Bio-based Industries Joint Undertaking

(BBI JU)

ANNUAL ACTIVITY REPORT 2018

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.

The annual activity report will be made publicly available after its approval by the Governing Board.

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FACTSHEET

Name	Bio-based Industries Joint Undertaking	
Objectives	The objectives of BBI JU are: To contribute to the implementation of Regulation (EU) No 1291/2013 and in particular Part III of Decision 2013/743/EU; 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: • demonstrate technologies that enable new chemical building blocks, new materials, and new consumer products from European biomass which replace the need for fossil-based inputs; • develop business models that integrate economic actors along the whole value chain from supply of biomass to biorefinery plants to consumers of bio-based materials, chemicals and fuels, including by means of creating new cross-sector interconnections and supporting cross-industry clusters; and • set up flagship biorefinery plants that deploy the technologies and business models for bio-based materials, chemicals and fuels and demonstrate cost and performance improvements to levels that are competitive with fossil-based alternatives. The 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.	
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 Board[1]	EC (As designated by their respective services according to the Commission Decision 4255 (2014) of	BIC constituent entities

[1] Composition in the last Governing Board meeting December 2018.

	27 June, as amended by the Commission Decisions 3268 (2016) of 6 June 2016 and 1811 (2017) of 23 March 2017)	
	Wolfgang BURTSCHER, Deputy Director-General, DG RTD (Chair) John BELL, Director for "Bioeconomy", DG RTD/F Carlo PETTINELLI, Director for "Consumer, Environmental and Health Technologies", DG GROW/D Peter DROELL, Director for "Industrial Technologies", DG RTD/D Nathalie SAUZE-VANDEVYVER, Director for "Quality, Research & Innovation, Outreach", DG AGRI/B	Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Vice-Chair) Claus CRONE FUGLSANG, Senior Vice-President for Research and Technology, NOVOZYMES Marcel WUBBOLTS, Chief Technology Officer, CORBION Alex MICHINE, CEO METGEN Giulia GREGORI, Head of Strategic Planning and Institutional Communication, NOVAMONT
Other bodies	States Representatives Group (SRG) Scientific Committee (SC)	
Staff	23 staff members	
2018 Budget[2]	Commitment appropriations: EUR 121 231 820[3] Payment appropriations: EUR 118 118 924[4]	
Budget implementation	Commitment appropriations: total consumption EUR 119 982 639 (99%) Title 1 – EUR 2 433 820 (86.1%) Title 2 – EUR 1 890 574 (68.8%) Title 3 – EUR 115 658 245 (100%) Payment appropriations: total consumption EUR 79 173 000 (70.6%) Title 1 – EUR 2 372 457 (83.7%) Title 2 – EUR 1 850 771 (65%) Title 3 – EUR 79 172 889 (70.4%)	
Grants	82 signed grants for a total value of EUR 498 923 017	

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

[3] Voted commitment appropriations were EUR 119 783 525, subsequently amended to include EUR 1 448 295 of unused appropriations from prior years (EUR 825 798 on the operational side and EUR 622 497 on the administrative side).

[4] Voted payment appropriations were EUR 116 903 523 and the amendment added EUR 1 215 401 of unused appropriations from the previous years (EUR 486 657 operational and EUR 728 744 administrative).

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 2018:	2017 (Implemented)	2018 (Launched)
	Number of proposals submitted:	149	144
	Number of eligible proposals:	149	140
	Number of proposals funded or retained for funding:	17	19 (retained)
	Global project portfolio (since the setting-up):	82	101
	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]: 1169 of which: % of SME beneficiaries: 41%[6] % of private-for-profit companies: 61%		

[5] The data refers to all projects funded (Calls 2014-2017) and retained for funding (Call 2018) by the end of activity year 2018.

[6] The data refers to non-unique beneficiaries.

FOREWORD

The BBI JU priorities in 2018 were mainly about the consolidation of the project portfolio while maintaining the highest standards of quality for its operations. Another important priority of 2018 was to highlight the impact of the initiative to a wider group of stakeholders. As you will be able to read in the 2018 Annual Activity Report (AAR), with the exception of specific well-identified areas, BBI JU performed very well and the achievements are well aligned with its initial goals. It is also confirmed that the two main positive effects of BBI JU, as also pointed out in the interim evaluation report, are the evident structuring effect in organising the value chains across sectors and the innovation-driven mobilizing effect of all key stakeholders. BBI JU is now recognised as a high impact initiative and an excellent example of a mission-oriented instrument, contributing to the systemic changes needed for the development of a sustainable and competitive Bio-based industries in Europe, capable to attract investments and create value for citizens in Europe.

The 7 flagship biorefineries alone generate private investments of more than EUR 1,000 million against a BBI JU grant amount of EUR 159 million. This corresponds to the creation of more than 3,000 direct jobs and more than 10,000 indirect ones well spread across Europe, for a total of CO2 emission savings expected to reach 600 kT CO2/year. In addition, one of BBI JU's key successes has been the very high representation of SMEs in its current portfolio, corresponding to a total of 41% depicting the excellent opportunity the BBI JU initiative offers to SMEs in this sector to scale up their technologies and get access to the market. Another important feature is the ability to foster the closer collaboration between the scientific community and industry. Academia and research organisations represent 28.4% of beneficiaries in the BBI JU projects and 79% of the projects report they contribute to increasing academia-industry cooperation.

This high socio-economic and environmental impact is the direct consequence of the outputs and outcomes of a very well balanced project portfolio, well aligned with the agreed objectives of the SIRA and the BBI JU Council regulation. I am convinced that the main reason for the success of the initiative lies in the dynamic alignment of the strategies of both the EU and Industry and in the efficiency and robustness of the programming process which is driven by the industry but co-managed by the Bio-based Industries consortium (BIC) and the European Commission. The role of the dedicated programme office is also essential as it enables the efficient implementation of the initiative, but more importantly contributes to shaping the programming in accordance with the agreed objectives, based on an efficient monitoring of the initiative, providing input from the ground for corrective actions where needed in a very agile and reactive manner. The governance model with a GB, composed half by BIC representatives and half by EC representatives from DG RTD, AGRI and GROW enables the dedicated programme office to maximise the impact of the initiative by mobilising a very broad range of stakeholders, by promoting Calls in areas that would otherwise not participate at the current level such as SMEs, new Member States and the primary sector, just to name a few. The current AAR shows that the initiative is on the right track but even though we are delighted with the results already delivered, we do realise that many things still need to be done to ensure that the momentum created so far in developing this sector further in Europe is fully valorised.

I am proud for the achievements of my team. Despite the increased workload, they have delivered excellent work maintaining high levels of efficiency, effectiveness and motivation. I want to thank them

for their enthusiasm and dedication. Their contributions have been invaluable in making BBI JU the organisation it is today. But none of the above would have been achieved without the fruitful cooperation with our two founding partners, the European Commission and BIC, as well as the support and advice from our two advisory bodies.

Enjoy the reading!

Philippe Mengal

Executive Director BBI JU

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 2014[7] (the 'Council Regulation').The BBI JU is the body entrusted with the implementation of 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 founding partners is to contribute to the development of a sustainable and competitive bio-based industries in Europe based on advanced biorefineries that source their biomass sustainably; and in particular to:

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

As announced in the updated Bioeconomy Strategy[8] 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 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*

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

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

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 feedstocks such as dedicated crops, agricultural and forest residues, bio-waste 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 billion[9].

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 which is not without risk. 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 viewed a PPP (public-private partnership) as 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, keep and attract investment in Europe to create competitiveness and jobs, in particular in coastal and rural areas.

[9] https://biconsortium.eu/sites/biconsortium.eu/files/documents/European_Bioeconomy_in_Figures_2008-2015_06042018.pdf

EXECUTIVE SUMMARY

In 2018, the Bio-based Industries Joint Undertaking (BBI JU) Programme Office reached its maturity in terms of both processes and procedures, while consolidating its well-balanced project portfolio – in terms of participation, geography and strategic orientations - and confirming its significant contribution in structuring the bio-based sector in Europe.

In this context, while dealing with an increasing workload, BBI JU maintained high levels of efficiency and effectiveness in the programme implementation, thus further confirming the outcome of its interim evaluation:

1. Efficiency of operations, based also on Horizon 2020 KPIs;
2. Well balanced project portfolio showing a strong SME participation;
3. Relevant projects' expected outcomes surpassing SIRA targets measured via BBI specific KPIs;
4. Relevant expected socio-economic and environmental impact;
5. Financial leverage effect lower than expected, but based only on partial in kind additional activities reporting and despite the lack of financial contributions from the member other than the Union, Bio-based Industries Consortium (BIC).

1. A mature organisation working effectively

In 2018, BBI JU's priorities focussed on dealing with the growing workload – particularly on the side of project reporting and payment - fine-tuning internal processes and managing a large number of new reporting duties and audits. In parallel, BBI JU had to deal with the recruitment of three staff members, reaching the JU's full staff allocation by the year-end.

Key business processes are consolidated and well documented, allowing staff to complete tasks and achieve objectives whilst respecting applicable rules and policies. This was also confirmed by the IAS in its limited review of the internal control standards in the BBI JU that was finalised in 2018. In addition, the report from the European Court of Auditors on the 2017 annual accounts contained no qualification and confirmed that BBI JU processes are well established.

Risk Management has remained an integral part of the management processes in place at BBI JU since its outset, adding value to the organisation by efficiently and effectively supporting the achievement of objectives. The 2017 risk assessment performed on the 2018 objectives identified 17 risks. These risks were described in the Risk Register of the organisation. The management monitored and reported possible threats as they arose during the year.

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 102 days against a target of 153 (100% on time);
- time to grant was 231 days on average against a target of 245 days (100% on time);

- time to pay was 11.4 days on average for pre-financing against a target of 30 days (94% on time);
- time to pay was 71.3 days on average for periodic payments against a target of 90 days (97% on time).

BBI JU communication activities focussed on promoting the BBI JU call and organising events and campaigns about the impact of the initiative. BBI JU recognition was brought to a wider group of prioritised stakeholders, relevant federations, Governmental and Non-Governmental Organisations in the EU and worldwide. These results were achieved by: i) organising informative events, ii) attending numerous relevant events about the bioeconomy and the circular economy, iii) producing several publications and iv) developing new videos about project results and impact on the life of European citizens.

2. An effective and well-balanced project portfolio

At the end of 2018, the total number of **beneficiaries is 933 covering 82 granted projects, with a total funding of EUR 499 million**. Among the beneficiaries, 25 Member States are represented together with seven associated countries: Israel, Iceland, Norway, Serbia, Switzerland, Turkey and the Faroe Islands.

These data are going to increase with the signature of the 19 grants awarded following the 2018 Call, pushing the project portfolio to **101 funded projects** with 1169 total beneficiaries from 35 countries, and a total grant amount of EUR 602 million.

BBI JU's Call 2018 once again attracted a significant response compared to the first Calls, with 144 proposals submitted, pushing the total number of proposals since the first Call to 516, involving more than 5800 applicants from 67 countries.

The number of proposals received (144) was well above average of previous calls (103 proposals submitted per call) and around 39% of proposals obtained scores above threshold, confirming the competitiveness of the Call. The available budget for Call 2018 amounted to EUR 115 million, thus resulting in a success rate of 13.6% as compared to 11% for the Call 2017. A novelty of Call 2018 was the inclusion of six Research and Innovation Action topics (so called 'RIA B') where participation was restricted to consortia including at least one BIC 'large industry' member. Of these six topics however, only four topics received seven proposals.

BBI JU is an industry-driven initiative, which favours the maximisation of the structuring and mobilising effect of this industrial sector, involving large industries (31% of funding in signed grants) and small and medium enterprises. A fundamental element of BBI JU Calls is in fact the **high SME participation[10] of 41% and 35% in terms of funding (82 granted projects),** which is confirmed also by the results of Call 2018. This demonstrates BBI JU's essential role in structuring the sector and improving the competitiveness of small companies that, often, are key technology providers. BBI JU presents an attractive opportunity for them to scale-up their technology and to access markets.

[10] One SME participant may have several participations in different projects. The percentage shows the participation.

With respect to the other main types of beneficiaries, 28.4% of funding goes to research organisations and higher education establishments. This shows the important contribution of BBI JU to the mobilising effect of all key actors across sectors and across disciplines, including the scientific community. Beneficiaries from the scientific community are fundamental for BBI JU as they provide expertise and 'out of the box' thinking, driving the translation of science into innovation (so called 'innovation potential'). BBI JU also provides numerous possibilities for them to build relationships with industry and to be part of high TRL projects, scaling up technologies and valorising their intellectual property.

The distribution of BBI JU's funding among the different types of actions demonstrates that the budget allocation for RIAs and Flagships is in line with the targets outlined in the Strategic Industrial Research Agenda (SIRA). Adjustments are still required for Demonstration (DEMO) and Common Support Actions (CSA), that are respectively showing higher and lower budget allocations compared to the targets. This deviation is expected to be addressed at the level of the Annual Work Plans (AWP) 2019 and 2020 ensuring better coverage in terms of the different types of action and the topics.

The coverage of different feedstocks is improving; agri-based, forest based, bio-waste and aquatic biomass have been covered by RIA and DEMO projects. The majority of RIA projects are mainly clustered around agri-based and forest-based biomass. Call 2018 has further reinforced the coverage of municipal wastes and aquatic feedstock. Flagships are focused on agri-based and forest-based feedstocks, but no flagship has been financed yet on aquatic biomass.

The geographical distribution of beneficiaries in BBI JU Calls follows the overall trend observed in Horizon 2020, with the majority of them coming from the EU15 but with a better participation from the EU13 in terms of BBI JU financing (nine percent) as compared with other programmes such as Horizon 2020 Societal Challenge 2 (6.8%) and LEIT KET biotechnology (5.1%). In addition, by normalising the analysis by gross domestic expenditure in research and development, EU13 countries perform well in the BBI JU programme. This proves the effectiveness of the widening participation strategy deployed by the Programme Office over the last two years, which contained measures such as awareness raining, supporting partnerships and mobilising regional stakeholders. Because of BBI JU's widening participation strategy we are observing for the first time in Call 2018 a 25% increase of EU13 participation as compared to 2017.

In terms of industrial deployment, BBI JU is financing seven flagship bio-refineries projects and 23 demonstration projects also evenly spread across EU geographical areas and type of feedstock. In fact, three flagships are located in EU13 countries (Estonia, Slovakia and Romania), three others in EU15 (Ireland, Belgium and Italy) and one in Norway - an associated country.

The complete landscape of participation and funding in 2018 further confirms the effectiveness of the BBI JU project portfolio highlighted by the interim evaluation of BBI JU. Therefore, the BBI JU's objectives to de-risk investment, to organise value chains and to reach a critical mass remain highly relevant in order to maintain the EU as a competitive and attractive market at the forefront of global bioeconomy development.

3. Tangible impact of the initiative through BBI JU's specific outcome KPI monitoring

The expected outcomes from projects are defined in the updated SIRA (SIRA 2017) and are monitored on an annual basis through a questionnaire received from project coordinators. At this stage of the initiative, for most KPIs, BBI JU projects are expected to exceed the targets set for 2020, 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 KPI1, ongoing and finished projects expect to generate 143 new cross-sector interconnections by 2020, almost four times the target of 36 in the SIRA 2017.
- According to KPI 2, ongoing and finished projects expect to create 113 new bio-based value chains by 2020 against a target of 10 in the SIRA 2017.
- According to KPI 3, 82 Grant Agreements (soon to be 101) are already signed out of 200 expected by the end of the initiative.

Most of the expected results go substantially beyond the initial expectations, demonstrating a systemic change in the bio-based sector that results in a much higher number of bio-based value chains and sector interconnections. Initially, the SIRA 2013 model was based on well-identified linear and isolated value chains linked to several feedstock categories. The reality of the current BBI JU project portfolio is that new value chains are much more interconnected and none of them can be considered in isolation.

Those figures also confirm that the two main positive effects of BBI JU are still the structuring effect in organising the value chains across sectors and the innovation-driven mobilising effect of all key stakeholders across sectors and across geographies. The fundamental benefit brought by BBI JU in this context is the acceleration of bringing together different sectors and industries towards 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 able to access the markets and, in most cases, are demonstrating superior properties to those of fossil-based equivalents.

- KPI 4 shows that projects expect to create 67 new bio-based building blocks by 2020 against a target of five in the SIRA 2017.

The building blocks reported by the projects are more versatile than the traditional ones and can therefore cover a wider range of chemicals independently of their size and structure. Furthermore, the same molecule can be produced from various types of feedstock, via diverse processing technologies, resulting in building blocks that are considered different, as they display different elements of novelty.

- KPI 5 shows that projects expect to create 147 new bio-based materials by 2020 against the 2020 target of 50 in the SIRA 2017.

Among the 147 expected new bio-based materials, project coordinators report that only 32% of the bio-based materials are 'drop-in', so identical to non-renewable building blocks, with the sole added-value being their clean label. More than 2/3 of the new bio-based materials offer new or improved

functionalities, 40% performing better than fossil-based equivalents and 18% being breakthrough materials that have no fossil-based counterpart.

- KPI 6 monitoring show that ongoing projects expect to create 65 new bio-based consumer products against a 2020 target of 30 in the SIRA 2017.

The main novelty of the new bio-based consumer products is their expected inferior carbon dioxide (CO_2) emission over their whole life cycle compared to fossil-based alternatives. This aspect is reported in similar percentages (~80%) for the new building blocks and the new bio-based materials. In addition, around 45% of the 'new consumer' products are expected to have higher biodegradability, improved health aspects and recyclability or a combination of all these aspects.

- KPI 7 shows that BBI JU has signed seven flagship projects, which is already higher than the 2020 target of five flagships in the SIRA 2017.

Those biorefineries, spread right throughout Europe, will process different lignocellulosic feedstocks such as agricultural residues, dedicated crops from underutilised lands, biomass from the forest industry or side-streams from the dairy industry. They will deliver bio-based chemicals and materials to 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 with improved functionalities compared to their fossil-based alternatives.

4. Relevant socio-economic and environmental impact

Current results show that most of the projects expect to contribute to job creation, as around half of them are located in rural and coastal areas. The seven flagships granted so far are generating private investments in biorefineries of around EUR 800 million against a BBI JU financing of EUR 159 million. This represents the creation of more than 3,000 direct and more than 10,000 indirect jobs evenly shared between EU15, EU13 and associated countries.

The expected environmental impact is also large as two thirds of the projects report producing bio-based products with lower GHG emissions. More than half of them expect to contribute to waste reduction, reuse, valorisation or recycling and a decrease of their energy consumption. Considering only the seven flagships funded so far, the total CO_2 saving is expected to reach 600 kT CO2/year. Finally, 40% of the projects report they expect to improve land use and seven projects report a positive impact on biodiversity.

One of the unique features of the BBI JU initiative has been to foster the closer collaboration between the scientific community and Industry, ascending the scale of Technology Readiness Level (TRL) and thus enabling a swifter move towards innovation. The scientific community mobilisation is evidenced by the 28.4% participation level of universities and research centres in the BBI JU projects. It is further confirmed by the annual survey: according to the projects' reports, 80% of them contribute to knowledge creation, 79% contribute to increasing the academia-industry cooperation, more than the half contribute to the building of scientific community networks and to technology transfer. These

results contribute significantly to **KPI 8 (Technology Readiness Level gain)** where RIA projects report 33 cases of improved technologies filling gaps in the value chain.

5. A leverage effect lower than expected, because of partial certification of in kind additional activities and despite the lack of financial contributions at project level

Counting towards the overall leverage are: (i) the difference between the total costs of the projects and the JU contribution (APIK), which encompasses the in-kind contributions to operational activities by BIC constituent entities (IKOP); (ii) the in-kind contributions to additional activities by BIC constituent entities (IKAA); and (iii) the financial contributions by BIC and its constituent entities to operational activities. In 2018, the European Commission confirmed its interpretation of the Council Regulation amendment concerning the conditions for financial contributions at project level to be eligible towards the Council Regulation's targets[11].

The overall contributions from the JU's member other than the Union is slightly below the level expected at this point of the initiative.

On this basis and according to the formula agreed by the BBI JU Governing Board, the leverage effect is lower than expected, reaching a level of 1.88 at this stage of the initiative, due to the submission of partial in kind additional activities certificates by the end of May 2019.

There is also concern about the low financial contribution from the member other than the Union to the operational costs of the Joint Undertaking, as also pointed out by the report of the European Court of Auditors on the annual accounts 2017[12], and also expressed by the European Parliament[13].

In order to address this issue and following the amendment to the Council Regulation, an additional eligibility condition was decided by the Governing Board and implemented in the BBI JU AWP 2018 to facilitate effective cooperation and transfer of knowledge between relevant industrial actors on the one hand, and academia and research and technology organisations on the other. The additional eligibility condition was to require for certain topics (so called 'RIA B') that among the participants in the consortium there is at least one constituent entity of BIC not eligible for JU funding according to Commission Delegated Regulation (EU) No 623/2014.

However, in selected projects of Call 2018 BIC's constituent entities only committed to EUR 400 000 of financial contributions towards the objective of EUR 182.5 million set out in the Council Regulation. 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

[11] Financial contributions at project level delivered within the framework of BBI JU must be delivered by a constituent entity of the member other than the Union, that is a beneficiary not receiving funding, towards a beneficiary receiving funding.

[12] https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47646

[13] European Parliament decision of 26 March 2019 on discharge in respect of the implementation of the budget of the Bio-based Industries Joint Undertaking for the financial year 2017 (2018/2214(DEC)) http://www.europarl.europa.eu/doceo/document/TA-8-2019-0287_EN.html?redirect

the overall strategic objectives of the BBI JU initiative by 2024, that are for the most part already well on track.

CONCLUSION

The 2018 Annual Activity Report of BBI JU demonstrates that the organisation continues to perform efficiently and effectively despite the growing workload. Objectives are achieved in terms of Call attractiveness and implementation, SME participation, outputs and outcomes of the project portfolio, expected socio-economic and environmental impact.

Those achievements confirm the conclusions of the interim evaluation carried out in 2017: BBI JU is creating a stimulating research and innovation environment in Europe, attracting a satisfactory level of participation of relevant European players in the areas of the selected value chains. The development of business models integrating economic actors along the value chains is an achievement. Member States, sector organisations or the scientific community would not have achieved these goals individually, confirming what has already been underlined by the European Parliament: *"the objectives of the Joint Undertaking could not be addressed with traditional Union instruments"*[14].

This AAR 2018 also shows that the two main positive effects of BBI JU are still the structuring effect and the innovation-driven mobilising effect of all key stakeholders across sectors, regions and countries. The benefit of the initiative remains largely in accelerating the joint effort of different sectors and industries towards the creation of new value chains.

This is in line with what the European Parliament has also confirmed: *"the Joint Undertaking has provided a structuring effect, bringing together the sectors and actors towards deployment of new value chains, and it has mobilised increasing investments on developing innovations for the bio-based industries*". The European Commission, in its updated Bioeconomy Strategy of 2018, similarly affirms that BBI JU "*has been instrumental in the development and deployment of new bio-based value chains, based on the use of renewable resources including waste*".

The expected consequence of the BBI initiative is a revitalisation of rural areas in different European regions, benefitting from industrial investments affecting existing and new value chains. In this respect, the BBI JU Programme Office staff as well as constituent entities of BIC, BBI JU Scientific Committee and BBI JU States Representatives Group will continue to support the European Commission's action plans and policies. They will act as ambassadors of the initiative in their respective communities, providing support and driving the momentum towards the full realisation of the bio-based economy in Europe.

[14] ibidem

1. IMPLEMENTATION OF THE ANNUAL WORK PLAN 2018

1.1. 2018 KEY OBJECTIVES AND ASSOCIATED RISKS

1.1.1. Overall operational objectives from AWP 2018

Call 2018[15] focussed 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 2018 aimed at stimulating partnerships involving end-market actors to create a 'market pull' for bio-based products for identified applications.

Thus, the 2018 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 respond adequately to a 'pull' from the end markets.

Call 2018 continued to develop among the four strategic orientations (SOs) linked in a matrix, with three 'vertical' orientations and the 'horizontal' one cutting across them.

The SOs for 2018 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 avoid 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, by 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 2018 are outlined in sections 1.2 and 1.3 of the current report.

1.1.2. Management objectives and achievements 2018

The 2018 priorities and objectives were presented by the Executive Director to the BBI JU Governing Board at the meeting held on 26 September 2017. The priorities were mainly about the consolidation

[15] https://www.bbi-europe.eu/sites/default/files/awp2018.pdf

of the project portfolio, keeping the highest standards of quality and addressing the issues related to the reporting of financial contributions. Another important priority of 2018 was to highlight the impact of the initiative to a wider group of stakeholders.

The 2018 objectives were organised around five priorities, the main results achieved for each of them are briefly detailed below:

1. **Reinforce the PPP highlighting the impact of the initiative, the EU added-value, the industry commitment and the strategic alignment of its founding members**.

   BBI developed communication documents as well as videos presenting a set of success stories highlighting the impact of BBI JU, the EU added-value and the structuring effect of the initiative. Based on the yearly survey of ongoing projects a report on the socio-economic and environmental impact of BBI's project portfolio has been developed and integrated in the AAR 2018. The final version of the report will be available in 2019.

2. **Consolidate the BBI JU projects portfolio in line with the up-dated SIRA and BBI JU Council Regulation objectives.**

   The BBI project portfolio was consolidated in 2018 by maintaining the balance among the type of actions and the four SOs, ensuring optimal coverage of traditional and new feedstock like aquatic biomass. The Programme Office kept the efficient management of BBI project portfolio with a growing activity in reporting, progress review, payments and effective monitoring of its progress. The growing workload was absorbed while improving the operational KPIs' reporting and confirming the good trends reported in the AAR 2017. In 2018, concrete results were observed from the widening participation action plan. The high level of SME participation is confirmed The SME participation has been analysed in depth in 2018 and reported to the BBI JU GB and to advisory bodies. A dedicated report will be published in 2019. BBI JU also pursued the implementation of its synergies action plan with concrete and visible results such as the Joint Working Group with the SPIRE cPPP.

3. **Continue running BBI JU operations ensuring the highest standards in terms of quality and efficiency.**

   The Programme Office continued to monitor the compliance, the effectiveness and the efficiency of BBI JU processes and procedures in cooperation with the Internal Audit Service to maintain the very high standards already reached in 2017. Again, in 2018 BBI JU ensured a smooth ECA audit for the year 2017 without any qualification, and obtained discharge from the European Parliament for the 2016 annual accounts. In 2018, the ex post audit strategy was implemented and its first results were analysed in view of improving ex ante controls where relevant and possible. Overall, the high-level performance of BBI JU was confirmed on the basis of its reported KPIs.

4. **Successfully implement solutions addressing the issues of IKAA and IKOP reporting and financial contribution at project level.**

   The guidance for reporting and certification of the in-kind contributions to the operational costs (IKOP) had already been finalised and approved by the GB in 2017, bringing additional clarity and transparency into the 2017 IKOP report for their inclusion in the draft AAR by end February 2018. The guidance for the planning, reporting and certification of the in-kind contributions for additional activities (IKAA) was approved by the GB in January 2019 only, but still bringing additional clarity

and transparency into the 2019 IKAA plan to be adopted by the GB in January 2019 . Following the entering into force of the amended BBI JU Regulation, specific RIA topics (RIA B) were included in the Call 2018. Those RIA B topics included an additional eligibility criterion to stimulate an effective cooperation and transfer of knowledge between relevant industrial actors on the one hand, and academia and research and technology organisations on the other.

5. **Implement the communication and stakeholder management action plan towards a wider group of stakeholders; shifting from BBI 'recognition' to 'reputation'.**

The first priority of the communication activity remained the promotion of the BBI Calls with particular emphasis on underrepresented countries or macro-regions, in synergy with other EU and BIC initiatives. As the project portfolio is maturing, the Programme Office organised communication events and campaigns to communicate the impact of the BBI initiative, considering this as a key instrument for the development of a sustainable bio-based industry in the EU. The stakeholder management action plan implementation enabled the broadening of the understanding and recognition of BBI towards a wider group of prioritised key stakeholders from the EU institutions, relevant federations, Governmental & NGOs.

1.1.3. Associated risks

In line with the BBI JU procedures for identifying risks and their preventive measures, the 2017 risk assessment performed on the 2018 objectives identified 17 risks. These risks were described in the Risk Register of the organisation together with individual responsibilities, the relevant risk responses and deadlines for the Programme Office to implement them. 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 2018 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.

However, a significant risk that was identified for 2018 eventually materialised close to the year-end, when it became evident that the member other than the Union of BBI JU could not deliver the required level of financial contributions at operational level in line with the objectives set out in the Council Regulation establishing the BBI JU. The European Commission decided to address this shortcoming by reducing the EU contribution to the BBI JU. The Programme Office re-assessed the impact of this event and it concluded that the budget reduction still allows for a robust BBI JU Call in 2020 and that it will not endanger the achievement of the overall strategic objectives of the BBI JU initiative by 2024.

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, by 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 so far, with respect to the implementation of its AWPs 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 an overview of the BBI JU Calls, the various types of actions and the current project portfolio. Finally, section 1.2.4 outlines the BBI JU project monitoring activities carried out in 2018.

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 and has been developed by BIC based on extensive consultation with the European Commission and other public and private stakeholders. The original SIRA (2013) underwent a process of revision which resulted in the publication of the adjusted SIRA (so called SIRA 2017) in July 2017.

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, bio-waste, CO_2 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 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 their residuals and sidestreams; forest-based feedstock, including forestry, forest-based sector and their residuals and sidestreams; aquatic feedstock, including aquatic organisms, fisheries and aquaculture sectors and their residues; and bio-waste and CO_2, including municipal solid waste, sludge from wastewater and CO_2 effluents
- SO2: optimise **efficient processing for integrated biorefineries** through research, development and innovation (R&D&I) (SO2); SO2 focusses 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 impact of projects (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.[16] It enables the assessment of the maturity of a particular technology and the consistent comparison of maturity between different types of technologies.

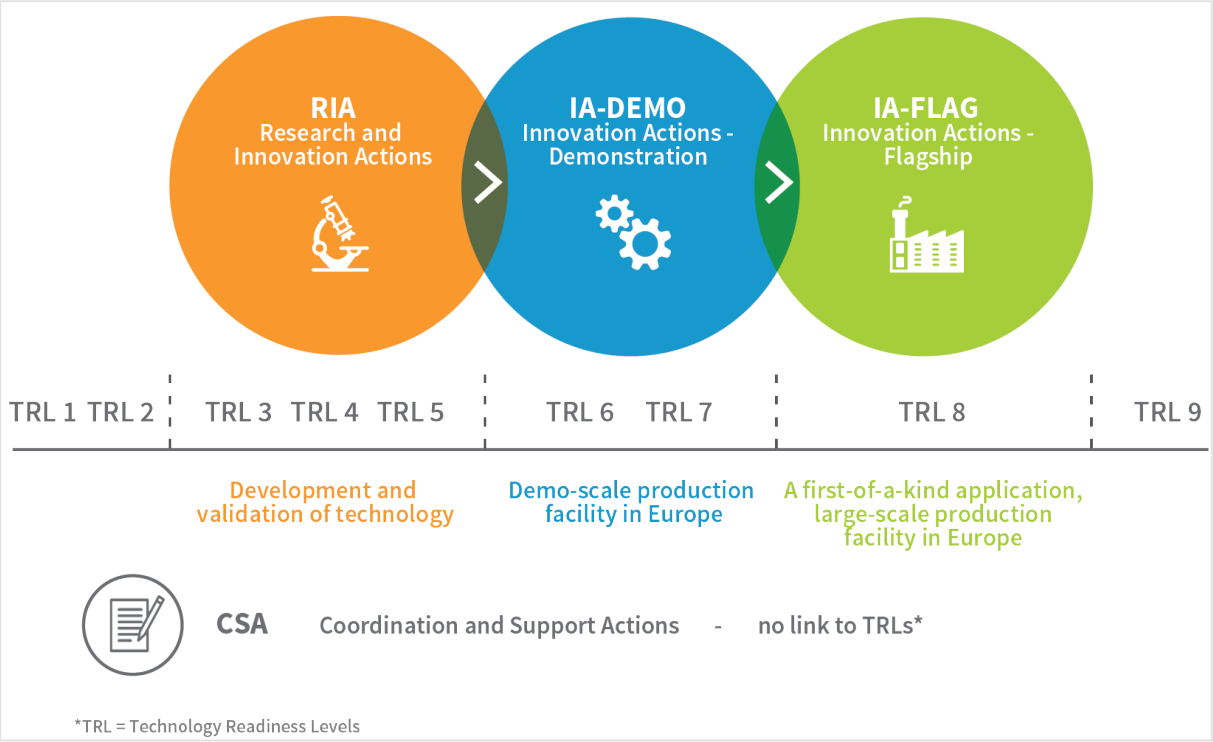

Figure 2: Technology Readiness Levels (TRLs) according to the SIRA and connection to BBI JU types of actions

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 shall deliver - by the end of the project - 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 CO_2 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.

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

1.2.3. Overview of BBI JU Calls and Project Portfolio

CALL AND PROJECT MANAGEMENT OVERVIEW

BBI JU has thus far implemented five Calls[17] out of the seven foreseen until the end of 2020, concluding grants for EUR 498 923 017 that represent about 99% of the cumulative indicative funding, and 62% of its overall budget foreseen for all Calls until 2020 (budget reduction of call 2020 already deduced).

The following table shows an overview over all calls implemented by now.

Call	2014	2015	2016	2017	Total by 31/12/2018
Proposals	38	82	103	149	372
Applicants	364	901	1190	1734	4189
Grant agreements	10	26	29	17	82
Beneficiaries (non-unique)	104	304	330	195	933
Beneficiaries (unique)	95	263	278	175	811
Grant amount	€ 49,653,708	€ 179,036,384	€ 185,070,933	€ 85,161,992	€498,923,017

The main activities that occurred during 2018 include the following:

- Finalisation of the Grant Agreement preparation (GAP) process of Call 2017 projects, resulting in the signature of 17 grant agreements for new projects;
- Implementation of Call 2018 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 2018 to the applicants and launch of the respective GAP in December 2018 upon approval of the ranking list by the BBI JU Governing Board;
- Adoption of the AWP 2019 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 2018 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

[17] 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.

than the target. This deviation is being tackled at the programming level and in particular through the 2019 AWP. For CSAs, the overall funding is still below the indicative target, however this is also addressed in AWP 2019 where a higher number of both topics and budget are allocated to this type of action.

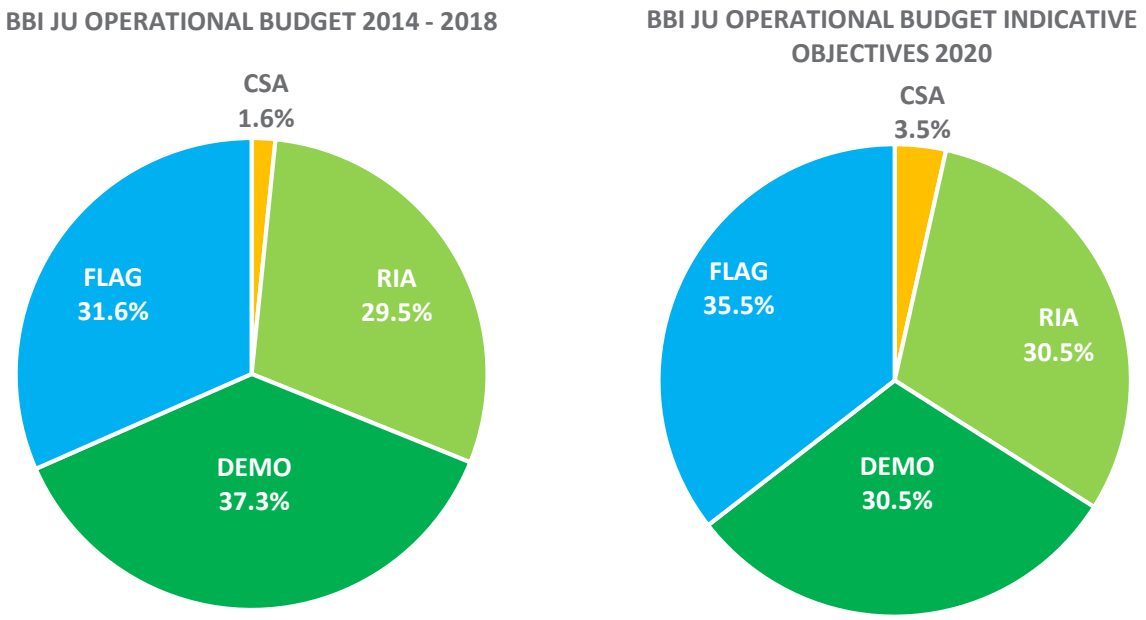

Figure 3: BBI JU overall operational budget: allocation of funding between types of actions. Cumulative figures for the period 2014-2018 as compared to the indicative values at the end of 2020 (SIRA 2017). Data for 2018 refers to proposals currently in GAP.

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

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 2018 are provided in section 1.3.2.

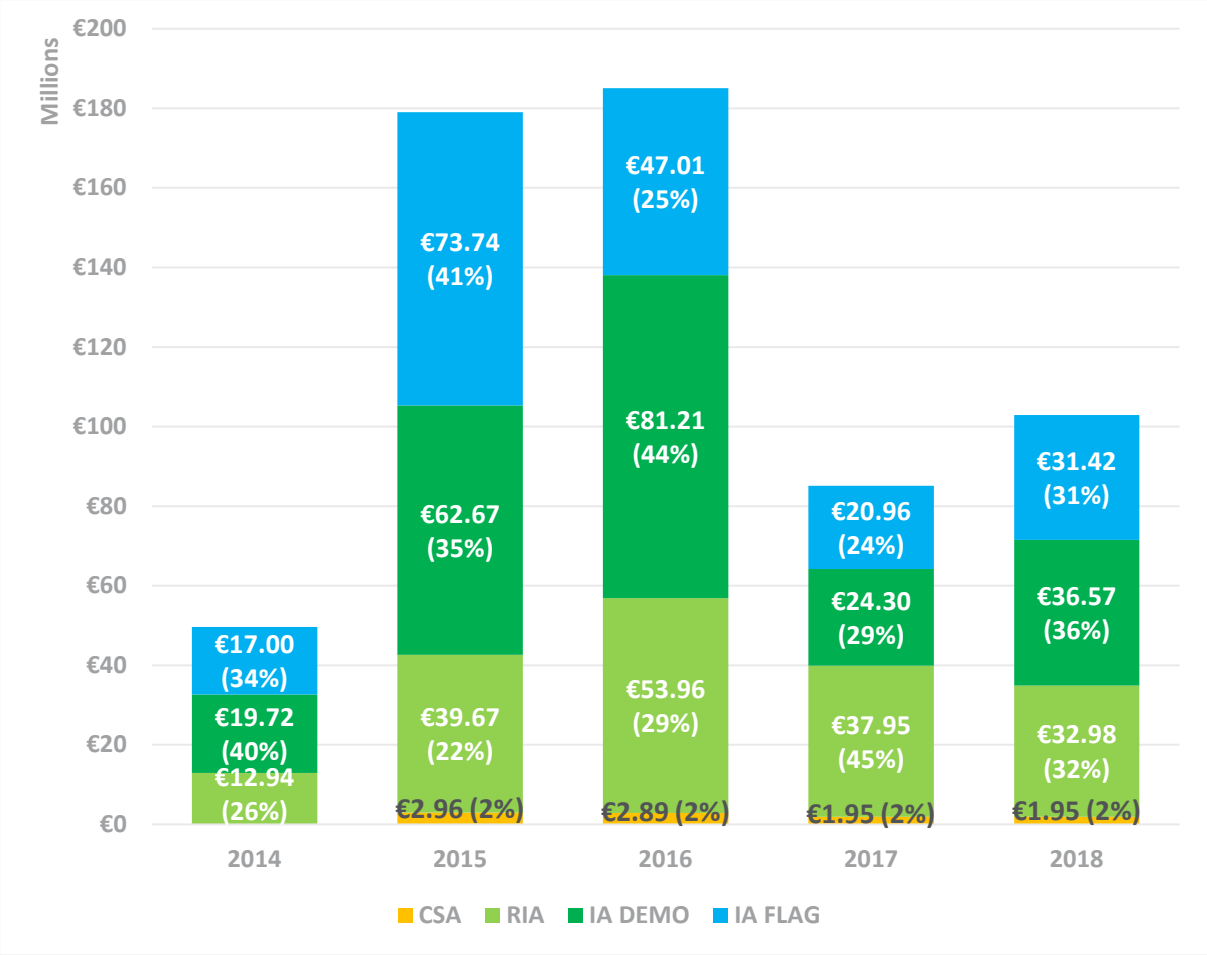

Figure 4: BBI JU overall operational budget expenditure in Calls 2014 - 2018 (the data for the Call 2018 refers to retained proposals)

OVERVIEW OF BBI JU'S PROJECT PORTFOLIO

At the end of 2018, the BBI JU project portfolio consisted of 82 granted projects (43 RIAs, 24 DEMOs, seven Flagships and eight CSAs, resulting from the Calls of years 2014, 2015, 2016 and 2017). After the finalisation of the GAP process from Call 2018, nine RIA, five DEMO, two Flagship and three CSA projects are expected to be added to the BBI JU's project portfolio. Table 1 summarises the number of projects by Call and action for each year and the plan for Call 2019.

Call 2014	10 projects: one Flagship, two DEMOs, seven RIAs (first periodic reports were submitted in March 2017)
Call 2015	26 projects: 11 RIA, nine DEMOs, three CSA, three flagships (first periodic reports were submitted in November 2017)
Call 2016	29 projects: 15 RIAs, nine DEMOs, two flagships, three CSAs (first periodic reports were submitted in May 2018)
Call 2017	17 projects: 10 RIAs, four DEMOs, one flagship and two CSAs

Call 2018	19 projects in GAP: 9 RIAs, five DEMOs, two flagships and three CSAs
Call 2019	AWP 2019 drafting Call publication on the BBI JU website (mid Dec 2018) Call opening (expected April 2019)

Table 1: BBI JU summary of calls: achievements by the end of 2018

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

The SIRA SO 1 defines different types of feedstock:

- Agri-based feedstock including by-products from the agro-food chain
- Forest-based feedstock including sidestreams and residues
- Aquatic feedstock
- Bio-waste including municipal waste and waste water and CO_2

Table 2 presents the project distribution according to the main sources of feedstock described in the SO1 and type of action, for each of the five years' Calls implemented by BBI JU so far. Project acronyms are indicated using different colour codes for each Call: Call 2014 (marked in orange), Call 2015.1 and 2015.2 (green), Call 2016 (red) and Call 2017 (purple). Projects marked with blue stars are from Call 2018 and currently in GAP.

Origin of feedstock SO1	RIA	DEMO	Flagship
Agri-based	Carbosurf, PROMINENT, LIBBIO, HYPERBIOCOAT, Zelcor, BIOrescue, EnzOx2, InDIRECT, BioBarr, SSUCHY, ReSolve, BIOSMART, ECOXY, REFUCOAT, POLYBIOSKIN NEWPACK, Pro-Enrich, Prolific, EXCornsEED, VIPRISCAR iFermenter, * *	Pulp2Value, AgriMax, Funguschain, GreenProtein, LIPES, GRACE, OPTISOCHEM, BIOMOTIVE SUSFERT, ReInvent, EFFECTIVE *	FIRST2RUN, LIGNOFLAG, BIOSKOH AgriChemWhey, PEFerence, * *
Forest based	SmartLi, Greenlight, PROVIDES, US4GREENCHEM NeoCel, LIBRE, TECH4EFFECT, EFFORTE, SHERPACK SusBind, WoodZymes, UNRAVEL, * * * *	ValChem, BIOFOREVER, GreenSolRes, PULPACKTION, FRESH, LigniOx Dendromass4Europe SYLFEED, EUCALIVA *	EXILVA SWEETWOODS

Bio-waste and CO_2	NewFert, AFTERLIFE, PERCAL, BARBARA, * *	EMBRACED, URBIOFIN, DEMETER, Biowaste, * * *	
Aquatic Biomass	MACROCASCADE, BIOSEA, ABACUS, MAGNIFICENT, VALUEMAG, AQUABIOPROFIT *	SpiralG	

Table 2: BBI JU RIA and IA projects from Call 2014 (orange) -15 (green) -16 (red) -17 (purple) and the proposals in GAP in Call 2018 (blue stars). The distributions reflect the portfolio of projects by the end of 2018

As shown in the table above, all feedstock sources have been covered by RIA and DEMO projects. The majority of RIA projects are mainly clustered around agri-based and forest-based biomass and Call 2018 has further reinforced these groups by delivering five new projects in these domains. From Call 2016 onwards, there is also a steady increase in RIA projects processing other types of biomass, such as aquatic biomassand municipal solid waste. Following this trend, Call 2018 has delivered three new RIA projects two processing urban bio-waste biomass and one using aquatic biomass.

Similar to the RIA project portfolio, up to now IA projects have been mainly grouped in the agri-based and forest-based feedstock and this is confirmed under Call 2018 with one new DEMO using each of the two abovementioned feedstocks. Moreover, the seven ongoing flagship projects are transforming diverse types of agri- or forest- based biomass, whereas the two new flagship projects which will be added to the portfolio as a result of Call 2018, will use agri-based feedstock. An important novelty of this year is the three new DEMO projects processing urban bio-waste, contributing to the scaling up and deployment of technologies separating and processing this type of feedstock. Additionally, the projects classified in other feedstock categories are mainly using feedstock of waste materials collected from the pulp paper industry, recycled bio-polymers, residues and by-products of the fishery processing industry. This shows not only the increasing importance of waste as feedstock but also the integration of the notion of circularity in the bio-based industry.

So far, there is only one DEMO on aquatic feedstock, and no flagship project in the portfolio processing aquatic biomass or organic waste feedstock. This is mainly due to the fact that the business models for the processing of aquatic and organic waste biomass have not yet reached the level of maturity of the other value chains. For municipal waste in particular several segments are faced with specific issues such as the fragmentation between a wide range of different actors (collectors, cities, technology providers, etc. and a very unstable and varied feedstock.

CSA projects are contributing to SO4 by facilitating market update and 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 actors of the different segments of the value chains. There are in total eight ongoing CSA projects in the current BBI JU project portfolio and Call 2018 adds three additional ones, as shown in table 3.

Market Uptake SO4	Policy, regulations and standardisation	Consumer awareness of the benefits of the bio-based products	Knowledge gathering and networking
CSA	STAR4BBI	BioCannDo, BIOWAYS BIOBRIDGES	BIOPEN, Pilots4U, RoadToBio ICT-BIOCHAIN * * *

Table 3: CSA projects from Call 2015 (green) -2016 (red) -2017 (purple) and the proposals in GAP in Call 2018 (blue stars)

CONTRIBUTION OF BBI JU PROJECTS TO SIRA STRATEGIC ORIENTATIONS

As mentioned in section 1.2.1, the SIRA 2017 introduced the definitions of four SOs as compared with the SIRA 2013. They focus on the supply of sustainable biomass feedstock (SO1), efficient processing (SO2), bio-based product development and application (SO3) and lastly the market up-take of bio-based products and applications (SO4).

As shown in Figure 5 all IA projects cover SOs 1, 2 and 3 which is the consequence of the obligation for those projects to cover the whole value chain. RIA are more focussed on solving one or several elements of a value chain but some of them also **contribute to multiple SOs**. This demonstrates the deep interrelation among the four SOs reflecting the projects' coverage of the full value chain.

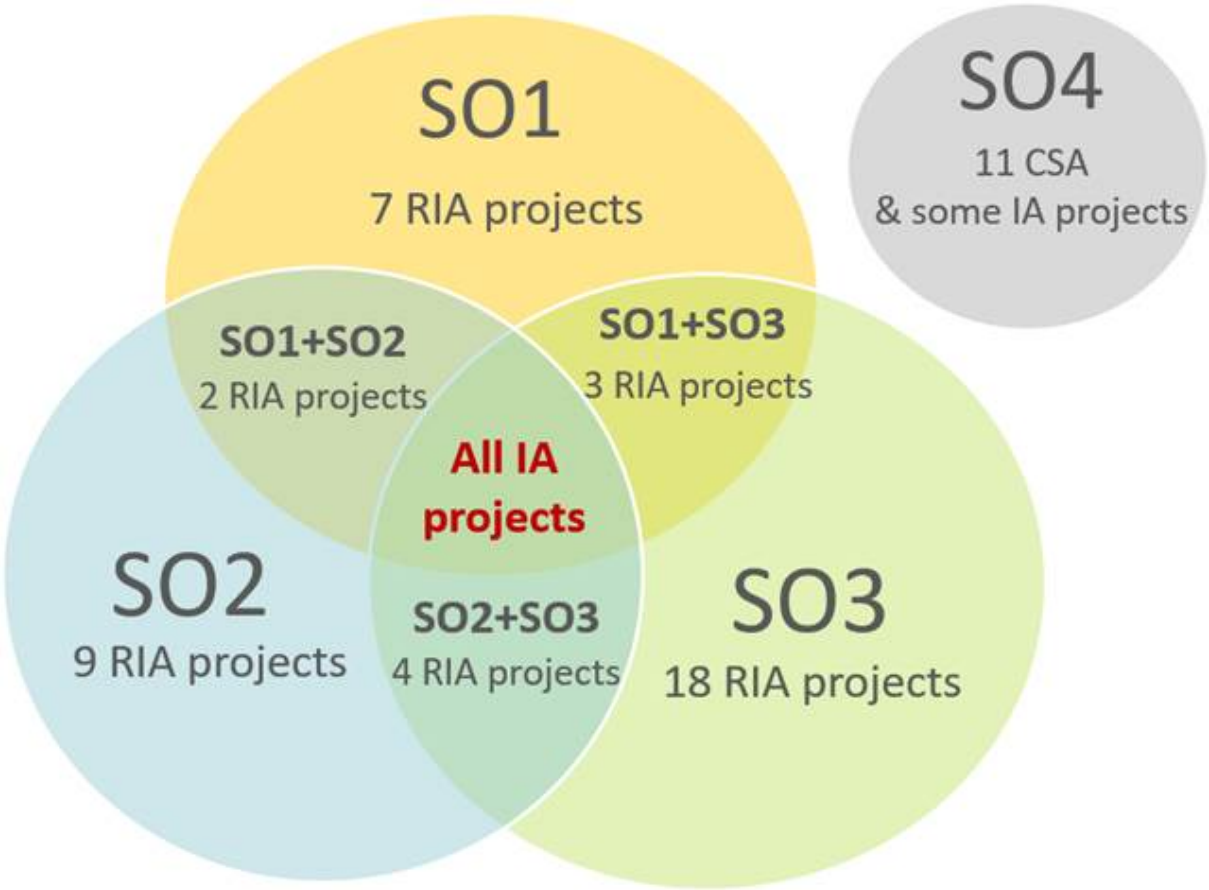

Figure 5: Strategic Orientations addressed by BBI JU ongoing projects of Calls 2014, 2015.1, 2015.2, 2016, 2017and 2018 (retained for funding)

Some examples below illustrate projects' contributions to SO1, SO2 and SO3:

- RIA project TECH4EFFECT is focussing on SO1 by setting up a systematic approach to maintain sustainable supply of forest biomass and maximise the value of this resource. The aim of this project is to increase the access to wood resources via improved silviculture operations, to harvest and collect of forestry biomass supply in efficient manner, to lower the cost and the environmental impact of harvesting and to create effective business models for the forestry sector. At the end of the project, it is expected to develop a novel management tool to elevate the efficient use of forest resources in the forestry rich EU countries.
- WOODZYMES is a RIA project focussing on SO2. The main objective of this project is to develop an enzymatic process, which is adaptable to extreme industrial operational conditions utilising the hemicellulose and lignin type of feedstock from pulp mills. To this end, WOODZYMES will go beyond the state-of-the-art technology by advancing the enzyme-aided technologies, depolymerisation and modification units via unique approaches. Once the technology is optimised, the process will generate resin precursors for fibreboards and phenols for polyurethane production to use in pulp and paper industry.
- RIA project Pro-Enrich focusses on SO3. It aims to develop functional proteins and bioactive ingredients from rapeseed, olive, tomato and citrus fruit sidestreams for applications in food, cosmetics, pet food and adhesives. With fractionising the biomass from agri-food sidestreams,

the several protein compounds and antioxidant polyphenols and prebiotic carbohydrates will be identified. The project Pro-Enrich will not only have a positive impact on the increasing need for proteins and other food ingredients in the EU but also develop innovative bio-based products for specific market applications from alternative resources.

- RIA project InDirect is focussing on the production of chitin, proteins and lipids from agricultural sidestreams and by-products. The novelty of this project is the development of a biorefinery approach in which insects convert the agri-based feedstock. In addition, with an integration of the novel extraction technologies of supercritical fluid extraction, membrane-based techniques and selective absorption, insect-derived products are extracted from the mixed-culture medium.
- Flagship project EXILVA is developing a biorefinery for the production of high quality Microfibrillated Cellulose (MFC) for its application in a wide range of sectors, such as personal and home-care products, agricultural chemicals, adhesives, coatings and construction, among others.
- DEMO project LigniOx is working on integrated chemical pre-treatment, bioprocessing and downstream processing technologies to optimise the bio-refineries, using forestry-type biomass for plasticiser production to be used in the paints and coating industry
- Flagship project AgriChemWhey will provide the techno-economic viability of the innovative biorefinery technology which is based on a unique fermentation process to convert whey permeate into lactic acid. This fully-integrated biorefinery will enable the extraction of high-value bio-based chemicals and minerals from dairy industry by-products.
- DEMO project SpiralG aims to build an algal bio-refinery production site. Algal biomass will be used in the production of phycocyanin pigments to use specifically in the pharmaceutical, cosmetic and food industries. SpiralG project will enable the sourcing, extraction and co-valorisation of the whole algae combination with the full processing-till-purification of the pigments.
- Flagship project SWEETWOODS aims at developing a bio-fractionation flagship plant processing hardwood biomass. The process combines innovative pre-treatment technology with enzymatic solutions to provide a sugar recovery yield of over 90% in high purity levels. Sugars and lignin can be further processed and converted to high-value biomaterials such as bio-plastics, insulation foams, and organic chemicals to be used in the chemical industry.

Until now, 8 CSA projects have been granted through BBI JU Calls. At the beginning of the programme, the projects were mainly addressing public awareness, bio-based products' standardisation and regulations, networking within the bio-based industry, support to value chains via clustering and road-mapping activities. The programme was expanded to topics focussed on the use of ICT to increase the efficiency of biomass supply and on improving the market uptake of bio-based products. The CSA projects covering SO4 are described below:

- BioCannDo focusses on improving the 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. Educational communication materials will be accessible for EU

citizens on the topics of the bioeconomy and bio-based products as well as their benefits for our society.

- BIOWAYS is developing educational materials and encouraging active public engagement to promote the bio-based industries and the potential of bio-based products. To this aim, BIOWAYS created several tools and materials, such as an innovative online collaboration platform with a social networking opportunity, an accessible library of bio-based products, training materials, social hack days, co-creation workshops, an e-Conference, Bar-Camps and a thematic workshops for problem-solving in the bio-based economy area.
- STAR4BBI aims at identifying the technological trends in the bio-based economy. Trends, standards and regulations for the bio-based industry will be screened, in an attempt to establish a coherent and coordinated regulatory framework. Depending on the outcome, an adaptation of the regulatory framework and relevant standards will be provided.
- Biopen aims at gathering the expertise of the bio-based industries in Europe and promoting the engagement and involvement of Industry, researchers and academia at both European and national levels. One of the main tools for achieving this is the setting-up of an 'Open Innovation' platform addressing strategic cross-cutting challenges such as clustering and the interconnection of the bio-based value chains. This platform promotes and supports, connecting at least 20 co-innovation partnerships alongside existing new value chains. Among the expected impacts are knowledge gathering and providing access to relevant information for markets and products innovations in the bio-based industry field.
- Pilots4U supports the visibility of European pilot and demo biorefinery facilities. Pilots4U provides 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. The platform will be easily accessible to all bioeconomy actors, making the innovation phase from laboratory to market level less risky in both technological and financial terms.
- BIOBRIDGES' aim is to develop, stimulate and support a permanent mechanism of communication for the marketability of bio-based products, by establishing primary partnerships between bio-based Industries, brand owners and consumer representatives in cooperation with other stakeholders like local communities, local authorities and industrial actors. Project BIOBRIDGES works in close collaboration with other CSA projects (e.g. Open-Bio, Bioways) valorising the outcome of these projects. One of the main results of BIOBRIDGES will be to establish and to support cross-sector partnerships in the bio-based economy.
- 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-BIOCHAIN targets and 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.

Some IAs also contribute to SO4, for example:

- EMBRACED is establishing a DEMO-scale plant which is using absorbent hygiene products' (AHP) waste for biopolymer and bioplastics production. The DEMO plants are expected to be in Italy and in the Netherlands. To overcome the legislative bottlenecks, EMBRACED has a dedicated work package covering the development of EU and national legislations on the 'End of Waste' criteria. In this work package, variations and inconsistencies among different EU Member States will be highlighted for policy makers. The final goal is to prevent fragmentation while removing the hurdles impeding the re-use of waste, to achieve a fully Circular Economy in the EU.
- AgriChemWhey is establishing a Flagship biorefinery plant for the valorisation of sidestreams from the dairy industry in Lisheen, Ireland. One of the by-products of the AgriChemWhey process is Gypsum, which is a valuable fertiliser for the local farmers. The use of Gypsum at farm level will not only reinforce the farmers' ability to comply with the efficient use of local sources, but also leverage quality standards in delivering highly nutritious food products via effective production strategies. Thanks to this project, the mushroom growers' cooperative and the local dairy industry are now working in close collaboration. Through dedicated stakeholder analysis and brokerage events with local farmers, joint venture opportunities will become visible. These actions can further contribute to the acceleration of market uptake.

GEOGRAPHICAL COVERAGE OF BBI JU PROJECTS

After five Calls BBI JU has delivered a balanced coverage of demonstration and flagship projects throughout Europe, with a good spread between the EU15, EU13 and associated countries (Figure 6), in particular for flagships. BBI JU DEMO plants have a wide coverage across Europe including Eastern and Southern European countries. There are three new DEMO plants in proposals retained for funding under Call 2018 planned to start in Spain, the UK and Sweden. The other two DEMO projects are expected to have several plants established in more than one country: Italy, Belgium, France, Spain and Czech Republic.

Flagship projects also have a good geographical spread across Europe, three of them being in the EU13, three in the EU15 and one in an associated country. The two new flagship projects retained for funding from Call 2018 are expected to be located in Belgium and France.

The IA projects also ensure a wide coverage of geographical diversity of feedstock. More specifically, Flagship projects Exilva (Norway) and SweetWoods (Estonia) are utilising wood and pulp industry side streams, as this type of feedstock is abundantly available in Northern Europe with well-established logistics. Instead, projects based in Eastern Europe, Bioskoh (Slovakia) and LignoFlag (Romania), are focussing on the availability of a huge amount of agricultural sidestreams (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 maximising the use of regional agricultural resources, since the side streams of the agri-food industry provide an excellent opportunity for valorisation. AgriChemWhey (Ireland) uses the dairy processing side streams while PEFerence (Belgium) valorises the starch collected from wheat and corn processing industries. Finally, 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.

In conclusion, the distribution of action types is progressing well towards the objectives in the SIRA, supporting the development of a bio-based economy across Europe, addressing its full potential of feedstock.

More detailed information on the BBI JU projects can be found on the BBI JU website[18].

[18] https://bbi-europe.eu/projects

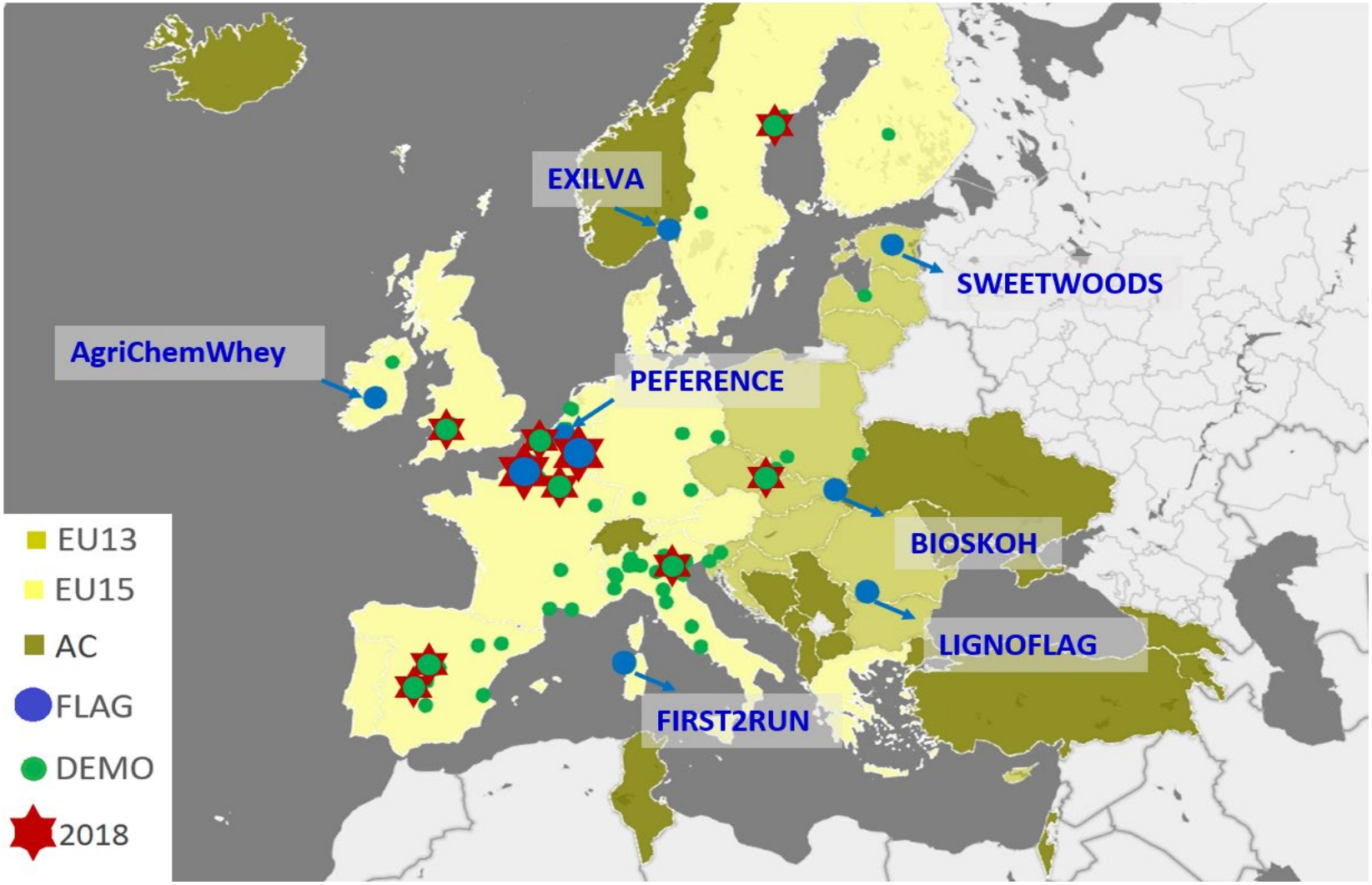

Figure 6: BBI JU Flagships & Demos in ongoing projects and proposals selected for funding in Call 2018[19]

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 tools[20]. BBI JU-specific elements are further clarified in the 'Project Management' part of BBI JU's website[21].

