

2017
**Call for
proposals**



*The catalyst for a sustainable
bio-based economy in Europe*

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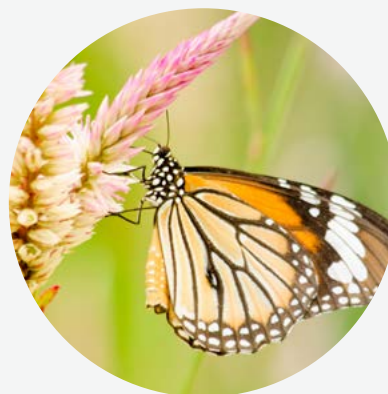


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MISSION

BBI JU's mission is to implement the Strategic Innovation and Research Agenda (SIRA) developed by the Bio-based industry Consortium (BIC), using Horizon 2020 rules and procedures.

BBI JU organises yearly calls for proposals to support research, demonstration and deployment activities enabling the collaboration between stakeholders along entire value chains, covering primary production of biomass, processing industry and final use.

VISION

Our vision is a competitive, innovative and sustainable Europe leading the transition towards a post-petroleum society while decoupling economic growth from resource depletion and negative environmental impacts.

Together with pan-European and cross-sector industries/SMEs, research organisations, universities, regions, and countries, we will develop a bio-based economy for Europe.



I. INTRODUCTION



Philippe Mengal
Executive Director

Bio-based Industries
Joint Undertaking (BBI JU)



The Joint Undertaking operates its programme as the catalyst to enable the European Union (EU) and bio-based industries to align their strategy and vision, while respecting Horizon 2020 principles of openness, of transparency and of excellence for the Call for proposals organised each year supporting research, demonstration and industrial deployment activities.

Our first projects from the 2014 Call started in the summer of 2015. The grant agreements from Call 2016 will be signed in early May 2017 at the latest, growing the number to 65 ongoing projects with 729 participants for a total grant of €414 million. The current project portfolio is well-balanced between the type of actions and across the value chains of the Strategic Innovation and Research Agenda. In particular there is good coverage of the value chains based on agro-food chain by-products, bio-waste and aquatic biomass.

We have also noted a growing mobilisation of the sector, with 103 eligible proposals for the 2016 Call, corresponding to an average of 3.8 proposals per topic.

Thanks to a huge effort to promote the Call and the engagement of BBI JU's advisory bodies, namely the States Representative Group and the Scientific Committee, the initiative showed a wider geographic coverage with better mobilisation of the European biomass potential, with participants from 30 countries. This was achieved while keeping an attractive success rate of nearly 30%.

So at the end of 2016, based on our reporting, BBI JU's governing board stated that the initiative is 'on the right track', with Europe becoming an attractive area to invest in bio-based industries.

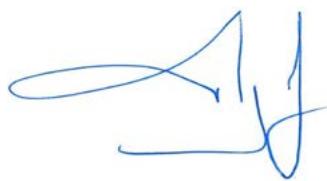
Nevertheless, the critical path to 2020 means accelerating the development of new sustainable value chains from biomass feedstock supply via efficient processing, towards the acceptance and application of bio-based products in the end-markets. The 2017 Call will focus on the need to improve the integration of biomass feedstock suppliers at the front end of the chain to create a demand for biomass feedstock from biorefining processes. Similarly, the Call will stimulate partnerships with end-market actors to create a 'market pull' for bio-based products for identified applications.

The scientific priorities and impacts for the year 2017 were set by the Bio-based Industries Consortium (BIC) and the European Commission,

in collaboration with BBI JU. They were identified through a wide consultation targeting bio-based industries, universities, Research and Technology Offices, European Technology Platforms and European industry associations, and included additional inputs from BBI JU's advisory bodies. The 2017 priorities continue to build on those of 2016, but add emphasis on products with new functionalities, and on supporting actions to better realise the associated expected impacts. Furthermore, additional emphasis is placed on sustainability and the environmental, social and economic dimensions.

The BBI 2017 Call topics are comprehensive, with 16 topics covering all possible types of actions, including 7 Research & Innovation Actions, 5 Demonstration Actions, 2 Flagship Actions and 2 Coordination and Support Actions. Prospective applicants can propose innovative ways to maximise the usefulness and profitability from side and waste streams at all stages of the R&D cycle. Uniquely for BBI JU projects, successful proposals can receive financial support to establish first-of-a-kind flagships which scale up new applications and processes to an industrial level. Successful applicants of this 2017 Call will have access to upwards of € 81 million of funding from the BBI JU programme.

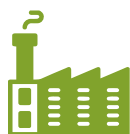
I want to thank you for your endeavours for the European bio-based economy, and would like to wish you much success for your participation in BBI JU's activities.





Dirk Carrez
Executive Director

*Biobased Industries
Consortium (BIC)*



We are now half-way through the Calls for proposals in this challenging adventure known as the Bio-based Industries initiative. As private partner in the BBI JU, the Bio-based Industries Consortium (BIC) is more than happy to see the results obtained so far.

We observe a significant mobilisation of private investment in Europe due to BBI JU projects. Industry participates massively in projects keeping innovation in Europe, and with the demo and flagship projects we not only support deployment, but also keep investments in innovative production processes in Europe and even attract investments from outside the EU.

New value chains are being created, and due to BBI JU projects, we now see partners, from sectors that have never collaborated before, working together setting up innovative value chains. Examples include the food industry collaborating with the chemical industry; the forestry and pulp & paper sector collaborating with chemical industry, etc.

New industrial sectors are joining and more and more sectors see opportunities to create value from waste and side streams, such as the food processing sector, aquatic-based sector, and even biowaste and CO₂.

The updated Strategic Innovation and Research Agenda, which is effective as of 1 January 2017, takes into account these changes in the economy and in society. As a result, BIC sees a growing and more diverse membership. Not only are new sectors joining, like the food industry, and aquatic/marine sectors, with a wider geographical spread throughout Europe, but we also observe a growing interest from brand owners. This closer collaboration with brand owners is key as they help to increase acceptance of bio-based products in market applications, develop new applications for our bio-based products, and as such, they create new markets.

Throughout 2016 and into 2017, BIC has also strengthened its collaboration with the European regions to exchange information and explore synergies and opportunities for joint financing and deployment of new value chains. At the same time, the regions are exploring different financing options, such as using regional development funds to support our innovative sector.

All this industry activity directly contributes to the priorities of the current Juncker Plan for Europe by stimulating investments and creating innovative growth & jobs, leading to a more sustainable and circular economy and to a more competitive Europe.



John Bell
*Director for Bioeconomy
Directorate-General
for Research and Innovation*

European Commission



Since its launch in 2012, the European Union's Bioeconomy Strategy has put research and innovation firmly in the driver's seat when it comes to making the bioeconomy in Europe a reality. By joining forces with the private sector and creating the joint undertaking, the European Commission has demonstrated its commitment to European citizens to seize the opportunities offered by the bio-based economy for Europe, ensuring the pressing socio-economic and environmental issues of our time can be addressed.

The establishment of the bio-based industries (BBI) initiative should be seen as a strong political signal to industry at EU level. The initiative provides a stable long-term framework to allow strategic programming with industry. This stability is critical in leveraging and securing long-term investments from the private sector, in particular for close-to-market demonstration and large-scale commercial activities needed to bring the bio-based economy to maturity.

Since its first Call in 2014, BBI Joint Undertaking (BBI JU) has proved its key role in bringing together previously fragmented sectors to ensure fruitful collaborations along the entire bio-based value chain. Key stakeholders, including primary production and processing industries, consumer brands, SMEs, research and technology centres and universities, are all participating. BBI JU has set its own standard for effective and efficient programme management, and is setting the conditions for the EU to deploy its industrial, research and renewable resources potential.

With eyes firmly on the initiative's 2020 targets, the new strategic orientations for the 2017 Call will allow for better integration of biomass feedstock suppliers at the front end of the value chain. Building on the 2016 priorities, the new topics will cover all types of actions ensuring that results are translated into concrete added value for our citizens.

Under the 2017 Call the BBI JU funding, provided from the Horizon 2020 programme, will be allocated to the best proposals which can bring EU research and innovation policy one step closer to our 'Open Innovation, Open Science and Open to the World' goals. BBI JU is becoming one of the cornerstones for the development of the bio-based economy in Europe, fostering a culture of collaboration across Member States, Associated Countries and internationally.

I am confident that with our common efforts we will bring EU's research and innovation priorities to the forefront with new products, new services, new markets, and new horizons for the bio-based industries in Europe.

II. ABOUT BBI JU

DEVELOPING A SUSTAINABLE BIO-BASED INDUSTRIES SECTOR IN EUROPE

A. THE BIO-BASED INDUSTRIES SECTOR

The bioeconomy covers the use of renewable biological resources and their conversion into food, feed, bio-based products and biofuels via innovative agronomic, food processing technologies and industrial biotechnology.

Bio-based industries are a significant sub-sector of the bioeconomy. However, a distinct, coherent single European bio-based industry sector still does not exist and currently includes a wide range of different industrial sectors often working in isolation.

Existing sectors like chemical, agro-food, forestry, pulp and paper sectors, technology providers, including bio-waste industries all have an interest in moving from an unsustainable petroleum-based economic model to a bio-based one. This can be achieved by improving the cooperation around all parts of the value chain and encouraging cross-sector collaboration.

Integrated biorefineries play a central role in the bio-based economy, as they convert biomass, including organic waste, through efficient and innovative technologies into different types of bio-based products such as feed, fibres, materials, chemicals and bioenergy. By ensuring a sustainable supply of suitable raw biomass we can reduce the current reliance for Europe on imported fossil-based raw materials.

