



EUROPEAN UNION



#HorizonEU

# HORIZON EUROPE



## INFO DAYS

CLUSTER 6

**FOOD, BIOECONOMY, NATURAL  
RESOURCES, AGRICULTURE  
& ENVIRONMENT**

13 - 14 December 2022

**BROKERAGE**

19 December 2022

THE EU RESEARCH & INNOVATION PROGRAMME **2021 – 2027**



# CIRCULAR ECONOMY AND BIOECONOMY SECTORS



## POLICY CONTEXT

- European Green Deal
- Circular Economy Action Plan
- Biodiversity Strategy
- Bioeconomy Strategy
- Forest Strategy
- Plastics Strategy
- Industrial Strategy
- SME Strategy



## IMPACT FROM STRATEGIC PLAN

**Sustainable and circular management and use of natural resources** as well as **prevention and removal of pollution are mainstreamed**, unlocking the potential of the **bioeconomy**, ensuring competitiveness and guaranteeing healthy soil, air, fresh and marine water for all, through better understanding of planetary boundaries and deployment of innovative technologies and other solutions, notably in **primary production, forestry and bio-based systems**



## IMPACT AREAS

- Climate change mitigation and adaptation
- Enhancing ecosystems and biodiversity on land and in water
- A resilient EU prepared for emerging threats
- Inclusive growth and new job opportunities
- Industrial leadership in key and emerging technologies that work for people

# CIRCULAR ECONOMY AND BIOECONOMY SECTORS



Enabling a circular economy transition

5 topics



Innovating for sustainable bio-based systems, biotechnology and the bioeconomy

8 topics



Innovating for blue bioeconomy and biotechnology value chains

1 topic



Safeguarding and sustainably innovating the multiple functions of EU forests

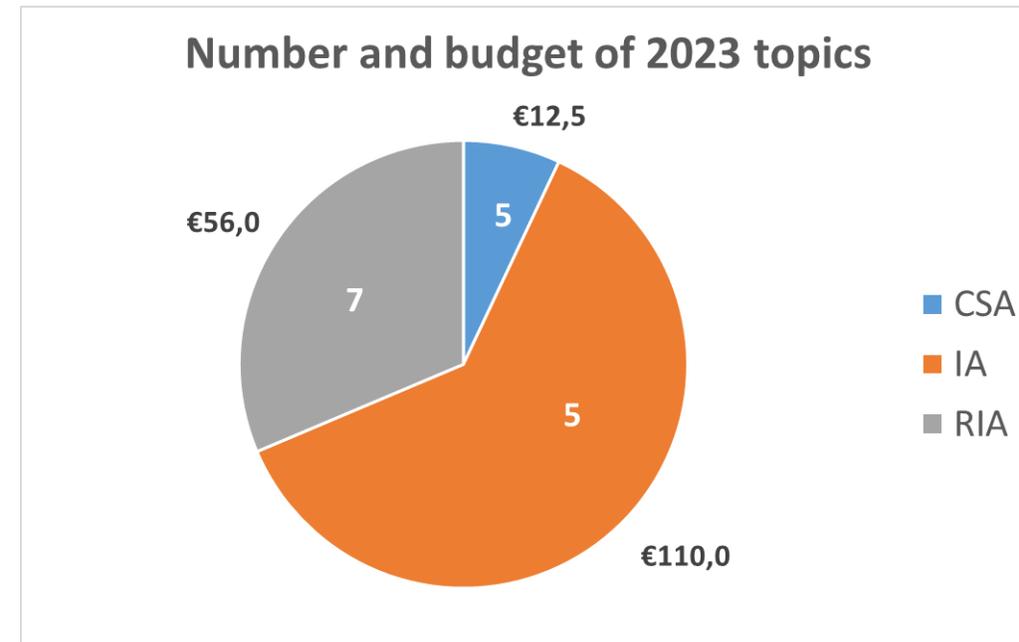
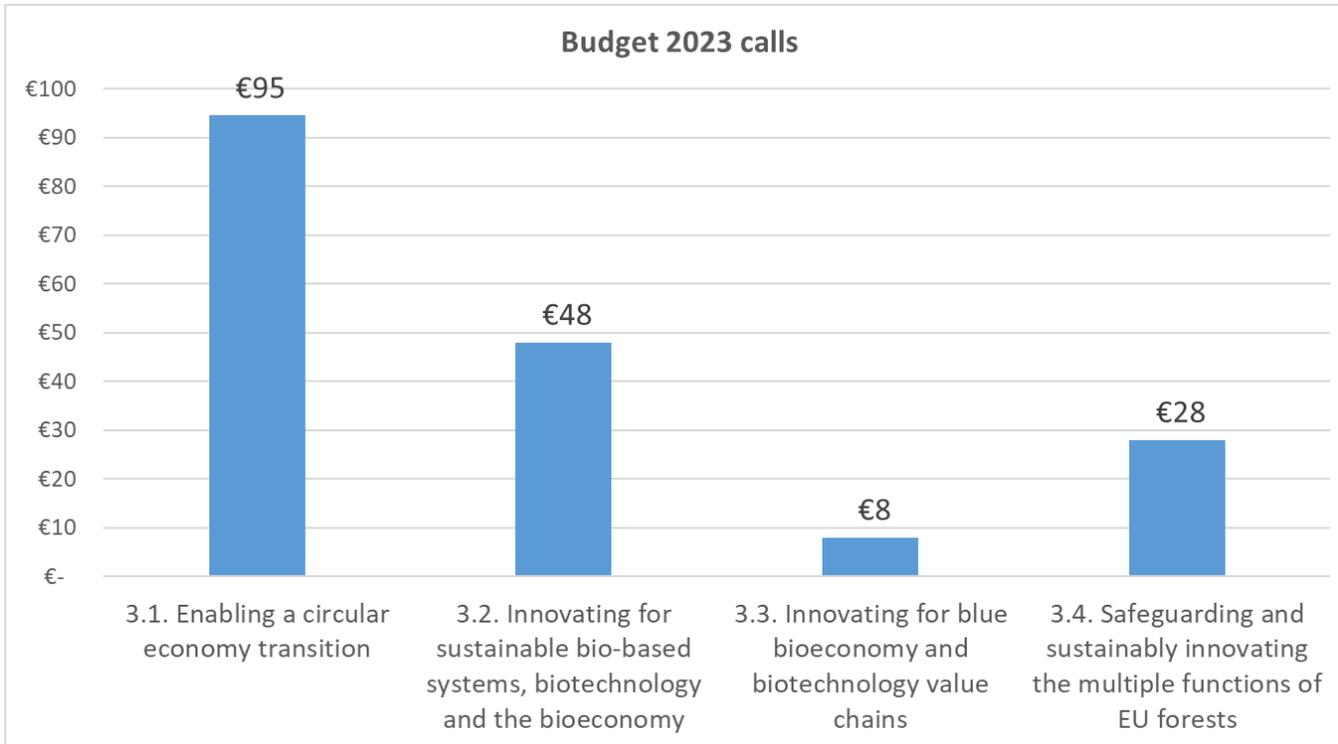
3 topics