Kick-off meetings. In 2018, 17 kick-off meetings for the projects from Call 2017 took place between April and September 2018 and BBI JU participated in the vast majority 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 2018, BBI JU organised 28 project reviews: 24 reviews of Call 2015 projects, and 4 reviews of Call 2016 projects.

Periodic reporting and payments. In 2018, BBI JU completed 33 periodic report assessments and finalised 32[22] related interim payments within an average of 71.3 days (compared to 83.7 days in 2017). Furthermore, 97% (31/32) of the payments were finalised within the TTP deadline of 90 days, compared to 80% in 2017. These results show that corrective actions were implemented at the start of 2018 - based on the 2017 assessment and payment results – and resulted in a significant improvement in time to pay compared to 2017.

Amendments. Applying Horizon 2020 procedures[23], BBI JU assessed and processed 42 GA amendment requests initiated by project coordinators in 2018, 40 of which were accepted.

Project finalisation. In 2018, five BBI JU projects submitted their last periodic report. Among these five projects, one (ValChem, Call 2014) was prematurely terminated upon the request of the consortium.

1.2.5. Synergies with other initiatives

According to the Council Regulation, BBI JU shall develop close synergies with other EU programmes in areas such as education, environment, competitiveness and SMEs, and with the Cohesion Policy funds and Rural Development Policy as well as the European Structural and Investment Funds (ESIF). Such synergies can help in strengthening local, regional and national research and innovation capabilities in the bio-based sector.

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[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] One assessment resulted in a zero payment, as the total of previous payments had already reached the ceiling of 90% of the maximum grant amount.

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

During 2018, BBI JU continued the actions initiated in prior years promoting synergies, identifying complementarities and avoiding overlaps with other funding programmes. More specifically, BBI JU focussed on the following:

- Synergies and complementarities with the contractual public-private partnership **SPIRE**[24].

Over the past years, BBI JU and the Sustainable Process Industry through Resource and Energy Efficiency (SPIRE) have been exploring collaborative ways of maximising their impact. Since 2016, the two public-private partnerships have established a Joint Working Group with BIC and SUSCHEM[25] with the aim of collaborating at several levels including: firstly synergies at the programming level among BBI SIRA, SPIRE roadmap and BBI/SPIRE work programmes; secondly synergies among funded projects; thirdly dissemination of information and the promotion of networking between the SPIRE and BBI communities. In 2018, the fourth and fifth meetings of the Joint Working Group were organised (on 23 January and 16 November respectively) and these were the main achievements:

- Strategic alignment between the work plans, emphasising further complementarity and striving for synergies among topics. The two programmes continue to pay close attention to CO_2 utilisation as feedstock so that they complement each other. BBI JU focusses on CO_2 from all sources but converted via biological processes, whereas SPIRE addresses non-biological processes.
- Exchanges of information about the monitoring of impact and potential links for cooperation among funded projects by both initiatives;
- Close coordination of communication activities and access to respective communication channels for promotional purposes. For example, during 2018, BBI JU participated in several SPIRE events such as the SusChem stakeholder event, the SPIRE stakeholder workshop and the SusChem brokerage event. Furthermore, in 2018, joint networking events for BBI and SPIRE projects were under discussion.
- On 2 October 2018 BBI JU and SPIRE launched a **joint statement on teaming-up for synergy of actions**[26]. The objective of the statement is to confirm the added-value generated by the two initiatives and to specify the main achievements of the joint actions. The document reaffirms the commitment of both organisations to working towards synergies and complementarities. The statement is published on the respective websites[27] and was jointly presented in the SPIRE stakeholder workshop.

[24] https://www.spire2030.eu/

[25] SusChem is the European Technology Platform for Sustainable Chemistry. It is a forum that brings together industry, academia, policy makers and the wider society, see http://www.suschem.org/about).

[26] https://www.bbi-europe.eu/news/public-private-partnerships-bbi-ju-and-spire-publish-joint-statement-team-synergy-actions

[27] https://www.bbi-europe.eu/news/public-private-partnerships-bbi-ju-and-spire-publish-joint-statement-team-synergy-actions https://www.spire2030.eu/news/new/public-private-partnerships-bbi-ju-and-spire-publish-joint-statement-team-synergy-actions http://www.suschem.org/newsroom/spire-and-bbi-ju-publish-joint-statement-on-team-up-for-synergy-of-actions

- The last meeting of the year represented an important step to continue enhancing the collaborative work towards the future of both initiatives under **Horizon Europe**, ensuring complementarities, coherence and mutual understanding. The participants confirmed their commitment to work in cooperation. In particular, it was agreed to foster interactions between the organisations to ensure coordination and coherence on the draft of the respective SIRAs & roadmaps of SusChem/BIC/SPIRE in order to avoid overlaps and maximise synergies.
- **10th European Innovation Summit Dinner Debate on Innovation Partnerships**: BBI JU's Executive Director Philippe Mengal spoke at the debate on 'Chemical industry & innovation partnerships: Impact assured!' organised in collaboration with CEFIC. The event hosted a discussion about how Horizon 2020 partnerships like BBI JU and SPIRE bring collaboration along the innovation eco-system, enable cross-sectorial collaboration, deliver fast replication of innovative solutions throughout multiple sectors, and how they can develop a solid portfolio of projects geared to deliver impact.

- 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 those regions that have identified - among their S3 priorities - activities oriented towards supporting the bio-based industries. In 2018, these were the two main achievements:
  - BBI JU successfully collaborated with the European Commission's Joint Research Centre (JRC) to promote synergies with ESIF/RIS3 in the context of the project **Stairways for Excellence**[28]. As a result, BBI JU participated in the pilot event on 7 March 2018 '***Developing synergies between Joint Undertakings and ESIF for optimising RIS3 implementation'***[29]. This event involved also two other JUs (Clean Sky, Fuel Cells and Hydrogen) and brought together over 180 participants from Member States, regions and other European Commission participants. The event was an important opportunity to identify mechanisms to improve synergies between BBI JU and regions, and more specifically to: 1) share information on the methodology and the mechanisms used by the JUs to engage with regions; 2) share good practices and lessons learnt by regions to develop collaborations; 3) peer-learning (between regions, between JUs), identify good practices for establishing and implementing such collaborations; 4) facilitate connections with relevant stakeholders via matchmaking activities. A report with the results of the event is under preparation by the JRC and is expected to be published in 2019.

[28] http://s3platform.jrc.ec.europa.eu/stairway-to-excellence

[29] https://europa.eu/!wH76wV

- Following the request of the Governing Board, BBI JU is preparing a proposal for a pilot action currently called 'BBI Synergy Label'. The pilot will seek to facilitate access to regional funds to support BBI JU IA projects that obtained good evaluation results, but were not selected for funding due to budget limitations. The pilot will be launched in 2019 if approved by the Governing Board.
- BBI JU has enhanced its interaction with the European Investment Bank (EIB) providing relevant contacts of EIB to various stakeholders willing to invest in the EU. BBI JU also had several contacts with the European Bank for Reconstruction and Development (EBRD) in an effort to further maximise opportunities for access to finance by the applicant community. To this end, the BBI JU is in ongoing discussions with the EBRD for the development of a more structured collaboration, possibly in the form of a memorandum of understanding.

To conclude, during 2018 and following the exploratory activities undertaken in 2017, BBI JU remained committed to promoting synergies with other relevant Horizon 2020 initiatives. This included synergies with **EraCoBiotech and EIT-KICs.** EraCoBiotech is an ERA-Net Cofund Action under Horizon 2020, which aims to strengthen the European Research Area (ERA) in the field of Biotechnology through the enhanced cooperation and coordination of different national and regional research programmes. It promotes *systems biology* and *synthetic biology* as technology drivers to speed up research and innovation in *industrial biotechnology*. Potential synergies arising from the **EIT** and its **KICs (in particular Food and Climate)** remained on the radar of BBI JU's activities during 2018, namely, the identification of projects aimed at sustainably transforming natural resources into bio-based products, materials and fuels.

It should be noted that BBI JU and the members of the JTI have different possibilities to foster synergies based on their respective remits and competences. In this context, 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 website[30]

[30] https://www.bbi-europe.eu/participate/other-funding

1.3. CALLS FOR PROPOSALS AND GRANT INFORMATION

In 2018, BBI JU operations included the conclusion of the Grant Agreement Preparation (GAP) for Call 2017, which resulted in the signature of 17 Grant Agreements, bringing the total number of projects of the BBI JU portfolio to 82 by the end of the year.

In addition, BBI JU successfully implemented Call 2018. The final ranking list was adopted by the BBI JU GB on 14 December 2018, the letter of information was sent to applicants on 17 December 2018, and the Grant Agreement Preparation process was initiated before the end of the year for 19 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 and projects invited to GAP as a result of the Call 2018 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 2018 statistics at the stage of submission and evaluation, the finalisation of Grant Agreement Preparation (GAP) for projects from Call 2017 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 monitoring[32] and cross-cutting issues, such as gender dimension, widening participation, SME participation and type of organisation. Achievements of objectives at the end of 2018 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 contribution for all beneficiaries (APIK) and in-kind contributions for the additional activities (IKAA) are used to calculate the leverage effect. Achievements of objectives at the end of 2018 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 2018 are presented in section 1.3.1.3;

[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.).

4. **Expected socio-economic and environmental** impact of the BBI JU projects. Achievements at the end of 2018 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 2018, 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 2018 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 102 days against a target of 153 (100% on time);
- ✓ TTG of 231 days in average all before a target of 245 days (100% on time);
- ✓ TTP of 11.4 days for pre-financing on average against a target of 30 days (94% on time)
- ✓ TTP of 71.3 days on average for periodic payments against a target of 90 days (97% on time).

With respect to TTG, all GAs from GAP 2017 were signed on time, within an average of 231 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 2017 was on average 11.4 days, compared to the target of 30 days. 94% of these payments were performed on time, one of them was late.

Finally, in 2018, BBI JU assessed the first periodic reports (technical and financial) submitted by the projects funded under Calls 2014, 2015 and 2016. The average time to pay of the cost claims derived from the periodic reporting was 71.3 days on average, compared to the target of 90 days. 97%- of these payments were performed on time, 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;
- type 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 the majority of funding going to the EU15 (Figure 7). Similarly, EU13 participation rates in the BBI JU Calls are lower than for the EU15, at the level of both proposals (Figure 8) and projects (Figure 9). Notably, the overall success rate of EU13 countries in BBI JU Calls is 15% compared to an overall success rate of 20% 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 (9%) than in other programmes such as SC2 (6.8%) or the LEIT KET Biotechnology programme (5.1%)[33], as also pointed out in the report of the interim evaluation of the BBI JU[34].

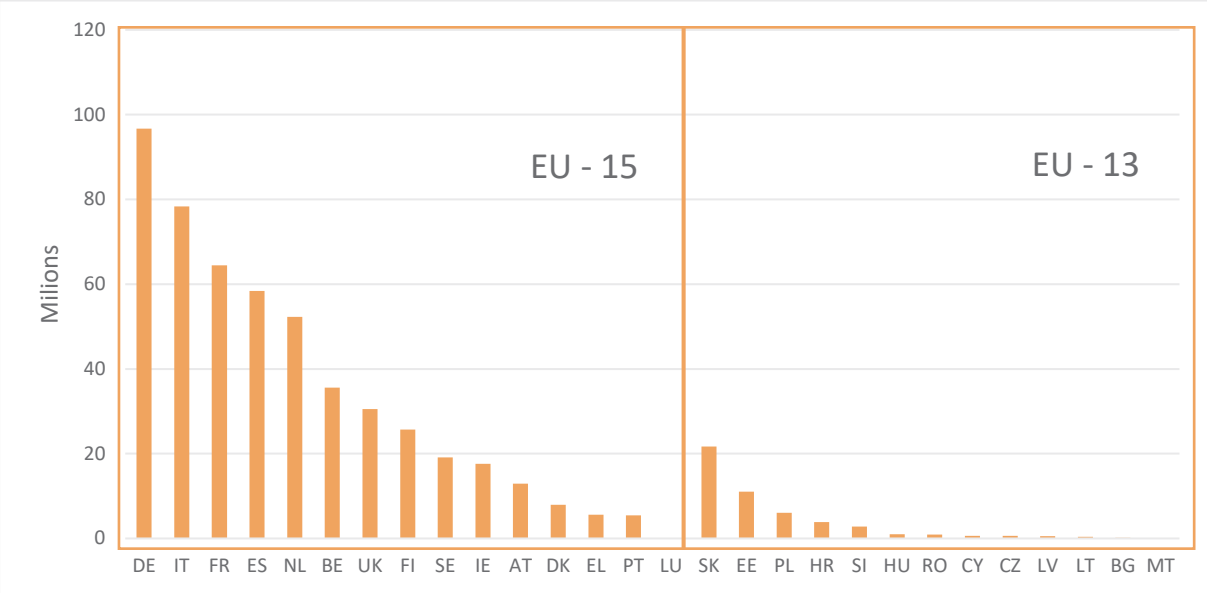


Figure 7: Grants (in EUR millions) per EU15 and EU13 Member States in Calls 2014-2018 (the data for the Call 2018 refers to retained proposals)

[33] Based on Horizon 2020 dashboard, extracted on 14 December 2018. (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

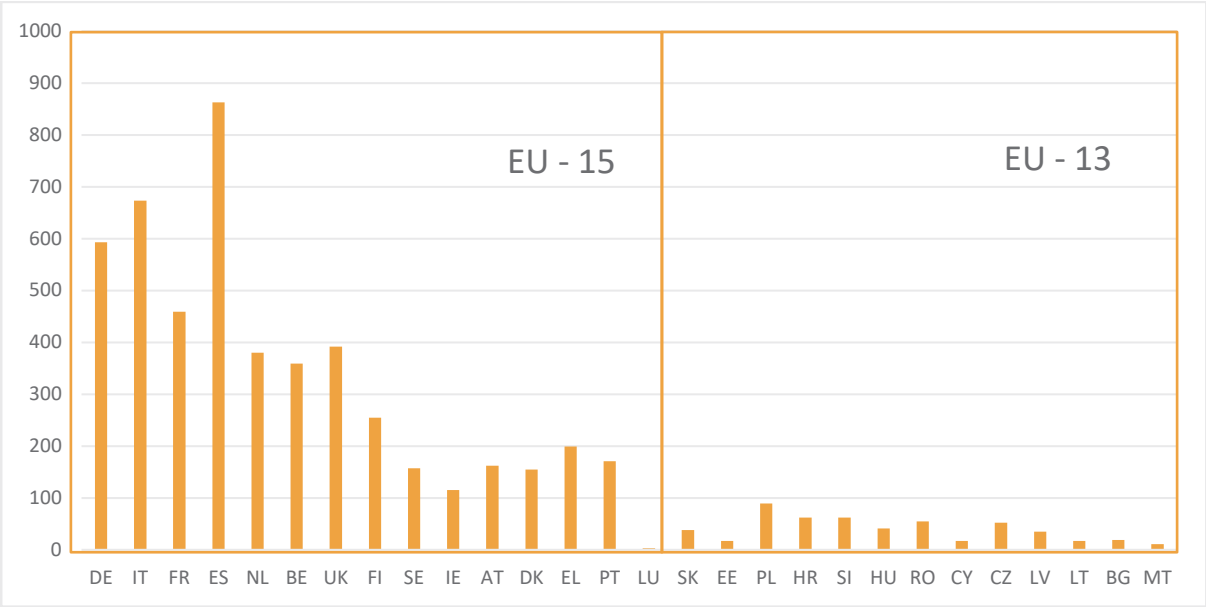


Figure 8: Distribution of applicants per country from EU15 and EU13 in Calls 2014-2018

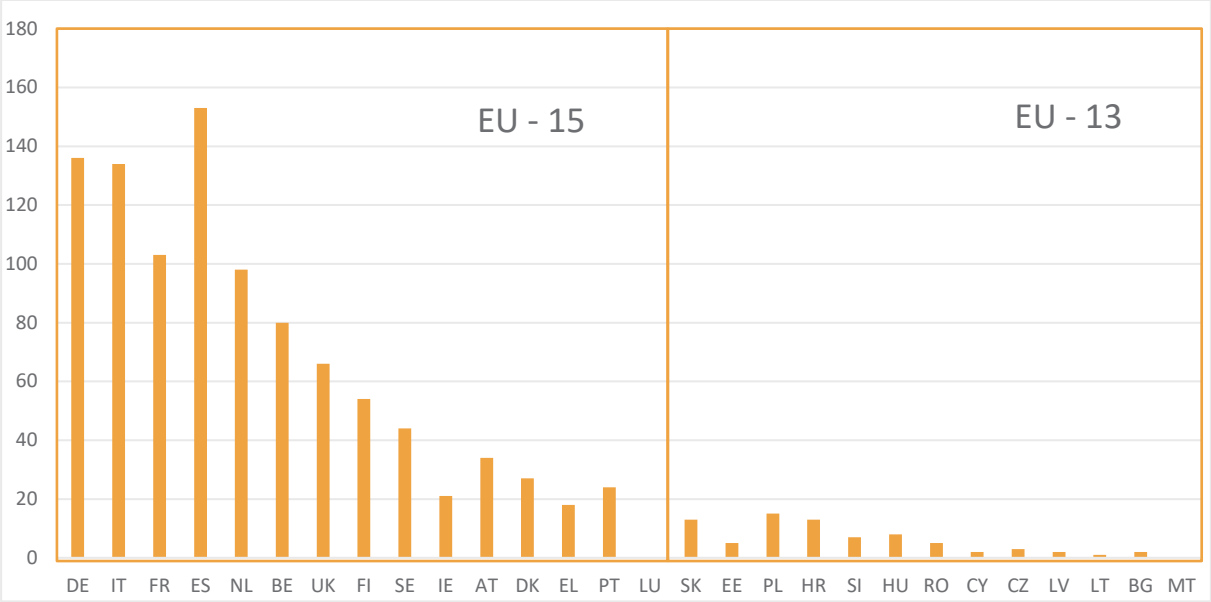


Figure 9: Distribution of beneficiaries per country from EU15 and EU13 in Calls 2014-2018 (the data for the Call 2018 refers to retained proposals)

The data presented in Figures 7-9 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 among 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 10-12, 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 population[37], as extracted from the corresponding Eurostat databases on 22 November 2018. The blue lines in Figure 10 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 11 and 12 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 10 shows that the highest success in obtaining BBI JU funding compared to the national investment in R&D comes from the EU13 countries Slovakia and Estonia, thanks to the flagship projects BIOSKOH and SWEETWOODS, respectively. Other EU13 countries, such as Croatia, Latvia and Cyprus, as well as some EU15 countries, such as Greece 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 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 9), EU13 countries perform more than two times better than EU15 countries, when the investment in R&D is considered as the normalisation parameter in the analysis.

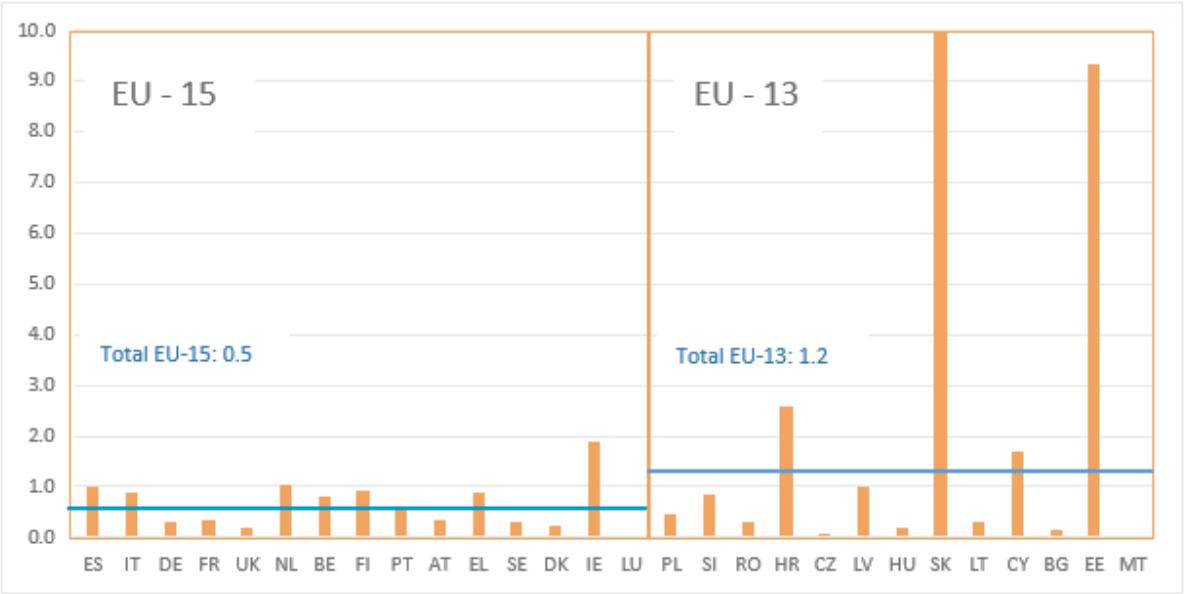


Figure 10: Distribution of funding per country from EU15 and EU13 in Calls 2014-2018 normalised by GERD (normalised performance index 0-10)

[35] Intramural R&D expenditure (GERD) by sectors of performance and fields of science, as a summation of years 2007-2016

[36] Gross Domestic Product, as an average value between the years 2008-2017.

[37] Average value between the years 2007-2016.

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 11. In this case however, the overall performance of EU13 countries when normalised by their total GDP is comparable to that of EU15. On the contrary, when the normalisation is performed by the population of the country, essentially representing the BBI JU funding per capita, as seen in Figure 12, EU15 countries appear to perform better than EU13 countries, receiving EUR 0.8 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 to EUR1 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 is for example Estonia, Slovakia, Slovenia and Ireland where the funding per capita ranges from EUR 2 to EUR 10, as a result of the funding for flagship and/or DEMO projects.

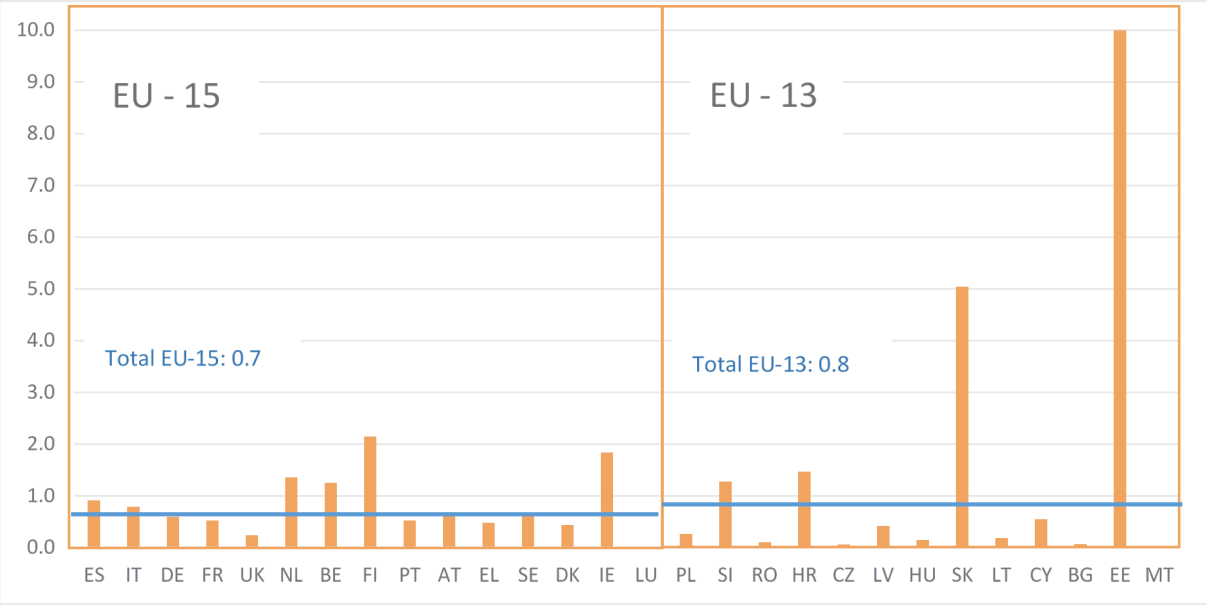


Figure 11: Distribution of funding per country from EU15 and EU13 in Calls 2014-2018 normalised by GDP (normalised performance index 0-10)

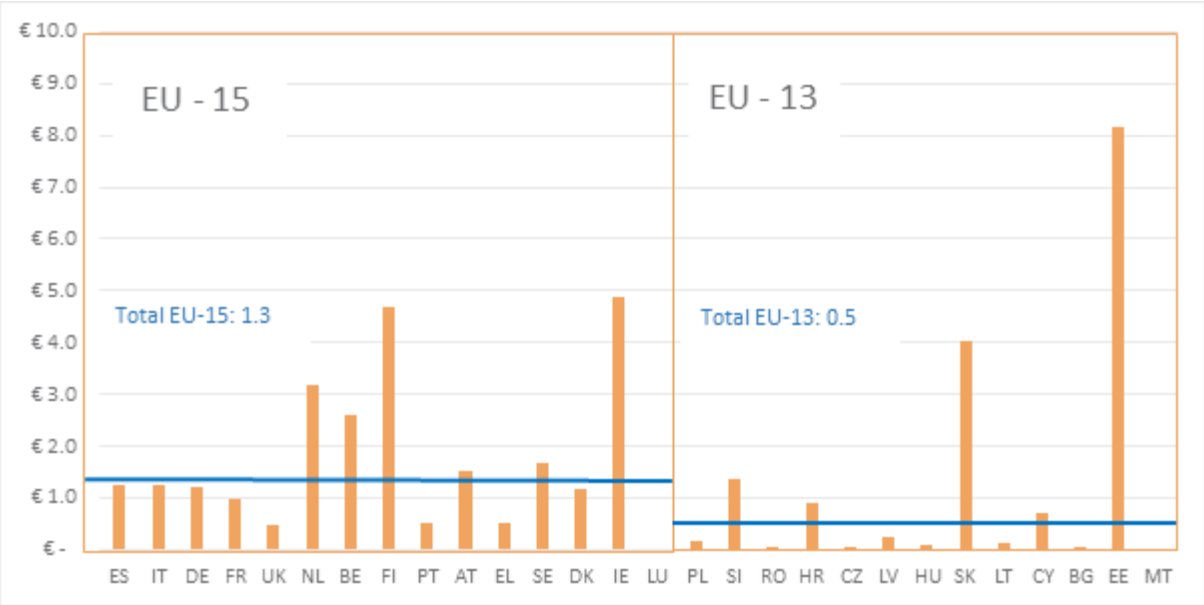


Figure 12: Distribution of funding per country from EU15 and EU13 in Calls 2014-2018 per capita

The normalised comparisons in Figures 10-12 provide an important perspective with respect to the overall performance of the various countries across Europe in the BBI JU portfolio, indicating that reference only 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 countries may report GERD in different ways and any conclusions drawn from these normalisations should be considered in the relevant context.

Regarding the level of participation of associated and third countries in proposals (Figure 13) and projects (Figure 14) indicates an upkeep of the strong mobilisation from countries such as Norway, Switzerland, Turkey and Israel and increased interest in the BBI JU initiative from a broader set of countries as Serbia, Iceland and The Former Yugoslav Republic of Macedonia. However, with respect to funding going to associated and third countries, the budget distribution is not fully aligned with the level of participation (Figure 15).

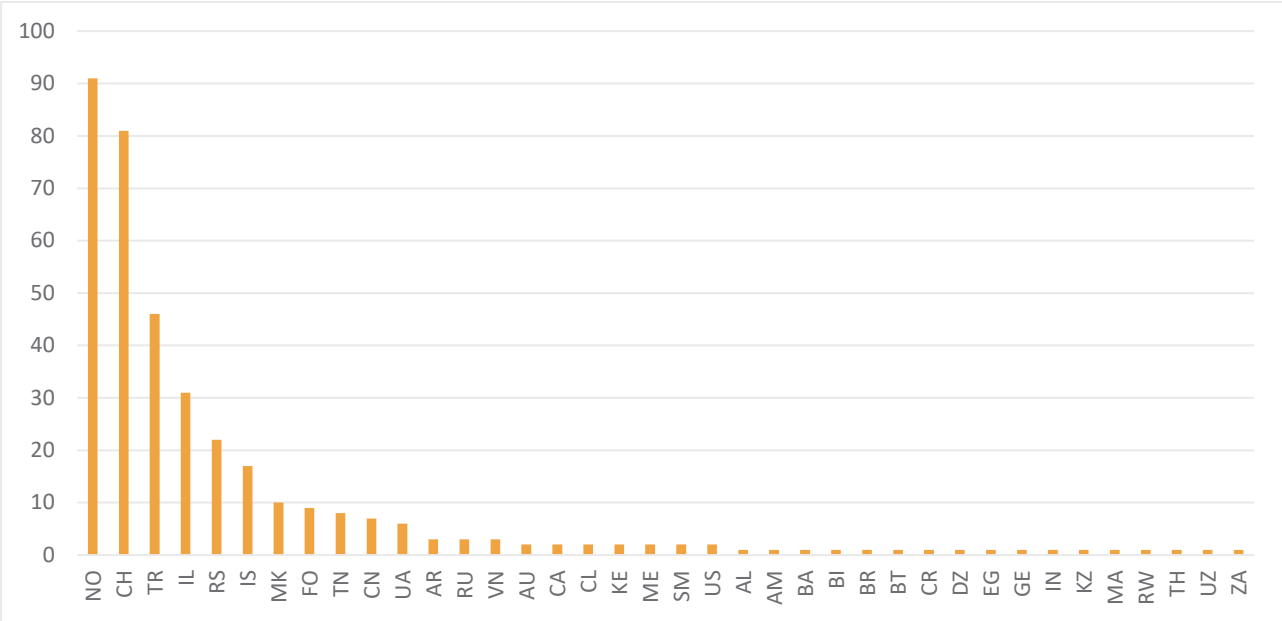


Figure 13 Distribution of applicants from associated and third countries, industrialised countries, and emerging economies and developing countries) in Calls 2014-2018 (the data for Call 2018 refers to retained proposals

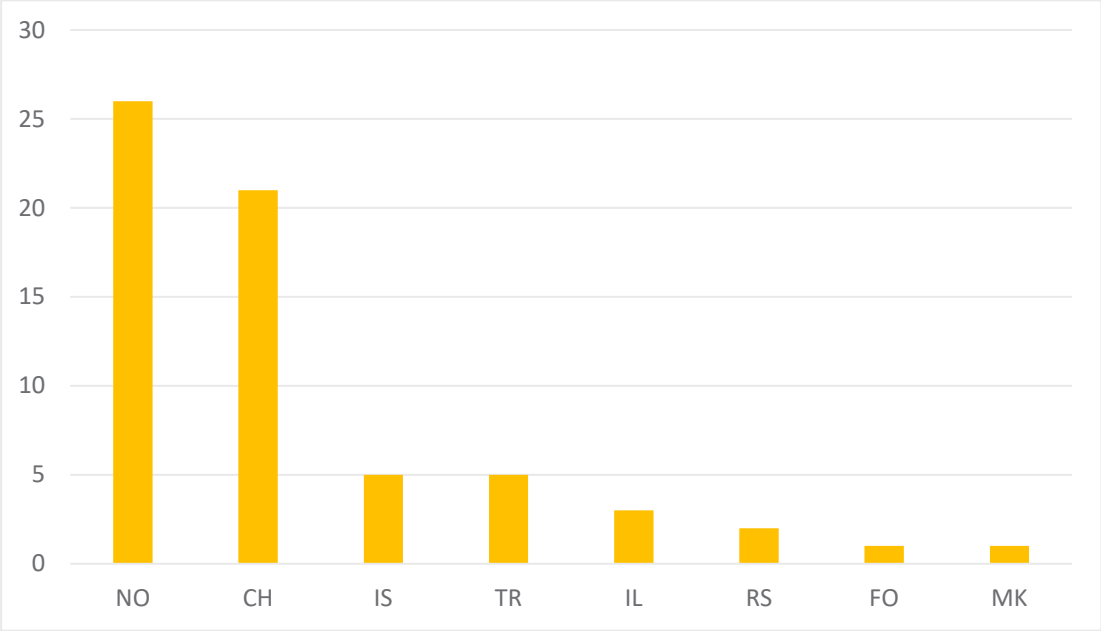


Figure 14: Distribution of beneficiaries from associated countries in Calls 2014-2018 (the data for Call 2018 refers to retained proposals)

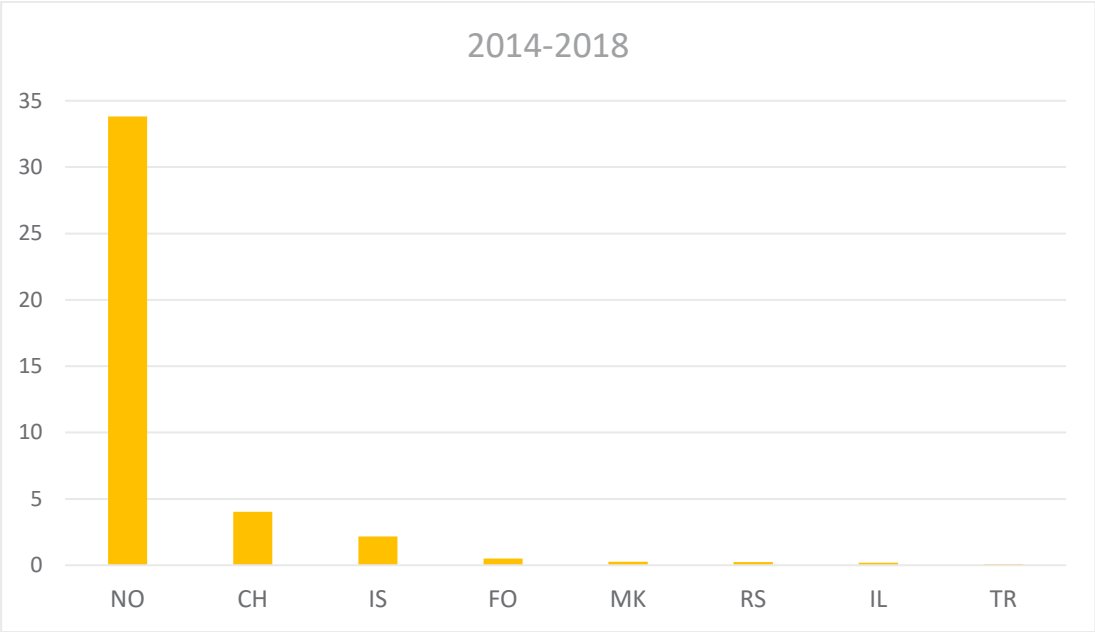


Figure 15: Grants (in EUR millions) per associated countries in Calls 2014-2018 (the data for Call 2018 refers to retained proposals)

In order to optimise the geographical distribution within the EU, BBI JU instigated its widening participation strategy that was developed together with 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 that were undertaken in 2018 focussed mainly on encouraging wider participation together with development of knowledge, know-how and partnerships, as well as through the mobilisation of regional stakeholders. Relevant actions are further detailed below.

FOCUS ON Central and Eastern Europe

During 2018, BBI JU participated in several national activities to leverage the engagement of stakeholders from underrepresented countries in Central and Eastern Europe:

- During the 3rd Conference on Circular Change Unfolding Circular Economy Roadmaps, organised in Kostanjevica na Krki and **Maribor, Slovenia** (9-10 May 2018), BBI JU participated in the panel discussion on 'Circular vs. Bio Based Economy'. This discussion examined the numerous opportunities for Europe, by explaining also the key role of BBI JU in unlocking the potential of the bio-based sector in the EU. The event highlighted the link between the circular

economy and the bio-based economy, and on creative industries as opportunities for development for Slovenia and Europe.

- Participation in the workshop 'Building a biomass innovation ecosystem in a circular bioeconomy in Poland', **Cracow, Poland** (7-8 June 2018). The workshop was organised by OECD and the Ministry of Science and Higher Education of Poland to discuss the availability of different types of biomass in Poland and their transformation, in the context of fostering the implementation of the circular bioeconomy and stimulating bio-industry in Poland. BBI JU addressed the possibilities for Polish companies to participate more actively in the bioeconomy sector.
- 'Food 2030', **Plovdiv, Bulgaria** (14-15 June 2018). The event was organised by the Bulgarian Presidency of the Council of the EU to discuss the role of research and innovation (R&I) as a driver of food systems transformation that can make food systems more sustainable, resilient, inclusive, diverse, and competitive. BBI JU participated as speaker in the session on 'Strengthening R&I alignment & investments through better governance', with a presentation on 'Leveraging investment and increased R&I impact through public-private collaboration'.
- LIGNOFLAG Ground-breaking ceremony in **Podari, Romania** (11 September 2018). The event set an important milestone for the implementation of the LIGNOFLAG project, a first-of-a-kind commercial flagship facility for lignocellulosic feedstock to ethanol conversion. Located in Podari, in the southwestern part of Romania, it will be the most technologically advanced bioethanol plant in Romania. It receives funding from BBI JU under the EU's Horizon 2020 research and innovation programme and it was one of the three flagship projects awarded under the Call 2015 of the BBI JU.BBI JU participated in the event by giving opening remarks.
- Participation in the VI European Bioeconomy Congress in **Lodz, Poland** (20-21 September 2018). The objective of the Congress was to give the opportunity for networking to Central and Eastern European bioregions, to support knowledge transfer between European regions, to increase industry involvement in local bioeconomy value chains as well as to increase participation in the European and national programmes supporting bioeconomy development. Participation at this event is linked to the letter of intention signed in 2016 between BBI JU, BIC and the Polish regions interested in developing their local bioeconomy capabilities, and represents a valuable opportunity for BBI JU to demonstrate its commitment with respect to Eastern European Member States.
- BBI JU participated in the '**Bratislava Slovakia** Bioeconomy Conference', a high level European meeting organised by the Ministry of Agriculture and Rural Development and National Agriculture and Food Centre and by the European Commission (17 October 2018 in Bratislava, Slovakia). The conference is part of the European Bioeconomy Strategy and Action Plan, and serves as an important input to the future orientation of the European Bioeconomy Strategy. BBI JU presented the potential for the bio-based industries by presenting a range of everyday bio-based products in a walking exhibition, accompanying four BBI JU projects that are an outstanding example of putting new technologies into practice. Flagship projects like BIOSKOH, EXILVA and FIRST2RUN, together with demonstration project PULP2VALUE were exhibiting their products and explaining their specific added-value to all the participants.

- On 23 November 2018 the Ministry of Agriculture and Rural Development of **Romania** and the Bio-based Industries Consortium hosted in **Bucharest** the roundtable 'Opportunities for jobs, growth and investment: Developing the Bioeconomy and the Bio-based industries sector in Romania'. The objective of this meeting was to present and discuss the potential of the bioeconomy in Romania and to debate the public policy framework needed for its development. The event aimed to show the potential of the bio-based industries across the value chains to secure investments in Romania and enable Romanian stakeholders to benefit from EU-funded projects. BBI JU presented the results as well as potential future opportunities for Romania within BBI JU, during the session dedicated to relevant developments for the bioeconomy/bio-based sector in Romania.

Furthermore, throughout the year BBI JU also participated at several Info Days, in countries underrepresented in the current portfolio. More details on all Info Days are presented in the section National Info Days below and in section 2.1.2 Outreach activities.

FOCUS ON MEDITERRANEAN AND SOUTHERN EUROPE

National and regional events provide the opportunity to local value chain stakeholders to become familiar with BBI JU programme and the potential funding opportunities. During 2018, BBI JU participated in the following events in Mediterranean and Southern European countries:

- ECOMONDO, **Rimini, Italy** (7 November 2018): Ecomondo is the leading Euro-Mediterranean green and circular economy expo. The event provided important networking opportunities and boosted the recognition of BBI JU as a key player in the development of the bio-based economy in the Mediterranean region. BBI JU participated in the event with a presentation on 'BBI JU's mission and support for the development of the bio-based industry sector in Europe' focussing on bio-based products derived from municipal solid waste feedstock. BBI JU also participated in the panel on 'Circular Bioeconomy: National Case Studies of Innovation Ecosystems', with a presentation on 'Other major initiatives launched in Europe: major flagships funded by the Bio-based Industries Joint Undertaking (BBI JU)'. The panel discussed the OECD BNCT project 'National Case Studies of Innovation Ecosystems', focussing on how to build value chains across the bio-based industry and the circular bioeconomy, bringing together and analysing key country case studies.
- IFIB 2018 (International Forum on Industrial Biotechnology and Bioeconomy), **Turin, Italy** (27 September 2018). The 8th edition of IFIB aimed at strengthening the bioeconomy network in the Euro-Mediterranean area and promoting new partnerships. The forum consisted of two days of debates and information exchanges on bioeconomy and biotechnology as providers of new resources for industries, with sessions and round tables on bio-based industries, agro-food, energy, and environment policies for industrial biotech. BBI JU participated in the panel on 'Financing the Bioeconomy', giving a presentation on BBI JU's impact in building a sustainable EU bio-based industry sector, and discussing the future challenges and priorities.

Some of the BBI JU projects, such as BioCannDo, BIOWAYS, GRACE, Demeter, Pilots4U, also attended the event.

- During 2018, BBI JU participated in the conference: 'The Greek Agriculture of Tomorrow' organised by the Municipality of **Chalkidona, Greece** (27 November 2018). The conference provided information to local stakeholders on the relevant aspects to be considered in the future of agriculture in Greece, such as new technologies in agriculture, forms of financing and the education of young farmers.
- International Development Lab on Endogenous Resources in the Wine Value Chain, **Anadia, Portugal** (19 June 2018): BBI JU presented opportunities to the participants during this international development lab that builds on an earlier Entrepreneurial Discovery Focus Group targeting the wine and vineyard value chain, in order to further develop business ideas in Portugal Centro region. National and international expertise and networks attended, and opportunities for funding were discussed.

NATIONAL INFO DAYS

In 2018, BBI JU participated in 12 national Info Days organised by EU MS and associated countries with a broad geographical coverage, including EU13 MS such as Lithuania, Czech Republic and Latvia and associated countries such as Israel. The main purpose of national Info Days is to ensure effective dissemination of information on the 2018 Call for proposals 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 2.1.2 Outreach activities.

EVOLUTION OF PARTICIPATION OF MS AND AC 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 2018 as compared with previous Calls. Figures 16 and 17 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, Greece). interestingly, the participation rates of EU13 countries increased for more than half them in Call 2018 as compared to 2017 (e.g. Croatia, Poland, Estonia, Bulgaria, Hungary, Slovakia, Czech Republic). However, at the level of the beneficiaries (absolute values), EU15 countries (Figure 18) appear to perform better than EU13 (Figure 19), rendering their overall success rates somewhat lower than those of EU15 applicants.

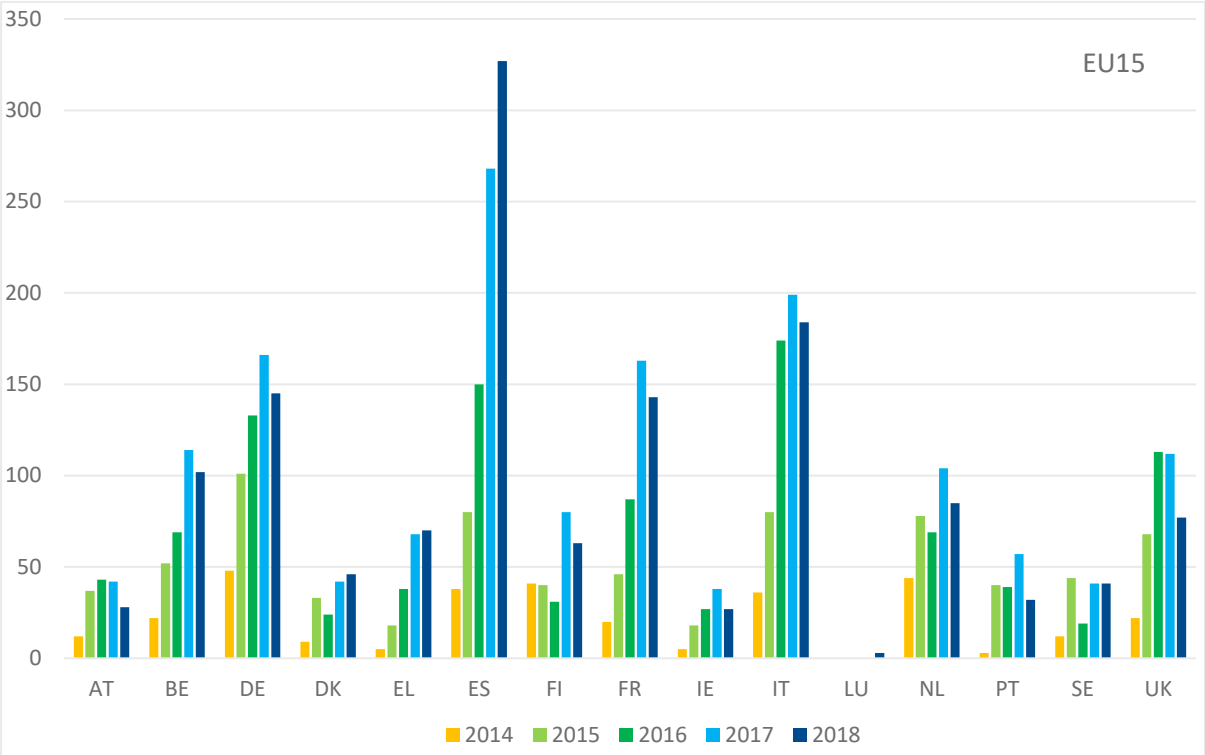


Figure 16: Distribution of applicants per country from EU15 in Calls 2014-2018

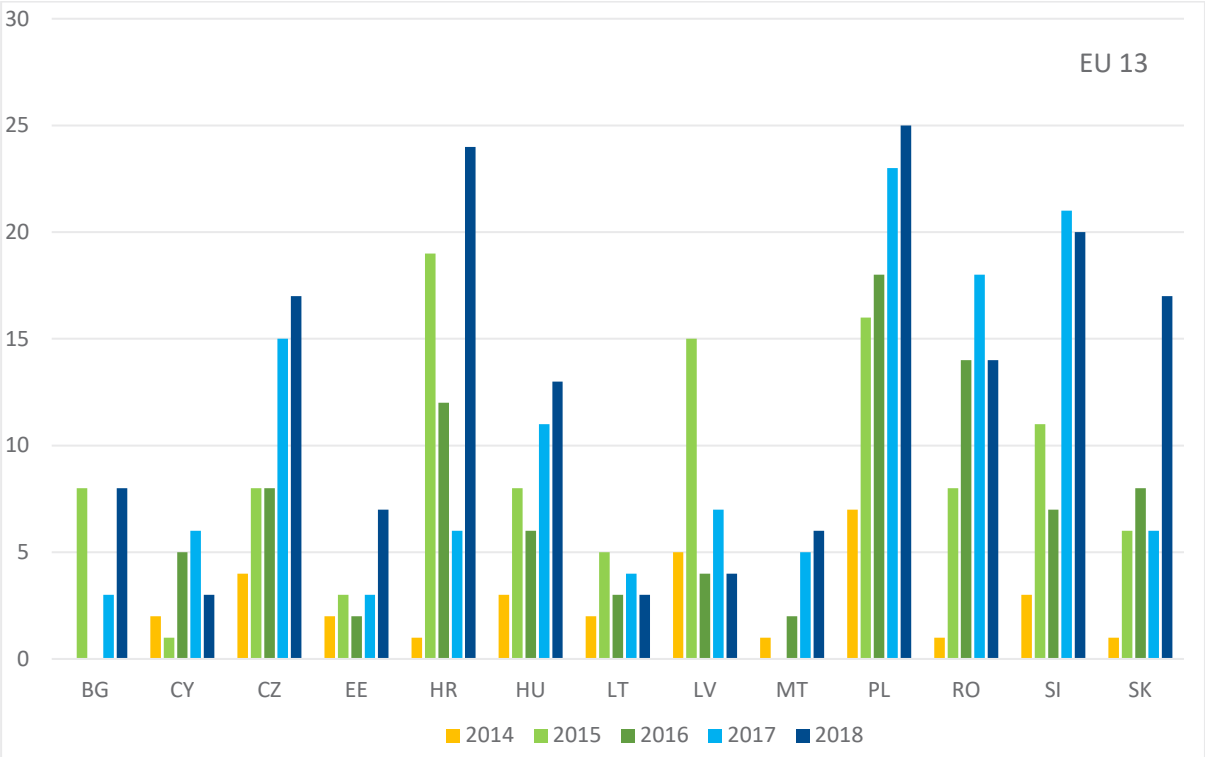


Figure 17: Distribution of applicants per country EU13 in Calls 2014-2018

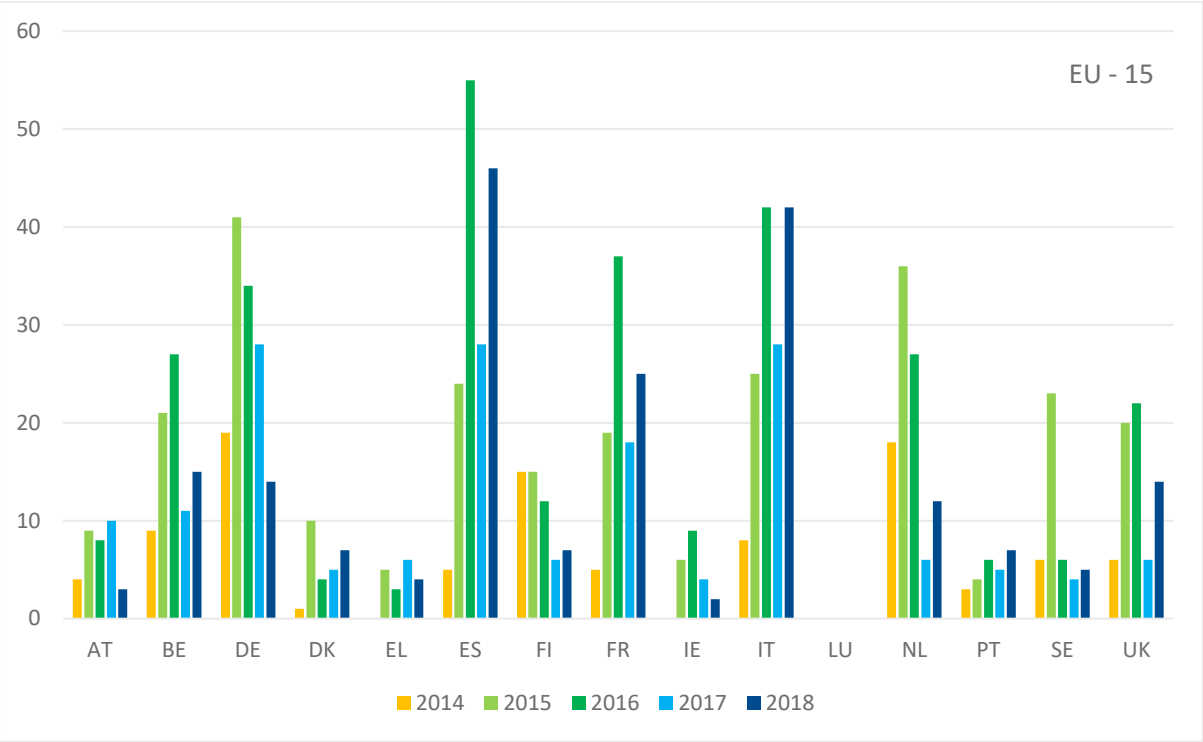


Figure 18: Distribution of beneficiaries per country from EU15 in Calls 2014-2017 and in proposals selected for funding in Call 2018

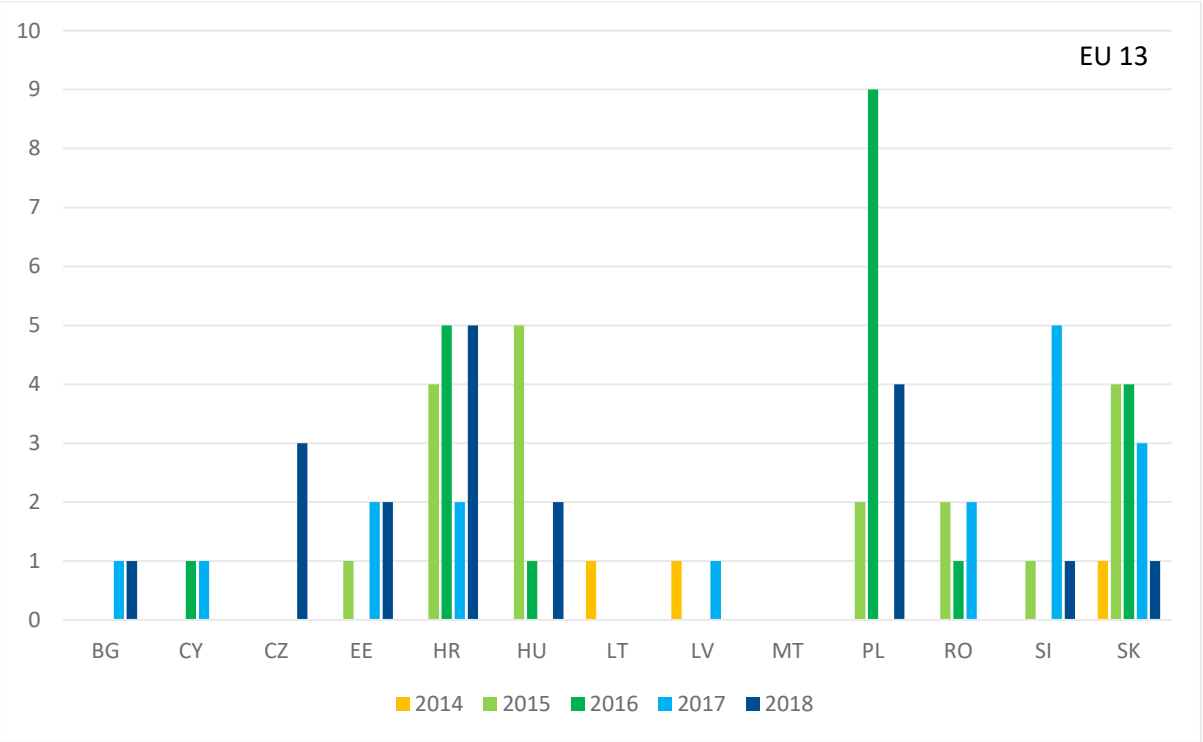


Figure 19: Distribution of beneficiaries per country from EU13 in Calls 2014-2017 and in proposals selected for funding in Call 2018

However, when looking at the evolution of the participation of EU15 and EU13 countries as a group (Figures 20 and 21 respectively) a continuous increase in EU13 applications since Call 2016 can be observed with a remarkable increase of 25% from Calls 2017 to 2018 in particular. This is a testament to 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 described previously.

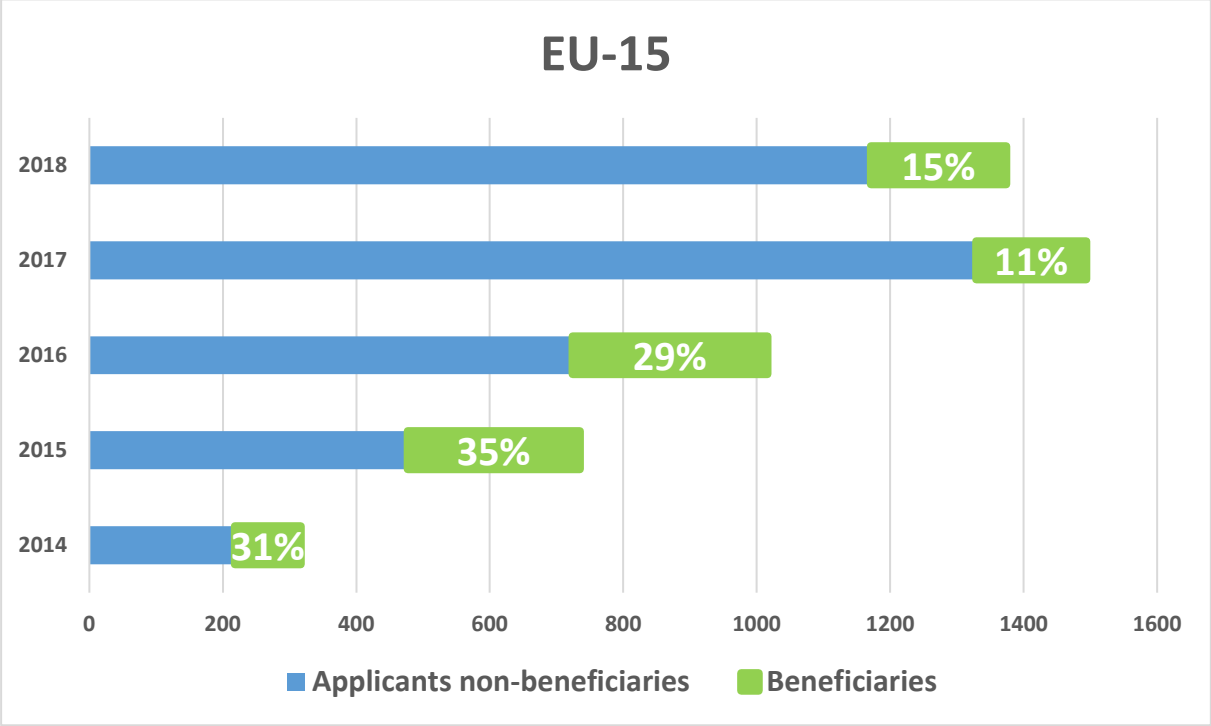


Figure 20: Distribution of applicants and beneficiaries from EU15 in Calls 2014-2017 and in proposals selected for funding in Call 2018

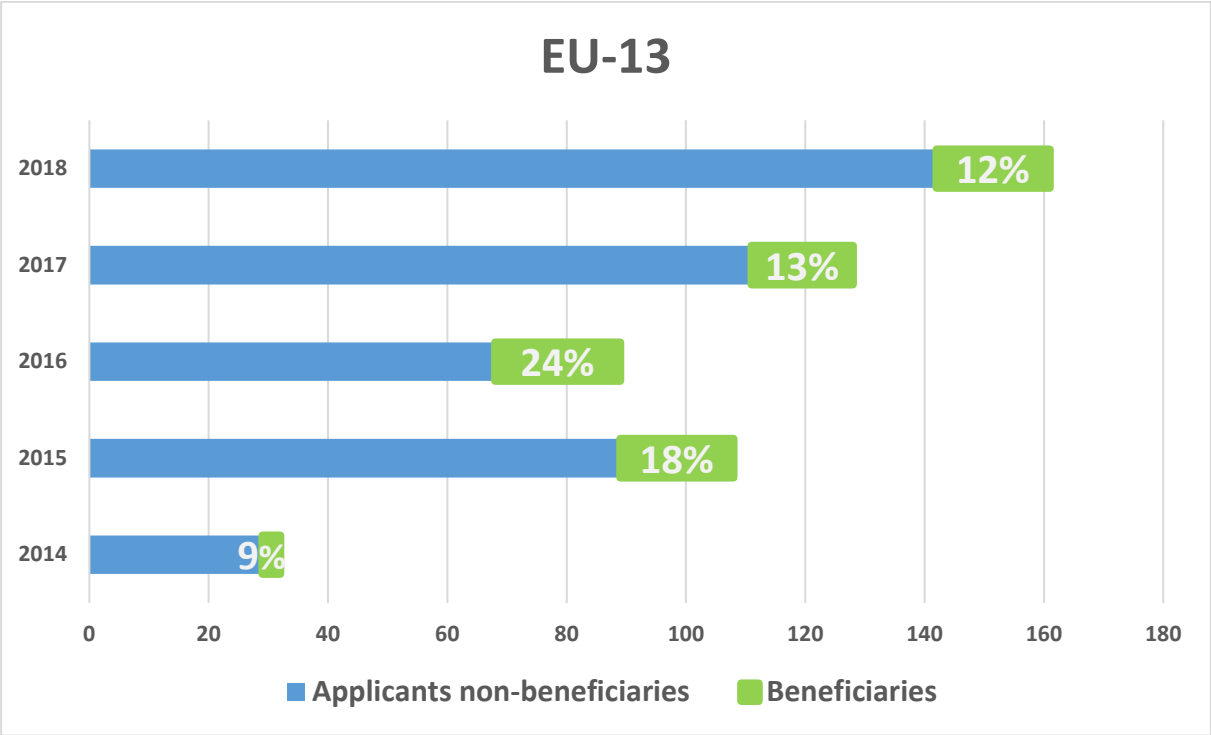


Figure 21: Distribution of applicants and beneficiaries from EU13 in Calls 2014-2017 and in proposals selected for funding in Call 2018

TYPES OF PARTICIPANTS IN BBI JU PROJECTS

Within the 82 funded projects from BBI JU Calls 2014, 2015, 2016 and 2017, as well as the 19 projects currently in GAP from Call 2018, 714 beneficiaries represent the private-for-profit sector, corresponding to about 61.1% of all BBI JU beneficiaries. The BBI JU contribution to the private-for-profit sector in those projects accounts for EUR 410 732 493.63, equivalent to 68.2% of the total BBI JU funding allocated (Table 4). In Call 2018, a good balance of industrial participation was achieved, representing 61% of the total number of participants in retained proposals. It is important to highlight that, in line with the overall high SME participation in the BBI JU portfolio, 54% of the private-for profit entities are SMEs (Figure 22) and 27% are large industry. This further confirms the pivotal role SMEs hold in the deployment of bio-based industries. The remaining 19% are represented by private-for profit legal entities with a currently undefined distinction between SMEs or large industry[38]. With respect to funding, around 68% is allocated to private-for-profit companies, of which 39% corresponds to SME funding (Figure 23) and 46% to large industry funding.

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 19.8% of the total, together with higher

[38] As per data 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".

education establishments accounting for 12.7%. So altogether research organisations and higher education establishments represent a share of around 33% of the total. 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	714	61.1%	410,732,493.63	68.2%
Research organisations	232	19.8%	102,775,745.53	17.1%
Higher education establishments	149	12.7%	67,987,786.4	11.3%
Others	65	5.6%	18,927,388.45	3.1%
Public body	9	0.8%	1,410,414	0.2%
Total	1169	100%	601,833,828.01	100%

*Table 4: Calls 2014-2018 number/type of participants and attribution of BBI JU funding in selected proposals. *Call 2018 still under GAP.*

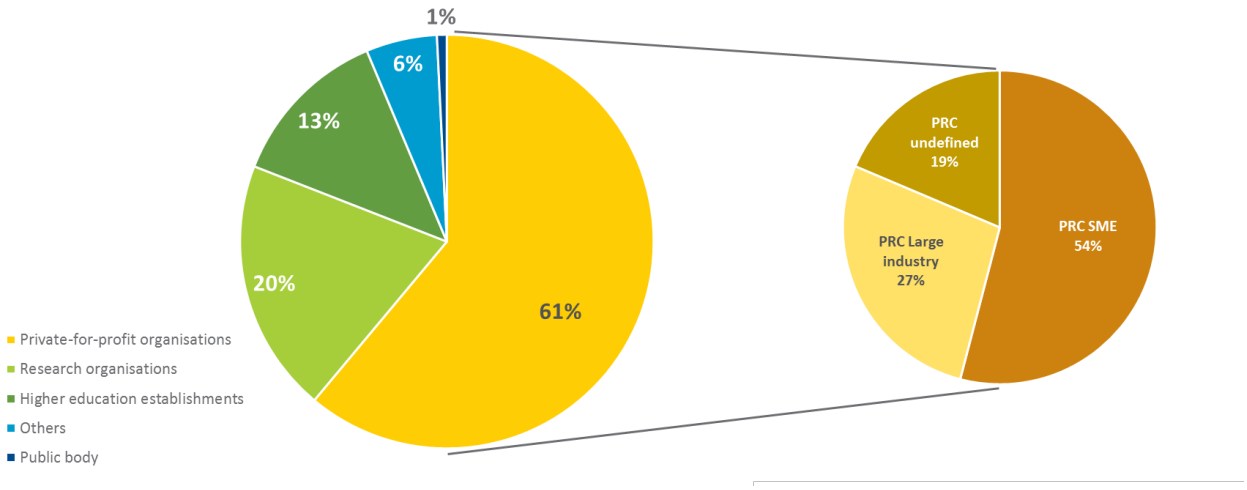


Figure 22: Calls 2014-2018 number/type of participants in selected proposals.

