMIC RESULT WITH BUDGET RESULT

| | EUR '000 | |
|--------------------------------------------------------------------------------------------------------------|------------------|------------------|
| | 2019 | 2018 |
| ECONOMIC RESULT OF THE YEAR | (124 932) | (120 692) |
| Adjustment for accrual items (items not in the budgetary result but included in the economic result) | 50 531 | 58 110 |
| <i>Adjustments for accrual cut-off (net)</i> | <i>50 555</i> | <i>58 102</i> |
| <i>Depreciation, amortization and impairment of intangible and tangible assets</i> | <i>14</i> | <i>15</i> |
| <i>Other individually immaterial</i> | <i>(38)</i> | <i>(7)</i> |
| Adjustment for budgetary items (item included in the budgetary result but not in the economic result) | 90 291 | 95 597 |
| <i>Members' cash contributions collected in the year</i> | <i>154,046</i> | <i>116,404</i> |
| <i>Asset acquisitions (less unpaid amounts)</i> | <i>(28)</i> | <i>(7)</i> |
| <i>Payments made from non-budget lines</i> | <i>–</i> | <i>–</i> |
| <i>New pre-financing paid in the year and remaining open as at 31 December</i> | <i>(63,725)</i> | <i>(20,797)</i> |
| <i>Other individually immaterial</i> | <i>(2)</i> | <i>(3)</i> |
| BUDGET RESULT OF THE YEAR | 15 890 | 33 015 |

4. IMPLEMENTATION OF BUDGET REVENUE

4.1. Implementation of budget revenue – Title 1

EUR '000

| Item | Income appropriations | | Entitlements established | | | Revenue | | | | Out-standing |
|---------------------------------------------------------------------|-----------------------|----------------|--------------------------|--------------|----------------|----------------|----------------|----------------|--------------|--------------|
| | Initial budget | Final budget | Current year | Carried over | Total | On entitlement | On entitlement | Total | % | |
| | 1 | 2 | 3 | 4 | 5=3+4 | 6 | 7 | 8=6+7 | 9=8/2 | 10=5-8 |
| 1001 EU (incl. EFTA) contribution to administrative | 1 513 | 1 513 | 1 513 | – | 1 513 | 1 513 | – | 1 513 | 100 % | – |
| 1002 EU (incl. EFTA) contribution to operational | 166 520 | 148 520 | 148 520 | – | 148 520 | 148 520 | – | 148 520 | 100 % | – |
| 1003 Bio-based Industries Consortium contribution to administrative | 1 513 | 1 513 | 1 513 | – | 1 513 | 1 513 | – | 1 513 | 100 % | – |
| 1004 Bio-based Industries Consortium contribution to operational | 2 000 | 2 000 | 2 501 | – | 2 501 | 2 501 | – | 2 501 | 125 % | – |
| 1005 JU revenues | – | – | 6 | – | 6 | 6 | – | 6 | – | – |
| Total Chapter 10 | 171 546 | 153 546 | 154 053 | – | 154 053 | 154 053 | – | 154 053 | 100 % | – |
| Total Title 1 | 171 546 | 153 546 | 154 053 | – | 154 053 | 154 053 | – | 154 053 | 100 % | – |
| GRAND TOTAL | 171 546 | 153 546 | 154 053 | – | 154 053 | 154 053 | – | 154 053 | 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 appropri. available | |
|------------------|--------------------------------------------------------------------------------------------|------------------------------|---------------------|-----------|---------------------------|-----------------|---------------------|---------------------------------|-------|
| | | Initial adopted budget | Amending budgets | Transfers | Final budget adopted | Carry- overs | Assigned revenue | | Total |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 | 8=4+7 |
| 1100 | Staff costs | 502 | – | (0) | 501 | 1 742 | – | 1 742 | 2 243 |
| 1110 | Trainees and interim staff | 266 | – | – | 266 | 102 | – | 102 | 369 |
| Total Chapter 11 | | 768 | – | (0) | 768 | 1 844 | – | 1 844 | 2 612 |
| 1200 | Sundry recruitment expenses | – | – | – | – | 46 | – | 46 | 46 |
| 1201 | Installation resettlement and daily subsistence allowances and removal and travel expenses | 60 | – | – | 60 | – | – | – | 60 |
| Total Chapter 12 | | 60 | – | – | 60 | 46 | – | 46 | 106 |
| 1300 | Mission expenses, duty travel expenses and other ancillary expenditure | – | – | – | – | 73 | – | 73 | 73 |
| Total Chapter 13 | | – | – | – | – | 73 | – | 73 | 73 |
| 1400 | Medical service | 6 | – | – | 6 | 9 | – | 9 | 16 |
| 1401 | Mobility costs and other social expenses for staff | 59 | – | – | 59 | 71 | – | 71 | 130 |
| 1402 | Training | 33 | – | – | 33 | 69 | – | 69 | 102 |
| Total Chapter 14 | | 98 | – | – | 98 | 149 | – | 149 | 247 |
| 1500 | Entertainment and representation expenses | 10 | – | 0 | 10 | 7 | – | 7 | 17 |
| Total Chapter 15 | | 10 | – | 0 | 10 | 7 | – | 7 | 17 |
| Total Title 1 | | 936 | – | – | 936 | 2 118 | – | 2 118 | 3 054 |

5.1.2. Breakdown & changes in commitment appropriations – Title 2

EUR '000

| Item | | Budget appropriations | | | Additional appropriations | | | Total apppr. available |
|----------------------|-----------------------------------------------------------------|------------------------------|---------------------|------------|---------------------------|-----------------|---------------------|------------------------------|
| | | Initial adopted budget | Amending budgets | Transfers | Final budget adopted | Carry- overs | Assigned revenue | |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 |
| | | | | | | | | 8=4+7 |
| 2000 | Rentals | 305 | – | 9 | 314 | 12 | – | 12 |
| 2010 | Charges and works | 11 | – | (11) | – | – | – | – |
| Total Chapter 20 | | 316 | – | (2) | 314 | 12 | – | 12 |
| 2100 | IT equipment & software purchase/development costs | – | – | – | – | 77 | – | 77 |
| 2101 | Other IT costs | 169 | – | – | 169 | 61 | – | 61 |
| Total Chapter 21 | | 169 | – | – | 169 | 137 | – | 137 |
| 2200 | Movable property and associated office equipment purchase costs | 5 | – | – | 5 | – | – | – |
| Total Chapter 22 | | 5 | – | – | 5 | – | – | – |
| 2300 | Stationery and office supplies | – | – | – | – | 20 | – | 20 |
| 2302 | Legal expenditure | 10 | – | (9) | 1 | – | – | – |
| 2303 | Other current administrative expenditure | – | – | – | – | 1 | – | 1 |
| Total Chapter 23 | | 10 | – | (9) | 1 | 21 | – | 21 |
| 2400 | Telecommunications and postal charges | 11 | – | – | 11 | 7 | 5 | 12 |
| Total Chapter 24 | | 11 | – | – | 11 | 7 | 5 | 12 |
| 2500 | Expenditure on formal meetings | 107 | – | (11) | 96 | 23 | – | 23 |
| Total Chapter 25 | | 107 | – | (11) | 96 | 23 | – | 23 |
| 2600 | Events and campaigns | 220 | – | 16 | 236 | 358 | – | 358 |
| 2601 | Materials | – | – | – | – | 84 | – | 84 |
| 2602 | Communications tools | – | – | – | – | 50 | – | 50 |
| 2603 | Public relations | 0 | – | – | 0 | 70 | – | 70 |
| Total Chapter 26 | | 220 | – | 16 | 236 | 561 | – | 561 |
| 2700 | Studies, consultancy and other services | 60 | – | – | 60 | 95 | – | 95 |
| Total Chapter 27 | | 60 | – | – | 60 | 95 | – | 95 |
| 2800 | Evaluators' contract and meetings | 900 | – | 50 | 950 | 48 | – | 48 |
| Total Chapter 28 | | 900 | – | 50 | 950 | 48 | – | 48 |
| 2900 | Expert reviewers | 291 | – | (45) | 246 | – | – | – |
| Total Chapter 29 | | 291 | – | (45) | 246 | – | – | – |
| Total Title 2 | | 2 089 | – | (1) | 2 088 | 905 | 5 | 910 |

