



2014
2020

Bio-based Industries
Joint Undertaking

A high-impact
initiative for **green**
recovery of Europe



Bio-based Industries
Joint Undertaking



Bio-based Industries
Consortium

TABLE OF CONTENT

BBI JU projects - key figures
About BBI JU
An ambitious budget attracting private investments

p. 3

Supporting SMEs, industry and researchers across Europe

p. 4

Towards a European Green Deal: promoting sustainable and circular bio-based industries

p. 5

Types of projects

p. 6

BBI JU projects across Europe

p. 7

BBI JU on track to deliver beyond the SIRA targets

p. 8

BBI JU expected socio-economic impact

p.10

BBI JU expected environmental impact

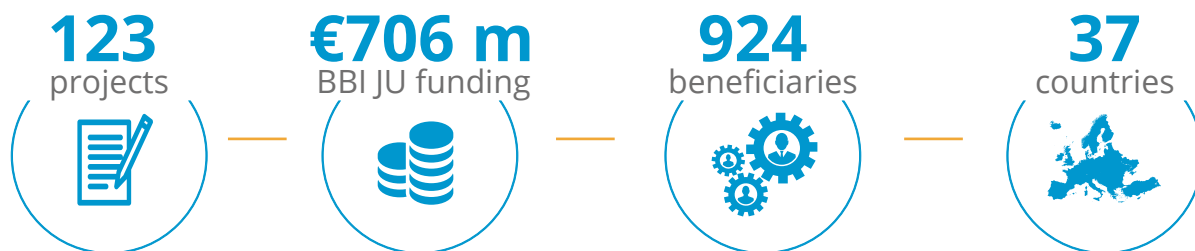
p.11

BBI JU mission
Strategic Innovation & Research Agenda
About the bio-based industries sector

p.12

BBI JU PROJECTS - KEY FIGURES

Source: CORDA, June 2020



ABOUT BBI JU



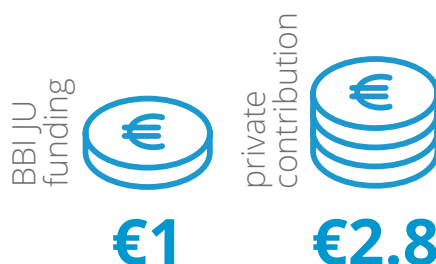
Bio-based Industries
Joint Undertaking

The Bio-based Industries Joint Undertaking (BBI JU) is a €3.7 billion public-private partnership between the [European Union](#) and the Bio-based Industries Consortium (BIC) that supports the development of innovative and competitive bio-based industries in Europe. BBI JU aims to bridge the gap between bio-based innovations and the market, stimulate research & innovation in Europe and integrate economic actors along the whole value chain in the bio-based industries sector. This will be achieved by de-risking investments and spurring collaborations to organise the sector. BBI JU's goal is to reach a critical mass in Europe to address the strategic challenges of creating a sustainable, circular and flourishing bioeconomy and enhancing European competitiveness on a global scale.

Since 2014, BBI JU has contributed to the implementation the Strategic Innovation & Research Agenda ([SIRA](#)). BBI JU has funded 123 projects that replace fossil-based with bio-based materials to develop new, better, sustainable products and bring them closer to the market. Ten projects are flagship biorefineries at commercial scale and first-of-their-kind in Europe. They convert sustainable biomass into different types of bio-based products, such as feed, fibres, materials, chemicals and bioenergy.