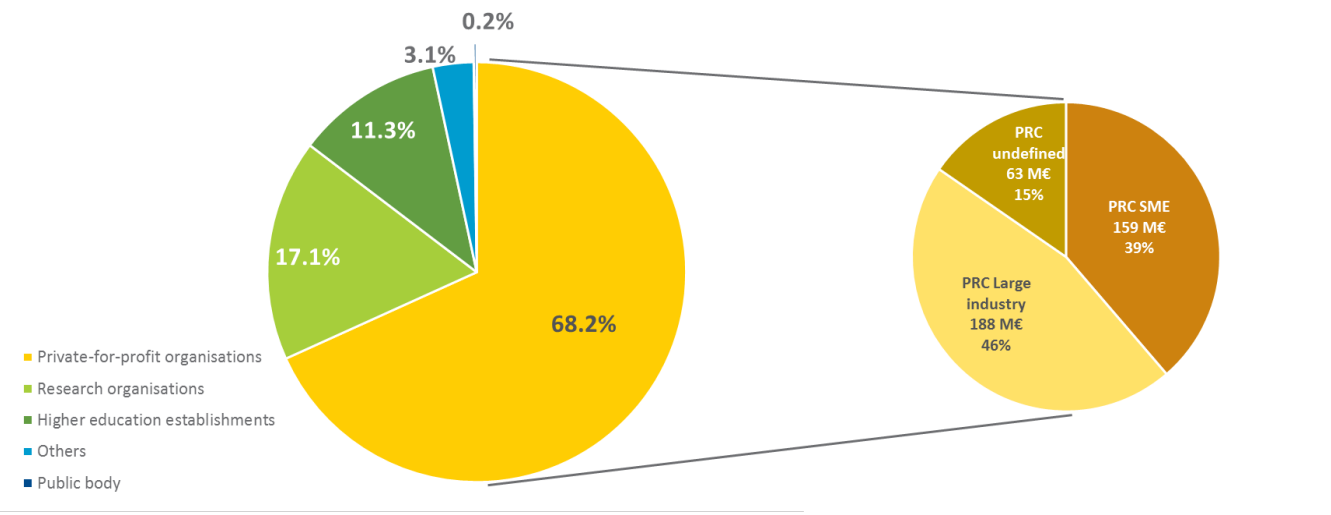


Figure 23: Calls 2014-2017 BBI JU funding/type of participants in selected proposals.
** For Call 2018 the BBI JU grant will be allocated to beneficiaries upon the finalisation of the GAP process*

Similar patterns of participation are observed at the level of submission. The private-for-profit organisations represent about 55.2% of the total applications requesting 52.4% of the total budget (Table 5). Nevertheless, the type of applicants remains diverse with an important representation from research organisations (about 20%) and higher education establishments (about 19%) representing respectively 18.4% and 18.2% of requested funding (Figure 24).

Type of applications	Number of applications	Number of applications vs total applications	Requested grant (in EUR)	Funding requested vs total funding (%)
Private-for-profit organisations	3218	55.2%	1,655,464,889.73	52.4%
Research organisations	1151	19.7%	582,068,700.19	18.4%
Higher education establishments	1112	19.1%	573,760,379.79	18.2%
Others	294	5.0%	320,523,741.45	10.1%
Public body	54	0.9%	26,932,159.88	0.9%

Total	5829	100%	3,158,749,871.04	100%

Table 5: Calls 2014-2018 number/type of participants and attribution of BBI JU funding in submitted proposals. [39]

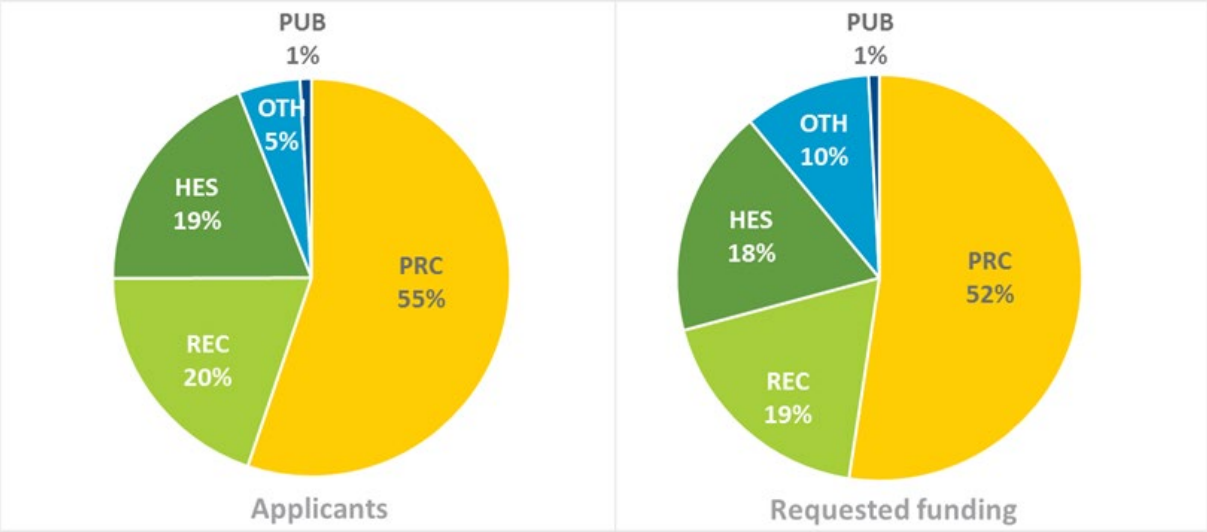


Figure 24: Calls 2014-2018 applicants and requested funding/type of applicants.

SMES PARTICIPATING IN BBI JU CALLS AND PROJECTS

In the context of the European bio-based industries, SMEs are key players in the consolidation and further expansion of this very fragmented sector. SMEs are important drivers for innovation and technology development. In addition, they are essential in providing valuable support to large industrial players through the development of specific services, technologies or products, often in close cooperation with Research and Technology Organisations (RTOs). Bioreactor design, process optimisation, new biocatalysts for biomass processing are some examples of areas where SMEs are deeply involved and which are of great relevance for the bio-based industries. At the same time, BBI JU offers SMEs a unique opportunity, via their participation in projects (particularly IAs), to scale-up their technologies while securing access to markets through their collaboration with large industry and end users. This open innovation approach, consequently, helps SMEs not only to expand their network and achieve greater recognition in their respective sectors but also to move their technologies or products to a commercial scale more quickly and efficiently.

Given the pivotal role of SMEs in this sector, the updated SIRA and the AWP 2018 set a clear target for their participation in BBI JU projects, which is also in line with the Horizon 2020 objective of at least 20% of allocated funds to SMEs.

[39] The table analyses applications, therefore non-unique.

SME applications represent 33% of all applications (Figure 25) in Calls 2014-2018, whereas the SME participation is 41% in all retained proposals up to now, demonstrating the efficiency of SME participation in the BBI JU programme. This level of participation corresponds to an overall allocated funding of 35% as well as an overall success rate of 24%. Notably, the total funding allocated to SMEs has increased by 30% as compared to the total SME funding that was reported in 2017, exceeding the target mentioned in the SIRA 2017. This is mainly due to the result of Call 2018, in which a flagship led by an SME was retained for funding.

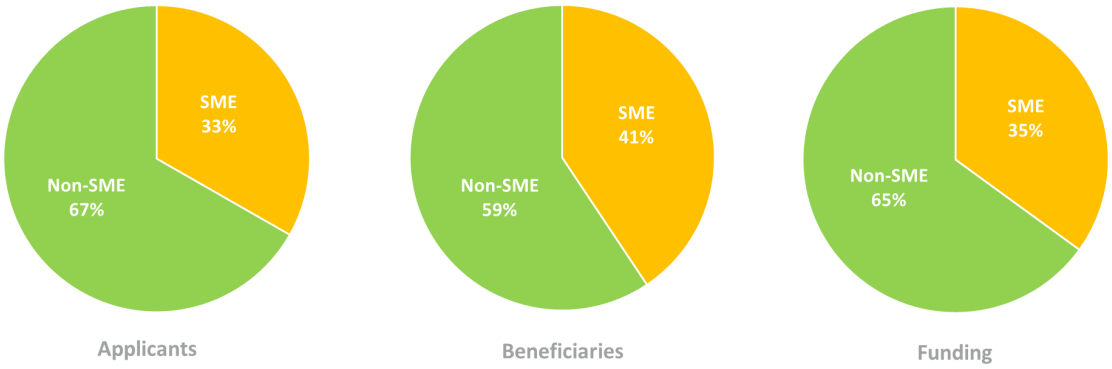


Figure 25: Calls 2014-2018 share of SME unique applicants, beneficiaries and share of funding (the data for Call 2018 refers to retained proposals)

Figure 26 shows the total SME participation in Horizon 2020 programmes in comparison with SME participation in BBI JU projects to date. 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 2018) in the five ongoing Calls. These figures demonstrate that SMEs play a vital role in the bio-based economy and BBI JU represents a valuable instrument for SME-driven innovation.

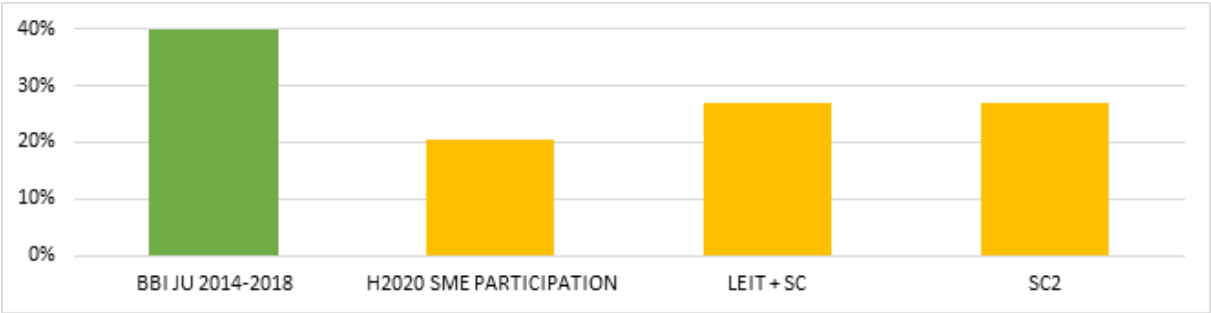


Figure 26: SME participation in BBI JU projects (Call 2014-2017) and retained proposals (Call 2018) in comparison with total Horizon 2020 SME participation as well as SME participation in SC and LEIT combined and SC2[40].

[40] Source for Horizon 2020 SME participation: Horizon 2020 dashboard queried on 23/12/2018.

http://ec.europa.eu/research/participants/portal/desktop/en/projectresults/index.html

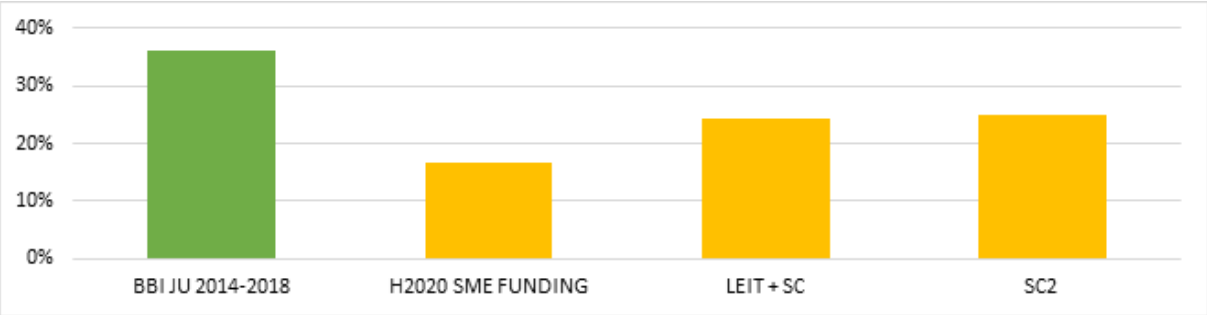


Figure 27: SME funding in BBI JU projects (Call 2014-2017) and retained proposals (Call 2018) in comparison with total Horizon 2020 SME funding as well as SME funding in SC2 and LEIT combined and SC2[41].

The wide geographical distribution of SMEs participating in BBI JU projects confirms the mobilisation effect generated by the BBI JU programme: SMEs participating in BBI JU projects are from 25 EU Member States and six associated countries. More details on the BBI JU SME landscape will be available in a dedicated report currently under preparation.

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 2020[42]:

- 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 6 shows data on the distribution of women and men in the different groups comprising BBI JU advisory bodies, expert evaluators (Call 2018) and project coordinators from all ongoing projects. The data demonstrates that gender balance is at the expected levels with respect to all BBI JU groups, with the exception of its Governing Board, where BBI JU has no influence.

Name of group	Total number of members	Percentage of women	Percentage of men

[41] 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

[42] https://ec.europa.eu/programmes/horizon2020/en/h2020-section/promoting-gender-equality-research-and-innovation

BBI JU Governing Board	10	20%	80%
Scientific Committee	15	60%	40%
States Representatives Group	34	59%	41%
BBI JU Programme Office	23	61%	39%
Expert-Evaluators Call 2018	100	48%	52%
Project Coordinators	82	45%	55%

Table 6: 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 asked to report on the gender of researchers and other workforce members involved in the project. Based on data collated up to 31 December 2018, 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 2017[43] establishes eight specific BBI JU KPIs and their targets for 2020 (Table 7). These KPIs refer to both BBI JU project portfolio outputs (KPIs 3 and 7) and outcomes (KPIs 1, 2, 4, 5, 6 and 8). The SIRA also includes overall objectives for the broader socio-economic and environmental impact of the whole sector of the bio-based industries in Europe.

KPIs numbering and definition	**KPI target by 2020**
KPI 1 - New cross-sector interconnections in BBI JU projects	36
KPI 2 - New bio-based value chains created with BBI JU projects	10
KPI 3 - Number of Grant Agreements signed between BBI JU and the project consortia	200
KPI 4 - New bio-based building blocks	5

43 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 by 2020
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 joint undertaking 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 7: BBI JU specific KPIs and their targets by 2020 as established in the SIRA 2017.

KPI 3 and KPI 7, respectively the number of BBI JU Grant Agreements and number of BBI JU flagship grant agreements, are figures reflecting the status of the BBI JU project portfolio as reported at the end of 2018. Their monitoring is based on the statistics from the Calls' results. KPIs 1, 2, 4, 5, 6 and 8 refer to the expected results by 2020 and their results are provided by project coordinators through an annual survey of each BBI JU ongoing project, as described hereafter.

With this aim, a questionnaire was developed to gather annual information about the expected results of the BBI JU KPIs and the expected socio-economic and environmental impact of BBI JU projects by 2020, or by the end of the project (the earliest date). This questionnaire gathers data on both quantitative and qualitative aspects of BBI JU KPIs. It has been updated after various consultations with BIC, EC and the BBI JU advisory bodies, and this year included some new aspects in order to clarify certain definitions and provide more information regarding the aspects of novelty. A new section on projects' contributions to the UN Sustainable Development Goals (SDGs) was also added.

The interpretation of the results provided in this report is based on a critical analysis of the expected results reported by the coordinators against the definitions and targets set in the SIRA, as well as from the discussions with and comments from 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. It also takes into account the conclusions of the interim evaluation of BBI JU carried out by the European Commission and the review of the EU Bioeconomy Strategy 2012. A methodology for the validation of the actual results of the finalised BBI JU projects is under development and will be established in 2019, by the end of which 24 projects are expected to be finalized.

The 2018 questionnaire was distributed to all 82 BBI JU project coordinators in October 2018. These projects resulted from the Calls of the first four years (2014 -2017), out of a total of seven years. It corresponds to EUR 500 million grant for a total operational budget of EUR 945 million.

The following analysis is based on the feedback received from 70 projects (85.4% response rate)[44]. For the purpose of the interpretation, the KPIs are grouped by area of impact contribution. KPIs 1-2 and 3 are indicators of the contribution to the structuring and mobilising effect. KPIs 4-5-6 and 7 are

[44] The present analysis was made with the information available on 30 November, when 70 projects had sent their completed questionnaires.

indicators of the contribution to market uptake. Finally, KPI 8 is an indicator of the contribution to the scientific and technological progress.

The present section offers an overview of the main conclusions extracted from the expected results and the impact reported by the projects in 2018. A more comprehensive analysis on the achievements and impact of BBI JU projects will be further developed in a dedicated report.

CONTRIBUTION TO THE STRUCTURING AND MOBILISING EFFECT: KPIs 1-2-3:

Overall, the results of the survey confirm the very positive trend observed in previous years, demonstrating that the expected results for all but one of the KPIs (KPI 3) are already exceeding the 2020 SIRA targets (Figure 28). KPI 3 refers to the number of signed Grant Agreements (GAs), which amounts to 82 versus a target of 200 by 2020. This value is the direct consequence of strategic choices at programming level and directly linked with budget allocation per type of action.

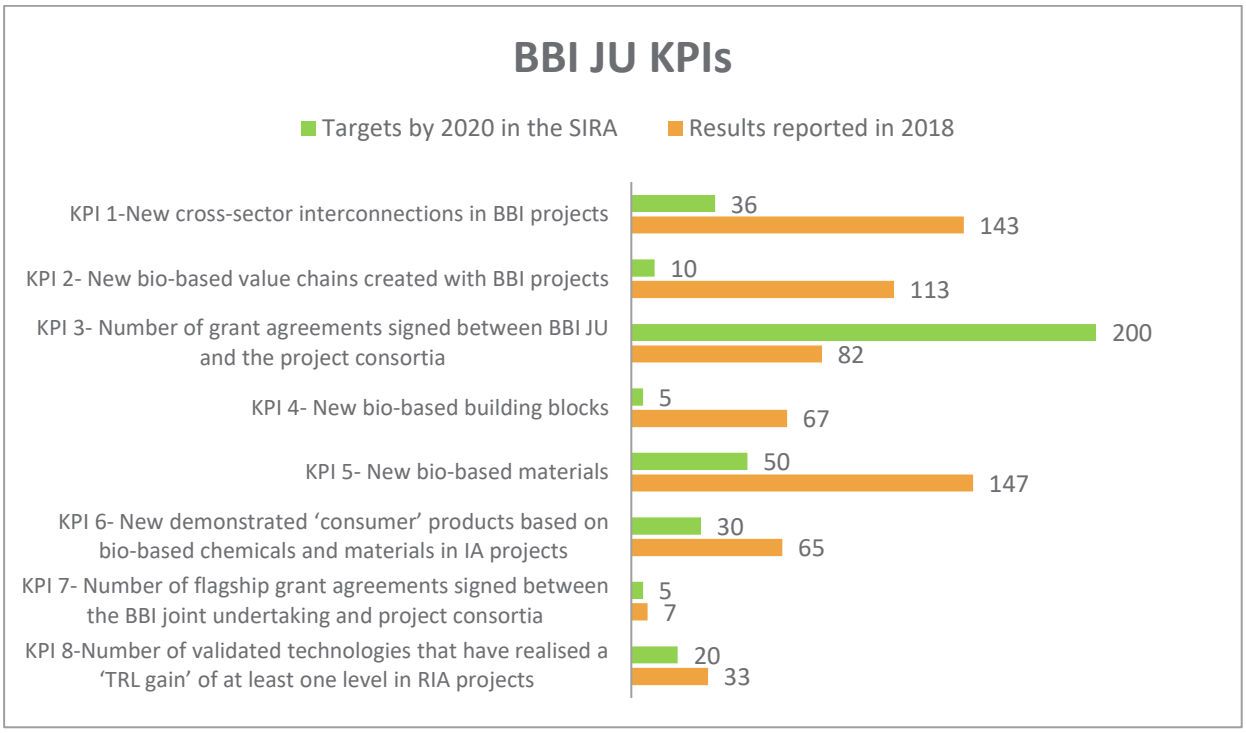


Figure 28: KPIs' forecast results by 2020: expected results reported by projects' coordinators in 2018 versus targets in the SIRA.

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 business 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 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 3. End users.

Reported expected results

BBI JU ongoing projects report expecting 143 new cross-sector interconnections by 2020, almost 4 times the target of 36 in the SIRA 2017.

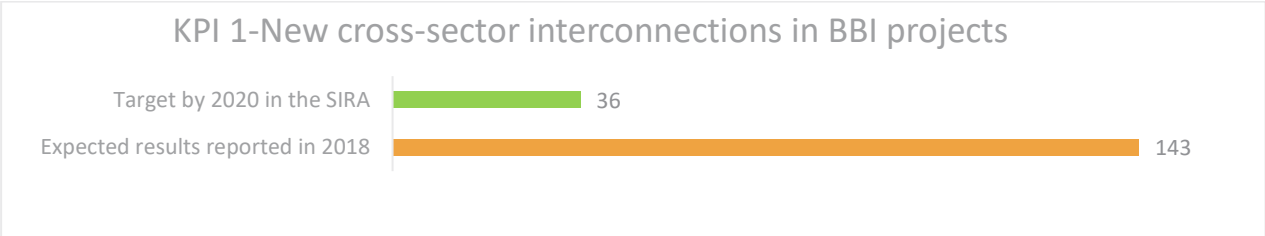


Figure 29: KPI 1-Expected New cross-sector interconnections in BBI projects

The higher ratio of interconnections per project is exhibited in FLAGs with an average of 4.2 new interconnections per project, followed by 2.8 for DEMOs and 1.9 for RIAs. It is the direct consequence of the obligation for IAs to cover the whole value chain.

Figures 30, 31, and 32 show the number of expected new interconnections reported involving different sectors in the three segments of the bio-based industries value chain. Those results show how diversified the actors of the bio-based value chains are. So, as already previously highlighted, the expected structuring effect in the bio-based industries and the mobilisation of the key relevant actors across the value chain have triggered a much more rapid creation of cross-sector interconnections than initially foreseen, which explains to a large extent why the expected new cross-sector interconnections outnumber the initial objectives in the SIRA (36 cross-sector interconnections by 2020).

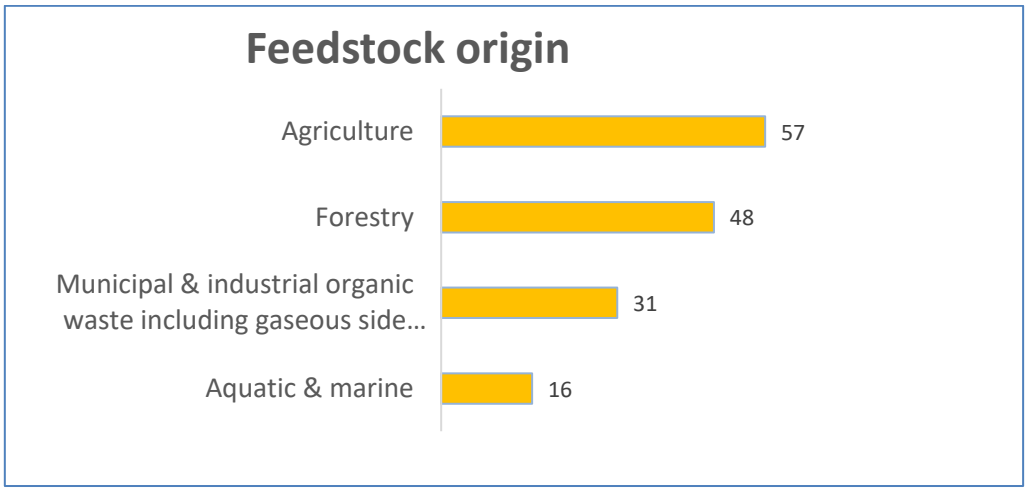


Figure 30: Number of expected new interconnections reported that involve sectors related to different origins of feedstock

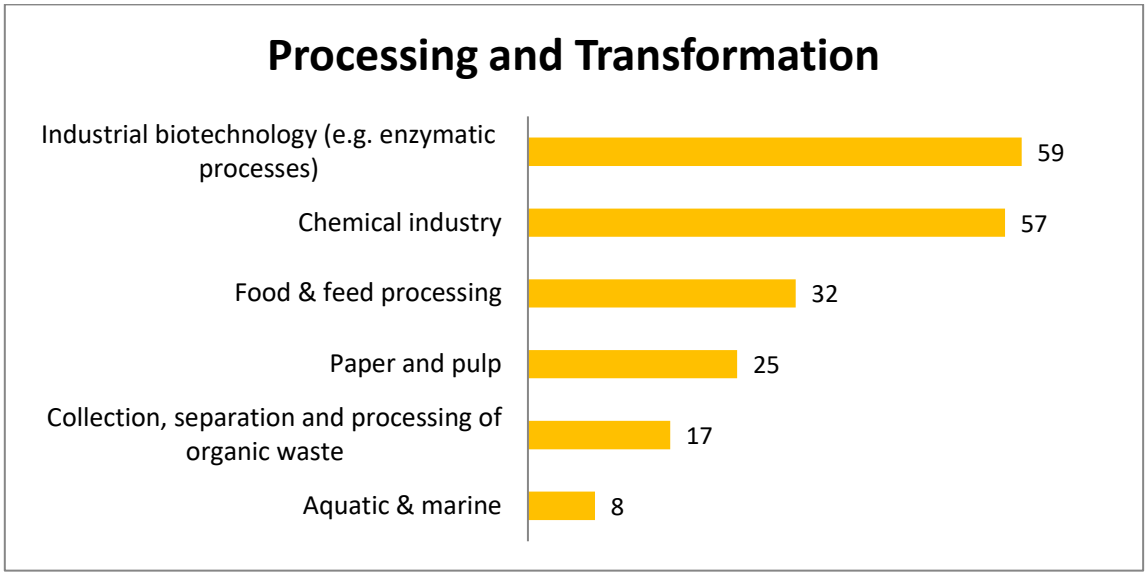


Figure 31: Number of expected new interconnections reported that involve different sectors related to processing and transformation

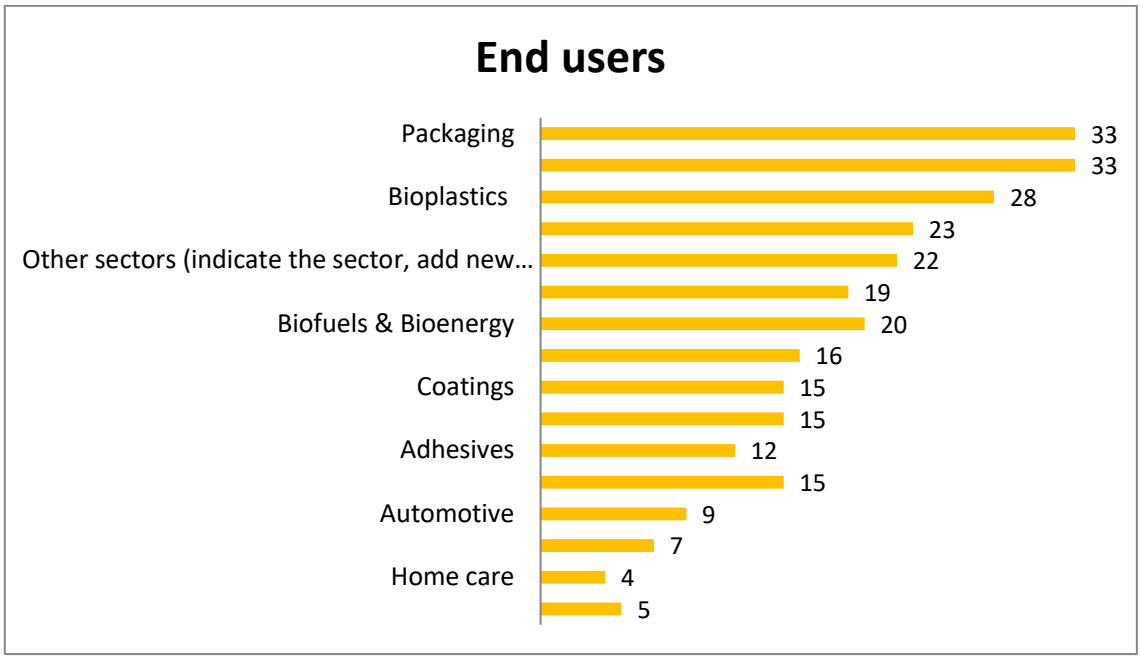


Figure 32: Number of new interconnections that involve different end users' sectors

Table 8 shows a matrix with the expected interconnections between feedstock origin and end users. The colour grading indicates the frequency of interconnections reported across sectors. Agriculture and forestry show the highest number of interconnections with end users. Nearly all the end users (from packaging to construction, from personal care to chemicals for agriculture) represent the *natural* target of the traditional sectors that use agriculture and forestry biomass as feedstock. The only exceptions are in electronics, pharmaceuticals and home care, as no interconnection has yet emerged.

Interestingly, new expected interconnections have now been shaped for the aquatic sector, evidencing the emerging of new avenues, linking for example the aquatic feedstock to the textile and bioplastic end users. These new emerging innovative interconnections reflect the broadened scope of the SIRA 2017.

Colours Code:	from 10 to 13 from 5 to 9 from 2 to 4 1			
	Agriculture	Forestry	Aquatic	Municipal & industrial organic waste including gaseous side streams (CO2)
Packaging	11	12	2	7
Medical & healthcare	4	5	4	3
Personal care & cosmetics	8	4	3	1
Home care	2	0	0	0
Pharmaceutical	0	0	2	2
Food and feed ingredients	12	7	6	5
Textile	4	4	1	3
Automotive	5	8	0	2
Construction	6	8	0	1
Chemicals for agriculture	7	5	0	5
Equipment producers & designers	4	6	2	5
Adhesives	4	7	1	4
Coatings	2	7	0	2
Electronics	0	5	0	1
Biofuels & Bioenergy	6	6	0	3
Bioplastics	8	8	1	5
Other sectors	4	5	1	3

Table 8: Matrix showing expected interconnections between feedstocks of different origin and end users.

Examples of new cross-sector interconnections

- Agriculture and home care: the DEMO project Funguschain uses fungal residues to produce antimicrobials/antioxidants for household cleaning products and other applications; the RIA project CARBOSURF aims at producing, among other things, home care products from agricultural residues;

- Forestry sectors and automotive sector: the SmartLi RIA project has established new interconnections between the resin and biocomposite producers and the automotive-machinery sector, including equipment; LIBRE, another RIA project, uses lignin from trees as a precursor material for carbon fibre which can be used in the automotive interiors and panels;

- Aquatic sector and textile: the RIA project MACROCASCADE aims at establishing a portfolio of new applications from seaweed, including nanoparticles and textiles. Currently, no such products exist in those segments;

- Municipal organic waste and the chemical sector for agriculture (fertilisers): The DEMO project EMBRACED, where the new feedstock is the organic fraction of post-consumers absorbent hygiene products waste, encompasses new technologies towards the production of polymers for medical applications based on bio-based polyhydroxybutyrate (PHB).

KPI 2- New bio-based value chains created with BBI JU projects

This indicator monitors the number of new value chains (from raw material 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). The new value chains are economically viable and fulfil all relevant sustainability criteria. Each of the value chains 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 between 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 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 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 CO_2 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 expected results

Projects expect to create **113 new bio-based value chains** by 2020**.** These achievements go substantially beyond the initial expectations. SIRA originally defined a target of 10 novel bio-based value chains. These figures signal a systemic change in the bio-based sector that, along with the mobilisation of actors and the structuring effect previously analysed, result in a much higher number of bio-based value chains than was initially expected.

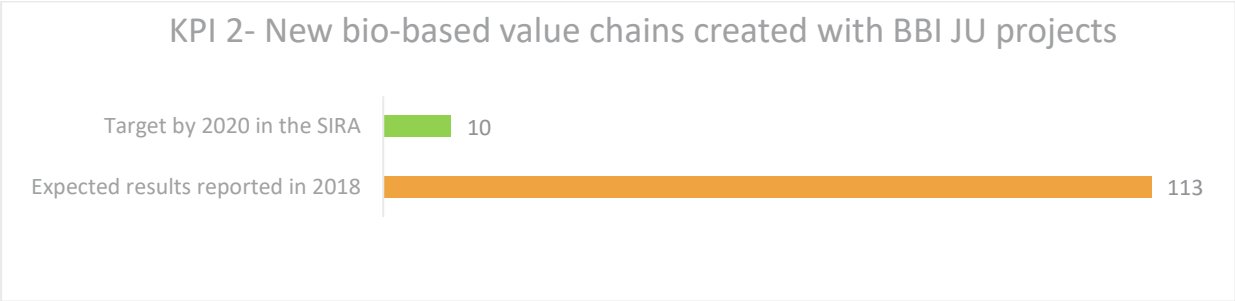


Figure 33: KPI 2- New bio-based value chains expected to be created with BBI JU projects

When investigating the origin of the feedstock (SO1) for the reported new value chains, the prevalence of agri-based feedstock, organic residues and forest-based feedstock can be observed (Figure 34). In addition, the increasing importance of the aquatic feedstock in feeding the new bio-based value chains is evident, corresponding to 12% of the new bio-based value chains.

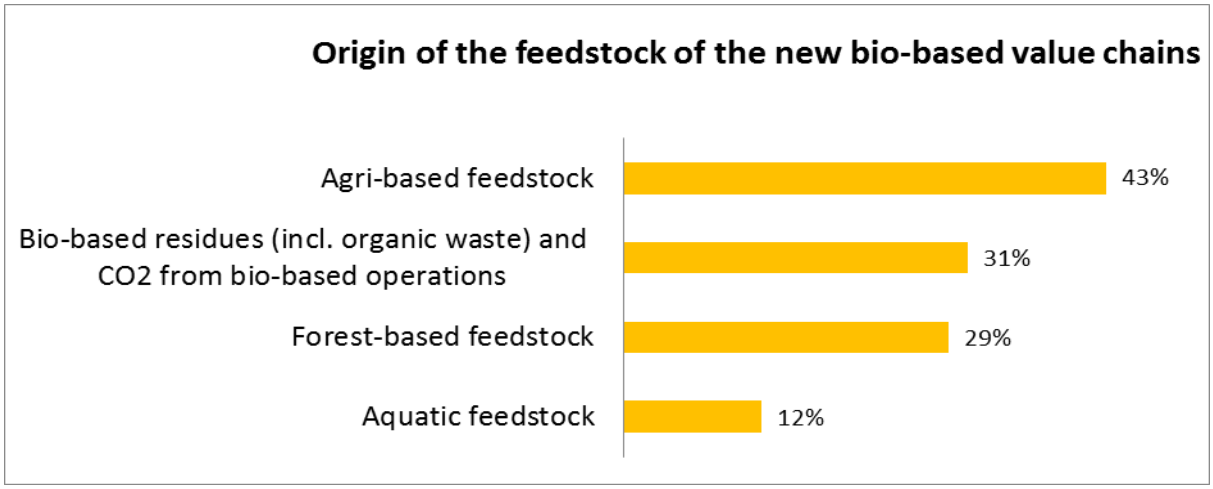


Figure 34: Percentage of the reported expected new value chains indicating different origin of feedstock (SO1).

These expected achievements go substantially beyond the initial expectations. SIRA originally defined a target of 10 novel bio-based value chains. These figures signal a systemic change in the bio-based sector that, along with the mobilisation of actors and the structuring effect, result in a much higher number of bio-based value chains than initially expected. Originally the model was based on well-identified linear and isolated value chains each using different feedstock. The reality we can see in current BBI JU projects is that new value chains are much more interconnected. Figure 35 shows the example of the agri-based value chains reported by BBI JU projects. Each line in the map indicates a single project with a distinct colour code depending on the type of action. These interconnected value chains arise from the links between various types of agri-based feedstock and different processing and biorefining technologies, which transform them into a wide variety of bio-based chemical building blocks, materials and consumer products for a diverse range of market sectors, thereby producing a multiplication of new bio-based value chains.

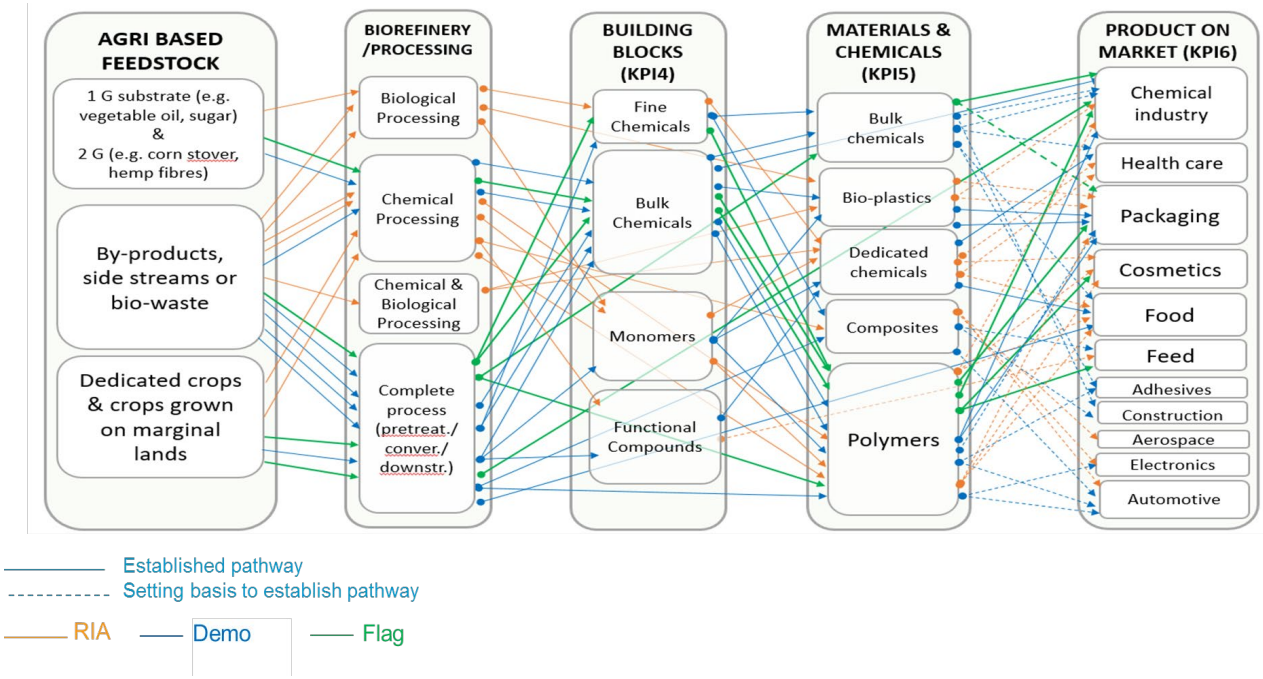


Figure 35 Example of agri-based value chains in BBI JU projects, showing the multiple links between feedstock, processing and bio-based building blocks (KPI 4), materials (KPI 5) and consumer products (KPI 6)

Figure 36 shows the percentage of new bio-based value chains demonstrating a specific aspect of novelty. 71% of new value chains are expected to deliver new markets or products, 55% to use a brand new technology, 50% to deploy a combination of several existing technologies. 54.% of the new value chains will mobilise a new source of feedstock and 41% will adopt a new business model.

Actors and stakeholders throughout all segments of the value chain (primary producers, processing and end applications) are engaged in shaping business models and industrial cooperation which did not exist before, providing evidence of a structuring effect and systemic change in the sector.

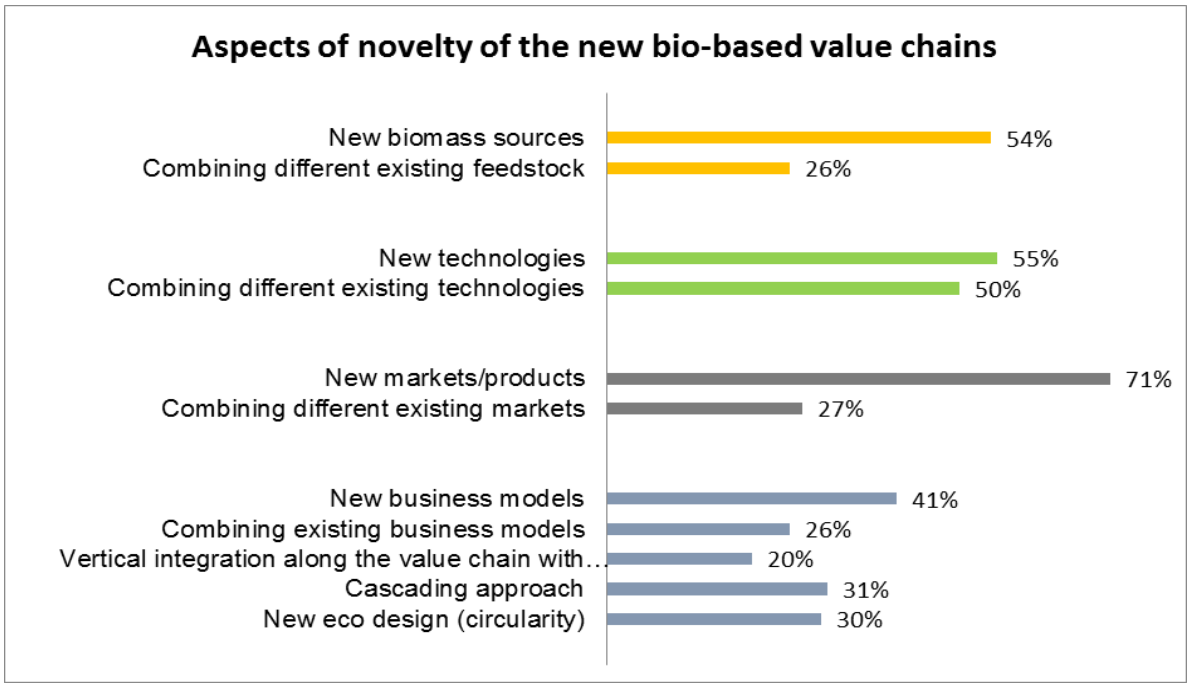


Figure 36: Percentage of the expected new bio-based value chains reporting a specific aspect of novelty

Examples of new bio-based value chains

The AgriChemWhey flagship project will use whey permeate and delactosed whey permeate, by-products of dairy processing, to extract bio-based L-Lactic acid. Lactic acid can be further converted and valorised into value-added speciality and platform chemicals, material such as PLA (PolyLactic Acid) or food and feed ingredients. Other sidestreams are also converted into bio-based fertiliser. This is typically a model that can be replicated in regions with dairy production.

The EFFECTIVE DEMO project combines different biomasses (1st and 2nd generation sugars) for the production of bio-based nylon applying innovative fermentation technologies. Bio-based nylon is a valuable material for a wide range of applications such as. garments, carpet solutions as well as for primary packaging.

In the VALUEMAG RIA project an advanced magnetic nanotechnology method to improve the downstream processing will be developed for the harvest of microalgae. Thanks to this new bioreactor, a reduction of costs is expected. Many valuable metabolites will be extracted from the improved biomass in a multi-facility bio-refinery for the production of food additives, nutraceutical, pharma and cosmetic products.

A new business model has been developed by the EMBRACED project, where citizens/consumers represent the starting and ending points of the value chain concept. This involvement of citizens/consumers in the recycling activities is entirely embedded in the different value chains.

KPI 3- Number of Grant Agreements signed between BBI JU and the project consortia

Number of Grant Agreements signed between the BBI JU and the project consortia at the end of 2018. This KPI is measured at a programme level.

The **current number of BBI JU signed Grant Agreements is 82** versus the 2020 target of 200 in SIRA. The 82 BBI JU ongoing projects include 43 RIAs, 24 DEMOs, seven flagships and eight CSAs. The number of BBI JU projects is expected to increase to 100 in 2019 once the Grant Agreements of the projects selected for funding under Call 2018 are signed.

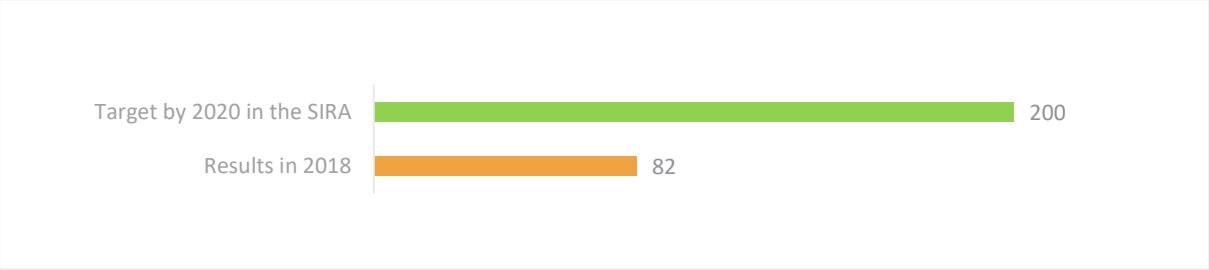


Figure 37: KPI 3-Number of Grant Agreements signed between BBI JU and the project consortia

As a conclusion KPIs 1-2 and 3 monitoring show that BBI JU is expected to continue contributing to a systemic change in the bio-based industries by mobilising a wide range of key actors across the value chain and reducing market entry barriers, resulting in the generation of new bio-based value chains, all of which are highly innovative. The contribution to the structuring effect is particularly confirmed at the level of the expected new value chains by 2020. The analysis of the project portfolio also shows a deployment of the bio-based industry sector organised around interconnected value chains rather than linear isolated ones, as modelled in the initial SIRA in 2013.

MARKET UP-TAKE: KPIS 4-5-6-7:

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 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 been (successfully) made on a (pre)commercial scale yet. (2) those that have better performance 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 all technical requirements, be economically viable and match all relevant sustainability criteria. 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 (TRL 8) scale in Flagships.

All BBI JU projects are requested to report the number of expected 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 improved functionality or performance, reduced production costs or decreases in the negative impact on environment.

Reported expected results

BBI JU ongoing projects report that they expect to create **67 new bio-based building blocks** by 2020 versus the target of five in the SIRA.

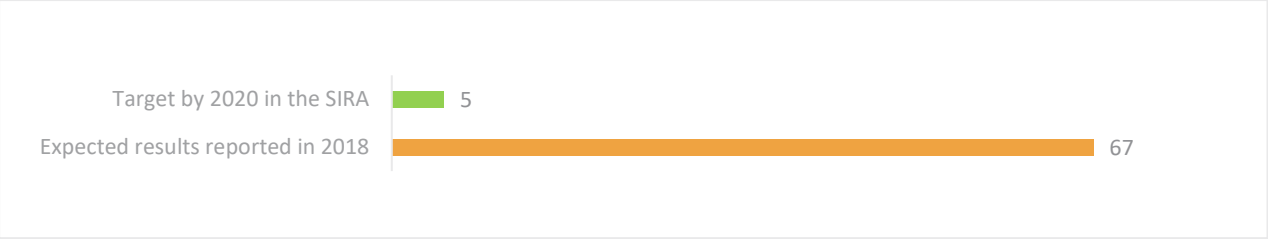


Figure 38: KPI 4- Expected New bio-based building blocks

The SIRA target looks very small compared to the reported figures, but the target was 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. In the bio-based industries, the building blocks are more versatile and can therefore cover wide range of chemicals independent of their size and structure. Furthermore, the same molecule can be produced from very diverse feedstocks, through varied processing technologies, thereby resulting in building blocks that are considered different, as they display different aspects of novelty. This contrasted situation could evolve in ways which may result in the future structuration of the sector and the emergence of domination building blocks like succinic acid, lactic acid, levulinic acid or bioethanol to name just a few.

Figure 39 presents the percentage of the new building blocks expected per level of innovation intensity from 'drop-in' to breakthrough.

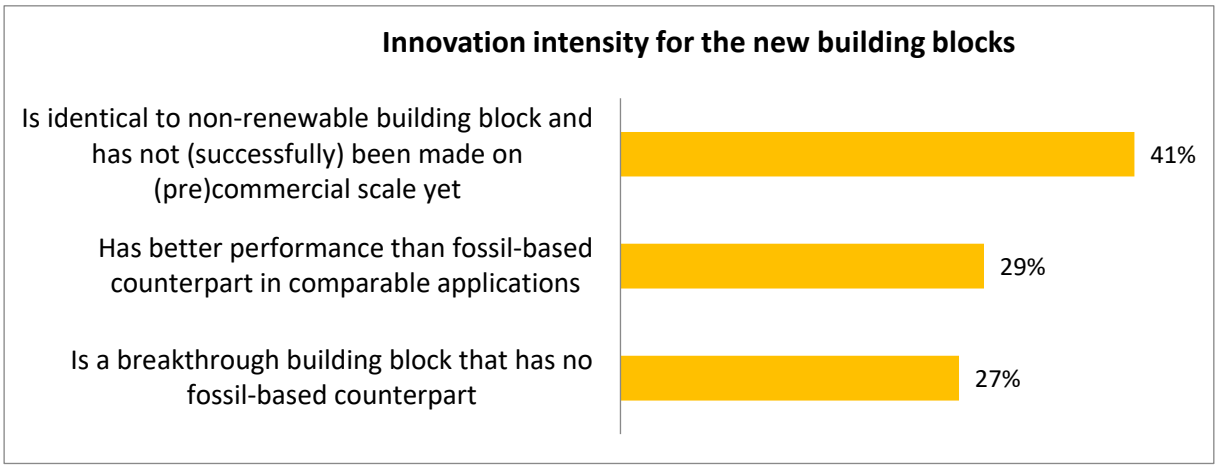


Figure 39: Percentage of new building blocks and their innovation intensity

41% of those new building blocks are identical to non-renewable building blocks or so called 'drop-in' chemicals whose sole added-value is their clean label. As BBI's main focus is on creating added value, 29% of the new building blocks perform better than fossil-based equivalents, and 27% are breakthrough building blocks that have no fossil-based counterparts.

Some examples of new building blocks together with their innovation intensity and potential market use:

Project acronym	Building block	Innovation intensity	Potential market use
Examples for drop-in building blocks:			
GRACE (DEMO)	Bio-butandiol & azeleic acid	Feedstock resource for the production of bio-butandiol & azeleic acid by non-food crops in marginal lands.	• Polyesters for automotive and chemical industry
EFFECTIVE (DEMO)	Di-carboxylic acids	Through optimized technological improvements, nylon and polyester production will become cost-efficient and competitive with fossil-based equivalents.	• Polyesters for textile industry
MACROCASCADE (RIA)	FDCA	FDCA production will be achieved by optimized use of seaweed strains.	• Cosmetic • Personal health care

UNRAVEL (RIA)	Polyols	Polyols will be derived with advanced integrated technology of pre-extraction, separation and conversion of complex lignin structures.	• Polyurethane rigid foams as insulation material • Bitumen additives
Examples drop-in building blocks with better performance than fossil-based counterparts in comparable applications:			
GreenSolRes (DEMO)	1,4-Butanediol	1,4-Butanediol production from forest based resources will be first time used in pharmaceutical applications.	• Adhesives • Pharmaceutical industry
SWEETWOODS (Flagship)	Glucosone	Glucone is produced from woody biomass and is expected to be the feedstock for platform chemicals.	• Chemical industry
US4GREENCHEM (RIA)	Phenol	Bio-phenol is to be derived with less energy, less by-products and waste materials. End product produced from bio-phenol will be completely bio-degradable.	• Polymers and polyesters production for chemical industry
Breakthrough building blocks that have no fossil-based equivalent:			
Carbosurf	MELs	MELs are produced only from renewable sources using wild-type microorganisms. Technological development is expected to bring MELs cost-competitive in the market	• Bio-surfactant ingredient in cosmetic and pharmaceuticals
SLYFEED (DEMO)	SylPro®	Alternative protein source that is produced from woody biomass.	• Animal and fish feed

The aspects of novelty of the building blocks are classified into four groups (Figure 40). The expected results indicate that the majority of the building blocks are novel due to their contribution to environmental aspects, mainly the decrease of CO_2 gas emissions, land use and optimised energy use. Almost half of the building blocks report that they expect to have a direct positive impact on land use. This is mainly due to the use of sidestreams or by-products of agricultural and forestry areas rather than using the land directly to grow the desired biomass.

Other environmental aspects like water use, and CO_2 utilisation are reported by a reduced number of projects. Regarding CO_2 utilisation, as the maturity of technology evolves, more building blocks can be produced by the technology of CO_2 recycling and utilisation. With regards to economical novelty, almost half of the building blocks are produced with lower input costs or higher material efficiency. Novelties in respect of the building blocks' performance (e.g. improved biodegradability, safety or recyclability) are expected from around 30% of the building blocks. This result is line with Figure 39 in

which 29% of the building blocks has a better performance than fossil-based equivalents in comparable applications.

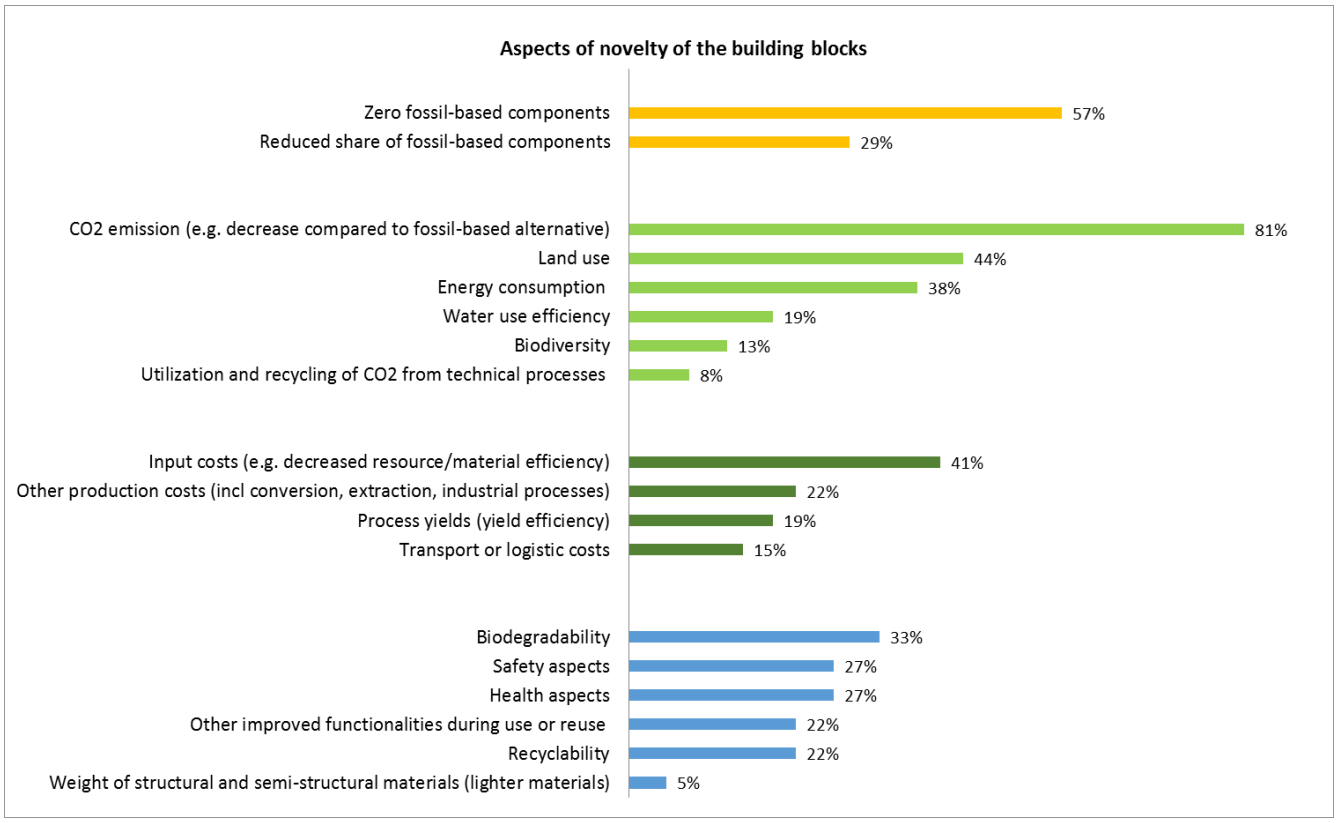


Figure 40: Percentage of building blocks addressing different aspects of novelty: feedstock (light yellow), environmental (light green), economic (dark green) and product performance (blue).

Examples from the BBI projects portfolio

- BIOFOREVER is preparing a demonstration-scale bio-refinery that will produce three different groups of building blocks: sugar monomers, resin acids and alcohols. These monomers will be converted into high added-value products (e.g. carbon binder) in the chemical industry. In this project, the building blocks' purity will be improved as compared with the current commercially available ones. For the alcohol building blocks, a better performance than their non-renewable equivalents is expected. This is mainly due to the high purity of the target building block. For instance, n-butanol will be produced with no isobutanol contamination which is reported to be beneficial for downstream processing to specialty chemicals. Land use efficiency will also increase due to the use of wood residues as a feedstock. Lastly, the optimised purification technologies will reduce the processing costs, making the final products' cost more competitive.

- SWEETWOODS flagship project processes woody residues into novel functional building blocks of 2G sugar monomers, to be used in the chemical industry as a platform for the bio-based production of plastics, insulation materials and materials such as sport mats. The building blocks produced in the SWEETWOODS project will give a better performance than the fossil–based equivalents. It will reduce the CO_2 compared to its established fossil-based processing, will decrease the input costs and will have a systematic improved approach for hard woodland use in Estonia.

KPI 5: New bio-based materials

The new bio-based materials are the products that are produced from biomass resources through sustainable processes. The new bio-based material is expected to have at least equal or overall better sustainability, assessed through a detailed LCA analysis. Moreover, they are expected to have an improved material efficiency, reduced GHG emission, biodegradability, recyclability or other improved functionalities. The new bio-based materials also need to meet a clear market demand and fulfil all technical requirements, have proven economic viability and match all relevant sustainability criteria. The newness can be either in the selection of particular biomass, integration of a novel technology or development of a specific compound that will replace 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 (TRL 8) scale in Flagships.

Reported expected results

Projects reported that they expect to create **147 new bio-based materials** by 2020 versus the 2020 target of 50 in the SIRA.

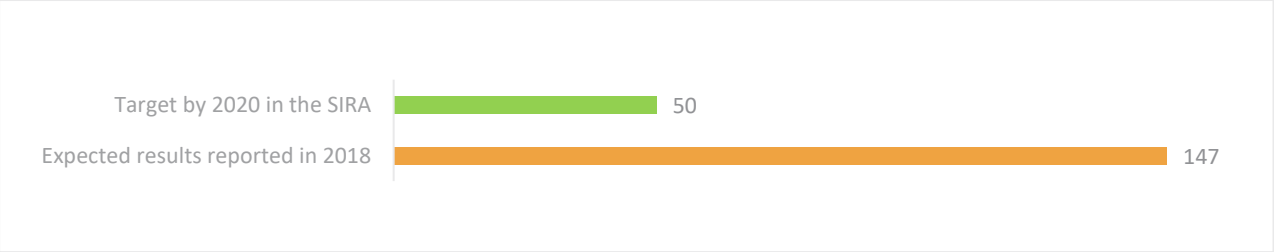


Figure 41 KPI 5- Expected new bio-based materials

Exceeding the initial target depends on various factors, similar to those highlighted in the case of new bio-based building blocks (KPI 4). The same type of material can be reported by different projects, and in each case the differentiation of the materials is measured by different aspects of novelty. For instance, in one project, the newness relies on the use of new technologies while in another project the novelty derives from the use of different feedstock.

As shown in Figure 42, among the 147 expected new bio-based materials, projects report that 32% of the bio-based materials are 'drop-in', 40% have a better performance than fossil-based equivalents in comparable applications and 18% of products are expected to be breakthrough bio-based materials.

Figure 42 presents the percentage of new bio-based materials at each of the three levels of innovation intensity described among the new bio-based materials reported. An important outcome of the survey is that the most reported aspect of novelty lies in the improved performance of the bio-based materials compared to their equivalents in similar applications, whereas only 32% of the new bio-based materials are reported as 'drop-in'.

This shows the efficiency of the programming process that translated the priorities of the SIRA which promote breakthrough new bio-based materials with new functionalities instead of 'drop-in'

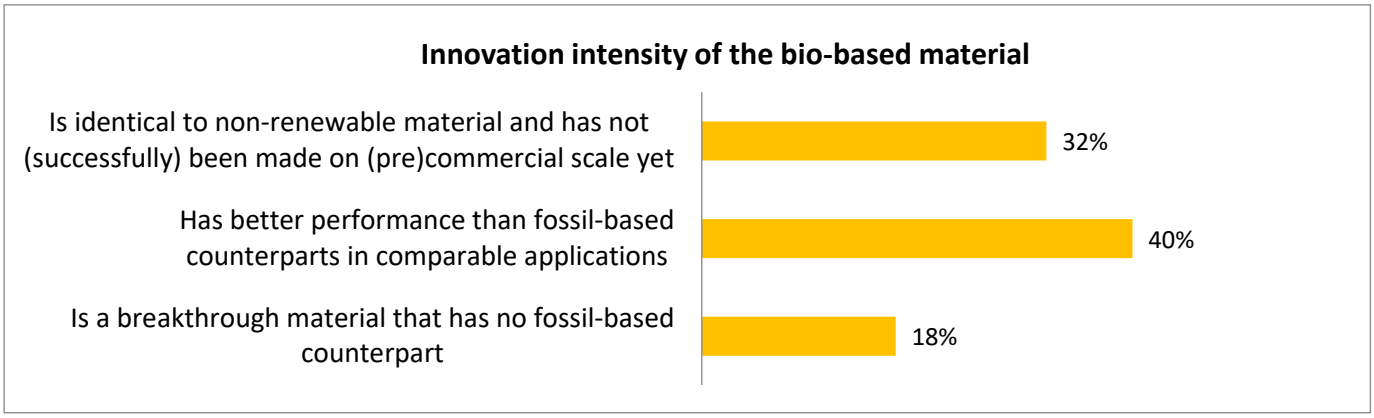


Figure 42: Percentage of expected new bio-based materials and their innovation intensity.

Some examples of new bio-based materials considering their reported innovation intensity:

Project acronym	New material and chemical	Innovation intensity	Potential end market application
Examples for drop-in material and chemical:			
BIOSKOH (Flagship)	Ethylene	Bio-ethylene production will be achieved from dedicated crops with no-impact on food production.	• Chemical industry
LignoFlag (Flagship)	Ethanol	Bio-ethanol will be produced from non-food plants grown in marginal lands avoiding the environmental impacts.	• Fuel
LigniOx (DEMO)	Dispersants	Lignin based plasticizers is new in the market compared to its synthetic equivalents.	• Construction industry

Examples drop-in new materials and chemical with better performance than fossil-based counterparts in comparable applications:			
BIOMOTIVE (DEMO)	PolyUrethane	Bio-based thermoplastic polyurethane has increased fire resistance, improved recyclability increased safety thanks to the reduction of isocyanate, toxic flame retardant and catalysts uses in the composition.	• Automotive industry
LIPES (DEMO)	Copolyesters	Copolyester will be derived from oils and fats via reduced 80% energy and 45% water consumptions.	• Automotive • Electronics
SUSFERT (RIA)	Coatings	Biotechnologically modified lignosulfonate-based controlled release coatings. The main advantage is that higher biodegradability without microplastic remains in soil.	• Fertilizers in agriculture industry
Breakthrough building blocks that have no fossil-based equivalent:			
AgriChemWhey (Flagship)	Lactic acid/PLA	Lactic acid and PLA will be produced from the side streams collected from dairy and agricultural industries	• Plastic bottles, packaging
PEFerence (Flagship)	PEF	PEF material will be improved barrier properties, completely recyclable and cost competitive when produced at high scales.	• PEF bottles, films, fibres, resins
PULPACKTION (DEMO)	ThermoPlasticStarch	New packaging material which will be free of contaminant PFAS, moisture repellent and bio-degradable	• Food packaging

The most reported aspects of novelty in the new bio-based materials are the environmental aspects (Figure 43). In a similar ratio to building blocks, 77% of the new materials are expected to contribute to a reduction of CO_2 emissions.