# CIRCULAR ECONOMY AND BIOECONOMY SECTORS

## Expected impacts

- **Regional, rural, local/urban and consumer-based transitions towards a sustainable, regenerative, inclusive and just circular economy and bioeconomy** across all regions of Europe based on enhanced knowledge and understanding of science;
- European **industrial sustainability, competitiveness and resource independence** by lowering the use of primary non-renewable raw materials and reducing greenhouse gas emissions and other negative environmental footprint;
- **Innovative and sustainable bio-based value-chains**, replacing fossil-based value chains and increasing circular bio-based systems from sustainably sourced biological resources
- **Improved consumer and citizen benefits**;
- **Multi-functionality and management of forests** in Europe based on the three pillars of sustainability (economic, environmental and social);
- **Enlarged potential of marine and freshwater biological resources and blue biotechnology** to deliver greener (climate-neutral circular) industrial products and processes, and to help characterise, monitor and sustain the health of aquatic ecosystems for a healthy planet and people.

# CIRCULAR ECONOMY AND BIOECONOMY SECTORS



HORIZON-CL6-2023-CIRCBIO-01-4

# Land-based bioprospecting and production of bioactive compounds and functional materials for multiple bio-based value chains

*Research and Innovation Action*

*Indicative budget: 4 M€ in total  
(4 M€ per project)*



Questions?  
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# HORIZON-CL6-2023-CircBio-01-4



## POLICY CONTEXT

- The revised (2018) **bioeconomy strategy** action plan
- The **industrial strategy**
- The **biodiversity strategy** for 2030



Innovative and sustainable value-chains are developed in **bio-based sectors** replacing fossil-based value chains... **circular bio-based systems from sustainably sourced biological resources**... R&I in **biotechnology** and other enabling technologies....

European **industrial sustainability**, **competitiveness** and **resource independence**... reducing the use of primary non-renewable raw materials and greenhouse gases emissions and other pollutants, achieving an improved environmental footprint (including on **biodiversity**), enabling **climate-neutrality**, zero pollution and higher resource efficiency



## EXPECTED OUTCOMES

- Enhanced understanding of **terrestrial biodiversity**
- Sustainable **sourcing and development** of novel natural, sustainable and 'eco-friendly' (including 'climate-friendly') **materials and product ingredients** for various sectors and applications
- Improved **sustainable exploitation, cultivation and processing methods** based on promising species/organisms (including complex inter-species communities)
- Increased **competitiveness of European biotechnology**, in particular the SMEs sector
- Increased **public knowledge and awareness** of connections between biodiversity and biotechnology

### Related impacts:

- Develop the circular economy and bioeconomy sectors;
- Ensure natural resources are used and managed in sustainable and circular manner

# HORIZON-CL6-2023-CircBio-01-4



## SCOPE

- Technical improvements of the **bioprospecting of any land-based organisms** for potential bioactive compounds and functional materials, based on identified suitable sources of feedstock. The bioprospecting may be “**bio-guided**” by the study of chemical ecology interspecific interactions
- Sustainable biodiscovery, including by **advanced detection methods**
- Defining and assessing the optimal **further production routes** via innovative approaches and systems/platforms
- Assessing and clearly communicating, by **inclusive communication and dissemination strategies**, the environmental and climate benefit (...) while expanding the range of natural ingredients for the new applications in industrial sectors
- Covering the environmental, climate and safety/health impacts of the developed ingredients or processes, using **Life-Cycle Assessment (LCA)** methodologies
- **Not in scope:** food, biofuel and bioenergy applications, agricultural crop protection products (chemical pesticide substitutes), marine and aquatic ecosystems



## KEEP IN MIND

- Guarantee **biodiversity preservation** and **compliance with relevant international rules on access to biological resources**, with the national regulations in the source countries and with the Convention on Biological Diversity and its Nagoya Protocol
- For any health-related applications, complementarities with **Horizon Europe Cluster 1 ‘Health’** should be explored
- Synergy with **Circular Bio-based Europe Joint Undertaking (CBE JU)**
- Gender dimension not mandatory

HORIZON-CL6-2023-CIRCBIO-01-8

# Eco-friendly consumer products – low-toxicity/zero pollution construction bio-based materials

*Innovation Action*

*Indicative budget: 10 M€ in total  
(5 M€ per project)*



Questions?  
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# HORIZON-CL6-2023-CircBio-01-8



## POLICY CONTEXT

- The revised (2018) **bioeconomy strategy** action plan
- The **industrial strategy**
- The **circular economy action plan**



Innovative and sustainable value-chains are developed in **bio-based sectors** replacing fossil-based value chains... **circular bio-based systems from sustainably sourced biological resources**... R&I in **biotechnology** and other enabling technologies....

European **industrial sustainability**, **competitiveness** and **resource independence**... reducing the use of primary non-renewable raw materials and greenhouse gases emissions and other pollutants, achieving an improved environmental footprint (including on **biodiversity**), enabling **climate-neutrality**, zero pollution and higher resource efficiency



## EXPECTED OUTCOMES

- Higher **environmental sustainability**, including on the **climate targets** (primarily reduction of greenhouse gas emissions, and accessorially increase of carbon removals), and **zero pollution**
- Demonstrated **non-toxic and zero-pollution properties of the construction materials**, as well as their recyclability and/or reusability
- Increased **competitiveness** of European industry, including SME sector
- Improved innovation potential in regard to **biotechnology**, and its potential contribution to the sustainable, circular bio-based materials and bio-based chemicals
- Improved **societal innovation and creativity**

### Related impacts:

- Develop the circular economy and bioeconomy sectors;
- Ensure natural resources are used and managed in sustainable and circular manner