5.1.3. Breakdown & changes in commitment appropriations – Title 3

EUR '000

| Item | | Budget appropriations | | | Additional appropriations | | | Total appropri. available |
|----------------------|-------------------|------------------------------|---------------------|-----------|---------------------------|-----------------|---------------------|---------------------------------|
| | | Initial adopted budget | Amending budgets | Transfers | Final budget adopted | Carry- overs | Assigned revenue | |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 |
| 3100 | Current year call | 135 576 | – | 1 | 135 577 | – | – | – |
| Total Chapter 31 | | 135 576 | – | 1 | 135 577 | – | – | – |
| Total Title 3 | | 135 576 | – | 1 | 135 577 | – | – | – |
| GRAND TOTAL | | 138 602 | – | 0 | 138 602 | 3 023 | 5 | 3 028 |

5.2. Breakdown & changes in payment appropriations

5.2.1. Breakdown & changes in payment appropriations – Title 1

EUR '000

| Item | | Budget appropriations | | | Final adopted budget | Additional appropriations | | | Total approp. available |
|----------------------|--------------------------------------------------------------------------------------------|------------------------|------------------|-----------|----------------------|---------------------------|------------------|--------------|-------------------------|
| | | Initial budget adopted | Amending budgets | Transfers | | Carry-overs | Assigned revenue | Total | |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 | 8=4+7 |
| 1100 | Staff costs | 415 | – | (0) | 414 | 1 940 | – | 1 940 | 2 354 |
| 1110 | Trainees and interim staff | 317 | – | – | 317 | 68 | – | 68 | 385 |
| Total Chapter 11 | | 732 | – | (0) | 732 | 2 008 | – | 2 008 | 2 739 |
| 1200 | Sundry recruitment expenses | 8 | – | – | 8 | 24 | – | 24 | 32 |
| 1201 | Installation resettlement and daily subsistence allowances and removal and travel expenses | 60 | – | – | 60 | – | – | – | 60 |
| Total Chapter 12 | | 68 | – | – | 68 | 24 | – | 24 | 92 |
| 1300 | Mission expenses, duty travel expenses and other ancillary expenditure | 8 | – | – | 8 | 62 | – | 62 | 70 |
| Total Chapter 13 | | 8 | – | – | 8 | 62 | – | 62 | 70 |
| 1400 | Medical service | 6 | – | – | 6 | 14 | – | 14 | 20 |
| 1401 | Mobility costs and other social expenses for staff | 67 | – | – | 67 | 65 | – | 65 | 132 |
| 1402 | Training | 33 | – | – | 33 | 53 | – | 53 | 86 |
| Total Chapter 14 | | 106 | – | – | 106 | 131 | – | 131 | 238 |
| 1500 | Entertainment and representation expenses | 10 | – | 0 | 10 | 5 | – | 5 | 15 |
| Total Chapter 15 | | 10 | – | 0 | 10 | 5 | – | 5 | 15 |
| Total Title 1 | | 924 | – | – | 924 | 2 230 | – | 2 230 | 3 154 |

5.2.2. Breakdown & changes in payment appropriations – Title 2

EUR '000

| Item | | Budget appropriations | | | | Additional appropriations | | | Total apppr. available |
|----------------------|-----------------------------------------------------------------|---------------------------|---------------------|------------|----------------------------|---------------------------|---------------------|------------|------------------------------|
| | | Initial budget adopted | Amending budgets | Transfers | Final adopted budget | Carry-overs | Assigned revenue | Total | |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 | 8=4+7 |
| 2000 | Rentals | 305 | – | (0) | 305 | 9 | – | 9 | 314 |
| 2010 | Charges and works | 11 | – | 2 | 13 | – | – | – | 13 |
| Total Chapter 20 | | 316 | – | 2 | 318 | 9 | – | 9 | 327 |
| 2100 | IT equipment & software purchase/development costs | 7 | – | – | 7 | 72 | – | 72 | 79 |
| 2101 | Other IT costs | 169 | – | (1) | 169 | 50 | – | 50 | 219 |
| Total Chapter 21 | | 177 | – | (1) | 176 | 122 | – | 122 | 298 |
| 2200 | Movable property and associated office equipment purchase costs | 5 | – | – | 5 | 6 | – | 6 | 11 |
| Total Chapter 22 | | 5 | – | – | 5 | 6 | – | 6 | 11 |
| 2300 | Stationery and office supplies | – | – | – | – | 19 | – | 19 | 19 |
| 2302 | Legal expenditure | 10 | – | – | 10 | – | – | – | 10 |
| 2303 | Other current administrative expenditure | – | – | – | – | 12 | – | 12 | 12 |
| Total Chapter 23 | | 10 | – | – | 10 | 31 | – | 31 | 41 |
| 2400 | Telecommunications and postal charges | 11 | – | – | 11 | 4 | 5 | 9 | 20 |
| Total Chapter 24 | | 11 | – | – | 11 | 4 | 5 | 9 | 20 |
| 2500 | Expenditure on formal meetings | 76 | – | (8) | 67 | 34 | – | 34 | 102 |
| Total Chapter 25 | | 76 | – | (8) | 67 | 34 | – | 34 | 102 |
| 2600 | Events and campaigns | 251 | – | (2) | 249 | 377 | – | 377 | 627 |
| 2601 | Materials | – | – | – | – | 70 | – | 70 | 70 |
| 2602 | Communications tools | – | – | – | – | 37 | – | 37 | 37 |
| 2603 | Public relations | – | – | – | – | 15 | – | 15 | 15 |
| Total Chapter 26 | | 251 | – | (2) | 249 | 500 | – | 500 | 749 |
| 2700 | Studies, consultancy and other services | 65 | – | – | 65 | 90 | – | 90 | 155 |
| Total Chapter 27 | | 65 | – | – | 65 | 90 | – | 90 | 155 |
| 2800 | Evaluators' contract and meetings | 900 | – | 58 | 958 | 40 | – | 40 | 998 |
| Total Chapter 28 | | 900 | – | 58 | 958 | 40 | – | 40 | 998 |
| 2900 | Expert reviewers | 291 | – | (50) | 241 | 16 | – | 16 | 257 |
| Total Chapter 29 | | 291 | – | (50) | 241 | 16 | – | 16 | 257 |
| Total Title 2 | | 2 102 | – | (1) | 2 101 | 851 | 5 | 857 | 2 957 |

5.2.3. Breakdown & changes in payment appropriations – Title 3

EUR '000

| Item | | Initial budget adopted | Budget appropriations | | Final adopted budget | Additional appropriations | | Total | Total appropriations available |
|----------------------|-----------------------|---------------------------|-----------------------|-----------|-------------------------|---------------------------|---------------------|---------------|--------------------------------------|
| | | | Amending budgets | Transfers | | Carry-overs | Assigned revenue | | |
| | | 1 | 2 | 3 | 4=1+2+3 | 5 | 6 | 7=5+6 | 8=4+7 |
| 3000 | Previous years' calls | 168 520 | (18 000) | (56 819) | 93 701 | – | – | – | 93 701 |
| Total Chapter 30 | | 168 520 | (18 000) | (56 819) | 93 701 | – | – | – | 93 701 |
| 3100 | Current year call | – | – | 56 819 | 56 819 | 25 487 | – | 25 487 | 82 306 |
| Total Chapter 31 | | – | – | 56 819 | 56 819 | 25 487 | – | 25 487 | 82 306 |
| Total Title 3 | | 168 520 | (18 000) | 1 | 150 521 | 25 487 | – | 25 487 | 176 007 |
| GRAND TOTAL | | 171 546 | (18 000) | – | 153 546 | 28 568 | 5 | 28 573 | 182 119 |

