Creating value chains to foster bio-based industries in Europe

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Bio-based Industries Consortium

In this session I will address

- What is BIC (Bio-based Industries Consortium): who, where, why
- The contribution of the bio-based industries to the European bioeconomy
- The public-private partnership Bio-based Industries Initiative
  - Implemented by the Bio-based Industries Joint Undertaking
  - Led by the industry (BIC)
    - Annual work plans to achieve long-term goals
  - BBI impacts so far
    - Current open call 2017

THE BIO-BASED INDUSTRIES CONSORTIUM

BIC's mission and activities

To build new 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

Bio-based Industries Consortium (BIC) established in 2012 to

- Represent the private sector in the Public-Private Partnership BBI JU with the EC (public)

Activities:

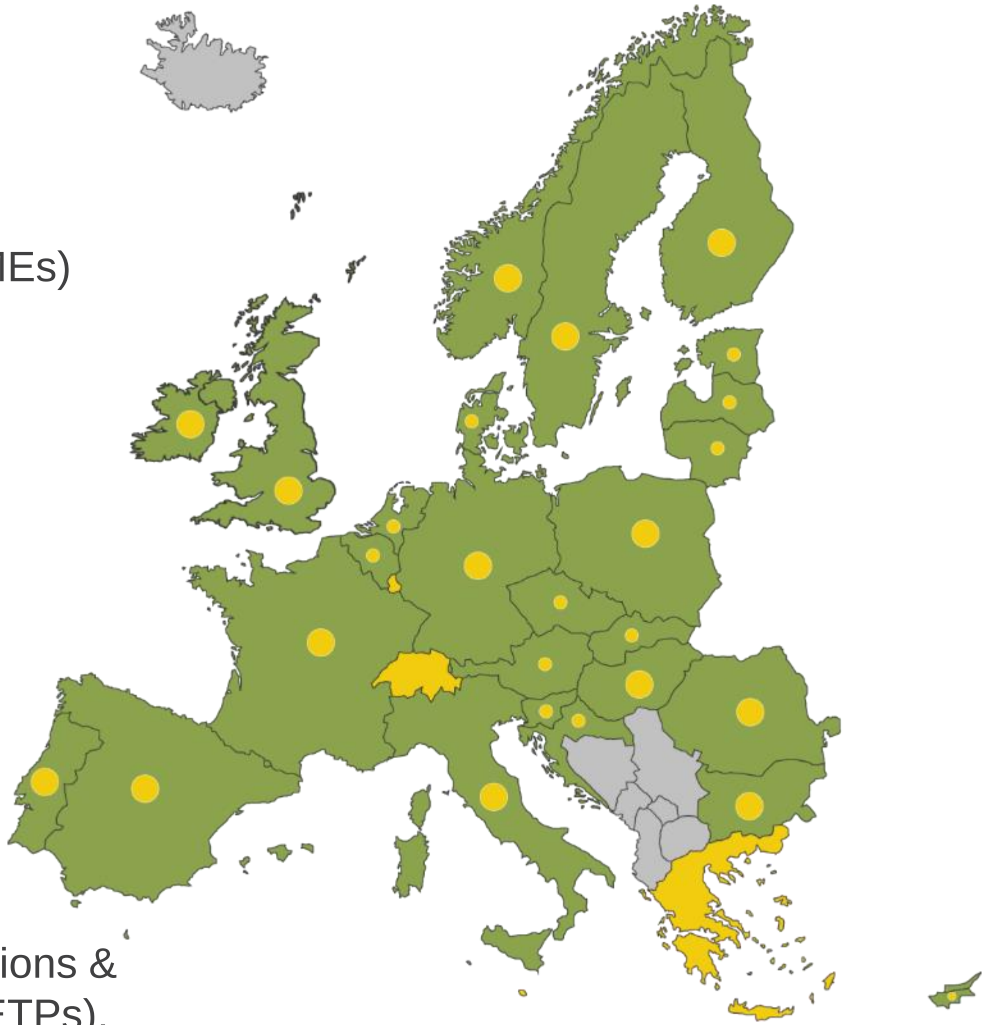
- Set up and update the BBI's Strategic Innovation and Research Agenda (SIRA)
- Lead the development & writing of the Annual Work Plans with topics for the Calls for Proposals
- Mobilise stakeholders: industry (large and SME), research organisations, universities, regions and relevant stakeholders across Europe
- Assist members gaining better access to European financial instruments
- Create awareness. At regional level: MoU with ERRIN, Vanguard Initiative, Polish regions, …; partnership with 6 Model Demonstrator Regions

Our members – per 5 May 2017

- 77 Full members
  - 31 Large industries
  - 30 SMEs
  - 16 SME Clusters (representing 110 SMEs)

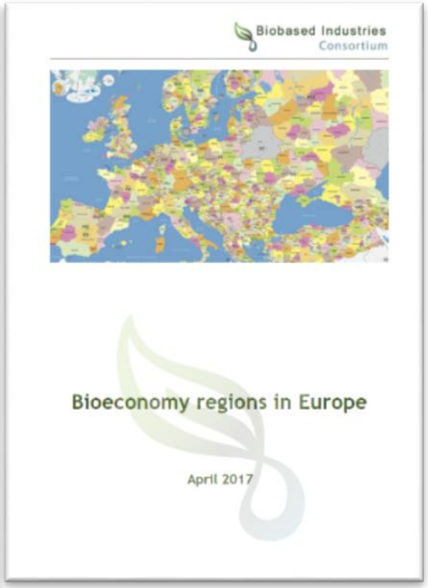
  Several industrial sectors covered
  - Agriculture & Agri-food
  - Forestry and Pulp & Paper
  - Technology providers
  - Chemicals and materials
  - Energy
  - Aquatic
  - …