# HORIZON-CL6-2023-CircBio-01-8



## SCOPE

- Identification and upscaling of **bio-based materials suitable for the construction sector**, understood as bio-based feedstocks (e.g. residues, other bio-based resources with functional properties, hybrid bio-based - traditional materials in scope).
- **Broad range of final construction materials** may cover composites, insulation materials, interior or exterior elements, adhesives, etc., depending on the construction value chain selected.
- Innovating in terms of **bio-based production improvements** (e.g., additive bio-based manufacturing, nature-based solutions, or composite materials with added functionalities)
- The **safety and user experience** aspects should be duly considered
- **Communication and dissemination** will form an essential part of the projects, especially as related to the sustainability, 'reconnection with nature' and inclusiveness aspects



## KEEP IN MIND

- Synergy with the **New European Bauhaus Initiative** and the **Renovation Wave**
- Synergy with **Circular Bio-based Europe** Joint Undertaking (CBE JU)
- **SSH** in scope, including development of recommendations for **pre-normative or/and regulatory actions**
- Gender dimension not mandatory
- Collaboration with other projects funded under this topic and other relevant topics
- **International cooperation** encouraged to benefit from exchange of best practices, while taking care of European (industrial) competitiveness.
- **Digital solutions**

HORIZON-CL6-2023-CIRCBIO-01-1:

# Enhancing collaboration between Circular Cities and Regions Initiative's (CCRI) supporting organisations

*Coordination and Support Action*

*Indicative budget: 2.5 M€ in total  
(2.5 M€ per project)*



Questions?  
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# HORIZON-CL6-2023-CircBio-01-1



## POLICY CONTEXT

- Supporting the **European Green Deal, the EU circular economy action plan (CEAP), industrial strategy and the bioeconomy strategy**
- Part of the instruments for the implementation of the European Commission's **Circular Cities and Regions Initiative (CCRI)**

Related impact:  
a sustainable, regenerative, inclusive and  
just circular economy across regions of  
Europe



## EXPECTED OUTCOMES

- Strengthened collaboration and complementarity between relevant initiatives and organisations that support circular economy at the local and regional scale
- Enhanced support to the implementation of circular systemic solutions in cities and regions
- Increased capacity, efficiency and efficacy of organisations that support circular economy at the local and regional scale
- Enhanced knowledge transfer and exchange of best practices
- More widespread dissemination of circular innovation
- Uptake and easier replication, scalability and visibility of circular systemic solutions

# HORIZON-CL6-2023-CircBio-01-1



## SCOPE

- Ensure **close cooperation and complementarities** with **CCRI** and its **Coordination and Support Office (CSO)**, and contribute to CCRI's goals and activities
- Facilitate **exchange of knowledge** and **best practices** on circular economy innovation
- Provide **technical support** to local and regional circular economy initiatives in order to increase the chance of success of circular systemic solutions
- Organise **workshops, webinars, trainings, capacity-building and/or peer-learning** activities
- Develop **case studies** of local and regional circular economy measures, activities and policies
- Develop **guidance and policy recommendations** for local and regional authorities
- Promote the **concept of circular economy** to cities and regions that are in the early stage of circular economy transition



## KEEP IN MIND

- Share knowledge and experiences **with CCRI and its Coordination and Support Office**
- Specify how synergies and complementarities are ensured with other circular economy projects and initiatives
- Participate in the CCRI's events
- Gender dimension is not mandatory

**HORIZON-CL6-2023-CIRCBIO-01-2:**

# One hundred circular model households: making European households sustainable through inclusive circular practices

*Innovation Action*

*Indicative budget: 18 M€ in total  
(6 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-CircBio-01-2



## POLICY CONTEXT

- Implement the European Green Deal and the EU circular economy action plan (CEAP)
- Support the Sustainable Products Initiative
- Complement the Circular Cities and Regions Initiative (CCRI)
- Expand the use of the Product Environmental Footprint method

Related impacts:  
accelerate regional, rural, local/urban and consumer-based transitions, and improve on consumer and citizen benefits



## EXPECTED OUTCOMES

- Significant, well-documented increase in **material efficiency** in participating households
- Significant **reduction of emissions** of GHG and other pollutants, including micro- and nanoplastic fibres from covered households, and increase of carbon removals
- Improvement of **living conditions** in participating households
- **Multiplier effect** regarding the replication of the approach and its benefits; leading by example
- **Lessons learnt** for a European rollout strategy and integration with sectoral strategies such as Circular Cities and Regions Initiative (CCRI)

# HORIZON-CL6-2023-CircBio-01-2



## SCOPE

- Provide a **cost-free circular economy advisory service** to selected households
- Consolidate knowledge on **environmental impacts** from households and establish a simple and robust method for comparison
- Demonstrate how sustainable products or services can better meet the real **needs of citizens** for entertainment, communication, mobility, housing, etc.
- Identify individual needs and optimisation potential
- Stimulate **behavioural change** at the level of individual decisions
- Set ambitious and plausible **reduction benchmarks**
- Propose measures that are **easy to implement** and at least **cost-neutral**
- Tackle financing and amortisation issues
- From environmentally friendly purchasing, shared product use, swaps to optimised maintenance, upgrade, repair, down to waste disposal
- Analyse and edit results for **multiplication** through media and on the ground



## KEEP IN MIND

- Respect zero pollution and non-toxicity principle
- No trade-offs between material and energy efficiency
- Work with NGOs and CSOs
- Joint activities with CCRI
- This initiative will also target social disparity
- Social and gender aspects are relevant

HORIZON-CL6-2023-CIRCBIO-01-3

# Harnessing the innovation potential and market uptake of successful circular economy water related projects

*Coordination and Support Action*

*Indicative budget: 2 M€ in total  
(2 M€ per project)*



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# HORIZON-CL6-2023-CircBio-01-3



## POLICY CONTEXT

- European Green Deal
  - ✓ Circular Economy Action Plan (CEAP)
  - ✓ Adaptation to Climate Change Strategy
  - ✓ Zero Pollution Action Plan
  - ✓ Bioeconomy Strategy
- EU water-related policies (e.g. Water reuse, Sludge, Industrial emission)



Overcome the lack of a common understanding of benefits of systemic solutions of applying circular economy and bioeconomy principles to water systems and related barriers



## EXPECTED OUTCOMES

- **Boost the uptake** of the most promising **systemic solutions**, innovative **recovered products** and related **business models** for sustainable wastewater treatment, recovery and reuse, **removing relevant barriers** and create a **level playing field for innovative companies**;
- Change **perception and behaviour** of European citizens, **removing social barriers** with regard to wastewater management, recovery and the reuse of resources and energy
- Enhance **collaboration and knowledge** sharing on water reuse and recovery, **education, awareness**, and **professional skills development**;
- Support the **implementation of relevant EU policies**