Almost half of expected new products are novel with respect to optimising energy consumption and input costs and one third has the novelty aspect of production costs. Enhanced performance at the level of health aspects, biodegradability, recyclability and safety are also reported for half of them. This indicates the trend of the portfolio directed towards improved product performance and the enlarging of the portfolio of 'green label' materials and chemicals.

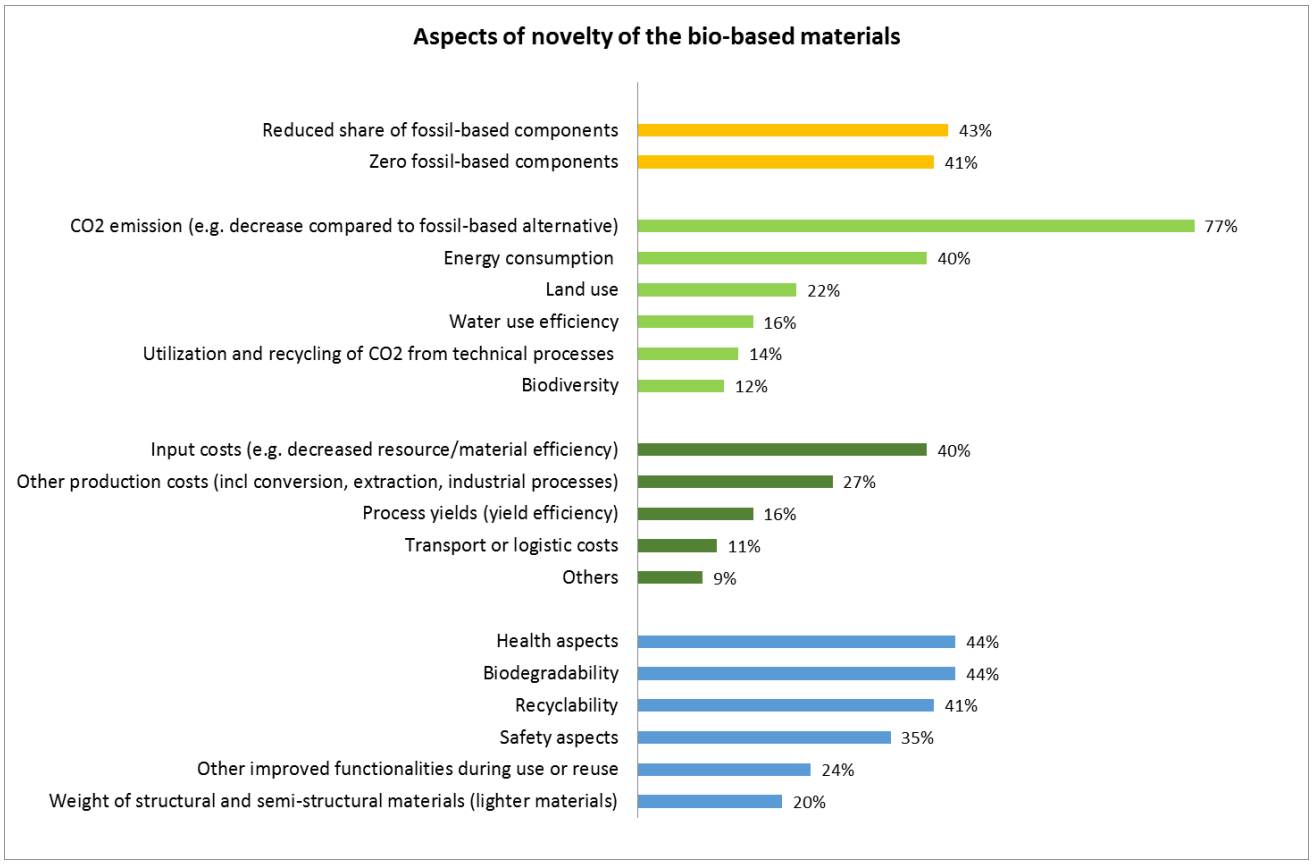


Figure 43: Percentage of bio-based materials addressing different aspects of novelty: feedstock (yellow), environmental (light green), economic (dark green) and product performance (blue).

Examples from the BBI JU projects portfolio

- POLYBIOSKIN is a RIA project focusing on the production of a new bio-based and biodegradable diaper and sanitary pad, consisting of a bio-based top sheet with antimicrobial and skin beneficial functionalities and a superabsorbent layer. The circularity is ensured by reusing the waste absorbent hygiene products as a raw material to produce new polymer products. The waste and side streams of the process is used as fertilizer. The product performance is improved in terms of safety, health, biodegradability and recyclability in addition to the less emission of ozone and CO_2 gases during the production stage.

- EMBRACED is a DEMO establishing a demonstration plant for the production of bio-based polyesters. Bio-based polyester will be produced from recycled bio-waste resources. The bio-based polyesters will be used in production of polymers for medical devices and packaging materials. The project ensures a decrease of CO_2 emissions of up to 35%; and an increase in material efficiency through the valorisation of sidestreams and the utilisation of CO_2

- EFFECTIVE is a DEMO project establishing a pilot-scale plant for production of bio-based nylon by converting food processing sidestreams. The bio-based nylon will be first-of-its-kind, 100% bio-based with a better environmental profile compared to fossil-based counterparts. The emission of N_2O, NO and NO_2 gases will be completely avoided. Energy consumption will be reduced while carbon rich food sidestreams will be valorised.

- The AgriChemWhey flagship project will use whey permeate and delactosed whey permeate, by-products of dairy processing, to extract bio-based L-Lactic acid. Lactic acid can be further converted and valorised into value-added speciality and platform chemicals, material such as PLA (polylactic acid) or food and feed ingredients. Other sidestreams are also converted into bio-based fertiliser. The efficiency of the dairy industry will be increased by reducing waste and extracting more value from the original resource. Bio-plastics produced from a bio-based lactic acid from the dairy sidestream biorefinery offer a 34% reduction in GHG emissions compared to fossil-based polypropylene.

- BIOSEA is a RIA project focusing on the production of micro and macro algae and the extraction of proteins, fatty acids, carbohydrates, carotenoids, and lipids to be used in food, feed and cosmetic/personal care markets. The target is to optimise the algal biomass processing technology to reduce the final cost of the product by 55% thanks to the cascading bio-refinery concept. The newly obtained food ingredients such as proteins and astaxanthin are expected to be healthier and less likely to produce allergic reactions, as well as safer regarding the production phase.

KPI 6: New bio-based consumer products

The bio-based consumer products are the products which are successfully converted into ‘consumer’ products as a material or chemical, for instance, surfactants in cleaning agents, bio-polymers in packaging industries, additives in cosmetics, food and feed applications, fibres used in textile etc. The ‘consumer product’ is expected to have better overall sustainability capacity than its current alternatives. This is mainly due to improved material efficiency, reduced GHG emissions, higher biodegradability, recyclability or other improved effects during use or reuse-. The bio-based ‘consumer products’ meet a clear market demand and fulfil all technical requirements, are economically viable and match all relevant sustainability criteria. KPI 6 targets products demonstrated at TRLs 6-7 (DEMOs) and TRL 8 (Flagships).

The new bio-based consumer products are successfully converted into 'consumer' products (such as cosmetics, food applications, vehicles, fertilisers, adhesives, etc.) from the bio-based intermediate and/or final products (materials, building blocks, chemicals). The ‘consumer product’ will have a better overall sustainability score than its current alternatives (improved material efficiency, reduced GHG emissions, biodegradability, recyclability or other improved effects during use or reuse). The bio-based

‘consumer products’ meet a clear market demand and fulfil all technical requirements, are economically viable and match all relevant sustainability criteria. This KPI addresses only IA projects: DEMO (TRL 6-7) and Flagships (TRL 8).

Reported expected results

Projects report that they expect to create **65 new bio-based consumer products** versus the 2020 target (30) in the SIRA.

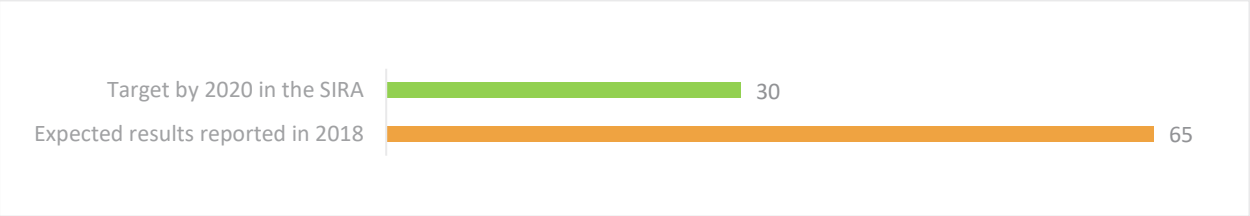


Figure 44: KPI 6- Expected new bio-based consumer products (IAs)

The diverse aspects of novelty reported by the new bio-based products mean that the consumer products delivered by each project have different characteristics. Several projects may address the same type of product (e.g. bio-based food packaging), but differences in the feedstock used, the process and the final functionalities (weight, biodegradability, barrier properties) make each of these consumer products distinct from the others.

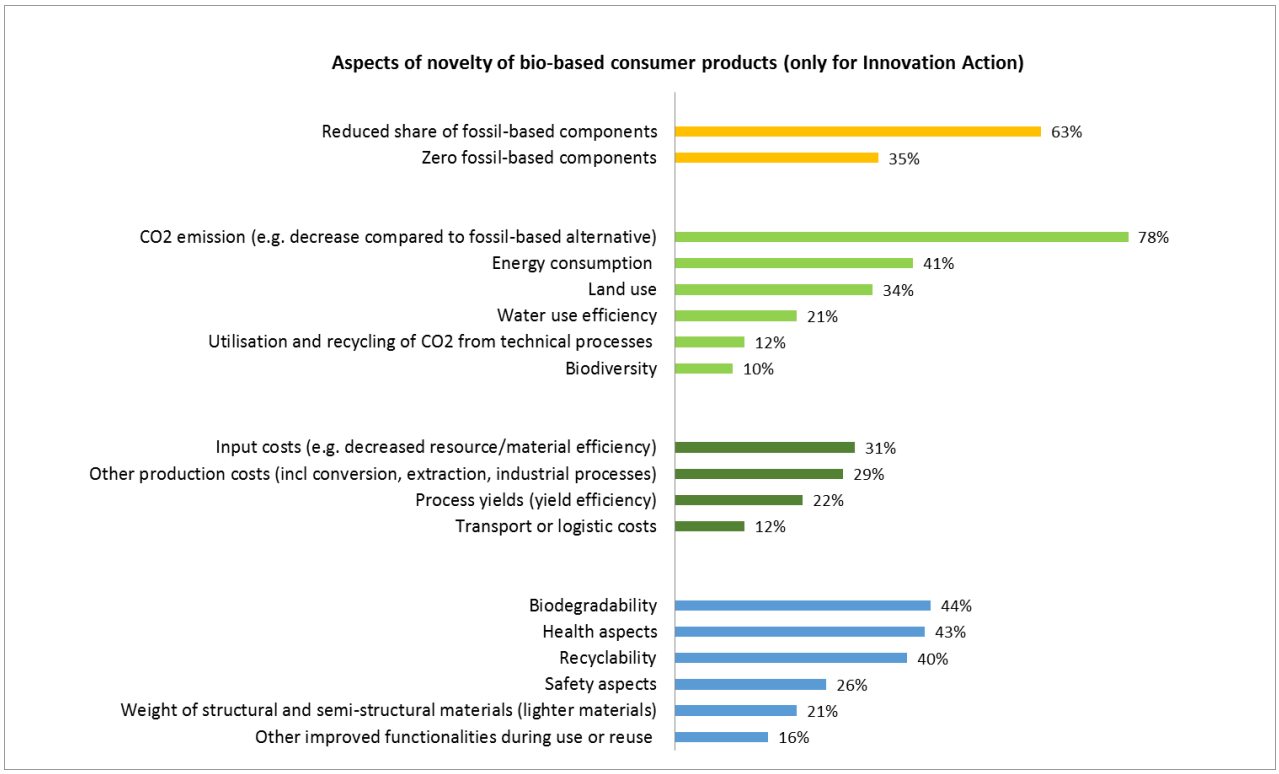


Figure 45: Percentage of expected new bio-based consumer products addressing different aspects of novelty: feedstock (yellow), environmental (light green), economic (dark green) and product performance (blue).

The main aspects of novelty of the expected new bio-based consumer products are presented in Figure 45. The main aspect of novelty perceived by consumers is clearly emphasised. Improved product performance is reported for nearly half of the consumer' products. Over 40% of the consumer products are expected to have better biodegradability, health aspects, recyclability or a combination of all these aspects. Economical aspects are reported for only 12% to 31% of the consumer products and refer mainly to improvements in aspects such as input costs and other production costs related to conversion, extraction, etc.

Examples of new bio-based consumer products

- SWEETWOODS flagship project contributes to KPI 6 by introducing several new consumer products: insulation foams and panels for construction materials, plastic parts for loudspeakers, earphones, isobutene derivatives for cosmetics, sport mats, paint producers. Currently, these materials are produced mainly from fossil-based feedstock. SWEETWOODS aims to produce these products from a hard-wood lignin type of biomass and to reduce the share of fossil-based components in the final products with less toxic, safer and heathier properties. Besides this, the developed process is based on the 'zero waste' concept which will minimise the negative impact on the environment and maximise land use for the growth of agricultural and forestry biomass.

- SpiralG, a DEMO project, is expected to produce bio-based food dye, bio-stimulants for plants, functional protein-rich compounds for pet food, and higher quality protein bioactive compounds to be used in the pharmaceutical industry. The molecules, which are extracted and purified from algal biomass, will be produced in an algal production DEMO plant located in France. The SpiralG project will have a positive impact on the environment by using non-arable land, whilst reducing CO_2 emissions. Process yields are expected to be improved due to automation in processing. The final products such as food additives, food dye and bio-stimulants will have properties such as higher biodegradability and be healthier for human and animal consumption.

KPI 7: BBI JU flagship projects

This indicator monitors the number of flagship projects funded by the BBI JU. BBI JU has already signed seven flagship projects, already higher than the 2020 SIRA target of five flagships. These biorefineries are well spread across Europe, located in Norway, Ireland, Belgium, Slovakia, Italy, Romania and Estonia.

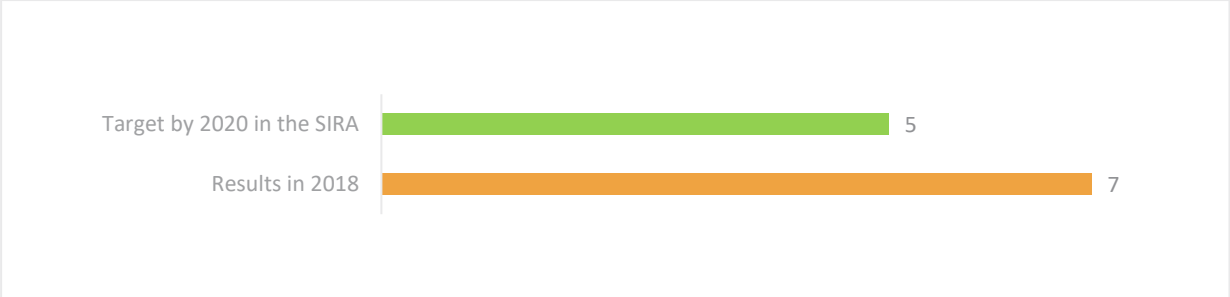


Figure 46: KPI 7- Number of BBI JU flagships

The flagships process different lignocellulosic feedstocks, such as agricultural residues, dedicated crops in underutilised lands, biomass from the forest industry or sidestreams from the dairy industry to deliver chemicals and materials. 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.

BBI JU flagship plants have mobilised significant additional investments in facilities for the deployment of biorefineries in Europe. Overall the seven flagships represent around EUR 800 million of investment and could generate 3,000 direct jobs and more than 10,000 indirect ones, most of them being 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. Further information on the overall socio-economic and environmental impact of the BBI JU projects is presented in section 1.3.1.3.

The seven flagships are the following:
FIRST2RUN: this biorefinery, located in Italy (Sardinia), will demonstrate 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 for the production of 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 ten new (or optimised) bio-based products by 2020.

BIOSKOH: this is a second-generation bio-refinery located in Slovakia for the production of ethanol in Europe. This biorefinery uses agricultural residues biomass to produce cellulosic bio-ethanol 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 expenditures as compared to greenfield sites.

LIGNOFLAG: commercial flagship plant located in Romania for cellulosic second-generation bio-ethanol 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 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 bottles, 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, sidestreams of the dairy-processing industry. These sidestreams 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.

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. However, the ongoing DEMOs and flagships have been requested to report on the expected TRL gain as well.

Reported expected results

RIA projects expect a TRL gain of at least one level for 33 core technologies against a target of 20 in the SIRA 2017.

Figure 47: KPI 8- Number of expected validated technologies that have realized a TRL gain (RIAs)

As shown in figure 48, 22 RIA projects expect to progress two levels in the maturity of their technology (from TRL 3 - experimental proof of concept, to TRL 5 - validation of the technology). Two projects report an expected gain of only one level from TRL 4 to 5, while nine projects expect the advancement of at least three levels from TRL 2 to 5.

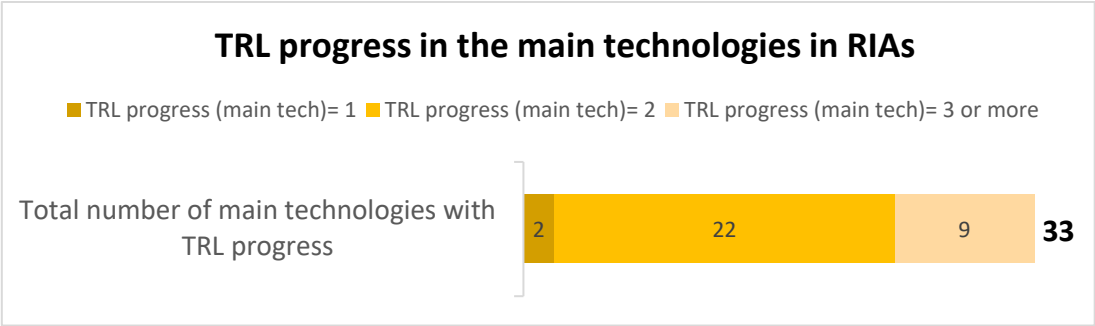


Figure 48: Number of technologies reporting a TRL gain of one, two or three levels in RIAs.

As shown in figure 49, projects in IAs, both DEMOs and flagships, expect to mature core technologies with gains ranging from 1 to 3 levels and more, by 2020. 10 projects expect to have TRL gain of two levels, while for five projects the expected gain in maturity will be of three or more levels. A gain of only one level is expected in one flagship project, from TRL 8 to 9, which is in fact the minimal expected gain.

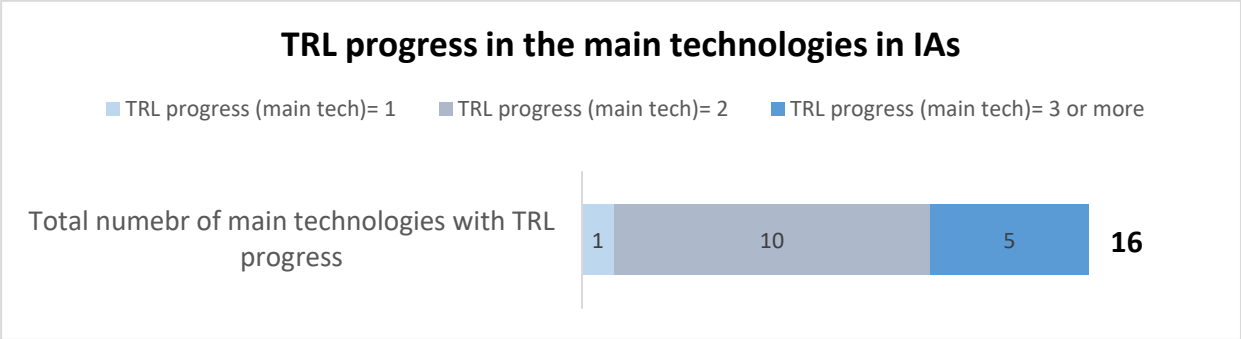


Figure 49: Number of technologies reporting a TRL gain of one, two or three levels in IAs.

Examples of technologies and processes experiencing TRL gains in RIAs

- NEWFERT RIA project: new chemical and bio-electrochemical technologies to extract nutrients from ashes of different origins and livestock affluent will be used for the production of advanced fertilisers. These technologies are starting at a very low TRL (2). It is expected that the technologies will reach TRL 5 at the end of the project;

- AFTERLIFE RIA project, starting from TRL 3, aims at demonstrating (TRL 5) a promising combination of innovative wastewater treatment processes. It considers a low-fouling filtration system to recover all the solids in wastewater, which will suffer a supercritical/subcritical fluid extraction for the recovery of the value-added extracts, consisting of mixtures of metabolites of a similar nature and functionality. The rest of the organic matter will be converted into high-volume added-value biopolymers, polyhydroxyalkanoates, by means of a two-step-fermentation process (anaerobic + aerobic).

- EnzOx2 RIA project: The enzymatic technology for the production of sugar, lipid and terpene bio-based chemical building blocks, flavour and fragrance, and active pharmaceutical ingredients, moving from TRL 3 (proof-of-concept) to first optimised and validated at the lab stage (TRL 4) and then under industrial-relevant conditions (TRL 5).

- BARBARA RIA project: several technologies will be up-scaled from TRL 3 to 5 for the production of several materials from different biomass. e.g.: Microwave-Assisted Extraction technology (MAE) is used for the extraction of dyes and antimicrobials from agro-residues coming from lemon, pomegranate, broccoli and almond shells biomass; a 3D printing heading device (concept) to enhance part properties will be conceived, designed, built, implemented and tested in a 3D printer. This heading will include pressure, temperature and cold plasma control, to be applied between layers

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 2020, to different social, economic and environmental impacts as set out in the SIRA 2017 and the EU Bioeconomy Strategy. These cover for example, the impact on markets and industry, the creation of jobs and the impact on primary producers and rural development. To address the latter, projects report on the involvement of primary producers in their project, their contribution to the diversification of primary producers' income, the creation of qualified jobs in rural areas or the increase of agricultural diversity.

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, gender balance and 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 (70).

JOB CREATION

The vast majority of projects (80%) report an expected creation of new skilled jobs. Among them, 63% of the projects expect to contribute to the creation of jobs in product development and engineering, while 46% of the projects expect to create jobs in rural regions and nine per cent in coastal regions, which could be further improved in view of the overall expectation for BBI JU to boost job creation primarily in rural and underdeveloped areas.

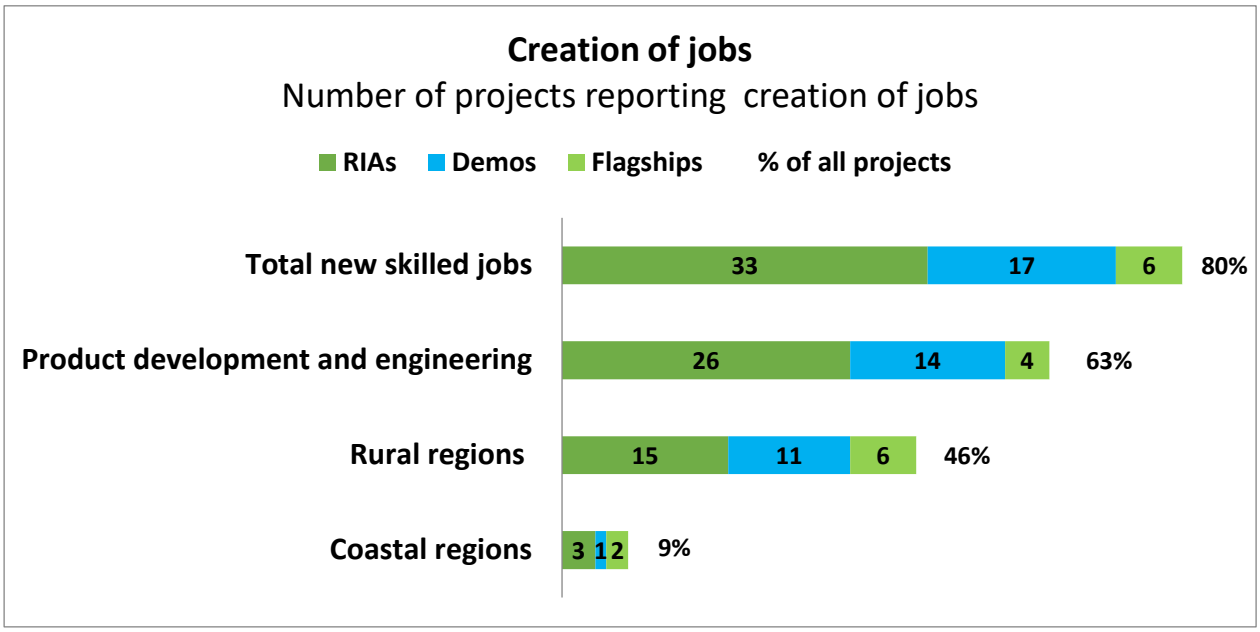


Figure 50: Number of projects reporting job creation in rural and coastal regions and in the area of product development and engineering, for different types of actions, as well as the overall percentage of projects creating jobs in these categories.

Examples

Regarding job creation in product development and engineering, the FRESH DEMO project employs over 30 engineers working full time on the process optimisation for the production of bio-based biodegradable food packaging. URBIOFIN, a DEMO project working on a biorefinery for the transformation of Municipal Solid Waste (MSW) into new bio-based products such as bioplastics, packaging or biofertilizers, will create about 20 new qualified jobs during the project duration.

AgriChemWhey, FIRST2RUN and SWEETWOODS flagship projects will produce bio-based chemicals for diverse market applications through the processing of residues of the dairy industry, marginal land

crops and wood-based sugars, respectively. These biorefineries will create direct and indirect jobs in rural areas in Ireland, Italy and Estonia. The biorefinery concepts have a big potential for replicability, as the biomass and residues used are available throughout Europe and the business models proposed are widely applicable in other regions. For example, AgriChemWhey is expected to create around 360 direct jobs and more than 3,000 full-time indirect jobs by 2025.

FIRST2RUN estimates that 60 new skilled jobs will be created for every 1kton of produced bioplastics, of which five per cent is in R&D, 20% in building blocks production, 15% in polymers/bioplastics production, 25% in the agricultural sector and 35% in composting. Moreover, positive economic impacts and the creation of new job opportunities are also expected for the end users of the developed bioproducts (mostly SMEs). Several opportunities of collaboration with start-ups and SMEs have been detected along the value chains, demonstrating that FIRST2RUN can act as catalyser for new innovations and market opportunities in both the agricultural and industrial sectors.

IMPACT ON PRIMARY PRODUCERS AND RURAL DEVELOPMENT

The role of primary producers in bio-based value chains is key in the consolidation of successful bio-based value chains, where they should not be feedstock providers only, but integral actors within a project or business model. As shown in Figure 51, nearly one third of the BBI JU projects expect to contribute to the income growth of primary producers and 27% expect to help them diversify their income sources. In addition, 24% of projects include primary producers among their beneficiaries and in 16% of the projects the primary producers are included in the decision-making process.

It should also be noted that several BBI JU projects, are related to the transformation of municipal solid waste, wastewater and organic sidestreams of industrial processes. These projects do not directly involve primary producers, which partly explains the moderate impact on primary producers shown in figure 52.

Further to the involvement of primary producers, 13% of the projects report an expected contribution to increasing agricultural diversity. Only one project reports a potential decrease in the agricultural diversity based on the partial replacement of proteins of vegetable origin by proteins from algae.

The participation of the primary sector in the bio-based industries being an area to be improved, a tender will be launched in the course of 2019 to address this issue, with a focus on the agricultural sector. Furthermore, new indicators related to rural development have been included in the annual reporting from coordinators.

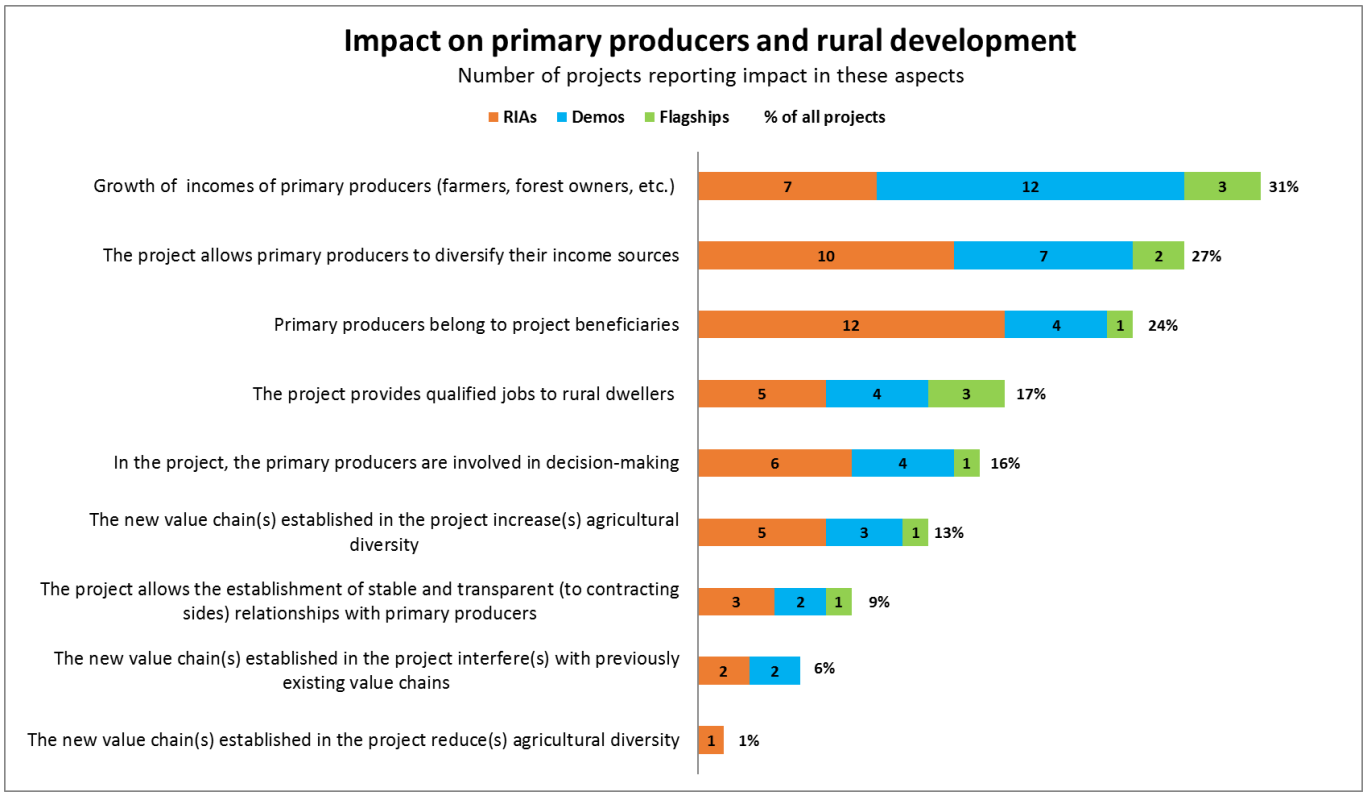


Figure 52: Number of projects reporting different types of impact on primary producers and rural development, as well as the overall percentage of projects addressing these areas.

Examples

GREENPROTEIN DEMO project works on the valorisation of residues of the vegetable processing industry into high-value functional proteins and other food ingredients. One of its beneficiaries is a farm cooperative, which involves its members and the younger generation of farmers in the decision-making process. The project provides them with an alternative source of income related to the use of residues, and generates job opportunities.

The dairy sector in Europe brings an extremely important socio-economic dimension to rural communities across Europe and produces large amounts of sidestreams. The AgriChemWhey flagship project works on the conversion of the dairy sector sidestreams into added-value products – specifically L-Lactic acid, polylactic acid, minerals for human nutrition and bio-based fertiliser - aimed at growing global markets. This will allow farmers to produce more milk sustainably and obtain increased value for their production. In this way, profits from end products will be fed back to the primary producer. In addition, AgriChemWhey involves farmers and mushroom producers through one of the project beneficiaries, which will valorise side streams from the Lactic Acid production process to provide resources for mushroom production and agricultural use. The use of residues from the dairy industry to produce high added-value chemicals contributes to diversifying farmers' income and creating new jobs.

FIRST2RUN flagship project processes crops from around 3000 ha underutilised lands, like cardoon, grown on arid and marginal lands, which are exploited for the extraction of vegetable oils to be further converted into bioproducts, such as bioplastics, cosmetics and lubricants. From cardoon, it is in fact possible to valorise all the fractions from the harvesting: seeds for oil extraction and protein feed for the livestock sector, lignocellulosic residues for sugars and/or energy production for the local area, roots for the extraction of active molecules. The cultivation of underutilised crops has the great potential to strongly contribute to the revitalisation of the agricultural sector, by generating new income for local farmers as well increasing their knowledge through the introduction of innovative systems for cultivation, harvesting, separation and storage and the adaptation of the existing ones. In addition, agronomic best practices are transferred to farmers through workshops, training, direct meetings, seminars.

More importantly, farmers participating in FIRST2RUN project are not solely biomass providers but rather a strategic partner in the whole integrated agro-industrial value chain. Project innovations are developed in close cooperation with them and various round tables 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. 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.

The sustainable cultivation and valorisation of underutilised dry crops that take place in FIRST2RUN project are of crucial importance to create the link between the agricultural and the industrial sectors necessary for the implementation of virtuous biorefineries integrated in the territory. Thanks to their adaptation to stress and difficult environments (excess of salt, lack of water and other abiotic stresses), they may play a strategic role in maintaining a rich diversity and hence a more stable environment, especially in marginal areas affected by desertification and salinisation erosion, thereby contributing to land rehabilitation and to the maintenance of balanced ecosystems.

REGIONAL AND LOCAL IMPACT

Nearly half of the projects (44%) report utilising local residues, and over one third expect to contribute to regional development by diversifying the local economy, involving local associations and stakeholders, creating synergies with regional initiatives and mobilising local resources as shown in Figure 53.

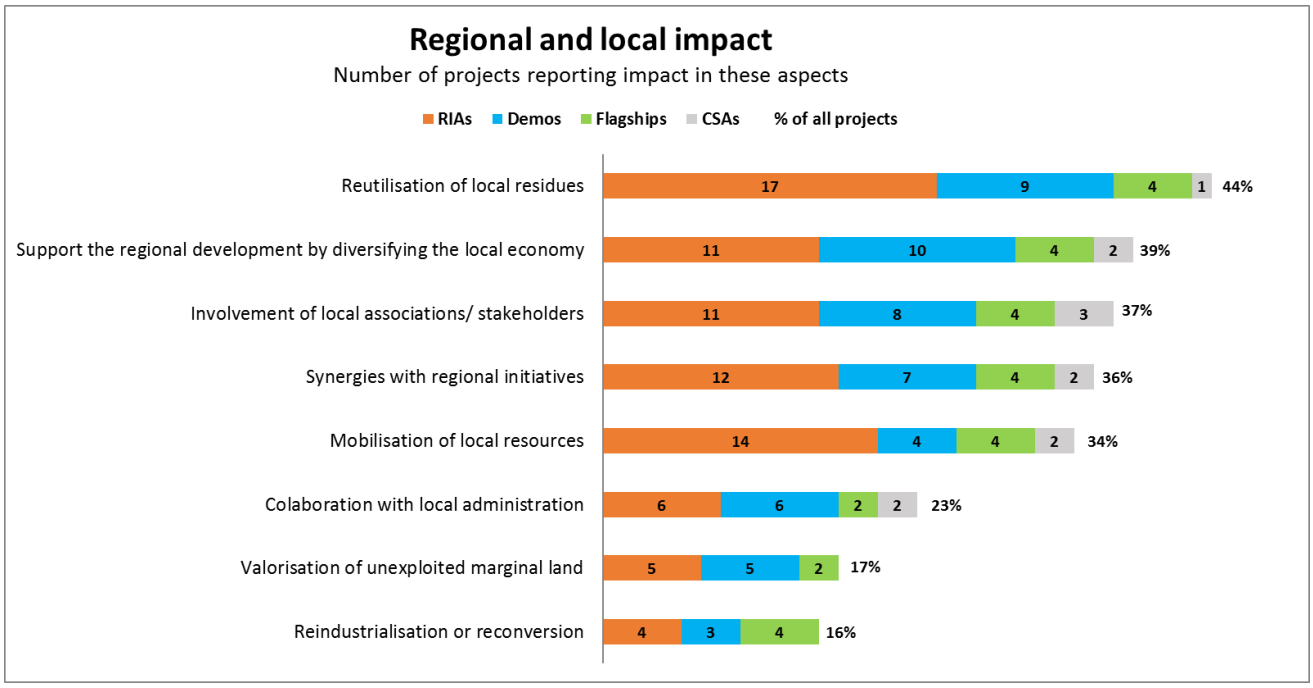


Figure 53: Number of projects reporting different types of regional and local impact, as well as the overall percentage of projects addressing these areas.

Examples

AQUABIOPROFIT RIA project valorises sidestreams of aquaculture in different regions of Norway, Spain and Sweden to produce nutrients for health products and supplements, thereby contributing to a reduction of aquaculture residues waste whilst diversifying the sources of income of the local fisheries and aquaculture sectors.

URBIOFIN DEMO project will develop bio-based chemical building blocks, biopolymers or additives using the biorefinery concept applied to the organic fraction of the municipal solid waste. By doing so, the project valorises local waste and develops a standard process that can be easily replicated and implemented in other municipalities, and regions. Strong collaboration with local administration and municipalities, as well as with other related activities, has been established to enable the deployment of the concept at a large scale.

EMBRACED DEMO project valorises the cellulosic fraction of the post-consumer Absorbent Hygiene Products (AHP) waste, which includes post-consumers' nappies, adult incontinence products, feminine hygiene items, wipes, 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, medical devices, underpads). The project deploys a circular economy approach, closing the cycle of raw materials and minimising the use of primary resources, and creates innovative business models that incentivise the participation of all actors in the value chain and can be replicated across

Europe. There is a strong involvement of the local community and municipalities that will enable an improved collection, separation and recycling of the AHP waste

IMPACT ON MARKETS AND INDUSTRY

More than three quarters of the projects report increasing the competitiveness of European companies and industry and reducing the dependence on imports of fossil oil and other resources, such as phosphates, potash or proteins. In addition, 63% expect to create new markets for bio-based products, which is coherent with the plethora of new value chains expected to be created as monitored by KPI2. This clearly demonstrates the impact of the BBI JU on shaping market uptake for bio-based products.

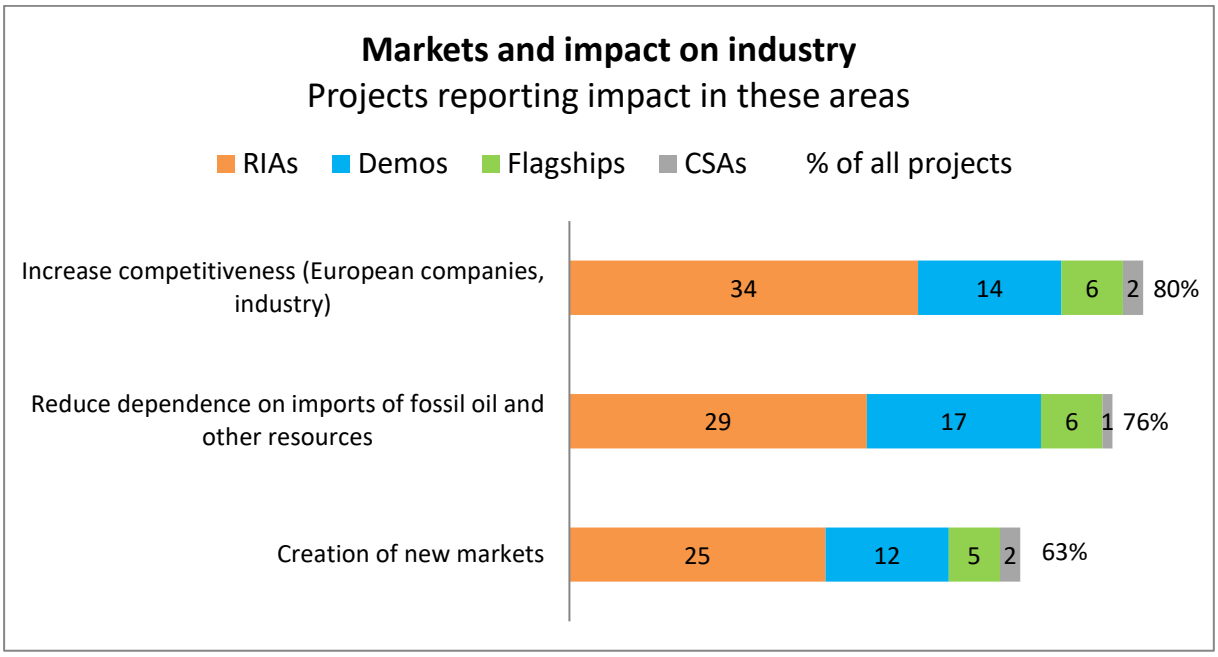


Figure 54: Number of projects per type of action reporting impacts on markets and industry in different aspects, as well as the overall percentage of projects addressing these aspects.

Examples

BIOSEA RIA project is developing innovative technologies to extract proteins, lipids, carbohydrates and other valuable compounds from algae to use them for different products and applications in cosmetics, food and feed products. By doing so, it will open new markets for algae producers and these three industrial sectors and increase their competitiveness and sales volume. In addition, it will contribute to reducing the European import of proteins and will replace some fossil-based components currently used in these markets.

NEWFERT RIA project re-uses and valorises biowaste residues, such as ashes of different origins and livestock effluents, to make them suitable as secondary raw materials in the fertiliser industry. This will

contribute to reducing the European dependence of phosphates and potassium and open new markets for bio-based fertilisers.

SYLFEED DEMO project works on the processing of wood biomass into single-cell proteins for aquaculture. It aims at demonstrating the technical and commercial validation of a protein-rich feed ingredient that can replace fish meal and soy protein concentrate, and thus open a new market and reduce our dependence on external sources of proteins.

ENVIRONMENTAL IMPACT

Overall, more than two thirds of the projects report development of bio-based products with lower GHG emissions as well as contributing to waste reduction, reuse, valorisation or recycling. In addition, 47% have a decreased energy consumption and 40% an improved land use, among other impacts. This indicates that the expected environmental impact of the BBI JU portfolio can be significant. However, it is important to note that the quantification and verification of the actual contributions of projects to the environmental impact can only take place once the LCA or equivalent assessments have been performed.

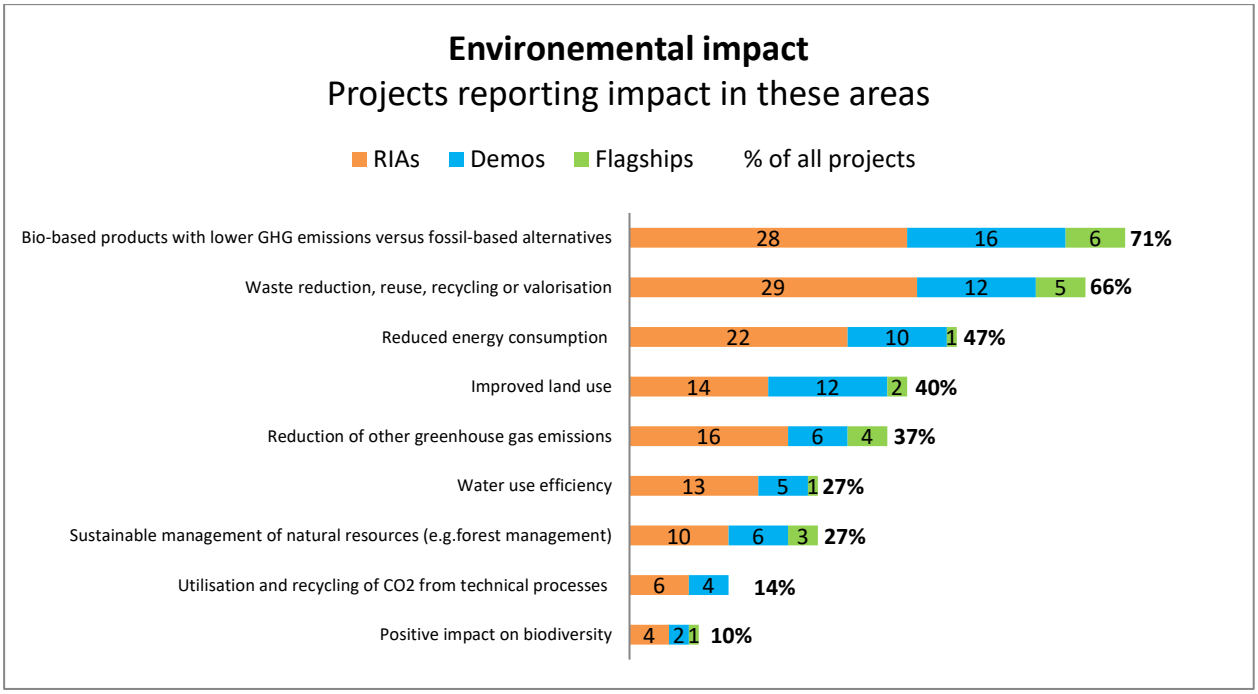


Figure 55: Number of projects reporting an expected positive environmental impact, as well as the overall percentage of projects addressing these aspects.

Examples

Many BBI JU projects expect to play a significant role in the **reduction of GHG emissions** by replacing current fossil-based products and/or compounds by bio-based ones. For example, the BIOMOTIVE DEMO project will produce bio-based materials for the automotive sector, with CO_2 savings ranging

from 10% up to 70% depending on the material, and the FRESH DEMO project will develop a fully bio-based and biodegradable ready-meal packaging, where the preliminary LCA shows a carbon footprint reduction of 80%.

Several BBI JU projects **valorise and reuse organic sidestreams and residues** to produce high added-value chemicals and products. For example, PERCAL RIA project valorises the organic fraction of municipal solid waste (biowaste) to process it into intermediate chemicals, such as lactic acid and succinic acid, reducing the incineration at the same time. BIOrescue RIA project transforms spent mushroom substrate into different biochemical materials, thereby contributing to addressing the problems related to the storage and disposal of the mushroom industry residues. AgriChemWhey flagship is closing loops in dairy processing by using dairy sidestreams for bio-based lactic acid (LA) and polymer polylactic acid (PLA) production. At the same time, sidestreams from the LA production process are also valorised to provide resources for mushroom production and agricultural use.

Some BBI JU projects also report **improved water and energy efficiency**. For example, Woodzymes RIA project transforms cellulosic residues into different bio-based building blocks. Many wood-processing techniques require extreme conditions of heat and alkalinity. WoodZymes seeks to develop extremozymes (enzymes that can function under extreme environments) and extremozyme-based processes that will allow underutilised lignin and hemicellulose fractions of kraft pulp mills to be valorised with less energy-intensive processes. This way, reductions can be expected of up to 30ºC in the temperature for the kraft pulp delignification stage, and up to-20% of the energy in enzyme-aided refining.

Dendromass4Europe DEMO project aims at establishing sustainable, Short-Rotation Coppice (SRC)-based, regional cropping systems for agricultural dendromass production on marginal land. The dendromass produced in SRC (ligneous biomass, bark and wood) will be supplied to bio-based value chains which will create additional job opportunities in rural areas. In addition, the project is expected to have a **positive impact on biodiversity** compared with the previous land use, mainly realised by acceptance of accompanying ground vegetation and by the related improvement of the agricultural habitats for fauna e.g. for several bird or small mammal species.

IMPACT ON SCIENCE AND KNOWLEDGE

One of the unique features of the BBI Initiative has been to foster the closer collaboration between scientific community and industry, moving up the TRL scale, thus enabling a swifter move towards innovation. This unique collaboration between researchers, working on low and high TRL domains, and industry has allowed certain challenges to be addressed in the bioeconomy in a concrete manner. In line with this trend, it is not surprising that 80% of all the projects report a contribution to knowledge creation and increase the academia-industry cooperation. In addition, more than 70% foster an increased cooperation across regions and countries and nearly 60% of the projects contribute to the building of networks and to technology transfer.

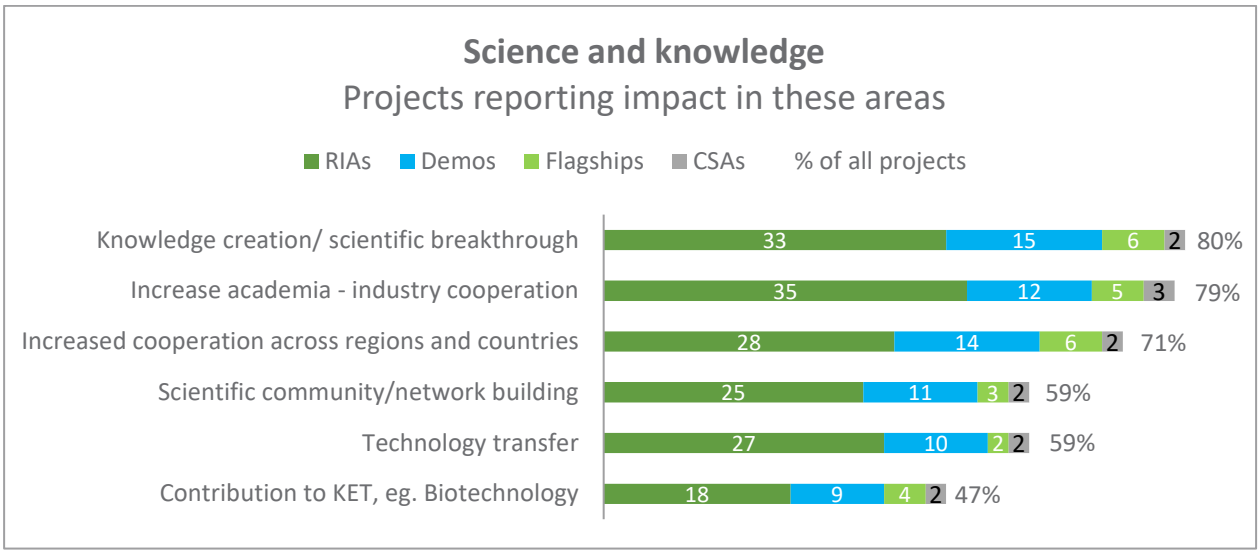


Figure 56: number of projects per type of action reporting contributions to different aspects of scientific impact, as well as the overall percentage of projects addressing these aspects.

Examples

EFFORTE RIA project will use the potential of Big Data (geospatial as well as data from forestry processes and common information e.g. weather data) to develop applications to improve the efficiency of forest operations, contribute to trafficability predictions and to improve silviculture and the harvesting process. This will help to meet the demand and expectations of both forest industries and society, guaranteeing efficient and sustainable management of forests.

Zelcor RIA project intends to demonstrate the feasibility of transforming lignocellulose recalcitrant sidestreams into high added-value bio-based products, by combining chemical and enzymatic catalysis with insect-based bioconversion. It will contribute to a deep understanding of insect physiology on industrial substrates, as well as to the development of new biotechnological routes for lignin conversion and of new bio-based nanoparticles with biological activity, thereby improving the robustness of biorefinery processes

EDUCATION AND CITIZENS

One of the key factors affecting the market uptake of bio-based products relates to society's level of awareness about their respective benefits. The role of citizens' awareness and education is well recognised in the BBI JU portfolio, with over 60% of the projects reporting to expect enhancing society's awareness and understanding of the bio-based economy, 50% contributing to training and education and 23% fostering gender balance and inclusion.

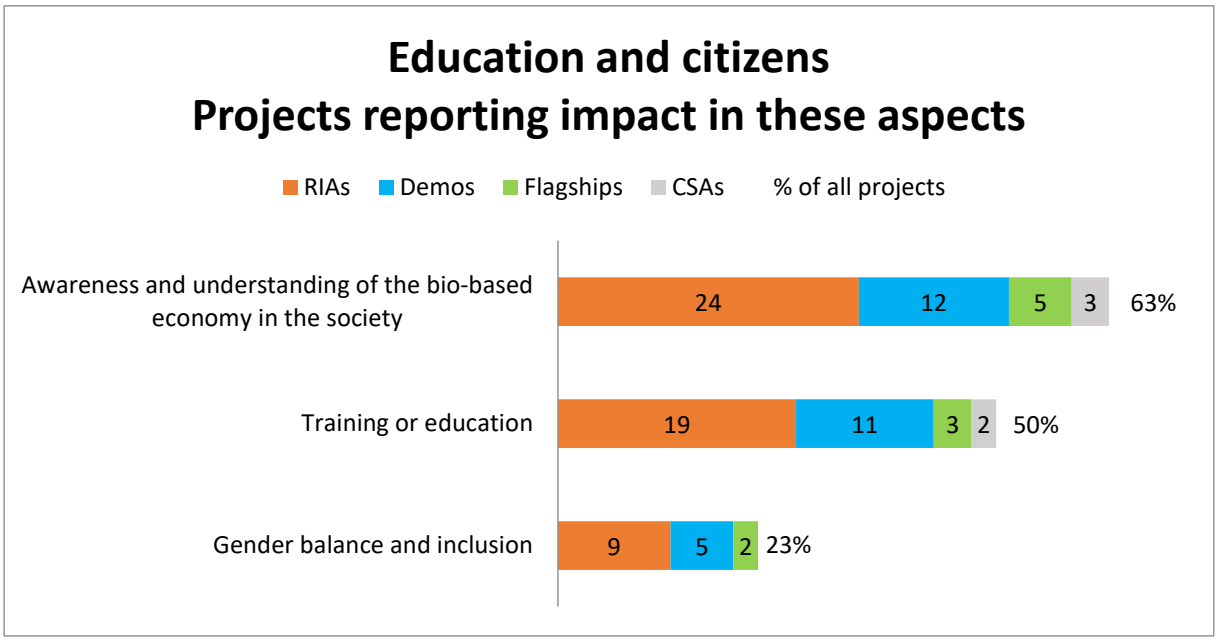


Figure 57: Number of projects per type of action reporting an impact on education and society, as well as the overall percentage of projects addressing these areas.

Examples

BIOBRIDGES CSA project will run effective 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.

AgriChemWhey flagship project will set up an integrated biorefinery for the conversion of dairy sidestreams to high value bio-based chemicals. AgriChemWhey aims at providing inspiration to society and industry to support a European circular bioeconomy. Project partners will collaborate with local educational institutions, and the engagement of different stakeholder groups and citizens will be promoted with a first-of-its kind pilot plant facility.

IMPACT ON SAFETY AND HEALTH

One third of the projects reports a contribution to developing safer processes and healthier products, as shown by Figure 58.

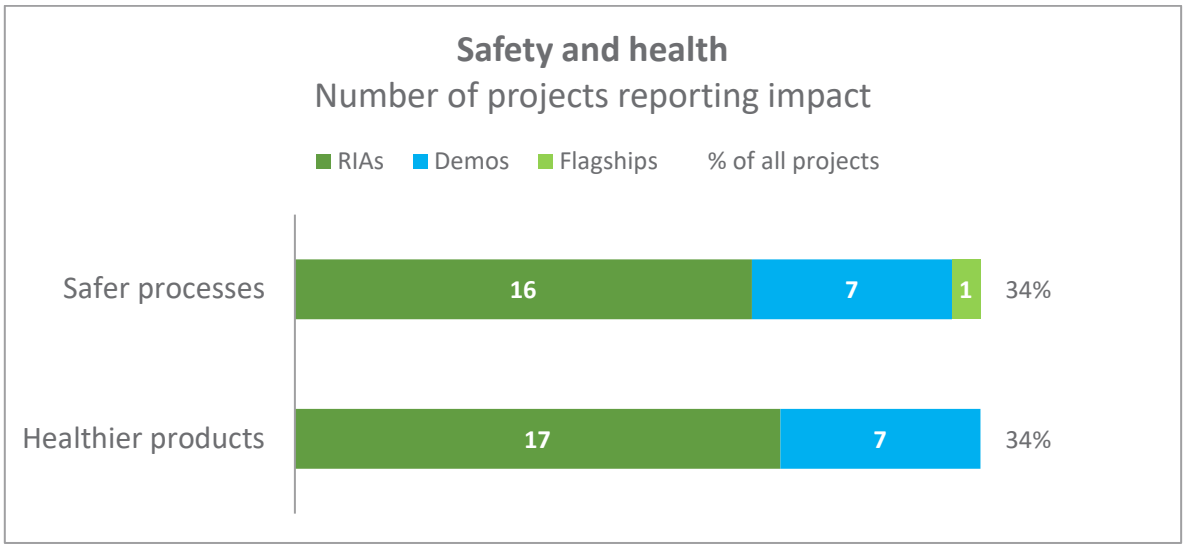


Figure 58: Number of projects reporting a positive impact on health and safety.

Examples

CARBOSURF RIA project produces glycolipid biosurfactants and specialty carbohydrates, which have a wide range of application fields, such as detergents, neutraceutical, pharmaceutical and cosmetic industries. The fermentation-based production of glycolipid biosurfactants is much safer than the classic processes for surfactant production, which include hazardous processes such as ethoxylation.

ReSolve RIA project works on the replacement of two hazardous solvents - toluene and NMP (N-methyl-2-pyrrolidone) - with safer alternatives derived from non-food carbohydrates, which have a lower toxicity profile, as well as a high application performance.

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, 29% 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 59.

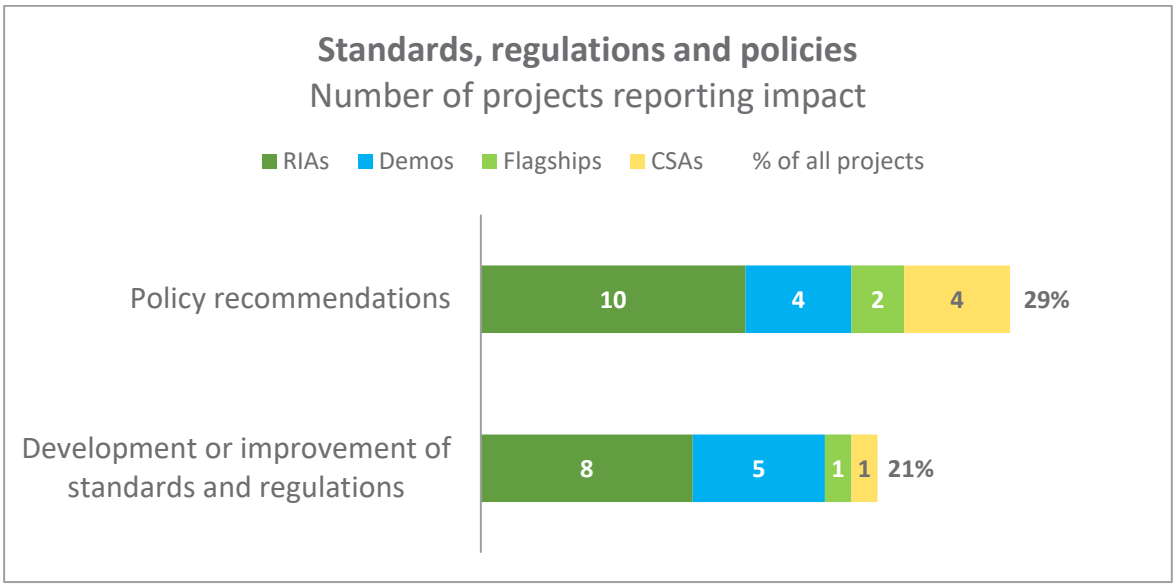


Figure 59: number of projects reporting a contribution to the development of standards, regulations and policies.

Examples

Several 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 contributes to the definition of strategies towards the standardization of the developed bio-based processes and products. 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.

FIRST2RUN also expects to provide **policy recommendations** to support the adoption of sustainable bio-based and biodegradable products in specific applications where biodegradability provides an added-value by solving environmental problems. URBIOFIN DEMO project, which processes the organic fraction of municipal solid waste (biowaste) into different bio-based chemicals, will identify regulatory constraints for the deployment of its biorefinery and provide policy recommendations to overcome these limitations.

Sustainable development is at the heart of the updated Bioeconomy Strategy and the BBI JU in particular offers a concrete opportunity to achieve the UN Sustainable Development Goals (SDGs)[45]. In this year's survey, project coordinators were requested to report on the contributions of the respective projects to the SDGs (Figure 60). The close connection between the SDGs and BBI JU's portfolio was confirmed, with more than half of the projects reporting contributions to SDGs: SDG 12 - Responsible consumption and production, SDG 13 - Climate action and SDG 9 - Industry, innovation and infrastructure. In addition, about 40% of the projects contribute to SDG 8 - Decent work and economic growth and 3 - Good health and well-being.

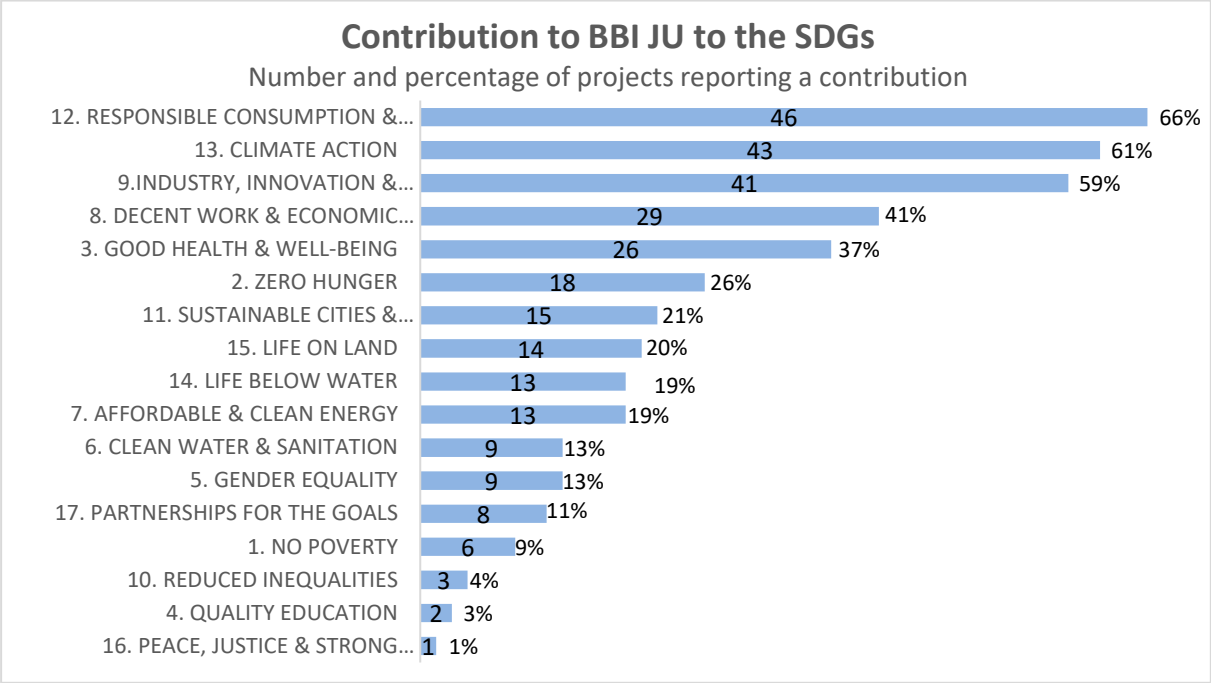


Figure 60: number of projects reporting contributing to the Sustainable Development GoalsSome examples of BBI JU projects contributing to the SDGs are mentioned below. A more in-depth analysis will be carried out by the BBI JU and included in a dedicated report in 2019.