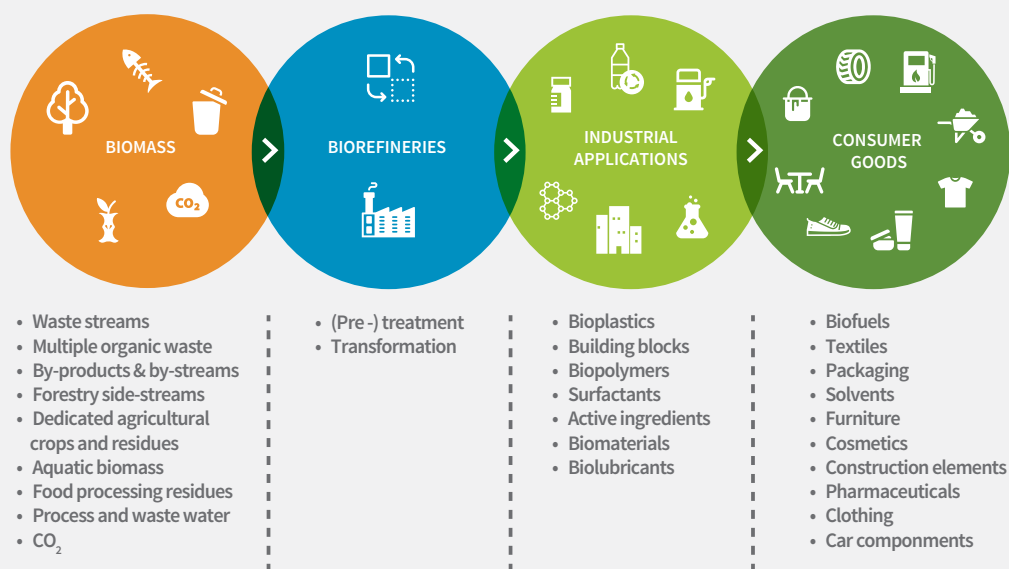
The combined bio-based industries contributed €600 million to the wider European economy and supported 3.2 million jobs. However, bio-based industries are still seen as 'emerging' and therefore require risky investments for industry. What's currently missing is the critical mass at European level regarding the scale of activity, excellence, and the potential for innovation.





Existing sectors like chemical, agro-food, forestry, pulp and paper sectors, technology providers, including bio-waste industries all have an interest in moving from an unsustainable petroleum-based economic model to a bio-based one.

BBI JU VALUE CHAIN



B. CHALLENGES FOR THE EUROPEAN BIO-BASED INDUSTRIES

The European economy is heavily dependent on fossil-based raw materials as a source of chemical, consumer and energy products. Reducing this dependency is of paramount importance in view of the increasing depletion of fossil resources and their impact on climate change.

A strong European bio-based industrial sector will help to reduce Europe's dependency on fossil-based products, moving Europe more quickly towards the many socio-economic benefits of a post-petroleum society.

While European companies have been key players in developing bio-based applications worldwide, the further growth of bio-based industries in Europe is being hampered by a lack of support for the development of their value chains.

Many of the key market players are traditionally not used to collaborating, yet the challenges they are facing cannot be addressed by a single company or sub-sector. The supply chains for a significant amount of bio-based industries are still at an early development stage.



C. WHAT IS THE BIO-BASED INDUSTRIES JOINT UNDERTAKING ?



The Bio-Based Industries Joint Undertaking (BBI JU) is a €3.7 billion public-private partnership between the European Union (EU) and the Bio-based Industries Consortium (BIC).

It is dedicated to realising the European bioeconomy potential, turning biological residues and wastes into greener everyday products through innovative technologies and biorefineries.

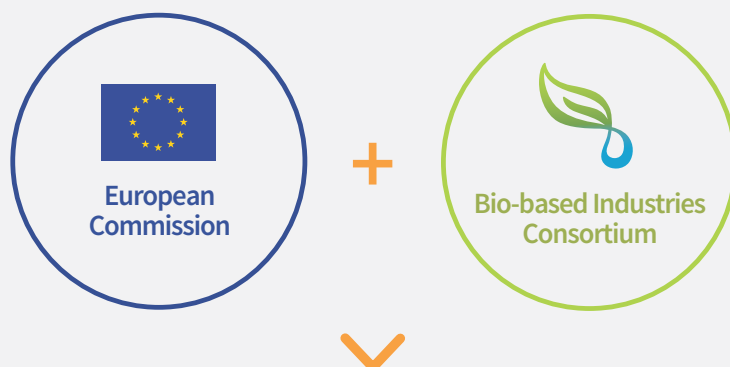
The BBI JU is about connecting key sectors, creating new value chains and producing a range of innovative bio-based products to ultimately create a new bio-based community and economy.

As a public-private partnership, BBI JU provides the stable and long-term framework necessary for the

implementation of the Strategic and Innovation Research Agenda (SIRA). By bringing together key stakeholders from across a diverse range of relevant industrial sectors, including large companies and SMEs, academia, regional and technological clusters, significant private investment is leveraged.

BBI JU will act as a catalyst to enable long-term stability and predictability for a sustainable European bio-based economy sector.

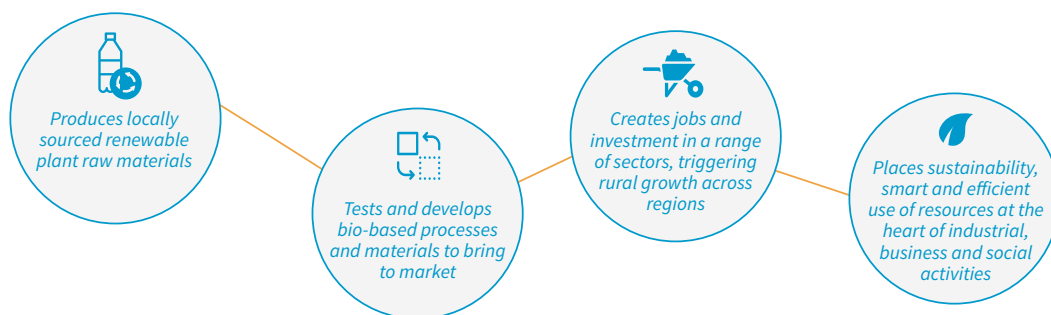
BBI JU GOVERNANCE



1. Common Vision

Our vision is a competitive, innovative and sustainable Europe leading the transition towards a post-petroleum society while decoupling economic growth from resource depletion and negative environmental impacts.

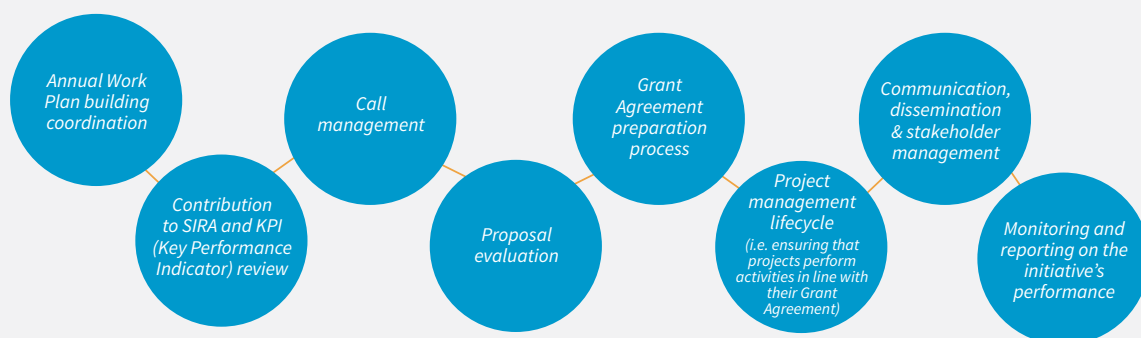
Together with pan-European and cross sector industries/SMEs, research organisations, universities, regions, and countries, we will develop an economy that:



2. Mission

BBI JU's mission is to implement the Strategic Innovation and Research Agenda (SIRA) developed by the Bio-based industry Consortium (BIC), using Horizon 2020 rules and procedures.

BBI JU organises yearly calls for proposals to support research, demonstration and deployment activities enabling the collaboration between stakeholders along entire value chain, covering primary production of biomass, processing industry and final use. BBI JU is specifically in charge of:



3. Objectives

BBI JU's objectives are to contribute to a more resource efficient and sustainable low-carbon economy and to increasing economic growth and employment, in particular in rural areas, by developing sustainable and competitive bio-based industries in Europe. This will be based on advanced biorefineries that source their biomass sustainably and in particular to:



D. HOW WILL BBI JU ACHIEVE ITS OBJECTIVES?

BBI JU is using its funding programme to support research to demonstrate enabling technologies which can produce new chemical building blocks, new bio-based materials, and new consumer products from sustainable sources of European sustainably-sourced biomass. This will reduce the need for raw materials based on non-sustainable inputs such as petroleum and natural gas into the European Economic Area.

1. Calls

BBI JU is responsible for the implementation of open Calls for proposals for research and innovation actions and innovation actions, as well as coordination and support actions, in line with the Horizon 2020 rules for participation.



2. Type of Actions



Research & Innovation Actions (RIA)

Research & Innovation Actions aim to fill the technological gaps within specific value chains, leading to the development of new knowledge or a new technology. Research & Innovation Actions cover actions with a technology readiness level (TRL) from 3 to 5 by the end of the project.



Innovation Actions - Demonstration Actions (IA-DEMO)

Demonstration Actions include the establishment of a demo-scale production facility in Europe, being a new installation, a substantial modification of an existing facility, or the use of existing demo facilities. Demonstration projects aim at reaching a TRL 6-7 by the end of the project so that the scaling-up of the technology and the business cases are demonstrated.