Related impact:  
Accelerate transitions towards a sustainable, regenerative, inclusive, just and clean circular economy

# HORIZON-CL6-2023-CircBio-01-3



## SCOPE

- Assess how **digital business models** can further support water reuse, energy and resource and **promote actions for their market uptake**
- Assess the **social, environmental and economic impacts** of various EU funded project results and their contribution the aims of various **related EU policies**
- Propose a roadmap, recommendations and guidance on the **standardisation of water products**
- Propose a roadmap and action plan to **address the social perception** and related biases of water reclamation and reuse with a view to **increasing awareness among various water users and citizens** in general
- Develop **new education and training programmes to upskill young professionals** in relevant sectors in relation to the circular use of water along the water cycle
- Define and propose national and **EU-harmonized end-of-waste criteria** for the recovered materials



## KEEP IN MIND

- Action to **build on key successful past and ongoing EU funded projects**, promote the dissemination and exploitation of their results and create a critical mass for knowledge exchange.
- Action to **bring together a wide network** of relevant business representatives, investors water utilities, policy makers, researchers, technology providers, water utilities, and other water users and citizens, as well as relevant water EU associations and supporting platforms
- **SSH expertise** would be also needed

# HORIZON-CL6-2023-CIRCBIO-01-5

## Broadening the spectrum of robust enzymes and microbial hosts in industrial biotechnology

*Type of Action*

*Innovation Action*

*Indicative budget:*

*10 M€ in total  
(5 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-CircBio-01-5



## POLICY CONTEXT

- >> EU Green Deal
- >> Bioeconomy strategy & its action plan
- >> European Industrial strategy



## EXPECTED OUTCOMES

- **Enhanced EU bio-based sector competitiveness, sustainability and resource independence**, including SMEs. **Paradigm shift** to evolved microbial hosts and enzymes, for improved (bio-based) process/production robustness and flexibility.
- **Enabling environmental performance improvements of bio-based processes** (climate-neutrality, circularity and zero pollution).
- **Long-term benefits to the bio-based sector, consumers and end-users: more environmentally-friendly, technically and economically feasible applications in diverse value chains**, also underpinned by **progress in industrial biotechnology**.

# HORIZON-CL6-2023-CircBio-01-5



## SCOPE

- Identification and bioprospecting of novel enzymes and/or industrial microbial hosts, including though the **use of existing sequencing data**, from **all types of environments** (especially terrestrial but also marine). *Especially address extreme habitats (relevant to bio-based processes conditions/ challenges).*
- Optimize enzymes' and/or microbial hosts' properties for industrial use, addressing (bio-based) process conditions barriers: physical (e.g., temperature, pH) and chemical (e.g., solvents, variable biomass feedstock composition, contaminants etc.).
- Test and demonstrate novel concepts for industrial, enzyme-catalysed or microbial host-based processes to **valorise biomass** and produce **high-value bio-based products** (e.g. chemicals, materials).
- Demonstrate optimized process design, development and control aspects, with considerations for implementation of **enabling digital technologies**, towards **improving process efficiency** but also achieving **environmental performance improvements**.
- Assess the tested, optimized enzyme-catalysed or microbial host-based processes **with respect to biotechnological, economic, environmental performance (lifecycle assessment) as well as safety parameters and standards**.
- Link to **ongoing work on sustainability improvements via industrial biotechnology**.



## KEEP IN MIND

- TRL 6-7 by end of the project.
- Pay attention to the delivery of FAIR data, results and methodologies.
- Gender dimension (sex and gender analysis) in R&I content: not a mandatory requirement.
- Synergies with HEU topics (incl. BBI JU/CBE JU PPP), LIFE & H2020.
- Plan on how to collaborate with other projects funded under this topic (and other related topics too, as relevant).

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# HORIZON-CL6-2023-CIRCBIO-01-6

## Bio-based solutions for humanitarian applications

*Type of Action*

*Coordination and Support Action*

*Indicative budget:*

*3 M€ in total  
(1.5 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-CircBio-01-6



## POLICY CONTEXT

- >> EU Green Deal
- >> Zero Pollution ambition & action plan
- >> Bioeconomy strategy, & action plan
- >> Circular Economy action plan



## EXPECTED OUTCOMES

- **Identification of sustainable bio-based solutions**, of applicable performance, under **humanitarian aid contexts** (diverse environmental, social and economic conditions).
- **Science-based information to humanitarian aid operators and bio-based sector stakeholders** on: -application potential, -sustainable performances and -circularity of bio-based solutions and options.
- **Improved way to address waste management and waste-related challenges in humanitarian aid contexts.**
- **Significant reduction/minimisation of waste** (e.g., plastic or fibres waste) **littered** in the environment.
- Improvement on **social benefits of bio-based systems.**

# HORIZON-CL6-2023-CircBio-01-6



## SCOPE

- Assess the **scope** for **innovative, bio-based technologies** and **systems** for **relevant applications**<sup>1</sup>, and their **environmentally sound applicability under humanitarian settings** (scoping exercise)<sup>2</sup>.  
*<sup>1</sup>Application examples: plastic products & packaging, logistic assets, textiles, waste treatment, water treatment etc. <sup>2</sup>Aspects of environmental performance but also circularity, safety, quality, cost effectiveness, technical performance, prevention of littering are essential considerations.*
- Evaluate **socio-economic/governance aspects**, including the **replication potential**.
- Include **appropriate lifecycle assessment methodologies** to examine the **potential** of proposed solutions to **reduce the environmental impact** (*accounting also for: biodiversity, ecosystems preservation and enhancement, zero pollution as well as greenhouse gas emissions*), **under relevant humanitarian aid conditions** (*variable environmental, social and economic conditions*).
- Develop **guidelines**<sup>3</sup> and **recommendations** to **policy makers, bio-based sector actors & humanitarian aid operators/practitioners** (e.g., NGOs). & Detail on the potential of bio-based products and systems for uptake, also based on the scoping exercise and a SWOT analysis.<sup>cross.ref. (2)</sup>  
*<sup>3</sup>guidelines addressing: R&D&I needs and socio-economic aspects. & crossref. 2*
- Implement **multi-actor approach (MAA)**, accounting also for **trans- and inter-disciplinary research**.



## KEEP IN MIND

- **Multi-actor approach**.
- **'Legal entities established in low- and middle-income countries** (see General Annexes) may exceptionally participate as beneficiaries or affiliated entities.'
- **International cooperation** and **gender-related aspects** consideration are highly encouraged.
- **SSH, social innovation**: essential part.
- **Synergies** with LIFE and HEU topics, across all relevant Clusters (e.g. CL6-2024-CircBio-01-05), including their PPPs (e.g. CBE JU).