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 2020 | | | Appropriations lapsing | | | |
|-------------------------------------------------------------------------------------------------|-------------------------|--------------------------|------------------|----------------------|--------------|--------------|-------------------------------------|-------------|----------|--------------------------|------------------|----------------------|-------------|
| | | from final adopt. budget | from carry-overs | from assign. revenue | Total | | Assign. revenue | By decision | Total | from final adopt. budget | from carry-overs | 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 | 2 243 | 369 | 1 742 | - | 2 111 | 94 % | - | - | - | 132 | - | - | 132 |
| 1110 Trainees and interim staff | 369 | 241 | 102 | - | 344 | 93 % | - | - | - | 25 | - | - | 25 |
| Total Chapter 11 | 2 612 | 610 | 1 844 | - | 2 454 | 94 % | - | - | - | 157 | - | - | 157 |
| 1200 Sundry recruitment expenses | 46 | - | 11 | - | 11 | 24 % | - | - | - | - | 35 | - | 35 |
| 1201 Installation resettlement and daily subsistence allowances and removal and travel expenses | 60 | - | - | - | - | 0 % | - | - | - | 60 | - | - | 60 |
| Total Chapter 12 | 106 | - | 11 | - | 11 | 10 % | - | - | - | 60 | 35 | - | 95 |
| 1300 Mission expenses, duty travel expenses and other ancillary expenditure | 73 | - | 73 | - | 73 | 100 % | - | - | - | - | - | - | - |
| Total Chapter 13 | 73 | - | 73 | - | 73 | 100 % | - | - | - | - | - | - | - |
| 1400 Medical service | 16 | 5 | 9 | - | 14 | 90 % | - | - | - | 2 | - | - | 2 |
| 1401 Mobility costs and other social expenses for staff | 130 | 57 | 60 | - | 117 | 90 % | - | - | - | 2 | 11 | - | 13 |
| 1402 Training | 102 | 33 | 69 | - | 102 | 100 % | - | - | - | - | - | - | - |
| Total Chapter 14 | 247 | 95 | 138 | - | 233 | 94 % | - | - | - | 3 | 11 | - | 14 |
| 1500 Entertainment and representation expenses | 17 | 10 | 7 | - | 17 | 100 % | - | - | - | - | - | - | - |
| Total Chapter 15 | 17 | 10 | 7 | - | 17 | 100 % | - | - | - | - | - | - | - |
| Total Title 1 | 3 054 | 716 | 2 072 | - | 2 788 | 91 % | - | - | - | 221 | 45 | - | 266 |

5.3.2. Implementation of commitment appropriations - Title 2

EUR '000

| Item | | Total approp. available | Commitments made | | | | Appropriations carried over to 2020 | | | Appropriations lapsing | | | | |
|------------------|--------------------------------------------------------------------------|-------------------------------|-----------------------------------|-------------------------|----------------------------|-------------|----------------------------------------|--------------------|----------------|------------------------|-----------------------------------|-------------------------|----------------------------|-----------------|
| | | | from final adopt. budget | from carry- overs | from assign. revenue | Total | % | Assign. revenue | By decision | Total | from final adopt. budget | from carry- overs | 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 | 327 | 302 | 12 | – | 314 | 96 % | – | – | – | 13 | – | – | 13 |
| Total Chapter 20 | | 327 | 302 | 12 | – | 314 | 96 % | – | – | – | 13 | – | – | 13 |
| 2100 | IT equipment & software purchase/development costs | 77 | – | 73 | – | 73 | 95 % | – | – | – | – | 3 | – | 3 |
| 2101 | Other IT costs | 230 | 159 | 61 | – | 220 | 96 % | – | – | – | 10 | 0 | – | 10 |
| Total Chapter 21 | | 306 | 159 | 134 | – | 293 | 96 % | – | – | – | 10 | 3 | – | 13 |
| 2200 | Movable property and associated office equipment purchase costs | 5 | 4 | – | – | 4 | 83 % | – | – | – | 1 | – | – | 1 |
| Total Chapter 22 | | 5 | 4 | – | – | 4 | 83 % | – | – | – | 1 | – | – | 1 |
| 2300 | Stationery and office supplies | 20 | – | 20 | – | 20 | 100 % | – | – | – | – | – | – | – |
| 2302 | Legal expenditure | 1 | – | – | – | – | 0 % | – | – | – | 1 | – | – | 1 |
| 2303 | Other current administrative expenditure | 1 | – | 1 | – | 1 | 100 % | – | – | – | – | – | – | – |
| Total Chapter 23 | | 22 | – | 21 | – | 21 | 95 % | – | – | – | 1 | – | – | 1 |
| 2400 | Telecommunications and postal charges | 23 | 9 | 7 | 4 | 20 | 89 % | – | – | – | 1 | – | 1 | 2 |
| Total Chapter 24 | | 23 | 9 | 7 | 4 | 20 | 89 % | – | – | – | 1 | – | 1 | 2 |
| 2500 | Expenditure on formal meetings | 119 | 38 | 6 | – | 44 | 37 % | – | – | – | 58 | 17 | – | 75 |
| Total Chapter 25 | | 119 | 38 | 6 | – | 44 | 37 % | – | – | – | 58 | 17 | – | 75 |
| 2600 | Events and campaigns | 594 | 233 | 340 | – | 573 | 97 % | – | – | – | 2 | 18 | – | 20 |
| 2601 | Materials | 84 | – | 65 | – | 65 | 78 % | – | – | – | – | 19 | – | 19 |
| 2602 | Communications tools | 50 | – | 35 | – | 35 | 70 % | – | – | – | – | 15 | – | 15 |
| 2603 | Public relations | 70 | – | 60 | – | 60 | 85 % | – | – | – | 0 | 10 | – | 10 |
| Total Chapter 26 | | 797 | 233 | 500 | – | 733 | 92 % | – | – | – | 2 | 62 | – | 64 |
| 2700 | Studies, consultancy and other services | 155 | 47 | 50 | – | 97 | 62 % | – | – | – | 13 | 45 | – | 58 |
| Total Chapter 27 | | 155 | 47 | 50 | – | 97 | 62 % | – | – | – | 13 | 45 | – | 58 |

EUR 000

| Item | | Total approp. available | Commitments made | | | | Appropriations carried over to 2020 | | | Appropriations lapsing | | | | |
|------------------|--------------------------------------|-------------------------------|-----------------------------------|-------------------------|----------------------------|-------------|----------------------------------------|--------------------|----------------|------------------------|-----------------------------------|-------------------------|----------------------------|-----------------|
| | | | from final adopt. budget | from carry- overs | from assign. revenue | Total | % | Assign. revenue | By decision | Total | from final adopt. budget | from carry- overs | 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 |
| 2800 | Evaluators' contract and meetings | 998 | 950 | 48 | – | 998 | 100 % | – | – | – | – | – | – | – |
| Total Chapter 28 | | 998 | 950 | 48 | – | 998 | 100 % | – | – | – | – | – | – | – |
| 2900 | Expert reviewers | 246 | 246 | – | – | 246 | 100 % | – | – | – | – | – | – | – |
| Total Chapter 29 | | 246 | 246 | – | – | 246 | 100 % | – | – | – | – | – | – | – |
| Total Title 2 | | 2 999 | 1 989 | 778 | 4 | 2 771 | 92 % | – | – | – | 100 | 127 | 1 | 228 |