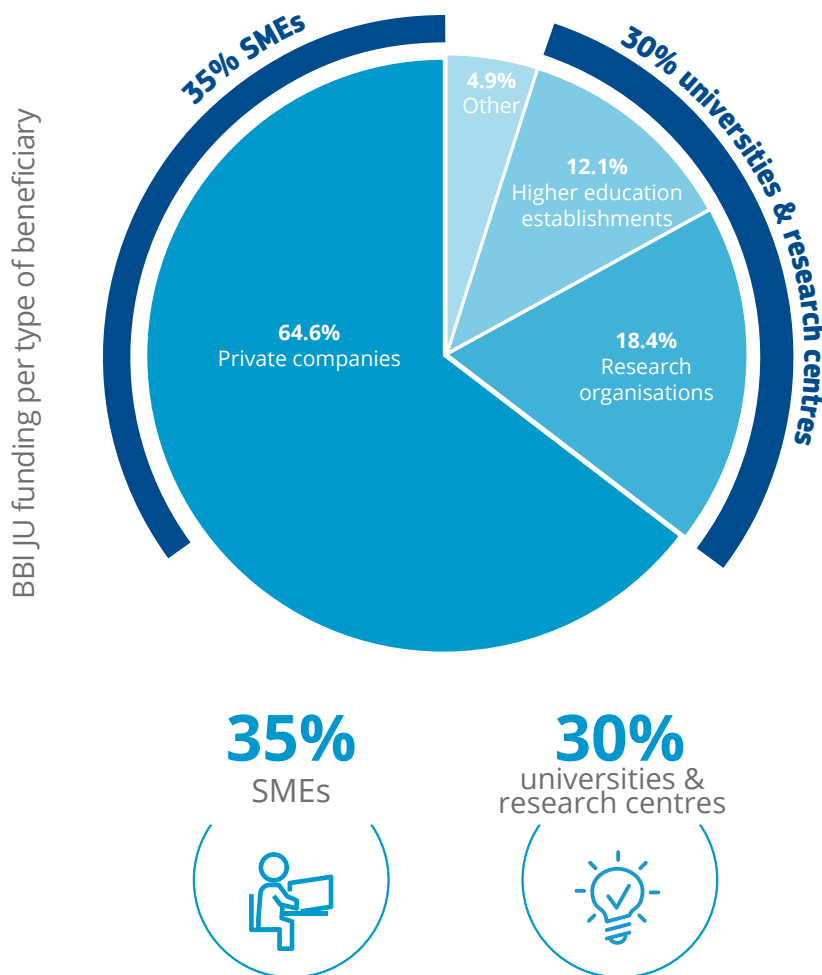
AN AMBITIOUS BUDGET ATTRACTING PRIVATE INVESTMENTS

So far, BBI JU has invested over €700 million in 123 projects, raising the contribution of project partners to much higher amount. By 2024, each euro of BBI JU funding is expected to have attracted a private contribution of €2.8.



SUPPORTING SMES AND RESEARCHERS ACROSS EUROPE

BBI JU projects mobilise all relevant stakeholders – SMEs, large industries, clusters, primary producers, trade associations, academia, research centres, and end-users – to develop technologies and business models advancing Europe's green economy. Funding to the BBI JU beneficiaries is well balanced across main actors.



SMEs receive 35% of the total BBI JU funding. They also represent 40% of all beneficiaries and two-thirds of private organisations taking part in BBI JU projects.

SMEs benefit from participating in BBI JU project consortia, as this helps them scale up their technologies and get access to the market. At the same time as technology and innovation providers, they play a crucial role in the projects.

Universities and research centres receive 30% of all BBI JU funding and represent 32% of all participations in projects. Their involvement is relevant to boost cooperation between different actors in the bioeconomy: indeed, the vast majority of our projects report an increase in the collaboration between academia and industry.



Project participants are evenly located across Europe – as example, the flagship biorefineries are set in Estonia, France, Ireland, Italy, the Netherlands, Norway, Romania and Slovakia. Participants present a great variety of business models with high potential for replication. Moreover, despite being distributed all over the continent, they all share the same ability to mobilise local feedstock.

TOWARDS A EUROPEAN GREEN DEAL: PROMOTING A SUSTAINABLE AND CIRCULAR BIO-BASED SECTOR

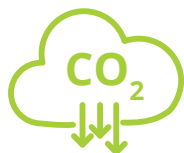
The development of a sustainable and competitive bio-based sector in Europe will help fighting climate change while having a positive socio-economic impact, as it will allow:



Replacing 25% of oil-based chemicals by 2030



Drastically reducing EU's dependency on the import of strategic raw materials, such as protein (by 50%), phosphorus and potassium (by 25%)