- 146 Associate members
  - Universities, RTOs, European associations & organisations, Technology Platforms (ETPs), public institutions, regional organisations, private banks, …



(In)direct impact of the BBI JU

- **A clear framework** that brings clarity for activities & investments, together with predictability
- **Developing new value chains** involving different industrial sectors
- **A joint approach** - across sectors and nations – that will unite parties that :
  - would otherwise find these activities too risky for an individual sector/company to carry out on its own
  - are not used to work together
- **Improve access to finance** (EIB, ESIF, …), attract investments to EU and **leverage further (industry) investments**



Contents Bioeconomy regions in Europe

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Importance of the EU bio(based) economy

Turnover in the bioeconomy in the EU-28 (2014)

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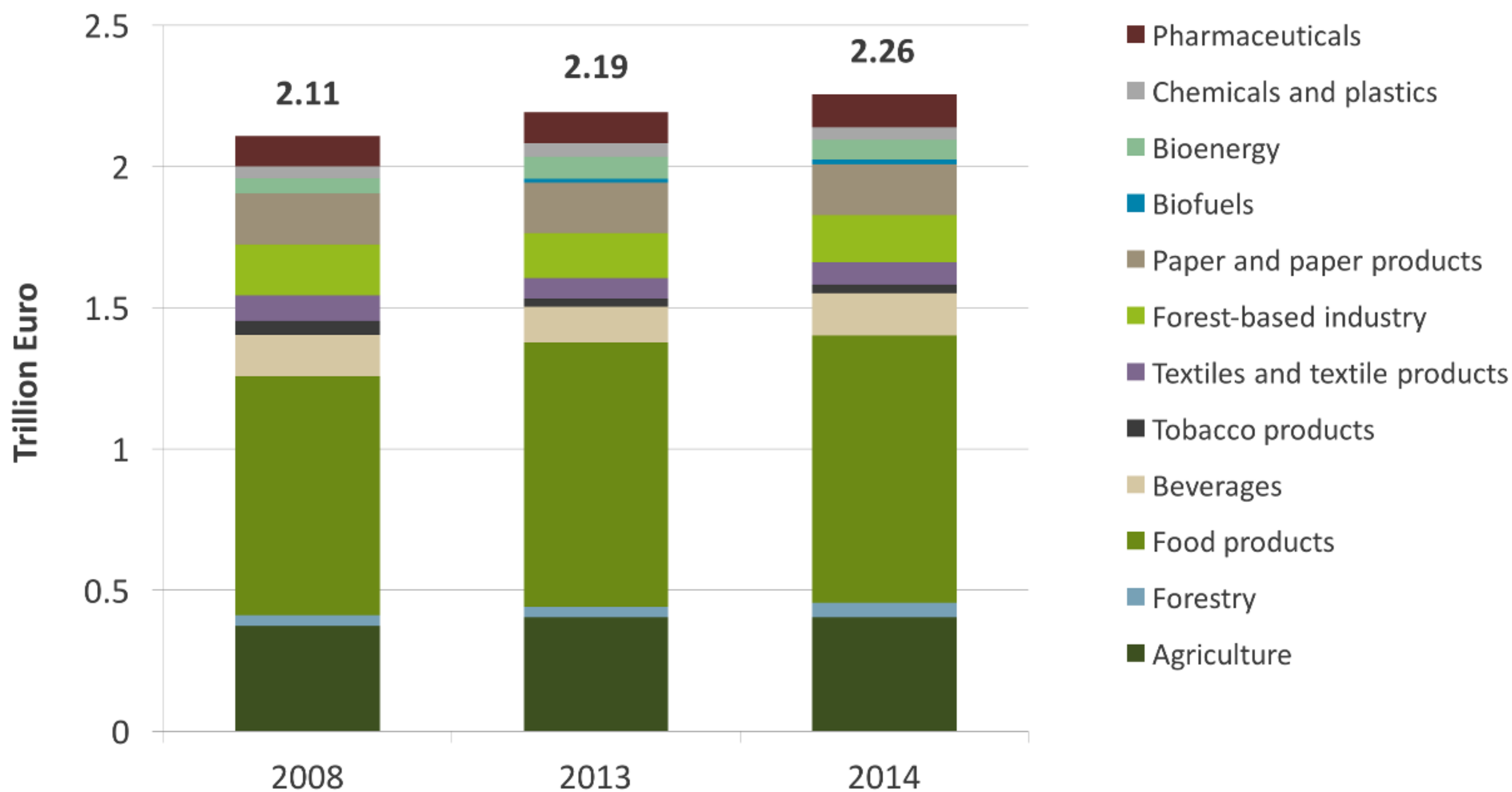