5.3.3. Implementation of commitment appropriations - Title 3

EUR '000

| Item | Total approp. availabl e | Commitments made | | | Total | % | Appropriations carried over to 2020 | | | Appropriations lapsing | | | |
|------------------------|-----------------------------------|--------------------------------|-------------------------|----------------------------|----------------|-------------|----------------------------------------|----------------|----------|--------------------------------|-------------------------|----------------------------|-----------------|
| | | from final adopt. budget | from carry- overs | from assign. revenue | | | Assign. revenue | By decision | Total | from final adopt. budget | from carry- overs | 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 |
| 3100 Current year call | 135 577 | 118 230 | - | - | 118 230 | 87 % | - | - | - | 17 347 | - | - | 17 347 |
| Total Chapter 31 | 135 577 | 118 230 | - | - | 118 230 | 87 % | - | - | - | 17 347 | - | - | 17 347 |
| Total Title 3 | 135 577 | 118 230 | - | - | 118 230 | 87 % | - | - | - | 17 347 | - | - | 17 347 |
| GRAND TOTAL | 141 629 | 120 934 | 2 850 | 4 | 123 788 | 87 % | - | - | - | 17 667 | 173 | 1 | 17 841 |

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 2020 | | | | Appropriations lapsing | | | |
|------------------|--------------------------------------------------------------------------------------------|------------------------|--------------------------|------------------|----------------------|---------|-------|-------------------------------------|-------------|---------------|----------|--------------------------|------------------|-------------------|-------------|
| | | | from final adopt. budget | from carry-overs | from assign. revenue | Total | % | Autom. carry-overs | By decision | Assigned rev. | Total | from final adopt. budget | from carry-overs | from assign. 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 | 2 354 | 267 | 1 770 | - | 2 036 | 86 % | - | - | - | - | 148 | 170 | - | 318 |
| 1110 | Trainees and interim staff | 385 | 190 | 68 | - | 258 | 67 % | - | - | - | - | 127 | - | - | 127 |
| Total Chapter 11 | | 2 739 | 457 | 1 838 | - | 2 294 | 84 % | - | - | - | - | 275 | 170 | - | 445 |
| 1200 | Sundry recruitment expenses | 32 | - | 6 | - | 6 | 18 % | - | - | - | - | 8 | 18 | - | 26 |
| 1201 | Installation resettlement and daily subsistence allowances and removal and travel expenses | 60 | - | - | - | - | 0 % | - | - | - | - | 60 | - | - | 60 |
| Total Chapter 12 | | 92 | - | 6 | - | 6 | 6 % | - | - | - | - | 68 | 18 | - | 86 |
| 1300 | Mission expenses, duty travel expenses and other ancillary expenditure | 70 | 8 | 60 | - | 67 | 96 % | - | - | - | - | 0 | 2 | - | 3 |
| Total Chapter 13 | | 70 | 8 | 60 | - | 67 | 96 % | - | - | - | - | 0 | 2 | - | 3 |
| 1400 | Medical service | 20 | - | 14 | - | 14 | 68 % | - | - | - | - | 6 | 0 | - | 6 |
| 1401 | Mobility costs and other social expenses for staff | 132 | 50 | 55 | - | 105 | 80 % | - | - | - | - | 17 | 10 | - | 27 |
| 1402 | Training | 86 | 23 | 52 | - | 75 | 87 % | - | - | - | - | 10 | 1 | - | 11 |
| Total Chapter 14 | | 238 | 73 | 121 | - | 194 | 81 % | - | - | - | - | 34 | 11 | - | 44 |
| 1500 | Entertainment and | 15 | 10 | 4 | - | 14 | 95 % | - | - | - | - | 0 | 1 | - | 1 |

EUR '000

| Item | Total approp. availab. | Payments made | | | | | Appropriations carried over to 2020 | | | | Appropriations lapsing | | | |
|-------------------------|------------------------|--------------------------|------------------|----------------------|--------------|-------------|-------------------------------------|-------------|---------------|----------|--------------------------|------------------|-------------------|-------------|
| | | from final adopt. budget | from carry-overs | from assign. revenue | Total | % | Autom. carry-overs | By decision | Assigned rev. | Total | from final adopt. budget | from carry-overs | from assign. 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 |
| representation expenses | | | | | | | | | | | | | | |
| Total Chapter 15 | 15 | 10 | 4 | – | 14 | 95 % | – | – | – | – | 0 | 1 | – | 1 |
| Total Title 1 | 3 154 | 547 | 2 028 | – | 2 575 | 82 % | – | – | – | – | 377 | 202 | – | 579 |

5.4.2. Implementation of payment appropriations - Title 2

EUR '000

| Item | Total approp. availab. | Payments made | | | | | Appropriations carried over to 2020 | | | | Appropriations lapsing | | | |
|----------------------------------------------------------------------|------------------------|--------------------------|------------------|----------------------|---------|-------|-------------------------------------|-------------|---------------|----------|--------------------------|------------------|-------------------|-------------|
| | | from final adopt. budget | from carry-overs | from assign. revenue | Total | % | Autom. carry-overs | By decision | Assigned rev. | Total | from final adopt. budget | from carry-overs | from assign. 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 | 314 | 305 | 8 | – | 312 | 100 % | – | – | – | – | – | 1 | – | 1 |
| 2010 Charges and works | 13 | 13 | – | – | 13 | 100 % | – | – | – | – | – | – | – | – |
| Total Chapter 20 | 327 | 318 | 8 | – | 326 | 100 % | – | – | – | – | – | 1 | – | 1 |
| 2100 IT equipment & software purchase/development costs | 79 | 6 | 43 | – | 49 | 62 % | – | – | – | – | 1 | 28 | – | 30 |
| 2101 Other IT costs | 219 | 136 | 50 | – | 187 | 85 % | – | – | – | – | 32 | – | – | 32 |
| Total Chapter 21 | 298 | 142 | 94 | – | 236 | 79 % | – | – | – | – | 34 | 28 | – | 62 |
| 2200 Movable property and associated office equipment purchase costs | 11 | 3 | 4 | – | 7 | 68 % | – | – | – | – | 2 | 2 | – | 3 |
| Total Chapter 22 | 11 | 3 | 4 | – | 7 | 68 % | – | – | – | – | 2 | 2 | – | 3 |
| 2300 Stationery and office supplies | 19 | – | 19 | – | 19 | 99 % | – | – | – | – | – | 0 | – | 0 |

| | | Total approp. availab. | from final adopt. budget | Payments made | | | | Appropriations carried over to 2020 | | | | Appropriations lapsing | | | |
|------------------|------------------------------------------|------------------------------|-----------------------------------|-------------------------|----------------------------|-------------|-------|-------------------------------------|----------------|------------------|--------------|-----------------------------------|-------------------------|-------------------------|-----------------|
| Item | | | | from carry- overs | from assign. revenue | Total | % | Autom. carry- overs | By decision | Assigned rev. | Total | from final adopt. budget | from carry- overs | from assign. 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 |
| 2302 | Legal expenditure | 10 | – | – | – | – | 0 % | – | – | – | – | 10 | – | – | 10 |
| 2303 | Other current administrative expenditure | 12 | – | 11 | – | 11 | 94 % | – | – | – | – | – | 1 | – | 1 |
| Total Chapter 23 | | 41 | – | 30 | – | 30 | 73 % | – | – | – | – | 10 | 1 | – | 11 |
| 2400 | Telecommunications and postal charges | 20 | 10 | 4 | 5 | 19 | 96 % | – | – | – | – | 1 | – | – | 1 |
| Total Chapter 24 | | 20 | 10 | 4 | 5 | 19 | 96 % | – | – | – | – | 1 | – | – | 1 |
| 2500 | Expenditure on formal meetings | 102 | 9 | 34 | – | 44 | 43 % | – | – | – | – | 58 | – | – | 58 |
| Total Chapter 25 | | 102 | 9 | 34 | – | 44 | 43 % | – | – | – | – | 58 | – | – | 58 |
| 2600 | Events and campaigns | 627 | 0 | 47 | – | 47 | 7 % | – | – | – | – | 249 | 331 | – | 580 |
| 2601 | Materials | 70 | – | 70 | – | 70 | 100 % | – | – | – | – | – | – | – | – |
| 2602 | Communications tools | 37 | – | 37 | – | 37 | 100 % | – | – | – | – | – | – | – | – |
| 2603 | Public relations | 15 | – | 15 | – | 15 | 100 % | – | – | – | – | – | – | – | – |
| Total Chapter 26 | | 749 | 0 | 169 | – | 169 | 23 % | – | – | – | – | 249 | 331 | – | 580 |
| 2700 | Studies, consultancy and other services | 155 | 47 | 78 | – | 125 | 81 % | – | – | – | – | 18 | 12 | – | 30 |
| Total Chapter 27 | | 155 | 47 | 78 | – | 125 | 81 % | – | – | – | – | 18 | 12 | – | 30 |
| 2800 | Evaluators' contract and meetings | 998 | 958 | 40 | – | 998 | 100 % | – | – | – | – | – | – | – | – |
| Total Chapter 28 | | 998 | 958 | 40 | – | 998 | 100 % | – | – | – | – | – | – | – | – |
| 2900 | Expert reviewers | 257 | 201 | 15 | – | 216 | 84 % | – | – | – | – | 40 | 1 | – | 41 |
| Total Chapter 29 | | 257 | 201 | 15 | – | 216 | 84 % | – | – | – | – | 40 | 1 | – | 41 |
| Total Title 2 | | 2 957 | 1 689 | 475 | 5 | 2 170 | 73 % | – | – | – | – | 411 | 376 | – | 788 |

