ANNUAL REPORT
2016

BIO-BASED INDUSTRIES CONSORTIUM (BIC)

Disclaimer

This document reflects the objectives of the members of the Bio-based Industries Consortium (BIC) in January 2017. References to figures, budgets, public and private contributions and statistics are those that were official in December 2016. Changes may have occurred since then.

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01/ MESSAGE FROM THE EXECUTIVE DIRECTOR

Our second Annual Report finds us half-way through the Bio-based Industries Joint Undertaking (BBI JU) Calls for Proposals. We are happy to report strong growth across the bio-based industries and that our activities have supported the sector's development. Successes from our work in 2016 include:

- BBI JU projects mobilised a significant amount of private investment in European bioeconomy initiatives. There is large-scale industry involvement in R&D projects. Technology deployment is being supported through demonstration and flagship projects, which ensures investments in innovative production processes remain in Europe
- Partners from sectors which previously did not collaborate are now working together. For example, new partnerships have been established between the chemical industry, the food industry and the forestry, pulp and paper industries
- New sectors such as the food processing, aquatic-based and bio-waste sectors, as well as industries using CO_2 as a feedstock, are joining BBI JU projects. Industry is seizing the opportunity to create value from waste and other side streams
- The Bio-based Industries Consortium's (BIC) membership is growing and becoming more diverse. Brand owners are interested in joining. Closer collaboration with brands will help to create market pull and support the development of novel bio-based product applications
- BIC has strengthened its regional collaboration because European regions are best placed to identify available feedstocks (agriculture, agri-food, forestry, waste and side streams, etc.) and have an important part to play in establishing value chains. Regions can also attract investments in local demonstration or flagship projects through the European Structural and Investment Funds (ESIF) or the European Agricultural Fund for Rural Development (EAFRD). Local investments will help support job creation and provide additional opportunities for the primary sector

The coming pages provide more detailed information about our activities and achievements.

Dirk Carrez
Executive Director

02/ ABOUT THE BIO-BASED INDUSTRIES CONSORTIUM (BIC)

2.1 Who we are

BIC is a non-profit organisation set up in Brussels in 2013. BIC represents the private sector in a public-private partnership (PPP) with the European Commission, which is known as the **Bio-based Industries Joint Undertaking (BBI JU)**.

Established as one of the pillars of the European Commission's Bioeconomy Strategy, BBI JU is dedicated to transforming renewable, natural resources into bio-based products through a programme of research and innovation activities. Operating under the EU's Horizon 2020 programme, BBI JU is driven by the **Strategic Innovation and Research Agenda (SIRA)**, which is developed by industry.

2.2 Mission

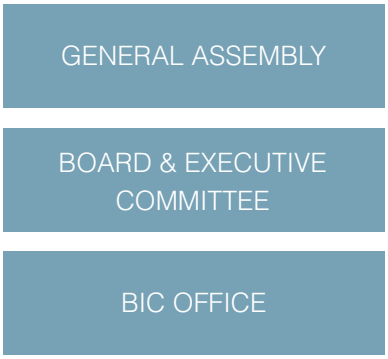
BIC's mission is to build innovative **bio-based value chains** by developing new biorefining technologies, optimising feedstock use, and creating a favourable business and policy climate to accelerate market acceptance of bio-based products.

BBI JU's 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.

2.3 BIC governance

2.3.1 BIC General Assembly

BIC's main decision-making body is the General Assembly. All industry members have a seat. An ordinary meeting of the General Assembly is convened once a year.



2.3.2 BIC Board and Executive Committee

BIC is managed by the Board of Directors. Elected by the General Assembly, the Board has a two-year mandate. Every year, half of the Board is renewed through General Assembly elections. The Board implements BIC policy and the General Assembly work program.

In February 2016, six new members were elected to the Board.[1]

Marcel Wubbolts - CHAIR DSM	**Agnes van Ardenne** Dutch Biorefinery Cluster
Claus Crone Fuglsang - VICE-CHAIR Novozymes	**Christine Hagström-Näsi** CLIC Innovation
Christophe Rupp-Dahlem - VICE-CHAIR Roquette	**Christophe Luguel** IAR Cluster
Mat Quaedvlieg - VICE-CHAIR Sappi	**Niklas Von Weymarn** Metsä Group
Piero Cavigliasso Biochemtex	**Giulia Gregori** Novamont
Gloria Gaupmann Clariant	**Laila Rogestedt** Södra

2.3.3 BIC Working Groups

The Board is supported by two Working Groups. The BIC **Programming Working Group** (PWG), which includes all BIC industry members, develops topics for the Annual Work Plans (AWPs). After approval by the BIC Board and the BBI JU Governing Board, the AWPs form the basis of the BBI JU Annual Calls for Proposals. A small Programming Core Team (PCT) prepares details of the topics for further discussion with the PWG. PCT membership is reviewed annually.

The **Public Affairs & Public Relations Working Group** (PA-PR WG) outlines BIC's advocacy and communications strategy on behalf of the Board. The PA-PR WG aims to make the bioeconomy a political priority by engaging with bioeconomy stakeholders and decision-makers. The Group advocates for a coherent, flexible and stimulating policy and investment environment for bio-based solutions.

[1] The current composition of the BIC Governing Board can be found on the BIC website. **http://biconsortium.eu/about/governance**

2.3.4 BIC structure and staff

Dirk Carrez is BIC's Executive Director. He is responsible for the day-to-day management of the association. A bioengineer, he holds a PhD in Agricultural Sciences. Dirk is a member of the European Commission (EC) Expert group and a member of the advisory board of several European projects.

Cathy Tavernier is responsible for all administrative duties within BIC. She is the main point of contact for all questions regarding BIC membership (applications, invoices, member area access, etc). She has been supporting BIC since August 2013.

Suzy Renckens manages BIC public affairs and communications. Suzy graduated as an Engineer in Chemical and Bio-industries and holds a PhD in Applied Biological Sciences. Over the course of her career, Suzy has acquired extensive experience in the fields of biotechnology, and regulatory and governmental affairs. Suzy joined BIC in March 2016.