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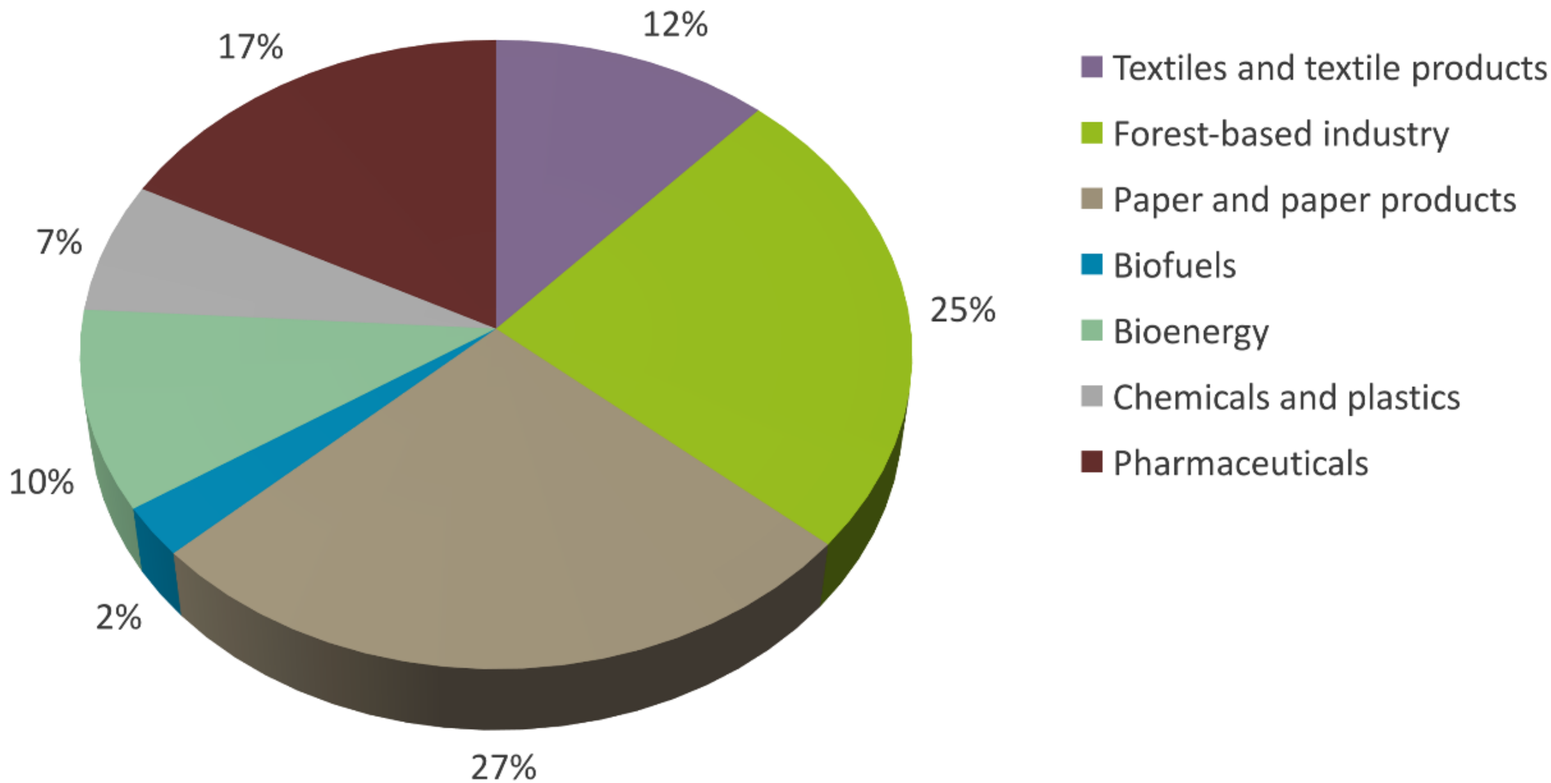
BIO-BASED INDUSTRIES Public-Private Partnership

Prepared by nova-Institute 2017

The total European Bioeconomy, including the food, feed, beverages and primary sectors (agriculture and forestry) amounts to 2.26 trillion EUR turnover.

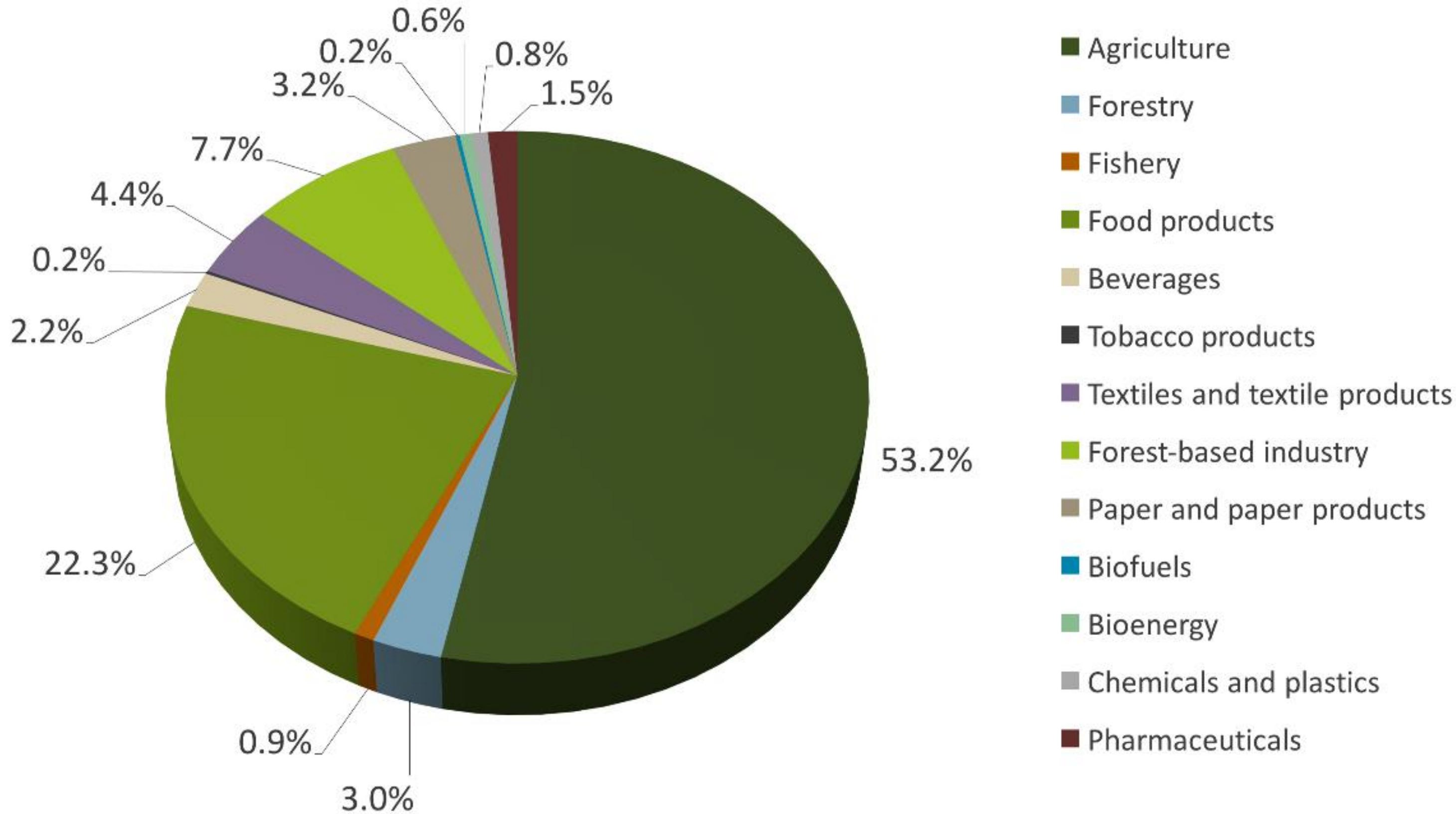
Turnover in the bio-based economy in the EU-28 (2014)