5.4.3. Implementation of payment appropriations - Title 3

EUR '000

| Item | | Total approp. availab. | from final adopt. budget | Payments made | | | % | Appropriations carried over to 2020 | | | | Appropriations lapsing | | | |
|----------------------|-----------------------|------------------------------|-----------------------------------|-------------------------|----------------------------|----------------|-------------|-------------------------------------|----------------|------------------|--------------|-----------------------------------|-------------------------|-------------------------|-----------------|
| | | | | from carry- overs | from assign. revenue | Total | | Autom. carry- overs | By decision | Assigned rev. | Total | from final adopt. budget | from carry- overs | from assign. 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 | 93 701 | 51 112 | - | - | 51 112 | 55 % | - | - | - | - | 42 590 | - | - | 42 590 |
| Total Chapter 30 | | 93 701 | 51 112 | - | - | 51 112 | 55 % | - | - | - | - | 42 590 | - | - | 42 590 |
| 3100 | Current year call | 82 306 | 56 819 | 25 487 | - | 82 306 | 100 % | - | - | - | - | - | - | - | - |
| Total Chapter 31 | | 82 306 | 56 819 | 25 487 | - | 82 306 | 100 % | - | - | - | - | - | - | - | - |
| Total Title 3 | | 176 007 | 107 931 | 25 487 | - | 133 418 | 76 % | - | - | - | - | 42 590 | - | - | 42 590 |
| GRAND TOTAL | | 182 119 | 110 168 | 27 990 | 5 | 138 163 | 76 % | - | - | - | - | 43 378 | 578 | - | 43 956 |

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 | | | | Total commitm. outstanding at year-end |
|----------------------|------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------|-----------|----------|-----------------------------------|--------------|----------------------------------------------------------|----------------------------------|----------------------------------------|
| | | Commitm. carried forward from previous year | Decommit. Revaluation Cancel-lations | Pay-ments | Total | Commit-ments made during the year | Pay-ments | Cancel-lation of commit. which cannot be carried forward | Commit. outstand-ing at year-end | |
| | | 1 | 2 | 3 | 4=1+2-3 | 5 | 6 | 7 | 8=5-6-7 | |
| 1100 | Staff costs | 34 | (33) | 1 | 0 | 2 111 | 2 035 | – | 76 | 76 |
| 1110 | Trainees and interim staff | 13 | (3) | 10 | – | 344 | 248 | – | 96 | 96 |
| 1120 | Other services rendered | 2 | (2) | – | – | – | – | – | – | – |
| Total chapter 11 | | 48 | (37) | 11 | 0 | 2 454 | 2 283 | – | 171 | 171 |
| 1200 | Sundry recruitment expenses | 4 | (4) | – | – | 11 | 6 | – | 5 | 5 |
| Total chapter 12 | | 4 | (4) | – | – | 11 | 6 | – | 5 | 5 |
| 1300 | Mission expenses, duty travel expenses and other ancillary expenditure | 7 | (5) | 2 | – | 73 | 66 | – | 7 | 7 |
| Total chapter 13 | | 7 | (5) | 2 | – | 73 | 66 | – | 7 | 7 |
| 1400 | Medical service | 5 | (1) | 4 | – | 14 | 10 | – | 4 | 4 |
| 1401 | Mobility costs and other social expenses for staff | 7 | – | 7 | – | 117 | 98 | – | 19 | 19 |
| 1402 | Training | 33 | (15) | 14 | 5 | 102 | 61 | – | 41 | 46 |
| Total chapter 14 | | 45 | (15) | 24 | 5 | 233 | 169 | – | 64 | 69 |
| 1500 | Entertainment and representation expenses | – | – | – | – | 17 | 14 | – | 3 | 3 |
| Total chapter 15 | | – | – | – | – | 17 | 14 | – | 3 | 3 |
| Total Title 1 | | 103 | (61) | 37 | 5 | 2 788 | 2 538 | – | 250 | 255 |

6.2. Outstanding commitments – Title 2

EUR '000

| | | Commitments outstanding at the end of previous year | | | | Commitments of the current year | | | | |
|----------------------|--------------------------------|-----------------------------------------------------|--------------------------------------|------------|-----------|-----------------------------------|--------------|----------------------------------------------------------|---------------------------------|----------------------------------------|
| Item | | Commitm. carried forward from previous year | Decommit. Revaluation Cancel-lations | Pay-ments | Total | Commit-ments made during the year | Pay-ments | Cancel-lation 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 | 25 | (17) | 8 | – | 314 | 304 | – | 10 | 10 |
| 2010 | Charges and works | 13 | – | 13 | – | – | – | – | – | – |
| Total chapter 20 | | 38 | (17) | 22 | – | 314 | 304 | – | 10 | 10 |
| 2100 | IT equipment & software | 30 | (0) | 20 | 10 | 73 | 29 | – | 44 | 54 |
| 2101 | Other IT costs | 25 | (4) | 21 | – | 220 | 165 | – | 54 | 54 |
| Total chapter 21 | | 55 | (4) | 42 | 10 | 293 | 195 | – | 99 | 108 |
| 2200 | Movable property and | 4 | (0) | 3 | – | 4 | 4 | – | – | – |
| Total chapter 22 | | 4 | (0) | 3 | – | 4 | 4 | – | – | – |
| 2300 | Stationery and office supplies | 5 | – | 5 | – | 20 | 14 | – | 6 | 6 |
| 2303 | Other current administrative | 10 | – | 10 | – | 1 | 1 | – | 0 | 0 |
| Total chapter 23 | | 15 | – | 15 | – | 21 | 15 | – | 6 | 6 |
| 2400 | Telecommunications and | 10 | (4) | 6 | – | 20 | 14 | – | 7 | 7 |
| Total chapter 24 | | 10 | (4) | 6 | – | 20 | 14 | – | 7 | 7 |
| 2500 | Expenditure on formal | 3 | (2) | 1 | – | 44 | 42 | – | 2 | 2 |
| Total chapter 25 | | 3 | (2) | 1 | – | 44 | 42 | – | 2 | 2 |
| 2600 | Events and campaigns | 6 | (5) | 1 | (0) | 573 | 46 | – | 527 | 527 |
| 2601 | Materials | 21 | (15) | 7 | – | 65 | 63 | – | 1 | 1 |
| 2602 | Communications tools | 20 | (3) | 17 | – | 35 | 20 | – | 15 | 15 |
| 2603 | Public relations | – | – | – | – | 60 | 15 | – | 45 | 45 |
| Total chapter 26 | | 47 | (23) | 24 | (0) | 733 | 145 | – | 588 | 588 |
| 2700 | Studies, consultancy and | 53 | – | 32 | 21 | 97 | 93 | – | 3 | 24 |
| Total chapter 27 | | 53 | – | 32 | 21 | 97 | 93 | – | 3 | 24 |
| 2800 | Evaluators' contract and | – | – | – | – | 998 | 998 | – | – | – |
| Total chapter 28 | | – | – | – | – | 998 | 998 | – | – | – |
| 2900 | Expert reviewers | 42 | (1) | 40 | – | 246 | 176 | – | 71 | 71 |
| Total chapter 29 | | 42 | (1) | 40 | – | 246 | 176 | – | 71 | 71 |
| Total Title 2 | | 267 | (52) | 184 | 31 | 2 771 | 1 986 | – | 785 | 816 |