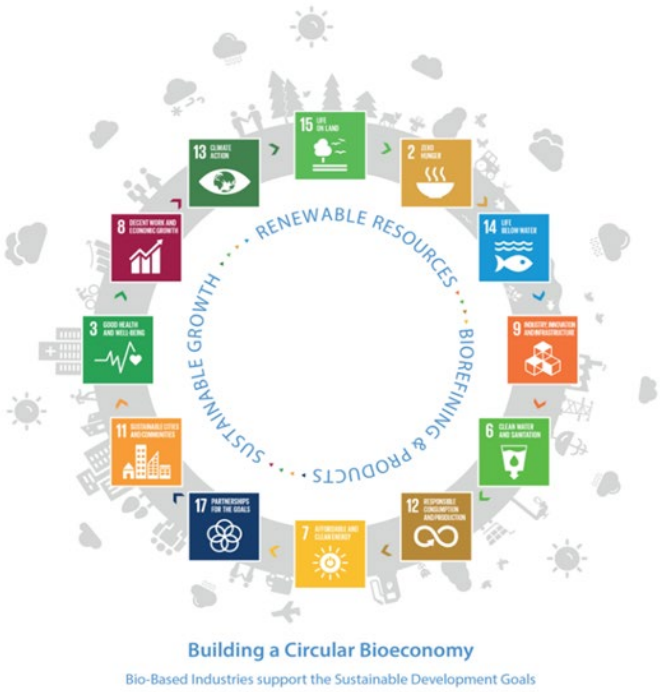
Examples

MACROCASCADE RIA project contributes to SDG 13: Take urgent action to combat climate change and its impacts. This project works on the development of a cascading marine macroalgal biorefinery, covering the entire technological chain for processing sustainable cultivated seaweed into highly processed value added products. The cultivation of macroalgae contributes to CO2 uptake, thereby mitigating the global warming and the acidification of the oceans.

[45] The definitions of the SDGs can be found here: https://sustainabledevelopment.un.org/?menu=1300

URBIOFIN DEMO project contributes to SDG 11: Make cities inclusive, safe, resilient and sustainable This project is setting up an integrated and innovative biorefinery for the transformation of the organic fraction of municipal solid waste into new marketable bioproducts, chemical building blocks, biopolymers and additives. The project results will help meet the European target of recycling 65% of municipal waste by 2030, developing a more sustainable and profitable organic waste management. This will be in line with the objectives of the new Waste Management Directive and the circular economy, i.e. reducing fossil resource dependence in the domains of energy and products, boosting competitiveness, fostering sustainable economic growth and improving citizens' quality of life. URBIOFIN also contributes to SDG 13: Climate action by avoiding CH4 emissions from landfilling of biowaste.

EFFORTE RIA project contributes to SDG 15: Sustainably manage forests, combat desertification, halt and reverse land degradation, halt biodiversity loss. EFFORTE establishes improved and knowledge-based precision forestry practices to ensure both sustainability and efficiency in forest management. Sustainability, biodiversity and soil conservation are enabled by customising forest management according to the specific local conditions, mechanisation of harvesting and planting operations and geo-referencing.



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 – being them members of the JU or not - and 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 contribution 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. The so-called APIK in fact 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 2014-2018 reaches EUR 229 710 558.

In order to measure the leverage effect, the European Commission proposed a calculation method that was applied to all Joint Undertakings in the context of the mid-term evaluation of the JUs operating under Horizon 2020. This calculation method excludes the contribution to the administrative costs of the Joint Undertaking[46]. In 2018, the calculation method was formally adopted by the BBI JU Governing Board[47]. It provides an indication of the total leverage effect of the initiative over a given period of time. The formula is the following:

(Total) leverage = Operational leverage + additional leverage:

$$Operational\ leverage = \frac{\sum APIK^{48} + \sum FC^{49}}{\sum EU\ contribution^{50}}$$

$$Additional\ leverage = \frac{\sum IKAA^{51}}{\sum EU\ contribution}$$

As each element of this calculation has its own reporting and certification process with significant differences over time, it is only at the end of the programme that the result reaches the appropriate level of reliability. Despite this consideration, the BBI JU Governing Board discussed and agreed that

[46] 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

[47] BBI JU governing board meeting of 28 June 2017.

[48] 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.

[49] 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.

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

[51] 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.

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 2018, the value of the leverage effect of the BBI JU Initiative is:

$$Operational\ leverage = (229\ 710\ 558 + 3\ 250\ 000^{52})\ /\ 495\ 673\ 017 = 0.47$$

$$Additional\ leverage = 699\ 879\ 000^{53}\ /\ 495\ 673\ 017 = 1.41$$

$$(Total)\ \ leverage\ by\ end\ 2018 = 0.47 + 1.41 = \mathbf{1.88}$$

The reported value is below the expectation over the reporting period, but based only to partial reporting of in kind additional activities.

Element of the leverage effect calculation	In kind additional activities (IKAA) in Eur (cumulative)	Financial contributions in Eur (cumulative)	Difference between the total costs and the BBI JU contribution of the projects (APIK) in Eur (cumulative)	Total (cumulative) in Eur	EU contribution (cumulative) in Eur	Total leverage
2015	291,482,000	0	28,093,229	319,575,229	49,653,708	6.44
2016	477,342,000	750,000	101,961,334	580,053,334	228,690,682	2.54
2017	663,589,000	1,250,000	183,634,711	848,473,711	413,761,615	2.05
2018	699,879,000	3,250,000	229,710,558	932,839,558	495,673,017	1.88

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

[53] This figure includes the provisional IKAA certified amount of EUR 36 290 000 provided by BIC by 27 May 2019. Additional certification of IKAA may be provided by BIC at a later stage.

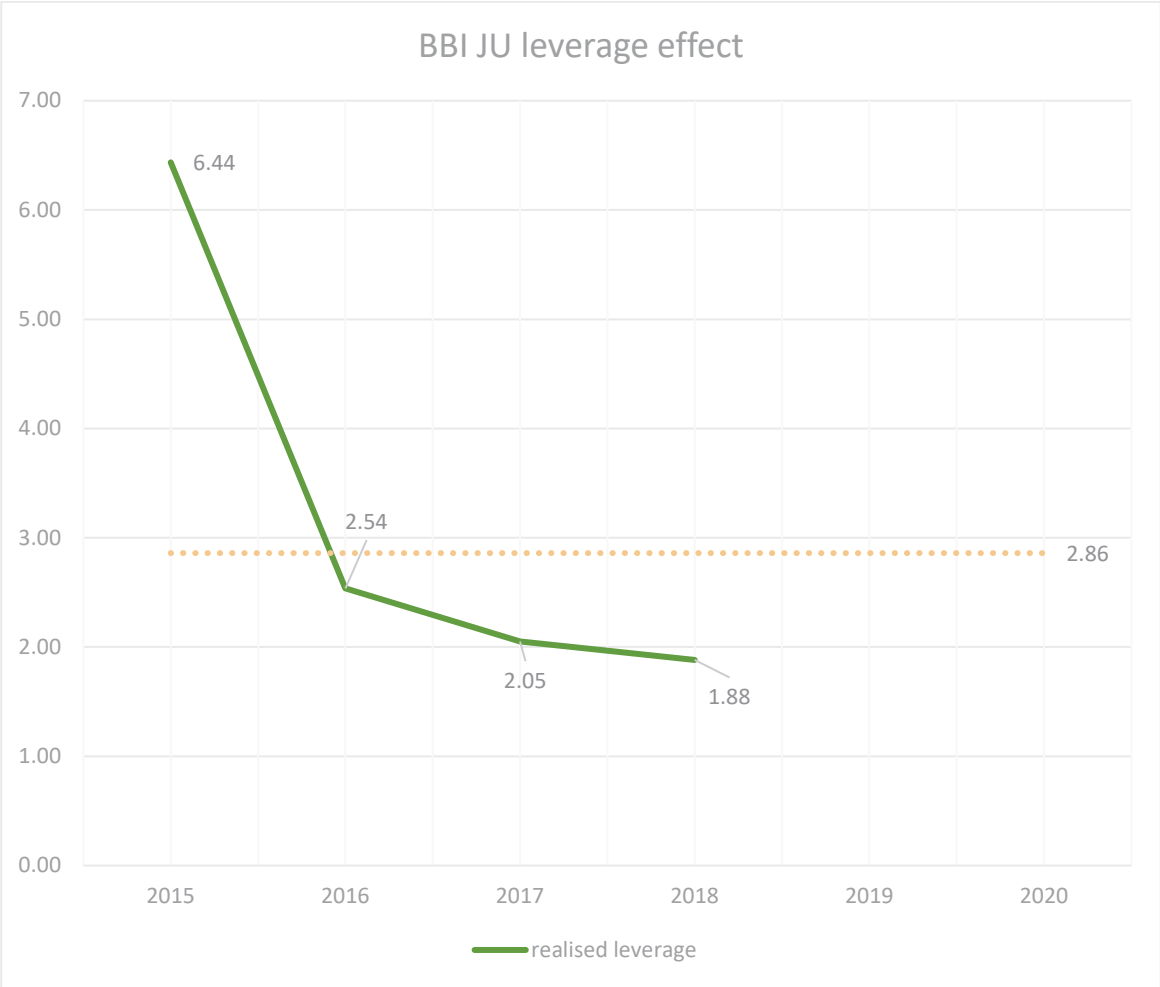


Figure 61: the evolution of the leverage effect over the first years of the initiative.

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

CALL 2018 EVALUATION: KEY STATISTICS AND INFORMATION ON TOPICS

The 2018 Call for Proposals covered Research and Innovation Actions (RIA), Innovation Actions (IA) – comprising Demonstration Actions (DEMO) and Flagships (FLAG) –, and Coordination and Support Actions (CSA). The Call contained 21 topics (two FLAG, five DEMO, 11 RIA, and three CSA). The initial indicative budget for the Call was EUR 115 million (the breakdown per type of action is shown in Table 9).

In Call 2018 the BBI JU introduced a distinction within RIA topics resulting in the creation of six RIA topics (RIA B) containing an additional eligibility criterion. According to this criterion, at least one participant of each consortium had to be a constituent entity of the Bio-based Industries Consortium (BIC) that is not eligible for JU funding according to Commission Delegated Regulation (EU) No 623/2014. RIA topics not containing the additional eligibility criterion are referred to as RIA A.

The Call was published in the Funding and Tenders Portal and in the Official Journal on 11 April 2018 with a submission deadline of 6 September 2018. 144 proposals were submitted under this Call: two proposals were declared inadmissible during the admissibility and eligibility checks; two other proposals were found to be out of scope during the evaluation and were therefore declared ineligible. 39% of the proposals were evaluated above threshold, and 19 proposals out of 140 eligible proposals were retained for funding, corresponding to 13.6% success rate. Prioritization 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 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 (RIA A and DEMO). The widening geographical coverage, as well as the expansion of FLAG portfolio in new countries, confirm a significant mobilisation of the BBI sector.

The evaluation of all proposals was completed in November 2018 and the resulting ranking list was adopted by the BBI JU Governing Board on 14 December 2018. All applicants were informed about the evaluation results on 17 December 2018 and, on the same date, the Grant Agreement preparation (GAP) for the 19 retained proposals was officially launched for an amount of EUR 102 910 812. The Call 2018 GAP is expected to be finalised by 6 May 2019.

Figure 62 shows the annual evolution of the mobilisation of the bio-based community through the Calls over the years 2014 to 2018. Between 2017 and 2018, the number of topics increased from 16 to 21. The number of proposals confirmed the stable mobilisation created by the initiative, reaching 144 proposals and an average of 6.9 proposals per topic.

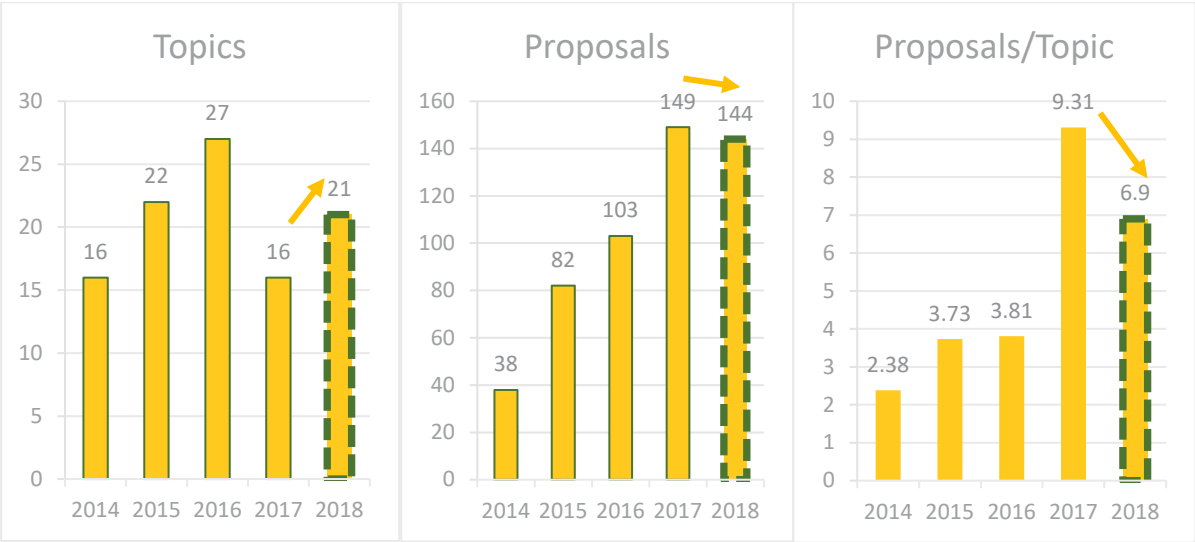

Figure 62: Overview of the evolution of submissions in BBI JU Calls (2014-2018).

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 100 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 100 experts giving a gender balance of 52 men (52%) and 48 women (48%). 35% 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 30 different countries (66% EU15, 28% EU13, four per cent associated countries, two per cent other).

Hearings were organised for flagship actions for all submitted proposals. The hearings were organised 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 2018, no later than five months after the proposal submission deadline (see section 1.3.1.1. Horizon 2020 KPIs and cross-cutting issues on specific details with respect to TTI). Two redresses were submitted in January 2019.

CALL OUTCOME

The budget available for the Call according to the 2018 AWP was EUR 115 million, 35% higher compared to the EUR 85 million budget allocated for Call 2017. As a result of the higher budget availability, the overall success rate increased from 11% (Call 2017) to 13.6% (Call 2018).

For Call 2018 the overall quality of the proposals was high and made the Call very competitive. A good topic coverage was accomplished, however not all topics received submissions. RIA 4 (*Apply advanced*

biotechnologies to convert biomass that contains inhibitors into high value-added chemicals and materials) and RIA 11 (*Develop technologies and systems to produce bio-based aromatics that outperform fossil-based counterparts*) topics did not receive any proposal.

In total 19 out of 140 eligible proposals were selected for funding, consuming 89.5% of the overall budget, corresponding to a 67% overall topic coverage, with seven topics not covered by proposals retained for funding (topics D1, F1, R3, R4, R5, R8 and R11). Table 9 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	5	0	10%	Improve the logistical and pre-processing steps of locally sourced biomass to serve as feedstock for the bio-based industry	30,000,000
	2	8	1		Find solutions to dilution, pollution and content diversity challenges to turn mixed urban bio-waste into sustainable feedstock for the bio-based industry	
	3	6	2		Valorise sugars from the cellulosic and/or hemicellulosic fractions of lignocellulosic biomass	
	4	15	1		Produce biopesticides or bio-based fertilisers as components of sustainable agricultural management plans	
	5	21	1		Produce sustainable and cost-efficient high-performance functional ingredients from alternative sources	

RIA A	1	6	1	14%	Resolve logistical, infrastructural and technological challenges to valorise residual and sidestreams from aquaculture, fisheries and the aquatic biomass processing industries	26,000,000
	2	12	1		Develop techniques and systems to improve the performance of biocatalysts	
	3	3	0		Introduce new technologies to make pulping operations more resource-efficient	
	9	12	1		Develop functional molecules for bio-based coatings outperforming existing products and meeting market requirements	
	10	21	4		Develop bio-based packaging products that are biodegradable/ compostable and/or recyclable	

	4	0	0		Apply advanced biotechnologies to convert biomass that contains inhibitors into high value-added chemicals and materials	
	5	1	0		Develop innovative single-step processes for conversion of a biomass feedstock into multiple readily usable intermediate streams	
	6	4	1		Apply emerging breakthrough technologies to improve existing value chains	
RIA B	7	1	1	29%	Electrochemical processes for bio-based monomers and polymers	15,000,000
	8	1	0		Develop adequate computational systems for modelling the design, start-up, scaling-up and continuous improvement of bioprocesses involving microorganisms	
	11	0	0		Develop technologies and systems to produce bio-based aromatics that outperform fossil-based counterparts	

FLAG	1	5	0	17%	Produce on a large scale competitive bio-based building blocks, polymers and materials that outperform existing alternatives in identified market applications	42,000,000
	2	8	2		Large-scale production of proteins for food and feed applications from alternative, sustainable sources	
CSA	1	3	1	20%	Benefit from previous and current work to create a coherent and stimulating 'environment' for a sustainable bio-based industry in Europe	2,000,000
	2	7	1		Expand the bio-based industry across Europe	
	3	5	1		Identify opportunities to promote careers, education and research activities in the European bio-based industry	

Table 9: Call 2018 Number of proposals submitted and retained per AWP topic.

Participants in submitted and retained proposals. These fall under the five following categories (Figure 63):

Private-for-Profit (PRC);

Research Organisation (REC);

Higher or Secondary Education (HES);

Public Body (excluding research and education) (PUB);

Other types of organisation (OTH)

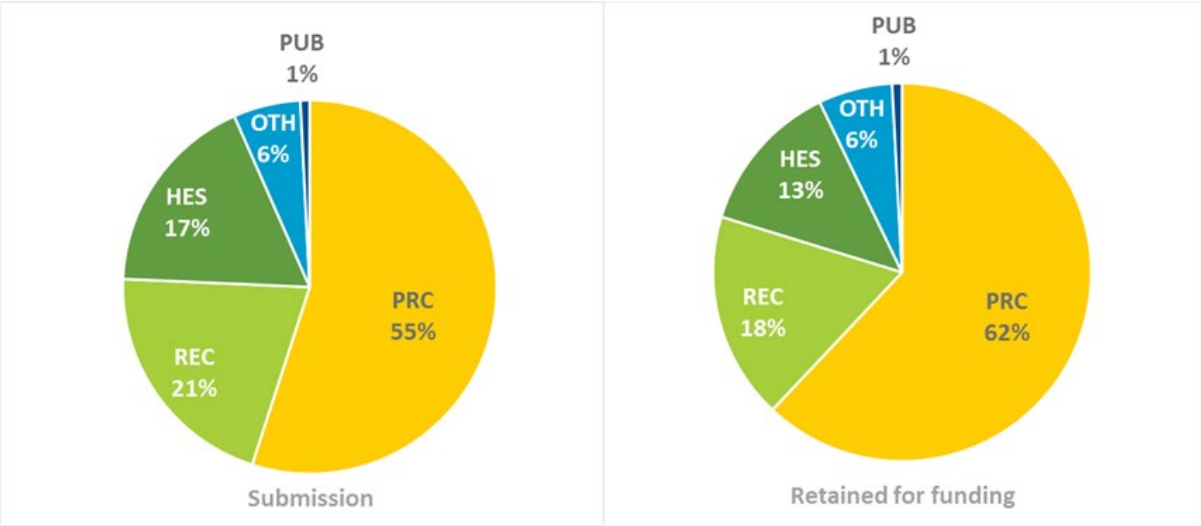

Figure 63: Type of participants in submitted or retained for funding proposals in Call 2018.

Figure 64 shows the distribution of applicants and beneficiaries per country, indicating that EU13 participation, as well as the success rate, is considerably lower than that of EU15. Overall, the 2018 Call attracted applicants from all Member States. From EU28, only 1 EU15 country (Luxembourg) and only five EU13 countries (Romania, Malta, Latvia, Cyprus, and Lithuania) do not have participants in the retained proposals. The success rate for certain under-represented countries, such as Ireland (7%) and Greece (6%), remained lower than the overall success rate for the Call (13.6%); nevertheless, for certain other countries, such as Italy (23%), Portugal (22%) and Croatia (21%), a more dynamic participation can be observed with success rates significantly higher than the overall rate for the Call.

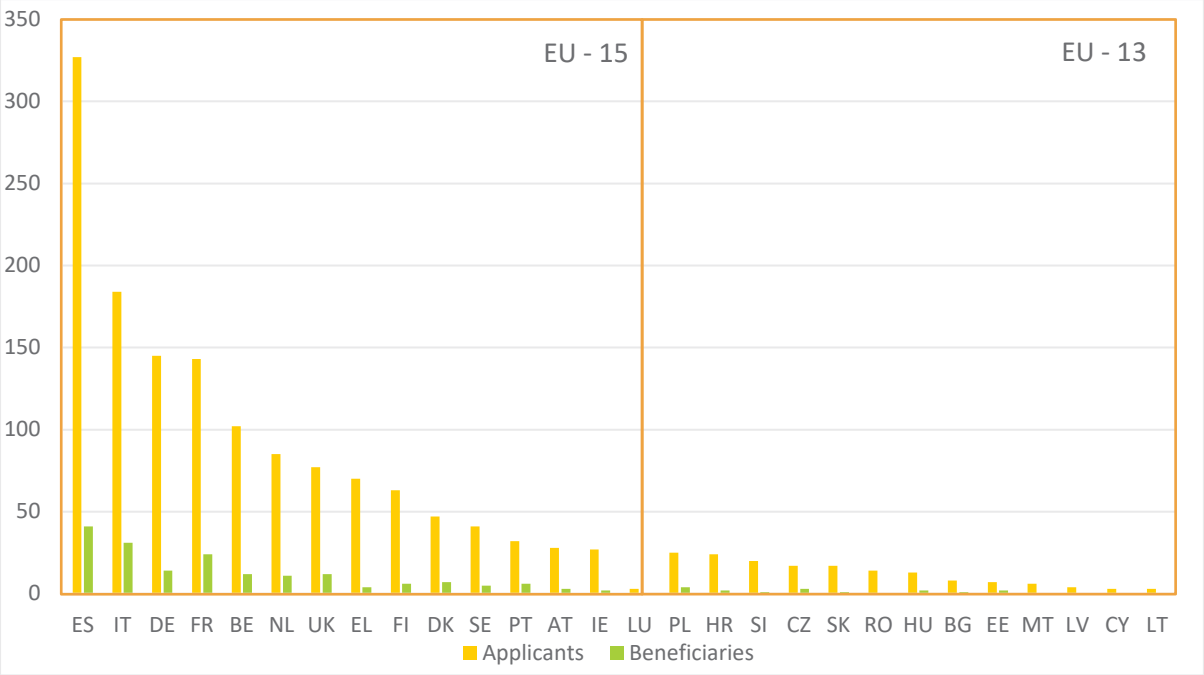

Figure 64: Distribution of applicants and beneficiaries per country from EU15 and EU13 in Call 2018.

Figure 65 shows the distribution of applicants and beneficiaries per country from associated and third countries. In Call 2018, five associated countries are receiving funding. More specifically, there is a stable number of beneficiaries from Norway and Switzerland and, for the first time in BBI JU Calls, applicants from the Former Yugoslav Republic of Macedonia are in the proposals selected for funding. In addition, Turkey (TR) and Israel (IL) are participating in the retained proposals. No third country is participating in retained proposals.

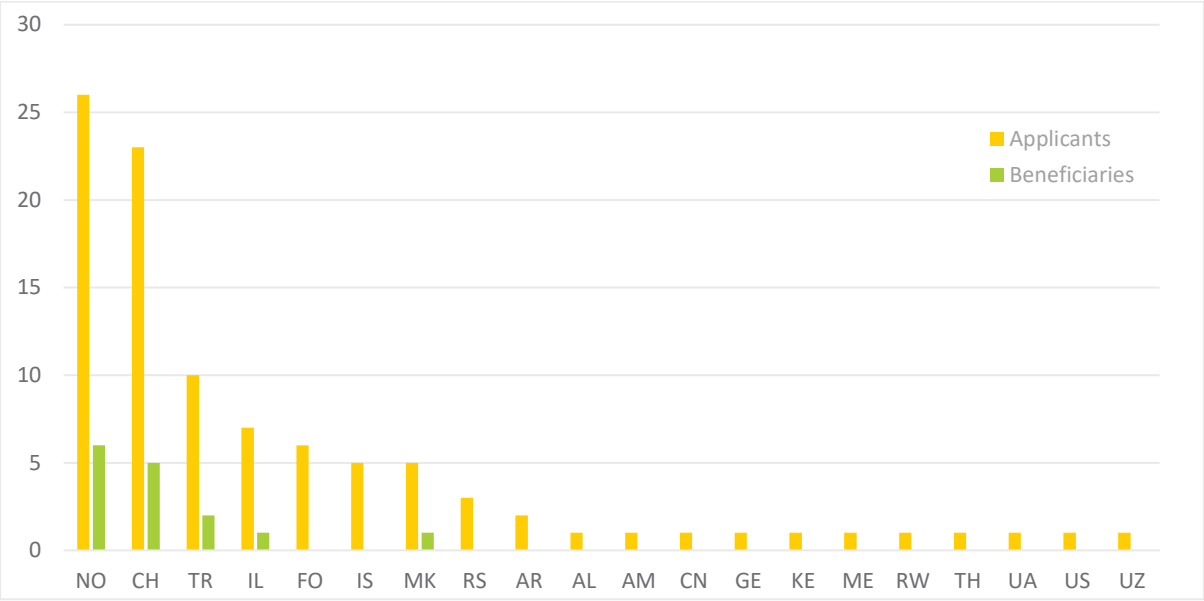

Figure 65: Distribution of applicants and beneficiaries per country from associated countries and third countries (industrialised countries and emerging economies and developing countries) in Call 2018.

With respect to SMEs, in Call 2018, 554 participants out of 1.633 were self-declared as SMEs, thus representing 34% of the total number of participants (Figure 66). In retained proposals, SMEs represented 34% of all participants, corresponding to 42% of the total funding, which is a further improvement compared to the level of funding observed for Call 2017 (38%). This improvement is mainly due to the funding of a flagship led for the first time by an SME. For more details on the overall SME participation and funding allocation see section 1.3.1.1.

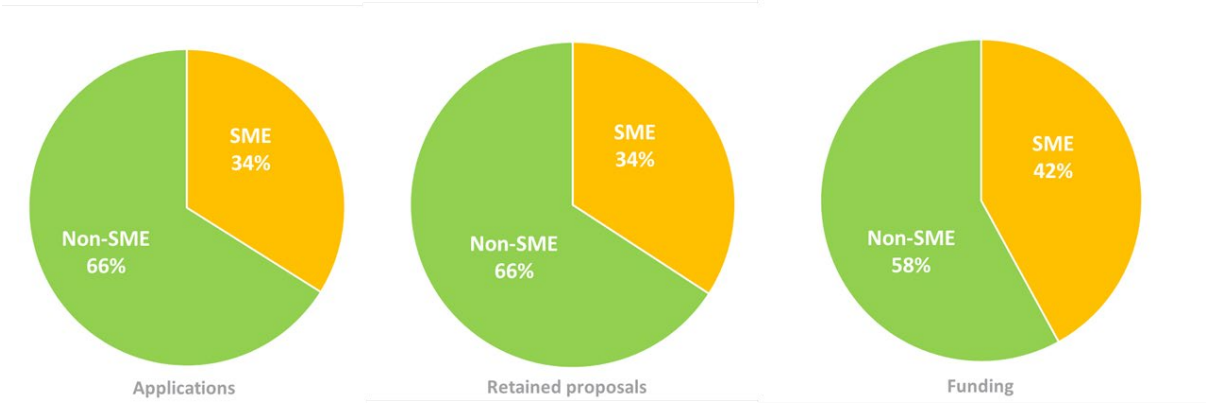

Figure 66: SME share in applications, retained proposals and funding in Call 2018. These figures refer to non-unique applicants/beneficiaries.

1.4. CALLS FOR TENDERS

No calls for tenders were planned in the AWP 2018, 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 2018, the BBI JU project portfolio reached 82 projects at different stages of their implementation since they were funded under Calls 2014, 2015, 2016 and 2017, and covering all types of actions. Because of this variety, the dissemination activities of ongoing projects were very heterogeneous in 2018. By the end of the year, only projects from Calls 2014 and 2015, as well as three projects of Call 2016, had made considerable progress and disseminated intermediate results.

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

1. Number of dissemination and communication activities: concerns activities in 19 categories such as organisation of a conference; press release, flyer, etc.;
2. Estimated number of persons reached: concerns persons in nine categories such as scientific community, industry, policy makers, etc.

Tables 10 and 11 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. For comparison's sake, tables 10 and 11 also include the data available at the end of 2017, as described in BBI JU's 2017 Annual Activity Report. This comparison shows that in 2018, 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 2018 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, flyers and social media.
- data provided by 59 projects; 33 of the 82 BBI JU projects will only report their first dissemination and communication data in 2019 at the earliest.

Type of dissemination & communication activities	2017	2018	Total
Organisation of a Conference	5	39	44
Organisation of a Workshop	14	36	50
Press release	59	164	223
Non-scientific and non-peer-reviewed publication (popularised publication)	111	487	598
Exhibition	23	96	119

Flyer	24	5553	5577
Training	20	62	82
Social media	45	2735	59569
Website	86	230	316
Communication campaign (e.g. radio, TV)	14	37	51
Participation at a conference	159	550	709
Participation at a workshop	59	128	187
Participation at an event other than a conference or a workshop	51	179	230
Video/film	12	59	71
Pitch event	5	9	14
Trade Fair	19	66	85
Participation in activities organised jointly with other Horizon 2020 projects	13	71	84
Other	34	157	195

Table 10: dissemination and communication activities of all BBI JU projects reported in the *Funding and Tenders Portal*

Category / target group	Estimated number of persons reached		
	2017	2018	Total
Scientific Community (Higher Education, Research)	124 007	450 043	574 050
Industry	231 388	414 702	646 090
Civil Society	9 141	2 935 852	2 944 993
General Public	945 855	8 173 203	9 119 058
Policy Makers	15 489	62 034	77 823
Media	15 371	1 577 383	1 592 754
Investors	6 845	39 195	46 040
Customers	104 997	365 529	470 526

Table 11: estimated number of persons reached, in the context of all dissemination and communication activities (2017-2018).

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 by year, having reached 160 publications by the end of 2018. Similarly, as the projects from the first Calls of the programme (2014-2015) start producing exploitable results, the number of patent applications grew to 31 only in the year 2018, with the majority submitted by FLAG projects.

BBI JU ACTIVITY IN SUPPORT TO DISSEMINATION OF PROJECTS 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 webpage[54] 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.
- CORDIS[55], 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 BBI JU newsletter, which was launched in the second half of 2017, and which facilitates - among other things - the dissemination of project results.

BBI JU provides dissemination-supporting information using a webpage[56] dedicated to project management, which includes the following information:

- Communication guidelines for projects, including texts and logos which acknowledge EU funding;
- 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 2018 BBI JU took into account new insights gathered from the DiEPP[57] meetings and its successor (the 'Dissemination and Exploitation Network'), 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.

Finally, BBI JU also disseminates information actively via social media. This activity is described in more detail in section 2.1.4.

[54] https://www.bbi-europe.eu/projects

[55] http://cordis.europa.eu/home_en.html

[56] https://www.bbi-europe.eu/participate/project-management

[57] DiEPP = Dissemination and Exploitation Practitioners' Platform, 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 2018 BBI JU published a Call for proposals for a total maximum indicative funding amount of EUR 115 000 000 covered by a budgetary commitment (L1 global) of EUR 114 832 447 of current year's credits and EUR 825 798 of reactivated unused commitment appropriations from 2017, total EUR 115 658 245. The actions covered by the Call were RIAs, DEMOs, flagships and CSAs.

19 proposals were selected for a requested total funding of EUR 102 910 812, amounting to a foreseen consumption of 89% 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.

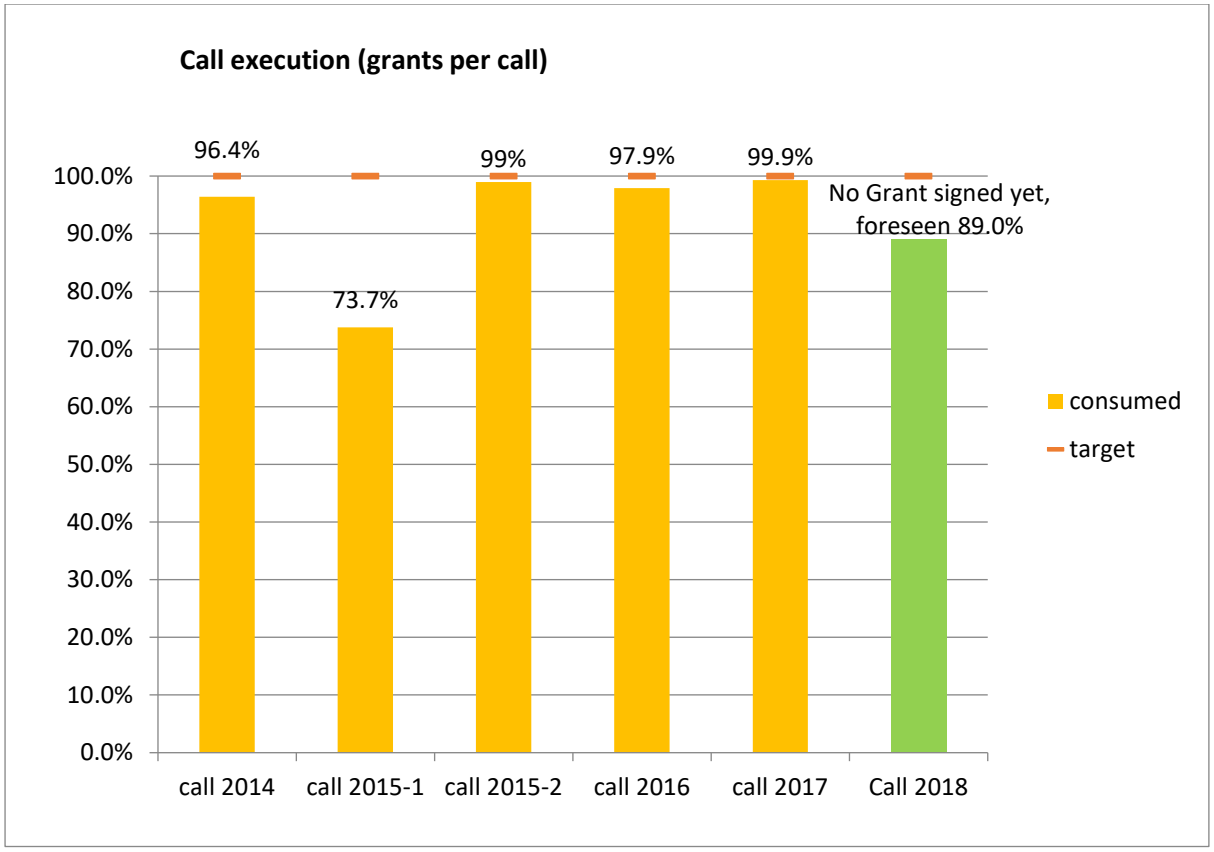

Figure 67: Call budget execution.

Regarding Call 2017, grants for EUR 85 161 992 were all signed by May 2018 within the given deadline of eight months from the Call closure and with an average TTG of 232 days.

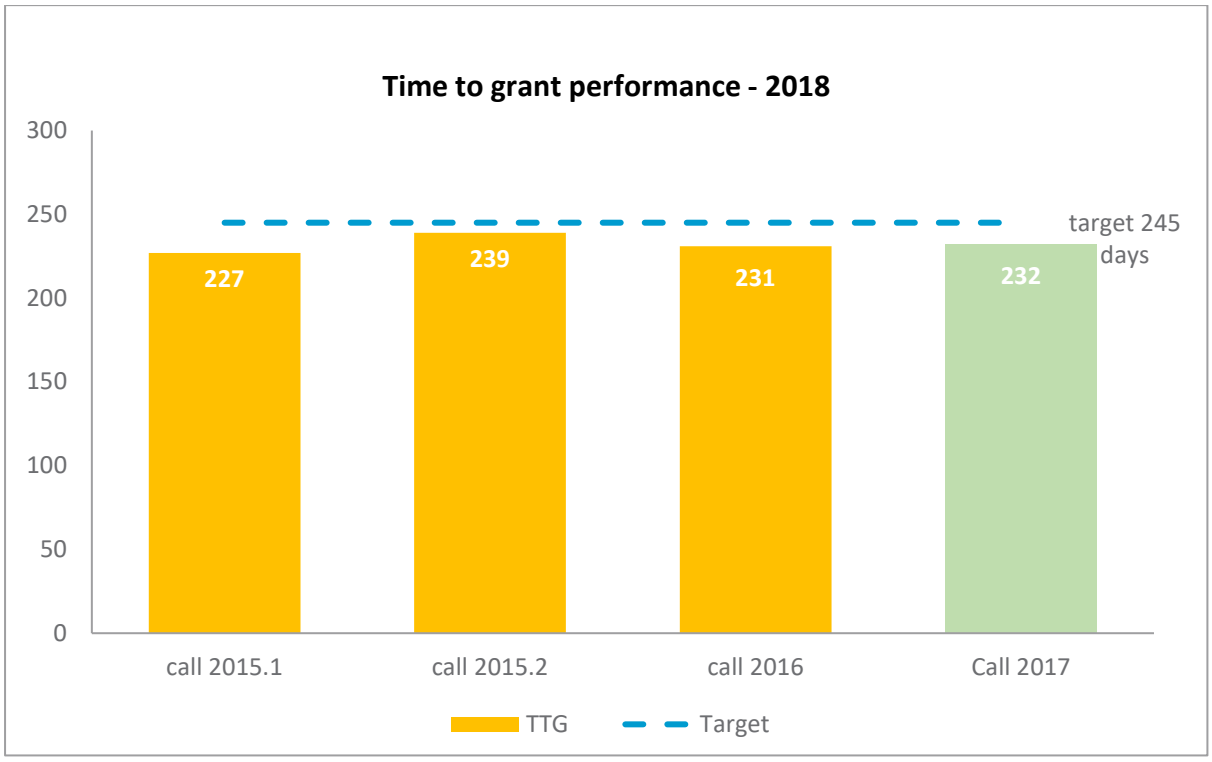

Figure 68: Time to grant performance in 2018

PAYMENT APPROPRIATIONS

Pre-financings were paid with an average time to pay of 11.4 days (against a target of 30 days). 94% of the payments for a total amount of EUR 34 064 797 were made on time, only one was finalised after the target date.

Regarding the payment of the periodic reports, the BBI JU Programme Office dealt with 33 interim costs claims in 2018. The average time to pay was 71.3 days (against a target of 90 days) for a total of EUR 45 108 092. Only one payment was late.

The overall execution of payment appropriations (included in the amended budget – total EUR 112 439 102) for the operational expenditure was for a total amount of EUR 79 172 889. The remaining EUR 33 266 213 was budgeted for payments of periodic reports in 2018 which were either delayed until early 2019 or the amount claimed was much less than anticipated. Part of this surplus will be reactivated in the 2019 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 Union[58] 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[59].

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)[60] 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 AWPs.

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 described at three different layers in terms of concretisation of costs (1) expected/committed; (2) estimated/reported; (3) certified.

The table below shows the values of expected IKOP resulted 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	36,989,461	55,890,387	18,900,927
2015.1	65,485,179	99,059,489	33,574,310
2015.2	42,569,942	58,532,869	15,962,927
2016	101,442,139	146,224,690	44,782,551
2017	32,914,827	41,340,323	8,425,496
TOTAL	**279,401,547**	**401,047,758**	**121,646,211**

Table 11: value of IKOP committed in running grants by BIC beneficiaries, per call

[58] 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.

[59] Including contribution towards administrative costs.

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

In line with Article 4(3) of the Council Regulation, BIC submitted the 2018 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 2018. 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 2018[61] 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)
2014	2,438,785	4,494,436	4,279,317
2015.1	2,973,000	3,627,843	6,813,094
2015.2	139,517	2,278,318	2,964,681
2016		1,726,419	5,935,905
2017			692,526
TOTAL per year	5,551,302	12,127,016	20,685,523
TOTAL by end 2018	38,363,841		

Table 12: Values of estimated IKOP incurred in 2016, 2017 and 2018, per Call.

Compared to the total amount of EUR 38 million of IKOP estimated by BIC constituent entities, EUR 12 102 972 has been certified and is included in the BBI JU accounts as net assets (see table below). The IKOP certification was done via certificates of financial statements submitted in the context of the first concluded project and via the submission by some BIC constituent entities of IKOP certificates[62] before the end of the projects.

Grants from Call for proposals	Certified IKOP incurred in 2016 and 2015 (in EUR)	Certified IKOP incurred in 2017 (in EUR)	Certified IKOP incurred in 2018 (in EUR)
2014	10,345,189	1,499,775	258,008
2015.1	NA	NA	NA

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

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

2015.2	NA	NA	NA
2016	NA	NA	NA
2017	NA	NA	NA
TOTAL per year	10,345,189	1,499,775	258,008
TOTAL by now	12,102,972		

Table 14: Values of certified IKOP incurred in 2015, 2016, 2017 and 2018, per Call.

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 2018 submitted by BIC and approved by the GB at the beginning of 2018, up to EUR 269 910 000 of additional activities were expected to be invested in 2018 by BIC's constituent entities.

In May 2019[63] BIC delivered the report of certified IKAA incurred during 2018 for a total value of EUR 36 290 000. 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 certified[64] IKAA provided by BIC for the year 2018 amounts to EUR 36 290 000. The certified additional investments by the end of 2018 reach a total of EUR 699 879 000. 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
TOTAL	**699,879,000**

Table 14: values of certified IKAA by year

[63] Shown value includes IKAA certified for 2018 by 27 May 2019. BIC will provide additional IKAA certificates at a later date.

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

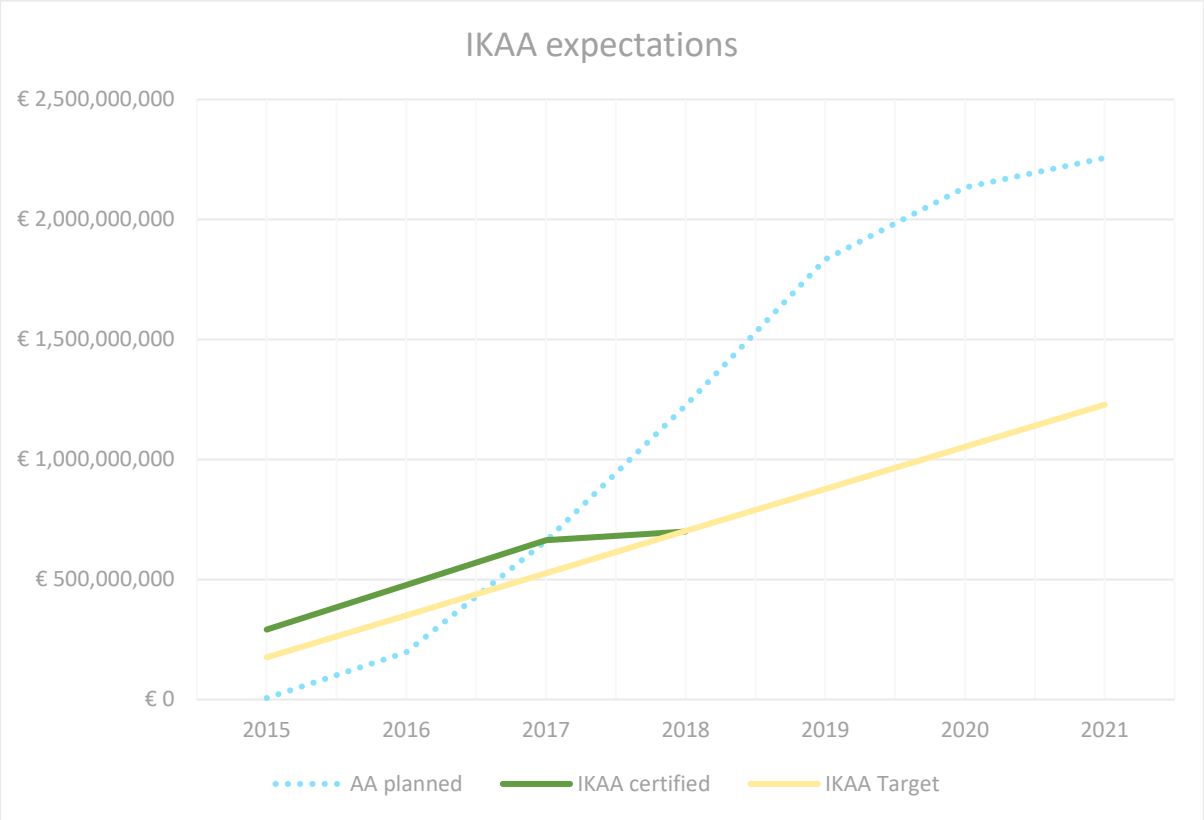

Figure 69: Value of planned additional activities, IKAA target and certified IKAA (2015-2018[65])

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.

Currently this objective is far from being reached. The European Court of Auditors[66] and the European Parliament[67] have expressed their concern on this issue.

The EC, BIC and BBI JU have taken action in 2017 and 2018 to encourage BIC constituent entities to further contribute. The solution – decided by the Governing Board to facilitate financial contributions

[65] Shown value includes IKAA certified for 2018 by 27 May 2019. BIC will provide additional IKAA certificates at a later date.

[66] Report on the annual accounts of the Bio-based Industries Joint Undertaking for the financial year 2017 (https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47646).

[67] European Parliament decision of 26 March 2019 on discharge in respect of the implementation of the budget of the Bio-based Industries Joint Undertaking for the financial year 2017 (2018/2214(DEC)) (http://www.europarl.europa.eu/doceo/document/TA-8-2019-0287_EN.html).

by BIC and implemented in the BBI JU AWP 2018 – was to have an additional eligibility criterion for some RIAs. Under that criterion, at least one participant of each consortium had to be a constituent entity of the Bio-based Industries Consortium (BIC) that is not eligible for JU funding according to Commission Delegated Regulation (EU) No 623/2014. After the Council Regulation has been amended, as of Call 2018, it has been possible for the member other than the Union and its 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 B topics, BIC constituent entities committed to only EUR 400 000 in the submitted proposals. Thus, only a small amount of financial contributions in selected projects of Call 2018 counts towards the objective of EUR 182.5 million set out in the Council Regulation.

At the end of 2018, the financial contribution committed to by BIC and/or its constituent entities as direct contribution to the BBI JU operational budget amounts to a total of EUR 3 250 000 – less than 2 % of the amount committed to (see table below).

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

Looking at the total level of the contribution by BIC and its constituent entities at the end of 2018, it remains below the expected values. The certified IKAA are at the expected level, committed IKOP is at around half of the expected value, and the financial contribution is far below.

Year	*IKOP (Eur)*	*Financial contribution (Eur)*	*IKAA (Eur)*	*Total (Eur)*
	committed	*committed*	*certified*	
2015	18,900,927		291,482,000	*310,382,927*
2016	*49,537,237*	750,000	185,860,000	*236,147,237*
2017	44,782,551	500,000	186,247,000	*231,529,551*
2018	8,425,496	2,000,000	36,290,000	*46,715,496*
Total	121,646,211	3,250,000	699,879,000	824,775,211

	IKOP (Eur)	*Financial contribution committed (Eur)*	*IKAA (Eur)*	*total (Eur)*
Expected value by end of initiative	763,250,000[68]	*182,500,000*	1,700,000,000	2,505,750,000
Total 2018	**121,646,211**	**3,250,000**	**699,879,000**	**824,775,211**

[68] The value of IKOP has been calculated

%	16%	2%	41%	33%

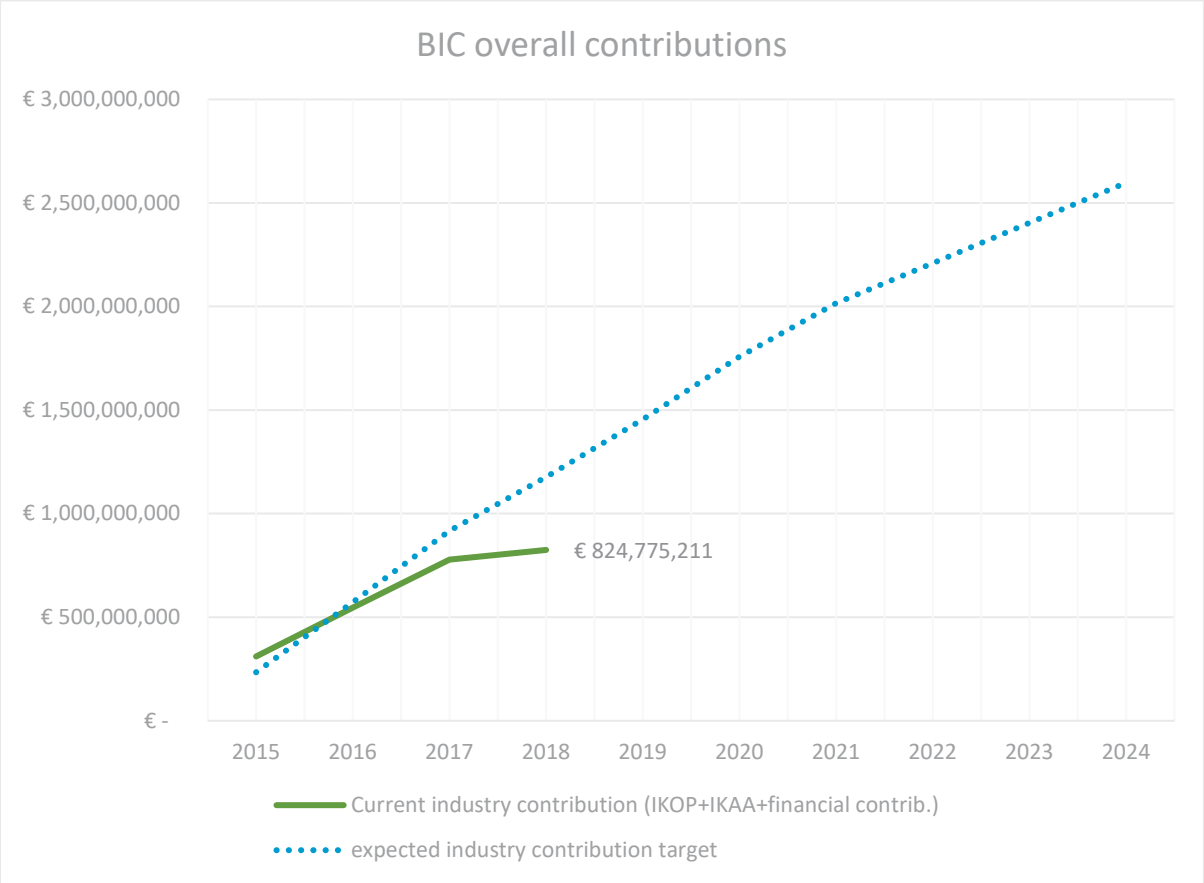

Figure 70: Total amount of contribution by BIC and its constituent entities to BBI JU (committed IKOP, committed financial contributions, certified IKAA)[69].

For the calculation of the related leverage effect, please refer to section 1.3.1.4 above.

[69] Shown value includes IKAA certified for 2018 by 27 May 2019. BIC will provide additional IKAA certificates at a later date

2. SUPPORT TO OPERATIONS

2.1. COMMUNICATION ACTIVITIES

Communication and stakeholder management activities during 2018 were mainly focussed on disseminating the impact of BBI JU, mostly at a socio-economic level, while key recurring activities such as the promotion of the BBI JU programme remained an overarching priority.

Similar to the previous year, the communication and stakeholder management strategy was executed following the roadmap already developed in cooperation with BIC and the EU represented by the EC 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.

2.1.1. Priority actions

The Communication and Stakeholder Management Action Plan 2018 was based, developed and executed around four key priorities in order to successfully allow the transition of the communication activities from recognition to reputation building. The four priorities were namely:

1. Promote the BBI Calls with a particular emphasis on underrepresented countries or macro-regions in synergy with other EU and BIC initiatives;
2. Organise communication events and campaigns to communicate the impact of the BBI initiative as a key instrument for the development of a sustainable bio-based industry in the EU;

3. Implement a stakeholder management action plan to widen the understanding and recognition of BBI among a wider group of prioritised key stakeholders from the EU institutions, relevant federations, Governmental & NGOs;
4. Extend the communication action plan to third countries where win-win strategies have been identified.

2.1.2. Outreach activities

2.1.3. Promoting BBI JU Call 2018: BBI JU Info Day & Brokerage event 2018

The BBI JU Info Day and Brokerage event for the promotion of the 2018 Call took place on the 17th April, keeping the same format as that 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 interested parties. Printed supporting material (2018 Call brochure) was made available both during the day of the event and via the BBI JU dedicated webpage.

In line with the trend of increasing participation recorded in 2017, over 600 participants coming from 31 different countries registered for the event in the European Commission's Charlemagne building, and more than 250 participants watched via live streaming, followed by another 250 users tuning in afterwards. This year, close to 16% of participants came from non-profit research organisations, 21% of participants came from SMEs and another 16% from academic and higher education institutions.

In addition to plenty of informal networking during the breaks, BBI JU's brokerage event gave attendees a formal opportunity to expand their contacts through networking. During the afternoon 700 face-to-face meetings were scheduled from a total of 900 meeting requests, through the BBI JU Partnering Platform, allowing the attendees to grow their professional networks and discuss potential collaborations.

In parallel to the plenary session and brokerage event, BBI JU invited six[70] 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.

Particular mention should be made of the social media campaign around the event, as the dedicated hashtag #BBIinfoday became a Trend Topic during 12 hours in Belgium. Below there is a short

[70] The attending organisations included the Bio-Based Industries Consortium (BIC), the network project BioHorizon NCPs, the Enterprise Europe Network (EEN), the Executive Agency for Small and Medium-sized Enterprises (EASME) and the European partnership EIP-AGRI. Hosting a special cross-institutional synergies InfoBooth, there were colleagues from DG RTD, DG AGRI and additionally the European Commission services RESAVER (a pension scheme for European researchers) and the Research Enquiry Service (RES).

summary of the Twitter activity during the event day with the BBI JU post receiving more than 646,000 impressions.

Figure 71: Twitter activities during the BBI JU Info Day and Brokerage event for the promotion of the 2018 Call

The Info Day was followed by a survey requesting the participants to evaluate the quality of both the event as well as the dedicated sessions. As can be seen from the graphs below an overwhelming majority found the event either excellent or good.

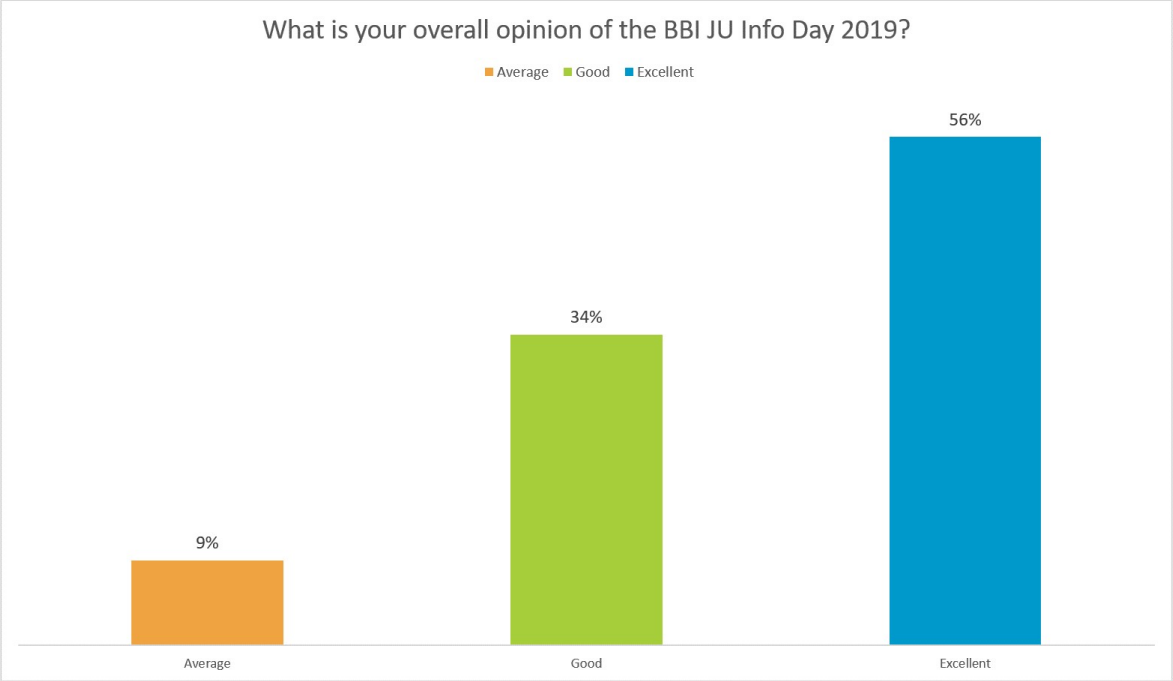

Figure 72: BBI JU Info Day 2018 satisfaction survey

Similarly to previous years, the promotion of the Call was not limited to the BBI JU Info Day. The BBI JU Programme Office ensured the promotion of the Call's details to numerous external stakeholders, particularly - but not exclusively - during national Info Days.

12 dedicated national Info Days took place in EU MS and associated countries covering a broad geographical spread (compared to nine in 2017) and dedicated information was also disseminated via the SRG, the SC and the NCPs network.

National Info Days

Date	City, Country
18 April 2018	Rome, Italy
18 April	Germany,(webinar)
19 April 2018	Kaunas, Lithuania
20 April 2018	Riga, Latvia
24 April 2018	Kongens Lyngby, Denmark
25 April 2018	Helsinki, Finland
26 April 2018	Madrid, Spain
16 May 2018	The Hague, The Netherlands
24 May 2018	Lisbon, Portugal
31 May 2018	Cork, Ireland
11 June 2018	Tel Aviv, Israel
19 June 2018	Prague, Czech Republic and Slovakia

Table 15: Participation of BBI JU staff at dedicated National Info Days in 2018

2.1.4. Communicating the impact of BBI JU

In 2018, BBI JU paid particular attention to showcasing its activities and projects as well as communicating about the impact of the bio-based products in the daily lives of the EU citizens. To this end, BBI JU participated in a number of meetings, events and conferences and organised a number of side-events, including in countries outside the EU. Figure 73 shows the map with the location of all the events that BBI JU attended throughout 2018. The colour code of the dots links the event with the communication objective. Annex 7.11 presents the whole list of events. It is worth noting that during 2018 the number of invitations requesting BBI JU's presence increased significantly, resulting in BBI JU's participation at 58 external events compared to 35 in 2017.

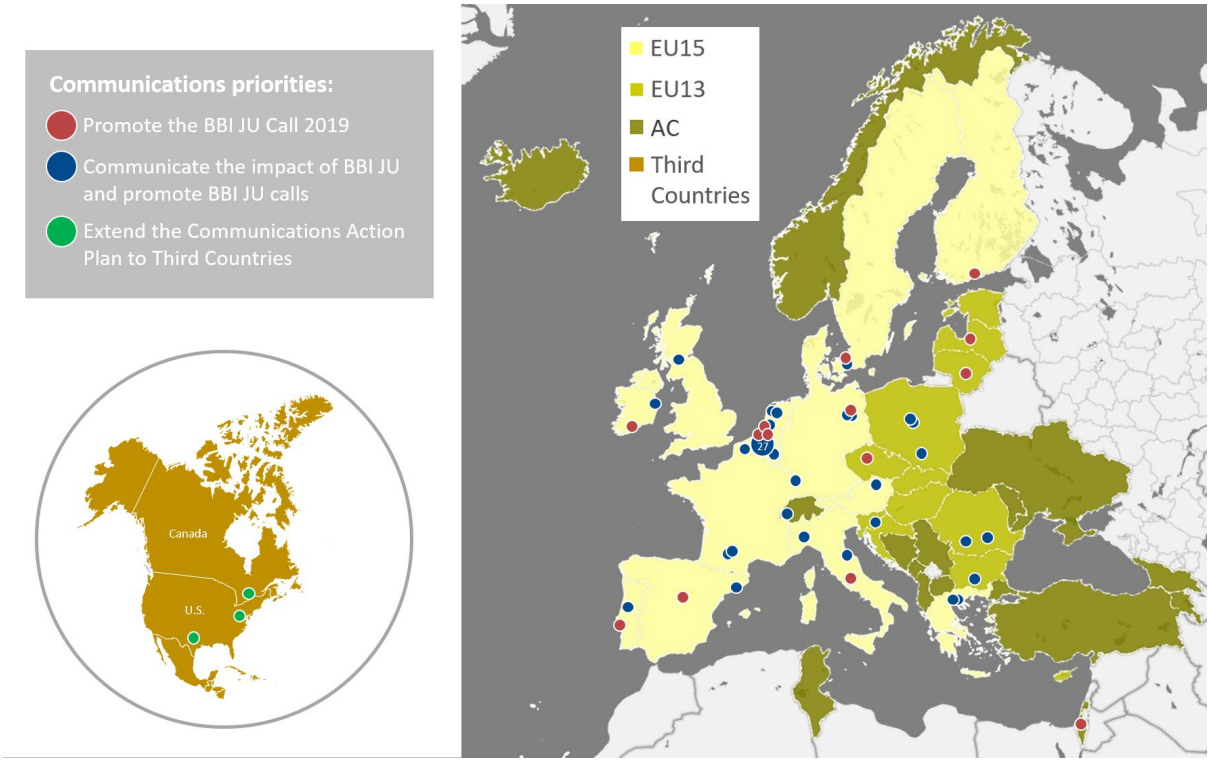

Figure 73 16: Map of meetings, events and conferences where BBI JU participated or organised in 2018.

Among the events listed in Annex 7.11, the ones briefly described below were some of the highlights of the year 2018.

MEP AWARDS 2018

The awards organised by the European Parliament Magazine are a well-established and well-recognised event in Brussels. Organised on a yearly basis, the awards aim at recognising the Members of the European Parliament who have contributed significantly to the legislative, supervisory or budgetary role of the institution through their parliamentary activities. Account is also taken of the nominees' achievements in the year immediately prior to receiving the award, as well as their past achievements and ongoing contribution to the European Project.