Prepared by nova-Institute 2017

The bio-based industries (chemicals and plastics, pharmaceuticals, paper and paper products, forest-based industries, textile sector, biofuels and bioenergy) contribute with 674 billion EUR.

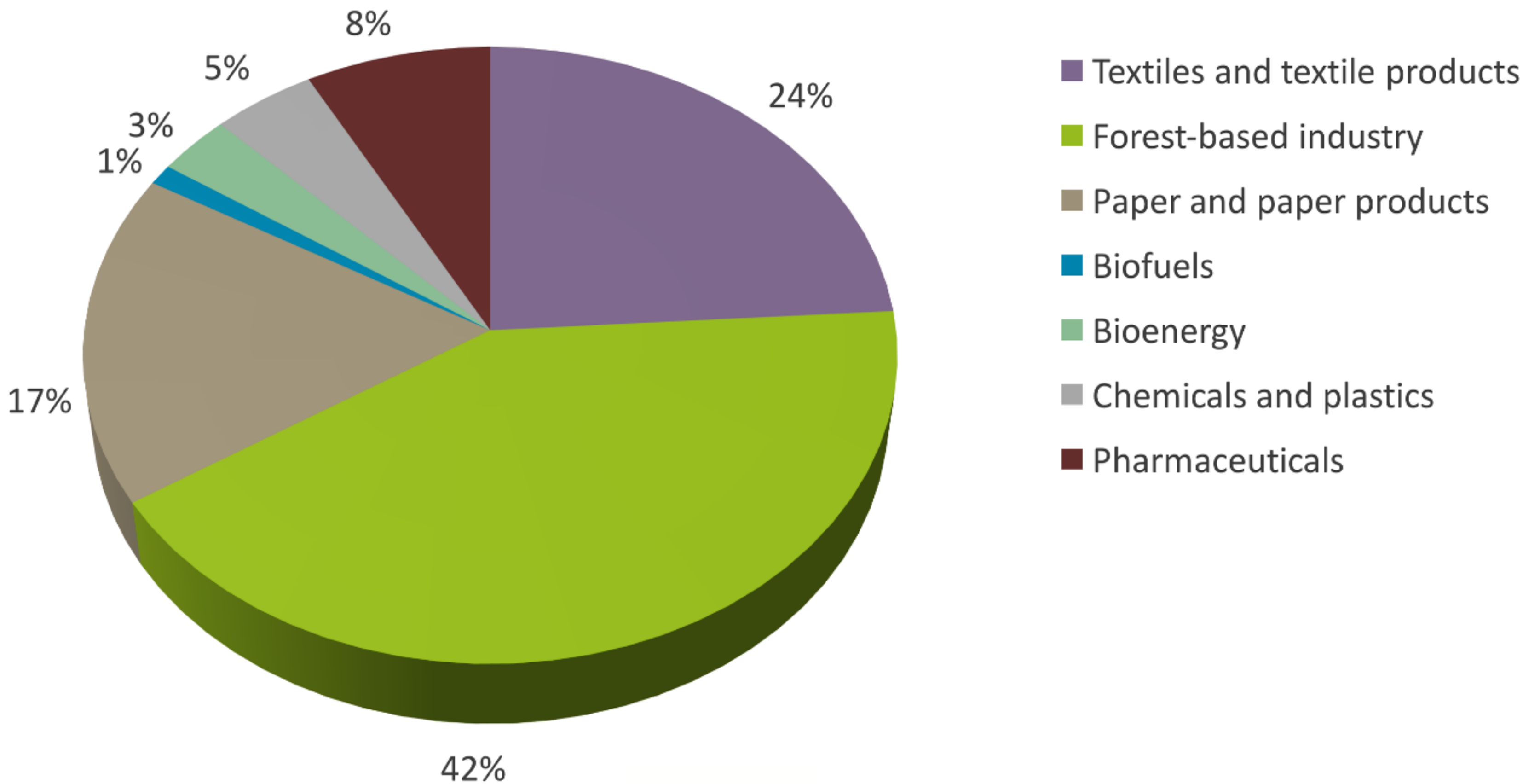
Employment in the bioeconomy in the EU-28 (2014)



Prepared by nova-Institute 2017

The total employment in the European Bioeconomy is 18.3 million employees with primary biomass production (agriculture and forestry) as the biggest contributor (56%).