Nelo Emerencia manages BIC's programming activities. He graduated as a Chemical Engineer from the Delft University of Technology. Nelo's expertise covers a broad range of subjects from engineering and operations, economics and planning, to marketing, communication and public affairs, as well as education and innovation.

2.3.5 BIC membership

BIC has more than 200 members including large companies, SMEs (small and medium-sized enterprises), SME clusters, RTOs (Research and Technology Organisations), universities, technology platforms and associations. Host to a unique mix of sectors, BIC's membership currently includes agriculture, aquaculture, agri-food, technology providers, forestry/pulp and paper, chemicals, energy and biofuels, and end-users.

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

Through investments in innovative manufacturing facilities and processes, as well as in biorefining research and demonstration projects, the financial contributions made by BIC members support the large-scale commercialisation of high-quality bio-based products.

Recently, interest in BIC membership has started to come from new industry sectors. For example, the fishing and fish processing industries are keen to develop value-added bio-based co-products from aquatic residues. Similarly, the agri-food sector sees an opportunity to extract value from their waste and side-streams.

BIC welcomes membership applications from interested stakeholders from across the bio-based value chain.

BIC INVITES BRAND OWNERS TO ITS MEMBERSHIP

Together, the bio-based industries and brand owners can develop a shared vision for the future of the bioeconomy. Through BIC membership, brands can steer the development of novel bio-based applications and support the market uptake of bio-based products. Brands can participate in research, demonstration or flagship projects by joining BBI JU consortia. Their involvement can help to shorten the time to market for innovative bio-based products.

The 2016 list of BIC Full and Associate members is provided at the end of this document.

03/ THE BIO-BASED INDUSTRIES JOINT UNDERTAKING (BBI JU)

The Bio-based Industries Joint Undertaking (BBI JU) was officially established under EU Council Regulation No 560/2014 on 7 June 2014. It manages the public-private partnership (PPP) between the European Commission and BIC.

To contribute to society's long-term sustainability, BBI JU aims to trigger:

- The **deployment** of new bio-based value chains and products
- The **establishment** of new, fully operational flagship projects and biorefinery upgrades
- The **development** of new bio-based products, novel bio-based applications and dedicated policy measures

Since it was set up, BBI JU has helped to build the European bio-based economy through:

- **Innovation:** After three years, 65 projects have already been launched with a total of 729 participants from 30 countries. Funding worth €414 million has been granted, including for 20 DEMO and 6 flagship projects. €2.15 billion in private contributions has been announced by beneficiaries
- **Support for small and medium-sized enterprises (SMEs):** 36% of BBI JU grant beneficiaries are SMEs. As technology developers, SMEs are particularly involved in bioreactor design, process optimisation and developing new biocatalysts for biomass processing

3.1. BBI JU Call for Proposals 2015

The 2015 Call for Proposals has so far resulted in €206 million in BBI JU funding for 24 projects.

Two flagship projects[2] started in 2016:

- **BIOSKOH:** A circular bioeconomy project to transform a brownfield industrial site in eastern Slovakia into a 55 kton cellulosic ethanol production facility
- **EXILVA:** A flagship demonstration plant for the large-scale production and supply of microfibrillated cellulose (MFC)

A third flagship from this call will start in 2017.

Eleven Research and Innovation Action (RIA) projects were launched in 2016:

- **BIOrescue:** Bioconversion of spent mushroom substrate into biochemicals
- **EFFORTE:** Sustainable and efficient forestry operations for a cost competitive bio-based industry
- **EnzOx2:** New enzymatic oxidation/oxyfunctionalisation technologies for added-value bio-based products
- **HYPERBIOCOAT:** High-performance and functional hybrid polymer coatings for food, cosmetic and medical device packaging
- **InDIRECT:** Direct and indirect biorefinery technologies for the conversion of organic side streams into marketable products
- **LIBBIO:** Cultivation of Lupinus mutabilis from marginal lands as biomass for biorefineries
- **LIBRE**: Lignin-based carbon fibres for composites
- **MACRO CASCADE**: A cascading marine macroalgal biorefinery
- **NeoCel**: Novel processes for sustainable cellulose-based materials
- **TECH4EFFECT**: Techniques and technologies for effective wood procurement
- **ZeIcor:** Zero waste ligno-cellulosic biorefineries via integrated lignin valorisation

[2] For more information, see the BIC Success Stories: http://biconsortium.eu/library/success-stories

Eight demonstration (DEMO) projects were also funded:

- **AgriMax**: Conversion of crop and food waste into high value-added products through multi-feedstock biorefinery processing technologies
- **BIOFOREVER**: Conversion of woody biomass into value-added chemical building blocks
- **DEMETER:** Efficient enzyme production for increased biogas yields
- **FUNGUSCHAIN:** Extraction of high value molecules from fungal residues to meet end-user needs
- **GreenProtein:** Transformation of industry waste from vegetable processing into functional proteins and other food ingredients
- **GreenSolRes:** Solvent and resin production from lignocellulosic biomass via the platform chemical levulinic acid
- **LIPES:** Enzymatic splitting of triglycerides
- **PULPACKTION:** Optimised moulded pulp for renewable packaging solutions

Three Coordination and Support Action (CSA) projects were launched in 2016:

- **BioCannDo:** Bioeconomy awareness and discourse project
- **BIOCOM:** Increasing public awareness of bio-based products and applications to support European bioeconomy growth
- **STAR4BBI:** Standards and regulations for the bio-based industry

More detailed information about these projects can be found on the BBI JU website: www.bbi-europe.eu/projects

3.2. BBI JU Call for Proposals 2016

The 2016 Call for Proposals was launched on 19 April. It provides up to €189 million in funding from BBI JU, with additional industry investment.

The 2016 Call topics included new flagship research on algae and aquatic biomass, industrial crop varieties and biomass from new sources (e.g. municipal solid waste), as well as waste streams and by-products from the food industry.

The deadline for submissions was 8 September 2016.

In response to the 2016 Call, a total of 103 proposals were submitted: 7 CSA proposals, 70 RIA proposals, 20 DEMO proposals and 6 Flagship proposals.

The evaluation of the proposals began in September and was finalised in November 2016. Out of the 103 proposals, 29 went through to the Grant Agreement Preparation (GAP) phase.

For the first time, panel review hearings were organised for all submitted Flagship proposals.