Reducing greenhouse gas (GHG) emissions by 50%

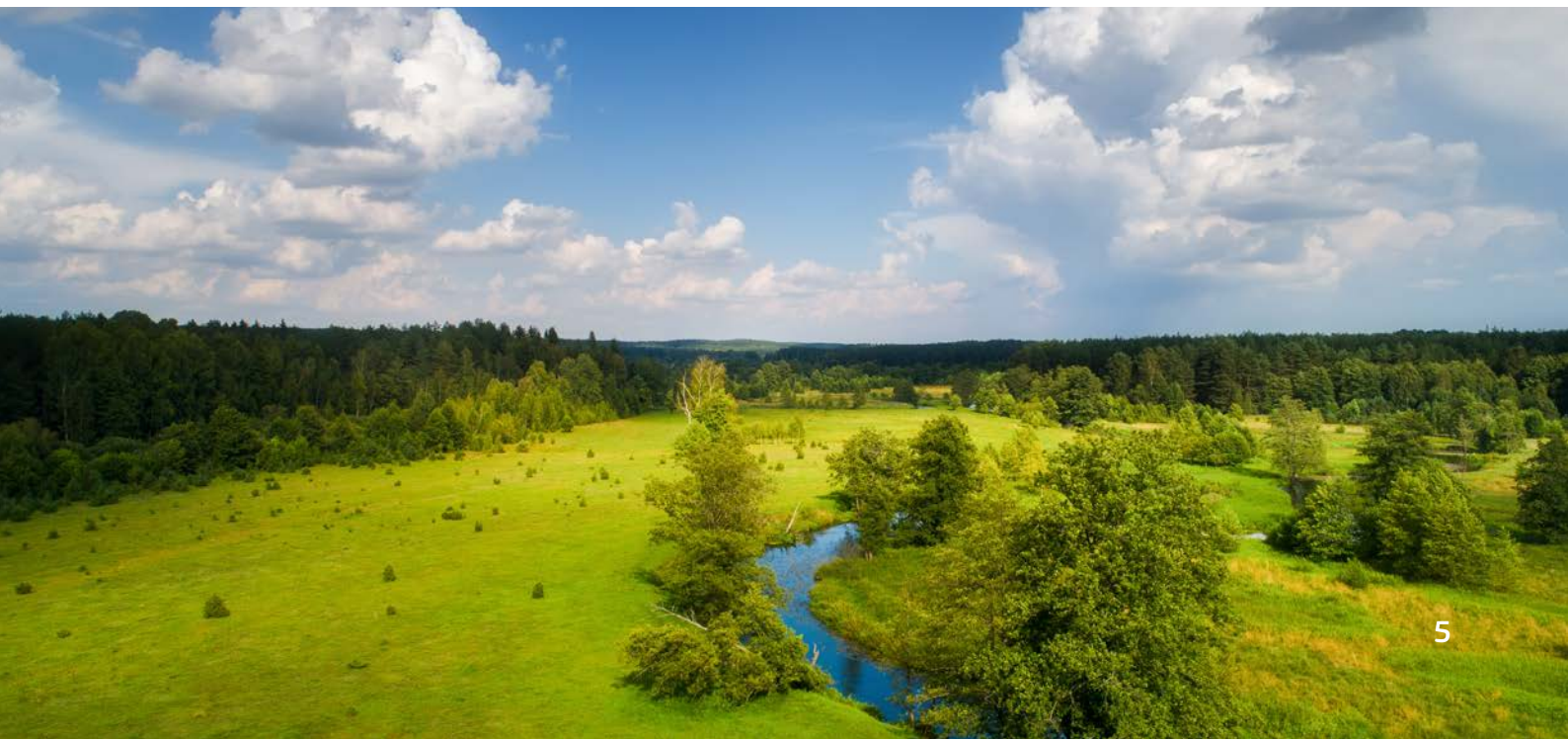


Creating up to 700,000 green jobs by 2030 especially in rural and coastal areas

Sources:
[EU Bioeconomy Strategy](#), [SIRA 2017](#)
& [Impact Assessment](#)

Already over 80% of BBI JU projects anticipate lower GHG emissions compared to fossil-based counterparts, while a vast majority of them contribute to waste reduction and valorisation, reuse and recycling.