Employment in the bio-based economy in EU-28 (2014)

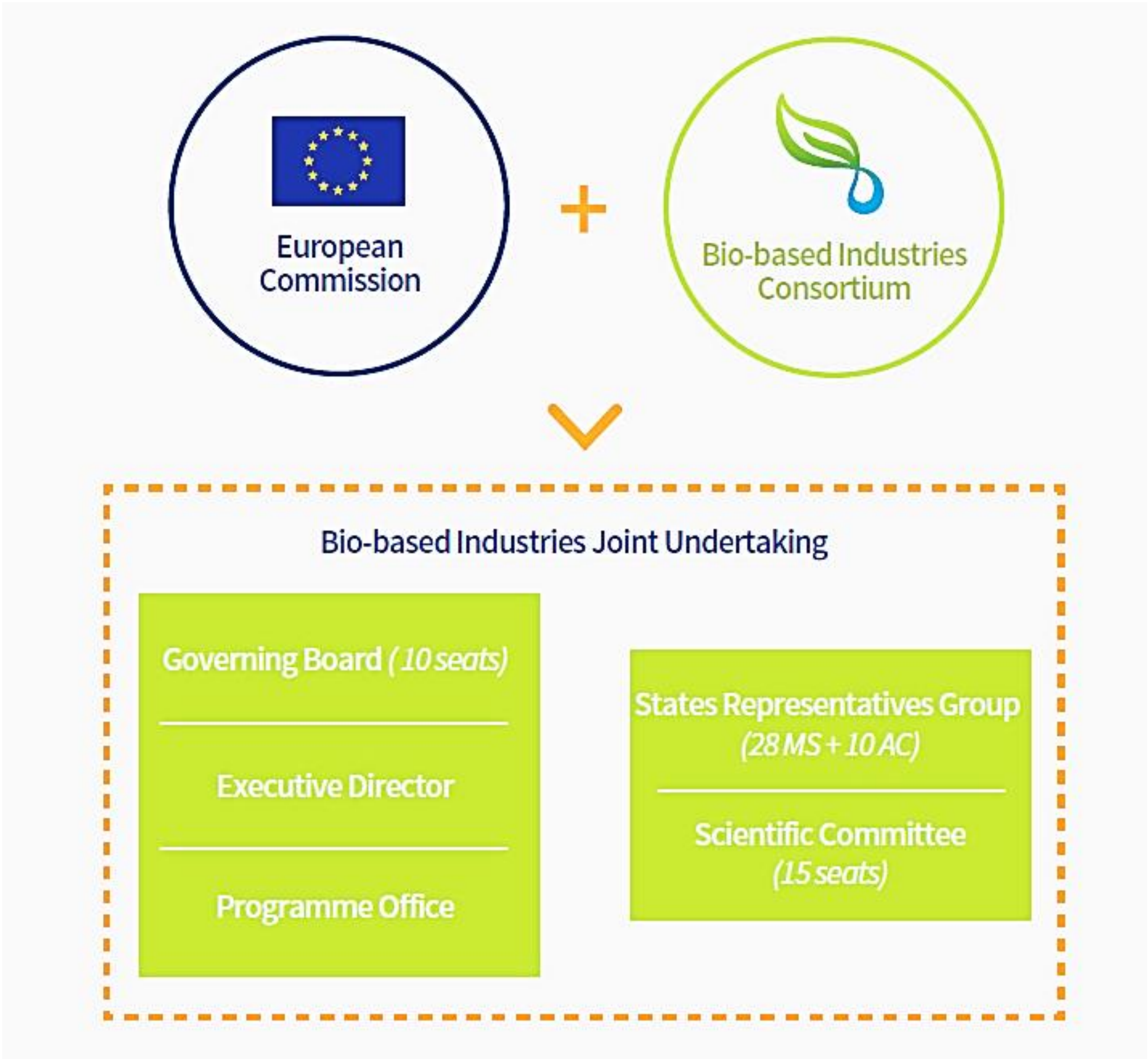


Prepared by nova-Institute 2017

The bio-based industries contribute with 3.3 million employees.

Public-private partnership: Bio-based Industries Initiative (BBI)