6.3. Outstanding commitments – Title 3

EUR '000

| | | Commitments outstanding at the end of previous year | | | | Commitments of the current year | | | | Total commitm. outstanding at year-end |
|----------------------|-----------------------|-----------------------------------------------------|-------------------------------------|----------------|----------------|-----------------------------------|--------------|----------------------------------------------------------|---------------------------------|----------------------------------------|
| Item | | Commitm. carried forward from previous year | Decommit. Revaluation Cancellations | Pay-ments | Total | Commit-ments made during the year | Pay-ments | Cancel-lation 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 | 256 698 | (8 144) | 51 112 | 197 443 | – | – | – | – | 197 443 |
| Total chapter 30 | | 256 698 | (8 144) | 51 112 | 197 443 | – | – | – | – | 197 443 |
| 3100 | Current year call | 115 998 | (12 777) | 82 305 | 20 916 | 118 230 | 1 | – | 118 229 | 139 145 |
| Total chapter 31 | | 115 998 | (12 777) | 82 305 | 20 916 | 118 230 | 1 | – | 118 229 | 139 145 |
| Total Title 3 | | 372 696 | (20 920) | 133 417 | 218 359 | 118 230 | 1 | – | 118 229 | 336 588 |
| GRAND TOTAL | | 373 067 | (21 034) | 133 638 | 218 395 | 123 788 | 4 525 | – | 119 264 | 337 659 |

7. GLOSSARY

ABAC

This is the name given to the Commission's accounting system, which since 2005 has been enriched by accrual accounting rules. Apart from the cash-based budget accounts, the Commission produces accrual-based accounts which recognise revenue when earned, rather than when collected. Expenses are recognised when incurred rather than when paid. This contrasts with cash basis budgetary accounting that recognises transactions and other events only when cash is received or paid.

Accounting

The act of recording and reporting financial transactions, including the creation of the transaction, its recognition, processing, and summarisation in the financial statements.

Accounting Officer

The role, powers and responsibilities of the accounting officer are set out in the Financial Regulation:

- proper implementation of payments,
- collection of revenue,
- recovery of amounts and offsetting,
- keeping, preparing and presenting the accounts,
- laying down the accounting rules and methods and the chart of accounts,
- laying down and validating the accounting systems and validating systems laid down by the authorising officer to supply or justify accounting information (local systems),
- treasury management,
- designation of the Imprest Administrators,
- opening and closing bank accounts in the name of the Institution.

Administrative appropriations

Administrative appropriations cover the running costs of the Institutions and entities (staff, buildings, office equipment).

Adjustment

Amending budget or transfer of funds from one budget item to another.

Adopted budget

Draft budget becomes the adopted budget as soon as approved by the Budgetary Authority.

Cf. Budget

Agencies

EU bodies having a distinct legal personality, and to whom budget implementing powers may be delegated under strict conditions. They are subject to a distinct discharge from the discharge authority.

Amending budget

Decision adopted during the budget year to amend (increase, decrease, transfer) aspects of the adopted budget of that year.

Annuality

The budgetary principle according to which expenditure and revenue is programmed and authorised for one year, starting on 1 January and ending on 31 December.

Appropriations

Budget funding.

The budget forecasts both commitments (legal pledges to provide finance, provided that certain conditions are fulfilled) 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. Non-differentiated appropriations apply to administrative expenditure and commitment appropriations equal payment appropriations.

Assigned revenue External/Internal

Dedicated revenue received to finance specific items of expenditure.

Main sources of external assigned revenue *are financial contributions from third countries to programmes financed by the Union.*

Main sources of internal assigned revenue are revenue from third parties in respect of goods, services or work supplied at their request, revenue arising from the repayment of amounts wrongly paid and revenue from the sale of publications and films, including those on an electronic medium.

The complete list of items constituting assigned revenue is given in the Financial Regulation Art. 21.

Authorising Officer by Delegation (AOD)

The AOD is responsible in each entity for authorising revenue and expenditure operations in accordance with the principles of sound financial management and for ensuring that the requirements of legality and regularity are complied with.

The AOD is responsible for taking all financial decision concerning actions under his/her responsibility. Particularly, he/she must take decisions to implement the budget based on his/her risk analysis.

Budget

Annual financial plan, drawn up according to budgetary principles, that provides forecasts and authorises, for each financial year, an estimate of future costs and revenue and expenditures and their detailed description and justification, the latter included in budgetary remarks.

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 as provided in the Financial Regulation for agencies.

Budget implementation

Consumption of the budget through expenditure and revenue operations.

Budget item / Budget line / Budget position

As far as the budget structure is concerned, revenue and expenditure are shown in the budget 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 authority

Institutions with decisional powers on budgetary matters: for the EU institutions, the European Parliament and the Council of Ministers.

For the agencies and joint undertakings, their board is the budgetary authority.

Budgetary commitment

A budgetary commitment is a reservation of appropriations to cover for subsequent expenses.

Cancellation of appropriations

Unused appropriations that may no longer be used.

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 cost of legal obligations (contracts, grant agreements/decisions) that could be signed in the current financial year. Financial Regulation Art. 7: *Commitment appropriations cover the total cost in the current financial year of legal obligations (contracts, grant agreements/decisions) entered into for operations extending over more than one year.*

De-commitment

Cancellation of a reservation of appropriations.

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. Financial Regulation Art. 7: *Differentiated appropriations are entered for multiannual operations. They consist of commitment appropriations and payment appropriations.*

Earmarked revenue

Revenue earmarked for a specific purpose, such as income from foundations, subsidies, gifts and bequests, including the earmarked revenue specific to each institution.

Cf. Assigned revenue

Economic result

Impact on the balance sheet of expenditure and revenue based on accrual accounting rules.

Entitlements established

Entitlements are recovery orders that the European Union must establish for collecting income.

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 currency at the closure.

Expenditure

Term used to describe spending the budget from all types of funds sources.

Financial regulation (FR)

Adopted through the ordinary legislative procedure after consulting the European Court of Auditors, this regulation lays down the rules for the establishment and implementation of the general budget of the European Union.

For reference, Regulation (EU, Euratom) No 2018/1046 of the European Parliament and of the Council of 18 July 2018 on the financial rules applicable to the general budget of the Union

Funds Source

Type of appropriations

Grants

Direct financial contributions, by way of donation, from the budget in order to finance either an action intended to help achieve an objective part of an EU policy or the functioning of a body, which pursues an aim of general European interest or has an objective forming part of an EU policy.

Implementation

Cf. Budget implementation

Income

Cf. Revenue

Joint Undertakings (JUs)

A legal EU-body established under the Treaty on the Functioning of the European Union. The term can be used to describe any collaborative structure proposed for the *"efficient execution of Union research, technological development and demonstration programmes"*.