More detailed information about the Calls for Proposals can be found on the BBI JU website.[3]

FAQ: WHAT IS THE 4% PROJECT CONTRIBUTION?

BIC requires consortia of successful proposals to pay a Project Contribution equal to 4% of the approved BBI JU project grant. The Project Contribution is used to finance half of the annual BBI JU administrative costs – the other half is financed by the European Commission. The Contribution is not managed by the BBI JU office but by BIC, and is not an eligible cost.

[3] www.bbi-europe.eu/participate/calls-proposals

04/ BIC ACHIEVEMENTS IN 2016

In 2016, BIC started to update the Strategic Research and Innovation Agenda (SIRA) to broaden participation in BBI JU. BIC also strengthened its collaboration with the European Regions and continued to advocate for a strong link between the European Circular Economy and Bioeconomy strategies. The bio-based industries reported additional European bioeconomy investments on top of BBI JU funding.

4.1. Investing in the European bioeconomy

Industry is participating on a large scale in BBI JU projects. Through demonstration and flagship projects, BBI JU supports deployment while keeping investments in Europe and attracting financing for innovation from outside the EU. For every euro of public money spent, BBI JU is expected to leverage €4.4 in private contributions.

ACCORDING TO BIC'S ANNUAL SURVEY, IN 2015 BIC MEMBERS HAD A €2 BILLION PIPELINE OF INVESTMENTS, WHICH DOUBLED IN 2016 TO ALMOST €4 BILLION.

4.2. The Board and Working Groups

The BIC Board launched **project BIC 2.0** to analyse the conditions and framework for a possible follow-up to BBI JU (post 2020).

The PWG developed the **2017 Priority Paper** following input from BIC members and advice of the two BBI JU advisory bodies, the Scientific Committee (SC) and the States Representatives Group (SRG). The Priority Paper sets the basis for the **2017 Annual Work Plan (AWP)** with topics for the 2017 Call. The 2017 AWP was approved in December 2016, following consultation with the SRG and the SC and agreement with the European Commission. The Call was officially launched in April 2017. Starting in October 2016, BIC members and Associate members had access to the full list of Call topics via the BIC partnering platform.

Following a mapping exercise on the Circular Economy Package facilitated by FTI consulting, the PA-PR WG agreed to focus on several new policy areas, including **waste, biomass, bioenergy and ecodesign**.

4.3. Strategic Innovation and Research Agenda update

As provided for in the 2013 Strategic Innovation and Research Agenda (SIRA), BIC, the European Commission (EC) and BBI JU updated SIRA based on recent technology developments, changes in the market and new political realities. Throughout 2016, several workshops were organised to agree SIRA's new structure, its content and direction. Industry experts, the BBI JU advisory bodies, as well as other stakeholders were invited to the discussions. The formal approval process was concluded in 2017.

The updated SIRA re-emphasises the BIC and BBI JU position that a bio-based economy is 'circular in nature'.

The **new SIRA** has four pillars:

- Fostering a **supply of sustainable biomass-feedstock** to feed both existing and new value chains
- Optimising **efficient processing** for integrated biorefineries through R&D
- Developing **innovative bio-based products** for identified market applications
- Creating and accelerating **market uptake** of bio-based products and applications

4.4. Letters and position papers

In July, BIC sent a letter welcoming the European Parliament report on the Waste package drafted by Member of the European Parliament (MEP) Simona Bonafè on behalf of the ENVI Committee. The letter stressed the need to "promote the use of materials from renewable, bio-based sources and increase utilisation of waste and industrial side streams".

A meeting between MEPs and BIC staff triggered a parliamentary question from MEP Jonás Fernández on 26 October (P-008008-16). The question relates to the publication of a study on access to finance for the bio-based industries and the blue economy commissioned by the EIB and developed in collaboration with BIC.

In October, BIC developed a paper outlining its views on the EU Waste package: A successful circular economy requires a vibrant renewable bioeconomy.

The paper's key policy asks include:

- Ensuring access to biomass
- Promoting industrial symbiosis and boosting secondary raw materials
- Promoting bio-based packaging

4.5. Press releases and media coverage

In 2016, BIC published three press releases which were widely distributed to the European and bioeconomy press. The first press release about the **€189 million in available funds** for the 2016 BBI JU Call for Proposals was published in April. The June **BIC and Vanguard Initiative sign Bioeconomy MoU** press release announced a new collaborative effort between the two organisations to support improved access to funding and awareness-raising activities. In October, BIC's **Enhanced Central and Eastern Regional Cooperation Boosts European Bioeconomy** press release celebrated the signing of the Lodz Letter of Intent to develop new bioeconomy partnerships with eight Polish regions.

BIC press releases received coverage in EurActiv and leading bioeconomy publications including Biofuels Digest, Bio-Based World News, Biomass Magazine and bioplastics MAGAZINE, as well as in local news outlets in Austria, Finland, Italy, the Netherlands, Poland and Slovakia.

Agro & Chemistry published an article on 9 May dedicated to the launch of the third BBI JU call. On 20 September, Agro & Chemistry published an interview with Nelo Emerencia, Senior Manager Programming at BIC, about the Bio-based Cluster in Emmen, the Netherlands.

The European Research Area Industrial Biotechnology (ERA-IB) published an interview with Dirk Carrez, **Perspectives for IB in the bioeconomy**, about BBI JU's main achievements and its broader socio-economic impact. The interview was published in the May Newsletter.

4.5.1. BIC website and publications

The BIC website (www.biconsortium.eu) was revamped at the end of 2016, giving it a new look and feel. It now includes information on BIC's governance and puts greater emphasis on BIC's members.

To showcase BIC member investments in the European bioeconomy, a series of **Bioeconomy Success Stories** was published, available for download on the BIC website.

In September 2016, BIC also published a **Fact sheet on Biorefineries**.

4.6. Events calendar

18-19 February

EU-Brazil Sector Dialogues Workshop, Seville, Spain
The Institute for Prospective Technological Studies (IPTS), one of seven institutes of the European Commission's Joint Research Centre (JRC), and the Brazilian Ministry of Science, Technology and Innovation (MCTI), organised the workshop "A global view of bio-based industries". Representatives from the EU, Brazil, Canada and the US exchanged information on their respective bio-based industries. BIC presented BBI JU and the role of PPPs in Europe.