In 2018's edition, BBI JU was the sponsor of the Research & Innovation Award. Similarly to 2017, the event has proven an excellent opportunity to develop relations with Members of the European Parliament (MEPs) and communicate directly to them BBI JU's mission and most importantly the concrete achievements of its projects. Ahead of the awards ceremony, the BBI JU Executive Director had the opportunity to hold bilateral meetings with all nominees and during the actual ceremony he presented BBI JU to a number of Brussels-based stakeholders and policy makers.

High-level conference: EU Research and Innovation in our Daily Life

On Tuesday the 27th of November, the European Parliament under the auspices of President Tajani, hosted a high-level conference on how research and innovation positively impact the everyday life of EU citizens. The event was co-organised by the European Parliament and the European Commission.

The conference brought together high-level speakers - including researchers and politicians - with the aim of reflecting on past and present achievements and debating the challenges lying ahead in the area of research and innovation. A number of panel discussions were organised including: health and wellbeing, sustainable environment, putting innovation on the market and safe and secure society for all.

The conference was attended by a vast number of participants and received overwhelming attention on social media, particularly on Twitter, reaching a staggering 55 million impressions on the 'Research and Innovation' Twitter account, many of which were attributed to BBI JU traffic created around the event.

EU 'front runners' projects were present in order to showcase their results to the wider public, including the BBI JU project FIRST2RUN.

BIO WORLD CONGRESS ON INDUSTRIAL BIOTECHNOLOGY

The BIO World Congress on Industrial Biotechnology is the world's largest conference on industrial biotechnology, providing a unique forum for over 1.000 global business leaders, investors and policy makers working in the biotechnology field and coming from over 30 countries.

In the context of the conference, BBI JU organised a session under the theme *of 'Bio-based Industries Joint Undertaking (BBI JU): A Model of Collaborative Research Building and Structuring the European Bio-based industry Sector'*. The BBI JU Executive Director and BBI JU project partner representatives from Novamont, MetGen and Pole-IAR, provided insights into how BBI JU is a successful example of the structuring effect in the bio-based sector in Europe.

One of the key messages from the panel was that BBI JU catalysed science projects, and de-risked investments that would not have happened otherwise or would have taken place outside of Europe. Panel participants also had the chance to further elaborate on the fact that being part of BBI JU projects means joining a network of actors all interested in investing in the bio-based industry sector and committed to developing a sustainable and competitive sector in Europe.

Over the four days of the event, BBI JU event-related tweets earned 118.5k impressions and the number of Twitter followers grew sharply making the BIO World Congress on Industrial Biotechnology the most 'popular' event in terms of social media.

ANNOUNCEMENT OF AGRICHEMWHEY AND GROUND-BREAKING EVENT OF LIGNOFLAG BIOREFINERIES

Two significant events for the BBI JU projects portfolio took place during 2018, both of them involving the launching of activities for the development of two flagship bio-refineries. On 26th of April an open event was organised in Dublin (Ireland) aimed at announcing the award of EUR 22 million of funding from BBI JU to a new bioeconomy research project, AgriChemWhey, led by Glanbia Ireland.

The event attracted a number of high-level speakers among which were the European Commissioner for Agriculture and Rural Development, Glanbia CEO and Irish Ministers. The BBI JU Executive Director was present at the end and spoke about the importance of the biorefinery in the advancement of the bio-based sector in Europe whilst also setting a worldwide example.

On the 11th of September 2018, the BBI JU Executive Director participated and spoke at the ceremony that marked the ground-breaking event for LIGNOFLAG, a new full-scale commercial plant for the production of cellulosic ethanol from agricultural residues. Located in Podari, in the south-western part of Romania, it will be the most technologically advanced bioethanol plant in Romania.

The event set an important milestone for the implementation of the LIGNOFLAG project, a first-of-a-kind commercial flagship 2G bio-refinery for lignocellulosic feedstock conversion into ethanol. The project is supporting the EU in its efforts to reduce GHG emissions and thus accelerate the process of decarbonising the transport sector. LIGNOFLAG is also expected to support the transformation from a fossil-based economy to a bio-based, circular economy through the creation of jobs in an underdeveloped rural region of the country.

2.1.5. Publications and promotional materials

Besides the development and subsequent publication of the BBI JU Call brochure, in 2018 the Programme Office worked towards the elaboration of targeted publications focussing on the concrete impact and results of the BBI JU projects. The BBI JU Projects brochure 2018 and the BBI JU Country factsheets (figure 74) are two separate publications that were widely disseminated to all EU-level policy makers and stakeholders and, while they will be updated on a yearly basis in order to reflect the development of the BBI JU project portfolio, they will be used as reference documents in the coming years.

Figure 74: BBI JU Country factsheets

In addition, tables 16 and 17 show that numerous dedicated publications and articles were published about BBI JU's role in developing a sustainable, competitive and innovative bio-based economy while providing socio-economic benefits for European citizens.

BBI JU Publications 2018	
Title	Link
BBI JU Call for proposals brochure	https://www.bbi-europe.eu/sites/default/files/media/bbiju-call2018.pdf

BBI JU Projects brochure 2018	https://www.bbi-europe.eu/sites/default/files/media/bbiju-projects-2018.pdf
BBI JU Country factsheets	https://www.bbi-europe.eu/sites/default/files/media/bbi-ju-countryfactsheets.pdf

Table 16: BBI JU Publications in 2018.

Commissioned articles and publications 2018	
Title, *Publication*	Link
Europe must continue to invest in the Bioeconomy revolution ***The Parliament Magazine***	http://library.myebook.com/theparliament/the-parliament-magazine-issue-483-22-october/1403/#page/23
Towards greener, smarter food packaging: how BBI JU is reinventing plastics and cutting waste ***The Parliament Magazine***	http://library.myebook.com/theparliament/the-parliament-magazine-issue-479-9-july-2018/1266/#page/15
Project focus: How a bio-based solution can solve our plastic tray problem ***Bio-based World News***	https://www.biobasedworldnews.com/project-focus-how-a-bio-based-solution-can-solve-our-plastic-tray-problem
Project Focus: Moving Europe's mountain of nappies from landfill to helping create useful bio-based products ***Bio-based World News***	https://www.biobasedworldnews.com/project-focus-moving-europes-mountain-of-nappies-from-landfill-to-helping-create-useful-bio-based-products-1

Project Focus: Converting dairy by-products into high value bio-based chemicals ***Bio-based World News***	https://www.biobasedworldnews.com/project-focus-converting-dairy-by-products-into-high-value-bio-based-chemicals
Event Review: BBI JU Stakeholder Forum – Bringing together the bio-based community ***Bio-based World News***	https://www.biobasedworldnews.com/event-review-bbi-ju-stakeholder-forum-bringing-together-the-bio-based-community
Una oportunidad para las bioindustrias en Europa: la Asociación Público-Privada de la Unión Europea ***Bioeconomy and Sustainable Development, Cajamar***	http://www.publicacionescajamar.es/publicaciones-periodicas/mediterraneo-economico/mediterraneo-economico-31-bioeconomia-y-desarrollo-sostenible/#
Bio-based Industries Joint Undertaking: The catalyst for sustainable bio-based economic growth in Europe ***New Biotechnology***	https://www.sciencedirect.com/science/article/pii/S1871678416325638

Table 17: Commissioned articles and publications in 2018

In addition to publications such as promotional material, BBI JU continued the development of videos presenting ongoing BBI JU projects, their goals and final products (Table 18). The communication team succeeded in collecting a substantial amount of bio-based products that are exhibited at the BBI JU premises and used ad hoc for external events. These products have proven particularly useful for e.g. events targeting the wider public, as they reinforce citizens' awareness and make it easier for them to better understand the actual meaning of the bio-based sector.

Videos published in 2018	• BBI JU Info Day 2018 • BBI JU insiders views • Agrimax project • Lignoflag project

Videos initiated in 2018 (to be published in 2019)	• BBI JU Webinar on reporting • BBI JU animated video • BBI JU success stories

Table 18: Videos developed and published in 2018.

2.1.6. Website, social media and e-newsletter

BBI JU WEBSITE

The BBI JU website continued to be the key reference for BBI JU's stakeholders for the retrieval of information regarding its activities. In 2018, the number of accesses amounted to 117.961 visits from 59.691 unique visitors, generating a total website traffic of 316.513 page views. The most visited page besides the BBI JU home page, with 63,000, views was the one referring to the Calls, and the second most popular was the one detailing the BBI JU projects. It is noteworthy that the majority of visitors to the website arrived there firstly via organic search and secondly via direct search. As expected, peaks in the online activity were notable during key BBI JU events such as the Info Day as well as during specific stages of the Call such as its opening and closure.

Regarding the website visitors' country of origin, Belgium, Italy and Spain were the countries from which most visitors originated. A special mention should be made of the fact that visitors from the US rank among the top 10 countries, which demonstrates a significant interest in BBI JU's activities.

At the end of 2017, the BBI JU website and associated domain names were transferred to the management of DG DIGIT (Next Europa platform) and the operation was successfully concluded in January 2018. Additionally, a number of improvements were introduced during the past year such as cookies policy, encryption of visitors/users data as well as the implementation of the https/ protocol. All bugs and issues that arose were tackled which contributed significantly to improving the user experience.

Following the entry into force of the new data protection rules, the European Data Protection Supervisor (EDPS) made known to all EU Institutions that, according to a ranking performed on a total of 70 EU bodies' websites by Privacyscore[71], in order to evaluate their compliance with the data protection regulation, BBI JU's website ranked among the top ten safest on the list.

LINKED-IN GROUP/CORPORATE PAGE

[71] Project lead by the University of Bamberg

BBI JU's Programme Office continued to post 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 was one of the channels used to promote the 2018 Call and open vacancies.

Currently the BBI JU profile has 885 followers, from which 25% are located in Brussels.

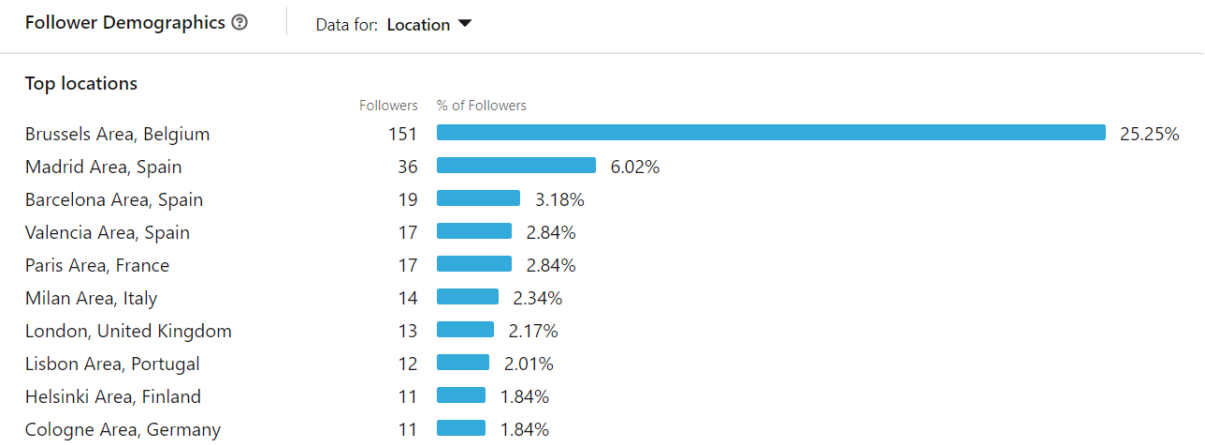

Figure 75: BBI JU LinkedIn followers' locations

In 2018, BBI JU LinkedIn profile posts reached 20.661 views and the page was visited by an average of 2.000 users. The traffic growth in the last quarter of the year reflects the positive trend also reflected on Twitter following the reinforced strategy of being more present in this social media network.

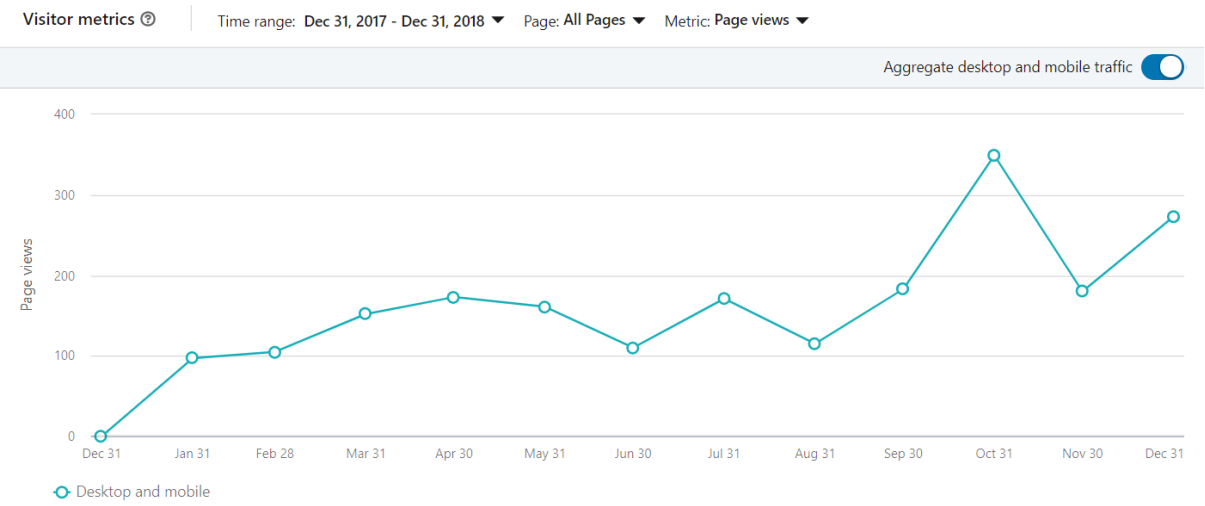

Figure 76: BBI JU LinkedIn visitor metrics

TWITTER

Following the 2017 trend, the BBI JU Twitter page continued growing in 2018, reaching 3500 users at the end of December 2018. This number meant an increase of 1500+ new followers compared to

December 2017, an increase of 75%. In total, over the past two years the BBI JU account achieved an increase in its followers of 191%.

@BBI2020 tweeted 522 unique original messages in addition to several retweets, which resulted in 1.475.150 views of BBI JU tweets, an increase of 281% compared with 2017.

3500 followers

500+ original tweets

1.475.150 impressions

BBI JU Twitter account followers retweeted @BBI2020 messages 2.346 times and liked them 3.945 times. These numbers represent a very significant increase in the engagement with BBI JU followers.

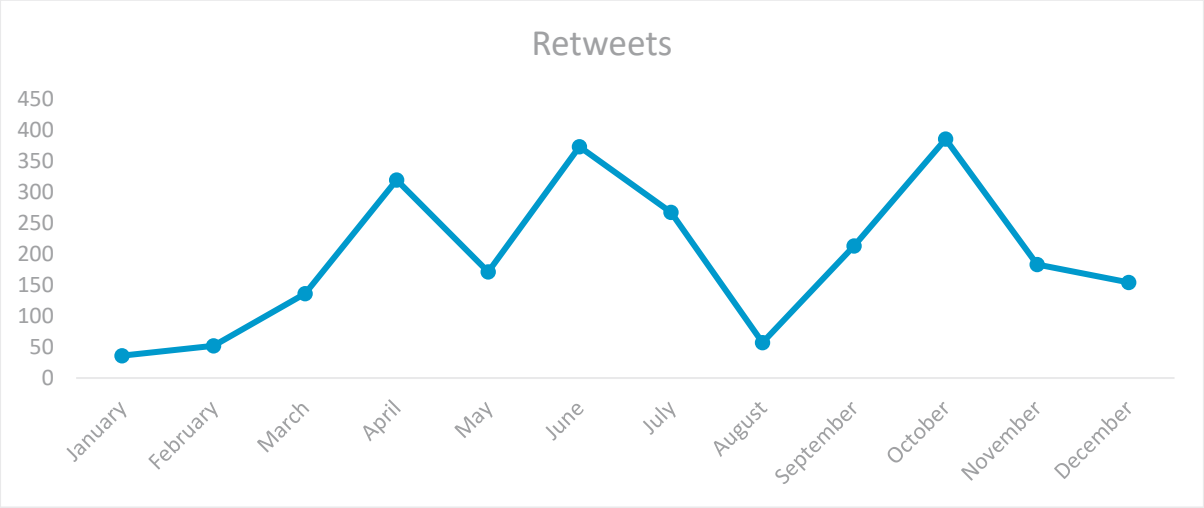

Figure 77: Number of BBI JU Twitter posts retweeted by the account followers

As expected, there were peaks in BBI JU's Twitter activity around the 2018 Info Day (BBI JU posted 15 tweets on the day of the event and was Trend Topic in Belgium) as well as around other relevant events (i.e. Bio World Congress on Biotechnology , and EU Research and Innovation in our Daily Life).

YOUTUBE

The BBI JU YouTube account has reached 116 subscribers and currently accounts for more than 10.000 video views. A playlist dedicated to the BBI JU projects was created in 2018 and currently 16 project videos are included in it.

E-NEWSLETTER

The BBI JU e-newsletter includes information about BBI JU news and activities, highlights from its projects, new publications, upcoming events and articles worth having on the EU-radar. It was sent to an average of 5.800 recipients, 4.000 more than in 2017 where the number of recipients was 2.000. The last issue of the 2018 e-newsletter will be sent during January 2019.

The countries with the highest percentage of recipients actually opening the newsletters were Spain, Italy, the U.S., the Netherlands, Belgium, Germany and France.

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.

In 2017, the necessary procedure was launched by the EC to carry out an amendment of the legal framework, with a view to making it possible for the member other than the Union and its constituent entities to have their financial contributions at project level counted towards the EUR 182.5 million target for the financial contributions towards operational costs. These contributions are among the contributions to be fulfilled by the private partner (BIC), as established in the Council Regulation, and should amount to at least EUR 182.5 million.

The amendment was finally adopted by the Council Regulation (EU) 2018/121[72] of 23 January 2018 amending Regulation (EU) No 560/2014 establishing the Bio-based Industries Joint Undertaking and entered into force on the 15th of February 2018.

[72] *OJ L 22, 26.1.2018*

2.3. BUDGETARY AND FINANCIAL MANAGEMENT

OVERVIEW

The Governing Board adopted the original 2018 budget for the BBI JU for the global amount of EUR €120 233 525 million in commitment appropriations and EUR €117 840 180 million in payment appropriations in December 2017. In April 2018, the budget was amended in order to (i) enter the unused commitment appropriations for operational expenditure related to the call for proposals of 2016 and the unused commitment and payment appropriations of administrative expenditure in the estimate of revenue and expenditure of up to the following three financial years, and to (ii) take into account the amount of the Union contribution as laid down in the budget of the Union. The amended budget amounted to EUR € 121 231 820 million in commitment appropriations and EUR € 118 126 520 million in payment appropriations.

The management of BBI JU's 2018 budget was characterised by the fact that only a small amount of the total unused appropriations from the previous year's budget were reactivated – mostly for operational expenditure – thus providing a straightforward picture in terms of execution, particularly on the administrative side.

In fact, for what concerns the 2018 administrative budget, the execution shows satisfactory progress compared to the 2017 amended budget, as well as a steady performance in both commitment and payment appropriations.

Concerning the operational budget, the execution in terms of commitment appropriations reached 100%. Following the signature of grant agreements in 2019 unused appropriations will be decommitted and reactivated in 2020 to complement the BBI 2020 Call. On the payment appropriations side, the execution was lower than expected, mainly because of some delayed periodic reports and because the amounts of certain cost claims were below the expected level. The unused appropriations will be reactivated and used in 2019, according to the provision included in Article 6(5) of the BBI JU Financial Rules.

From a general point of view, the overall budget execution for the year 2018 shows positive figures in both commitment appropriations (99%) and in payment appropriations (70.6%).

Statement of Revenue	Voted budget 2018		Amended budget 2018	
Heading	Commitment appropriations (in EUR)	Payment appropriations (in EUR)	Commitment appropriations (in EUR)	Payment appropriations (in EUR)
EU contribution excl. EFTA	**112,487,038**	**111,138,458**	**112,487,038**	**111,146,054**
Of which Administrative[73]	2,223,726	2,223,726	2,223,726	2,223,726
Other administrative revenue[74]	0	0	0	7,596
Of which Operational	110,263,312	108,914,732	110,263,312	108,914,732
EFTA	**2,820,948**	**2,789,526**	**2,820,948**	**2,789,526**
Of which Administrative	51,813	51,813	51,813	51,813
Of which administrative third countries excluding EFTA	200,000	200,000	200,000	200,000
Of which Operational	2,569,135	2,537,713	2,569,135	2,537,713
Industry financial (cash) contribution	**4,475,539**	**2,975,539**	**4,475,539**	**2,975,539**
Of which Administrative	2,475,539	2,475,539	2,475,539	2,475,539
Of which Operational[75]	2,000,000	500,000	2,000,000	500,000
SUB-TOTAL REVENUES	**119,783,525**	**116,903,523**	**119,783,525**	**116,911,119**
C2 reactivation of unused appropriations from administrative expenditure	450,000	450,000	622,497	728,744
Of which from 2017	450,000	450,000	622,497	728,744
C2 reactivation of unused appropriations from operational expenditure	0	486,657	825,798	486,657
Of which from 2016	0	0	825,798	0
Of which from 2017	0	486,657	0	486,957
SUB-TOTAL REACTIVATIONS	**450,000**	**936,657**	**1,448,295**	**1,215,401**
GRAND TOTAL	**120,233,525**	**117,840,180**	**121,231,820**	**118,126,520**

Table 19 : BBI JU 2018 budget – Statement of Revenue.

[73] Received EUR 1 702 349 inc. EFTA and admin third countries excl. EFTA - net of EUR 773 190 retained by the EC for the REA payment of expert-evaluators of BBI JU's 2018 Call. Of the retained amount, EUR 707 735 was informed as being executed by REA.

[74] A late interest payment was received from the industry member (BIC), relating to the late payment of the second instalment of their contribution to BBI's administrative expenditure

[75] The PA contribution of EUR 500 000 from the industry partner (BIC) to BBI JU's 2018 operational budget was not recovered by BBI in 2018 as there was a large operational cashflow surplus. It has been recovered in early 2019.

Statement of Expenditure (Commitment appropriations)	Amended budget 2018 (AWP)	Amended budget 2018 after transfers	Executed Budget 2018	%	Carry over to 2019 (C8)	Available for future use (N+3 rule) (C2)
Title 1 - Staff expenditure	**2,826,854**	**2,826,854**	**2,433,820**	**86.10%**	**103,450**	**393,034**
11 Salaries & allowances	2,424,068	2,453,594	2,128,965	86.77%	48,387	324,629
12 Expenditure relating to Staff recruitment	67,322	58,400	17,460	29.90%	3,745	40,940
13 Mission expenses	80,000	88,000	85,000	96.59%	6,701	3,000
14 Socio-medical infrastructure (incl. training)	245,417	213,860	191,001	89.31%	44,617	22,859
15 Receptions, events and representation	10,048	13,000	11,394	87.64%	0	1,606
Title 2 - Infrastructure and operating expenditure	**2,746,721**	**2,746,721**	**1,890,574**	**68.83%**	**266,978**	**856,147**
20 Rental of buildings and associated costs	325,516	305,796	303,417	99.22%	38,400	2,379
21 Information, communication technology and data processing	279,047	276,423	202,833	73.38%	55,247	73,590
22 Movable property and associated costs	5,000	11,104	9,421	84.85%	3,581	1,683
23 Current administrative expenditure	29,792	36,160	24,070	66.57%	14,782	12,090
24 Postage / Telecommunications	16,836	13,600	12,240	90.00%	10,087	1,360
25 Expenditure on formal meetings	113,000	113,000	61,388	54.33%	3,456	51,612
26 External communication information and publishing	602,477	595,583	218,479	36.68%	47,342	377,104
27 Service contracts	100,000	120,000	55,535	46.28%	52,500	64,465

28 Experts contracts and evaluations[76]	1,027,260	1,027,260	773,190	75.27%	0	254,071
29 Expert reviewers	247,794	247,794	230,000	92.82%	41,584	17,794
Title 3 - Operational expenditure	**115,658,245**	**115,658,245**	**115,658,245**	**100.00%**	**0**	**0**
30 Previous years' Calls						
31 Current year's Call	115,658,245	115,658,245	115,658,245	100.00%	115,658,245	0
TOTAL	**121,231,820**	**121,231,820**	**119,982,639**	**99.00%**	**116,028,673**	**1,249,180**

Table 20 : BBI JU 2018 budget – Statement of Expenditure (commitment appropriations).

[76] For chapter 28, the commitment of EUR 773,190 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 2018 Call for Proposals. The most recent estimate of the payment execution on this commitment was only notified by the REA in mid-January and amounts to EUR 707 735. Taking this into account, the execution on the line becomes 68.9%, the total Title 2 % is 66.45% and the overall execution is reduced to 98.92%.

Statement of Expenditure (Payment appropriations)	Amended Budget 2018	Amended budget 2018 after transfers	Executed Budget 2018	%	Available for future use (N+3 rule) (C2)
Title 1 - Staff expenditure[77]	**2,831,306**	**2,832,806**	**2,372,457**	**83.75%**	**460,349**
11 Salaries & allowances	2,464,308	2,447,389	2,100,885	85.84%	346,504
12 Expenditure relating to Staff recruitment	66,400	66,400	15,455	23.28%	50,945
13 Mission expenses	80,738	80,738	80,403	99.58%	336
14 Socio-medical infrastructure (incl. training)	209,860	225,279	163,848	72.73%	61,431
15 Receptions, events and representation	10,000	13,000	11,866	91.28%	1,134
Title 2 - Infrastructure and operating expenditure	**2,848,516**	**2,854,612**	**1,850,771**	**64.90%**	**996,245**
20 Rental of buildings and associated costs	290,000	415,005	268,900	64.79%	146,106
21 Information, communication technology and data processing	252,100	255,435	187,432	73.38%	68,003
22 Movable property and associated costs	5,000	8,511	8,087	95.02%	424
23 Current administrative expenditure	29,000	33,004	12,212	37.00%	20,792

[77]The totals for Titles 1 and 2 of the "amended budget after transfers" differ by EUR1,500 from those of the "amended budget" (plus and minus), as a transfer was made in November 2018 between chapters 26 and 14 (in line with Article 10 of BBI JU's Financial Rules).

24 Postage / Telecommunications	13,600	13,600	3,811	28.02%	9,789
25 Expenditure on formal meetings	113,000	113,000	58,740	51.98%	54,260
26 External communication information and publishing	788,555	608,439	308,553	50.71%	299,886
27 Service Contracts	100,000	142,760	25,795	18.07%	116,965
28 Experts contracts and evaluations[78]	1,027,260	1,027,260	773,190	75.27%	254,071
29 Expert reviewers	230,000	230,000	204,051	88.72%	25,949
Other revenue		7,596			
Title 3 - Operational expenditure	**112,439,102**	**112,439,102**	**79,172,889**	**70.41%**	**33,266,213**
30 Previous years' Calls	112,439,102	112,439,102	79,172,889	70.41%	33,266,213
31 Call 2018					
TOTAL	**118,118,924**	**118,126,520**	**83,396,117**	**70.60%**	**34,722,807**

Table 21 : BBI JU 2018 budget – Statement of Expenditure (payment appropriations).

[78] 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 77.6% in commitment appropriations and 74.4% in payment appropriations. Comparing the total consumption to the original budget (which excludes a reactivation of prior year unused appropriations), these figures rise to 87.3% for CAs and 85.3% for PAs. These levels are very similar to those of 2017.

Title 1: Staff related costs such as salaries, other staff costs and missions are showing a strong execution in commitment appropriations (87%, 89% and 97% respectively). Overall the execution of commitment appropriations in Title 1 is 86.1% and in payment appropriations is 83.8% of the amended administrative budget.

Title 2: The infrastructure expenditure achieved an execution of 68.8% in the commitment appropriations of the amended 2018 budget. Building and contracting of experts incurred the highest costs in 2018, amounting to EUR 284 168 and EUR 773 190 respectively. The spending related to the evaluators' contracting and payment was executed by the Research Executive Agency on behalf of BBI JU.[79] Underspending was recorded for formal meetings (54%) and communication costs (37%) mainly due to the fact that the 2nd BBI JU Stakeholder Forum event was postponed to 2019. The overall consumption of payment appropriations side is 65% of the amended budget 2018.

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.

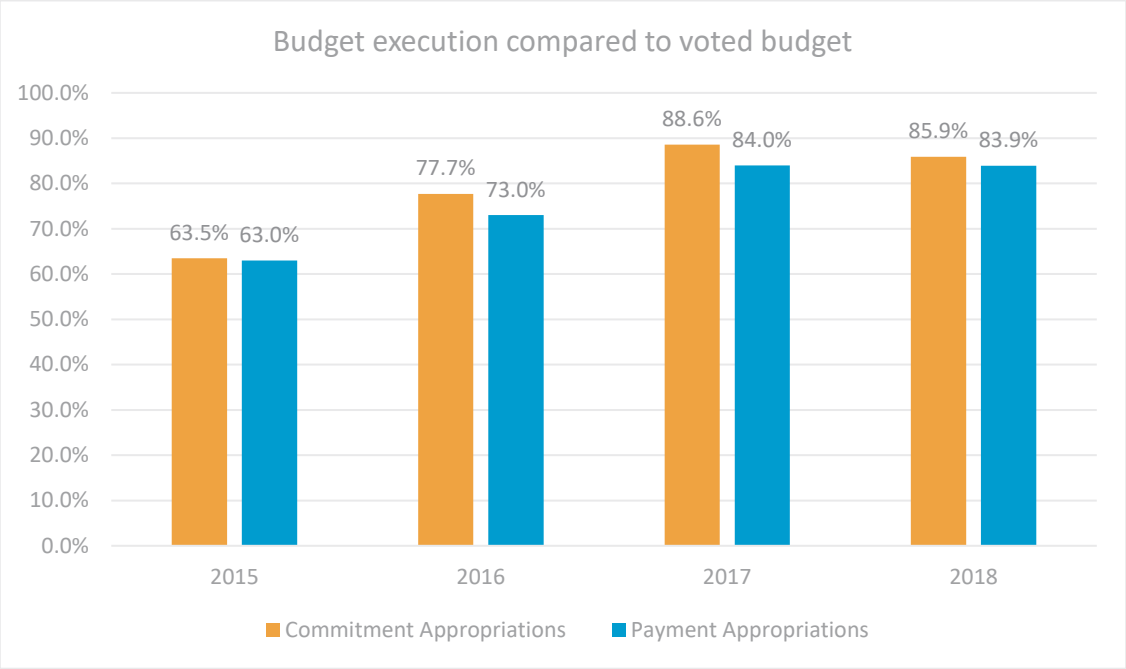

Figure 78: budgetary consumption against the voted budget (2015-2018)[80].

[79] EUR 773 190 was committed by the REA in 2018, 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 2018.

[80] excluding from the budget any reactivations of unused appropriations from previous years

In terms of the time to pay on the administrative budget, the Programme Office executed over 737 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 encoding mistakes; a corrective action will accordingly be put in place in 2019. The average time to pay on these transactions was 17.5 days, against a target of 30 days, showing some progress compared to the previous year.

OPERATIONAL COSTS

Concerning the commitment appropriations of the operational budget, the Programme Office concluded 17 grant agreements from Call 2017 for a total grant value of EUR 85 161 992 resulting in a 99,3% execution of commitment appropriations envisaged for this Call (EUR 85 764 866).

The 2018 call was committed for EUR 115 658 245 composed as follows: EUR 112 832 447 from the EU, EUR 825 798 of unused commitment appropriations from 2017, EUR 2 000 000 from BIC. The evaluation was successfully concluded by the end of 2018, resulting in a potential consumption of 89% if all grants amounting to a total of EUR 102 910 812 are signed in 2019.

In respect of payment appropriations, the Programme Office achieved 70.4% execution of the 2018 budget, with pre-financing payments for the grants of Call 2017 together with payments of periodic reports for grants from the previous BBI JU Calls. The execution was below expectation because of delays in some periodic reports and the amounts of certain cost claims being below the expected level.

An amount of EUR 25 000 000, remaining from the total available payment appropriations, has been reactivated in the BBI JU 2019 budget in order to deal with the payments delayed to 2019 as well as for future needs.

17 pre-financings were paid for a total amount of EUR 34 064 797.

Regarding the payment of the periodic reports, BBI JU Programme Office dealt with 33 periodic reports claiming costs for EUR 58 563 556 that led to 32 payments in 2018 for a total of EUR 45 108 093

Additional information is available under section 1.6 Operational budget execution.

2.4. PROCUREMENT AND CONTRACTS

In 2018, 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 2018, BBI JU used Service Level Agreements (SLAs) in force with the European Commission for purchasing supplies and services, notably through OIB and DG HR.

Not all procurements planned in the AWP2018 for communication activities have been carried out, mainly due to postponing the second BBI JU Stakeholder Forum to 2019.

Several other contract were concluded for less than EUR 15 000 each, while the following table shows contracts concluded in 2018 for single amounts higher than EUR 15 000:

Contractor	Framework contract Y/N	Tender procedure	Subject of the contract	Signature date	Amount (in EUR)
ABC Pharma	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	133,699
PKF Littlejohn	Y	Specific contract under framework contract	Audit of BBI JU accounts 2018-2019	13/12/2018	52,500

Table 22: Contracts over EUR 15 000 made in 2018.

2.5. IT AND LOGISTICS

IT TOOLS

In 2018 the Programme Office implemented the European Commission's Human Resources management tool 'SYSPER', with the aim of having a comprehensive and efficient tool supporting human resources, in line with the European Commission's standards and regulations.

The BBI JU also put into operation its Microsoft SharePoint-based Intranet. This platform allows BBI JU staff to access key documents and useful information as well as be updated about the latest events regarding the organisation, the Commission's policy activity and BIC initiatives.

To achieve further cost savings, BBI JU has migrated its cloud-based IT infrastructure to a new provider, under an inter-institutional framework contract. This agreement provides long-term (5 years) contractual stability and a higher level of security as well as other future upgrade possibilities.

The BBI JU and the other JUs located in the White Atrium building have launched a common open procurement procedure to renew their ICT Operations and Support Services Contract, with FCH JU being the leading entity. As a result of the tendering procedure, the new framework contract was signed with the incumbent contractor, Realdolmen, on 30/10/2018. The JUs put in place mechanisms to closely monitor and improve the quality of the provided service.

The Programme Office also implemented in 2018 the European Commission's corporate document management system, ARES. ARES is the web application used by all the Commission's Services, Executive Agencies and several Regulatory Agencies to electronically register, file and store documents in a common repository.

This achievement followed the intense preparatory work carried out throughout the year – in coordination with the Commission's Secretariat General and DG DIGIT -, including the drafting and approval of the Document Management Policy, the Filing Plan and the Specific Retention List. The Document Management Officer (DMO) and his deputy were officially appointed by the Executive Director, and all staff was trained in September before the migration. After the migration the previous document management system was frozen.

Since then the Administration and Finance Unit has implemented some workflows for procurement procedures using ARES to ease and speed-up processes, anticipating a gradual move to paperless procedures in 2019. New guidelines and training will be made available to staff in early 2019.

The migration to ARES allows the Programme Office to enjoy an integrated document management system, to implement paperless workflows and to be included in the European Institutions' communication systems. This last aspect is particularly important to keep track of important documents sent to the Programme Office.

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 2018, the BBI JU Programme Office comprised 23 staff members reaching its full staff establishment plan. Two recruitment procedures were launched in 2018 for the posts of Project Officer - Contractual Agent (CA) - and Communication Officer –Temporary Agent (TA).

The BBI JU Programme Office was consequently reinforced with three project officers (CA) in 2018. In addition, one candidate for a communication officer post (TA) was appointed at the end of 2018 and will take up her duties in the first quarter of 2019

In 2018, the Programme Office did not face any departure of its staff. In order to cope with peak workload periods, BBI JU concluded – via the inter JUs framework contract - four short-term contracts for interim services to address specific needs of the Programme Unit and of the Executive Director's office.

BBI JU also gave the opportunity to three trainees to acquire a first-hand experience in the BBI JU context. 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 primary insight into the objectives and activities of the BBI JU. Two trainees joined the Programme Unit for a period of six months and another one joined the Communication team for a period of six months.

The two graphs below show both the gender and geographical balance within BBI JU on 31/12/2018. The Programme Office pays attention to ensuring the widest representation of EU countries among its staff.

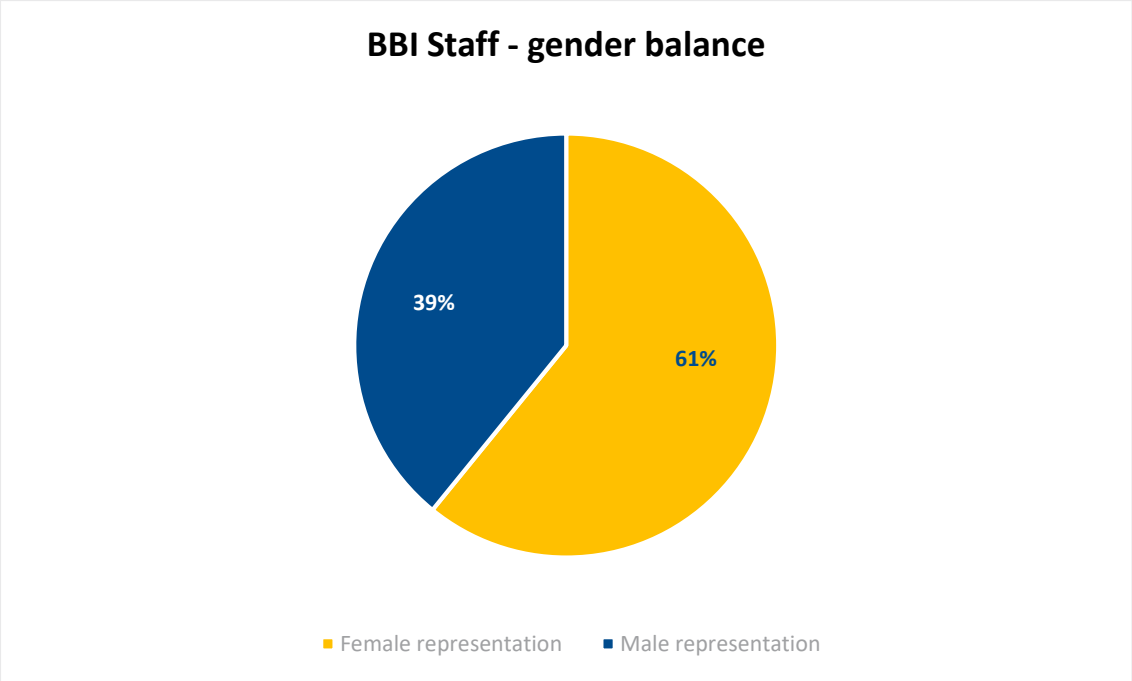

Figure 79: gender balance of the BBI JU programme team by 31/12/2018.

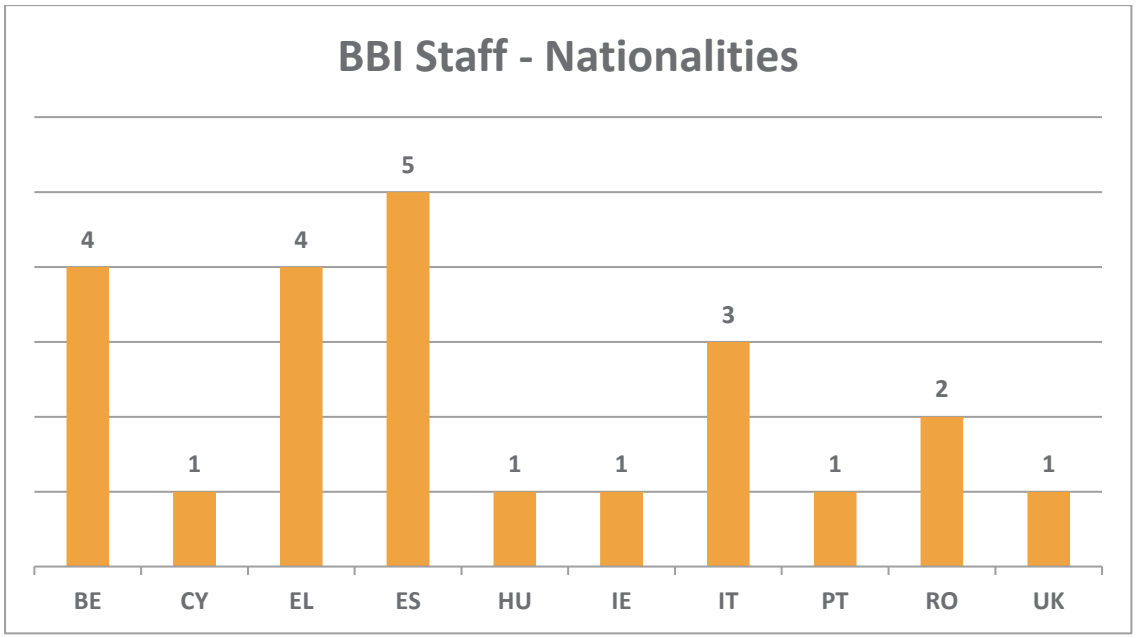

Figure 80: EU countries represented among BBI JU staff by 31/12/2018

LEGAL FRAMEWORK

In 2018, the Human Resources (HR) function continued to strengthen the legal framework of the BBI JU focussing on how certain implementing rules of the European Commission shall apply to BBI JU. In this context, in 2018 the BBI JU Governing Board adopted the implementing rules listed below:

- Whistleblowing;
- Middle Management;
- Advisor function;
- Recruitment of Contract Agents.

Following the adoption of the implementing rules on the policy on protecting the dignity of the person and preventing psychological harassment and sexual harassment, an inter-JU call for expression of interest, led by BBI JU, was launched to select confidential counsellors. As a result, two confidential counsellors were appointed by the Executive Directors in November 2018. They are appointed for two years and they will form the inter-JU network of confidential counsellors. Their principal role is to listen without passing judgement and to explore the possible options offered by the policy on protecting the dignity of the person and preventing psychological harassment and sexual harassment. Therefore, staff members who feel they are potentially victims of psychological or sexual harassment can contact, in full confidentiality, a confidential counsellor of their choice from the JUs' network. Following this initiative, the HR function launched an awareness campaign in December 2018 to make the network known to the BBI staff. A dedicated session on harassment prevention will be organised at the beginning of 2019.

In addition, in 2018 the Executive Director adopted the following internal procedures on:

- Teleworking;

- Golden working rules;
- Supplementary aid for the disabled concerning welfare appropriations for disabled persons.

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

In 2018 the HR function worked on the implementation of the European Commission's HR tool 'SYSPER' and BBI JU is among the first Joint Undertakings to use SYSPER in 2018. This tool will allow a better management of Human Resources and closer alignment with the legal framework.

The HR function, in close collaboration with the IT function and the communication team, also worked on the design and development of an internal corporate Internet. The BBI Intranet was launched in September 2018 and is an important tool for communicating with all the staff members, providing important and relevant information for them which is constantly updated.

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 2018 the HR function developed a Learning and Development Framework taking into consideration the BBI JU objectives for 2018 and the training survey launched in 2017.

A Service Level Agreement in force with the European Commission provided access to a broad catalogue of training courses, and ad hoc learning opportunities were constantly communicated to staff members throughout 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 were also organised; for example, the Management team, including some key functions within BBI, participated in an Insights Discovery profile workshop in order to provide self-awareness and personal development opportunities as well as fostering communication among the staff members.

In 2018, BBI staff members attended on average 9.1 training days almost reaching the indicative target of 10 training days per year per staff member included in the BBI JU learning and development framework.

In 2018, the HR function organised a workshop on BBI JU values with all BBI staff members. The agreed BBI core values have been communicated to the staff members and will be incorporated in the different BBI JU communication materials in 2019. Staff members agreed on the five core values listed below:

Team spirit

We believe that the whole exceeds the sum of the parts.

People and togetherness are at the very heart of the organisation.

We entertain a working environment based on trust, respect and mutual support.

We build on diversity and openness making our differences work for common goals.

Commitment

We are a dynamic and passionate team that strongly believes in BBI JU's vision. We are committed to delivering our mission with efficiency and effectiveness.

We are results-oriented.

Professionalism

We are professional and aim to be excellent in all facets of our work and conduct.

We are responsible for our activities.

We set and respect high standards of ethic and integrity.

Towards excellence

We contribute to the change we want to see in a spirit of continuous improvement. We work together bringing out the best in each other, by being an example and by walking the talk. We are driven and inspired by efficiency and knowledge-sharing.

Care

We care for the planet.

We want to contribute to making a significant change for the planet for the EU citizens and for future generations in terms of environment and prosperity. We want to leave a good legacy at the global level.

In 2018, four staff members received first aid and rescue training.

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 Statutes[81].

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

During 2018, there were several changes of positions in both the EC and BIC membership. As of the last meeting in December 2018, 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 members
Wolfgang BURTSCHER, Deputy Director-General, DG RTD (Chair) John BELL, Director for "Bioeconomy", DG RTD/F Carlo PETTINELLI, Director for "Consumer, Environmental and Health Technologies", DG GROW/D Peter DROELL, Director for "Industrial Technologies", DG RTD/D Nathalie SAUZE-VANDEVYVER, Director for "Quality, Research & Innovation, Outreach", DG AGRI/B	Mat QUAEDVLIEG, Manufacturing SFPE, Vice-President Strategic Business Project, SAPPI (Vice-Chair) Claus CRONE FUGLSANG, Senior Vice-President for Research and Technology, NOVOZYMES Marcel WUBBOLTS, Chief Technology Officer, CORBION Alex MICHINE, CEO METGEN Giulia GREGORI, Head of Strategic Planning and institutional Communication, NOVAMONT

Table 23: Members of the Governing Board as at 31/12/2018.

In 2018, four ordinary meetings took place as planned in the AWP 2018: 21 March, 22 June, 26 September and 14 December.

The decisions taken by the GB during 2018 respected the indicative timetable set in the AWP and were the following:

- Decision approving the Annual Additional Activities plan for 2017.
- Decision adopting the amendment to AWP and Budget 2018;

[81] Annex to the Council Regulation.

- Decision requesting the non-application of Commission Decision C(2017)6760 of 16 October 2017 on contract staff.
- Decision regarding the action plan in response to the recommendation of the interim evaluation of the BBI JU.
- Decision approving the Annual Activity Report 2017;
- Opinion on BBI JU Annual Accounts 2017;
- Decision adopting the formula for monitoring and reporting the prospective leverage effect of the BBI initiative.
- Decision on the extension of the mandate of the Executive Director;
- Decision concerning the function of adviser;
- Decision approving the Annual Additional Activities Plan for 2018;
- Decision on the appointment of a new Scientific Committee member;
- Decision on the middle management staff;
- Decision approving the guidelines on Whistleblowing;
- Decision adopting the AWP and Budget 2019;
- Funding of indirect actions pursuant to the 2018 Call for proposals.

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 report of BBI JU was published in October 2017.

The interim evaluation report[82] 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 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'[83] which includes a set of specific action points that corresponds to the recommendations provided by the interim evaluation report as well as the status for each of the actions.

[82] https://publications.europa.eu/en/publication-detail/-/publication/eebcfc39-ae32-11e7-837e-01aa75ed71a1/language-en

[83] https://www.bbi-europe.eu/sites/default/files/action_plan_in_response_to_the_recommendations_of_the_interim_evaluation_of_the_bbiju.pdf

At the Governing Board meeting of December 2018, BBI JU presented the first annual update on the implementation of the action plan, confirming that the majority of actions have been followed up according to the agreed deadlines whereas others were still ongoing. A summary of the key actions carried out by EC and BIC in the context of the implementation plan were also presented.

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 SMART[84] principles.

For 2018, the priorities and objectives were presented to the BBI JU Governing Board at the meeting held on 26 September 2017. The priorities were mainly about consolidating the project portfolio whilst maintaining the highest standards of quality and addressing the issues of financial contribution reporting. Another important priority of 2018, with a maturing project portfolio, was to highlight the impact of the initiative to a wider group of stakeholders.

The 2018 objectives were organised around five priorities detailed below:

1. Reinforce the PPP highlighting the impact of the initiative, the EU added-value, the Industry commitment and the strategic alignment of its founding members.
2. Consolidate the BBI JU projects portfolio in line with the up-dated SIRA and BBI JU Council Regulation objectives.
3. Continue running BBI JU operations ensuring the highest standards in terms of quality and efficiency.
4. Successfully implement solutions addressing the issues of IKAA and IKOP reporting and financial contribution at project level.
5. Implement the communication and stakeholder management action plan towards a wider group of stakeholders; shifting from BBI 'recognition' to 'reputation'.

For 2019, the Executive Director and his management team proposed four priorities to the Governing Board meeting held on 13 June 2018:

1. Keep BBI JU operational standards at the highest quality and ensure efficiency to absorb the peak of workload.
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
3. Implement the adjustments to the project portfolio following the recommendations of the BBI JU interim evaluation, while maintaining all its recognised key strengths
4. 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

The Executive Director and his management team have incorporated these priorities in the AWP 2019 as a basis for the non-topic text and the administrative budget. They will be cascaded into BBI JU

[84] Specific, Measurable, Accepted, Realistic and Time-related

Programme Office objectives and further into individual objectives for the Programme Office staff by the end of February 2019.

3.3. STATES REPRESENTATIVES GROUP

The SRG is an advisory body of the BBI JU established in accordance with the BBI JU Regulation[85] 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 81 shows the status of the representation of Member States and associated countries linked to Horizon 2020 in the SRG as of 31/12/2018. The SRG covers a broad geographical area, in spite of the fact that currently two Member States and six associated countries have not yet nominated a representative.

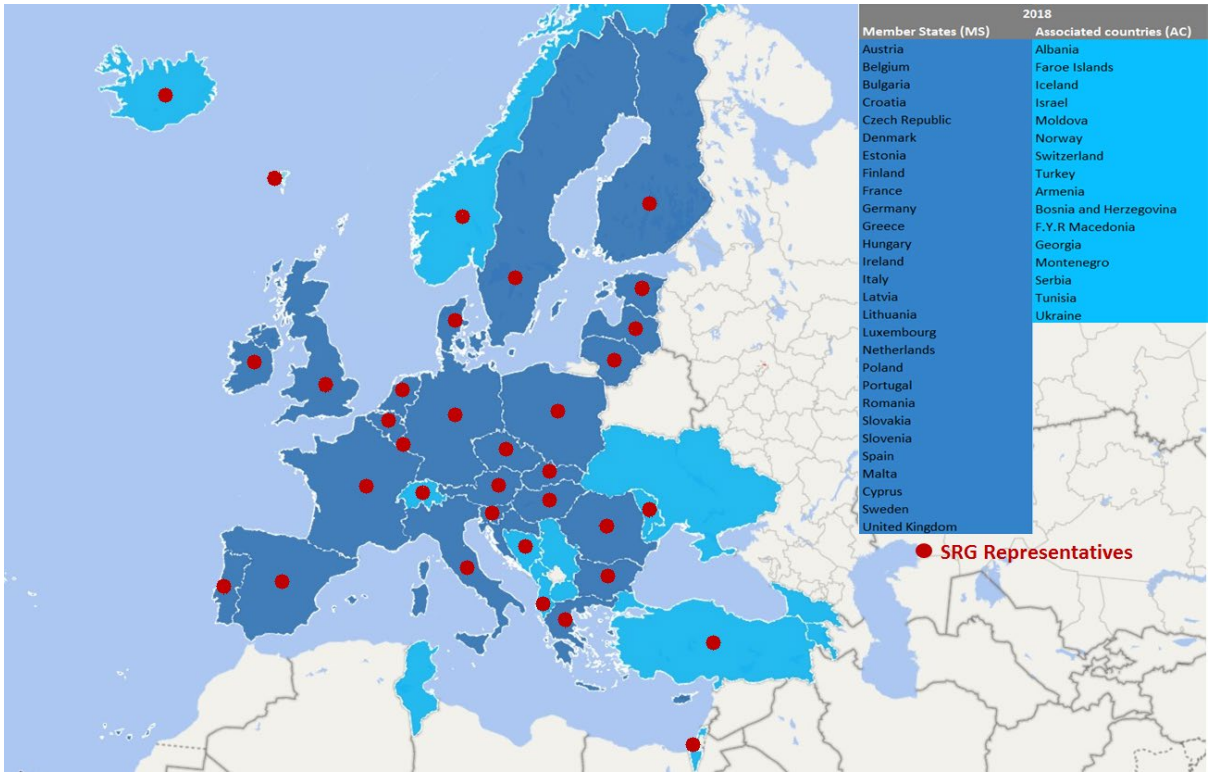

Figure 81: SRG members from EU MS (dark blue) and associated countries (light blue) as of 31/12/2018.

STATES REPRESENTATIVES GROUP MEETINGS IN 2018

During 2018, two meetings of the SRG were organised by the Programme Office, on 17 May 2018 and 16 October 2018. The first meeting was chaired by José Manuel González (Chair of the SRG and representative of Spain) and the second meeting was chaired by Fabio Fava who became the new elected Chair of the SRG, following the completion of the full mandate of José Manuel González. The

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

meetings 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 second meeting of the year.

During 2018 the SRG made valuable contributions to the strategic orientation of the programme and the development of the AWP 2019 providing recommendations on both the preliminary and final drafts of the 2019 AWP. The SRG also supported other programme-related activities by issuing concrete recommendations on various issues such as the annual KPI questionnaire, 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 2018, 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 the information in advance of the meetings and 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 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 national level on the bioeconomy. In 2018, the outcomes of the survey and a report with the b*ackground methods used and recommendations for future editions* were published by the JRC on the website of the BKC[86]. In addition, BBI JU also published (December 2018) a report with the information shared by the SRG[87] through the joint initiative. 21 members of the States Representatives Group 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. This also contributes to meeting the recommendations of the interim evaluation of the BBI JU and the follow- up actions set out in the Action Plan, in particular the recommendations focussed on the need to improve exchanges of best practice and cases of success to increase the participation of less represented countries.

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

8TH MEETING OF THE SRG HELD ON 17 MAY 2018:

- Inform SRG on the progress of the programme towards the achievement of its targets, including outcomes of the Call 2017, ongoing analysis of the project portfolio, monitoring of BBI JU KPIs and expected impact, analysis of SME participation and status of BBI JU office and leverage effect. In addition, the SRG received participation statistics from the 2014-2017 calls, and a report prepared by BBI JU with conclusions extracted from the Evaluation Summary Reports and other aspects of the evaluation of the Call 2017 that might help SRG members to perform their advisory role.

[86] https://biobs.jrc.ec.europa.eu

[87] https://www.bbi-europe.eu/sites/default/files/2017-srg-report-on-bbi-ju-national-related-activities-dec18.pdf

- Inform SRG on the BBI JU Interim Evaluation Action Plan, the process on the review of the European Bioeconomy Strategy and updates ON Horizon Europe preparations.
- Discuss with SRG the first draft of the 2019 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.
- SRG shared information on national activities to deploy and support the development of the bio-based industrial sector.

9TH MEETING OF THE SRG HELD ON 16 OCTOBER 2018:

- The SRG elected a new Chair, Fabio Fava (Italy) and a new Vice Chair, Marta de Diego (Spain) for the next two years.
- The SRG received information on the progress and achievements of the BBI JU programme since the previous meeting, including information on the 2019 BBI JU objectives, the situation of the BBI JU Programme Office, the leverage effect of the initiative achieved so far, KPI monitoring, activities on synergies.
- The SRG received information on the submission statistics of Call 2018 and funded projects since the first Call.
- The SRG discussed about the third draft of the 2019 AWP. The draft was presented by BIC. 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, status of the updated Bioeconomy Strategy.
- 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 SC Chair shared with the SRG the summary of the strategic discussions during the SC meeting. SRG members shared information about national activities on deployment, communication and dissemination at national level.
- SRG received information on the analysis performed by BBI JU of the joint bioeconomy questionnaire to identify practices of exchange of information and provide mentoring support to lesser-participating countries in the BBI JU.
- SRG members agreed on the organisation of a dedicated workshop in 2019, to share good practices in cluster creation in collaboration with the SCAR Bioeconomy Strategic Working Group. This event responds to the widening participation strategy implemented by BBI JU and intends to increase the participation of those countries in the initiative while supporting the bio-based industry all over Europe.
- In the context of Horizon Europe, SRG members were encouraged to act as BBI JU ambassadors towards the future of BBI JU. In particular, upon the request of the SRG's Chair, it was agreed to organise an extraordinary meeting to ensure that SRG members, in their role as BBI JU ambassadors, have all the necessary information to support their national representatives participating in the future Council negotiations.

The BIC vision for 2050 was presented at the October meeting and was well received by SRG members; they supported the approach and highlighted some additional aspects to be considered:

- the need for broadening the scope of the sectors' coverage,
- the clear reference to the SDGs' contribution,
- ensuring alignment with relevant policies including the updated Bioeconomy Strategy and the connection with the eco-innovation services,
- that the biorefinery concept may deliver by aligning economic opportunity, territories, value chains, actors and natural capital management.

A secure dedicated member area for the States Representatives Group has been used throughout 2018 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 supports the BBI JU by providing scientific advice on the areas of work undertaken by the BBI JU, such as advice on the scientific priorities to be addressed in the AWPs, as well as providing guidance to the programme implementation.

The SC is currently composed of 15 members - listed in Table 24 - who have expertise in most 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 sector; knowledge transfer and dissemination and social sciences.

Name	Role in SC	Position
Kevin O'Connor	Chair	Director Bioeconomy Research Centre (UCD), Ireland
Johanna Buchert	Vice-Chair	Executive Vice-President Research Natural Resources Institute, Finland
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 24: Members of the BBI JU SC[88]

The SC met twice at the BBI JU premises in Brussels during 2018. The SC made important contributions to the strategic orientation of the programme, such as giving valuable advice to BIC and to the EC about the AWP 2019 at different stages of the drafting process. The SC also supported other BBI JU activities by giving specific recommendations on the KPI monitoring, business intelligence initiatives and communication activities, among others.

Selection and Composition of the Scientific Committee

The SC may consist of 15 members appointed for three years. The Governing Board can renew the appointment for another three-year term.

At the beginning of 2018, Mr. Daan Dijk informed BBI JU that due to other professional commitments he would no longer be able to be a member of the SC. As established in the Specific Criteria and Selection Process for the Composition of the SC, a candidate from the reserve list of the 2017 selection procedure, Mr. Joe Gallagher, was appointed by the Governing Board on 26th September.

SCIENTIFIC COMMITTEE MEETINGS IN 2018

The SC met twice during 2018, on 16 May and 15 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 objectives of these meetings were:

- to discuss and provide scientific advice to the AWP 2019 in its first draft and third draft version. The SC provided detailed written recommendations to the BBI JU Programme Office, which were conveyed to the BIC and the EU represented by the EC;
- to inform the SC members on the progress of the programme towards the achievement of its targets, including the grant awarded under Call 2017, proposal submission statistics of Call 2018 and different analyses on the ongoing portfolio of projects;

[88] SC members' CV can be found here: https://www.bbi-europe.eu/about/scientific-committee

- to inform about and discuss different BBI activities, such as the KPI and impact monitoring, the exploration of synergies with other initiatives or the deployment of a strategy to widen the participation in the BBI Calls, among many others;
- to exchange information on communication, dissemination and deployment activities linked to BBI programme activities, and to engage SC members in the promotion of BBI JU activities;
- to update the SC members on the progress in the implementation of the BBI JU Interim Evaluation Action Plan
- to inform about and discuss with SC members the BBI- related activities undertaken by BIC and the EC, such as the review of the Bioeconomy Strategy and the preparations for Horizon Europe
- to inform and discuss the BBI-related initiatives undertaken by BIC, such as the drafting of the "*BIC missions for 'mission-oriented R&I'"* and the BIC 2050 vision '*The Circular Bio-society in 2050 in the context of Horizon Europe'.*
- to appoint new a new SC member.

The SC provided valuable advice to the AWP 2019, 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 2019, provided feedback to the Programme Office and the SC members on how these recommendations would be included in the final version of the AWP 2019.

The BIC vision for 2050 presented at the October meeting builds on the continuation of the current efforts and strategy to make Europe a competitive circular bio-based economy with informed citizens. The BIC vision for 2050 was well received by SC members, who supported the approach and the inclusion of the SDGs, and emphasised, inter alia, the importance of engaging society, developing educational and training programmes, strengthening communication and including a strong focus on health.

The October SC meeting also included an open strategic discussion on the future of the Bioeconomy and of the BBI JU under Horizon Europe. The SC concluded that the BBI JU is already addressing many of the most pressing societal challenges, such as climate change mitigation, production of greener consumer products and creation of jobs. Some other aspects were identified by the SC as priorities for the BBI JU in the future:

- supporting disruptive innovation and business models, involvement of citizens in the building of a sustainable bioeconomy,
- contributing to the development of legislation and regulations that facilitate the transition from a fossil-based to a bio-based economy;
- thinking on a global scale and engaging in cooperation with entities across the world;
- ensuring a sustainable use of resources and the valorisation of all kinds of organic residues;
- focussing on the development of key enabling technologies;
- promoting a knowledge-based bioeconomy and suitable education and training programmes in the field of the bioeconomy;

- placing health- for humans and animals, for the oceans and the soil, and for all ecosystems- at the heart of a sustainable bio-based economy for the future.

Following a debate with the EC and BIC, the SC clearly supported the continuation of the BBI JU under the next EU research and innovation Framework Programme (Horizon Europe) and identified the institutional public private partnership (iPPP) as the most suitable instrument to continue contributing to the development of sustainable and competitive bio-based industries in Europe. The SC Chair confirmed the SC's support for an iPPP at the Governing Board meeting in December 2018, where he explained the main reasons to favour this instrument:

- to maintain the momentum that BBI JU has created;
- to allow innovation to go hand in hand with research (low to high TRL);
- to allow key public and private stakeholders to work together to directly influence the content and strategic direction of the BBI programme

He concluded that the BBI JU is a necessary platform for further growth, consolidation and momentum in the bioeconomy.

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. Further improvements and simplification will be implemented thanks to the deployment of paperless workflows through the use of ARES.

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 ex-ante controls included in the Financial Rules and in the Manual of Financial procedures of BBI JU. 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 costs claims linked to the periodic reporting of ongoing BBI JU grants.

During 2018 the operational expenditure was implemented by means of pre-financing payments and periodic payments of ongoing grants.

In 2018 the BBI JU Programme Office processed a large number of periodic reports (33) and payments (32). A project was terminated on the request of the consortium and the final payment was performed just before the year end. 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 improve the quality of periodic reports, a webinar was organised by the end of 2018 involving project coordinators and beneficiaries. Specific key issues have been addressed, especially on the financial side, regarding the reporting of in-kind contributions.

A challenging task was to align the mid-term review process – organised by the deployment of external experts – with the payment process. In 2018 the dedicated COMPASS workflow was fully integrated with the reporting and payment phase. Nevertheless, there were some delays that impacted the overall time to pay.

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 2018 the BBI JU Programme Office dealt with a much higher number of requests compared to prior years: 42 amendments requested by the consortia were finalised (against the 30 of 2017). 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 Support Centre (CSC) 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 CSC 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 2018, the main results were:

1. The selection and launch of the second wave of audits on beneficiaries of BBI JU grants;
2. The delivery of the first audit results 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, each 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 layer[89], each year a random JU Representative Sample (JURS) is implemented. This was performed for the second time in 2018 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 2018 dealt with possible clashes between audits and optimised the audit effort wherever this was possible.

