The Bioeconomy Role in the Economic Recovery of the European Union on a Sustainable Basis

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1. Biobased Industries Consortium: an introduction
2. The bioeconomy and biobased economy in Europe
3. European policies: linking bioeconomy to circular economy, Green Deal and Green Recovery
4. The BBI JU: a public private partnership
5. Conclusions
The Bio-based Industries Consortium
BIC membership in figures

• > 240 industry members (large enterprises, SMEs and SMEs in clusters), includes brand owners/market actors

• Sector represented: Agriculture, food & feed, Aquaculture and marine, Chemicals and materials, Forestry and pulp & paper, Market actors, Technology providers, Waste management & treatment

• > 200 associate members i.e. universities, RTOs, associations, etc.
Mission

- We connect industry, academia, regions and citizens to transform bio-based feedstocks into novel sustainable products and applications.

- We create circular bioeconomy ecosystems through investments, innovation and know-how.
The bioeconomy and biobased economy in Europe
Turnover of the EU bioeconomy

Turnover in the bioeconomy in the EU-28, 2017, total: 2.4 trillion Euro

Turnover in the bio-based economy in the EU-28, 2008–2017
European policies: linking bioeconomy to circular economy, Green Deal and Green Recovery
Circular Economy: A key political concept in the EU since 2014
European Commission introduced several initiatives, re-enforcing link between industry and bioeconomy

• Commission defines the “circular economy [as the economic space] where the value of products, materials and resources is maintained in the economy for as long as possible, and the generation of waste minimised”
• But: “The circular economy is still in an early stage, stronger on paper than in practice.”

2020: (New) Circular Economy Action Plan “For a cleaner and more competitive Europe”
• Circularity is an essential part of a wider transformation of industry towards climate-neutrality and long-term competitiveness.
• Goal: Scaling up the circular economy from front-runners to the mainstream economic players
• Enable greater circularity in industry by supporting the sustainable and circular bio-based sector through the implementation of the Bioeconomy Action Plan
What is the EU’s understanding of the Bioeconomy.....

Circularity not (initially) part of European Commission definition

All sectors & systems that use / produce/ process / are driven by biological resources

- Ecosystems on land and sea
- Primary production systems - agriculture, forestry, aquaculture / fisheries – incl. waste/side streams
- Food, feed, fibres, bio-based industry, fuels and bio-energy

Source: European Commission
**A Bioeconomy for Europe: First proposal in 2012**

Proposal for a BBI JU one action point in 2012 Communication

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**Communication on Bioeconomy – 2012**

To pave the way to a more innovative, resource efficient and competitive society that reconciles food security with the sustainable use of renewable resources for industrial purposes, while ensuring environmental protection.

Food security, sustainable management of natural resources, climate change mitigation, reduced fossil-dependence, jobs creation and EU competitiveness

*Proposal for a BBI JU one action point in 2012 Communication*

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**Review of Bioeconomy Strategy – 2017**

Good delivery, objectives still relevant, increasing importance, more focussed actions for evolved context (SDGs, renewed industrial policy, circular economy, ...)

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Source: European Commission
Up-dated Bio-economy strategy presented in 2018

A sustainable bioeconomy for Europe

...was developed jointly across different DGs (RTD, AGRI, ENV, MARE, GROW, JRC, CLIMA) to develop actions and ensure impact.

The updated Bioeconomy Strategy aims to

• Link the sustainable use of renewable biological resources for food, feed, bio-based products and bioenergy, with the protection and restoration of biodiversity, ecosystems and natural capital across land and water.