Innovation Actions - Flagship Actions (IA-Flagship)

Flagship Actions aim to support the application/deployment in the market

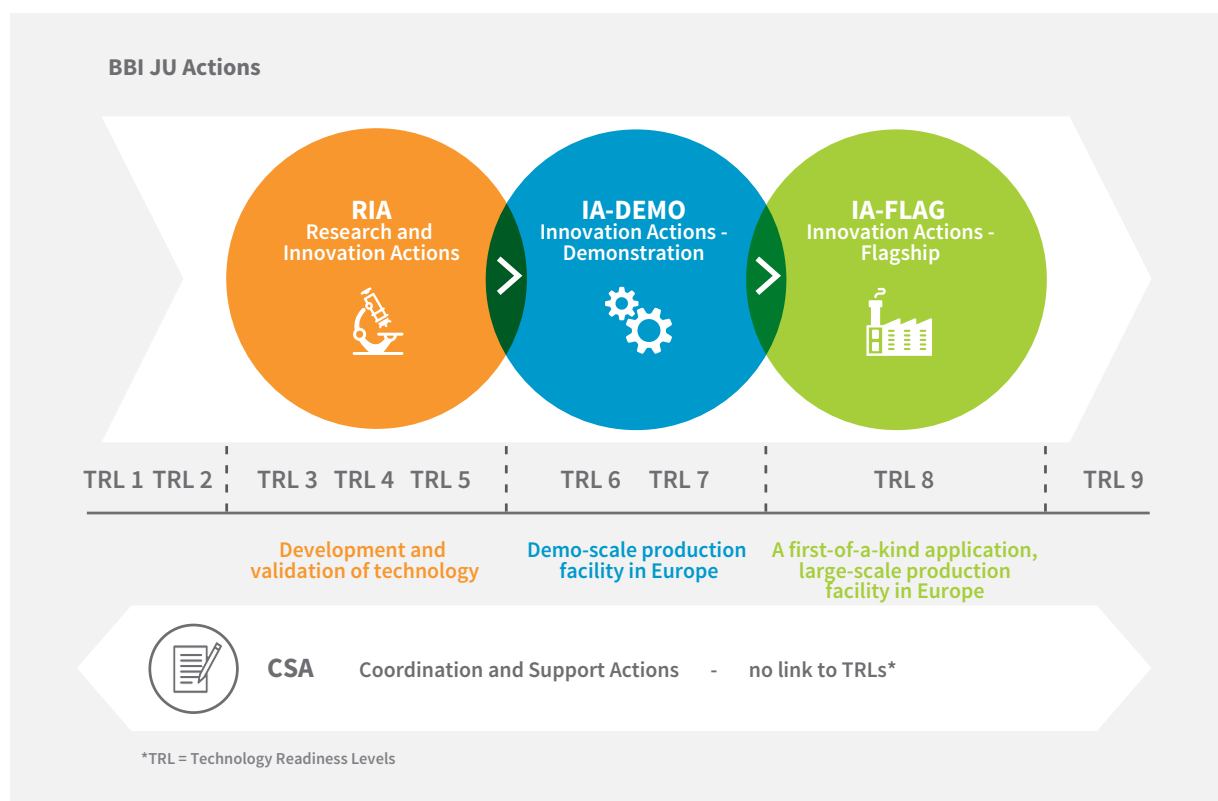
of an innovation that has already been demonstrated but not yet applied/deployed in the market due to market uptake failures and/or barriers. A flagship project should address a complete value chain from procurement, growth, supply of feedstock material to the final product(s). It should establish a large-scale production facility in Europe or a substantial modification of an existing facility, or the reconversion of old or abandoned industrial facilities. Flagship projects should aim at reaching a TRL of 8 by the end of the project.



Coordination And Support Actions (CSA)

Coordination and Support Actions typically address cross-sectorial challenges, and support value chains through knowledge development (studies) and networking. Funding covers e.g. the coordination and networking of research and innovation projects, programmes and policies.

Technology Readiness Levels (TRLs) are a method of measuring the maturity level of the technology development in a project. This method provides a common understanding of technology status and innovation.



Participation & Funding rates per action			
Type of Participant	RIA	IA (DEMO & Flag)	CSA
Large Industries	n/a	70%	n/a
SMEs	100%	70%	100%
Universities & RTOs (non profit, legal entities)	100%	100%	100%
Duration of the project	3-5 years	4-5 years	1-3 years

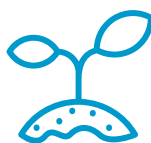
More information about eligible costs is available in the Annual Work Plan and in the guidelines for participants available via the Participant Portal and www.bbi-europe.eu/participate/participate.

3. Widening strategy and SMEs participation – synergies and other initiatives

A broad country participation in the BBI JU programme is desired in order to leverage the full European bio-based potential. As to be expected with a new programme initiative, take up rates have been higher with some Member States and associated countries which were already in positions to take advantage of the programme's early Calls, as compared to certain - e.g. EU-13 - member states. In response to this issue, BBI JU, in collaboration with the SRG and its partners (European Commission and BIC), elaborated a strategy with the objective of widening the participation of Member States, associated countries, regions and stakeholders in the BBI JU programme.

With respect to SMEs, BBI JU will ensure that innovative SMEs are an integral part of the programme, and has a specific approach to ensure support for SMEs concerning critical issues such as financing, market information and forecasts, legal obstacles and international partnering.

BBI JU promotes close synergies with other European funding instruments such as the European Structural and Investment Funds (ESIF) in the context of smart specialisation strategies and the European Fund for Strategic Investments (EFSI). BBI JU funded projects might find synergies with projects funded under other relevant instruments such as ESIF, SPIRE, national funding instruments, etc. or financed via the European Investment Bank. BBI JU works towards promoting these synergies to maximise the impact of the BBI JU funding.



E. EXPECTED RESULTS AND BENEFITS: HOW IS BBI JU MONITORED?

The progress of the BBI JU programme is monitored at four levels:

- ⑦ Efficiency monitoring is based on Horizon 2020 Key Performance Indicators (KPIs) common to all Joint Undertakings and further indicators linked to programme monitoring and cross-cutting issues, like gender dimension, widening participation, SME participation and private sector participation.
- ⑦ Project outcomes are monitored through level 2 KPIs described in the SIRA, measured against yearly project reporting and agreed objectives, in terms of new cooperation, new cross-sectors collaborations, new bio-based building blocks, new consumer products and new large scale biorefineries.
- ⑦ The leverage effect of private financial contribution versus public funding is monitored and audited. As a public-private partnership the objective is to leverage private investment through public funding. For each €1 of public money, it is expected that a minimum of €2.7 of industry financial contribution will follow. The BBI JU reports in-kind contribution in projects (IKOP) and in-kind additional activities (IKAA) on a yearly basis, together with the calculation of the leverage effect.
- ⑦ Monitoring of expected socio-economic impact.

1. Outcome of the projects: 7 KPIs

Project outcomes monitored through seven KPIs described in the SIRA are measured against yearly project reporting in terms of new cooperation, new cross-sectorial collaborations, new bio-based building blocks, new consumer products and new large-scale biorefineries. KPI reporting took place for the first time in 2016, and without any exception all KPIs already showed better results compared to agreed objectives.

Specifically, BBI JU's ongoing projects from Calls 2014 and 2015 reported the following expected outputs:

- ⑦ 146 cross-sector interconnections by 2020 which is already higher than the target of 36 interconnections announced in the SIRA for the seven Calls between 2014 and 2020. This shows the impact of BBI JU in accelerating the cross-sectorial integration along and across value chains.
- ⑦ 82 new or optimised bio-based value chains by 2020 which is already higher than the target of 10 announced in the SIRA for the seven Calls between 2014 and 2020. This confirms the significant structuring effect of the BBI JU programme and the fact that the future of the sector is also about the creation of a network of more new interconnected value chains than initially estimated.
- ⑦ 46 new bio-based building blocks based on biomass from European origin, which is already better than the target of 5 new building blocks announced in the SIRA for the seven Calls between 2014 and 2020.

€2.7 billion

Total investment from industry in activities related to research, development and innovation via BBI JU's different actions.

- ④ 106 new bio-based materials by 2020, which is more than the target of 50 announced in the SIRA for the seven Calls between 2014 and 2020.
- ④ 47 new demonstrated consumer products based on bio-based chemicals by 2020, which is already more than the target of 30 announced in the SIRA for the seven Calls between 2014 and 2020.

This first report also confirms the impact of the initiative in bridging the gap between research and markets.

2. Leveraging private investment

BBI JU activities clearly reflect the ambitions of our industrial partners to contribute to a sustainable society in the longer term. It's clear that this vision cannot be achieved by one single party working alone; it requires commitment from a range of private and public parties, and each needs to play their role.

BBI JU's programme is built around leveraging public funding against private contributions to encourage industry to invest through the BBI JU Programme via in cash & in kind contributions, and by investing in bio-based infrastructure through additional activities.

By solving these infrastructural challenges the BBI JU will encourage industry to take the critical steps to 'de-risk' operations, including the secure availability of local, affordable raw materials, and demonstrating new technologies at an industrial scale.

Collectively this will encourage more bio-based investment in Europe and 'de-risk' the operations for industry in this emerging sector. As an indication of the potential of the bio-based industries investment in Europe the preliminary figures identified by BIC show that their members' estimated pipeline investments across EU regions were € 2.16 billion by January 2015, rising to € 4 billion by January 2016.

3. Socio-economic impact

Everyone benefits from a strong European bio-based industrial sector. Reducing Europe's dependency on fossil-based products will help the European Union meet its climate change targets, and lead to greener and more environmentally-friendly growth. More concretely, bio-based industries are capable of delivering greener everyday products that are comparable or superior to fossil-based products by their superior performance,

advanced properties, availability, and in answering citizens' environmental concerns. These new products should reduce greenhouse gas emissions and reduce Europe's dependency on imported fossil-based raw materials.

Learning to use and re-use precious resources in a sustainable way means BBI JU's projects will develop the potential of currently underused raw materials as an example of circularity.

Local regions will benefit from rural (re)development, which creates new economic activity and jobs, and stimulates wealth creation for those involved. By creating new value chains for primary production actors like farmers, additional business revenues will support the move to a bio-based economy.

European citizens will have access to innovative products which have a neutral or even positive impact on their environment, with the added benefits of securing European jobs and ensuring investment follows knowledge-based capital, developed in Europe and remaining in Europe.

The bio-based industries can address citizens' concerns around food security, bio-diversity and zero waste through optimising land use, deploying underused or unusable land, low maintenance cultivation and recycling, as well as extracting and reusing underutilized raw materials. The bio-based industries are perfect examples of the circular economy in action, meaning sustainable, resource-efficient and largely waste-free utilisation of Europe's renewable raw materials for industrial processing.

As stated in the SIRA, by 2030 it is expected that the Bio-based Industrial sector will generate 700 000 skilled and non-skilled jobs compared to 2012, 80% of them being in rural areas. This will regenerate underdeveloped and/or abandoned regions and will grow and diversify farmers' income. It will enable the EU to reduce its dependency upon the import of strategic raw material like fossil raw materials but also protein for animal feed. It is expected that 30% of fossil based products will be replaced by bio-based ones with the consequence of reducing GHG emissions by 50%.

These expected socio-economic impacts will be monitored through socio-economic and environmental surveys to be launched in 2017.

+700 000

skilled and non-skilled jobs by 2030, 80% in rural areas.