The BBI JU Governance



A € 3,7 billion public-private partnership

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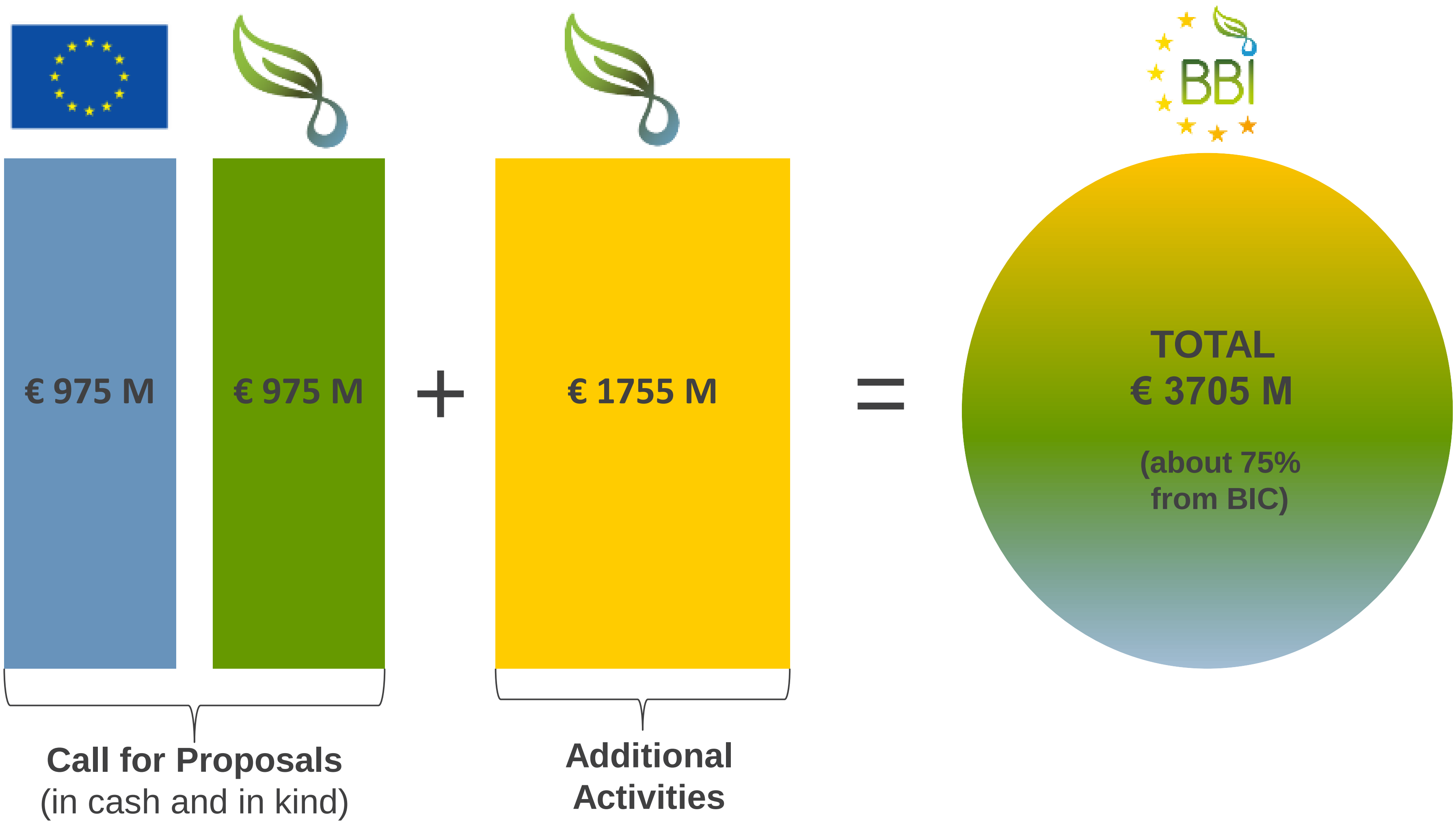

Implemented through annual work plans

Includes admin costs of the JU

Basis for annual work plans

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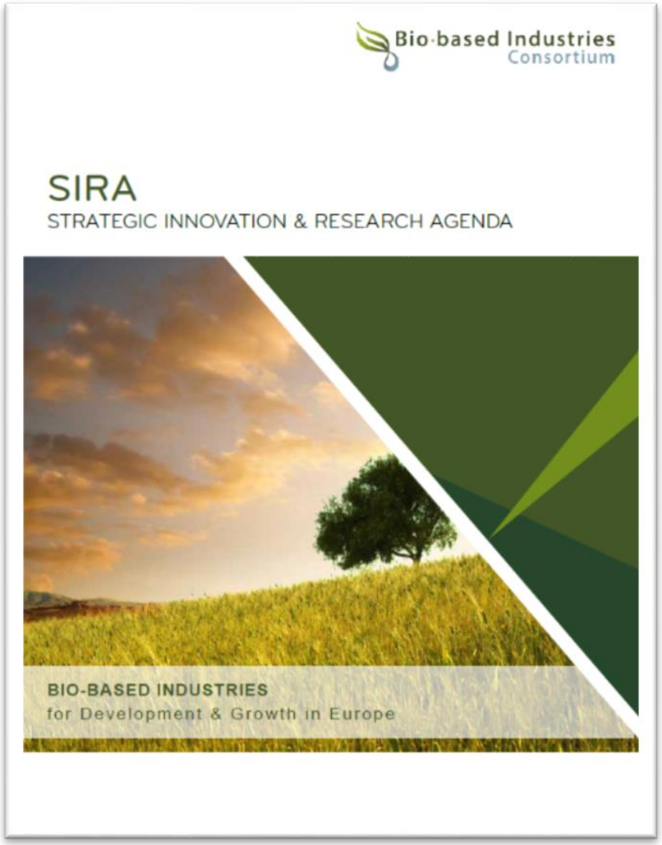
Version 1 (2013)



Version 2 (2017)