BBI JU projects are reducing energy consumption, improving the land use and water efficiency, as well as developing more sustainable use of natural and existing unused resources. In practical terms, the total CO₂ savings of the first nine BBI JU flagship biorefineries are expected to reach 600 kT per year. By doing so, BBI JU projects support the implementation of the [EU Bioeconomy Strategy](#) and in a way, they were already contributing to the objectives of the [Green Deal](#) before it was launched.



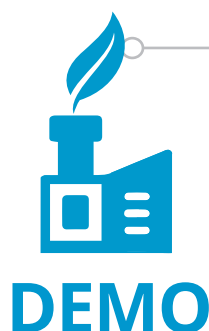
TYPES OF PROJECTS



64 projects • €225.8 million of BBI JU funding

Research and Innovation Action projects (RIAs) develop innovative technologies, create new knowledge and fill in the gaps within value chains.

For example, by bringing together academia, research centres and industry, the [BARBARA](#) project developed new bioplastic materials from waste leftovers of broccoli, pomegranate, almond shells and lemon via 3D printing, for use in the building and automotive sectors.



35 projects • €250.5 million of BBI JU funding

Demonstration Action projects (DEMOS) build demo-scale facilities in Europe at a size large enough to prove the technical and economical feasibility and to produce enough products to test the market.

For instance, the [PULP2VALUE](#) project demonstrated the potential of sugar beet industry sidestreams by refining underutilised sugar beet pulp and delivering high-value compounds for consumer products, such as cosmetics and food.



10 projects • €215.2 million of BBI JU funding

Flagship projects (FLAGS) support the design, construction of first-of-their-kind commercial scale biorefineries in Europe.

As an example, the [First2Run](#) project built an integrated biorefinery to process cardoon crop from marginal lands into bio-based vegetable oils which can be used to manufacture bioplastics, cosmetics, additives and biolubricants.



14 projects • €14.2 million of BBI JU funding

Coordination and Support Action projects (CSAs) accelerate the market uptake of bio-based, sustainable products by tackling the many cross-sectorial challenges the bioeconomy is currently facing.

To illustrate, the [Pilots4U](#) project has set up a [database](#) of more than 260 open access pilot and multipurpose demonstration infrastructures for the European bioeconomy, helping innovators bridge the gap between laboratory developments and market introduction.

BBI JU ON TRACK TO DELIVER BEYOND THE SIRA TARGETS

A sustainable and competitive bioeconomy in Europe is key for the success of the EU Green Deal and the achievement of the EU's green recovery. BBI JU projects contribute to this objective by structuring and mobilising the bio-based industry sector, boosting market uptake and supporting innovation.



STRUCTURING AND MOBILISING BIO-BASED INDUSTRIES

The two main positive impacts of BBI JU are the structuring effect in organising the value chains across sectors and the innovation-driven mobilising effect of key stakeholders.

BBI JU projects result in innovative interconnected bio-based value chains and new cross-sectoral collaborations, which are fundamental to make the European economy abreast of the times.



180 new bio-based value chains expected by 2024

versus the SIRA target of 10 new ones

A value chain covers the whole production from raw materials to product applications.



More than 200 new cross-sector interconnections expected by 2024

versus the SIRA target of 36 new ones

These new interconnections represent the links created between different actors across new value chains triggering collaborations that did not exist in the past.

For example, the **EFFECTIVE** project has created innovative value chains by combining different biomasses (e.g. sugar beets, beech wood) to produce bio-based nylon. Bio-based nylon is a valuable material for a wide range of applications such as garments, carpet solutions and primary packaging.



BOLSTERING MARKET UPTAKE

BBI JU is helping to bring innovations to the market by supporting the creation and boosting large-scale production of sustainable products and materials with an equal or overall better performance than their fossil-based counterparts. This results in a wide range of innovations aimed at satisfying consumer and industrial needs.



Over 180 new bio-based materials expected by 2024

versus the SIRA target of 50 new ones

Bio-based materials are derived from biological resources (such as wood, crops or fibres mostly from waste from food production processes). They can be used for a wide range of products (e.g. construction, furniture, paper, food, textile, and chemicals).