III. CALL CONDITIONS, RULES AND EVALUATION

Please note: the overview of the BBI JU Call 2017 Call conditions, management rules and evaluation texts provided in this document is aimed at providing a quick summary of the 2017 Call for Proposals. For a full description of the guidelines and procedures, please consult the Call 2017 Annual Work Plan and other relevant H2020 Legal Framework documents available on www.bbi-europe.eu/participate/calls-proposals-2017 and www.bbi-europe.eu/about/reference-documents.

The BBI JU operates under the Horizon 2020 rules for participation, set out in Regulation (EU) No 1290/2013 of the European Parliament and of the Council of 11 December 2013.

A. CALL CONDITIONS

Call identifier: H2020-BBI-JTI-2017

Publication date: 11 April 2017

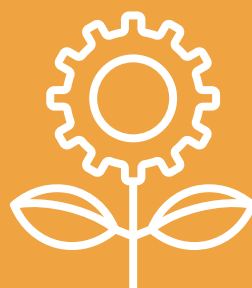
Deadline: 7 September 2017 17:00:00
(Brussels local time) - (single stage call)

Indicative budget:

€ 81 million

Estimated in kind contributions by BIC:

minimum € 40 million



Indicative budget by type of actions	
Type of action	Indicative budget
Research and Innovation Actions	€ 36 000 000
Innovation Actions - Demonstration Actions	€ 22 000 000
Innovation Actions - Flagship Actions	€ 21 000 000
Coordination & support Actions	€ 2 000 000
Total	€ 81 000 000



B. CALL MANAGEMENT RULES

Rules for participation in BBI JU Calls for proposals are the same as in Horizon 2020. This means that BBI JU Calls are open to private for-profit and not-for-profit organisations, including large enterprises as well as SMEs, Research and Technology Organisations, universities, associations, or any legal entity interested in BBI activities.

Everyone can apply and everyone is strongly encouraged to do so. The principles of openness, transparency and excellence prevail, and the three Horizon 2020 criteria for evaluation of excellence, impact and quality & efficiency of implementation apply. The main exception is that large enterprises are not eligible to receive funding for Research and Innovation Actions and Coordination and Support Actions under the BBI JU programme.

C. CALL EVALUATION

The BBI JU programme office is the neutral facilitator for the administration of the BBI JU Call processes and procedures. It selects and appoints independent experts to conduct a fair and transparent evaluation of the proposals received. The evaluation process is monitored by independent external observer(s), who ensure that each evaluation process is conducted in line with these principles.

Proposals are evaluated on their scientific excellence, potential impact, and potential of the proposal to resolve the issues posed in the Call topics. Proposals (excluding CSAs) are also evaluated on their potential socio-economic impact, and all processes and products described in the proposal have to undergo a lifecycle analysis to prove that they will contribute to a lower carbon footprint.

External evaluators are selected based on their expertise, and come from different professional backgrounds including industry (both large and small), academic and research institutions, public bodies, associations, etc.

D. PARTICIPANT PORTAL

The Participant Portal is the single-entry point for all interactions with the EU research and innovation programmes offered by the European Commission, its Executive Agencies, and BBI JU. It offers tools and services that facilitate the monitoring and management of your proposals and projects.

All BBI JU Call information and documents are published centrally on the Participant Portal. These include:

- 🔍 Call description
- 🔍 Topics and submission service
- 🔍 Call documents
- 🔍 FAQs and support

GRANT MANAGEMENT LIFE CYCLE



More information regarding Call Conditions and Rules as well as links to the Participant Portal are available on the BBI JU website under the main heading 'Participate'.





IV. CALL 2017

A. THE NEW STRATEGIC ORIENTATIONS

The 2017 Annual Work Plan (AWP) is the fourth in a total of seven work plans, covering the period between 2014 and 2020. It promotes the critical path needed for accelerating the development of new sustainable value chains, from biomass feedstock suppliers through efficient processing platforms, to their application into bio-based products and services in end-markets.

The AWP 2017 refocuses on the need for better integration of biomass feedstock suppliers at the front end of the value chain to create a demand for biomass feedstock for biorefining processes. Similarly, the AWP 2017 should stimulate new partnerships with end market actors to create a 'market pull' for bio-based products within identified applications.

This trend already started in the AWP 2016, and the AWP 2017 moves away from a strict biomass feedstock 'push' based on the traditional value chains, towards a demand for biomass to enable processing to respond adequately to a 'pull' from different end markets.

In the AWP 2017, the topics are grouped into four strategic orientations reflecting the steps along the critical path:



Feedstock: Fostering a sustainable biomass-feedstock supply to feed both existing and new value chains



Process: Optimising efficient processing for integrated biorefineries



Products: Developing innovative bio-based products for specific market applications



Market uptake: Create and accelerate the market uptake of bio-based products and applications

B. 2017 CALL TOPICS

Please note: the summaries of the BBI JU Call 2017 topic texts described in this document are indicative and solely aimed at providing a quick overview. However, all proposal evaluations will be based on the full topic texts and the relevant Horizon 2020 Legal Framework, as described in the Call 2017 Annual Work Plan available on www.bbi-europe.eu/about/reference-documents

The anticipated total contribution of BBI JU funding shown for each topic is the estimated amount which would allow the specific challenge to be addressed appropriately. Nonetheless, this estimate does not preclude the submission and selection of proposals with another requested contribution.



Strategic Orientation 1 - FEEDSTOCK

Fostering a sustainable biomass-feedstock supply to feed both existing and new value chains

The first strategic orientation aims to expand and diversify the biomass feedstock portfolio through improving utilisation of existing sources and tapping into new sources.

Focus areas for this strategic orientation are:



- ④ Improve the utilisation of existing feedstock sources from the agro-, forest, marine, chemical and waste industry sectors, also in geographical areas with currently low biobased activities. This includes feedstock from the paper and pulp and the food production and processing industries.
- ④ Expand the utilisation of the organic fraction of municipal solid waste (MSW), sludge from urban wastewater treatment, industrial organic waste and residues from perennial crops as a feedstock for the bio-based industry.
- ④ Exploit the opportunities of aquatic biomass as feedstock for the bio-based industry.
- ④ Valorise co-products and residues from bio-based operations, including (existing) biorefineries.





BBI 2017.R1 - Valorisation of gaseous side streams from bio-based operations into chemical building blocks

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Exhaust gases from bio-based operations (containing mainly CO₂) can serve as feedstock for different types of processing into valuable products. Integrating Carbon Capture and Utilisation (CCU) technologies within bio-based processes could minimise process efficiency losses, achieve a significant greenhouse gas emission reduction (potentially leading to negative emissions), and improve process economics by obtaining chemical building blocks for added-value products.

Technologies to convert gaseous feedstock have already reached a pilot and even an industrial scale in the petroleum and petrochemical industries. However, their use in bio-based operations still requires further research for successful replication and scale-up.

The specific challenge is to achieve sustainable and scaleable conversion technologies for gaseous feedstock from bio-based operations into added-value products.



BBI 2017.D1 - Valorisation of liquid and solid side streams from bio-based operations into high added-value products to create new feedstock for bio-based products

BBI JU FUNDING : max. € 7 million / project

TYPE OF ACTION : Innovation Action - Demonstration

Fully developed and sustainable biorefineries at an industrial scale require optimal valorisation of side streams generated during the different process steps. However, current practice is to divert these streams to low-value applications such as energy and fuels. Valorising these streams for higher-value applications requires further downstream processing steps. In some cases, within a cascading set-up of biorefining operations, the subsequent side streams could have a complex composition that makes it increasingly difficult to process them into valuable products.

The better this cascading operational set-up is at valorising subsequent liquid and solid side streams, the higher its competitiveness and sustainability will be. Resolving these challenges of downstream valorisation will potentially result in additional and new supplies of biomass feedstock for conversion into chemicals and materials.

The specific challenge is to valorise liquid and solid biorefinery side streams with a composition that impedes their further processing into high added-value products beyond the state-of-the-art.



BBI 2017.D2 - Integrated multi-valorisation of algae into advanced materials and high added-value additives

BBI JU FUNDING : max. € 7 million / project

TYPE OF ACTION : Innovation Action - Demonstration

In a context of growing demand for resources, sustainably capturing the potential of the seas, oceans and inland waters is critical for Europe. Micro- and macro-algae represent an additional source of biomass that can be used for various applications. They also have the advantage of a low land requirement.

Different cultivation systems to grow algae include open-sea, shallow-water, coastal areas and inland waters. There are specific systems for micro-algae like open ponds, photoreactors or bioreactors. Each system requires specific adaptation to its environment to maximise the biomass output, while minimising environmental impacts.

The specific challenge is to set up and operate a value chain for (micro- or macro-) algae production and logistics (harvest, transportation, storage) that can be used for their multi-valorisation into added-value chemicals and materials, through a cascading approach where applicable.



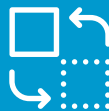
Strategic Orientation 2 - PROCESS

Optimising efficient processing for integrated biorefineries

The second strategic orientation aims to improve efficiency and sustainability of 'biorefining biomass into compounds for chemicals (including food and feed ingredients) and materials' and to develop new, breakthrough processes.

Focus areas for this strategic orientation are:

- ④ Improve the effectiveness of pre-treatment steps.
- ④ Further increase the efficiency of chemo- and bio-catalysis targeting better product quality, higher selectivity, higher output, lower cost and/or lower energy consumption.





BBI 2017.R2 - Innovative technologies for the pre-treatment and separation of lignocellulosic feedstock and complex composition streams into valuable fractions while maintaining key characteristics

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Pre-treatment of biomass is a key step in implementing an economically viable biorefinery. The conventional methods of biomass pre-treatment mainly apply harsh conditions, consume much energy, require significant capital investments and generate inhibitors to the downstream biological processes. These methods can also harm many characteristics of naturally occurring polymers, often hindering their use for a large variety of applications.

The ideal pre-treatment should lead to a higher 'usability' of the various biopolymers in the biomass feedstock in the subsequent steps, generate low amounts of inhibitory compounds, and limit biomass losses. This pre-treatment technology should also have a high efficiency when applied to different biomasses, require less energy and resources, have a low environmental impact and be economically viable.

The specific challenge is to develop pre-treatment technologies to separate and extract naturally occurring polymers and other useful fractions (for example extractives) of lignocellulosic and mixed biomass streams with complex composition, while keeping their structure essentially intact.