‘Actions’ in annual work plans

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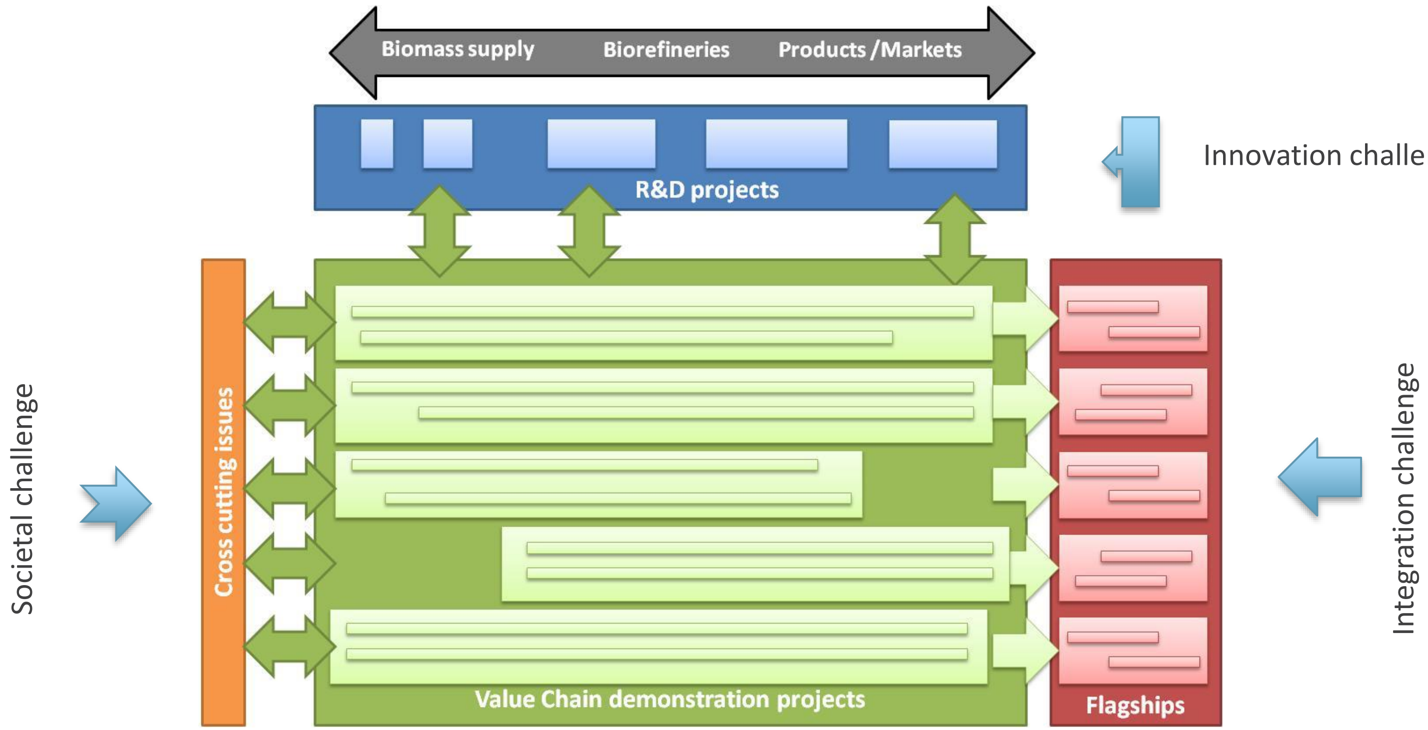

Research and Innovation Actions: TRL 4-5;	30.5% of budget
Innovation Actions – Demonstration: TRL 6-7;	30.5% of budget
Innovation Actions – Flagship: TRL 8;	35.5% of budget
Coordination & Support Actions;	3.5% of budget

Bio-based value chains per the BBI Initiative

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Biomass and organic waste

From the agro-based industries
- Feedstock originating from the agriculture and agro-food industries
- Agricultural crops such as flax, hemp and fibre
- Co-products, side streams, and residues from the agriculture, including animal manure and from the agro-food industries, including residues from food processing plants

From the forest-based industries
- Feedstock originating from the forest and forest-based industries
- 'Woody and non-wood forest feedstock'
- Co-products, side streams, and residues from the forest and forest-based industries, including the wood industry, saw mills, Paper and Pulp

From the aquatic-based industries
- Feedstock originating from the aquatic and aquatic-based industries, including aquaculture, the fish and fish processing industries
- Co-products, side streams and residues from the aquatic and aquatic-based industries

Bio-waste and CO_2:
- Biodegradable garden and park waste
- Food and kitchen waste from households, restaurants, caterers and retail premises
- Waste water and sludge
- CO_2

Biorefineries

Bio-based products & markets
- Bio-based chemicals
- Bio-based plastics, polymers, materials, packaging
- Specialties (for example bio-based surfactants, lubricants, pharmaceuticals, nutraceuticals, cosmetics)
- Textiles
- Food ingredients and feed
- Advanced biofuels

Impacts 3 years BBI JU 2017 call open funding / cost of projects

Impact of 3 years BBI

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DIRECT IMPACTS:

- 65 projects of which 20 DEMOs and 6 FLAGSHIPS (full scale biorefineries)
- A total of 729 participants from 30 countries for a total grant of € 418 million
- 36,7% of beneficiaries are SMEs. Funding to SMEs: 29%
- Current leverage: more than €4 private investment for each €1 of public money
- Projects from 2014-2015 exceed many of the expected impacts projections for 2020