• Step up action to ensure that the Bioeconomy provides a long-term balance of social, environmental and economic gains

• Have a stronger focus on sustainability and circularity

Source: European Commission
The way towards a sustainable, circular bioeconomy

Three key actions

1. **Strengthen and scale-up the bio-based sectors, unlock investments and markets**
   - Mobilise stakeholders in development and deployment of sustainable bio-based solutions
   - Launch the EUR 100 million Circular Bioeconomy Thematic Investment Platform
   - Analyse enablers and bottlenecks for the deployment of bio-based innovations
   - Promote and develop standards, labels and market uptake of bio-based products
   - Facilitate the development of new sustainable biorefineries
   - Develop substitutes to fossil based materials that are bio-based, recyclable and marine biodegradable

2. **Deploy local bioeconomies rapidly across Europe**
   - Launch a Strategic Deployment Agenda for sustainable food and farming systems, forestry and bio-based products
   - Launch pilot actions for the development of bioeconomies in rural, coastal and urban areas
   - Support regions and Member States to develop Bioeconomy Strategies
   - Promote education, training and skills across the bioeconomy

3. **Understand the ecological boundaries of the bioeconomy**
   - Enhance knowledge on biodiversity and ecosystems
   - Monitor progress towards a sustainable bioeconomy
   - Promote good practices to operate the bioeconomy within safe ecological limits
   - Enhance the benefits of biodiversity in primary production

Source: European Commission
“[…] It is a broad roadmap for a rapid transition to a cleaner continent and the “start of a journey”
EC President, Ursula Von der Leyen, 11/12/2019

Introduction to the European Green Deal...

50 actions
Cross-sectorial
Economic growth ≠ resource use
A new growth strategy
€1 trillion investment
EU Green Investment Plan

Europe - First climate neutral continent
What’s in a deal…

Transforming the EU’s economy for a sustainable future

- Mobilising industry for a clean and circular economy
- Supplying clean, affordable and secure energy
- Increasing the EU’s Climate ambition for 2030 and 2050
- Building and renovating in an energy and resource efficient way
- Mobilising research and fostering innovation
- A zero pollution ambition for a toxic-free environment
- Preserving and restoring ecosystems and biodiversity
- From ‘Farm to Fork’: a fair, healthy and environmentally friendly food system
- Accelerating the shift to sustainable and smart mobility

The European Green Deal

The EU as a global leader

- NECP Assessment
- ETS/RED/EED/LULUCF
- Energy taxation Directive
- EU Industrial Strategy
- Circular Economy 2.0
- A regulatory framework for biodegradable and bio-based plastics (by 2030)

A European Climate Pact

- Chemical strategy for sustainability
- Zero pollution action plan
- EU Biodiversity Strategy
- EU Forest strategy
- “Farm to Fork” strategy
- Measures to reduce the use of pesticides & fertilizers.
- Strategy on sustainable and Smart mobility
- Assessment of legislative options to boost the use of alternative fuels

Financing the transition

- Just Transition Fund
- Renewed Sustainable Finance Strategy
- ERDF/European Social Fund
- EIB

Leave no one behind (Just Transition)
A few key takeaways..

- EU Green deal and its key policy measures represent a significant **opportunity for growth of the EU bio-based sector**, both within the Single market and outside of the EU (gaining access to new markets).

- EU Green deal provides concrete **incentives for the development of the bio-based sector**, provided that it functions in a circular manner and under stricter biodiversity requirements. (in respect of the “planetary boundaries”).

- EU Green deal has been broadly **supported by the EU Member States and EU Parliament**, providing a degree of predictability on the overall political direction and the acceptance of the suggested measures.

- EU Green deal has a **strong focus on sustainable development** being part of the Commission’s strategy on the implementation of the UN SDGs. It includes not only environmental, but also social and economic aspects of sustainability. Green Deal’s measures aim at **de-risking investments** in sustainable development projects, exporting EU policies through “green deal diplomacy” and promote sustainable business models, rather than single products.
The bioeconomy will play an integral role in spurring on the EU recovery from the COVID-19 crisis by aligning the economy with the biosphere. The bioeconomy will thus improve resilience and competitiveness, providing long-term systemic solutions, and ensuring a just transition.