HORIZON-CL6-2023-CIRCBIO-01-7

# Symbiosis in the bio-based industrial ecosystems

*Coordination and Support Action*

*Indicative budget: 3 M€ in total  
(1.5 M€ per project)*



**Questions?**  
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# HORIZON-CL6-2023-CircBio-01-7



## POLICY CONTEXT

EU circular economy action plan  
Bioeconomy strategy  
European Green Deal

- Transition pathway of the EU industry
- Reduced environmental impacts on soil, water, and air quality, biodiversity and climate



## EXPECTED OUTCOMES

- Innovative processes and industrial symbiosis approaches in the bio-based industrial value chains **enabling local security of supply** chains and the maximum **valorisation of biological resources** while **minimizing hazardous substances and waste streams**;
- Monitoring systems of the industrial symbiosis in the bio-based industrial value chains

Related impacts:

European industrial sustainability, competitiveness and resource independence  
Bio-based solutions with reduced environmental impacts on soil, water, and air quality, biodiversity and climate

# HORIZON-CL6-2023-CircBio-01-7



## SCOPE

- Technical solutions enabling the symbiosis to specific sectors/facilities within the bio-based industrial ecosystems
- Synergy with the European Community of Practice (ECoP)
- Assessment of the circularity and symbiosis of bio-based industrial ecosystems
- Environmental sustainability of symbiotic processes in terms of (decreased) impacts on soil, water, and air quality, biodiversity and climate
- Economic and social benefits of the industrial symbiosis assets: economic value of final products, better distribution of benefits, local supply chains, and integration in local circular strategies
- High-potential regions/areas, or specific industrial hubs for the demonstration of the developed symbiotic approach. Synergy with EU Hubs for Circularity (H4C) experiences
- Stakeholders' engagement
- Targeted reporting system



## KEEP IN MIND

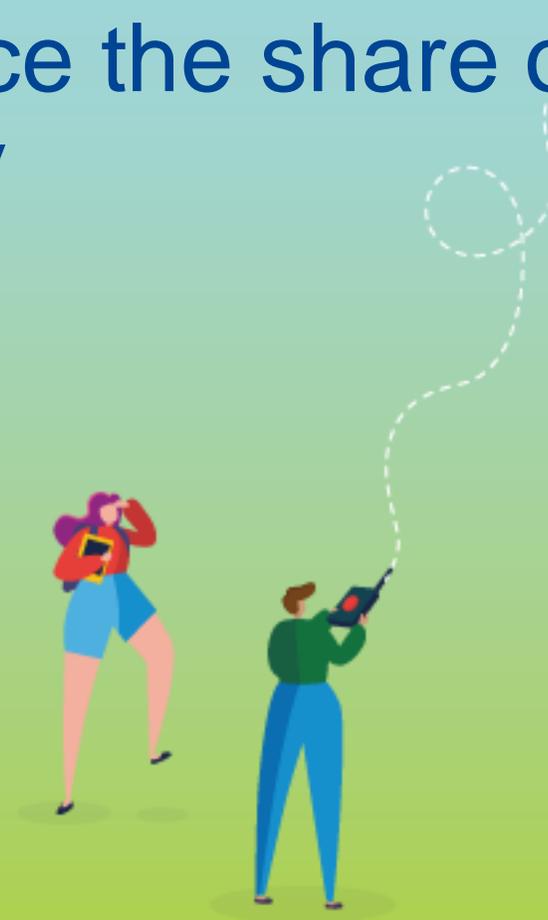
- Contribute to the New European Bauhaus (NEB) initiative
- Cluster with relevant projects (including under Circular Bio-based Europe JU)
- 'SSH' flagged
- Gender dimension not mandatory

HORIZON-CL6-2023-CIRCBIO-01-9

# Business models that balance the share of power and profit in the bioeconomy

*Research and Innovation Action*

*Indicative budget: 8 M€ in total  
(4 per project)*



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# HORIZON-CL6-2023-CircBio-01-9



## POLICY CONTEXT

- The circular use of waste and residues from agriculture, forestry, and the agri-food industry can lead to the creation of **new economic opportunities in rural areas**.
- Primary producers are often not fully integrated in bio-based value chains, and thus, **benefits are not sufficiently distributed** among value chain actors.
- This topic addresses diverse forms of cooperation among primary producers and suitable business models to create high-value bio-based products in **vertically integrated value chains**.



## EXPECTED OUTCOMES

- ✓ **Revitalisation and resilience of rural economies** by creating new green jobs and investments.
- ✓ **Development and validation of replicable, scalable production and business models** for the operation of biorefineries that offer economic opportunities in rural areas and contribute to a fair distribution of benefits in bio-based value chains.
- ✓ **Linking of underutilised feedstock types with available technologies and market information, improved logistics and quality standards.**
- ✓ **Identification of factors for success and policy recommendations** in view of robust contracts and agreements, training and capacity building, shared business plans, marketing strategies for bio-based products as well as financial and legal aspects.
- ✓ **Climate-neutral land sector by 2035 and climate-neutral economy by 2050.**
- ✓ **Diversification and enhancement of agricultural incomes** (organic and conventional farming).
- ✓ **Enhanced cooperation between primary producers and other key actors** along the value chain in the bio-based economy.

# HORIZON-CL6-2023-CircBio-01-9



## SCOPE

- ✓ **Develop and promote business models for different primary production sectors** in the EU that build on existing rural infrastructures, support the economies of scale, and contribute to a fair distribution of costs, benefits, and risks amongst the economic operators.
- ✓ Contribute to a better understanding of **sustainable and fair biobased supply chains**, synergetic points along and across agricultural, forestry and industrial value chains as well as **industrial symbiosis opportunities**.
- ✓ Explore existing **investment options** and identify **barriers and enablers for sustainable long-term operations**.
- ✓ Contribute to **restoring carbon content in soil, increasing nutrients, revitalising marginal lands and ensuring food security**.
- ✓ Consider further socio-economic factors, influencing farmers' behavior and develop indicators to assess the **economic, environmental and social impacts**.
- ✓ Develop a portfolio of **research and innovation priorities**.
- ✓ **Promote bioeconomy-related interventions in the new CAP** and provide **advice and technical guidance for Member States**.