AUDIT COVERAGE IN 2018

In the Horizon 2020 corporate layer, given the stage of the programme lifecycle, cost claims totalling EUR 9 billion of requested funding had been received by the services by the end of 2018. The first Horizon 2020 audits resulting from the corporate sampling were launched in the middle of 2016 and further audits were launched in 2017 and 2018. Two Common Representative Samples (CRS), Common Risk Samples and Additional samples were selected. In total, by December 2018, 2383 participations had been selected for audit, covering all the services signing grants in Horizon 2020.

In its own local layer, BBI JU validated and paid cost claims totalling EUR 80.5 million by the end of 2018. The first audits resulting from the local sampling were launched at the end of 2017 and further audits were selected and launched by the end of 2018. In total, by December 2018, 27 participations had been selected for audit.

The detailed view of the audit coverage of BBI JU expenditure is presented in the following table:

	Audit coverage		
	Values (in EUR)	Percentages	Number of cost claims selected for audits
Costs validated and paid by BBI JU	80,497,139	100%	
Costs covered by risk audits	1,104,819	1.3%	3
Costs covered by representative audits	26,546,784	33%	24

[89] Selections done in this layer by entities with specific Grant Agreements follow different procedures and are reported in the AAR of the European Commission

Total direct audit coverage	27,651,603	34.4%	27

Table 25: Audit coverage as of 31/12/2018

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 system[90].

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:

- **Detected Error Rate**: this is the error rate derived from the results of all audits, whether audits on a representative sample of beneficiaries or audits implemented for other reasons (large beneficiaries, preventive audits, risk factors, etc.). Its value can be calculated for the whole Research and Innovation family (**Overall Horizon 2020 Detected Error Rate**) or for BBI JU (**Overall BBI JU Detected Error Rate**);
- **Representative 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;
- **Representative 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:

- **Residual Error Rate**: the residual error rate, on a multi-annual basis, is the extrapolated level of error remaining after corrections/recoveries 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;

[90] BBI JU reported on the implementation of ex-ante controls in section 4.2 above.

- 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 (**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 over 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 audit of a total 1155 Horizon 2020 participations was finalised by 31/12/2018 (763 in 2018). This includes 164 out of 303 participations selected in the first two CRS.

The error rates reported by CAS as of 31/12/2018 are:

- **The Overall Horizon 2020 detected error rate is 1.62%,** and is derived from the results of all finalised audits on Horizon 2020 participations;
- **The Detected Error Rate in the two CRS[91] is 2.43%** and is based on 164 out of 303 participations selected for an audit. However, if we take into account the draft audit reports, then the expected Representative Error Rate for Horizon 2020 will be around 3.32%;
- **The Residual Error Rate for Horizon 2020 is 2.22%**, expected to rise to around 2.45% when taking into account the draft audit reports.

At the level of BBI JU, only the audits of five participations were finalised by 30/04/2019. The finalised audits are one corporate risk audit and four representative audits. The representative audits cover slightly more than 10% of the project costs paid by BBI JU by the end of 2018.

The error rates that can calculated on that basis for BBI JU are the following:

- **The Overall BBI JU detected error rate is 0.03%,** and is derived from the results of the five finalised audits on BBI JU participations;
- **The Detected Error Rate in the JURS[92] is 0.02%** and is based on four out of 24 participations selected for representative audits. However, if we take into account the three draft audit reports

[91] This error rate is still not classified as representative at this stage as the audits of the first CRS are not yet all finalised.

[92] This error rate is still not classified as representative at this stage as the audits of the first JURS are not yet all finalised.

available at 30/04/2019, then the expected Representative Error Rate for BBI JU will be around 0.15%;

- **The Residual Error Rate for BBI JU is 0.01%**, expected to be around 0.11% when taking into account the abovementioned draft audit reports.

The error rates set out above must still be treated with care. The two first waves of representative audits - both at corporate level and at BBI JU level - are not yet complete. Therefore, the error rate is not yet fully representative of the expenditure that it covered. In addition, the first samplings were taken at an early stage of the programme in order to provide an early indication of the error rate and to help assess whether the simplifications introduced in Horizon 2020 had been effective. The nature of expenditure in the first years of the programme may not be totally representative of the expenditure across the whole period of expenditure.

Additionally, the error rates, and especially the residual error rate, must be considered over time. In particular, the cleaning effect of audits over time will tend to increase the difference between the representative/detected error rate and the residual error rate, with the latter finishing at a lower rate.

There is nevertheless evidence that the simplifications introduced in Horizon 2020, as well as the increased experience of major beneficiaries, are reducing the number and level of errors made by beneficiaries. However, beneficiaries still make errors, sometimes because of either a lack of understanding of the rules, or a 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, as reported in section 4.2.

Results of these actions shall contribute to achieve the multiannual objectives about 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 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 programme[93].

In conclusion, BBI JU does not consider that a reserve is needed for Horizon 2020 expenditure this year.

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

4.4. AUDIT OF THE EUROPEAN COURT OF AUDITORS

On 12 November 2018 the European Court of Auditors (ECA) published its report on BBI JU's annual accounts for the financial year 2017[94], 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.

[94] https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=47646

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, which were adopted by the Governing Board on 9 December 2014 and amended by the Governing Board decision of 23 December 2015.

On 13 April 2018, the IAS delivered the final report of the audit's 'Limited review of the implementation of the Internal Control Standards (ICS) in the BBI JU'. The final audit report contained no critical or very important findings and considered that the continuous implementation of the ICS is well embedded in the management routine of the BBI JU. Almost all the Internal Control Standards (ICSs) were considered to be implemented or largely implemented, with only certain standards remaining to be fully implemented such as ICS 8 (Processes and procedures), ICS10 (Business continuity) and ICS 11 (Document management). The IAS made three important recommendations in order to support and complement existing BBI's efforts in the field. The Programme Office responded to the report by proposing the corresponding action plans and the IAS considered them adequate to mitigate the identified issues.

By the end of 2018, the state of implementation of the audit recommendations is the following:

- Rules and guidelines covering all areas of document management were adopted with the introduction of ARES (as reported in section 2.5 above) and the IAS concluded that the relevant recommendation was adequately and effectively implemented.
- Implementation of a common Business Continuity Framework for all the JUs placed within the same building was almost complete, with some residual testing requirements to be met. The action plan shall be completed for IAS assessment by March 2019.
- The finalisation of the management dashboards and analysis of the reporting landscape was ongoing alongside the drafting of the present AAR reporting and it is expected to be completed for IAS assessment by March 2019.

With reference to the three standards considered as still to be fully implemented at the beginning of 2018, the Programme Office re-assessed all of them during the year as implemented or largely implemented as reported in section 4.7 below.

Finally, in the Strategic Internal Audit Plan (SIAP) 2017-2019 for BBI JU, the IAS initially planned to conduct an audit in 2018 on "*the Horizon 2020 processes, from the identification of the Call topics to the signature of the Grant Agreement*". In the course of 2018, the IAS revised its planning and proposed a postponement to March 2019. The Programme Office assessed this request in October-November within the yearly IAS risk assessment procedure and agreed on the postponement. The IAS eventually confirmed the new scheduling with the announcement letter sent on 07/12/2018.

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 evaluates 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 takes into account 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 2019 OBJECTIVES

The annual risk assessment started in October 2018 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 2019. However, some initial assumptions needed to be verified and the assessment was updated in January 2019 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 number of risks to be monitored and which require a dedicated response continues to decrease (from 27 for 2017 and 17 for 2018, to seven for 2019). The periodic review of well-established and tested business policies, processes and procedures ensures an improved reliability of existing internal controls. Standardised procedures deal also with exceptional events and the timeliness of communications is ensured through well-established reporting lines.

In addition the general degree of exposure caused by the threats (the risks level) also continues to decrease. This is particularly the case for the significant and critical risks identified in 2017 for the availability and efficient allocation of human resources in the Programme Office. One year later, these risks have been lowered to an acceptable level for the short term and the conditions for their avoidance in the long term have been set.

The overall typology of risks tends to be mainly dependent on the external environment of the Programme Office and the risk responses have been adapted to mitigate the impact of such events. The most relevant risk in this regard is the impending withdrawal of the United Kingdom from the European Union (so called '*Brexit'*). The Programme Office has analysed the possible scenarios (so called *'hard' or 'soft' Brexit*) and assessed their consequences. Then, actions have been planned to mitigate the impact of the different scenarios on the successful achievement of the operational and strategic objectives of the initiative.

Some threats continue to appear on the risk management radar. This is particularly the case for risks related to legality and regularity aspects potentially affecting ex-post controls on operational expenditure and the timely implementation and reporting of their results. The Programme Office has already implemented and planned actions that start addressing these risks and the relevant assumptions will be constantly reviewed alongside the implementation of the audit strategy.

Other two 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 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.

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.

Within the processing of personal data, Regulation (EC) No 45/2001 applied until the entry into force, on 11 December 2018, of the Regulation 2018/1725 on the protection of natural persons with regard to the processing of personal data by the EU institutions, bodies, offices and agencies.

By that date the action plan envisaged in 2017 for the implementation of the new Regulation was deployed. Among the actions implemented to adapt to the new Regulation, in 2018 the Programme Office undertook the update of private statements and the adaptation and update of the register of operations treating personal data.

4.7. COMPLIANCE AND EFFECTIVENESS OF INTERNAL CONTROL

In line with Articles 12 and 17.3 of the BBI JU Financial Rules, on 16 September 2015 the Governing Board adopted 16 Internal Control Standards (ICSs) on the basis of the equivalent standards laid down by the European Commission for its own departments. On 30 November 2017 the Governing Board amended the ICSs in order to ensure that they adequately reflect the context of BBI JU and are in line with the provisions of Article 12 of its Financial Rules.

As planned in the AWP 2018, between June and September 2018 the Programme Office performed a self-assessment of the level of implementation of its ICSs. The overall objectives of the exercise were to provide the Programme Office with an updated picture of the state of implementation of the ICSs and to conclude the analysis initiated in 2017 on the degree of maturity of the current internal control framework. Moreover, these conclusions were considered 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 and results of the limited review performed by the Internal Audit Service on the implementation of ICSs at BBI JU (as detailed in section 4.5 above) and the self-assessment criteria of compliance, effectiveness and efficiency of the ICS' implementation. In coherence with previous reporting and with the objectives of the year, the conclusions are then drawn on the basis of the maturity model matrix as provided by the Global Institute of Internal Auditors[95].

ASSESSMENT CONCLUSIONS

The assessment process ran smoothly, confirming that the staff involved in the implementation of ICSs had acquired a good understanding of the assessment objectives, methodology and criteria . As also mentioned by the IAS in its report, striving for full implementation of the Internal Control Standards 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 ICSs, as demonstrated in the table below, with noteworthy improvements on four of them as compared to the 2017 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 Auditors[96] and assessed by the accountable functions for each ICS in a scale 0 to 5:

> **3 ICSs 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 ICSs 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.

[95] IPPF – Practice Guide: Selecting, Using, and Creating Maturity Models: A Tool for Assurance and Consulting Engagements. Global Institute of Internal Auditors, July 2013

[96] Ibi idem

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. 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.

	Maturity (0 to 5)	
Internal Control Standards	**2017**	**2018**
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	3	4
ICS 7 Operational structure	3	3
ICS 8 Processes and procedures	3	4
ICS 9 Management supervision	4	4
ICS 10 Business continuity	3	4
ICS 11 Document management	3	4
ICS 12 Information and communication	3	3
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 26: Degree of maturity of Internal Control Standards implemented at BBI JU as assessed in 2017 and in 2018.

The overall good implementation of actions envisaged in 2017 has improved the level of maturity of all ICSs or confirmed the positive results of previous assessments. Moreover, all the three ICS that the IAS considered to be still under implementation at the beginning of 2018 have been implemented or largely implemented and the pending actions do not challenge the overall maturity of the ICSs in meeting the control objectives and requirements.

The action plan for these ICSs 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 these bases, 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

As suggested by the Internal Audit Service in April 2018 and in line with the conclusions mentioned above, in November 2018 the Management Team performed a risk assessment of the conditions and requirements necessary to adopt a new principle-based ICF in line with the most recent practice of the EU Institutions. The assessment concluded that there are no immediate requirements for the JU to comply with the new framework, but the organisation is now ready for a smooth transition. This shall be done by building on the achieved compliance and effectiveness of the current system while fostering its efficiency. This objective was also translated into the AWP 2019 in order to prepare during the year the conditions for its effective implementation.

5. MANAGEMENT ASSURANCE

5.1. ASSESSMENT OF THE ANNUAL ACTIVITY REPORT BYTHE GOVERNING BOARD

INTRODUCTION

The Bio-based Industries Joint Undertaking (BBI JU) programme office submitted the 2018 Annual Activity Report (AAR) to its Governing Board on 26 February 2019.
On 28 March 2019, the Governing Board appointed a working group to carry out all the preparatory work required for the assessment of the 2018 AAR. This working group included representatives of the Bio-based Industries Consortium (BIC, the only member other than the Union) and the Commission. The Governing Board agreed to appoint a BBI JU contact in to the working group.
In accordance with Article 15(3) of the Governing Board's rules of procedure, the working group reported to the Governing Board on 5 June 2019 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 2018 Annual Work Plan (AWP) on 13 December 2017 and subsequently amended it on 10 April 2018. 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:

- The grant agreements under the 2017 call for proposals (Call 2017) were signed within 231 days on average (against a target of 245 days), which reflects the efforts made by the BBI JU. The Union committed to providing funding of EUR 85 161 992 in total for the 17 projects resulting from this call.
- On 31 December 2018, the BBI JU project portfolio included 82 ongoing projects, with a total grant amount of EUR 498 923 017. The Governing Board appreciates that the different types of feedstock are now even better covered than in the year before.
- The 2018 call for proposals (Call 2018) was published on 11 April 2018 with an indicative budget of EUR 115 million and a deadline for submitting proposals of 6 September 2018. No proposals were submitted to 2 out of 21 topics, and 7 topics were not covered by proposals retained for funding, including a flagship topic[97]. The evaluation was carried out in the period provided for, with an excellent time-to-inform.
- The Commission has amended the Council Regulation and the model grant agreement in order to allow financial contributions at project level made by BIC's constituent entities to the beneficiaries to be counted towards the target set out in Article 12(4) of the Statutes annexed to the Council Regulation. However, neither this nor the introduction of an additional eligibility criterion[98] for research and innovation actions have increased the commitment to financial contributions made by BIC and its constituent entities under Call 2018.
- Including the projects from Call 2018, which were selected but not signed by 31 December 2018, the BBI JU project portfolio includes 101 projects, with a total Union contribution of around EUR 602 million. Funding is allocated as follows: 32 % for nine flagship actions; 37 % for 29 demonstration actions; 29 % for 52 research and innovation actions; 2 % for eleven coordination and support actions.

[97] With the exception of one grant agreement, the resulting 19 grant agreements, with an expected total Union contribution of EUR 102 910 812, were signed by the planned deadline of 6 May 2019. BBI JU is not responsible for the one delayed signature.

[98] Under Article 9(5) of the Horizon 2020 rules for participation.

- BIC's and the Union's contribution to the BBI Initiative is shown in the amounts of funding provided in the first 5 years[99] to fulfil the commitments set out in the Council Regulation:
    - The **Union** committed EUR 504 530 037 (an operational budget of EUR 495 673 017 for the 2014-2017 calls, plus an administrative budget of EUR 8 857 020 for 2014-2018). This accounts for 52 % of the maximum budget of EUR 975 million envisaged under Article 3(1) of the Council Regulation and is therefore in line with expectations.
    - The members paid around EUR 8 857 020 each in **administration costs** to the BBI JU programme office up to 2018. This accounts for only around 30 % of the 10-year administrative budget envisaged under Article 12(2) of the Statutes of the BBI JU (EUR 58 500 000), 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), 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.
    - BIC's **project-level operational financial contribution** to the calls 2014-2017 equals zero.[100,101]
    - The committed total **in kind contributions** made by BIC's constituent entities towards **operational activities** (committed total IKOP in grant agreements of Calls 2014-17) amounted to EUR 121 646 211. BIC has reported that the estimated total in-kind contributions made by its constituent entities towards operational activities (estimated total IKOP) is EUR 38 363 841 (estimated and reported by BIC for 2015, 2016, 2017 and 2018)[102,103]. BIC reported that certified in-kind contributions made by its constituent entities towards operational activities (certified IKOP) amounted to EUR 12 102 972[104].
    - In 2018, BIC's constituent entities contributed EUR 36 290 000[105] in kind to **additional activities**, leading to an amount of EUR 699 879 000 certified for the years 2014 to 2018 in total. This is nearly 40 % of the amount expected over 11 years under Article 4(2)(b) of the Council Regulation and is therefore a bit below expectations.

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

[100] The amount given in the 2017 AAR (nearly EUR 12 million) had been committed by BIC's constituent entities that are beneficiaries receiving funding; therefore they cannot be counted.

[101] The project-level contributions of BIC's constituent entities in Call 2018 cannot be considered here yet, as the commitments are only signed in the grant agreements of May 2018. I any case, this contribution is expected to be very low.

[102] 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.

[103] Sum of the figures for 2015/2016 (EUR 5 551 302), 2017 (EUR 12 127 016) and 2018 (EUR 20 685 523).

[104] 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.

[105] This amount only comprises those parts of the 2018 IKAA that were certified by 27 May 2019.

- BIC and its constituent entities have therefore delivered a reported EUR 724 088 992 in total[106]. 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.
- Taken together, the efforts described in the above points are less than positive steps towards fulfilling the commitments, and more work is needed.
- The Governing Board appreciates that, as requested by the EC, the 2019 AAR uses tables to clearly show BIC's level of compliance with its contributory obligations over the years.
- The methodology for calculating the initiative's **leverage** is consistent with the methodology used by the Commission for the interim evaluation of the joint technology initiatives in 2017[107]. Only the signed grant agreements up to Call 2017 can be considered, as the Call 2018 grant agreements had not yet been signed by 31 December 2018. The underlying figures are thus: the difference between the committed total costs and the committed JU contribution of the grant agreements signed (EUR 229 710 558); BIC's financial contribution at programme level (EUR 3 250 000); and its constituent entities' in-kind contributions to additional activities (EUR 699 879 000). The initiative's prospective operational leverage calculated for the first 5 years of operations is therefore 0.470 and the actual additional leverage is 1.412, giving a total leverage of 1.88. In other words, it is reasonable to assume that every euro committed by the Union through the BBI Initiative up to the end of 2018 has leveraged an additional EUR 1.88.
- 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. This is particularly true for the SME participation: among the 1 169 participations in projects funded under the 2014-2017 calls for proposals and in projects retained for Call 2018 funding, 41 % are SMEs. They currently receive 35 % of the Union's total financial contribution, and this proportion has been increasing in recent years. This is higher than the overall target of 20 % for Leadership in Enabling and Industrial Technologies (LEIT) and the societal challenges of Horizon 2020.
- The KPI related to the geographical distribution of participants shows the same general pattern as for Horizon 2020: low EU-13 participation of 9 %. Though low, this figure is nevertheless higher for the BBI JU than for the comparable parts of Horizon 2020 (Societal Challenge 2, LEIT Biotechnology). The GB appreciates that – when normalised by their GDP or GERD – the overall performance of EU-13 countries is comparable to that of EU-15 countries, mostly due to demonstration and flagship plants in EU-13 countries. The Governing Board also appreciates the efforts made by the BBI JU, the SRG, BIC and the EC to further widen participation.

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[106] 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).

[107] 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.

- Project outcomes are monitored using the six BBI-specific KPIs described in the Strategic Innovation and Research Agenda. Project coordinators have reported these outcomes via questionnaires, together with the projects' expected socio-economic and environmental impacts. Based on their responses, the BBI JU then added up the input and compared it against the agreed objectives. The overall picture shows a positive outcome. However, it must be emphasised that it is based on expected results, not on results actually achieved. A meaningful analysis of the real KPIs will only be possible after the results are validated when the projects have ended; this is planned for 2019 for the first time when the first projects are finalised. Whenever KPI-related data are publicly used, this difference must be made clear and the link to the expected impact must be explained (as is the case in this AAR).
- 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 brokerage event, participated in 12 national info days, 58 other events and in the high-level kick-off events of two flagship bio-refineries. It published several brochures describing the results and impact of BBI projects, edited 26 country factsheets on projects, and took part in external publications.
- The Governing Board notes that the target of 23 staff members set in the 2018 AWP has been met and that in 2018 BBI JU staff carried out activities in 2018 that were relevant to their role.
- 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 Manual of Financial Procedures in light of suggestions made by the European Court of Auditors, the fine-tuning of the internal procedure for tendering and signing procurement contracts, and the implementation of ARES workflows. The BBI JU programme office has been performing ex ante controls in line with Article 18 of the BBI JU Financial Rules to provide the authorising officer with assurance on the correctness of all payments. In 2018, a final payment was carried out for the first time. The first ex post audit results for operational expenditure were delivered in 2018, and the second wave of audits was started. Due to the low number of participations audited, no conclusions can be drawn yet.

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.
- regrets that the BBI JU has not delivered the requested analysis of BIC's constituent entities participating in BBI projects in the 2018 AAR.

CONCLUSION

The Governing Board believes that the technical and operational information provided in the 2018 AAR reflects the situation at the end of 2018. It believes that the 2018 AAR provides a complete and accurate report of the progress made by the BBI JU in 2018, in particular on the objectives set in the 2018 AWP as amended on 10 April 2018. 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 merit 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 2018 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 or have largely been implemented and require supplementary action, and that the BBI JU is properly monitoring and mitigating any risks.

5.2. ELEMENTS SUPPORTING ASSURANCE

This section reviews the assessment of the elements reported in chapters two and four 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 of the Annual Activity Report.

The main elements supporting such assurance are based on the management assessment of 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, from the Head of Programme, from the Internal Control and Audit Manager and from 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 2018.

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 view[1].

State that I have reasonable assurance that the resources assigned to the activities described in this report have been used for their intended purpose and in accordance with the principles of sound financial management, and that the control procedures put in place give the necessary guarantees concerning the legality and regularity of the underlying transactions.

This reasonable assurance is based on my own judgement and on the information at my disposal, such as the results of the internal control self-assessment, ex-post controls on the Horizon 2020 expenditure, 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

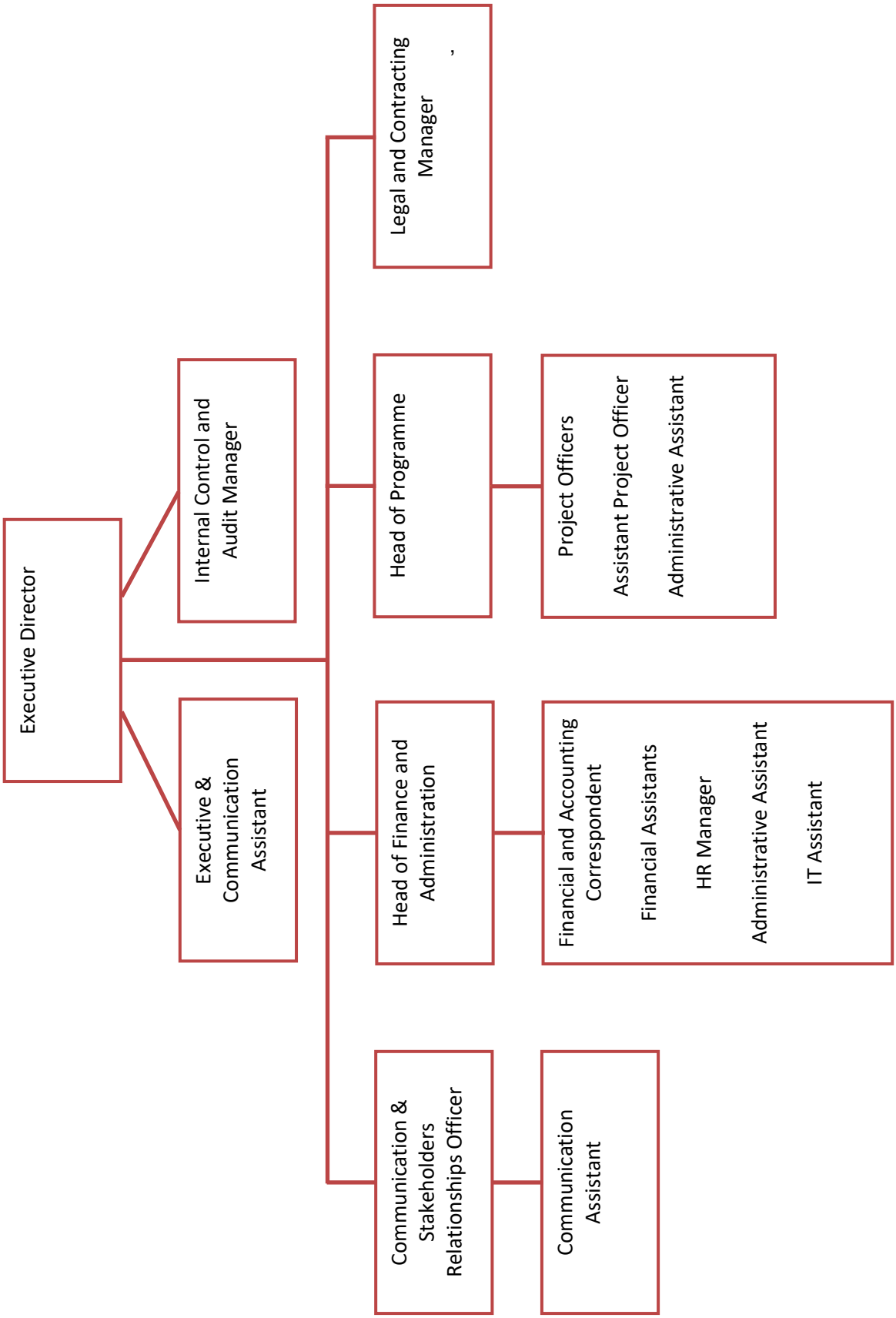
Date: 26/02/2019

Philippe MENGAL
Executive Director

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

7. ANNEXES

7.1. ORGANISATIONAL CHART



7.2. STAFF ESTABLISHMENT PLAN

Function group and grade	2017				2018			
	Authorised budget		Filled in position as of 31/12/2017		Authorised budget		Filled in position as of 31/12/2018	
	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								
AD 11		2		2		2		2
AD 10								
AD 9								
AD 8						2		2
AD 7		5		5		5		5
AD 6		2		2				
AD 5								
AD total		10		10		10		10
AST 11								
AST 10								
AST 9								
AST 8								
AST 7								
AST 6								
AST 5						1		
AST 4		2		2		1		2
AST 3								
AST 2		1		1		1		1
AST 1								

Function group and grade	2017				2018			
	Authorised budget		Filled in position as of 31/12/2017		Authorised budget		Filled in position as of 31/12/2018	
	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts	Permanent Posts	Temporary Posts
AST total		3		3		3		3
AST/SC 6								
AST/SC 5								
AST/SC 4								
AST/SC 3								
AST/SC 2								
AST/SC 1								
AST/SC total								
TOTAL		13		13		13		13
GRAND TOTAL	13		13		13		13	

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

Contract agents	Authorised 2017	Recruited as of 31/12/2017	Authorised 2018	Recruited as of 31/12/2018
Function group IV	5	2	5	5
Function group III	4	5	5	5
Function group II				
Function group I				
TOTAL	9	7	10	10

7.3. PUBLICATIONS FROM PROJECTS

The tables for the publications below were generated based on data provided by the 82 BBI JU funded projects via the 'continuous reporting' module[108] of the Funding and Tenders Portal. In 2017, BBI JU projects produced 71 publications, of which 26 were reported in AAR 2017. The remaining publications were reported by the projects during 2018, when the 'continuous reporting' module was updated with the new information. In 2018, BBI JU projects produced 75 publications. This amount is most likely an underestimation, since some 2018 publications were not added in the Funding and Tenders Portal by the end of 2018. In total, BBI JU projects have produced 160 publications between the years 2015-2018. The summary table below gives an overview of the number and the type of publications reported by BBI JU projects per year, and shows that as the projects progress and the BBI JU project portfolio becomes larger, the number of publications per year increases, from only two in 2015 to 75 in 2018. The category "other" includes mainly congress presentations and public reports that do not strictly fit in any of the other categories.

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**

The publications produced by BBI JU projects in 2018 are listed in the table below, being grouped per project. It is important to mention that the BBI JU projects followed the Horizon 2020 guidelines[109] for Open Access (OA) publications: 26 are in Green OA and 28 are in Gold OA. Out of the 21 remaining publications that are not in OA, only four of them are Journal articles, which in practice means that more than 90% 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.

[108] http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/reports/continuous-report_en.htm

[109] 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	Publisher
AgriChemWhey	Biodegradable Plastic Blends Create New Possibilities for End-of-Life Management of Plastics but They Are Not a Panacea for Plastic Pollution	Tanja Narancic, Steven Verstichel, Srinivasa Reddy Chaganti, Laura Morales-Gamez, Shane T. Kenny, Bruno De Wilde, Ramesh Babu Padamati, Kevin E. O'Connor	Environmental Science & Technology	American Chemical Society
BARBARA	Reactive Compatibilisation of Plant Polysaccharides and Biobased Polymers: Review on Current Strategies, Expectations and Reality	Balázs Imre, Lidia García, Debora Puglia, Francisco Vilaplana	Carbohydrate Polymers	Pergamon Press Ltd.
CARBOSURF	Advanced materials from microbial fermentation: The case of glycolipids and nanocellulose	Baccile, N., Roelants, S.L.K.W. and Konturri, E	L'Actualité Chimique	Societe Francaise de Chimie
CARBOSURF	Biobased Surfactants: Synthesis, Properties and Applications, Second Edition.	Solaiman, D.K.Y., Roelants, S.L.K.W., Van Renterghem, L., Lodens, S., Soetaert, W., Ashby, R.		AOCS Press
CARBOSURF	Complex coacervation of natural sophorolipid bolaamphiphile micelles with cationic polyelectrolytes	Ghazi Ben Messaoud, Lyndsay Promeneur, Martha Brennich, Sophie L. K. W. Roelants, Patrick Le Griel, Niki Baccile	Green Chemistry	Royal Society of Chemistry
CARBOSURF	From lab to market: An integrated bioprocess design approach for new-to-nature biosurfactants produced by Starmerella bombicola	Lisa Van Renterghem, Sophie L.K. W. Roelants, Niki Baccile, Katrijn Uyttersprot, Marie Claire Taelman, Bernd Everaert, Stein Mincke, Sam Ledegen, Sam Debrouwer, Kristel Scholtens, Christian Stevens, Wim Soetaert	Biotechnology and Bioengineering	Wiley - V C H Verlag GmbbH & Co.
CARBOSURF	Serine integrase recombinational engineering (SIRE): A versatile toolbox for genome editing	Nico Snoeck, Maarten L. De Mol, Dries Van Herpe, Anke Goormans, Isabelle Maryns, Pieter Coussement, Gert Peters, Joeri Beauprez, Sofie L. De Maeseneire, Wim Soetaert	Biotechnology and Bioengineering	Wiley - V C H Verlag GmbbH & Co.

CARBOSURF	Synthesis and Biological Evaluation of Bolaamphiphilic Sophorolipids	Elisabeth I. P. Delbeke, Jonas Everaert, Olivier Lozach, Tony Le Gall, Mathieu Berchel, Tristan Montier, Paul-Alain Jaffrès, Petra Rigole, Tom Coenye, Martha Brennich, Niki Baccile, Sophie L. K. W. Roelants, Wim Soetaert, Inge N. A. Van Bogaert, Kevin M. Van Geem, Christian V. Stevens	ACS Sustainable Chemistry & Engineering	American Chemical Society
CARBOSURF	Taking biosurfactants from the lab to the market: hurdles and how to take them by applying an integrated process design approach	Roelants, S.L.K.W., Van Renterghem, L., Maes, K., Everaert, B., Redant, E., Vanlerberghe, B., De Maeseneire, S.L., Soetaert, W.		CRC Press
EFFORTE	Pilotprojects regarding soil scarification, data from harvesters and other data sources (in Swedish)	Erik Willén, Maria Nordström, Isabelle Bergqvist, Gert Andersson		Skogforsk
EFFORTE	Wheel rut measurements by forest machine-mounted LiDAR sensors – accuracy and potential for operational applications?	Aura Salmivaara, Mikko Miettinen, Leena Finér, Samuli Launiainen, Heikki Korpunen, Sakari Tuominen, Jukka Heikkonen, Paavo Nevalainen, Matti Sirén, Jari Ala-Ilomäki, Jori Uusitalo	International Journal of Forest Engineering	Taylor & Francis
EnzOx2	Biocatalytic Oxidation Reactions: A Chemist's Perspective	JiaJia Dong, Elena Fernández-Fueyo, Frank Hollmann, Caroline E. Paul, Milja Pesic, Sandy Schmidt, Yonghua Wang, Sabry Younes, Wuyuan Zhang	Angewandte Chemie International Edition	John Wiley & Sons Ltd.
EnzOx2	Biological Lignin Degradation	A. T. Martínez, S. Camarero, F. J. Ruiz-Dueñas, M. J. Martínez	Lignin Valorisation: Emerging Approaches	Royal Society of Chemistry
EnzOx2	Description of a Non-Canonical Mn(II)-Oxidation Site in Peroxidases	Elena Fernández-Fueyo, Irene Davó-Siguero, David Almendral, Dolores Linde, Maria Camilla Baratto, Rebecca Pogni, Antonio Romero, Victor Guallar, Angel T. Martínez	ACS Catalysis	American Chemical Society

EnzOx2	Draft Genome Sequence of the Sordariomycete Lecythophora (Coniochaeta) hoffmannii CBS 245.38	Sabrina Leonhardt, Enrico Büttner, Anna Maria Gebauer, Martin Hofrichter, Harald Kellner	Genome Announcements	American Society for Microbiology
EnzOx2	Enzymatic Preparation of 2,5-Furandicarboxylic Acid (FDCA)—A Substitute of Terephthalic Acid—By the Joined Action of Three Fungal Enzymes	Alexander Karich, Sebastian Kleeberg, René Ullrich, Martin Hofrichter	Microorganisms	MDPI
EnzOx2	Evolutionary convergence in lignin-degrading enzymes	Iván Ayuso-Fernández, Francisco J. Ruiz-Dueñas, Angel T. Martínez	Proceedings of the National Academy of Sciences	National Academy of Sciences
EnzOx2	Multiple implications of an active site phenylalanine in the catalysis of aryl-alcohol oxidase	Juan Carro, Pep Amengual-Rigo, Ferran Sancho, Milagros Medina, Victor Guallar, Patricia Ferreira, Angel T. Martínez	Scientific Reports	Nature Publishing Group
EnzOx2	Selective Synthesis of the Human Drug Metabolite 5'-Hydroxypropranolol by an Evolved Self-Sufficient Peroxygenase	Patricia Gomez de Santos, Marina Cañellas, Florian Tieves, Sabry H. H. Younes, Patricia Molina-Espeja, Martin Hofrichter, Frank Hollmann, Victor Guallar, Miguel Alcalde	ACS Catalysis	American Chemical Society
EnzOx2	Selective synthesis of the resveratrol analogue 4,4'-dihydroxy-trans stilbene and stilbenoids modification by fungal peroxygenases	Carmen Aranda, René Ullrich, Jan Kiebist, Katrin Scheibner, José C. del Río, Martin Hofrichter, Angel T. Martínez, Ana Gutiérrez	Catalysis Science & Technology	Royal Society of Chemistry
EnzOx2	Self-sustained enzymatic cascade for the production of 2,5-furandicarboxylic acid from 5-methoxymethylfurfural	Juan Carro, Elena Fernández-Fueyo, Carmen Fernández-Alonso, Javier Cañada, René Ullrich, Martin Hofrichter, Miguel Alcalde, Patricia Ferreira, Angel T. Martínez	Biotechnology for Biofuels	BioMed Central
EnzOx2	Shuffling the neutral drift of unspecific peroxygenase in Saccharomyces cerevisiae	Javier Martin-Diaz, Carmen Paret, Eva García-Ruiz, Patricia Molina-Espeja, Miguel Alcalde	Applied and Environmental Microbiology	American Society for Microbiology

EnzOx2	Side chain removal from corticosteroids by unspecific peroxygenase	René Ullrich, Marzena Poraj-Kobielska, Steffi Scholze, Claire Halbout, Martin Sandvoss, Marek J. Pecyna, Katrin Scheibner, Martin Hofrichter	Journal of Inorganic Biochemistry	Elsevier BV
EnzOx2	Stepwise Hydrogen Atom and Proton Transfers in Dioxygen Reduction by Aryl-Alcohol Oxidase	Juan Carro, Patricia Ferreira, Angel T. Martínez, Giovanni Gadda	Biochemistry	American Chemical Society
FIRST2RUN	FIRST2RUN: Flagship demonstration of an integrated biorefinery for dry crops sustainable exploitation towards biobased materials production	A. Vassoi, F. Digioia, F. Cavani	Book of abstracts 3rd Green and Sustainable Chemistry Conference, Berlin	Elsevier
FIRST2RUN	First2Run: un esempio di bio-raffineria integrata per la valorizzazione e lo sfruttamento sostenibile dell'olio di cardo	A. Vassoi, T. Tabanelli, F. Digioia, F. Cavani	Book of abstracts VI° Workshop G.C.-C.S., Milan	Interdivisional Group of Green Chemistry
InDIRECT	Insect Rearing and Processing for Food, Feed and Bio-based Chemicals	Leen Bastiaens & Leen Van Campenhout	"Revolution in Food and Biomass Production" (REFAB) - conference	Nova
LIBRE	Biobased Structurally Compatible Polymer Blends Based on Lignin and Thermoplastic Elastomer Polyurethane as Carbon Fiber Precursors	Mario Culebras, Anne Beaucamp, Yan Wang, Manuel M. Clauss, Erik Frank, Maurice N. Collins	ACS Sustainable Chemistry & Engineering	American Chemical Society

LIBRE	Understanding the thermal and dielectric response of organosolv and modified kraft lignin as a carbon fibre precursor	Mario Culebras, Maria J. Sanchis, Anne Beaucamp, Marta Carsí, Baljinder K. Kandola, A. Richard Horrocks, Gianmarco Panzetti, Colin Birkinshaw, Maurice N. Collins	Green Chemistry	Royal Society of Chemistry
LigniOx	Adsorption of plasticisers on ordinary Portland cement surface	Jaakko Sippola		Metropolia University of Applied Sciences
LigniOx	LigniOx lignins – High performance concrete plasticisers and versatile dispersants	Kalliola, A. , Vehmas, T. and Liitiä, T.	NWBC 2018: Proceedings of the 8th Nordic Wood Biorefinery Conference	VTT Technical Research Centre of Finland
LigniOx	Membrane-based post-treatment of oxidised lignin for versatile plasticisers	Dries Mondelaers		KU Leuven
LigniOx	Membrane-based post-treatment of oxidised lignin for versatile dispersant applications	Michaël Mestdagh		KU Leuven
NewFert	A semi-pilot microbial electrolysis cell (MEC) for hydrogen production and pig-slurry valorisation	San Martín, Isabel;Alonso, R. M.;Pelaz, G.;Escapa, Adrián;Morán, Antonio		UNIVERSIDAD DE LEÓN
POLYBIOSKIN	Biobased Tissues for innovative Cosmetic products: Polybioskin as an EU Research project	P. Morganti, M.B.Coltelli, S.Danti	Global Journal of Nanomedicine (GJN)	Juniper Publishers
POLYBIOSKIN	Biobased Tissues for Innovative Cosmetic Products: Polybioskin as an EU Research Project	Morganti Pierfrancesco, Coltelli Maria Beatrice and Danti Serena	Global Journal of Nanomedicine	Juniper Publisher

POLYBIOSKIN	Chitin and lignin to produce biocompatible tissues	Pierfrancesco Morganti, Serena Danti, Maria Beatrice Coltelli	Research in Clinical Dermatology	Allied academies
POLYBIOSKIN	Innovative Tissue Engineering for an Enlarged Market	Pierfrancesco Morganti, Pietro Febo	Journal of Clinical and Cosmetic Dermatology	SciForschen
POLYBIOSKIN	Natural Polymers for a Cleaner Environment	Pierfrancesco Morganti, Maria-Beatrice Coltelli, Gianluca Morganti	International Journal of nanotechnolo gy and nanomedicine	Opast International
POLYBIOSKIN	Poly(lactic acid) (PLA) Based Tear Resistant and Biodegradable Flexible Films by Blown Film Extrusion	Norma Mallegni, Thanh Phuong, Maria-Beatrice Coltelli, Patrizia Cinelli, Andrea Lazzeri	Materials	MDPI Open Access Publishing
POLYBIOSKIN	Preparation of Innovative Skin Compatible Films to Release Polysaccharides for Biobased Beauty Masks	Maria-Beatrice Coltelli, Serena Danti, Luisa Trombi, Pierfrancesco Morganti, Giovanna Donnarumma, Adone Baroni, Alessandra Fusco, Andrea Lazzeri	Cosmetics	MDPI
POLYBIOSKIN	Tessuti Naturali per cosmetici innovativi: un progetto di ricerca europeo	Pierfrancesco Morganti, Maria-Beatrice Coltelli, Serena Danti	ICF – RIVISTA DELL'INDUSTR IA CHIMICA E FARMACEUTI CA	Interprogetti editori
PROMINENT	Enzyme-aided gelation of a protein-enriched rice bran fraction	Anni Kortekangas		University of Helsinki
PROMINENT	Functionalisation of cereal protein concentrates for improved performance.	Anni Nisov		Aalto University

PULP2VALUE	From batch to continuous: Au-catalysed oxidation of dgalacturonic acid in a packed bed plug flow reactor under alkaline conditions	F. van der Klis, L. Gootjes, J. van Haveren, D. S. van Es, J. H. Bitter	Reaction Chemistry & Engineering	Royal Society of Chemistry
ReSolve	A methodical selection process for the development of ketones and esters as bio-based replacements for traditional hydrocarbon solvents	Fergal P. Byrne, Bart Forier, Greet Bossaert, Charly Hoebers, Thomas J. Farmer, Andrew J. Hunt	Green Chemistry	Royal Society of Chemistry
SmartLi	A comparative Life Cycle Assessment of Different Excess Lignin Valorisation Methods	Bonell E.		University of Natural Resources and Life Sciences, Vienna
SmartLi	Aqueous acetone fractionation of kraft, organosolv and soda lignins	Juan Domínguez-Robles, Tarja Tamminen, Tiina Liitiä, María Soledad Peresin, Alejandro Rodríguez, Anna-Stiina Jääskeläinen	International Journal of Biological Macromolecules	Elsevier BV
SmartLi	Aqueous solvent fractionation of kraft lignin - technoeconomical perspective	Leppävuori, J., Pehu-Lehtonen, L., Liitiä, T., Tamminen, T., Jääskeläinen, A.-S.	Nordic Wood Biorefinery Conference	VTT
SmartLi	Barriers and incentives on the market diffusion of lignin composites – A Delphi-SWOT analysis	Schmelzenbart, A., Lettner, M., Hesser, F., Schwarzbauer P.,	PTF BPI - International Conference on Processing Technologies for the Forest and Biobased Industries 2018	Salzburg University of Applied Sciences

SmartLi	From Wood to Resin—Identifying Sustainability Levers through Hotspotting Lignin Valorisation Pathways	Miriam Lettner, Pia Solt, Björn Rößiger, Daniela Pufky-Heinrich, Anna-Stiina Jääskeläinen, Peter Schwarzbauer, Franziska Hesser	Sustainability	MDPI Open Access Publishing
SmartLi	Hardwood kraft lignin fractions as phenol substitute in phenol-formaldehyde resins	Lourençon, T.V., Magalhães, W.L.E., Muniz, G.I.B., Virtanen, T., Jääskeläinen, A.-S., Liitiä, T., Alakurtti, S., Hughes, M., Tamminen, T.	15th European Workshop on Lignocellulosics and Pulp	University of Aveiro
SmartLi	Identifiying barriers against and incentives for a successful market entry of lignin an amine curing agent in epoxy resins with the help of the Delphi Method and SWOT Analysis	Smith, L.		University of Natural Resources and Life Sciences, Vienna
SmartLi	Improving lignin homogeneity by aqueous solvent fractionation	Jääskeläinen, A.-S.; Liitiä, T., Tamminen, T.	ACS National Meeting 2018, New Orleans, LA	American Chemical Society
SmartLi	Integrating environmental and market assessment into technical R&D projects	Lettner M. & Hesser F.	PTF BPI - International Conference on Processing Technologies for the Forest and Biobased Industries 2018	Salzburg University of Applied Sciences
SmartLi	Lignin as composite material - Barriers and incentives of market diffusion	Schmelzenbart, A. C.		University of Natural Resources and Life Sciences, Vienna

SmartLi	Lignin phenol formaldeyhde resiles using base-catalyzed kraft lignin	Solt, P., Rößinger, B., Lingenfelter, P., Konnerth, J., van Herwijnen, H.W.G.	Polymers	MDPI - Multidisciplinary Digital Publishing Institute
SmartLi	Monitoring lignin reactions in LPF resin synthesis	Tamminen, T., Jääskeläinen, A.-S., Alakurtti, S., Mikkelsson, A., Virtanen, T., Lourençon, T., Liitiä, T.	1st PAPTAC International Lignin Conference	Pulp and Paper Association of Canada
SmartLi	Scenario Analysis for lignin-based PU foams	Haberl, N.		University of Graz
SmartLi	Scenario-based eco-efficiency analysis of lignin valorisation pathways	Bonell E., Lettner, M., Hesser, F., Schwarzbauer, P.,	PTF BPI - International Conference on Processing Technologies for the Forest and Biobased Industries 2018	Salzburg University of Applied Sciences
SmartLi	The Impact of Molecular Weight of Kraft-lignin on Adhesive Performance of Lignin Based Phenol Formaldehyde Resins	Solt, P., Jääskelainen, A-S., Lingenfelter, P., Konnerth, J., van Herwijnen, H. W. G.	Forest Products Jounal	Forest Products Society
TECH4EFFECT	An operational UAV-based approach for stand-level assessment of soil disturbance after forest harvesting	Bruce Talbot, Johannes Rahlf, Rasmus Astrup	Scandinavian Journal of Forest Research	Taylor & Francis
TECH4EFFECT	Modifying the settings of CTL timber harvesting machines to reduce fuel consumption and CO_2 emissions	Robert Prinz, Raffaele Spinelli, Natascia Magagnotti, Johanna Routa, Antti Asikainen	Journal of Cleaner Production	Elsevier BV

URBIOFIN	Waste Biorefinery	Víctor Pérez, Andrés Pascual, Alfredo Rodrigo, María García Torreiro, Marcos Latorre-Sánchez, Caterina Coll Lozano, Antonio David-Moreno, Jose Miguel Oliva-Dominguez, Alba Serna-Maza, Natalia Herrero García, Inmaculada González Granados, Rocio Roldan-Aguayo, David Ovejero-Roncero, Jose L. Molto Marin, Mark Smith, Hana Musinovic, Amélie Raingué, Laurent Belard, Celia Pascual, Raquel Lebrero, Raul Muñoz.		ELSEVIER
US4GREENCHEM	Evaluation of Ligno Boost™ softwood kraft lignin epoxidation as an approach for its application in cured epoxy resins	Antons Jablonskis, Alexandr Arshanitsa, Alexandr Arnautov, Galina Telysheva, Dmitry Evtuguin	Industrial Crops and Products	Elsevier BV
US4GREENCHEM	Organic Sonochemistry - Brief in Ultrasound and Sonochemistry	Prof. Dr. Cravotto, Giancarlo Dr. Calcio Gaudino, Emanuela, Dr. Tabasso,Silvia Springer	Challenges and Perspectives for the 21st Century	Comptes Rendue Chemie
US4GREENCHEM	Wheat straw lignin extraction with bio-based solvents using enabling technologies	Emanuela Calcio Gaudino, Silvia Tabasso, Giorgio Grillo, Giancarlo Cravotto, Thomas Dreyer, Gerhard Schories, Sven Altenberg, Lilija Jashina, Galina Telysheva	Comptes Rendus Chimie	Elsevier Masson
VALUEMAG	Extraction of Astaxanthin and Lutein from Microalga Haematococcus pluvialis in the Red Phase Using CO_2 Supercritical Fluid Extraction Technology with Ethanol as Co-Solvent	Antonio Molino, Sanjeet Mehariya, Angela Iovine, Vincenzo Larocca, Giuseppe Di Sanzo, Maria Martino, Patrizia Casella, Simeone Chianese, Dino Musmarra	Marine Drugs	Multidisciplinary Digital Publishing Institute (MDPI)
VALUEMAG	Extraction of astaxanthin from microalga Haematococcus pluvialis in red phase by using generally recognised as safe solvents and accelerated extraction	Antonio Molino, Juri Rimauro, Patrizia Casella, Antonietta Cerbone, Vincenzo Larocca, Simeone Chianese, Despina Karatza, Sanjeet Mehariya, Angelo Ferraro, Evangelos Hristoforou, Dino Musmarra	Journal of Biotechnology	Elsevier BV

VALUEMAG	Microalgae Characterisation for Consolidated and New Application in Human Food, Animal Feed and Nutraceuticals	Antonio Molino, Angela Iovine, Patrizia Casella, Sanjeet Mehariya, Simeone Chianese, Antonietta Cerbone, Juri Rimauro, Dino Musmarra	International Journal of Environmental Research and Public Health	International Journal of Environmental Research and Public Health
VALUEMAG	Microalgae Valorisation via Accelerated Solvent Extraction: Optimisation of the Operative Conditions	Antonio Molino, Juri Rimauro, Patrizia Casella, Antonietta Cerbone, Vincenzo Larocca, Despina Karatza, Evangelos Hristoforou, Simeone Chianese, Dino Musmarra	CHEMICAL ENGINEERING TRANSACTIONS	AIDIC - The Italian Association of Chemical Engineering
VALUEMAG	Microwave-assisted synthesis of iron oxide nanoparticles in biocompatible organic environment	E. Aivazoglou, E. Metaxa, E. Hristoforou	AIP Advances	American Institute of Physics Inc.
VALUEMAG	Supercritical Carbon Dioxide Extraction of Astaxanthin, Lutein, and Fatty Acids from Haematococcus pluvialis Microalgae	Giuseppe Sanzo, Sanjeet Mehariya, Maria Martino, Vincenzo Larocca, Patrizia Casella, Simeone Chianese, Dino Musmarra, Roberto Balducchi, Antonio Molino	Marine Drugs	Multidisciplinary Digital Publishing Institute (MDPI)
WoodZymes	A highly stable laccase obtained by swapping the second cupredoxin domain	Isabel Pardo, David Rodríguez-Escribano, Pablo Aza, Felipe de Salas, Angel T. Martínez, Susana Camarero	Scientific Reports	Nature Publishing Group
Zelcor	Imidazolium-Based Ionic Liquids as Efficient Reagents for the C–O Bond Cleavage of Lignin	Marina Thierry, Amel Majira, Bruce Pégot, Laurent Cezard, Flavien Bourdreux, Gilles Clément, François Perreau, Stéphanie Boutet-Mercey, Patrick Diter, Giang Vo-Thanh, Catherine Lapierre, Paul-Henri Ducrot, Emmanuel Magnier, Stéphanie Baumberger, Betty Cottyn	ChemSusChem	Wiley - V C H Verlag GmbbH & Co.

7.4. PATENTS FROM PROJECTS

Based on data provided by the 82 funded BBI JU projects via the 'continuous reporting' module of the Funding and Tenders Portal, 31 patent applications were submitted by the end of 2018 (compared to no reported submitted patents in 2017). The table below shows the number of patent applications reported by the projects. Summarising, eight patent applications were submitted by RIA projects, seven by DEMO projects and 16 by FLAG projects.

Project Acronym	Number of Patent Applications until end of 2018	Type of Action
BIOFOREVER	1	DEMO
BIOMOTIVE	1	DEMO
CARBOSURF	1	RIA
EFFECTIVE	1	DEMO
EnzOx2	4	RIA
EXILVA	15	FLAG
FRESH	1	DEMO
InDIRECT	1	RIA
LIBRE	1	RIA
NewFert	1	RIA
PULP2VALUE	3	DEMO
SWEETWOODS	1	FLAG

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 (under GAP)
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[110]: 97 innovations introduced by SMEs in the company 119 innovations introduced by SMEs in the market					N.A.
	13	SME - Growth and job creation in participating SMEs	Turnover of company, number of employees	Turnover of company, number of employees;	Cumulative figures[111] : Turnover: EUR 1 403 913 211 Employees: 7 873					N.A.

[110] 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)

[111] 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 (under GAP)
SOCIETAL CHALLENGES	14	Publications in peer-reviewed high impact journals	The percentage of papers published in the top 10% impact ranked journals by subject category.	Publications from relevant funded projects (DOI: Digital Object Identifiers); Journal impact benchmark (ranking) data to be collected by commercially available bibliometric databases.	See Section 7.3					
	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					

		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 (under GAP)
	16	Number of prototypes testing activities	Number of prototypes, testing (feasibility/demo) activities	Reports on prototypes, and testing activities,	90	2	118	195	70	N.A.
	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
	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.

		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 (under GAP)
EVALUATION	NA	Time to inform (TTI) all applicants of the outcome of the evaluation of their application from the final date for submission of completed proposals	To provide applicants with high quality and timely evaluation results and feedback after each evaluation step by implementing and monitoring a high scientific level peer reviewed process	Number and % of information letters sent to applicants within target Average TTI (calendar days) Maximum TTI (calendar days)	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

		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 (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[112]	1[113]	2[114]
GRANTS	NA	Time to grant (TTG) measured (average) from Call deadline to signature of grants	To minimise the duration of the granting process aiming at ensuring a prompt implementation of the Grant Agreements through a simple and transparent grant preparation process	Number and % of grants signed within target Average TTG in calendar days Maximum TTG in calendar days	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	N.A.

[112] The result of the evaluation review concluded that the two complaints were unfounded.

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

[114] 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 (under GAP)
	NA	Time to sign (TTS) grant agreements from the date of informing successful applicants (information letters)		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	N.A.
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	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	No pre-financing, interim and final payments Experts: 100

		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 (under GAP)
				Average number of days for administrative payments;	Administrative time to pay for year 2018: 17.5 days					
HR	NA	Vacancy rate (%)		% of posts filled in, composition of the JU staff [115]	3 recruitment took place in 2018, reaching full staff by the year-end (vacancy rate 0%)					
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 and 10 payment of periodic reports of call 2014)	CA: 99.9% PA: 70.4% (pre-financing of the 2017 and 32 payment of periodic reports of previous calls)	N.A.

[115] Additional indicators can be proposed/discussed with R.1 and/or DG HR

		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 (under GAP)
	NA	Administrative Budget: Number and % of total of late payments	Realistic yearly budget proposal, possibility to monitor and report on its execution in line with sound financial management principle	Number of delayed payments % of delayed payments (of the total)	Not Applicable (pre-autonomy phase). All payments executed by EC/DG RTD	36 delayed payments in 2016 39.1%		51 Late Payments in 2017 8% of delayed payments	67 Late Payments in 2017 9% of delayed payments	N.A.

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 Horizo 2020-BBI-JTI-2017	Call Horizon 2020-BBI-JTI-2018 (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	Cumulativ e 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	Cumulativ e 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 (under GAP)
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
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

	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 (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
6	Gender	6.1 Percentage of women participants in Horizon 2020 projects	Gender of participants in Horizon 2020 projects	Not available	Not available	Not available	Not available	Not available	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

	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 (under GAP)
		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
7	International cooperation	7.1 Share of third-country participants in Horizon 2020	Nationality of Horizon 2020 beneficiaries	0	0	0	0	0	0
		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
9	Bridging from discovery to market	9.1 Share of projects and EU financial contribution allocated to Innovation Actions (IAs)	Number of IA proposals and projects properly flagged in the WP; follow up at grant level.	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

[116] This indicator (9.2) is initially intended to monitor the Digital Agenda (its applicability could be only partial)

	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 (under GAP)
		9.2 Within the innovation actions, share of EU financial contribution focussed on demonstration and first-of-a-kind activities	Topics properly flagged in the WP; follow-up at grant level	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%)
NA		Scale of impact of projects (High Technology Readiness Level)	Number of projects addressing TRL[117] 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
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%

[117] 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 (under GAP)
		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%
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
		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

	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 (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, web-sites, communication campaigns (e.g. radio, TV)]	A drop down list allows to choose the type of dissemination activity. Number of events, funding amount and number of persons reached thanks to the dissemination activities	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
		14.3 Proposal evaluators by organisations' type of activity	Type of activity of evaluators' organisations	Not available[118]	Not available	Not available	Not available	Not available	Not available

[118] 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 (under GAP)
NA	Participation of RTOs and Universities	Participation of RTO[119]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
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)[120]	0	0	0	0	0	0

[119] RTO: Research and Technology Organisation

[120] 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 (under GAP)
NA	Audit	Error rate	% of common representative error; % residual error	Representative Error rate: N/A (Detected error rate in BBI JU representative audits: 0.02%) Residual Error Rate for BBI JU: 0.01%					
NA		Implementation of ex-post audit results	Number of cases implemented; in total EUR million; ´of cases implemented/total cases	5 cases implemented out of 27 launched audits 5 cases implemented out of 5 closed audits Negative adjustments: 0.003 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 - is 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[121]	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 (under GAP)
1. N° of new cross-sector interconnections in BBI JU projects	143					NA
2. New bio-based value chains realised	113					NA
3. Number of BBI JU Grant Agreements signed	10	3	23	29	17	NA
4. Number of new bio-based building blocks	67					NA
5. Number of new bio-based materials	147					NA
6. Number of new bio-based 'consumer' products	65					NA

[121] 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[121]	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 (under GAP)
7. Number of flagship biorefinery plants started based on BBI JU demonstration projects	1	3	0	2	1	NA
8. Number of validated technologies that have realised a TRL gain of at least one level (RIA projects)	33					NA
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%

7.8. FINAL ANNUAL ACCOUNTS

Ref. Ares(2019)3728376 - 11/06/2019

Annual Accounts of the Bio-based Industries Joint Undertaking

Financial year 2018

CONTENTS

CERTIFICATION OF THE ACCOUNTS

The annual accounts of the Bio-based Industries Joint Undertaking for the year 2018 have been prepared in accordance with the Financial Regulation of the JU and the accounting rules adopted by the Commission's Accounting Officer, as are to be applied by all the institutions and union bodies.

I acknowledge my responsibility for the preparation and presentation of the annual accounts of the Joint Undertaking in accordance with Article 43 of the Financial Regulation of the JU.

I have obtained from the Authorising Officer, who guaranteed its reliability, all the information necessary for the production of the accounts that show the JU's assets and liabilities and the budgetary implementation.

I hereby certify that 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 a true and fair view of the financial position of the JU in all material aspects.

[signed]

Rosa ALDEA BUSQUETS

Accounting Officer

11 June 2019

BACKGROUND INFORMATION ON THE BBI JU

The Bio-based Industries Joint Undertaking (BBI JU) was established by the Council Regulation (EU) 560/2014[1]. 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 research, demonstration and deployment of advanced bio based products and biofuels.

BBI JUs 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.

Following Articles 38 and 43 of the BBI JU Financial Rules[2], the Governing Board of BBI JU appoints the Accounting Officer who is, among other things, responsible for preparation of the annual accounts of the Joint Undertaking. Following Article 40 of the BBI JU Financial Rules the annual accounts should be prepared in accordance with the accounting rules adopted by the Commission's Accounting Officer (EU Accounting Rules, EAR) that are based on the International Public Sector Accounting Standards (IPSAS). 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 entering the peak period of its activity, focussed mainly on the grant management side. This aspect of BBI's activities involves the largest part of the budget and in 2018 involved the implementation of the 2018 Call for proposals for EUR 115 million, the signature of grant agreements from the previous year's Call for over EUR 85 million and the payment of pre-financing and periodic payments for over EUR 79 million. In 2018 BBI managed a much larger number of cost claims from ongoing grant agreements compared to 2017, including 33 cost claims for a total of EUR 58 million.

A significant amount of these claims were either lower than expected or delayed, resulting in an underexecution of the 2018 budget on the payment appropriations side. An in-depth analysis has been carried out to absorb the surplus already in 2019, and to avoid similar issues in future years.

An important aspect to be highlighted concerns the in-kind contribution from the JU Members other than the EU: in 2018 the first certifications of in-kind contributions were received and recorded in the BBI JU accounts as net assets.

With respect to the administrative expenditure, the consumption of both commitment and payment appropriations remains efficient, while BBI JU ensures optimal use of appropriations carried forward from previous years, in accordance with the BBI JU financial rules.

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[1] Council Regulation (EU) No 560/2014 of 6 May 2014 establishing the Bio-based Industries Joint Undertaking.
[2] Adopted by the decision of the BBI JU Governing Board.

FINANCIAL STATEMENTS AND EXPLANATORY NOTES

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

CONTENTS

BALANCE SHEET

EUR '000

	Note	31.12.2018	31.12.2017
NON-CURRENT ASSETS			
Property, plant and equipment	*2.1*	*40*	*47*
Pre-financing	*2.2*	*107 972*	*101 483*
		108 012	**101 530**
CURRENT ASSETS			
Pre-financing	*2.2*	*31 714*	*31 425*
Exchange receivables and non-exchange recoverables	*2.3*	*38 386*	*4 080*
		70 100	**35 506**
TOTAL ASSETS		**178 112**	**137 036**
CURRENT LIABILITIES			
Payables and other liabilities	*2.4*	*(47 803)*	*(35 422)*
Accrued charges and deferred income	*2.5*	*(91 334)*	*(70 454)*
		(139 138)	**(105 876)**
TOTAL LIABILITIES		**(139 138)**	**(105 876)**
NET ASSETS		**38 974**	**31 160**
Contribution from Members	*2.6*	*285 770*	*157 264*
Accumulated deficit		*(126 103)*	*(39 534)*
Economic result of the year		*(120 692)*	*(86 569)*
NET ASSETS		**38 974**	**31 160**

STATEMENT OF FINANCIAL PERFORMANCE

EUR '000

	Note	2018	2017
REVENUE			
Revenue from non-exchange transactions			
Recovery of expenses		*1*	*–*
Total		**1**	**–**
Revenue from exchange transactions			
Financial income		*8*	*–*
Other exchange revenue		*6*	*22*
Total		**14**	**22**
Total revenue		**15**	**22**
EXPENSES			
Operating costs	*3.1*	*(116 544)*	*(82 225)*
Staff costs	*3.2*	*(2 043)*	*(1 929)*
Finance costs	*3.3*	*(91)*	*–*
Other expenses	*3.4*	*(2 029)*	*(2 438)*
Total expenses		**(120 707)**	**(86 591)**
ECONOMIC RESULT OF THE YEAR		**(120 692)**	**(86 569)**

CASHFLOW STATEMENT[3]

EUR '000

	2018	2017
Economic result of the year	*(120 692)*	*(86 569)*
Operating activities		
Amortisation and depreciation	*15*	*14*
Non-cash expenses in-kind	*12 103*	*–*
Cash contribution from the Members	*116 404*	*89 353*
(Increase)/decrease in pre-financing	*(6 777)*	*(53 847)*
(Increase)/decrease in exchange receivables and non-exchange recoverables	*(34 306)*	*(913)*
Increase/(decrease) in accounts payable and other liabilities	*12 381*	*19 882*
Increase/(decrease) in accrued charges and deferred income	*20 880*	*32 089*
Investing activities		
(Increase)/decrease in intangible assets and property, plant and equipment	*(8)*	*(9)*
NET CASHFLOW	**–**	**–**
Net increase/(decrease) in cash and cash equivalents	*–*	*–*
Cash and cash equivalents at the beginning of the year	*–*	*–*
Cash and cash equivalents at year-end	*–*	*–*

[3] 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 31.12.2016	**67 911**	**6 873**	**(46 407)**	**28 376**
Allocation 2016 economic result	*–*	*(46 407)*	*46 407*	*–*
Cash contribution	*89 353*	*–*	*–*	*89 353*
Economic result of the year	*–*	*–*	*(86 569)*	*(86 569)*
BALANCE AS AT 31.12.2017	**157 264**	**(39 534)**	**(86 569)**	**31 160**
Allocation 2017 economic result	*–*	*(86 569)*	*86 569*	*–*
Cash contribution	*116 404*	*–*	*–*	*116 404*
Contribution in-kind	*12 103*	*–*	*–*	*12 103*
Economic result of the year	*–*	*–*	*(120 692)*	*(120 692)*
BALANCE AS AT 31.12.2018	**285 770**	**(126 103)**	**(120 692)**	**38 974**

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 and reporting 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	31.12.2018	31.12.2017	Currency	31.12.2018	31.12.2017
BGN	**1.9558**	*1.9558*	**PLN**	**4.3014**	*4.177*
CZK	**25.7240**	*25.5350*	**RON**	**4.6635**	*4.6585*
DKK	**7.4673**	*7.4449*	**SEK**	**10.2548**	*9.8438*
GBP	**0.8945**	*0.8872*	**CHF**	**1.1269**	*1.1702*
HRK	**7.4125**	*7.4400*	**JPY**	**125.8500**	*135.01*
HUF	**320.9800**	*310.3300*	**USD**	**1.145**	*1.1993*

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 receivables, contingent assets and liabilities, and degree of impairment of assets. Actual results could differ from those estimates.