3-4 March

General Assembly and Match Making Event, Brussels, Belgium
The BIC General Assembly featured presentations on:

- The Review of the EU Bioeconomy Strategy
- A bioeconomy mapping of regional smart specialisation strategies
- Climate-KIC and bio-based production systems
- The Sustainable Biomass for the Bioeconomy (S2BIOM) project

The BIC Match Making Event (MME) on 4 March welcomed more than 200 participants, of whom two thirds were BIC Associate members. The MME facilitated interaction between industry and non-industry members and included interactive meetings and workshops. There were 200 one-on-one meetings and eight working groups with 20-50 participants.

7 March

ECO-BIO 2016, Rotterdam, the Netherlands
The ECO-BIO conference highlighted the latest research and innovation in industrially viable, safe and ecologically friendly bio-based solutions. BIC co-chaired one of the event sessions.

11 April

CommBeBiz Workshop, Utrecht, the Netherlands
BIC was invited to discuss bioeconomy acceptance with journalists and social scientists at the workshop 'Bioeconomy – Kickstarting the Debate'. The CommBeBiz project aims to bridge the gap between bioeconomy research, business and social innovation.

12-13 April

Fourth BioEconomy Stakeholders' Conference, Utrecht, the Netherlands
Co-organised by the Dutch Ministry of Economic Affairs and the European Commission as part of the European Bioeconomy Strategy and Action Plan, the meeting provided input on the future direction of the European Bioeconomy Strategy. BIC chaired a working session contributing to the 'Stakeholders' Manifesto for the Bioeconomy in Europe'.

14 April

BioSTEP Stakeholder Workshop, Utrecht, the Netherlands
BIC took part in a workshop titled "The Future is Bright, the Future is the European Bioeconomy?" to develop targeted policy recommendations for the development of a balanced bioeconomy strategy at the regional, national and European level.

17-20 April

BIO World Congress on Industrial Biotechnology, San Diego, USA
BIC took part in several one-on-one meetings with companies and brand owners and contributed to the workshop "Back to the future: A Rebalancing of the Global Bioeconomy Through Innovation + Manufacturing." BIC presented on its vision for the European bio-based industries.

21 April

BBI JU Info Day, Brussels, Belgium
BBI JU organised its third Info Day in Brussels, following the official launch of the 2016 BBI JU Call for Proposals. Over 530 participants registered for the event and over 100 participants watched via live streaming.

5 May and 20 May

Info Meeting and Webinar for Finnish Regions, Brussels, Belgium
At the request of the East & North Finland EU Office, BIC met with delegates from the University of Eastern Finland. BIC subsequently organised a webinar for participants (including universities, regional representatives and industry) from across seven Finnish regions to present the BIC and BBI JU programming activities, as well as the benefits for (associate) members. The Kainnu region has since joined BIC as an Associate Member.

17 May

BBI JU National Info Day, Lisbon, Portugal
BIC and BBI JU provided a general overview of BBI JU, BIC and the 2016 Annual Work Plan.

25 May

Innovation for a Sustainable Bioeconomy, Paris, France
The OECD workshop was organised to examine value chains and how public policy can support their creation. BIC presented at the event and workshop results were published in an OECD report.

26 May

BIC-SRG Workshop, Brussels, Belgium
BIC organised this workshop to update members of the BBI JU States Representatives Group (SRG) on the bio-based industries and BIC initiatives. The workshop resulted in a series of actions designed to increase bio-based activities and expand BIC membership in various industrial and geographical areas across the EU.

30 May-1 June

12th International Conference on Renewable Resources and Biorefineries, Ghent, Belgium
BIC provided the keynote presentation at this conference organised to discuss the future of industrial biotechnology, sustainable chemistry and agricultural policy related to the use of renewable raw materials.

1 June

COPA-COGECA Working Party on Research, Brussels, Belgium
Event attendees learned about BIC's programming work and the Strategic Innovation and Research Agenda (SIRA). BIC stressed the importance of having farmers and foresters within BBI JU project consortia, because they provide the feedstocks for bio-based value chains. Agricultural and forestry feedstocks are essential to the emerging bio-based industries.

13 June

BBI JU National Info Day, Ljubljana, Slovenia
BIC presented its activities and 2016 Annual Work Plan. The event was hosted by the Ministry of Education, Science and Sport of Slovenia.

21 June

European Committee of the Regions debate on the EU circular bioeconomy, Brussels, Belgium
Under the title "Innovating towards resource efficiency, jobs and growth – the challenges and opportunities of creating an EU circular bioeconomy" the European Committee of the Regions invited stakeholders to discuss environmental, investment and policy opportunities for the circular bioeconomy with Members of the Parliament and the European Commission. BIC was one of the invited panellists.

8-9 September

EU Cohesion Policy Regions: The Potential of Biomass to Bio-based Products in the CEE Region Workshop, Brussels & Ghent, Belgium
Organised by the European Commission, the workshop addressed several topics relating to the development of a sustainable European bio-based industry. The second day of the event included a visit to the Bio Base Europe Pilot Plant in Ghent, one of BIC's members, and to a local biorefinery.

14-15 September

International Biorefining Seminar & Partnering Workshop, Foulum, Denmark
Aarhus University hosted the FACCE SURPLUS Kick-off Meeting, which was held alongside the International Biorefining Seminar & Partnering Workshop. BIC provided a keynote presentation on BIC and BBI JU.

29-30 September

BIOSPAIN 2016, Bilbao, Spain
Organised by the Spanish Bioindustry Association (ASEBIO) and the Basque Business Development Agency, BIC presented BBI JU and BIC to Spanish stakeholders.

6-7 October

European Bioeconomy Congress, Lodz, Poland
The Fourth European Bioeconomy Congress included presentations from the Commission, BBI JU and BIC as well as national bioeconomy stakeholders. Alongside the publication of the Lodz Declaration of Bioregions, BIC, BBI JU and eight Polish regions signed a Letter of Intent to develop new bioeconomy partnerships.