## KEEP IN MIND

Multi-actor approach

Financial support to third parties possible

Eligible costs will take the form of a lump sum

HORIZON-CL6-2023-CIRCBIO-01-10

# Supporting the fair and just transition from GHG-intensive economies facing challenges towards circular bioeconomy model regions

*Coordination and Support Actions*

*Indicative budget: 2 M€  
(2 M€ per project)*



Questions?  
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# HORIZON-CL6-2023-Circbio-01-10



## POLICY CONTEXT

- European Green Deal priorities, the EU's climate targets for 2030 and 2050, the objectives of the EU Biodiversity Strategy for 2030, the Farm to Fork Strategy and the vision of a society that acts within environmental and social boundaries as defined in the EU Bioeconomy Strategy.
- The EU Bioeconomy Strategy Progress Report (June 2022), states that the bioeconomy is now more important than ever to contribute to the green and fair transition in Europe.
- Yet, many regions still rely on GHG-intensive economies and need support in their coming transition.



## EXPECTED OUTCOMES

- Outline widespread best practices showing the economic, social and environmental opportunities and the challenges of transforming GHG-intensive economies, such as coal mining, intensive agriculture such as livestock or crop production, forestry, and fisheries, and peat production, towards circular bioeconomy model regions.
- Strengthened interactions and coordination between affected European / Associated Countries regions.

**Related impact:** Regional, rural, local/urban and consumer-based transitions are accelerated towards a sustainable, regenerative, inclusive, just and clean circular economy and bioeconomy across all regions of Europe

# HORIZON-CL6-2023-Circbio-01-10



## SCOPE

- **Identify** just and fair bioeconomy **solutions** in regions that face difficulties in the green transition to leave no person and no place behind.
- **Establish a network** structure for European / Associated Countries regions to exchange views, best practices and align their work to overcome common challenges.
- **Identify new bioeconomy structures** that generate local green growth in regions currently relying on carbon-intensive economic activities that would be utilised by the IA project funded under **HORIZON-CL6-2024-CircBio-01-07**: Demonstrating the fair and just transition from GHG-intensive economies facing challenges towards circular bioeconomy model regions.
- **Provide logistical support** to the IA project funded under **HORIZON-CL6-2024-CircBio-01-07**: Demonstrating the fair and just transition from GHG-intensive economies facing challenges towards circular bioeconomy model regions.



## KEEP IN MIND

- Multi-actor approach
- SSH disciplines
- Social innovation
- Cooperation with HORIZON-CL6-2024-CircBio-01-07

HORIZON-CL6-2023-CIRCBIO-01-11

# Novel culture of marine organisms for blue biotechnology applications

*Research and Innovation Action*

*Indicative budget: 8 M€ in total  
(4 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-Circbio-01-11



## POLICY CONTEXT

- European Green Deal stresses that the sustainable 'blue economy' will have to play a central role in alleviating the multiple demands on the EU's land resources and tackling climate change.
- The 2021 "Sustainable blue economy" communication highlights the potential of marine biotechnology as a source of innovative solutions.
- The 2012 Blue growth strategy already identified marine biotech as one of five key areas.



## EXPECTED OUTCOMES

- Expansion of the potential offered by marine or other aquatic biological resources through advances based on the greater knowledge of the functioning, processes and ecological interactions of marine and other aquatic organisms;
- Development of aquatic biotechnology solutions in cultivation and optimisation of production yield;
- Increased bio discovery of products through sustainable methods for robust aquatic bio-based production, including possibly production of chassis cells, as an alternative to wild harvesting;
- Support to green industrial bioprocessing and more sustainable bio-based products through new biotechnology processes and applications;
- Contribution to the development of circular processing.

# HORIZON-CL6-2023-Circbio-01-11



## SCOPE

- Develop culturing methods (including for mixed cultures) for vertebrate and invertebrate cell lines for the production of active compounds; based on co-metabolism between community members;
- Develop bio-engineering tools for the use of marine and other aquatic model organisms to improve the availability of metabolites for industrial applications;
- Optimise culturing conditions so that the relevant metabolites are appropriately expressed and can be recovered with selective downstream processing techniques.



## KEEP IN MIND

Selected projects should collaborate with each other. In this topic the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-CL6-2023-CIRCBIO-01-12

# Optimising the sustainable production of wood and non-wood products in small forest properties and development of new forest-based value chains

*Research and Innovation Action*

*Indicative budget: 12 M€ in total  
(6 M€ per project)*



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# HORIZON-CL6-2023-CircBio-01-12



## POLICY CONTEXT

- ~ **16 million forest owners**, whereby about 60% of the forest area is privately owned, the **majority being small properties**.
- Often lack of attention due to **fragmentation and non-profitability**.
- Knowledge on small-scale private forest owners' **expertise, skills, motivations and needs** limited.



## EXPECTED OUTCOMES

- ✓ Development of **regional and local management models for small-scale forest holdings** in support of the EU Forest Strategy for 2030, adapted to the wide variety of contexts found in the EU.
- ✓ Better understanding of knowledge, skills, motivation and needs of small-scale forest owners, and development of **targeted and innovative approaches for effective support structures and instruments** for the various ownership types.
- ✓ Contribution to forest-related policy goals of **the European Green Deal**, including the development of a forest-based bioeconomy, the reduction of greenhouse gas emissions, the increase of carbon removals, the protection of ecosystem services and the restoration and conservation of forest biodiversity.
- ✓ Development of **lively, prosperous and resilient rural areas and integration of small-scale forests owners in the bioeconomy value chains**.
- ✓ **Improvement of the quantity and quality of EU forests, their multifunctional role and resilience needs** under climate change and contribution to halting and reversing biodiversity loss.

# HORIZON-CL6-2023-CircBio-01-12



## SCOPE

- ✓ Explore, analyse, and develop innovative **forest management approaches, organisational, cooperation and business models, advisory services, education and training concepts, policy frameworks and social and institutional models** that take into account different ownership types.
- ✓ Assess and develop **innovative and tailored support structures, programmes and instruments.**
- ✓ Define sustainable production potentials for **wood and non-wood forest products through improved integrated management approaches.**
- ✓ **Develop new business models to promote the sustainable and value-added utilisation of damaged** (burnt, broken, degraded conditions etc.) or **infected wood** (e.g., by bark-beetle, etc.) within strictly defined ecological thresholds and in line with the cascading use principle, forestry side streams and **non-wood forest products** (e.g., cork, etc.).
- ✓ Engage small forest property owner types and all relevant actors in **co-creation processes for developing viable measures and tools at local and European scale** that contribute to increased awareness and motivation for ensuring sustainable use, restoration, and conservation of resilient small-scale private forest properties.
- ✓ **Involve rural communities with a view to optimising the mobilisation of forest resources, improving land management practices, and reducing land abandonment** in full respect of climate mitigation and adaptation, biodiversity protection and restoration objectives.