**Examples of how the bioeconomy contributes to the European Green Deal:**

- **Climate pact and climate law**: Carbon sequestration in soil, blue carbon and forests and its storage in harvested wood products, together with material substitution of fossil-based products (plastics, energy, textiles), can generate significant carbon savings and make us fit for -50% by 2030.

- **Promoting clean energy**: Unavoidable biowaste can be converted into energy including biofuels for sectors in which electrification will remain challenging (aviation, maritime).

- **Investing in smarter, more sustainable transport**: Use of cellulosic ethanol made from agricultural residues, such as wheat straw, in the transport sector can achieve up to 85% emission savings compared to fossil fuels.

- **Striving for greener industry**: Circular use of biomass promotes resource efficiency and stimulates the production of high added-value products from side and waste streams. Bark residues, e.g. can be used for extraction of protective compounds used for non-ionic treatment of wood-based construction materials.

- **Eliminating pollution**: Circular bioeconomy maximises the use of side and residual streams from agriculture, food-processing and forest-based industries, thus reducing the amount of landfilled waste. Moreover, the use of bio-fertilisers, bio-pesticides and bio-based pest control can contribute towards achieving the Farm to Fork and Biodiversity Strategy’s objectives of reducing fertiliser and pesticide use and risk.

- **Ensuring just transition for all**: The bioeconomy can create 400 000 new green jobs by 2035 in particular in rural and coastal areas if supported and deployed by regional and national strategies. Many bioeconomy opportunities also exist in urban and peri-urban areas.

- **Financing green projects**: The European Circular Bioeconomy Fund with a volume of up to €250 million will invest in innovative circular bioeconomy projects, in the areas of agriculture, aquaculture and fisheries, the forest-based sectors, biochemicals and biomaterials and biomaterials.

- **Making homes energy efficient, renovate**: The use of bio-based insulation materials such as cellulose fibre and sheep’s wool can effectively insulate buildings in a way that also minimises their embodied greenhouse gas emissions.

- **From farm to fork**: Algae farming can be a new source of renewable biomass for food and green products. Sustainable algae production has the potential of achieving high yields with minimum or no land and fertiliser requirements while enhancing biodiversity. Moreover, the circular bioeconomy helps to fight food waste by valorising it into a range of added-value products.

- **Protecting nature**: Developing sustainable bioeconomies can contribute to the enhancement of biodiversity while improving the provision of ecosystem services.

- **Leading the green change globally**: The European Commission leads global bioeconomy initiatives, such as the International Bioeconomy Forum and promotes the role of research and innovation as a key enabler in the global green transition.

For more information visit: [https://ec.europa.eu/research/bioeconomy/index.cfm](https://ec.europa.eu/research/bioeconomy/index.cfm)
Before the COVID-19 outbreak, the European Union set ambitious targets to reduce carbon emissions.

Now in the midst of the pandemic, the EU has temporarily lifted state-aid rules allowing governments to steer companies through the crisis and to minimise job losses using public money.

State aid can take the form of wage subsidies, tax and social contributions relief, financial support, and loans and guarantees via banks.

By attaching green conditions when granting state aid and guarantees during the COVID-19 crisis, governments could push companies to accelerate the adoption of low-carbon and circular technologies after the crisis is over, and thus aim for a green recovery.

In this way, state aid expenditures will not only promote the economic viability of companies, but also their environmental viability. This will accelerate the adoption of low-carbon and circular technologies.
The BBI JU: a public private partnership
BBI JU: Partnership between industry (BIC) and EC
Bio-based value chains envisioned in the BBI Initiative

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 CO₂
- Biodegradable garden and park waste
- Food and kitchen waste from households, restaurants, caterers and retail premises
- Waste water and sludge
- CO₂

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

1. Demonstrate technologies that enable new chemical building blocks, new materials, and new consumer products from European biomass, which replace the need for fossil-based inputs.

2. Develop business models that integrate economic actors along the value chain from biomass supply via biorefinery plants to consumers of bio-based materials, chemicals and fuels, including the creation of new cross-sector interconnections and supporting cross-industry clusters.