11 October

From Bio-waste to Bio-based Products: The Potential for Regional Innovation Development Workshop, Brussels, Belgium
BIC engaged in lively workshop discussions at the 14th European Week of Regions and Cities, which focused on the challenges currently facing Europe's regions and cities.

13 October

FOOD 2030: Research & Innovation for Tomorrow's Nutrition and Food Systems, Brussels, Belgium
A high-level event organised by the European Commission's Directorate-General (DG) for Research and Innovation and the DG for Agriculture and Rural Development, FOOD 2030 sought to support the creation of a coherent research and innovation policy framework for food and nutrition security. The 'Food Village' provided information on different H2020 projects, including BBI JU, and was an excellent opportunity to network and raise awareness of BIC and BBI JU activities.

12-13 October

The Circular Economy, Brussels, Belgium
Organised by MEP Kathleen Van Brempt, this policy event included an introduction by Karmenu Vella, European Commissioner for the Environment. BIC presented the bio-based economy.

17 October

Bratislava Bioeconomy Conference (BBEC2016), Bratislava, Slovakia
The BBEC2016, organised under the Slovakian Presidency of the European Council, provided BBI JU and BIC members with the opportunity to showcase everyday products made with bio-based materials, ranging from dandelion tyres and dresses made from milk fibres, to compostable shopping bags and high performance bio-ethanol. These examples prove that greener production methods and processes exist and that the bio-based economy is becoming a reality.

18-20 October

European Forum for Industrial Biotechnology and the Bio-based Economy (EFIB), Glasgow, UK
EFIB is a renowned annual conference on industrial biotechnology and the bio-based economy for businesses and policymakers. The 2016 edition attracted 650 professionals for three days of presentations, workshops, a PitchFest and trade fair. BIC organised a session in collaboration with BBI JU and had several one-on-one meetings with industry representatives.

1 November

Agri Meets Chemicals, Utrecht, the Netherlands
Bringing the worlds of agriculture and chemicals together, the third edition of 'Agri Meets Chemicals' was hosted by Deloitte and Rabobank. BIC joined experts from across Europe to share insights, debate, and discuss commercial opportunities for bio-based materials, chemicals and brands.

14-15 November

European Summit of Industrial Biotechnology (esib), Graz, Austria
BIC presented BBI JU at ESIB, a summit organised by the Austrian Centre of Industrial Biotechnology. The event aims to become an annual meeting hub for European industrial biotechnologists to help them enhance their networks and establish new connections.

05/ PARTNERSHIPS

5.1 Vanguard Initiative

On 21 June 2016, BIC signed a Memorandum of Understanding (MoU) with the Vanguard Initiative to improve interregional cooperation on the bioeconomy. The collaboration will support improved access to funding and awareness-raising activities, marrying BIC's bioeconomy expertise with the Vanguard Initiative's regional network. BIC will work together with the regions in the Vanguard Initiative to exchange information and explore synergies between BBI JU work programs and Vanguard pilot projects. The collaboration will identify opportunities for joint demonstration projects, accelerating the development and uptake of bio-based products, strengthening regional development and creating jobs.

5.2 Polish bioregions

BIC, BBI JU and eight Polish regions signed a Letter of Intent to develop new bioeconomy partnerships on 6 October 2016. Signed by the regions of Lodzkie, Lubelskie, Małopolska, Mazowieckie, Opole, Pomerania, Wielkopolska, West Pomerania, BBI JU and BIC, the Lodz Letter of Intent paves the way for regional actors to collaborate and set up local bioeconomy value chains. All eight of the Polish signatories have selected the bioeconomy as a smart specialisation strategy (RIS3), ensuring limited resources are channelled into the sector they believe will provide the best opportunity for regional development.

5.3 Model demonstrator regions

On 26 January 2016, the European Commission selected six model demonstrator regions (MDRs) to lead the way towards sustainable chemical production in Europe. The selected regions are Andalusia (Spain), Groningen-Drenthe (the Netherlands), Košice (Slovakia), Scotland (United Kingdom), South and Eastern Ireland, and Wallonia (Belgium). BIC is a member of the MDR Sustainable Chemistry Advisory Board and contributed to the development of a self-assessment tool. A BIC delegation visited the Groningen-Drenthe region on 23 March. BIC will visit other MDRs in 2017.

5.4 BIC and SPIRE cooperation

BIC and SPIRE (Sustainable Process Industry through Resource and Energy Efficiency) began working together to avoid overlap between the content of the two public-private partnerships (PPPs). At a workshop in February 2016, complementary Call topics from both PPPs were discussed. Philippe Mengal, BBI JU Executive Director, led a working group to develop priorities to better align the content of the respective SPIRE and BBI JU Calls.

06/ EUROPEAN BIOECONOMY ALLIANCE (EUBA)

THE EUROPEAN BIOECONOMY ALLIANCE (EUBA)

BIC is a founding member of the EUBA, a unique cross-sector alliance dedicated to mainstreaming and achieving the full potential of the European bioeconomy. EUBA advocates for a favourable and coherent policy and investment framework for the development of a competitive and sustainable bioeconomy in Europe. Members share common goals:

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

For more information, visit http://www.bioeconomyalliance.eu

6.1 EUBA position papers and outreach

January 2016

The EUBA position paper on the **Bioeconomy's potential to mitigate climate change** was adopted.

February 2016

The circular economy position paper, **Bioeconomy, a motor to the circular economy,** was adopted and used in EUBA outreach towards European policy makers.

EUBA put forward a series of guiding principles to enable the bio-based industries to deliver climate benefits under the European Union's Emissions Trading Scheme.

April 2016

EUBA wrote a letter to Carlos Moedas, European Commissioner for Research, Science and Innovation, ahead of the Bioeconomy conference in Utrecht which took place on 12-13 April 2016.

On 25 April, in a letter to Karmenu Vella, Commissioner for Environment, Maritime Affairs and Fisheries, EUBA requested the bioeconomy receive support as an integral part of the circular economy.

September 2016

EUBA sent a letter to Phil Hogan, Commissioner for Agriculture and Rural Development, insisting on the role of agriculture and forestry in supplying biomass to be processed into bio-based products and calling for a stronger bioeconomy in the EU.