## KEEP IN MIND

Multi-actor approach

Financial support to third parties possible

HORIZON-CL6-2023-CIRCBIO-01-13

# Capturing market trends and societal perceptions for tailor-made forest services

*Research and Innovation Action*

*Indicative budget: 12 M€ in total  
(6 M€ per project)*



Questions?  
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# HORIZON-CL6-2023-CircBio-01-13



## POLICY CONTEXT

- Increasing demand on European forests to provide a high diversity of goods and ecosystem services.
- Forest management can produce different outcomes for ecosystem services.
- Integrative approaches to ensure ecosystem services and to provide sufficient resources for a sustainable and circular bioeconomy, while at the same time, contributing to GHG emissions reductions and carbon removals to contribute to 2030 and 2050 EU climate targets.



## EXPECTED OUTCOMES

- ✓ Improved integrated management concepts with a focus on **market-oriented approaches to meet the growing demand for ecosystem services**, including carbon removals through carbon farming.
- ✓ Development of **decision support and management tools** (including digital technologies such as AI, sensors or robotics) that will facilitate the joint delivery of multiple ecosystem services.
- ✓ Increased long-term **resilience of forest production and use systems and associated value chains**.
- ✓ **Improved guidelines on carbon farming and PES (Payment for Ecosystem Services) design and implementation** in Europe formulated and implemented.
- ✓ Accelerated **uptake of sustainable business models** in the primary production sector.

# HORIZON-CL6-2023-CircBio-01-13



## SCOPE

- ✓ Set-up a **transdisciplinary forum** to regularly disseminate research results, discuss options for upscaling promising approaches and collaborate with relevant policy makers, stakeholders and the wider public.
- ✓ Improve the understanding of **ecosystem service interactions at different temporal scales** and consider relevant **social, environmental and economic interdependencies** and path dependencies.
- ✓ Identify **region and national specific market-driven approaches** to create new or reactivate value chains and business models based on co-operation between forest owners, policymakers and users of ecosystem services with a view to **develop tailor-made solutions** and strengthen interdisciplinary and cross-sectoral cooperation.
- ✓ Select a **set of representative European PES cases**, including carbon farming cases, with sufficient implementation length and data availability for a holistic impact evaluation. **Analyse and compare the data for contextualizing results vis-a-vis the existing literature** on PES design and implementation, including carbon farming.
- ✓ **Improve existing and develop new business models to determine the value and possible funding of sustainable forest management.**
- ✓ Propose standards for **measuring, assessing and valuating ecosystem services.**
- ✓ Promote and **provide advice for the set-up of adequate payment schemes** through private and public funding instruments at national and EU-level (including the CAP).



## KEEP IN MIND

Multi-actor approach

Build on previous research results

HORIZON-CL6-2023-CIRCBIO-01-14

# Monitoring the multi-functionality of European forests

*Research and Innovation Action*

*Indicative budget: 4 M€ in total  
(1 project)*



Questions?  
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# HORIZON-CL6-2023-CircBio-01-14



## POLICY CONTEXT

- To adequately manage forests and the services they provide, **reliable, up-to-date, and coherent European forest information is more important.**
- One of the challenges remain how to **integrate information from different sources** on the many functions that forests fulfil and the benefits they provide to society.
- Data are scattered and often focusing on a **limited set of indicators**, which do not adequately represent the multifunctionality of forests.



## EXPECTED OUTCOMES

- ✓ Development of a **comprehensive information base for all stakeholders** involved in forest matters, from policy making, through forest restoration and conservation planning and funding of such activities, to practical forest management.
- ✓ Successful **implementation of forest-related policy objectives** under the European Green Deal, including the building of a forest-based bioeconomy, the reduction of greenhouse gas emissions, the increase of carbon removals, the contribution to climate change adaptation, the provision of ecosystem services and the conservation and restoration of forest biodiversity.
- ✓ Better **understanding of the quantity and quality of European forests, their multifunctional role and resilience needs** under climate change and contribution to halting the loss of biodiversity.
- ✓ Efficient **implementation of possible certification schemes** in relation to forest multifunctionality (e.g., closer-to-nature forest management practices, carbon farming).

# HORIZON-CL6-2023-CircBio-01-14



## SCOPE

- ✓ Develop a **list of parameters relevant for monitoring of a range of ecosystems services** provided by forests.
- ✓ Consider the latest scientific knowledge and technology (e.g., through the use of AI, IoT/sensors, robotics and blockchain) for the development, **combination, and utilization of reliable data from multiple sources** (e.g., national forest inventories, remote sensing, environmental monitoring, large scale societal surveys, national or smaller-scale economic data etc.)
- ✓ Assess and propose suitable solutions to make these data available, also by considering issues related to the governance and funding of a fully **harmonised monitoring system at EU-level**.
- ✓ Engage in a **structured dialogue with institutions and stakeholders**, including the European Commission, national competent authorities, representatives of the forest-sector, as well as data providers to align the needs and possibilities of data collection, provision, and use.
- ✓ Build on past or ongoing research projects and **collaborate with relevant initiatives**, including the **Forest Information System for Europe (FISE)**.



## KEEP IN MIND

Multi-actor approach

The Joint Research Centre (JRC) may participate as member of the consortium selected for funding

Financial support to third parties possible

Consider ongoing R&I projects

HORIZON-CL6-2023-CIRCBIO-02-1-TWO-STAGE:

# Circular Cities and Regions Initiative (CCRI)'s circular systemic solutions

*Innovation Actions*

*Indicative budget: 58 M€ in total  
(9-10 M€ per project)*



Questions?