BBI 2017.R3 - Exploiting extremophiles and extremozymes to broaden the processing conditions to convert biomass into high-value building blocks

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Extremophilic microorganisms can survive and perform under extreme conditions of temperature (thermophiles and psychrophiles), pressure (barophiles),

pH (acidophiles, alkalophiles), salinity (halophiles) or a combination of these (complex extremophiles). The potential role of this kind of microorganisms in biotechnological and industrial applications is increasingly attracting attention.

The utilisation of extremophilic microorganisms and/or of related extremophilic enzymes can support a significant increase in process performance by widening operational conditions and developing new processes and/or products. Moreover, it can enable the treatment of (residual) streams featuring extreme conditions that currently cannot be processed or require expensive pre-treatments.

The specific challenge is to develop sustainable processes in a wider range of operating conditions (pressure, temperature, acidity, etc.) by using extremophilic microorganisms and/or related enzymes to convert biomass into valuable components at high process yields.



BBI 2017.F1 - Integrated 'zero waste' biorefinery utilising all fractions of the feedstock for production of chemicals and materials

BBI JU FUNDING : max. € 21 million / project

TYPE OF ACTION : Innovation Action - Flagship

Biorefineries converting feedstock into chemicals and materials will become the backbone of the future production of sustainable products. Such facilities combine several fundamental process steps, including the appropriate pre-treatment, conversion and downstream processes.

One challenge has always been the efficient integration of all process steps. Another significant challenge is to convert all fractions of the feedstock used in a biorefinery into chemicals and materials with the highest added value possible, to improve the profitability of the biorefinery.

The specific challenge is to utilise all fractions of the biomass feedstock to produce chemicals and materials, targeting 'zero waste' and a minimum diversion of carbon content streams to low-value uses.



Strategic Orientation 3 - PRODUCTS

Developing innovative bio-based products for specific market applications

The third strategic orientation aims to increase the applicability of high value-added bio-based products and avoid price competition with fossil-based products by pursuing advanced functionalities and unmatched performance.

Focus areas for this strategic orientation are:



- ④ Bio-based materials that outperform fossil-based materials in comparable applications in the packaging, construction, agriculture, transportation, personal care and hygiene sectors.
- ④ Breakthrough bio-based chemicals that have no fossil-based counterpart or industrial scale production.
- ④ New bio-based chemicals and materials for high-value applications meeting all safety and regulatory requirements.
- ④ Proteins and bio-based additives from plants, residual streams in the food production and other (waste) streams that are rich in protein and high-value molecules.
- ④ Bio-based plastics that are biodegradable/compostable or suitable for recycling.





BBI 2017.R4 - Proteins and other bioactive ingredients from side streams and residues

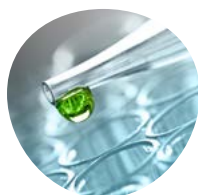
BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Proteins and bioactive compounds, such as carotenoids, polyphenols, lipid compounds and prebiotics, have extensive use as ingredients and additives in the food, feed, flavouring, fragrance, cosmetics, chemicals, textile, nutraceutical and pharmaceutical industries. The projected global demand for proteins and bioactive compounds in 2030 exceeds current production capacities.

Residual biomass and side streams are potentially interesting sources of these ingredients. As proteins and bioactive ingredients have a typically high value per volume unit, recovering and commercialising them could achieve a sizeable economic benefit for the whole value chain. However, exploitation of these sources for obtaining proteins and bioactive ingredients is still at an early stage.

The specific challenge is to develop sustainable technologies to recover proteins and bioactive ingredients from feedstock or to convert residual biomass and industry side streams into ingredients for food, feed and other high-value markets.



BBI 2017.R5 - Novel bio-based chemical precursors to improve the performance of mass consumption products

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Cost considerations are currently the prime hindrance to market penetration of bio-based chemical products. The maturity of the petrochemical industry makes purely cost-based competition unrealistic for most bio-based alternatives. Moreover, even the availability of bio-based products with equivalent performance and at the same cost would not per se be sufficient to drive acceptance and utilisation by consumers and brand owners.

A better performance at an acceptable premium price would increase the marketability of bio-based products for mass consumption. Bio-based feedstock gives the opportunity to produce chemical precursors that could outperform their fossil-based counterparts.

The specific challenge is to develop novel bio-based chemical precursors for mass consumption products that feature, at an acceptable cost, new functionalities or better performance than their fossil-based counterparts.



BBI 2017.R6 - Competitive biodegradable, compostable and/or recyclable bio-based plastics for a sustainable end-of-life phase

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Plastics are an essential part of modern society, with applications in almost every product range. Currently only a small part of the plastics produced are bio-based, as bio-based polymers usually bear a higher cost than the competing fossil-based alternatives. Also, current bio-based plastics on the market do not offer a large enough functional improvement to justify a premium price.

Biodegradability, compostability and recyclability of bio-based plastics may offer a significant added value in terms of sustainability. However, associated performance and costs still hinder the full marketability and competitiveness of biodegradable, compostable or recyclable bio-based plastics compared with their fossil-based counterparts.

The specific challenge is to develop biodegradable, compostable or recyclable bio-based polymers that can compete with fossil-based counterparts in terms of price, performance and environmental sustainability on a cradle-to-cradle basis.



BBI 2017.R7 – Novel secondary bio-based chemicals without significant fossil-based counterparts but with high application potential

BBI JU FUNDING : max. € 2-5 million / project

TYPE OF ACTION : Research and Innovation Action

Products derived from petrochemical feedstock have extensive downstream production routes, developed markets and an efficient infrastructure. Therefore, making the 'same' chemicals from biomass and 'blending' them into these existing value chains (known as 'drop-in' chemicals) is the quickest and most cost-effective way to implement bio-based value chains in the short term. However, there are some bio-based molecules without a 'significant' fossil counterpart that industry and researchers regard as promising in the medium to long term, due to their special functional properties or possible derivatives.

Like petrochemical building blocks such as benzene and p-xylene, these bio-based building blocks (for example levulinic acid, muconic acid and hydroxymethylfurfuraldehyde) do not have direct applications, but are the basis for a wealth of other chemicals that can bring renewability and sustainability in many markets. Technically, the production of those 'primary' bio-based building blocks is in many cases already at TRL 4-5 (see topic BBI 2017.D3). However, their conversion into 'secondary' products is often still at TRL 2-3, as there is a low level of insight into their applicability in existing fossil-based value chains.

The specific challenge is to validate at lab or pilot level the production routes from primary bio-based building blocks to breakthrough bio-based chemicals with no significant fossil counterpart, and to show a proof of principle for the added value they bring to the market.



BBI 2017.D3 – Breakthrough primary bio-based chemicals without significant fossil-based counterparts but with high marketability

BBI JU FUNDING : max. € 7 million / project

TYPE OF ACTION : Innovation Action - Demonstration

This topic starts from the same realisation as topic BBI 2017.F7, specifically that products derived from petrochemical feedstock have extensive downstream production routes, developed markets and an efficient infrastructure, and that using bio-based chemicals as 'drop-in' chemicals is the quickest and most cost-effective way to implement bio-based value chains in the short term.

While the production processes for bio-based chemicals with no significant fossil-based counterpart could be made more economical and sustainable, there is yet

no infrastructure for their further use, making them less attractive for now. Technically, the production of 'primary' bio-based chemicals like levulinic acid and muconic acid is in many cases already at TRL 4-5, as are some of their 'secondary' follow-up products. Industry now needs to demonstrate production routes for these chemicals at TRL 6-7.

The specific challenge is to demonstrate the technology of breakthrough bio-based chemicals with no significant fossil-based counterpart in a full demo-plant and to demonstrate its potential in at least one application at pre-commercial level.



BBI 2017.D4 - Innovative bio-based fertilising products to increase the sustainability of fertilising practices in agriculture

BBI JU FUNDING : max. € 7 million / project

TYPE OF ACTION : Innovation Action - Demonstration

Farm commodity products such as fertilisers need to be made more sustainable and resource-efficient. This will help secure European arable land productivity while also boosting sustainability and resource efficiency of the farming practices. For many years, mineral fertilisers have been used to intensify crop production to meet the food demand of a growing population.

A new EU legislative proposal imposes safety requirements to all fertilising products and requires, for instance, coating materials used in certain controlled-release fertilisers to be bio-degradable. The new EU regulation on fertilising products addresses the degradability of the coatings of Controlled-Release Fertilisers (CRFs) by stipulating a 90% conversion of the organic carbon into CO₂ in maximum 24 months.

Two specific challenges are included in this topic:

- finding coating polymers that are compliant with the biodegradability parameter in compliance with EU law, while achieving the controlled release of nutrients in the best possible manner.
- demonstrating the use of advanced bio-based fertilising products that meet the new EU regulations and that increase the sustainability of fertilising practices and the productivity of the agriculture in Europe. These could be fertilisers from bio-based streams, fully biodegradable coatings for CRFs or the smart use of plant biostimulants, including microorganisms.



BBI 2017.D5 - Advanced bio-based fibres and materials for large-volume applications

BBI JU FUNDING : max. € 7 million / project

TYPE OF ACTION : Innovation Action - Demonstration

Current large-volume products for market applications include fossil-based or bio-based products, and their production often occurs at relatively low sustainability levels. Due to the high market share and strategic role associated with these products, industry is increasingly pursuing technical solutions aimed at improving sustainability during their whole life cycle including end-of-life. Also, consumers and brand owners are pushing to tackle safety and environmental issues related to several consumer goods.

Sustainably produced bio-based large-volume products for a variety of applications would be one of the key drivers for accelerating and performing an effective transition towards a low-carbon society. However, some barriers still hinder this process, mainly because of issues over the cost, performance and social and environmental sustainability of the bio-based value chains and related products.

The specific challenge is to produce bio-based fibres and other bio-based materials able to efficiently compete with current benchmark counterparts for large-volume applications through better technical performance, lower cost and higher sustainability levels.



BBI 2017.F2 - Large-scale production of proteins for food and feed applications from alternative, sustainable sources

BBI JU FUNDING : max. € 21 million / project

TYPE OF ACTION : Innovation Action - Flagship

The worldwide demand for protein is progressively expanding due to strong growth in the world's population. Improvements in the standard of living in large parts of the world are adding to the protein demand. Forecasts to 2050 show that current protein availability will not be sufficient to meet protein demand for food purposes.