6.2 EUBA events

March 2016

On 1 March, at a meeting with Elżbieta Bieńkowska, European Commissioner for Internal Market, Industry, Entrepreneurship and SMEs, the EUBA delegation highlighted the importance of the bioeconomy to job creation and competitiveness in Europe and emphasised the need for a stable and consistent regulatory framework.

On 17 March, at an MEP breakfast meeting on "Enhancing the role of the bioeconomy in EU policy," chaired by MEP Miapetra Kumpula-Natri, the EUBA called upon the EU and Member States to support making bio-based public procurement a reality by using the recommendations of DG Grow expert group on Bio-based Products.

April 2016

On 28 April, EUBA was invited by Stephan Raes, Head of the Economic Affairs Department at the Netherlands Permanent Representation in Brussels to speak at the Council Working Party on Industry. Delegates from Austria, Belgium, Finland, France, Hungary and Poland agreed on the importance of the bioeconomy for Europe.

September 2016

On 23 September, EUBA organised an MEP assistant briefing to provide information on the bioeconomy and its importance for the EU in the context of current discussions on the circular economy and the EU waste legislation review. The event was introduced by a video message from MEP Miapetra Kumpula-Natri.

07/ THE BIOECONOMY IN FIGURES

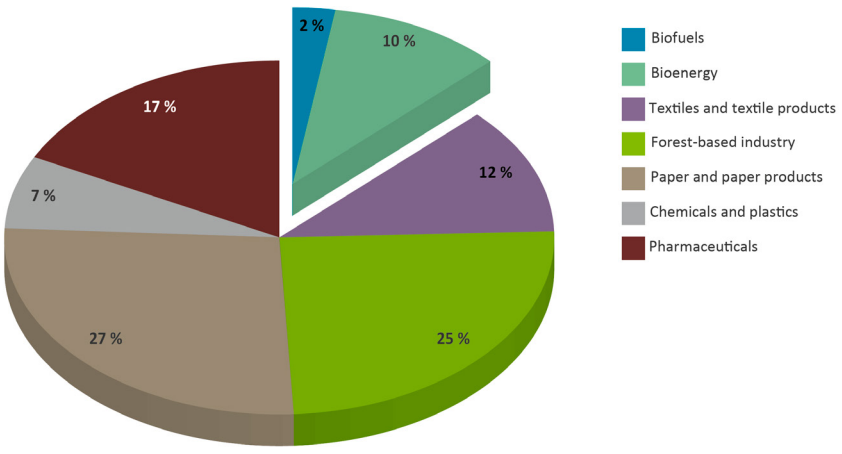
7.1. Turnover

According to Eurostat data from 2014, the European bioeconomy generated an estimated **turnover of around €2.26 trillion[4] .**

The bio-based industries alone generated a turnover of €674 billion. Biofuels and bioenergy accounted for 12% of this, whilst the largest share came from the paper and paper products sector (27%), followed closely by the forest-based industry (25%).

Turnover in the EU bio-based economy (EU-28, 2014)
Total: 674 billion Euro

Source: Eurostat, 2014



Bio-based Industries Consortium

BIO-BASED INDUSTRIES

Prepared by nova-Institute.eu | 2017

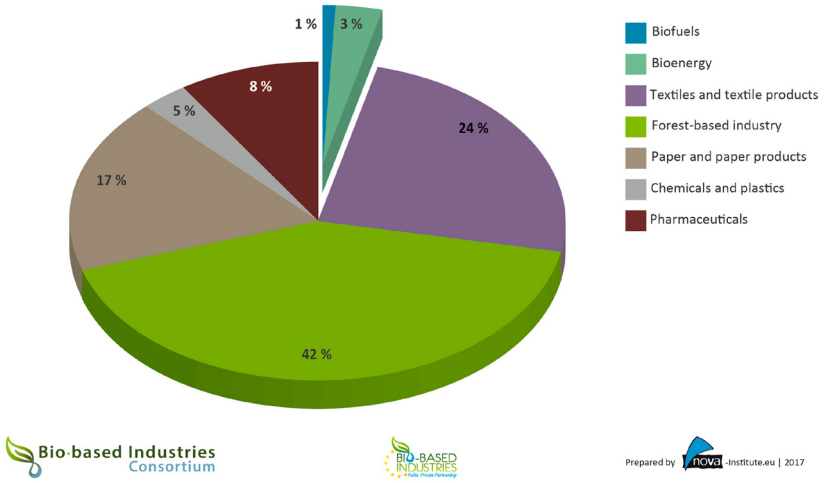
[4] nova-Institute study commissioned by BIC and BBI JU (2017).

7.2. Employment

A cornerstone of the bioeconomy, the bio-based industries play an important role in job creation. An estimated **18.3 million people were employed** by the European bioeconomy in 2014. The forest-based industry employed the greatest share of people (42%) followed by the textiles and textiles products sector (24%) and paper and paper products sector (17%).

Employment in the EU bio-based economy (EU-28, 2013)
Total: 3.3 million Euro

Source: Eurostat, 2014



08/ BIOECONOMY SUCCESS STORIES

The 'Bio-based Industries Success Stories' showcases investments by BIC members in innovative bio-based projects.

Hosted on the BIC website, these real-life examples demonstrate how BIC members are harnessing the power of renewables to transition towards a post-petroleum society. Each case study highlights the positive social and environmental impacts of BIC member bioeconomy projects and the important leveraging effect of the BBI JU in accelerating innovation and market uptake of bio-based products.

Bio-based Industries Consortium

BIOSKOH – NOVEL SECOND GENERATION BIOREFINERY

PROJECT DETAILS

Type of project:	BBI-Flagship
Start date:	June 2016
Duration:	4 years
Total cost:	€30 million
Industry investment:	€9 million
Headquarters:	Tortona, Italy
Website:	www.bioskoh.eu

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ABOUT THE PROJECT
A circular bioeconomy project, BIOSKOH will transform a brownfield industrial site in eastern Slovakia into a 55 kton cellulosic ethanol production facility.

PROJECT AIMS
A flagship research project, BIOSKOH will demonstrate a first-of-its kind commercial-scale second-generation biorefinery.

