The new Bio-based Industries Initiative bridging the gap between lab and market and meeting the societal challenge

Supported by



Nelo Emerencia Programming Biorefining seminar, Denmark, 15 September '16



### To build 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

### Activities:

- Set up and update the Strategic Innovation and Research Agenda (SIRA)
- Define the Annual Work Plans with topics for the Calls for Proposals
- Mobilise the industry (large and SME), research organisations, universities and relevant stakeholders
- Assist members gaining better access to European financial instruments



**Benefits for BIC members** 

# Our members – more than 200 and growing Consortium

- 69 Full members
  - Large industries
  - SMEs
- Regional clusters
- 151 Associate members
- Universities & RTOs
- European (Trade) Organisations
- (European) Technology Platforms (ETPs)
- Clusters
- Private banks
- Several industrial sectors covered
  - Agriculture & Agro-food
  - Forestry & Pulp and Paper
  - Technology providers
  - Chemicals
  - Energy





# Full members (industry)





### Associate members



### BBI JU - Governance Bio-based Industries Consortium



## **BBI JU: Budget**





• A clear framework that brings clarity for activities & investments

**Bio**-based Industries

- Long term stability and predictability
- A joint approach, across sectors, across Member States
- Joint financial commitment and a jointly defined programme, that will unite parties that would otherwise find these activities too risky for an individual sector/company
- Leverage further investments
- Industry driven and therefore result and market-oriented

# Our goal: create value chains – investin EU



Research and Innovation Actions: TRL 4-5 Innovation Actions – Demonstration: TRL 6-7 Innovation Actions – Flagship: TRL 8

# Process to prepare work plan & call

### Bio-based Industries Consortium

BIC Programming Working Group + Programming Core Team (representing all sectors, regions, large companies, SME)

- 1. BIC staff: survey all stakeholders for annual priorities
- PWG prepares Priority Paper + annual work plan topics (liaise with associate members)

3. BIC staff discusses AWP with EC

# 1. BBI: seeks advice from SC and SRG

- 2. BIC: agreement on final version by BIC General Assembly
- 3. BBI: endorsement by Governing Board

 BBI publishes the (open) calls 5. BBI organises
evaluation by
independent experts (on
excellence, impact +
implementation)

Bio-based Industries

Consortium

6. **BBI** negotiates and signs contract with winning consortia (consortium agreement and grant agreement)



Scientific Committee States Representatives Group



Topics are based on Priority Paper 2017-2018

Addressing the four strategic orientations of the bio-based industry in Europe"

- 1. Supply of sustainable biomass feedstock
  - Including: solid side streams, gaseous streams and aquatic biomass
- 2. Innovative processing
  - Including pre-treatment; extremophiles; integrated biorefinery using all fractions
- 3. Innovative bio-based products for identified applications
  - For agriculture; breakthrough molecules for high value low volume; proteins from alternative/sustainable sources; biodegradable/compostable a/o recyclable bio-based plastics (end-of-life)
- 4. Market uptake of bio-based products and applications
  - Using 'waste'; brand owners; improve logistics using ICT, IoT: Industry 4.0

The main research, development and innovation challenges for an expanded utilisation of agri-based feedstock towards chemicals and materials for value-added applications include among others:

- Higher cultivation efficiency to increase yields (topic 1.1.1 in Appendix 9.1)
- Reuse fertilisers from biorefining side streams (topic 1.1.2)
- Mitigate impacts of climate change, among others: maintain soil structure and fertility, reducing erosion, maximising efficiency of water use (topic 1.1.5)
- Precision farming (topic 1.1.6)
- Introduction of new plant species or varieties and tailoring of existing ones to deliver specific performance targets (growth rate, chemical composition etc.) (topic 1.2.2)
- Efficient logistics chains at local and regional levels (topic 1.2.7)
- Adequate, advanced recycling methods for bio-based materials and residues (topic 1.2.8)

# R&D&I challenges Forest-based feed tock

The main research, development and innovation challenges for an expanded utilisation of forest-based feedstock towards chemicals and materials for valueadded applications include among others:

- Higher cultivation efficiency to increase yields (topic 1.1.1 in Appendix 9.1)
- Mitigate the impacts of climate change on forestry (topic 1.1.5)
- Efficient logistics chains at local and regional levels (topic 1.2.7)
- Adequate, advanced recycling methods for bio-based materials and residues, including from paper making (topic 1.2.8)
- Extraction and conversion of polymers and compounds from woody biomass.

The main technological and innovation challenges for an expanded utilisation of biowaste and CO2 from bio-based operations towards chemicals and materials for value-added applications include among others:

- Technologies to convert CO<sub>2</sub> that are up-scalable (considering the volumes of available CO<sub>2</sub>) and ideally, replicable in other industrial domains. On the other hand, transferring best practices in other sectors such as chemical, steel, cement, etc., for use in the bio-based industry may present viable opportunities.
- Achieve adequate reactivity of CO<sub>2</sub> at affordable conditions for sustainable utilisation of this feedstock.
- Achieve industrial symbiosis with other sectors, allowing integrated biorefineries and/or inter linking industrial sites.