European crops, together with residues and co-products from primary biomass cultivation, are valuable sources of proteins. Residues from animal processing, fisheries, aquaculture and algae industries also offer a potential, albeit currently underexploited, source of proteins. The bio-based industry could help to expand the production of protein-rich ingredients by valorising existing alternative sources from food/feed value chains and by taking full advantage of the successes of earlier (and ongoing) R&D and small-scale industrial operations.

The specific challenge is to demonstrate a large-scale, first-of-its-kind bio-based value chain producing sustainable, safe proteins sourced from alternative, sustainable sources (dedicated crops as well as residues), through a cascading approach where applicable.





Strategic Orientation 4 - MARKET UPTAKE

Creating and accelerating the market uptake of bio-based products and applications

The fourth strategic orientation aims to respond to the concerns of society about bio-based products by engaging in dialogue with societal and consumer groups on benefits and how potential risks are addressed and managed.

Focus areas for this strategic orientation are:



- ④ Identify and propose solutions to remove (potential) hurdles to the increased use of the organic fraction of waste (specific co-products, side streams and residues from industrial and urban sources) for the bio-based industry.
- ④ Increase and improve communication and dialogue with all stakeholders on the benefits and possible risks of new bio-based products. These include materials for applications with food contact (such as nutraceuticals and packaging materials), in the pharmaceutical sector, and possibly also in the construction, agriculture, transportation, personal care and hygiene sectors.
- ④ Establish cooperation and partnerships with brand owners and consumer representatives to improve market access of sustainable bio-based products.





BBI 2017.S1 - Establish cooperation and partnership with brand owners and consumer representatives to improve the market access of sustainable bio-based products

BBI JU FUNDING : max. € 1 million / project

TYPE OF ACTION : Coordination & Support Action

The implementation of bioeconomy solutions and related value chains on a large scale depends heavily on the market acceptance of bio-based products. The fact that the price of bio-based products generally tends to be higher than the relevant fossil-based counterparts is still hindering the widespread take-up of these products. In addition to developing more features and better performance for the bio-based products and justifying a potentially premium price, the bio-based industry also needs to further increase consumers' and brand owners' awareness of the sustainability of bio-based products.

This topic focuses on involving brand owners and consumer representatives in the 'targeting' of bio-based value chains. The aim is to deliver products for relevant and necessary applications in consumer markets.

The specific challenge is to provide routes and means to increase cooperation and partnership between the different actors to achieve the market uptake of bio-based products. Industry should cooperate with brand owners and consumer representatives since they have a strategic role in better understanding market behaviours and needs.



BBI 2017.S2 - Identify opportunities for ICT to increase the efficiency of biomass supply chains for the bio-based industry

BBI JU FUNDING : max. € 1 million / project

TYPE OF ACTION : Coordination & Support Action

The implementation of bio-based value chains on large scale, fed by a diversified feedstock portfolio, requires effective supply chains able to reduce biomass losses, limit costs and enhance the overall sustainability of the value chains.

Biomass suppliers and technology providers need to jointly provide significant improvements in logistical issues such as biomass supply, collection, storage and the preparatory steps towards biorefining. Introducing and/or increasing the application of Information and Communications Technology (ICT) and tools could provide the desired efficiency improvements. Applying ICT will also provide links with 'the internet of things' and Industry 4.0.

The specific challenge is to identify opportunities for the introduction of ICT to increase the efficiency and sustainability of biomass supply chains for the bio-based industry. Sustainable feedstock supply chains will permit the creation of sustainable bio-based value chains, which could serve as engines for the economic development of rural areas.





V. SYNERGIES WITH BBI JU

BioHorizon (NCPs)



National Contact Points for H2020 SC2 and KET-Biotechnology

(Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research, Bioeconomy and Biotechnology)

BioHorizon runs for four years (March 2015 – February 2019). The project consortium comprises 15 NCP institutions, under the coordination of the Institute of Fundamental Technological Research Polish Academy of Sciences (IPPT PAN POLAND).

The overall idea behind the BioHorizon project is to establish a pan-European learning platform for the transnational activities engaged in by SC2 and KET Biotechnology NCPs, and to create a network of NCPs capable of exploiting synergies with respect to distributed knowledge and collective development of training sessions and materials. This well established, active network will allow NCPs to learn from one another, increasing mutual understanding of the different approaches applied and requirements encountered in the daily work of an NCP.

The network will develop high quality services provided in turn to beneficiaries of funding under SC2 and KET-Biotechnology, namely researchers, representatives of industry and SMEs, and other stakeholders. The assistance provided by BioHorizon will surpass typical NCP services, with the network emphasising the importance of the complex and multidisciplinary aspects of Horizon 2020, including widening participation throughout the EU 28 and involving new stakeholders.

The members of the network require specific knowledge of a variety of aspects related to European research and innovation policy, such as the common agricultural policy (CAP), marine policy, the European Innovation Partnership (EIP), Joint Technology Initiatives (JTIs), the Standing Committee on Agricultural Research (SCAR), etc.

For further information: www.ncp-biohorizon.net

EASME (Executive Agency for SMEs)



The Executive Agency for Small and Medium-sized Enterprises (EASME) is an Executive Agency of the European Commission located in Brussels.

It is responsible for managing specific programmes in the fields of business support targeting SMEs but also energy, environment and maritime research & innovation. Its goal is to help create a more competitive and resource-efficient European economy based on knowledge and innovation.

The original mandate of the Agency was extended several times since its foundation in 2003 and from energy it evolved to cross-cutting support to the innovation, competitiveness and internationalization of European SMEs. As a consequence, the original name of the agency changed to reflect the evolving mandate and from the original name Intelligent Energy Executive Agency (IEEA), it was renamed the European Agency for Competitiveness and Innovation (EACI) in 2007 and finally becoming EASME in 2014.

The Project

Today the Agency is responsible for the implementation of the following programmes:

- ④ Most of COSME, the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (SMEs), including Enterprise Europe Network (EEN) and Your Europe Business;
- ④ Part of Horizon 2020, the EU Framework Programme for Research and Innovation, and in particular:
 - ④ Innovation in SMEs (including the European IPR Helpdesks,
 - ④ INNOVACESS and Peer learning for innovation agencies)
 - ④ The SME instrument
 - ④ Fast Track to Innovation (FTI) Pilot
 - ④ INNOSUP including the SME Innovation Associate pilot action
 - ④ The Sustainable Industry Low Carbon Scheme (SILC II)
 - ④ Part of the Leadership in Enabling and Industrial Technologies
 - ④ The Energy Efficiency part of the Societal Challenge 'Secure, Clean and Efficient Energy';
- ④ The Societal Challenge 'Climate action, Environment, Resource Efficiency and Raw Materials'
- ④ Part of the EU programme for the Environment and Climate action (LIFE)
- ④ Part of the European Maritime and Fisheries Fund (EMFF)
- ④ The legacy of the Intelligent Energy – Europe programme and the Eco-innovation initiative

The EASME also organises the EU Sustainable Energy Week (EUSEW).

For further information: www.ec.europa.eu/easme





SPIRE (Sustainable Process Industry through Resource and Energy Efficiency)

SPIRE Sustainable Process Industry through Resource and Energy Efficiency

Launched in 2013, the SPIRE (Sustainable Process Industry through Resource and Energy Efficiency) Public Private Partnership is a cross-sectorial initiative involving the eight main players in the EU's process industries: chemicals, steel, engineering, minerals, non-ferrous metals, cement, ceramics and water.

SPIRE Targets

SPIRE aims at realising two key resource and energy efficiency targets within a time horizon of 2030:

- ④ A reduction in fossil energy intensity of up to 30% from current levels through a combination of, for example, cogeneration-heat-power, process intensification, introduction of novel energy-saving processes, energy recovery, and progressive introduction of alter-native (renewable) energy sources within the process cycle;
- ④ Up to 20% reduction in non-renewable, primary raw material intensity compared to current levels, by increasing chemical and physi-cal transformation yields and/ or using secondary (through optimised recycling processes) and renewable raw materials. This may require more sophisticated and more processed raw materials from the raw materials industries.

SPIRE Key Components

SPIRE will implement its research and innovation roadmap through six Key Components:

- ④ **Feed:** Increased energy and resource efficiency through better preparation and product mix of raw materials, higher levels of alter-native and renewable feedstock (including waste and waste water), as well as better managing increased quality variations in material resources.
- ④ **Process:** Solutions for more efficient processing and energy systems for the process industry, including industrial symbiosis. Applications: New processes to produce materials for market applications that boost energy and resource efficiency up and down the value chain.
- ④ **Waste2Resource:** Valorisation and re-use of waste streams within and across sectors, including recycling of post-consumer waste streams and new business models for eco-innovation.
- ④ **Horizontal:** underpinning the accelerated deployment of the R&D&I opportunities identified within SPIRE through sustainability eva-luation tools and skills and education programmes as well as enhance the sharing of knowledge and best practices.
- ④ **Outreach:** Reach out to the process industry, policy makers and citizens to support the realisation of impact through awareness, stimulating societal responsible behaviour.

More than 50 projects related to the first calls cover different focus areas including integrated process control, flexible feedstock, improved downstream processing of mixtures, cross-sectorial sustainability assessment, process intensification, energy and resource management systems, and more.

For further information: www.spire2030.eu

Climate-KIC



Climate-KIC is the European Union's largest public-private partnership tackling climate change. It facilitates transformative climate innovation by bringing together business, academia, research and government to accelerate the transition to a zero-carbon economy.

Established in 2010, Climate-KIC is supported by the European Institute of Innovation and Technology (EIT). Climate-KIC operates in 24 countries across Europe in addition to the independent Climate-KIC Australia, launched in 2016 and based on the successful European model.

Climate-KIC's work on bio-based solutions is delivered primarily through two of its four thematic priorities; these being the Sustainable Land Use (SLU) and Sustainable Production System (SPS) themes. The SLU theme paves the way for efficient, low carbon agriculture, advancing the bio-economy, and building resilience into food and forest value chains. The SPS theme lays the foundations for carbon-neutral, resource-efficient manufacturing through circular feedstocks, the redesign of production systems and cross-industry innovation.