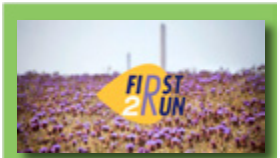
Boosting the sustainable conversion of renewable biomass into bio-based products, chemicals and energy is central to Europe's transition towards a sustainable bioeconomy. Currently, there are no full-scale producers of second generation (2G) bioethanol in Europe. BIOSKOH aims to change this by using 'Innovation Stepping Stones' to produce cellulosic ethanol for EU biofuel mandates.

The project will also explore emerging bio-based materials, such as lignin and bioethylene.

5

Bio-based Industries Consortium

FIRST2RUN – INTEGRATED BIOREFINERY FOR DRY CROPS



PROJECT DETAILS

Type of project:	BBI-Flagship
Start date:	July 2015
Duration:	4 years
Total cost:	€25 million
Industry investment:	€8 million
Headquarters:	Novara, Italy
Website:	www.first2run.eu

"We believe that the Bio-Based Industries Joint Undertaking, through this first flagship project, can produce a decisive acceleration towards a circular bioeconomy, creating not only new knowledge but also opportunities for economic growth and employment in Europe," Novamont CEO Catia Bastioli.

ABOUT THE PROJECT
A flagship demonstration of an integrated biorefinery for the sustainable transformation of dry crops into bio-based materials.

PROJECT AIMS
By setting up a value chain which integrates the regional agricultural sector with a new biorefinery, First2Run will demonstrate how low-input and underutilised oil crops like cardoon, grown in arid and/or marginal lands, can be used in biomaterials. A 50/50 joint venture (JV), this project will see the reconversion of the Porto Torres petrochemical site into a biorefinery with an integrated production chain for chemical intermediates.

The biorefinery will make use of every fraction (cascading use of biomass) to produce chemicals and animal feed. An agreement between Novamont and Coldiretti (the Italian Farmer's Federation) will ensure the biorefinery is the centrepiece of a circular economy model.

9

Bio-based Industries Consortium

FUNGUSCHAIN – MUSHROOM RESIDUE TRANSFORMATION

PROJECT DETAILS

Type of project:	BBI-Demo
Start date:	November 2016
Duration:	4 years
Total cost:	€8 million
Industry investment:	€2.3 million
Headquarters:	Amsterdam, the Netherlands
Website:	www.funguschain.eu

"Funguschain is a highly integrated project with a unique consortium specialising in various elements across a range of value chains. It brings together leading scientists and companies, who from the project outset have worked closely together to make this challenging project a success. Funguschain will provide an important example of a new way of working in the bio-based economy," Dr Bart van der Burg, Director of Innovation at BDS.

ABOUT THE PROJECT
Funguschain will use novel cascading processes to extract high-value molecules from fungal residue to meet end-user needs in the food, cleaning and plastics sectors.

PROJECT AIMS
The European mushroom farming industry generates over 60,000 tons of agri-residues each week. Funguschain aims to transform this waste into bio-based additives, bioplasticisers and biopolymers using innovative new procedures.

The project will demonstrate the industrial viability of building a new biorefinery which uses cost-effective extraction technologies and transforms more than 65% of the mushroom waste into valuable additives.

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Bio-based Industries Consortium

VALCHEM – CHEMICAL BUILDING BLOCKS FROM WOOD

PROJECT DETAILS

Type of project:	BBI-Demo
Start date:	January 2015
Duration:	4 years
Total cost:	€18.5 million
Industry investment:	€5.4 million
Headquarters:	Augsburg, Germany
Website:	www.valchem.eu

"Each part of the process – wood-to-sugars for chemical production, production of bio-MPG from sugars and production of lignin-based performance chemicals – show progress well beyond the state-of-art," Dirk Carrez, Executive Director of the Bio-based Industries Consortium.

ABOUT THE PROJECT
ValChem (Value-added chemical building blocks and lignin from wood) is an ambitious project combining expertise from the forest, chemical and biotechnology industries in the development of a sustainable and integrated process to convert wood into useful end products.

PROJECT AIMS
The project will demonstrate the technical and economic viability of an integrated biochemicals process covering the whole value chain from wood – the raw material – to a selected platform chemical and lignin-based performance chemicals.

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09/ BIC MEMBERS

FULL MEMBERS

Large industries

- AB InBev
- BASF
- Biochemtex
- Borregaard
- Cargill
- CEPSA – Compañía Española de Petróleos
- Clariant
- Cosun
- DONG Energy
- DSM
- DuPont Industrial Biosciences
- Ence
- ENERGOCHEMICA TRADING
- Fater
- Fertinagro
- Glanbia Ingredients Ireland
- Holmen
- Metsä Group
- Monaghan Mushrooms
- Novamont
- Novozymes
- Oleon
- Repsol
- Roquette
- Sappi
- Smurfit Kappa
- Södra
- Soremartec – Ferrero Group
- Stora Enso
- Südzucker
- Total
- Unilever
- UPM
- Versalis

SMEs

- AlgaEnergy
- Alkol Biotech
- ARD
- Avantium
- Bionet Engineering
- Biopolis
- BPF – Bioprocess Pilot Facility
- BLC3
- Buggypower
- CelluComp
- Celtic Renewables
- CPI – Centre for Process Innovation
- CLEA Technologies
- Corbion
- Exergy
- GFBiochemicals
- IDENER
- InKemia IUCT
- InnovEn
- Lygos
- METabolic EXplorer
- MetGen
- Mi-plast
- MicroA
- Nova Pangaea Technologies
- Particula Group
- Plaxica
- Six Fifty
- TIPA

SME clusters[5]

- BE-Basic
- Bedrijfsnetwerk Groene Chemie Drenthe
- Biobased Delta
- Bio Base Europe Pilot Plant
- BioEconomy Cluster
- BIOPRO Baden-Württemberg
- BioVale
- CLIB2021
- CLIC Innovation
- Dutch Biorefinery Cluster
- GFPi – Gemeinschaft zur Förderung von Pflanzeninnovation e.V.
- GreenWin
- IAR – Industry and Agro-resource
- IBB Netzwerk GmbH
- IBioIC – Industrial Biotechnology Innovation Centre
- ISPT – Institute for Sustainable Process Technology