**Bio-waste (WFD 2008/98/EC)**: Biodegradable garden and park waste; Food and kitchen waste from households, restaurants, caterers and retail premises; Waste water and sludge.



- Materials based on lignin (and bio-aromatic) chemistry;
- Bio-based alternatives for existing polymers and innovative polymers from new bio-based monomers
- New functional bio-based materials and products: e.g. bio-based plastics, bio-based composites, materials based on lignin, starch, (nano-)cellulose or carbon fibres;
- Materials based on cellulosic and hemicellulosic fibres and fibre/polymer composites
- Lignin-based carbon fibres and nano-cellulose fibres;
  - To include addressing health, safety and environmental testing to allow for a shorter time-to-market. Actions addressing this challenge should refer to the OECD work on test methods and LCA methodologies for nanomaterials
- Other and different materials based on biopolymers (such as starch, polyesters from vegetable oils and sugar, chitin);
- New high-value products (pharmaceuticals, cosmetics, chemical), in some cases directly extracted or derived from plants and other terrestrial biomass, including among others fungi associated with plants; and relevant compounds in plant-free expression systems;



1. Large research organisations provide first list of themes

BIC requested academia's insights for exciting and challenging research themes and R&D programmes that could draw financing from industry. This yielded the following preliminary list of R&D themes:

- a. Microencapsulation technology using bio-based polymers to recover active compounds (enzymes, vitamins, etc.) from co-products and residues from agriculture and agro-food industries and from bio-waste including wastewaters from various sectors.
- b. Metagenomics, metabolic engineering and synthetic biology for the production of new bio-based molecules.
- c. Bio-based aromatics from residual streams (industrial and urban) via furans.
- d. New bio-based materials (non-woven, composites, paper and paper-related products, etc.) based on residual streams from agriculture and agro-food industries and from bio-waste for different applications (packaging, construction, etc.).
- e. Bio-based light weight functional structures for defined applications in sectors such as aviation, construction, automotive, etc.).





2. BIC industry members support the concept

- Members of the Programming Core Team (all BIC industry members) support the idea of "specific RIA cash calls".
- Several questions were raised to clarify rules (e.g. about IPR), advantages, and the possible organisation in order to motivate companies to participate with cash in such larger and broader calls.
- Some countries like Finland, NL and the UK already have experience with such a system.

A small BIC task force with members from Fi, NL and UK:

- Clarify the rules, specify advantages, etc., and to share their experiences
- 'Paper' for next steps: approach all BIC industry and associate members to expand the list
- Prepare topics for call in 2018



## How to get involved?

 Respond to annual BBI Calls for Proposals
 Participate in project proposals

 Become a member of BIC to actively contribute to the development of the annual BBI Work Plans

Visit <u>http://biconsortium.eu/join-us</u> for more information on becoming a member







**Full membership**: (Industrial and commercial companies or any legal entity representing them, active in bio-based industries)

**Associate membership:** (RTOs, universities, associations, regions or any legal entity interested in BIC activities)

- **Define** the BBI's Strategic Research and Innovation Agenda
- **Develop** annual work plans and BBI Call for Proposals Topics
- **Participate** in timely networking and brokerage events
- Access the BIC Members' online Partnering Platform allowing for throughout the year exchange information and consortia building with BIC members
- **Clarification** on financing rules
- Identification of co-financing opportunities (e.g. H2020-ESIF) and development of guidelines

For more information and application forms: <u>http://www.biconsortium.eu/join-us</u>



### Contact





# **Evaluation criteria for proposals**

#### Excellence

- Clarity and pertinence
- Soundness of the concept
- Credibility of the proposed approach
- Extent that proposed work is ambitious, has innovation potential, and is beyond the state of the art
- Coverage of the value chain (IA)

#### Impact

- Expected impacts listed in the topic
- Enhancing innovation capacity and integration of new knowledge
- Strengthening the competitiveness and growth of companies
- Any other environmental and socially important impacts
- Effectiveness of the proposed measures to exploit and disseminate the results
- Extent to which consortium contribution, including additional investment, will help maximising the impact of the action (RIA/IA)

# Quality and efficiency of the implementation

Bio-based Industries Consortium

- Coherence and effectiveness of the work plan
- Complementarity of the participants within the consortium (if relevant)
- Appropriateness of the management structures and procedures
- Soundness of the business case and business plan (IA)
- Readiness of the technology for the implementation of the pilot phase, demonstration or flagship. (IA)

# **BBI JU scoring scale**

- 3 main criteria...
  - Excellence **WHAT?**
  - Impact
     SO WHAT?
  - Implementation HOW?
- but (even more) focus on 'Impact'
  - All actions: 'Impact' threshold = 4/5 ('Excellence' & 'Implementation': 3/5)
  - IAs (DEMOs & Flagships): weighting factor 1,5

# **Each** criterion: score of 0-5/5