Past and present projects by Climate-KIC that are aimed at sustainably transforming natural resources into bio-based products, materials and fuels include:

SimGas

SimGas produces and installs domestic biogas systems that are integrated into farms and rural households in developing countries, using livestock manure as the main input. In a country heavily reliant on wood for fuel, the aim is to make biogas systems an affordable alternative and help prevent deforestation. Slurry, a by-product of biogas production, is also a high-quality fertiliser that can be used in crop cultivation.

Microalgae Biorefinery 2.0

Microalgae Biorefinery 2.0 (MAB 2.0) is a pilot system, working with Budapest Sewage Works, integrating algae production into waste water treatment plants. This produces many benefits, including the capture of CO₂ produced on site, and the removal of nutrients to below the legal threshold needed for a natural discharge of waste water. In addition MAB 2.0 is exploring alternative markets for more sustainable algae in adhesives, cosmetics and bioplastics.

Renjet

Renjet is an innovation consortium developing a long-term strategy to address the renewable jet fuel barriers to adoption of price, production, value chains and deployment. The consortium has already taken its first steps to linking previously disparate actors, de-risking the production technology pathways and devising a renewables road map for the aviation industry.

For further information: www.climate-kic.org

EIP-AGRI (European Innovation Partnership for Agricultural productivity and Sustainability)



The EIP-AGRI is a new approach to boosting innovation in European agriculture and forestry. Launched in 2013, the EIP-AGRI aims to build bridges between science and practice, in particular through practical projects, carried out by Operational Groups, and through networking activities.

The concept of European Innovation Partnerships ("EIP"), as set out in the 2010 Commission Communication 'Innovation Union', encourages collaborative efforts in order to achieve synergies and EU value added. The EIP-AGRI is based on existing policies, most notably the Rural Development policy and the EU research and innovation policy Horizon 2020.

The success of the EIP-AGRI relies on people across the whole supply chain and from the scientific community working together and sharing their ideas and experiences in order to develop innovative solutions and research results ready for application.

The EIP-AGRI therefore focuses on forming partnerships, using bottom-up approaches and linking all actors together in a network.

A service point for the EIP-AGRI

The European Commission established the EIPAGRI Service Point in April 2013 to connect people and facilitate innovation and knowledge-exchange in agriculture. Here at the EIP-AGRI Service Point, we act as a mediator within the EIP-AGRI network, enhancing communication and cooperation between all innovation actors: farmers, researchers, advisors, businesses, environmental groups, consumer interest groups and other NGOs.

We do so by providing a number of services to innovation actors.

The dream? When a Romanian expert comes up with a solution that could help a Spanish farmer, we want to get this information to him as soon as possible.

Or when a Finnish advisor is looking for a solution to a problem many farmers in her district are facing, she can find the solution developed by an Estonian innovation project on the EIP-AGRI website.

For further information: www.eip-agri.eu



FACCE Surplus (Sustainable and Resilient agriculture for food and non-food systems)



FACCE SURPLUS
SUSTAINABLE AND RESILIENT AGRICULTURE
FOR FOOD AND NON-FOOD SYSTEMS

FACCE SURPLUS (Sustainable and Resilient agriculture for food and non-food systems) is an ERA-NET Cofund, formed in collaboration between the European Commission and a partnership of 15 countries in the frame of the Joint Programming Initiative on Agriculture, Food Security and Climate Change (FACCE-JPI).

FACCE SURPLUS is committed to improve collaboration across the European Research Area in the range of diverse, but integrated, food and non-food biomass production and transformation systems, including biorefining. Among other things, the ERA-NET Cofund aims to support innovation and value creation from biomass and biorefineries and organises joint calls between funding bodies from Member States and the European Commission.

It contributes to the strategic objective of FACCE-JPI to build a European Research Area in the domain of agriculture, food security and climate change as well as to the scientific objective of enhancing resilience in agricultural production systems. In turn, this will contribute to tackling the Grand Challenge of ensuring food security and agricultural production in the face of climate change.

FACCE SURPLUS First call

The first call for transnational research projects was launched in January 2015 with an indicative total available budget amounted to € 17M. In November 2015, 14 projects were selected to receive funding in the frame of FACCE SURPLUS. The projects were kicked off at Aarhus University, Denmark, in September 2016. The event was part of the International Biorefining Seminar and Partnering Workshop which aimed at facilitating European consortia establishment in the field of biorefining and food production. The funded projects are now supported by FACCE SURPLUS in particular in terms of communication, dissemination and valorization of results. More details on these projects can be viewed under facceturplus.org/research-projects/

FACCE SURPLUS Second call

Recognising that other initiatives are considering the scope and application of large-scale biorefineries in the EU context, the second call of FACCE SURPLUS focuses on the small-scale biorefinery concepts and their potential role in enhancing the sustainability and productivity of EU agriculture, as well as their scope to benefit the rural economy. 10 partners joined this call for transnational research projects with an indicative budget of € 6,25M. The deadline for submission of pre-proposals was March 7, 2017, while the deadline for full proposal submission is July 17, 2017.

For further information: www.facceturplus.org and www.faccejpi.com

EEN (Enterprise Europe Network) - Sector Group Environment



Launched in 2008, the Enterprise Europe Network (EEN) is an initiative of the European Commission, designed to help SMEs innovate and succeed by providing a local gateway to global business opportunities.

- 🕒 **Mission:** to help European businesses grow and innovate by providing the local support and advice they need to nurture their international ambitions, find business partners and access funding and finance.
- 🕒 **Vision:** to help more of Europe's ambitious, growth-oriented SMEs to succeed in bringing innovation to the marketplace on an international scale.

The Enterprise Europe Network brings together around 600 business support organisations from more than 65 countries. The member organisations include chambers of commerce and industry, technology centres, research institutes and development agencies. Enterprise Europe Network local branches offer the following free of charge services:

- 🕒 Innovation support services
- 🕒 Cross-border partnering activities for business cooperation, technology transfer or Research & Innovation projects
- 🕒 Access to finance
- 🕒 Advice on EU law and standards
- 🕒 Support on access to EU research funding
- 🕒 Advice on Intellectual Property Rights (IPRs)
- 🕒 Speak up on EU law

Learn more on EEN services and find out your local contact point:
www.een.ec.europa.eu

Sector Group Environment

The Sector Group Environment of the Enterprise Europe Network gathers approximately 50 advisors that team up to provide green businesses with customized support. They meet twice a year to exchange on the environmental-related challenges faced by companies and to accelerate business, technology and research cooperation in this key growing sector.

The sector group Environment organize brokerage events, company missions, conferences and workshops specifically targeting the environmental sector. These activities bring together enterprises, science and technology institutes and public bodies active in the environmental field.

For further information: www.een.ec.europa.eu/about/sector-groups/environment



EuropaBio (European Association for Bioindustries)



EuropaBio, the European Association for Bioindustries, promotes an innovative and dynamic European biotechnology industry. EuropaBio and its members are committed to the socially responsible use of biotechnology to improve quality of life, to prevent, diagnose, treat and cure diseases, to improve the quality and quantity of food and feedstuffs and to move towards a biobased and zero-waste economy. EuropaBio represents 80 corporate and associate members and bio-regions, and 17 national biotechnology associations which in turn represent over 1800 biotech SMEs.

The leading voice for biotech in Europe

No other industrial sector enhances quality of life, knowledge, innovation, productivity and environmental protection like biotechnology, while also being beneficial for the economy. From new drugs that can address unmet medical needs and fight epidemics and rare diseases, to industrial processes that use renewable feed stocks instead of crude oil, to drought-resistant crops that allow farmers around the world to feed more people under ever-harsher climatic conditions, promoting and investing in biotech pays economic, social and environmental dividends.

For such reasons biotechnology has been a cornerstone of Europe's competitiveness in terms of research and innovation as well as in terms of industrial growth, number of jobs and new companies created in Member States for numerous years. EuropaBio's purpose is to ensure this will continue, and that Europe not only remains the world's biotech research hub, but that European citizens also reap the benefits of innovative biotech products derived from that research.

Driving and sharing industry insights

What is required firstly to realise biotech's potential for and in Europe is sound policy that supports innovation and entrepreneurial risk-taking, together with regulatory structures that reward long-term investment in research and development over short-term gain and quick consumption. To support such policies and structures, EuropaBio set out key recommendations around research and development, assessment and approval, and market access in the industry's 2014-2019 Manifesto.

Fostering biotech awareness

Secondly, familiarisation of all parts of society with biotech and how it is helping to create a healthier, greener, more productive, and more sustainable economy, is paramount. To this end, EuropaBio showcases these benefits through a wide range of activities and events in the three specific sectors (healthcare, agriculture, and industry) as well as a series of cross-sectoral initiatives such as:

- 🔗 The European Biotech Week (www.biotechweek.org)
- 🔗 The Most Innovative European Biotech SME Awards (www.biotechmeawards.eu)
- 🔗 The European Forum on Industrial Biotechnology and the Biobased Economy (www.efibforum.com)
- 🔗 The Benefits of Biotechnology Event (www.biotechbenefits.eu)

For further information: www.europabio.org

COPA-COGECA



COPA - Committee of Professional Agricultural Organisations in the European Union and

COGECA - General Confederation of Agricultural Cooperatives in the European Union

The voice of 23 million European farmers and their cooperatives

Copa and Cogeca are the European umbrella organisations representing the united voice of farmers and agri-cooperatives in the EU. Together, Copa and Cogeca ensure that EU agriculture is sustainable, innovative and competitive, guaranteeing food security to half a billion people throughout Europe. Copa represents over 23 million farmers and their family members whilst Cogeca represents the interests of 22,000 agricultural cooperatives. Jointly, they have almost 70 member organisations from the EU Member States and 34 Partner Organisations.

Mission

Our policy advisers and staff members work together with our members in order to keep EU farmers well informed and their positions heard and well represented in Brussels and beyond.

Copa and Cogeca aim to be a front runner in the discussions with EU decision-makers, putting all its in-house and member expertise into achieving farmer and agri-cooperatives friendly policies, therefore also actively engaging in talks with our respective counterparts across the world and other stakeholders.

Research and innovation in agriculture have always been and will remain high on our agenda and promoting high-quality EU agriculture products also remains one of Copa and Cogeca's top priorities.

How does Copa and Cogeca work?