Reasonable estimates are 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

Acquired computer software licences are stated at historical cost less accumulated amortisation and impairment losses. The assets are amortised on a straight-line basis over their estimated useful lives. The estimated useful lives of intangible assets depend on their specific economic lifetime or legal lifetime determined by an agreement. Internally developed intangible assets are capitalised when the relevant criteria of the EU accounting rules are met. The costs capitalisable 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 when incurred.

1.3.2. Property, plant and equipment

All property, plant and equipment are stated at historical cost less accumulated depreciation and impairment losses. Historical cost includes expenditure that is directly attributable to the acquisition or construction 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 and works of art are not depreciated as they are deemed to have an indefinite useful life. Assets under construction are not depreciated as these assets are not yet available for use. Depreciation on other assets is calculated using the straight-line method to allocate their cost less their residual values over their estimated useful lives, as follows:

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

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

Leases

Leases of tangible assets, where the entity has substantially all the risks and rewards of ownership, are classified as finance leases. Finance leases are capitalised at the inception of the lease at the lower of the fair value of the leased asset and the present value of the minimum lease payments. The interest element of the finance lease payment is charged to statement of financial performance over the period of the lease at a constant periodic rate in relation to the balance outstanding. The rental obligations, net of finance charges, are included in financial liabilities (non-current and current). The interest element of the finance cost is charged to the statement of financial performance over the lease period so as to produce a constant periodic interest rate on the remaining balance of the liability for each period. The assets held under finance leases are depreciated over the shorter of the assets' useful life and the lease term.

Leases where the lessor retains a significant portion of the risks and rewards inherent to ownership are classified as operating leases. Payments made under operating leases are charged to the statement of financial performance on a straight-line basis over the period of the lease.

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 reviewed for impairment whenever events or changes in circumstances indicate that the carrying amount may not be

recoverable. An impairment loss is recognised for the amount by which the asset's carrying amount exceeds its recoverable amount. The recoverable 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. An asset's carrying amount is written down immediately to its recoverable amount if the asset's carrying amount is greater than its estimated recoverable amount. 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 categorised 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 trade date - 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. The amount of the pre-financing may be reduced (wholly or partially) by the acceptance of eligible costs (which are recognised as expenses).

Pre-financing is, on subsequent balance sheet dates, 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

As the EU accounting rules require a separate presentation of exchange and non-exchange transactions, for the purpose of drawing up the accounts, receivables are defined as stemming from exchange transactions and recoverables are defined as stemming from non-exchange transactions (when the entity receives value from another entity without directly giving approximately equal value in exchange).

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.

Where grants or other funding is 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 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.

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 means in this context not 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 control of the JU, the contributions are not recognised in the financial statements of the JU.

2. NOTES TO THE BALANCE SHEET

ASSETS

2.1. PROPERTY, PLANT AND EQUIPMENT

'000 EUR

	Furniture and vehicles	Computer hardware	Other	TOTAL
Gross carrying amount at 31.12.2017	*33*	*35*	*6*	*74*
Additions	*–*	*7*	*1*	*8*
Gross carrying amount at 31.12.2018	**33**	**42**	**7**	**82**
Accumulated depreciation at 31.12.2017	*(5)*	*(18)*	*(3)*	*(26)*
Depreciation charge for the year	*(4)*	*(10)*	*(2)*	*(15)*
Accumulated depreciation at 31.12.2018	**(9)**	**(28)**	**(4)**	**(41)**
NET CARRYING AMOUNT AT 31.12.2018	**24**	**13**	**2**	**40**
NET CARRYING AMOUNT AT 31.12.2017	*28*	*17*	*3*	*47*

2.2. PRE-FINANCING

EUR '000

	31.12.2018	31.12.2017
Non-current pre-financing	*107 972*	*101 483*
Current pre-financing	*31 714*	*31 425*
Total	**139 686**	**132 909**

For all pre-financing amounts open at 31 December 2018 a case-by-case assessment was performed and all the pre-financing that was considered unlikely to be cleared in the course of 2019 was classified as non-current pre-financing.

In 2018, a total pre-financing amount of kEUR 34 064 was paid for the projects arising from the Call 2017. The pre-financing paid in 2017 was kEUR 62 487 and related to grants from the BBI Calls 2016.

The estimation of the clearing of pre-financing (related to the estimated operating expenses for on-going projects) is actually aligned to the way in which pre-financing is cleared for expenses incurred during the year. Out of the total initial pre-financing of EUR 176 million, an amount of EUR 35 million was the net amount cleared in 2018 against eligible costs (following cost claims received in 2018, as well as project costs accrued to 31 December 2018) and kEUR 728 was the net amount cleared in 2017. The remaining portion of estimated expenses relating to 2018 is recorded in accrued charges (see note **2.5**). A provision for the bankruptcy of a project beneficiary amounting to kEUR 90 was deducted from the prefinancing.

In accordance with the Horizon 2020 rules pre-financing is only cleared when the total payments to the beneficiary reach 90 % of the maximum grant amount. In the first years of the project's life there is thus open pre-financing that will be only cleared at a later stage. This explains the increase in the pre-financing as compared to 2017 as well as the overall high balance of the open pre-financing. This trend is also expected to continue in 2019.

2.3. EXCHANGE RECEIVABLES & NON-EXCHANGE RECOVERABLES

The amounts included under this heading are fully composed of current receivables from exchange transactions.

EUR '000

	31.12.2018	31.12.2017
Central treasury liaison accounts	*37 002*	*3 982*
Customers	*1 364*	*90*
Deferred charges relating to exchange transactions	*14*	*11*
Others	*6*	*(2)*
Total	**38 386**	**4 080**

The main element concerns the treasury liaison/intercompany accounts with the Commission that represent a virtual bank account 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 of its own. All payments and receipts are processed via the Commission's treasury system and registered on intercompany accounts which are presented under this heading.

The result of the incoming and outgoing payments represents the cash balance of kEUR 37 002 (2017: kEUR 3 982). The increase in the liason account is related to funds which are to be used for future project activities.

The sub-heading "customers" is composed of receivables related to the Research Executive Agency costs incurred in 2017 and 2018, on behalf of BBI JU, for expert evaluations related to the BBI JU's Calls for proposals and of the contribution of the industry Member (BIC) to the operating expenses.

LIABILITIES

2.4. PAYABLES AND OTHER LIABILITIES

EUR '000

	31.12.2018	31.12.2017
Contributions in kind to be validated	*36 841*	*25 959*
Payables	*10 462*	*9 463*
Unpaid cash contributions	*500*	*–*
Total	**47 803**	**35 422**

Included under the sub-heading "contributions in-kind to be validated" are the in-kind contributions from Members relating to projects for which the amount of in-kind contribution was estimated on a case-by-case basis using the best available information on the projects at 31 December 2018. The estimated cash contribution to the operating expenses 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 2018 for which the IKOP declarations were not certified by an auditor and validated by the BBI Executive Director and the amounts related to 2018 had thus to be estimated during the closure (cut-off) exercise.

The sub-heading "payables" is composed of liabilities to public bodies (kEUR 5 214) and to suppliers (kEUR 5 248).

2.5. ACCRUED CHARGES

EUR '000

	31.12.2018	31.12.2017
Accrued charges	*91 334*	*70 454*

Accrued charges are the amounts estimated by the Authorising Officer of costs incurred for services and goods delivered in year 2018 but not yet invoiced or processed by the end of the year. They are largely composed of estimated operating expenses of kEUR 90 980 for on-going projects without a validated cost statement where the 2018 expense was estimated on a case-by-case basis using the best available information about the projects at 31 December 2018. 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**). The significant increase of accrued operating charges relates to all projects launched or ongoing in 2018 and 2017 for which there was a period not covered by validated cost claims as at 31 December 2018.

Also included under this heading are accrued administrative expenses of kEUR 307 relating mainly to other external services (kEUR 86), communication and publication expenses (kEUR 68), IT costs covering the operational phase of IT projects (kEUR 53) and training costs (kEUR 27), maintenance and security of building (KEUR 13). The accrued staff expenses for untaken leave is kEUR 46.

NET ASSETS

2.6. CONTRIBUTIONS FROM MEMBERS

In line with the Horizon 2020 rules only certified in-kind contributions from the Members validated by the Executive Director of BBI JU are considered in-kind contributions to the net assets. 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**).

EUR '000

Programming period	2018			2017		
	Cash	In-Kind	Total	Cash	In-Kind	Total
H2020	*273 667*	*12 103*	*285 770*	*157 264*	*–*	*157 264*
Total	**273 667**	**12 103**	**285 770**	**157 264**	**–**	**157 264**

2.6.1. Research and Innovation funding programme for 2014-2020 (Horizon 2020)

EUR '000

Member	EU		Industry Grouping		Total	
	Cash	In kind	Cash	In kind	Cash	In kind
Running costs contributions at 31.12.2017	*5 339*	*–*	*5 836*	*–*	*11 175*	*–*
Current year contributions	*2 476*	*–*	*2 476*	*–*	*4 951*	*–*
Running costs contributions at 31.12.2018	**7 815**	**–**	**8 311**	**–**	**16 126**	**–**
Operating costs contributions at 31.12.2017	*145 338*	*–*	*750*	*–*	*146 088*	*–*
Current year contributions	*111 452*	*–*	*–*	*12 103*	*111 452*	*12 103*
Operating costs contributions at 31.12.2018	**256 791**	**–**	**750**	**12 103**	**257 541**	**12 103**
TOTAL contributions at 31.12.2017	*150 678*	*–*	*6 586*	*–*	*157 264*	*–*
TOTAL contributions at 31.12.2018	**264 606**	**–**	**9 061**	**12 103**	**273 667**	**12 103**

% of total contributions (by type)	*96.69%*	*3.31%*	*100.00%*
Total contribution in %	*92.59%*	*7.41%*	*100.00%*
Voting rights %	*50.00%*	*50.00%*	*100.00%*

3. NOTES TO THE STATEMENT OF FINANCIAL PERFORMANCE

EXPENSES

3.1. OPERATING COSTS

Included under this heading are operating expenses related to projects that were started or ongoing in 2018. Operating costs relating to on-going or ended projects without any validated cost claims (or equivalent) available at 31 December, were 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 operating costs of the year. Depending on the availability of information at the time of the preparation of the annual acounts, 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 per the meaning of Article 4(3) and 4(4) of Regulation (EU) No 560/2014) or costs incurred to date as a proportion of the estimated total costs of the projects ('pro-rata temporis').

The break-down of the operating costs between operating costs incurred on the basis of validated cost claims (or equivalent) and estimated (to be validated) operating costs is given in the table below:

EUR '000

	2018	2017
Estimated EU contributions	*35 182*	*49 261*
Validated EU contributions	*58 377*	*22 052*
Estimated in -kind contributions	*22 985*	*10 912*
Total	**116 544**	**82 225**

The increase in the estimated in kind contributions and EU contributions can be explained by all projects started or ongoing in 2018 or for which no cost claims (or equivalent) had yet been validated and the entire underlying 2018 expense had thus to to be estimated during the closure (cut-off) exercise. The estimated amounts of EU Contributions (kEUR 35 182) and of in-kind contributions (kEUR 22 985) were calculated using the best available information about the projects at 31 December 2018.

3.2. STAFF COSTS

Included under this heading are expenses for salaries, other employment-related allowances and benefits. The calculations related to staff costs are, based on the service level agreement, entrusted to the Office for Administration and Payment of Individual Entitlements (also known as the Paymaster's Office-PMO).

The staff members of the BBI JU are covered by the Pension Scheme of European Officials. The administration of pensions is entrusted to the Commission which also accounts for the underlying pension expenses and liabilities.

A defined benefit plan is a pension plan that generally defines an amount of benefit an employee will receive on retirement, usually dependent on one or more factors such as age and years of service. Both BBI JU staff and the Commission contribute to the pension scheme in the function of the basic salary of the staff. 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's accounts.

Future benefits payable to the BBI JU staff under the Pension Scheme of European Officials are accounted for in the accounts of the Commission since it is the Commission who will pay these pensions. No provisions for such pensions are made in these accounts.

3.3. FINANCE COSTS

Included under this heading are expenses related to the write down of the pre-financing of one of the beneficiaries due to a confirmed of bankruptcy.

3.4. OTHER EXPENSES

EUR '000

	2018	2017
Experts' expenses	*907*	*823*
External non IT services	*324*	*334*
Operating lease expenses	*283*	*282*
Other	*166*	*158*
External IT services	*159*	*136*
Communications & publications	*155*	*661*
Property, plant and equipment related expenses	*34*	*43*
Total	**2 029**	**2 438**

The increase of kEUR 84 in expenses related to experts fees is due to the amount of proposals received for the 2018 Call. The substantial decrease in communications and publications expenses is explained by the organisation of two major events in 2017 which were high-cost and are not carried out every year (the Stakeholder Forum and the Walking Exhibition) and also by the migration of the BBI website, the creation of the corporate brochure, the sponsorship of events and the design of the new BBI logo implemented in 2017. Due to the increasing workload in the JU, the external non-IT increase relates mainly to outside contractors supplying interim staff.

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:

'000 EUR

	Future amounts to be paid			
	< 1 year	1- 5 years	> 5 years	Total
Buildings	*301*	*1 267*	*333*	*1 902*

4. OTHER SIGNIFICANT DISCLOSURES

4.1. OUTSTANDING COMMITMENTS NOT YET EXPENSED

EUR '000

	31.12.2018	31.12.2017
Outstanding commitments not yet expensed	*269 907*	*255 772*

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 2018 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 venturers and key management personnel of these entities. Transactions between these entities take place as part of the normal operations of BBI JU 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.

	31.12.2018	31.12.2017
Executive Director	*AD 14*	*AD 14*

The Executive Director is remunerated in accordance with the Staff Regulations of the European Union that is published on the Europa website and is the official document describing the rights and the obligations of all officials of the EU. The Executive Director has not received any loans from BBI JU.

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 2018 the financial assets are entirely composed of exchange receivables. The financial liabilities are entirely composed of accounts payables. 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 38 386 at 31 December 2018.

Financial assets by risk category

The exchange receivables relate with kEUR 37 002 to entities with prime grade and with kEUR 1 384 to entities without external credit rating that have never defaulted in the past.

5.4. LIQUIDITY RISK

Maturity analysis of financial liabilities by remaining contractual maturity

At 31 December 2018 the financial liabilities amounted to kEUR 139 138. They are mainly composed of current payables (kEUR 10 462), in kind contributions to be validated (kEUR 36 840) and accrued charges (kEUR 91 334). All the financial liabilities have an expected remaining maturity of less than 1 year.

REPORTS ON THE IMPLEMENTATION OF THE BUDGET

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

CONTENTS

1. BUDGETARY PRINCIPLES, STRUCTURE AND 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 overall budget implementation of administrative appropriations (Titles A-1 and A-2) for the year 2018 shows positive figures both in commitment appropriations (CA) (77.6 %) and in payment appropriations PA) (74.4 %). Comparing the total consumption to the original budget (so excluding a reactivation of prior year unused appropriations), these figures rise to 87.3 % for CAs and 85.3 % for PAs. These levels are very similar to those of 2017, demonstrating a consistent efficiency in budget preparation and spending.

In contrast to 2017, the BBI JU administrative budget included only a relatively small surplus of unused budget from prior years (mainly 2016 and 2017). Of these unused appropriations, amounting to almost EUR 825 798 of operational and EUR 622 497 in administrative CA as well as EUR 486 657 in operational and EUR 728 744 in administrative PA, part were reactivated in the original voted budget and part via an amendment to the annual work plan and budget in April 2018. These "C2" 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 2018, there was a surplus of unused commitment and payment appropriations of around EUR 1.3 million in administrative CA and EUR 1.5 million in administrative PA as well as nearly EUR 34 million in operational PA. A Governing Board decision was taken at the end of 2018 to reactivate EUR 1.3 million in administrative CA and PA as well as EUR 12 million in operational CA in the 2020 budget. This decision also voted the reactivation of EUR 25 million of the operational PA in the 2019 budget. Further reactivations (covering 2017 and 2018 surpluses) are to be envisaged in 2019 via a budgetary amendment.

Administrative expenditure

The total consumption of the (amended) administrative budget was 77.6 % in commitment appropriations and 74.4 % in payment appropriations. Comparing the total consumption to the original budget, these figures rise to 87.3 % and 85.3 % respectively.

Title 1: Staff related costs such as salaries, other staff costs and missions showed a strong execution in commitment appropriations (88 %, 90 % and 97 % respectively) representing a significant amount of over EUR 2.4 million. Overall the execution of commitment appropriations in Title 1 is 86.1 % and in payment appropriations 83.8 % of the amended administrative budget.

Title 2: The infrastructure budget achieved an execution of 68.8 % in the commitment appropriations of the amended 2018 budget. Building and contracting of experts incurred the highest costs in 2018, amounting to EUR 284 168 and EUR 773 190 respectively (see also footnote (4)). The budget related to the evaluators' contracting and payment was executed by the Research Executive Agency on behalf of BBI JU.[4] Underspending was recorded for formal meetings (54 %) and communication costs (37 %) mainly due to the fact that the 2nd BBI JU Stakeholder Forum organisation was postponed to 2019. The overall consumption of payment appropriations in Title 2 is 65 % of the amended 2018 budget.

Operational expenditure

Concerning the commitment appropriations of the operational budget, the programme office concluded 17 grant agreements from Call 2017 for a total grant value of EUR 85 161 992 resulting in a 99.3 % execution of commitment appropriations envisaged for this call (EUR 85 764 865).

The 2018 Call was committed for EUR 115 658 245 composed as follows: EUR 112 832 447 from the EU, EUR 825 798 of unused commitment appropriations from 2017, EUR 2 000 000 from BIC. The evaluation was successfully concluded by the end of 2018, resulting in a potential consumption of 89 % if all grants amounting to a total of EUR 102 910 812 are signed in 2019.

In respect of payment appropriations, the programme office achieved 70.4 % execution of the 2018 budget, with pre-financing payments for the grants of Call 2017 together with payments of periodic reports for grants from the previous BBI JU Calls. The execution was below expectation because of delays in some periodic reports and the amounts of certain cost claims being below the expected level.

As mentioned in the introduction above, an amount of EUR 25 000 000 remaining from the total available payment appropriations, has been reactivated in the BBI JU 2019 budget in order to deal with the payments delayed to 2019 as well as for future needs.

During 2018, 17 pre-financings were paid for a total amount of EUR 34 064 797 and 33 periodic reports claiming costs for EUR 58 563 556 that led to 32 payments totalling EUR 45 108 092.

[4] EUR 773 190 was committed by the REA in 2018, 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 2018. The provisional execution to date of these appropriations was notified by REA in mid-January 2019, as being EUR 707 347.92.

2. RESULT OF THE IMPLEMENTATION OF THE BUDGET

EUR '000

	Title	2018	2017
Revenue		**116 411**	**88 551**
of which:			
EU (incl. EFTA) contribution to administrative	*A-1*	*2 476*	*1 945*
EU (incl. EFTA) contribution to operational	*A-1*	*111 452*	*83 219*
Bio-based Industries Consortium contribution to administrative	*A-1*	*2 476*	*2 615*
Bio-based Industries Consortium contribution to operational	*A-1*	*-*	*750*
JU revenues	*A-1*	*8*	*23*
Expenditure		**(83 396)**	**(87 230)**
of which:			
Staff expenditure	*A-1*	*(2 372)*	*(2 178)*
Admin expenditure	*A-2*	*(1 851)*	*(1 241)*
Operational expenditure	*B0-3*	*(79 173)*	*(83 811)*
Exchange rate differences		**–**	**0**
Budget result		**33 015**	**1 322**

3. RECONCILIATION OF ECONOMIC RESULT WITH BUDGET RESULT

EUR '000

	2018	2017
ECONOMIC RESULT OF THE YEAR	**(120 692)**	**(86 569)**
Adjustment for accrual items (items not in the budgetary result but included in the economic result)		
Adjustments for accrual cut-off (net)	*58 102*	*60 350*
Unpaid invoices at year end but booked in expenses	*–*	*9*
Depreciation, amortization and impairment of intangible and tangible assets	*15*	*14*
Other individually immaterial	*(7)*	*(1)*
Adjustment for budgetary items (item included in the budgetary result but not in the economic result)		
Members' cash contributions collected in the year	*116 404*	*88 925*
Asset acquisitions (less unpaid amounts)	*(7)*	*(9)*
Payments made from non-budget lines		*(2)*
New pre-financing paid in the year and remaining open as at 31 December	*(20 797)*	*(61 760)*
Other individually immaterial	*(3)*	
Adjustment for expert evaluator transactions managed directly by REA		*365*
BUDGET RESULT OF THE YEAR	**33 015**	**1 322**

4.IMPLEMENTATION OF BUDGET REVENUE

4.1. Implementation of budget revenue – Title A-1

EUR '000

		Income appropriations		Entitlements established			Revenue				
		Initial budget	Final budget	Current year	Carried over	Total	Current year	Carried over	Total	%	Outstanding
		1	2	3	4	5=3+4	6	7	8=6+7	9=8/2	10
A-1001	EU (incl. EFTA) contribution to administrative	2 476	2 476	2 476	–	2 476	2 476	–	2 476	100%	–
A-1002	EU (incl. EFTA) contribution to operational	111 452	111 452	111 452	–	111 452	111 452	–	111 452	100%	–
A-1003	Bio-based Industries Consortium contribution to administrative	2 476	2 476	2 476	–	2 476	2 476	–	2 476	100%	–
A-1004	Bio-based Industries Consortium contribution to operational	500	500	–	–	–	–	–	–	0%	–
A-1005	JU revenues	–	–	8	–	8	8	–	8	–	–
Total chapter A-10		116 904	116 904	116 411	–	116 411	116 411	–	116 411	100%	–
Total Title A-1		**116 904**	**116 904**	**116 411**	**–**	**116 411**	**116 411**	**–**	**116 411**	**100%**	**–**
GRAND TOTAL		**116 904**	**116 904**	**116 411**	**–**	**116 411**	**116 411**	**–**	**116 411**	**100%**	**–**

5. IMPLEMENTATION OF BUDGET EXPENDITURE

5.1. Breakdown & changes in commitment appropriations

5.1.1. Breakdown & changes in commitment appropriations – Title A-1

EUR '000

		Budget appropriations of the year				Additional appropriations			
		Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
A-1100	*Staff costs*	*2 169*	*–*	*–*	*2 169*	*39*	*–*	*39*	*2 208*
A-1110	*Trainees and interim staff*	*202*	*–*	*–*	*202*	*–*	*–*	*–*	*202*
A-1120	*Other services rendered*	*43*	*–*	*–*	*43*	*–*	*–*	*–*	*43*
Total chapter A-11		2 414	–	–	2 414	39	–	39	2 454
A-1200	*Sundry recruitment expenses*	*19*	*–*	*–*	*19*	*–*	*–*	*–*	*19*
A-1201	*Installation resettlement and daily subsistence allowances and removal and travel expenses*	*47*	*–*	*(8)*	*39*	*–*	*–*	*–*	*39*
Total chapter A-12		66	–	(8)	58	–	–	–	58
A-1300	*Mission expenses, duty travel expenses and other ancillary expenditure*	*80*	*–*	*8*	*88*	*–*	*–*	*–*	*88*
Total chapter A-13		80	–	8	88	–	–	–	88
A-1400	*Medical service*	*11*	*–*	*–*	*11*	*4*	*–*	*4*	*15*
A-1401	*Mobility costs and other social expenses for staff*	*129*	*–*	*–*	*129*	*–*	*–*	*–*	*129*
A-1402	*Training*	*71*	*–*	*–*	*71*	*–*	*–*	*–*	*71*
Total chapter A-14		210	–	–	210	4	–	4	214
A-1500	*Entertainment and representation expenses*	*10*	*–*	*–*	*10*	*3*	*–*	*3*	*13*
Total chapter A-15		10	–	–	10	3	–	3	13
Total Title A-1		**2 781**	**–**	**–**	**2 781**	**46**	**–**	**46**	**2 827**

5.1.2. Breakdown & changes in commitment appropriations – Title A-2

EUR '000

		Budget appropriations of the year				Additional appropriations			
		Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
A-2000	*Rentals*	*285*	–	–	*285*	–	–	–	*285*
A-2010	*Charges and works*	*5*	–	–	*5*	*16*	–	*16*	*21*
Total chapter A-20		290	–	–	290	16	–	16	306
A-2100	*IT equipment & software purchase/development costs*	*52*	–	–	*52*	*24*	–	*24*	*76*
A-2101	*Other IT costs*	*200*	–	–	*200*	–	–	–	*200*
Total chapter A-21		252	–	–	252	24	–	24	276
A-2200	*Movable property and associated office equipment purchase costs*	*5*	–	*(0)*	*5*	*6*	–	*6*	*11*
Total chapter A-22		5	–	(0)	5	6	–	6	11
A-2300	*Stationery and office supplies*	*7*	–	*0*	*7*	*7*	–	*7*	*14*
A-2302	*Legal expenditure*	*10*	–	–	*10*	–	–	–	*10*
A-2303	*Other current administrative expenditure*	*12*	–	–	*12*	–	–	–	*12*
Total chapter A-23		29	–	0	29	7	–	7	36
A-2400	*Telecommunications and postal charges*	*14*	–	–	*14*	–	–	–	*14*
Total chapter A-24		14	–	–	14	–	–	–	14
A-2500	*Expenditure on formal meetings*	*113*	–	–	*113*	–	–	–	*113*
Total chapter A-25		113	–	–	113	–	–	–	113
A-2600	*Events and campaigns*	*270*	–	*(20)*	*250*	*2*	–	*2*	*252*
A-2601	*Materials*	*113*	–	–	*113*	*23*	–	*23*	*136*
A-2602	*Comunications tools*	*65*	–	–	*65*	*2*	–	*2*	*67*
A-2603	*Public relations*	*140*	–	–	*140*	–	–	–	*140*
Total chapter A-26		588	–	(20)	568	28	–	28	596
A-2700	*Studies, consultancy and other services*	*100*	–	*20*	*120*	–	–	–	*120*
Total chapter A-27		100	–	20	120	–	–	–	120
A-2800	*Evaluators' contract and meetings*	*550*	–	–	*550*	*477*	–	*477*	*1 027*
Total chapter A-28		550	–	–	550	477	–	477	1 027
A-2900	*Expert reviewers*	*230*	–	–	*230*	*18*	–	*18*	*248*
Total chapter A-29		230	–	–	230	18	–	18	248
Total Title A-2		**2 171**	**–**	**–**	**2 171**	**576**	**–**	**576**	**2 747**

5.1.3. Breakdown & changes in commitment appropriations – Title B0-3

EUR '000

		Budget appropriations of the year				Additional appropriations			
		Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
B3-100	*Current year call*	*114 832*	–	–	*114 832*	*826*	–	*826*	*115 658*
Total chapter B3-1		114 832	–	–	114 832	826	–	826	115 658
Total Title B0-3		**114 832**	**–**	**–**	**114 832**	**826**	**–**	**826**	**115 658**
GRAND TOTAL		**119 784**	**–**	**–**	**119 784**	**1 448**	**–**	**1 448**	**121 232**

5.2. Breakdown & changes in payment appropriations

5.2.1. Breakdown & changes in payment appropriations – Title A-1

EUR '000

		Budget appropriations of the year				Additional appropriations			
		Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
A-1100	*Staff costs*	*2 169*	*–*	*–*	*2 169*	*33*	*–*	*33*	*2 202*
A-1110	*Trainees and interim staff*	*202*	*–*	*–*	*202*	*–*	*–*	*–*	*202*
A-1120	*Other services rendered*	*43*	*–*	*–*	*43*	*–*	*–*	*–*	*43*
Total chapter A-11		2 414	–	–	2 414	33	–	33	2 447
A-1200	*Sundry recruitment expenses*	*19*	*–*	*–*	*19*	*–*	*–*	*–*	*19*
A-1201	*Installation resettlement and daily subsistence allowances and removal and travel expenses*	*47*	*–*	*–*	*47*	*–*	*–*	*–*	*47*
Total chapter A-12		66	–	–	66	–	–	–	66
A-1300	*Mission expenses, duty travel expenses and other ancillary expenditure*	*80*	*–*	*–*	*80*	*1*	*–*	*1*	*81*
Total chapter A-13		80	–	–	80	1	–	1	81
A-1400	*Medical service*	*11*	*–*	*–*	*11*	*2*	*–*	*2*	*12*
A-1401	*Mobility costs and other social expenses for staff*	*129*	*–*	*–*	*129*	*14*	*–*	*14*	*142*
A-1402	*Training*	*71*	*–*	*–*	*71*	*–*	*–*	*–*	*71*
Total chapter A-14		210	–	–	210	15	–	15	225
A-1500	*Entertainment and representation expenses*	*10*	*–*	*–*	*10*	*3*	*–*	*3*	*13*
Total chapter A-15		10	–	–	10	3	–	3	13
Title A-1		**2 781**	**–**	**–**	**2 781**	**52**	**–**	**52**	**2 833**

5.2.2. Breakdown & changes in payment appropriations – Title A-2

EUR '000

		Budget appropriations of the year				Additional appropriations			
		Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
		1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
A-2000	*Rentals*	*285*	–	–	*285*	*119*	–	*119*	*404*
A-2010	*Charges and works*	*5*	–	–	*5*	*6*	–	*6*	*11*
Total chapter A-20		290	–	–	290	125	–	125	415
A-2100	*IT equipment & software purchase/development costs*	*52*	–	–	*52*	–	–	–	*52*
A-2101	*Other IT costs*	*200*	–	*(4)*	*196*	*7*	–	*7*	*203*
Total chapter A-21		252	–	(4)	248	7	–	7	255
A-2200	*Movable property and associated office equipment purchase costs*	*5*	–	*4*	*9*	–	–	–	*9*
Total chapter A-22		5	–	4	9	–	–	–	9
A-2300	*Stationery and office supplies*	*7*	–	*0*	*7*	*4*	–	*4*	*11*
A-2302	*Legal expenditure*	*10*	–	–	*10*	–	–	–	*10*
A-2303	*Other current administrative expenditure*	*12*	–	–	*12*	–	–	–	*12*
Total chapter A-23		29	–	0	29	4	–	4	33
A-2400	*Telecommunications and postal charges*	*14*	–	–	*14*	–	–	–	*14*
Total chapter A-24		14	–	–	14	–	–	–	14
A-2500	*Expenditure on formal meetings*	*113*	–	–	*113*	–	–	–	*113*
Total chapter A-25		113	–	–	113	–	–	–	113
A-2600	*Events and campaigns*	*270*	–	*(20)*	*250*	*10*	–	*10*	*260*
A-2601	*Materials*	*113*	–	–	*113*	*22*	–	*22*	*135*
A-2602	*Comunications tools*	*65*	–	*(7)*	*58*	–	–	–	*58*
A-2603	*Public relations*	*140*	–	*7*	*147*	*8*	–	*8*	*155*
Total chapter A-26		588	–	(20)	568	41	–	41	608
A-2700	*Studies, consultancy and other services*	*100*	–	*20*	*120*	*23*	–	*23*	*143*
Total chapter A-27		100	–	20	120	23	–	23	143
A-2800	*Evaluators' contract and meetings*	*550*	–	–	*550*	*477*	–	*477*	*1 027*
Total chapter A-28		550	–	–	550	477	–	477	1 027
A-2900	*Expert reviewers*	*230*	–	–	*230*	–	–	–	*230*
Total chapter A-29		230	–	–	230	–	–	–	230
Title A-2		**2 171**	**–**	**–**	**2 171**	**677**	**–**	**677**	**2 847**

5.2.3. Breakdown & changes in payment appropriations – Title B0-3

EUR '000

	Budget appropriations of the year				Additional appropriations			
	Initial adopted budget	Amending budgets	Transfers	Final budget adopted	Carryover	Assigned revenue	Total	Total appropr. available
	1	2	3	4=1+2+3	5	6	7=5+6	8=4+7
B3-000 Previous years' calls	*111 952*	–	–	*111 952*	–	–	–	*111 952*
Total chapter B3-0	111 952	–	–	111 952	–	–	–	111 952
B3-100 Current year call	–	–	–	–	*487*	–	*487*	*487*
Total chapter B3-1	–	–	–	–	487	–	487	487
Title B0-3	**111 952**	**–**	**–**	**111 952**	**487**	**–**	**487**	**112 439**
GRAND TOTAL	**116 904**	**–**	**–**	**116 904**	**1 215**	**–**	**1 215**	**118 119**

5.3. IMPLEMENTATION OF COMMITMENT APPROPRIATIONS BY TITLE

5.3.1. Implementation of commitment appropriations – Title A-1

EUR '000

		Commitments made						Appropriations carried over to 2019			Appropriations lapsing			
		Total approp. availab.	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
A-1100	*Staff costs*	*2 208*	*1 954*	*18*	*–*	*1 972*	*89%*	*–*	*–*	*–*	*215*	*21*	*–*	*236*
A-1110	*Trainees and interim staff*	*202*	*156*	*–*	*–*	*156*	*77%*	*–*	*–*	*–*	*46*	*–*	*–*	*46*
A-1120	*Other services rendered*	*43*	*2*	*–*	*–*	*2*	*3%*	*–*	*–*	*–*	*42*	*–*	*–*	*42*
Total chapter A-11		2 454	2 111	18	–	2 129	87%	–	–	–	303	21	–	325
A-1200	*Sundry recruitment expenses*	*19*	*17*	*–*	*–*	*17*	*90%*	*–*	*–*	*–*	*2*	*–*	*–*	*2*
A-1201	*Installation resettlement and daily subsistence allowances and removal and travel expenses*	*39*	*–*	*–*	*–*	*–*	*0%*	*–*	*–*	*–*	*39*	*–*	*–*	*39*
Total chapter A-12		58	17	–	–	17	30%	–	–	–	41	–	–	41
A-1300	*Mission expenses, duty travel expenses and other ancillary expenditure*	*88*	*85*	*–*	*–*	*85*	*97%*	*–*	*–*	*–*	*3*	*–*	*–*	*3*
Total chapter A-13		88	85	–	–	85	97%	–	–	–	3	–	–	3
A-1400	*Medical service*	*15*	*10*	*3*	*–*	*13*	*85%*	*–*	*–*	*–*	*1*	*1*	*–*	*2*
A-1401	*Mobility costs and other social expenses for staff*	*129*	*111*	*–*	*–*	*111*	*87%*	*–*	*–*	*–*	*17*	*–*	*–*	*17*
A-1402	*Training*	*71*	*67*	*–*	*–*	*67*	*95%*	*–*	*–*	*–*	*3*	*–*	*–*	*3*
Total chapter A-14		214	188	3	–	191	89%	–	–	–	22	1	–	23
A-1500	*Entertainment and representation expenses*	*13*	*9*	*3*	*–*	*11*	*88%*	*–*	*–*	*–*	*1*	*0*	*–*	*2*
Total chapter A-15		13	9	3	–	11	88%	–	–	–	1	0	–	2
Total Title A-1		**2 827**	**2 411**	**23**	**–**	**2 434**	**86%**	**–**	**–**	**–**	**370**	**23**	**–**	**393**

5.3.2. Implementation of commitment appropriations – Title A-2

EUR '000

		Commitments made						Appropriations carried over to 2019			Appropriations lapsing			
		Total approp. availab.	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
A-2000	*Rentals*	*285*	*284*	*–*	*–*	*284*	*100%*	*–*	*–*	*–*	*1*	*–*	*–*	*1*
A-2010	*Charges and works*	*21*	*5*	*15*	*–*	*19*	*93%*	*–*	*–*	*–*	*1*	*1*	*–*	*2*
Total chapter A-20		306	289	15	–	303	99%	–	–	–	1	1	–	2
A-2100	*IT equipment & software purchase/development costs*	*76*	*25*	*24*	*–*	*50*	*65%*	*–*	*–*	*–*	*27*	*–*	*–*	*27*
A-2101	*Other IT costs*	*200*	*153*	*–*	*–*	*153*	*77%*	*–*	*–*	*–*	*47*	*–*	*–*	*47*
Total chapter A-21		276	179	24	–	203	73%	–	–	–	74	–	–	74
A-2200	*Movable property and associated office equipment purchase costs*	*11*	*3*	*6*	*–*	*9*	*85%*	*–*	*–*	*–*	*2*	*–*	*–*	*2*
Total chapter A-22		11	3	6	–	9	85%	–	–	–	2	–	–	2
A-2300	*Stationery and office supplies*	*14*	*6*	*7*	*–*	*13*	*94%*	*–*	*–*	*–*	*1*	*–*	*–*	*1*
A-2302	*Legal expenditure*	*10*	*–*	*–*	*–*	*–*	*0%*	*–*	*–*	*–*	*10*	*–*	*–*	*10*
A-2303	*Other current administrative expenditure*	*12*	*11*	*–*	*–*	*11*	*90%*	*–*	*–*	*–*	*1*	*–*	*–*	*1*
Total chapter A-23		36	17	7	–	24	67%	–	–	–	12	–	–	12
A-2400	*Telecommunications and postal charges*	*14*	*12*	*–*	*–*	*12*	*90%*	*–*	*–*	*–*	*1*	*–*	*–*	*1*
Total chapter A-24		14	12	–	–	12	90%	–	–	–	1	–	–	1
A-2500	*Expenditure on formal meetings*	*113*	*61*	*–*	*–*	*61*	*54%*	*–*	*–*	*–*	*52*	*–*	*–*	*52*
Total chapter A-25		113	61	–	–	61	54%	–	–	–	52	–	–	52
A-2600	*Events and campaigns*	*252*	*63*	*2*	*–*	*66*	*26%*	*–*	*–*	*–*	*187*	*–*	*–*	*187*
A-2601	*Materials*	*136*	*46*	*22*	*–*	*68*	*50%*	*–*	*–*	*–*	*67*	*2*	*–*	*69*
A-2602	*Comunications tools*	*67*	*47*	*2*	*–*	*49*	*73%*	*–*	*–*	*–*	*18*	*–*	*–*	*18*
A-2603	*Public relations*	*140*	*36*	*–*	*–*	*36*	*26%*	*–*	*–*	*–*	*103*	*–*	*–*	*103*
Total chapter A-26		596	192	26	–	218	37%	–	–	–	376	2	–	377
A-2700	*Studies, consultancy and other services*	*120*	*56*	*–*	*–*	*56*	*46%*	*–*	*–*	*–*	*64*	*–*	*–*	*64*
Total chapter A-27		120	56	–	–	56	46%	–	–	–	64	–	–	64
A-2800	*Evaluators' contract and meetings*	*1 027*	*296*	*477*	*–*	*773*	*75%*	*–*	*–*	*–*	*254*	*–*	*–*	*254*
Total chapter A-28		1 027	296	477	–	773	75%	–	–	–	254	–	–	254
A-2900	*Expert reviewers*	*248*	*230*	*–*	*–*	*230*	*93%*	*–*	*–*	*–*	*–*	*18*	*–*	*18*
Total chapter A-29		248	230	–	–	230	93%	–	–	–	–	18	–	18
Total Title A-2		**2 747**	**1 335**	**556**	**–**	**1 891**	**69%**	**–**	**–**	**–**	**836**	**20**	**–**	**856**

5.3.3. Implementation of commitment appropriations – Title B0-3

EUR '000

		Commitments made						Appropriations carried over to 2019			Appropriations lapsing			
		Total approp. availab.	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
B3-100	*Current year call*	*115 658*	*114 832*	*826*	*–*	*115 658*	*100%*	*–*	*–*	*–*	*–*	*–*	*–*	*–*
Total chapter B3-1		115 658	114 832	826	–	115 658	100%	–	–	–	–	–	–	–
Total Title B0-3		**115 658**	**114 832**	**826**	**–**	**115 658**	**100%**	**–**	**–**	**–**	**–**	**–**	**–**	**–**
GRAND TOTAL		**121 232**	**118 578**	**1 405**	**–**	**119 983**	**99%**	**–**	**–**	**–**	**1 206**	**43**	**–**	**1 249**

5.4. IMPLEMENTATION OF PAYMENT APPROPRIATIONS BY TITLE

5.4.1. Implementation of payment appropriations – Title A-1

EUR '000

			Payments made					Appropriations carried over to 2019				Appropriations lapsing			
		Total approp. availab.	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 assig. rev.	Total
		1	2	3	4	5=2+3+4	6 = 5/1	7	8	9	10=7+8+9	11	12	13	14=11+12 +13
A-1100	Staff costs	2 202	1 907	33	–	1 940	88%		–	–	–	262	–	–	262
A-1110	Trainees and interim staff	202	161	–	–	161	80%		–	–	–	41	–	–	41
A-1120	Other services rendered	43	–	–	–	–	0%		–	–	–	43	–	–	43
Total chapter A-11		2 447	2 068	33	–	2 101	86%		–	–	–	347	–	–	347
A-1200	Sundry recruitment expenses	19	15	–	–	15	80%		–	–	–	4	–	–	4
A-1201	Installation resettlement and daily subsistence allowances and removal and travel expenses	47	–	–	–	–	0%		–	–	–	47	–	–	47
Total chapter A-12		66	15	–	–	15	23%		–	–	–	51	–	–	51
A-1300	Mission expenses, duty travel expenses and other ancillary expenditure	81	80	1	–	80	100%		–	–	–	0	–	–	0
Total chapter A-13		81	80	1	–	80	100%		–	–	–	0	–	–	0
A-1400	Medical service	12	11	1	–	12	98%		–	–	–	0	0	–	0
A-1401	Mobility costs and other social expenses for staff	142	90	14	–	104	73%		–	–	–	38	–	–	38
A-1402	Training	71	47	–	–	47	67%		–	–	–	23	–	–	23
Total chapter A-14		225	149	15	–	164	73%		–	–	–	61	0	–	61
A-1500	Entertainment and representation expenses	13	9	3	–	12	91%		–	–	–	1	0	–	1
Total chapter A-15		13	9	3	–	12	91%		–	–	–	1	0	–	1
Total Title A-1		**2 833**	**2 321**	**52**	**–**	**2 372**	**84%**		**–**	**–**	**–**	**460**	**0**	**–**	**460**

5.4.2. Implementation of payment appropriations – Title A-2

EUR '000

			Payments made					Appropriations carried over to 2019				Appropriations lapsing			
		Total approp. availab.	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 assig. rev.	Total
		1	2	3	4	5=2+3+4	6 = 5/1	7	8	9	10=7+8+9	11	12	13	14=11+12+13
A-2000	Rentals	404	140	119	–	259	64%		–	–	–	145	–	–	145
A-2010	Charges and works	11	4	6	–	10	90%		–	–	–	1	–	–	1
Total chapter A-20		415	144	125	–	269	65%		–	–	–	146	–	–	146
A-2100	IT equipment & software purchase/development costs	52	19	–	–	19	37%		–	–	–	33	–	–	33
A-2101	Other IT costs	203	161	7	–	168	83%		–	–	–	35	–	–	35
Total chapter A-21		255	180	7	–	187	73%		–	–	–	68	–	–	68
A-2200	Movable property and associated office equipment purchase costs	9	8	–	–	8	95%		–	–	–	0	–	–	0
Total chapter A-22		9	8	–	–	8	95%		–	–	–	0	–	–	0
A-2300	Stationery and office supplies	11	7	4	–	11	100%		–	–	–	–	–	–	–
A-2302	Legal expenditure	10	–	–	–	–	0%		–	–	–	10	–	–	10
A-2303	Other current administrative expenditure	12	1	–	–	1	10%		–	–	–	11	–	–	11
Total chapter A-23		33	8	4	–	12	37%		–	–	–	21	–	–	21
A-2400	Telecommunications and postal charges	14	4	–	–	4	28%		–	–	–	10	–	–	10
Total chapter A-24		14	4	–	–	4	28%		–	–	–	10	–	–	10
A-2500	Expenditure on formal meetings	113	59	–	–	59	52%		–	–	–	54	–	–	54
Total chapter A-25		113	59	–	–	59	52%		–	–	–	54	–	–	54
A-2600	Events and campaigns	260	165	10	–	175	67%		–	–	–	85	0	–	86
A-2601	Materials	135	25	22	–	48	35%		–	–	–	88	–	–	88
A-2602	Comunications tools	58	35	–	–	35	60%		–	–	–	23	–	–	23
A-2603	Public relations	155	43	8	–	51	33%		–	–	–	103	–	–	103
Total chapter A-26		608	268	40	–	309	51%		–	–	–	299	0	–	300
A-2700	Studies, consultancy and other services	143	3	23	–	26	18%		–	–	–	117	–	–	117
Total chapter A-27		143	3	23	–	26	18%		–	–	–	117	–	–	117
A-2800	Evaluators' contract and meetings	1 027	296	477	–	773	75%		–	–	–	254	–	–	254
Total chapter A-28		1 027	296	477	–	773	75%		–	–	–	254	–	–	254
A-2900	Expert reviewers	230	204	–	–	204	89%		–	–	–	26	–	–	26
Total chapter A-29		230	204	–	–	204	89%		–	–	–	26	–	–	26
Total Title A-2		**2 847**	**1 175**	**676**	**–**	**1 851**	**65%**		**–**	**–**	**–**	**996**	**0**	**–**	**996**

5.4.3. Implementation of payment appropriations – Title B0-3

EUR '000

		Payments made						Appropriations carried over to 2019				Appropriations lapsing			
		Total approp. availab.	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 assig. rev.	Total
		1	2	3	4	5=2+3+4	6 = 5/1	7	8	9	10=7+8+9	11	12	13	14=11+12+13
B3-000	Previous years' calls	111 952	79 173	–	–	79 173	71%		–	–	–	32 780	–	–	32 780
Total chapter B3-0		111 952	79 173	–	–	79 173	71%		–	–	–	32 780	–	–	32 780
B3-100	Current year call	487	–	–	–	–	0%		–	–	–	–	487	–	487
Total chapter B3-1		487	–	–	–	–	0%		–	–	–	–	487	–	487
Total Title B0-3		**112 439**	**79 173**	**–**	**–**	**79 173**	**70%**		**–**	**–**	**–**	**32 780**	**487**	**–**	**33 266**
GRAND TOTAL		**118 119**	**82 668**	**728**	**–**	**83 396**	**71%**		**–**	**–**	**–**	**34 235**	**488**	**–**	**34 723**

6. COMMITMENTS OUTSTANDING

6.1. Commitments outstanding – Title A-1

EUR '000

		Commitments outstanding at the end of prev. year				Commitments of the year				Total commitments
		Comm. carried forward from prev. year	Decommit. Revaluation Cancellations	Payments	Total	Comm. made during the year	Payment	Cancellation of comm. which cannot be carried forward	Commit. outstanding at year-end	outstanding at year-end
		1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
A-1100	*Staff costs*	*5*	(3)	*2*	–	*1 972*	*1 938*	–	*34*	*34*
A-1110	*Trainees and interim staff*	*22*	(4)	*18*	–	*156*	*143*	–	*13*	*13*
A-1120	*Other services rendered*	–	–	–	–	*2*	–	–	*2*	*2*
Total chapter A-11		27	(7)	20	–	2 129	2 081	–	48	48
A-1200	*Sundry recruitment expenses*	*3*	(2)	*2*	–	*17*	*14*	–	*4*	*4*
Total chapter A-12		3	(2)	2	–	17	14	–	4	4
A-1300	*Mission expenses, duty travel expenses and other ancillary expenditure*	*2*	–	*2*	–	*85*	*78*	–	*7*	*7*
Total chapter A-13		2	–	2	–	85	78	–	7	7
A-1400	*Medical service*	*4*	–	*4*	–	*13*	*8*	–	*5*	*5*
A-1401	*Mobility costs and other social expenses for staff*	–	–	–	–	*111*	*104*	–	*7*	*7*
A-1402	*Training*	*42*	(29)	*13*	–	*67*	*34*	–	*33*	*33*
Total chapter A-14		46	(29)	17	–	191	146	–	45	45
A-1500	*Entertainment and representation expenses*	*1*	(1)	*0*	–	*11*	*11*	–	–	–
Total chapter A-15		1	(1)	0	–	11	11	–	–	–
Total Title A-1		**80**	**(38)**	**42**	**–**	**2 434**	**2 330**	**–**	**103**	**103**

6.2. Commitments outstanding – Title A-2

EUR '000

		Commitments outstanding at the end of prev. year				Commitments of the year				Total commitments
		Comm. carried forward from prev. year	Decommit. Revaluation Cancellations	Payments	Total	Comm. made during the year	Payment	Cancellation of comm. which cannot be carried forward	Commit. outstanding at year-end	outstanding at year-end
		1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
A-2000	*Rentals*	–	–	–	–	*284*	*259*	–	*25*	*25*
A-2010	*Charges and works*	*6*	(2)	*4*	–	*19*	*6*	–	*13*	*13*
Total chapter A-20		6	(2)	4	–	303	265	–	38	38
A-2100	*IT equipment & software purchase/development costs*	*4*	(4)	–	–	*50*	*19*	–	*30*	*30*
A-2101	*Other IT costs*	*53*	(13)	*40*	–	*153*	*128*	–	*25*	*25*
Total chapter A-21		57	(17)	40	–	203	148	–	55	55
A-2200	*Movable property and associated office equipment purchase costs*	*2*	–	*2*	–	*9*	*6*	–	*4*	*4*
Total chapter A-22		2	–	2	–	9	6	–	4	4
A-2300	*Stationery and office supplies*	*4*	(1)	*2*	–	*13*	*9*	–	*5*	*5*
A-2303	*Other current administrative expenditure*	*1*	–	*1*	–	*11*	*1*	–	*10*	*10*
Total chapter A-23		4	(1)	3	–	24	9	–	15	15
A-2400	*Telecommunications and postal charges*	*3*	(1)	*2*	–	*12*	*2*	–	*10*	*10*
Total chapter A-24		3	(1)	2	–	12	2	–	10	10
A-2500	*Expenditure on formal meetings*	*1*	–	*1*	–	*61*	*58*	–	*3*	*3*
Total chapter A-25		1	–	1	–	61	58	–	3	3
A-2600	*Events and campaigns*	*173*	(58)	*115*	–	*66*	*59*	–	*6*	*6*
A-2601	*Materials*	*2*	(1)	*1*	–	*68*	*47*	–	*21*	*21*
A-2602	*Comunications tools*	*46*	(40)	*6*	*0*	*49*	*29*	–	*20*	*20*
A-2603	*Public relations*	*15*	(0)	*15*	–	*36*	*36*	–	–	–
Total chapter A-26		236	(99)	137	0	218	171	–	47	47
A-2700	*Studies, consultancy and other services*	*23*	–	*23*	–	*56*	*3*	–	*53*	*53*
Total chapter A-27		23	–	23	–	56	3	–	53	53
A-2800	*Evaluators' contract and meetings*	*396*	(396)	–	–	*773*	*773*	–	–	–
Total chapter A-28		396	(396)	–	–	773	773	–	–	–
A-2900	*Expert reviewers*	*16*	–	*16*	–	*230*	*188*	–	*42*	*42*
Total chapter A-29		16	–	16	–	230	188	–	42	42
Total Title A-2		**744**	**(517)**	**227**	**0**	**1 891**	**1 624**	**–**	**267**	**267**

6.3. Commitments outstanding – Title B0-3

EUR '000

	Commitments outstanding at the end of prev. year				Commitments of the year				Total commitments
	Comm. carried forward from prev. year	Decommit. Revaluation Cancellations	Payments	Total	Comm. made during the year	Payment	Cancellation of comm. which cannot be carried forward	Commit. outstanding at year-end	outstanding at year-end
	1	2	3	4=1+2-3	5	6	7	8=5-6-7	9=4+8
B3-000 Previous years' calls	*335 871*	–	*79 173*	*256 698*	–	–	–	–	*256 698*
Total chapter B3-0	335 871	–	79 173	256 698	–	–	–	–	256 698
B3-100 Current year call	*340*	–	–	*340*	*115 658*	–	–	*115 658*	*115 998*
Total chapter B3-1	340	–	–	340	115 658	–	–	115 658	115 998
Total Title B0-3	**336 211**	**–**	**79 173**	**257 038**	**115 658**	**–**	**–**	**115 658**	**372 696**
GRAND TOTAL	**337 034**	**(554)**	**79 442**	**257 038**	**119 983**	**3 954**	**–**	**116 029**	**373 067**

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.

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, for agricultural market support and direct payments 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 is revenue from third parties in respect of goods, services or work supplied at their request; (c) 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 (AO)

The AO is responsible in each institution 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.

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) 2018/1046 on the financial rules applicable to the general budget of the Union.

Funds Source

Type of appropriations (e.g. C1, C2, etc.)

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 theirs 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 reactivated 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

Legal commitments having not fully given rise to liquidation by payments. Cf. RAL.

Outturn

Cf. Budget result

Payment

A payment is a cash 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. Outstanding commitments (or RAL, from the French 'reste à liquider') are defined as the amount of appropriations committed that have not yet been paid. They stem directly from the existence of multiannual programmes and the dissociation between commitment and payment appropriations. (Cf. Outstanding commitments)

Recovery

The recovery order is the procedure by which the Authorising officer (AO) 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. Outturn

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 authorization.

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 has to be assessed, not only for the year of reference, but more importantly, with a multi-annual outlook.

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 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:

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

Where:

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

A = total amount of the audited sample expressed in €.

Second step: calculation of residual error rate.

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

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

This results in a residual error rate, which is calculated by using the following formula:

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

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.

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.

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 2018				
Event	**Date**	**Place**	**Type of Participation**	**Organiser**
1. AAAS 2018 Annual Meeting	15-19 February	Austin, USA	Speaker	American Association for the Advancement of Science (AAAS)
2. Chimie Verte	27 February	Brussels, Belgium	Speaker	Innoviris
3. BIOKET conference	6-7 March	Strasbourg, France	Speaker	IAR Cluster
4. Developing synergies between Joint Undertakings and ESIF for optimising RIS3 implementation	7 March	CoR, Brussels, Belgium	Speaker	CoR & JRC-Seville
5. World Bio Markets	20-22 March	Amsterdam, the Netherlands	Speaker/Sponsor	Bio-based World News
6. MEP Awards	21 March	Brussels, Belgium	Sponsor	The Parliament Magazine & DODS
7. Status of the bioeconomy	16 April	Lille, France	Speaker	Region Hauts-de-France
8. New Protein Mining Technologies Seminar	17 April	Rotterdam, the Netherlands	Speaker	Prominent

9. Global Bioeconomy Summit 2018	19-20 April	Berlin, Germany	Speaker	German Bioeconomy Council
10. AgriResearch Conference - Innovating for the future of farming and rural communities	2-3 May	Brussels, Belgium	Speaker	European Commission
11. 3rd Circular Change Conference: Unfolding Circular Economy Roadmaps	9-10 May	Kostanjevica na Krki, Slovenia	Speaker	Circular Change; MEP Franc Bogovič & Dutch Embassy in Slovenia
12. UK Consortia Building Workshop: EU Funding for the bio-based industries	10 May	Glasgow, UK	Speaker	Knowledge Transfer Network (KTN); Horizon 2020 UK National Contact Point; SusChem UK; Enterprise Europe Network
13. EUBCE	15 May	Copenhagen, Denmark	Speaker	Joint Research Centre (JRC); European Commission ETA-Florence
14. BBI JU Online Networking Meetings 2018	15-17 May	BBI KU partnering platform	Organiser	BBI JU
15. Valbiom General Assembly	16 May	Namur, Belgium	Speaker	Valbiom
16. Bioeconomy research and innovation in Lower Austria	23 May	Tulln, Austria	Speaker	RTDS Group
17. Innovative bio-based products: Investment, Environmental Impacts and Future Perspectives	6 June	Brussels, Belgium	Participant	European Commission; Ecologic
18. Nature-Based Society: the contribution of bioeconomy	6 June	Brussels, Belgium	Speaker	National Research Council of Italy (CNR); European Parliament

19. Fighting marine litter: The contribution of biodegradable plastics to the marine areas	7 June	Brussels, Belgium	Participant	European Parliament
20. Transitioning from conventional to advanced biofuels	7 June	Brussels, Belgium	Participant	EURACTIV
21. Building a biomass innovation ecosystem in a circular bioeconomy in Poland	7-8 June	Kraków, Poland	Speaker	OECD
22. II International Congress of Bioeconomy	14 June	Barcelona, Spain	Speaker	Grupo Cooperativo Cajamar; Asociación de Parques Científicos y Tecnológicos de España
23. Food2030	14-15 June	Plovdiv, Bulgaria	Speaker/Exhibitor	Bulgarian Presidency of the Council of the EU
24. International Development Lab on endogenous resources in the wine value chain	19 June	Coimbra, Portugal	Speaker	JRC; CCDRC
25. Natural resources R&I missions addressing sustainable development goals	20 June	Brussels, Belgium	Participant	National Resources Institute - Finland
26. SusChem Stakeholder event 2018	20 June	Brussels, Belgium	Participant	SusChem
27. Industry, Partnerships – A new impetus	26 June	Brussels, Belgium	Participant	European Commission
28. Connecting European Chambers 2018	28-29 June	Brussels, Belgium	Participant/Speaker	Unioncamere Europa, EUROCHAMBRES, national Chambers of Austria, France, Germany, Spain, Netherlands

29. 18th European Congress on Biotechnology	1-4 July	Geneva, Switzerland	Speaker	European Federation of Biotechnology (EFB); University of Geneva; TFI Group
30. EuroScience Open Forum 2018 (ESOF)	9-14 July	Toulouse, France	Participant	EuroScience
31. BIO World Congress on Industrial Biotechnology	16-19 July	Philadelphia, USA	Speaker	BIO - Biotechnology Innovation Organisation
32. LIGNOFLAG Groundbreaking Ceremony	12 September	Podari, Romania	Participant	LIGNOFLAG
33. EUCYS 2018	14-19 September	Dublin, Ireland	Sponsor	European Commission
34. Workshop: Best practices in integrating primary production in the Bioeconomy value chains & boosting the development of the Bioeconomy in rural areas	20-21 September	Brussels, Belgium	Participant/Speaker	European Commission
35. European Bioeconomy Congress Lodzkie 2018	24 September	Lodz, Poland	Speaker	Lodz Region
36. IFIB 2018	27-28 September	Torino, Italy	Speaker	IFIB
37. SPIRE Stakeholder Workshop: Sustainable Process Industry Strategy Towards 2050	2 October	Brussels, Belgium	Participant/Speaker	SPIRE
38. EIN Seminar: Investing in Education and Innovation	11-12 October	Thessaloniki, Greece	Speaker	European Ideas Network (EIN)
39. World Food Day 2018	16 October	Brussels, Belgium	Participant	FAO; European Commission

40. EFIB 2018	16-18 October	Toulouse, France	Participant	EFIB
41. Sustainable & Circular Bioeconomy, the European Way	22 October	Brussels, Belgium	Participant/Exhibitor	European Commission
42. SusChem Brokerage Event 2018	23 October	Brussels, Belgium	Exhibitor/Speaker	SusChem
43. NEWFERT Final Workshop: "Nutrient Recovery from bio-based waste for Fertiliser Industry"	28-30 October	Brussels, Belgium	Speaker	NEWFERT
44. Scaling Up 2018	5-7 November	Ottawa, Canada	Participant/Speaker	Scaling Up
45. ECOMONDO 2018	6 -9 November	Rimini, Italy	Speaker	ECOMONDO
46. Starch Europe	6 November	Brussels, Belgium	Participant	Starch Europe
47. BIOVOICES Focus Group Workshop	13-14 November	Rome, Italy	Participant	BIOVOICES
48. Opportunities for jobs, growth and investment: Developing the Bioeconomy and the Bio-based industries sector in Romania	23 November	Bucharest, Romania	Speaker	Ministry of Agriculture and Rural Development of Romania; Biobased Industry Consortium (BIC)
49. 10th European Innovation Summit Dinner Debate on Innovation Partnerships	27 November	Brussels, Belgium	Speaker	knowledge4innovation
50. The Impact of EU Research and Innovation on Your Daily Life	27 November	Brussels, Belgium	Participant	European Commission; European Parliament
51. Conference: The Greek Agriculture of Tomorrow	27 November	Chalkidona, Greece	Speaker	Municipality of Chalkidona

52. Webinar 2018	29 November	online	Organiser/speaker	BBI JU
53. 13th European Bioplastics Conference	4 December	Berlin, Germany	Participant	European Bioplastics (EUBP)
54. UnILiON Open Talk	5 December	Brussels, Belgium	Speaker	Universities Informal Liaison Offices Network (UnILiON)
55. EIN seminar: Investing on Education and Youth	5 December	Brussels, Belgium	Speaker	European Ideas Network (EIN)
56. Sustainability of Food Chains, Science and Food Safety In Europe - A contribution from European Regions	5 December	Brussels, Belgium	Speaker	Emilia Romagna Region
57. First Stakeholder event, Blue Bioeconomy Forum	7 December	Amsterdam, The Netherlands	Speaker	DG for Maritime Affairs and Fisheries (DG MARE); Executive Agency for Small and Medium-sized Enterprises (EASME)
58. Enterprise Europe Network's Sector Group Chair Meeting	12 December	Brussels, Belgium	Speaker	Enterprise Europe Network
59. Participation opportunities for Polish institutions in the BBI JU Program: Building Consortium Networks	19 December	Lodz, Poland	Speaker	Regional Contact Point of EU Research Programmes at the University of Lodz

7.12.LIST OF ACRONYMS

AAR	Annual Activity Report
AHP	Absorbent Hygiene Products
AWP	Annual Work Plan
APIK	Difference between the total costs of the projects and the JU contribution for all beneficiaries, "All Participants' in-kind (i.e. own) contribution to operational activities"
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
CONT	Committee of the European Parliament
CO_2	Carbon dioxide
cPPP	Contractual Public-Private Partnership
CRS	Common Representative Sample
CSA	Coordination and Support Action
CSC	Common Support 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
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
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
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

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
OIB	Office for Infrastructure and Logistics
OLAF	European Anti-Fraud Office
OTH	Other type of organisations
PA	Payments
PEF	polyethylene furanoate
PET	polyethylene terephthalate
PHB	polyhydroxybutyrate
PLA	PolyLactic Acid
PPP	Public-Private Partnership
PRC	Private- for- Profit
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
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
TTI	Time to Inform
TTP	Time to Pay
UN	United Nations Organisation
URL	Uniform Resource Locator