ASSOCIATE MEMBERS

- 3N Kompetenzzentrum Niedersachsen Netzwerk Nachwachsende Rohstoffe und Bioökonomie
- Aalborg University
- Aarhus University – Danish Centre for Food and Agriculture
- Åbo Akademi University
- acib – Austrian Centre of Industrial Biotechnology
- ACS GCI – American Chemistry Society Green Chemistry Institute
- AFBI – Agri-Food and Biosciences Institute
- AIJU – Asociación de Investigación de la Industria del Juguete
- AIMPLAS – Plastics Technology Centre
- AINIA Technology Centre
- AITEX – Textile Research Institute
- Aitiip Technology Centre
- Andaltec Plastic Technological Centre
- ARCMED – Association of Mediterranean Forest Owners
- Atlanpole
- Automotive Industry Institute
- BIO Deutschland
- Bio4Energy
- BIOPLAT – Spanish Biomass Technology Platform
- BOKU – University of Natural Resources and Life Sciences, Vienna
- Brightlands Chemelot Campus
- Campus Iberus
- CBB Capbiotek
- CEA
- Cefic – European Chemical Industry Council
- CENER – National Renewable Energy Centre
- CEPF – Confederation of European Forest Owners
- CEPI – Confederation of European Paper Industries
- Certech – The Centre of Technological Resources in Chemistry
- CERTH – Centre of Research and Technology Hellas
- Chalmers University of Technology
- CIBE – International Confederation of European Beet Growers
- CIEMAT – Centro de Investigaciones Energéticas, Medioambientales y Technológicas
- CIRAD – Agricultural Research for Development
- CIRCE – Research Centre for Energy Resources and Consumption
- CNR – National Research Council of Italy
- CNRS – National Centre for Scientific Research
- CNTA – National Centre for Technology and Food Safety
- CoE BBE – Centre of Expertise Biobased Economy
- Condorcet RFS
- COPA-COGECA
- CREAF – Ecological and Forestry Applications Research Centre
- CSIC – Spanish National Research Council
- CTAQUA – Andalusian Aquaculture Technology Centre
- CTFC – Forest Sciences Centre of Catalunya
- CTP – Centre Technique du Papier
- DECHEMA – Society for Chemical Engineering and Biotechnology
- DTU Biosustain – Centre for Biosustainability at the Technical University of Denmark
- DWI – Leibniz Institute for Interactive Materials

[5] Representing 110 SMEs in total

- ECN – Energy Research Centre of the Netherlands
- ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development
- ENGIE Laborelec
- Environment Park
- EPNOE – European Polysaccharide Network of Excellence
- ERRMA – European Renewable Resources and Materials Association
- ESA – European Seed Association
- EuropaBio
- European Bioplastics
- FCBA – Institut Technologique Forêt Cellulose Bois-construction Ameublement
- FEUGA – La Fundación Empresa-Universidad Gallega
- FoodDrinkEurope
- Forschungszentrum Jülich
- FORTH/ICE-HT – Foundation for Research and Technology Hellas – Institute of Chemical Engineering Sciences
- Fraunhofer
- FTP – Forest-based Sector Technology Platform
- IAPAN – Institute of Agrophysics Polish Academy of Sciences
- IFP Energies Nouvelles
- IK4 Research Alliance
- Inbiotec – Instituto de Biotecnología de León
- INERIS – L'Institut National de l'Environnement Industriel et des Risques
- INIA – National Institute for Agricultural Research
- Innovatum
- Innovhub SSI – Stazioni Sperimentali per l'Industria
- Innventia (RISE)
- INRA – French National Institute for Agricultural Research
- INSTM – National Interuniversity Consortium of Materials Science and Technology
- IRTA – Institute of Agro-food Research and Technology
- ISCC – International Sustainability and Carbon Certification
- ITENE – Research and Technology Centre of Packaging, Transport and Logistics
- ITERG – Expertise Lipides, Corps gras
- IVIA – Instituto Valenciano de Investigciones Agrarias
- KIT – Karlsruhe Institute of Technology
- KTH – Royal Institute of Technology in Stockholm
- LUT – Lappeenranta University of Technology
- Leitat Technological Center
- LGP2 – Laboratory of Pulp and Paper Science and Graphic Arts
- LIST – Luxembourg Institute of Science and Technology
- Luke – Natural Resources Institute Finland
- Lund University
- Materia Nova
- Norut Narvik – Northern Research Institute Narvik
- nova-Institute
- NUI – National University of Ireland, Galway
- Piteå Science Park
- Plants for the Future – European Technology Platform
- PTS – Papiertechnische Stiftung
- Rabobank Group
- RAIZ – Forest and Paper Research Institute
- RE-CORD – Renewable Energy Consortium for Research and Demonstration
- RIVM – National Institute for Public Health and the Environment
- RSB – Roundtable on Sustainable Biomaterials
- RTDS Association
- SciTech-Service
- SINTEF
- Skogforsk – Forestry Research Institute of Sweden
- SP Technical Research Institute of Sweden
- SPRING – Sustainable Processes and Resources for Innovation and National Growth
- Starch Europe
- Steinbeis Europa Zentrum
- STU – Slovak University of Technology in Bratislava
- SusChem
- Swerea IVF
- Swerea SICOMP
- Tecnalia Corporation
- The James Hutton Institute
- Thünen Institute
- TNO – Netherlands Organisation for Applied Scientific Research
- TU Delft – Delft University of Technology
- TU/e – Eindhoven University of Technology
- TUHH – Hamburg University of Technology
- UA – University of Alicante
- UAH – University of Alcalá
- UAL – University of Almeria
- UCA – University of Cádiz
- UCCS – University of Colorado Colorado Springs
- UGent – Ghent University
- ULE – University of León
- Unimore – University of Modena and Reggio Emilia
- Università Cattolica del Sacro Cuore (Catholic University of the Sacred Heart)
- University of Bologna
- University of Graz
- University of Hohenheim
- University of Naples Federico II
- University of Oulu
- University of Oviedo
- University of Valladolid
- University of Vigo
- UPV/EHU – University of the Basque Country
- UPV – Polytechnic University of Valencia
- USC – University of Santiago de Compostela
- Utrecht University
- VITO
- VTT Technical Research Centre of Finland
- Wood K plus – Kompetenzzentrum Holz
- WUR – Wageningen University & Research

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