The joint Copa and Cogeca Secretariat is headed by Copa-Cogeca Secretary-General Pekka Pesonen (FI). There are 50 staff in the Brussels office operating in 6 working languages (EN, FR, ES, DE, IT, PL) and working in four teams, among which the Secretary General's team; Commodities and Trade and General Affairs.

Copa and Cogeca has 45 Working Parties, dealing with market and policy developments and covering 25 agricultural sectors. The Working Parties prepare joint Copa and Cogeca positions on a wide range of, often very technical and key topics, such as research & innovation, rural development, bioeconomy, environment (climate change, soil, water, waste...), organic farming, animal health & welfare or animal products, just to mention a few.

In addition, Copa and Cogeca supports a growing number of great and highly innovative projects developed by our members across the EU.

Copa and Cogeca are also very active in media and in organising events, workshops, seminars and business forums, such as for Green Week, the Congress of European farmers and diverse European Parliament events.

For further information: www.copa-cogeca.be

EUBA (European Bioeconomy Alliance)



European
Bioeconomy
Alliance

The European Bioeconomy Alliance is a unique cross sector alliance dedicated to mainstreaming and realising the potential of the bioeconomy in Europe. Bringing together the Alliance members are:

- ④ *The production and use of renewable resources as feedstock for making innovative, value-added everyday products and materials;*
- ④ *The commitment to maximise the unused potential of European renewable resources to encourage the production of bio-based products and materials “Made in Europe”;*
- ④ *Resource efficiency and sustainability as driving business principles.*

EUBA Mission

The Alliance's mission is to lead the transition towards a post-petroleum society. Recognising that the bioeconomy is still a relatively new political, economic and social concept, the Alliance will strive to:

- ④ Raise EU, national and regional leaders' awareness on the benefits of the bioeconomy and bio-based industries;
- ④ Make the bioeconomy mainstream above and beyond the research and innovation policy;
- ④ Mobilise and engage stakeholders to realise the European bioeconomy potential;
- ④ Advocate for a coherent, flexible and stimulating policy environment for bio-based solutions.

EUBA Objectives

- ④ Make bioeconomy a pan-European political priority;
- ④ Mobilise opinion leaders with a view to mainstreaming bioeconomy as a viable and accepted alternative;
- ④ Create a level playing field for bio-based products and materials.

EUBA Members

- ④ BIC – Bio-based Industries Consortium
- ④ CEFS – European Association of Sugar Producers
- ④ CEPF – Confederation of European Forest Owners
- ④ CEPI – Confederation of European Paper Industries
- ④ COPA-COGECA – European Farmers and European Agri-Cooperatives
- ④ ePURE – European Renewable Ethanol Producers Association
- ④ EuropaBio – The European Association for Bioindustries
- ④ EUBP – European Bioplastics
- ④ FEDIOL – The European Vegetable Oil and Protein Meal Industry
- ④ FTP – Forest-based Sector Technology Platform
- ④ PFP – Primary Food Processors
- ④ Starch Europe – European Starch Industry Association

For further information: www.bioeconomyalliance.eu





NCPs CaRE (National Contact Points for Climate action, Raw materials, Environment and Resource Efficiency)



NCPs CaRE performs valuable services in guiding and supporting national applicants in preparing proposals for Horizon 2020 funding in Societal Challenge 5 'Climate action, environment, resource efficiency and raw materials'.

Therefore, the overall objective of NCPs CaRE is to form and maintain a joint cooperation network of experienced and less-experienced National Contact Points (NCPs) on Societal Challenge 5 which aims at pooling their resources and know-how to provide high quality services to SC5 applicants.

The specific objectives of NCPs CaRE are to:

- ④ Offer relevant partnering opportunities for potential SC5 applicants to help them build interdisciplinary and high quality collaborative projects,
- ④ Help eco-innovative SMEs grasp Horizon 2020 opportunities,
- ④ Provide potential SC5 applicants and other stakeholders with up-to-date, exhaustive and good-quality information on H2020,
- ④ Raise the overall standard and professionalism of SC5 NCP services,
- ④ Help newcomers and less-experienced NCPs rapidly acquire the necessary know-how to deliver adequate NCP services,
- ④ Ensure effective international cooperation of the NCPs and their clients, in particular with European Neighbourhood Policy (ENP) countries,
- ④ Deliver joint and complementary activities in cooperation with other relevant networks and initiatives that have a stake in SC5 related purposes.

The activities foreseen by NCPs CaRE contribute to enhancing the impact of R&I in SC5 and ensure a more efficient use of resources and R&I developments by improving the workflow between NCPs, applicants, the European Commission (EC), and other parties with a stake in SC5. NCPs CaRE activities aim at enhancing the number of SC5 proposals with regards to both quantity and quality.

For further information: www.ncps-care.eu

VI. BBI JU FOUNGING PARTNERS

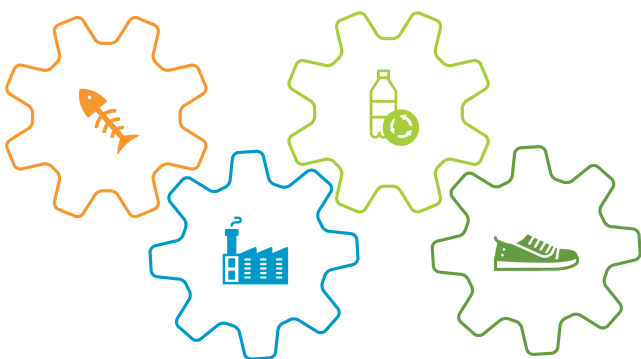
BIO-BASED INDUSTRIES CONSORTIUM (BIC)

The Bio-based Industries Consortium (BIC) is a non-profit organisation set up in Brussels in 2012. BIC represents the private sector in a public-private partnership (PPP) with the EU, represented by the European Commission, known as the Bio-based Industries Joint Undertaking (BBI JU), established in June 2014 as one of the pillars of the European Commission Bioeconomy Strategy.

The Bio-based Industries Joint Undertaking is dedicated to transforming renewable, natural resources into innovative bio-based products. Operating under Horizon 2020, the BBI JU is driven by the Vision and Strategic Innovation and Research Agenda (SIRA) developed by the industry.

BIC's vision is to accelerate the innovation and market uptake of bio-based products and to position Europe as a world-leading, competitive bio-based economy where the basic building blocks for chemicals, materials and advanced biofuels are derived from renewable biological resources.

BIC's mission is to build innovative bio-based value chains by developing new biorefining technologies, optimising feedstock use and creating a favourable business and policy climate to accelerate market acceptance of bio-based products.



The SIRA focuses on 4 Strategic orientations:

- ④ Foster a sustainable biomass-feedstock supply to feed both existing and new value chains.
- ④ Optimise efficient processing for integrated biorefineries through R&D&I. Innovative bio-based products for identified applications
- ④ Develop innovative bio-based products for identified market applications.
- ④ Create and accelerate market uptake of bio-based products and applications

BIC members put forward ideas for research topics, demonstration projects and flagship projects for the annual BBI JU Work Plans. They also decide how to address non-technical issues affecting the bio-based industries.

BIC is host to a unique mix of sectors that currently covers agriculture, aquaculture, agro-food, technology providers, forestry/pulp and paper, chemicals and energy. With more than 200 members including large companies, SMEs, SME Clusters, RTOs, universities, technology platforms and associations spread across Europe, BIC brings together an authoritative pool of cross sector and multi-disciplinary expertise in the field of bio-based industries. Any interested stakeholders along the bio-based value chain may apply for membership.

Of the total €3.7 billion BBI JU budget, almost 75% is being invested by BIC members, in total €2.7 billion from 2014-2020. Their financial contribution will support the large-scale commercialisation of high-quality bio-based products, through investment in innovative manufacturing facilities and processes, as well as in biorefining research and demonstration projects.

For further information: www.biconsortium.eu



EUROPEAN UNION (EU)

The European Union, through the European Commission, represents the public sector in the BBI JU initiative. Within the BBI JU the European Commission promotes its citizens' overall interests.

The Commission is organised into policy departments, known as Directorates-General (DGs), which are responsible for different policy areas. DGs develop, implement and manage EU policy, law, and funding programmes. Three DGs are represented in the governance of BBI JU.

Directorate-General for Research and Innovation (DG RTD)

The Directorate-General for Research and Innovation is responsible for EU policy on research, science and innovation, with a view to helping create growth and jobs and tackle the European's biggest societal challenges. The DG RTD defines and implements European Research and Innovation (R&I) policy with a view to achieving the goals of the Europe 2020 strategy and its key flagship initiative, the Innovation Union. To do so, the DG contributes to the European Semester by analysing national R&I policies, by assessing their strengths and weaknesses, and by formulating country specific recommendations where necessary. It monitors and contributes to the realisation of the Innovation Union flagship initiative and the completion of the European Research Area. It funds excellent Research and Innovation through Framework Programmes taking a strategic programming approach.

Directorate-General for Agriculture and Rural Development (DG AGRI)

The Directorate-General for Agriculture and Rural Development is responsible for EU policy on agriculture and rural development and deals with all aspects of the common agricultural policy (CAP). This DG has the following objectives:

- ④ helping farmers to produce sufficient quantities of safe food, produced respecting EU norms on sustainability, environmental rules, animal welfare, traceability, etc.

- ④ providing farm businesses with support systems to help stabilise their incomes in the face of less predictable production conditions
- ④ facilitating investment in a sustainable, modern farming sector
- ④ maintaining viable rural communities, with diverse economies
- ④ creating and maintaining jobs throughout the food chain

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROWTH)

The Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs is the European Commission service responsible for:

- ④ completing the Internal Market for goods and services;
- ④ helping turn the EU into a smart, sustainable, and inclusive economy by implementing the industrial and sectorial policies of the flagship Europe 2020 initiative;
- ④ fostering entrepreneurship and growth by reducing the administrative burden on small businesses; facilitating access to funding for small and medium-sized enterprises (SMEs); and supporting access to global markets for EU companies. All of these actions are encapsulated in the Small Business Act;
- ④ generating policy on the protection and enforcement of industrial property rights, coordinating the EU position and negotiations in the international intellectual property rights (IPR) system, and assisting innovators on how to effectively use IP rights;
- ④ delivering the EU's space policy via the two large-scale programmes Copernicus (European Earth observation satellite system) and Galileo (European global navigation satellite system), as well research actions to spur technological innovation and economic growth.

For further information: www.ec.europa.eu













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