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, which is represented by an appropriation.

Only for joint undertakings, 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 could be re-activated until financial year "N+3".

Legal base (basic act)

The legal base or basis is, as a general rule, a law based on an article in the Treaty on the Functioning of the European Union giving competence to the Community for a specific policy area and setting out the conditions for fulfilling that competence including budget implementation. Certain articles from the treaty authorise the Commission to undertake certain actions, which imply spending, without there being a further legal act.

Legal commitment

A legal commitment establishes a legal obligation towards third parties.

Non-differentiated appropriations

Non-differentiated appropriations are for operations of an annual nature. (Financial Regulation Art. 9). In the EU Budget, non-differentiated appropriations apply to administrative expenditure, for agricultural market support and direct payments.

Operational appropriations

Operational appropriations finance the different policies, mainly in the form of grants or procurement.

Outstanding commitment

Outstanding commitments (or RAL, from the French 'reste à liquider') are defined as the amount of appropriations committed that have not yet been paid or legal commitments having not fully given rise to liquidation by payments. They stem directly from the existence of multiannual programmes and the dissociation between commitment and payment appropriations.

Outturn

Cf. Budget result

Payment

A payment is a disbursement to honour legal obligations.

Payment appropriations

Payment appropriations cover expenditure due in the current year, arising from legal commitments entered in the current year and/or earlier years (Financial Regulation Art. 7).

RAL

Sum of outstanding commitments. Cf. Outstanding commitments

Recovery

The recovery order is the procedure by which the Authorising officer by Delegation (AOD) registers an entitlement by the Commission in order to retrieve the amount, which is due. The entitlement is the right that the Commission has to claim the sum, which is due by a debtor, usually a beneficiary.

Result

Cf. Budget result

Revenue

Term used to describe income from all sources financing the budget.

Rules of application

Detailed rules for the implementation of the financial regulation. They are set out in a Commission regulation adopted after consulting all institutions and cannot alter the financial regulation upon which they depend.

Surplus

Positive difference between revenue and expenditure (Cf. Budget result) which has to be returned to the funding authority as provided in the Financial Regulation.

Transfer

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. However, they are expressly authorised by the Treaty on the Functioning of the European Union under the conditions laid down in the Financial Regulation. The Financial Regulation identifies different types of transfers depending on whether they are between or within budget titles, chapters, articles or headings and require different levels of authorisation.

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 multi-annual 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 multi-annual 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 multi-annual 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 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:

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

Where:

Σ (er) = sum of all individual errors the sample (in value). Only the errors in favour of the JU will be taken into consideration¹³⁵;

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.

¹³⁵ Adjustments in favour of the Beneficiary are considered as 0 for the purpose of calculating the WAER

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:

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

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 consideration¹³⁶.

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.

¹³⁶ Adjustments in favour of the Beneficiary are considered as 0 for the purpose of calculating the RepERsys.

7.10.RESULTS OF TECHNICAL REVIEW

Not applicable.

7.11.LIST OF MEETINGS, EVENTS AND CONFERENCES WHERE BBI JU PARTICIPATED OR ORGANISED IN 2018

| Events 2019 | | | | |
|------------------------------------------------------------------------------------------|-------------|----------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| Event | Date | Place | Type of Participation | Organiser |
| Towards a Circular Bioeconomy in Navarra: Regional Challenges and European Opportunities | 25 January | Pamplona, Spain | Speaker | Navarra region; ADItech |
| The implementation of circular economy to agriculture and livestock farming | 31 January | Thessaloniki, Greece | Speaker | HELEXPO |
| EU Industry Days 2019 | 5 February | Brussels, Belgium | Speaker | European Commission |
| Invaluable supports in climate action from agriculture and forestry | 20 February | Brussels, Belgium | Participant | MTK |
| Public hearing: Civil Society in Action - European Bioeconomy Strategy | 28 February | Brussels, Belgium | Speaker | EESC |
| DanuBioValNet project: "Biopackaging – Let's create future together" | 6 March | Vienna, Austria | Speaker | Danube Transnational Programme; Business Upper Austria; ecoplus; Ministry of Education, Science and Sport of Slovenia |
| European Bioeconomy Projects - Focus on BBI JU | 13 March | Paris, France | Speaker | Pole IAR; AXELERA |

| | | | | |
|-----------------------------------------------------------------------------------------------------------------------|-----------|----------------------------|-----------|-----------------------------------------------------------------------------------------------------------------|
| Advancing the Creation of Regional Bioeconomy Clusters in Europe | 14 March | Brussels, Belgium | Speaker | BBI JU; SCAR |
| National Info Day | 22 March | Łódź, Poland | Speaker | Regional Contact Point for EU Research Programs in Lodz; Ministry of Science and Higher Education; Pro-Akademia |
| World Bio Markets | 1-3 April | Amsterdam, The Netherlands | Speaker | Bio-based World News |
| National Info Day | 2 April | Kongens Lyngby, Denmark | Speaker | Danish Ministry of Education and Science - Agency for Science and Higher Education |
| Towards a circular agro-food industry | 4 April | Brussels, Belgium | Speaker | BIOrescue |
| Agricultural Research and Innovation: A basis for the development of European agriculture, rural areas and bioeconomy | 5 April | Bucharest, Romania | Speaker | Romanian Presidency of the EU Council |
| Networking seminar on Bioeconomy | 11 April | Brussels, Belgium | Speaker | Estonian Research Council; University of Tartu |
| networX - Inspiring Rural Europe | 11 April | Brussels, Belgium | Speaker | The European Network for Rural Development (ENRD) |
| BBI JU Info Day & Brokerage event | 12 April | Brussels, Belgium | Organiser | BBI JU |
| National Info Day | 15 April | Riga, Latvia | Speaker | State Education Development Agency Republic of Latvia (SEDA) |
| National Info Day | 16 April | Vilnius, Lithuania | Speaker | Lithuanian Agency for Science, Innovation and Technology |
| National Info Day | 25 April | Prague, Czech Republic | Speaker | Technology Centre CAS |

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| Strategies and opportunities for the bio industries in Norway | 25 April | Brussels, Belgium | Speaker | Research Council of Norway; NORCORE |
| National Info Day | 29-30 April | Tel Aviv, Israel | Speaker | ISERD |
| German Webinar on BBI JU Call 2019 | 30 April | online | Speaker | Federal Ministry of Education and Research |
| National Info Day | 2 May | Manchester, UK | Speaker | Knowledge Transfer Network |
| National Info Day | 10-11 May | Thessaloniki, Greece | Speaker | Greek Bioeconomy Forum |
| National Info Day | 14 May | Rome, Italy | Speaker | APRE - Agency for the Promotion of European Research |
| EMBRACED Stakeholder Meeting | 14 May | Brussels, Belgium | Speaker | Fater |
| Plant Based Summit | 22-24 May | Lyon, France | Speaker | Chimie du Vegetal; IAR |
| National Info Day | 22 May | Madrid, Spain | Speaker | CDTI |
| National Info Day | 22 May | Limerick, Ireland | Speaker | InterTradeIreland; Dept. of Agriculture, Environment & Rural Affairs; Dept. of Agriculture, Food & the Marine; Marine Institute; University of Limerick |
| EUBCE | 27-30 May | Lisbon, Portugal | Session Organiser & exhibitor | European Commission, Joint Research Centre (JRC) |
| Austrian World Summit | 29 May | Vienna, Austria | Speaker | Austrian Ministry of Sustainability and Tourism |