Over 80 new bio-based chemical building blocks expected by 2024

versus the SIRA target of 5 new ones

The building blocks are intermediate molecules or chemicals that are used to produce new bio-based chemicals and materials.



More than 100 new bio-based products expected by 2024

versus the SIRA target of 30 new ones

The new products, such as materials, chemicals, biopolymers, additives, fibres, are expected to be more sustainable than their current fossil-based alternatives.

For example, starting from seaweed biomass, the **SpiralG** project is set to produce bio-based food dye, bio-stimulants for plants, functional protein-rich compounds for pet food and higher quality protein bioactive compounds to be used in the pharmaceutical industry.



SCIENCE AND KNOWLEDGE CREATION

BBI JU enables scientific advancements, as well as knowledge creation and sharing in the bio-based sector. All our projects work to increase maturity levels in technologies, making the leap from lab-scale testing to industrial-scale biorefineries.

- ☑ **The RIA projects expect at least one technological advancement for 47 core technologies by 2024**

versus the SIRA target of 20 new advancements

Technological advancements are related to filling gaps in value chains and enabling new chemical building blocks, new materials, new consumer products or new applications.

*For example, the **NEWFERT** project is developing new chemical and bio-electrochemical technologies to extract nutrients from ashes of different origins and livestock effluents, which are then used in the production of advanced fertilisers. The project aims to propel these technologies from the laboratory to the first demonstration facility in Europe.*



BBI JU EXPECTED SOCIO-ECONOMIC IMPACT

Since its inception in 2014, the BBI JU has contributed to developing a sustainable bio-based industry sector in Europe, providing environmental and socio-economic benefits for European citizens. Today, the awareness that BBI JU can support the green recovery of Europe strengthens its mission. BBI JU projects are developing bio-based products, chemicals and materials with a lower environmental impact, thus reducing our GHG emissions. In this way, BBI JU contributes to the objectives of the [EU Green Deal](#) while laying the foundations for a sustainable future and a competitive economy.



CREATING JOBS

82%

of ongoing projects result in the creation of new skilled jobs. In particular, 62% of projects create jobs in rural and coastal areas. 70% of these jobs are in product development and engineering.

Only the first nine flagship biorefineries funded by BBI JU will generate more than 3,300 direct and more than 10,000 indirect jobs.



LEVERAGING INVESTMENTS

€1.2bn

The first nine BBI JU flagship projects will mobilise €1.2 billion contribution from the private sector for a BBI JU funding of about €195 million.

By 2024, the total industry's participation in BBI JU projects is expected to be nearly three times higher than the BBI JU funding.



FOSTERING COLLABORATIONS

80%

of the projects increase the cooperation between academia and industry, as well as across regions and countries, paving the way for further bio-based developments. BBI JU supports collaborations between actors that would not interact otherwise. Nearly 70% of all projects are active networkers within the scientific community.

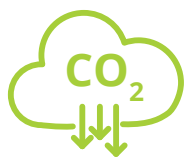


BOOSTING INNOVATION

80%

of projects create knowledge and come up with scientific breakthroughs. 41% have produced new patents and IP rights, and 11% created spin-offs and start-ups.

BBI JU EXPECTED ENVIRONMENTAL IMPACT



REDUCING EMISSIONS

84%

of ongoing projects will deliver bio-based products that will lower greenhouse gas emissions by replacing fossil-based alternatives. The total CO₂ savings of the first nine BBI JU flagship biorefineries are expected to reach 600 kT per year.

Furthermore, all our DEMO and FLAG projects must undergo a Life Cycle Assessment analysis to prevent damage to the environment and competition with food production.



ENHANCING SUSTAINABILITY AND CIRCULARITY

75%

of ongoing projects contribute to waste reduction, reuse, and recycling, while half of them reduce energy consumption and improve land use.

Over one-third of all projects contribute to the sustainable management of natural resources and foster efficient water use. By doing so, they concretely support a circular and sustainable economy in Europe.