See details on https://bbi-europe.eu

BBI grant-awarded projects 2014-2016

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Strategic orientation	Focus area	RIAs (TRL 3-5)	DEMOs (TRL 6-7)	Flagships (TRL 8)	CSAs
Sustainable supply of biomass feedstock	Agri-based feedstock	CARBOSURF, LIBBIO	PULP2VALUE, FUNGUSCHAIN, GreenProtein, AgriMax, GRACE	FIRST2RUN	
	Forest-based feedstock	PROVIDES, SmartLi, GreenLight, EFFORTE, TECH4EFFECT, NEOCEL	ValChem, LigniOx, EUCALIVA, Dendromass4Europe		
	Aquatic feedstock	MACROCASCADE, BIOSEA, ABACUS, VALUEMAG, MAGNIFICENT			
	Bio-waste and CO_2	NewFert, AFTERLIFE, PERCAL	EMBRACED, URBIOFIN		
Innovative processing	Pre-treatment	US4GREENCHEM			
	Conversion of pre-treated feedstocks to bio-based chemicals and materials	LIBRE, Zelcor, EnzOx2, BIOrescue, InDIRECT	DEMETER, OPTISOCHEM	PEFerence	
	Downstream processing				
	System modelling				
Innovative products	Drop-in bio-based products		BIOFOREVER, GREENSOLRES, LIPES	BIOSKOH; LIGNOFLAG	
	Bio-based products that outperform fossil-based counterparts	HYPERBIOCOAT, ReSolve ECOXY, SSUCHY, BARBARA, POLYBIOSKIN, BioBarr, SHERPACK, BIOSMART, REFUCOAT	PULPAKTION, FRESH, BIOMOTIVE	EXILVA	
	Breakthrough 'new' chemicals setting the foundation for tomorrow's market				
	Proteins and active ingredients for feed/food, pharma and cosmetics	PROMINENT	SYLFEED	Xxxx	
Market uptake					STAR4BBI, BioCannDo, BIOCOM, RoadToBio Pilots4U, BIOPEN
Total granted projects		33 RIAs	20 DEMOs	6 FLAGs	6 CSAs

Colour coding: CALL 2014, CALL 2015.1, CALL 2015.2, CALL 2016

Products topics 2014-2018

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Strategic orientation	Focus area	AWP 2014	AWP 2015	AWP 2016	AWP 2017	AWP 2018
Innovative products	Drop-in bio-based products	D1 (**(Di)carboxylic acids, diols & polyols** from lignocellulosic residues)	D1 (**Building blocks**) **BIOFOREVER, GREENSOLRES** D3 (**Bio-based elastomers**) D4 (Products **from vegetable oils and fats**) **LIPES**			
			F1 (**Bio-based chemicals, materials or ethanol** from **lignocellulosic** feedstock) **BIOSKOH; LIGNOFLAG**			
	Bio-based products that outperform fossil-based counterparts		R3 (Functional molecules for **coatings & surface treatment**) **HYPERBIOCOAT**	R5 (Smart **food packaging**) **BIOSMART, REFUCOAT, SHERPACK, BioBarr** R6 (**Bio-based alternatives** to improve HSE aspects) **ReSolve** R7 (**High performance polymers**) **BARBARA, ECOXY, SSUCHY, POLYBIOSKIN**	R5 (New **bio-based precursors** for **mass consumption products**) R6 (**Bio-based plastics** for a sustainable **EoL** phase)	SO3.1 (**Aromatics** from cellulose and/or lignin) - **RIA** SO3.2 (Tailor-made **functional molecules**) - **RIA (or DEMO)** SO3.4(Systems to **maintain soil quality**) - **RIA**
			D2 (**Cellulose-based** composite **packaging**) **PULPAKTION, FRESH**	D5 (**Products** with **new functionalities** for medical, construction, automotive and textile) **BIOMOTIVE**	D4 (Bio-based **fertilising products**) D5 (Advanced **bio-based fibres & materials** for **large volume applications**)	SO3.3 (**Bio-pesticides and bio-herbicides**) - **DEMO**
			F2 (Valorisation of **cellulose**) **EXILVA**			

Products topics 2014-2018 -2

Strategic orientation	Focus area	AWP 2014	AWP 2015	AWP 2016	AWP 2017	AWP 2018
	Breakthrough 'new' chemicals setting the foundation for tomorrow's market				R7 (**Novel secondary bio-based chemicals**)	
					D3 (**Breakthrough primary bio-based chemicals**)	
	Proteins and active ingredients for feed/food, pharma and cosmetics	R7 (**Proteins from plant residues**) **PROMINENT**			R4 (**Proteins from side streams & residues**)	
				D8 (**Proteins for feed**) **SYLFEED**		
				F1 (High-value **products from food industry**) **XYZ**	F2 (**Proteins for food & feed**)	

Topics in the annual work plan 2017

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Indicative budget AWP 2017

Topic	Indicative budget (million EUR)
Research and Innovation Actions	
BBI 2017.R1 – Valorisation of gaseous side streams from bio-based operations into chemical building blocks	36
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 2017.R3 – Exploiting extremophiles and extremozymes to broaden the processing conditions to convert biomass into high value building blocks	
BBI 2017.R4 – Proteins and other bioactive ingredients from side streams and residues	
BBI 2017.R5 – Novel bio-based chemical precursors to improve the performance of mass consumption products	
BBI 2017.R6 – Competitive biodegradable, compostable and/or recyclable bio-based plastics for a sustainable end-of-life phase	
BBI 2017.R7 – Novel secondary bio-based chemicals without significant fossil-based counterparts but with high application potential	
Innovations Actions – Demonstration Actions	
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	22
BBI 2017.D2 – Integrated multi valorisation of algae into advanced materials and high added-value additives	
BBI 2017.D3 – Breakthrough primary bio-based chemicals without significant fossil-based counterparts but with high marketability	
BBI 2017.D4 – Innovative bio-based fertilizing products to increase the sustainability of fertilising practices in agriculture	
BBI 2017.D5 – Advanced bio-based fibres and materials for large-volume applications	
Innovation Actions – Flagship Actions	
BBI 2017.F1 – Integrated zero waste’ biorefinery utilising all fractions of the feedstock for production of chemicals and materials	21
BBI 2017.F2 – Large-scale production of proteins for food and feed applications from alternative, sustainable sources	
Coordination and Support Actions	
BBI 2017.S1 – Establish cooperation and partnership with brand owners and consumer representatives to improve market access of sustainable bio-based products	2
BBI 2017.S2 – Identify opportunities for ICT to increase efficiency of biomass supply chains for the bio-based industry	


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