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| EU Green Week partner event: Biowaste Management and Environmental Sustainability in EU | 6 June | Brussels, Belgium | Speaker | EUBIA; Biorefine Cluster Europe |
| Press conference: launch of FARMYNG project | 11 June | Paris, France | Speaker | Ynsect |
| National Info Day | 19 June | Gembloux, Belgium | Speaker | University of Liège |
| First2Run final event | 20 June | Brussels, Belgium | Speaker | Novamont |
| Pilots4U Final Event: Fast forward the European Bioeconomy | 25 June | Brussels, Belgium | Speaker | Bio Base Europe Pilot Plant |
| Blue Bioeconomy Forum Second Conference | 25 June | Brussels, Belgium | Speaker | European Commission |
| BioHorizon SC2 and KET-B Brokerage Event for 2020 Calls | 3 July | Brussels, Belgium | Exhibitor | BioHorizon |
| Opportunities for the Bio-Based industries in Croatia | 4 July | Zagreb, Croatia | Speaker | Ministry of Agriculture of Croatia |
| Working group meeting of the Sectoral Social Dialogue Committee for Paper Industry | 5 July | Brussels, Belgium | Speaker | European Commission |
| European Bioeconomy Scene 2019 | 8-10 July | Helsinki, Finland | Speaker | Ministry of Agriculture and Forestry of Finland; European Commission |
| Bio World Congress 2019 | 9 – 19 July | Des Moines, USA | Session Organiser | BIO - Biotechnology Innovation Organization |
| Advanced Biofuels: Towards renewable energy transition in Europe | 5 September | Brussels, Belgium | Speaker | IBB Netzwerk GmbH |
| EUCYS Award | 17 September | Sofia, Bulgaria | Sponsor | European Commission |

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| Webinar on Financing the Bioeconomy | 18 September | Online | Speaker | European Commission |
| Balkan Clean Energy Transition Conference | 21 September | Kozani, Greece | Speaker | Kozani Chamber of Commerce and Industry; Cluster of Bioeconomy and Environment of Western Macedonia (CluBE) |
| European Research and Innovation Days | 24-26 September | Brussels, Belgium | Exhibitor | European Commission |
| EFIB | 30 September-2 October | Brussels, Belgium | Speaker | EuropaBio / BIOCOM |
| Blue Biotech Day Malta | 1 October | Mosta, Malta | Speaker | AquaBio Tech Group; Malta Marittima |
| Financing the Bioeconomy: from bottleneck to breakthrough | 8 October | Brussels, Belgium | Speaker | Embassy of the Netherlands in Brussels |
| Official Opening Green Protein Demo Plant | 10 October | Dinteloord, The Netherlands | Speaker | Suiker Unie |
| Supporting Rural Business Success Across Europe | 24 October | Brussels, Belgium | Speaker | Rubizmo |
| Societal and Market Challenges for the Sustainable Development of Bio-Based Industries | 25 October | Athens, Greece | Speaker | Industrial Process Systems Engineering Unit of the National Technical University of Athens (IPSEN) |
| Mobilisation and Mutual Learning BIOVOICES Workshop | 31 October | Paris, France | Speaker | EuBioNet |
| Bio-based Buildings International Conference (B3IC) | 6 November | Paris, France | Speaker | Paris Region |

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| NEW Bio-based Expert Group meeting | 7 November | Brussels, Belgium | Participant | nova-Institut |
| ECOMONDO 2019 | 8 November | Rimini, Italy | Speaker | Italian Exhibition Group |
| BioMonitor Expert Workshop | 14 November | Cologne, Germany | Participant | nova-Institut |
| BioHorizon Final Conference | 21 November | Brussels, Belgium | Speaker | BioHorizon |
| PRIMA Workshop | 21-22 November | Athens, Greece | Speaker | PRIMA Foundation; General Secretariat for Research & Technology (GSRT), Greek Ministry of Development & Investment |
| European Partnerships – New opportunities and possibilities to access additional EU funding (online workshop) | 22 November | Brussels, Belgium | Speaker | Wielkopolska Region Brussels Office |
| SusChem Stakeholders' Event | 27 November | Brussels, Belgium | Speaker | SusChem |
| BBi JU Stakeholder Forum 2019 | 3-4 December | Brussels, Belgium | Organiser | BBi JU |
| Side Event COP25 - Circular Economy Conference | 12 December | Madrid, Spain | Speaker | Fundación para el Conocimiento madri+d |

7.12.LIST OF ACRONYMS

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| AAR | Annual Activity Report |
| AHP | Absorbent Hygiene Products |
| AWP | Annual Work Plan |
| B2B | Business to Business |
| BBI JU | Bio-Based Industries Joint Undertaking |
| BIC | Bio-based Industries Consortium |
| BKC | European Commission's Knowledge Centre for Bioeconomy |
| CAS | Common Audit Service |
| CEO | chief executive officer |
| CA | Contractual Agent |
| CAS | Common Audit Service of the European Commission for Horizon 2020 |
| CBE | Circular Bio-based Europe |
| CF | Carbon Fibre |
| CONT | Committee of the European Parliament |
| CO ₂ | Carbon dioxide |
| cPPP | Contractual Public-Private Partnership |
| CRS | Common Representative Sample |
| CSA | Coordination and Support Action |
| CIC | Common Implementation Centre for Horizon 2020 |
| DEMOS-IA | Innovation Action for demonstrators |
| DiEPP | Dissemination and Exploitation Practitioners' Platform |
| 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 |
| DMO | Document Management Officer |

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| DPO | Data Protection Officer |
| EBRD | European Bank for Reconstruction and Development |
| EC | European Commission |
| ECA | European Court of Auditors |
| EDPS | European Data Protection Supervisor |
| EESC | European Economic and Social Committee |
| EFTA | European Free Trade Association |
| EFIB | European Forum for Industrial Biotechnology and the Bioeconomy |
| EIB | European Investment Bank |
| ESIF | European Structural and Investment Funds |
| EU | European Union |
| FAO | Food and Agriculture Organisation of the United Nations |
| FAQ | Frequently Asked Question |
| FDCA | Furan Dicarboxylic Acid |
| 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 | Greenhouse Gas |
| HES | Higher or Secondary Education |
| IAS | Internal Audit Service |
| IAs | Innovation Actions |
| ICF | Internal Control Framework |
| ICS | Internal Control Standard |
| ICT | Information and communication technology |
| IEA | International Energy Agency |
| IFIB | International Forum on Industrial Biotechnology and Bioeconomy |

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| IKAA | In-kind contributions by BIC's constituent entities to additional activities |
| IKOP | In-kind contributions by BIC's constituent entities to operational activities |
| iPPP | Institutionalised public-private partnership |
| IT | Information Technology |
| JRC | Joint Research Centre |
| JU | Joint Undertaking |
| JURS | Joint Undertaking Representative Sample |
| KPIs | Key Performances Indicators |
| LA | Lactic Acid |
| LCA | Life Cycle Analysis |
| LISO | Local Informatics Security Officer |
| MAE | Microwave-Assisted Extraction technology |
| MEP | Member of the European Parliament |
| MFC | Microfibrillated Cellulose |
| MS | Member State of the European Union |
| MSW | Municipal Solid Waste |
| NCPs | National Contact Points for Horizon 2020 |
| 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 | Payments |
| PEF | Polyethylene furanoate |
| PET | Polyethylene terephthalate |
| PHA | Polyhydroxyalkanoates |
| PHB | Polyhydroxybutyrate |
| PLA | PolyLactic Acid |

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| PPB | Purple Phototrophic Bacteria |
| PPP | Public-Private Partnership |
| PRC | Private- for- Profit |
| PU | Polyurethane |
| PUB | Public Body (excluding research and education) |
| 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 |
| SCP | Single Cell Protein |
| 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 |
| SOP | Standard Operating Procedures |
| SLA | Services Legal Agreement |
| SMART | Specific, Measurable, Accepted, Realistic and Time-related |
| SMEs | Small and Medium-Size Enterprises |
| SDG | Sustainable Development Goal |
| 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 |

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| TTI | Time to Inform |
| TTP | Time to Pay |
| UN | United Nations Organisation |
| URL | Uniform Resource Locator |
| WPC | Wood Plastic Composite |