Source: 2019 questionnaire to the BBI JU project coordinators

All feedstock used in BBI JU projects must be sustainably sourced in Europe and not compete with food production



EXPLOITING AGRICULTURAL WASTE

91%

of BBI JU projects using agricultural feedstock only use waste and by-products, and 7% use dedicated crops grown in marginal lands not suitable for agriculture.



BOOSTING SUSTAINABLE FORESTS

96%

of projects using forest-based feedstock use wood residues, cellulose and pulp, and paper industry sidestreams. Only 4% cut wood, exclusively from sustainably managed forests.



DEVELOPING CIRCULAR BLUE BIOECONOMY

100%

of aquatic feedstock used in BBI JU projects are algae and by-products of fish and seafood, which helps make the fishing industry more circular.

BBI JU MISSION

The BBI JU mission is to implement, under Horizon 2020 rules, the Strategic Innovation and Research Agenda. To fulfil this objective, BBI JU organises yearly calls for proposals to support research, demonstration, and deployment activities, enabling the collaboration between stakeholders from across Europe along the entire value chains. Call preparation, evaluation and project management fully respect the principles of transparency, openness, and excellence of the [Horizon 2020 programme](#).

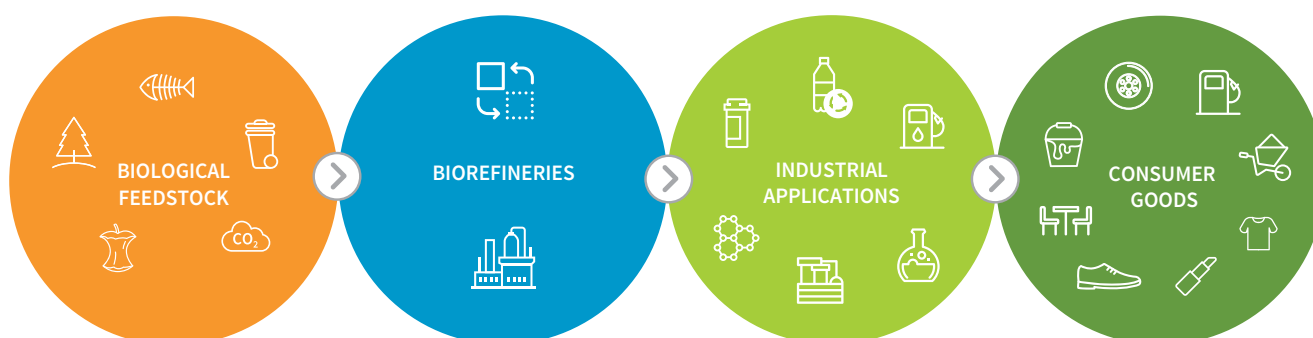


STRATEGIC INNOVATION & RESEARCH AGENDA

SIRA is a strategic guiding document identifying the main technological and innovation challenges that need to be addressed in the bio-based economy. The document suggests which research, demonstration and deployment activities should be addressed in the BBI JU calls for proposals. Following consultation with stakeholders, it was drafted by the Bio-based Industries Consortium and approved by the European Commission.

ABOUT THE BIO-BASED INDUSTRIES SECTOR

The bio-based industry is an emerging sector organised between interconnected value chains, which aims at transforming renewable biological feedstocks (such as agricultural by-products, forestry residues, organic waste and aquatic biomass) into bio-based chemicals, materials, energy and products, replacing their fossil-based versions. Accounting for 3.6 million jobs and around €700 billion turnover in the EU, it offers a vast potential to tackle societal challenges ranging from environmental degradation to climate change. Additionally, the bio-based industry plays an essential role in spurring sustainable growth and boosting Europe's competitiveness by re-industrialising and revitalising rural and coastal areas.





Bio-based Industries Joint Undertaking

Data: June 2020.

Find more information on the BBI JU [website](#).

Pictures: ©Shutterstock & ©Adobe Stock

Contact us

@ info@bbi.europa.eu
www.bbi-europe.eu

Follow us

in Bio-based Industries Joint Undertaking
@ BBI2020
Bio-based Industries Joint Undertaking