3. Set up flagship biorefinery plants that deploy the technologies and business models for bio-based materials, chemicals and fuels and demonstrate cost and performance improvements to levels that are competitive with fossil-based alternatives.
Mobilisation of private investment in Europe: keeping knowledge and innovation, and investments in innovative production processes in Europe. Attract companies from outside EU to invest in innovation in Europe!

Development of new innovative value chains: e.g. food industry collaborating with the chemical industry, the forestry and pulp & paper sector collaborating with chemical and textile industry, etc.

New industrial sectors are joining e.g. by creating value from waste and side streams (food processing sector, aquatic/marine sectors, bio-waste, ...). As a result we also observe a wider geographical spread throughout Europe.

Linking the industry to policies and initiatives such as the Circular Economy Package, Green Deal and COP21.

Increased market focus: participation of brand owners is key as they help to develop new applications and create new markets. Their involvement also shortens time to market for innovative bio-based products.

Growing involvement of the regions: BIC and BBI JU have strengthened their collaboration with the EU regions to exchange information and explore synergies and opportunities for joint financing, and deployment of new local value chains.
Geographical coverage of DEMOs and FLAGs
2014-2019

The location of DEMO and FLAG plants from Call 2019 may evolve.
BBI JU – 9 Flagships from calls 2014-18

EXILVA - Sarpborg (Norway)
- BBI JU contribution: €27M
- Feedstock: spruce wood pulp
- Product: MFC: microfibrillated cellulose

OXILVA - Co. Tipperary (Ireland)
- BBI JU contribution: €22M
- Feedstock: dairy processing side streams
- Product: lactic acid (building block for PLA production) minerals for food supplement; fertilizer

PLENITUDE - Ghent (Belgium)
- BBI JU contribution: €17M
- Feedstock: sustainable cereal crops
- Product: mycoproteins; bioethanol

PREFERANCE - Antwerp (Belgium)
- BBI JU contribution: €25M
- Feedstock: fructose from starch of wheat, corn
- Product: purified FCCA (furan dicarboxylic acid)

Bioskoh - Štrážske (Slovakia)
- BBI JU contribution: €21.6M
- Feedstock: 370 kg/year of lignocellulose from non-food agricultural residues and dedicated crops on marginal lands
- Product: vol: 2G bioethanol bio-ethylene oxide production

FARMYng - Amiens (France)
- BBI JU contribution: €19.8M
- Feedstock: Tenebrio molitor (mealworm) larvae, Agro-food wastes
- Product: protein meal; organic fertilizer

LIGNOFLAG - Podari (Romania)
- BBI JU contribution: €25M
- Feedstock: wheat and barley straw
- Product: vol: bioethanol (cellulosic ethanol)

FIRST2RUN - Porto Torres (Italy)
- BBI JU contribution: €17M
- Feedstock: lignocellulosic biomass, seeds (dry oil crops from marginal lands, mainly cardboard)
- Product: industrial building block of azelai acid for polyester production, vegetable oils

SWEETWOODS - Imavere (Estonia)
- BBI JU contribution: €21M
- Feedstock: wood
- Product: high quality C5/C6 sugars and dried lignin (85% purity)

9 FLAGSHIPs
3,300 direct jobs
+ 10,000 indirect jobs
Total Grant: €195 million
€1.2 billion private investment
High replicability potential
Conclusions
Conclusions

• The bioeconomy / biobased economy is already an important economic activity in Europe (turnover & employment), and is still growing

• Several policies and initiatives support the development of a sustainable, circular biobased economy in Europe (bioeconomy strategy, circular economy action plan, Green Recovery & Green Deal, public-private partnership, ...)

• The impact of the current BBI JU is clear and visible (new value chains, additional investments, new applications, new collaborations between industrial sectors, ...)

• We are setting up a new PPP, with more focus on circularity and SDGs
Thank you!