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# HORIZON-CL6-2023-CircBio-02-1-two-stage



## POLICY CONTEXT

- Supporting the **European Green Deal, the EU circular economy action plan (CEAP), industrial strategy and the bioeconomy strategy**
- Part of the demonstration projects for the implementation of the European Commission's **Circular Cities and Regions Initiative (CCRI)**



Provide concrete and demonstrated examples of circular systemic solutions



## EXPECTED OUTCOMES

- Increased circularity and reduced GHG emissions in product value chains
- Efficient valorisation of local resources in cities, regions or their groupings
- Creation of business opportunities and jobs
- Increased uptake and participation of citizens in circular and climate-neutral practices
- Enhanced knowledge transfer between the cities, regions or their groupings
- More effective widespread uptake and easier replication, scalability and visibility of circular systemic solutions

Related impact:  
a sustainable, regenerative, inclusive and just circular economy across regions of Europe

# HORIZON-CL6-2023-CircBio-02-1-two-stage



## SCOPE

- Implement and demonstrate at large scale **circular systemic solutions** for the deployment of the circular economy in cities and regions or their groupings
- Ideally, address **more than one key product value chain**
- Address **economic, social and environmental dimensions** of the transition
- Demonstrate circular **innovative technologies, novel governance and business models**
- Active participation of **all relevant stakeholders**
- High **replicability and scalability** potential



## KEEP IN MIND

- **Close cooperation with CCRI and its Coordination and Support Office** by sharing knowledge and experiences
- Participation in the CCRI's events
- Cooperation with relevant projects (e.g. LC-GD-3-2-2020, CL6-2021-CIRCBIO-01-01)
- TRL 6-8 by the end of the project
- SSH, social innovation and citizen science flagged

# HORIZON-CL6-2023-CIRCBIO-02-2-TWO-STAGE

## Novel, sustainable and circular bio-based textiles

*Type of Action*

*Innovation Action*

*Indicative budget:*

*14 M€ in total  
(7 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-Circbio-02-02



## POLICY CONTEXT

- >> EU Green Deal
- >> Zero Pollution ambition & action plan
- >> Chemicals Strategy for Sustainability
- >> Bioeconomy strategy, & action plan
- >> EU industrial strategy & EU textiles strategy
- >> Circular Economy action plan
- >> Biodiversity strategy 2030
- >> New European Bauhaus initiative



## EXPECTED OUTCOMES

- **Significantly ↓ negative environmental impact of textiles throughout their lifecycle:** primary raw materials, water consumption, land use, ILUC, GHGs, pollutants emissions via **circularity-by-design** and **sustainable production**.
- **Significantly ↑ recyclability and circularity of textiles.**
- **Increase use of EU (locally/regionally-sourced) alternative, bio-based fibers** (incl. reuse of bio-based textiles in present form and in novel forms of use).
- **Sustainable, circular and socially just textile production & consumption at EU level**, addressing both social impacts & environmental effects.
- **Replication potential** of proposed innovations at international level.
- **Empower and increase SMEs participation.**
- Improve **academia/industry/feedstock&fibres suppliers' interactions and collaboration.**
- **Establish new & innovative, circular bio-based value chains: EU competitiveness & jobs creation** (regional, rural, local levels).

# HORIZON-CL6-2023-Circbio-02-02



## SCOPE

- **One or more applications:** e.g., technical textiles, garments, industrial textiles, home textiles; smart textiles etc. Blended, but only bio-based compositions, are included.
- **Valorise secondary biomass, residues under-utilized (primary or secondary) biomass and/or reuse of fibres from bio-based textiles.** Address and showcase: sustainable biomass sourcing, land use, LULUCF and biodiversity.
- Design for **end-of-life circularity**, with attention to the final application(s)/end use of textiles.
- Design for **end-product quality, safety, and durability**, including preventing micro- and nano- plastics/fibres release throughout the lifecycle of textiles.
- Develop, demonstrate and scale-up innovative production processes to **significantly reduce the environmental footprint of textiles, across their production steps.** Apply symbiosis concepts, where necessary to achieve and enhance targeted outcomes and impacts.
- Assess environmental and social sustainability performance (textiles production and lifecycle), + assess techno-economic feasibility.
- Integrate the EC **SSbD framework** to assess the **safety & sustainability** of chemicals and materials.
- Contribute with and develop recommendations advancing further the application of the **SSbD framework**, incl. any **specificities** related with **bio-based chemicals and materials.**
- Address consumer behavior, acceptance and demand for circular and sustainable (bio-based) textiles.
- Assess existing barriers to implementing circular economy business models for textiles; & create innovative, sustainable and circular business models for the **(EU and local) bio-based textiles production and consumption.**



## KEEP IN MIND

- TRL 6-8 by end of the project.
- Participation of industry and particularly SMEs is strongly encouraged.
- NEB initiative contribution: interacting with the NEB Community, NEB Lab and other relevant actions through sharing information, best practices, and, where relevant, results.
- Two-stage proposals.
- SSH, social innovation and international cooperation aspects: are strongly encouraged and applicable for this topic.
- Synergies with Cluster 4 and Cluster 6 topics (incl. their PPPs – e.g. Processes4Planet, BBI JU/CBE JU), and LIFE.
- Plan on how to collaborate with other projects funded under this topic and other related topics too, as relevant.

# HORIZON-CL6-2023-CIRCBIO-02-3-TWO-STAGE

Non-plant biomass feedstock for industrial applications: technologies and processes to convert non-lignocellulosic biomass and waste into bio-based chemicals, materials and products, improving the cascading valorisation of biomass

*Type of Action*

*Research and Innovation Action*

*Indicative budget:*

*8 M€ in total  
(4 M€ per project)*



**Questions?**

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# HORIZON-CL6-2023-Circbio-02-03



## POLICY CONTEXT

- >> EU Green Deal
- >> Bioeconomy strategy & its action plan
- >> Circular Economy action plan
- >> Biodiversity strategy 2030
- >> Waste framework directive
- >> European Industrial strategy



## EXPECTED OUTCOMES

- Increased **sustainability** of biomass resources for **industrial applications**: land dependence, ILUC, biodiversity & ecosystems integrity aspects.
- Contribution to **climate-neutrality, zero pollution & resource efficiency**.
- Improved **industrial competitiveness, strategic autonomy** and **resource independence** of bio-based value chains.
- **Environmental, economic and social benefits** on **territorial and municipal level**, due to increased circularity and upcycling of low-value biomass.
- **SMEs engagement & skilled jobs creation** (incl. **regional dimension**).
- Increased **cooperation and awareness across circular bio-based value chains** [waste managers, biomass providers, process industry, end-users, civil society].

# HORIZON-CL6-2023-Circbio-02-03



## SCOPE

- Identify and optimize suitable NLBM feedstock – focus on **higher resources efficiency** and **circularity**, while **respecting** the **waste hierarchy principles**. Feedstock to be deployed in adequate production systems, incl. upcycling approaches.
- Design and develop innovative upstream and downstream conversion processes at **pilot scale**.
- Develop downstream processes to Build a **targeted portfolio of bio-based products** that can be later obtained in NLBM integrated biorefineries (of appropriate scale).
- Assess the **developed processes** on **techno-economic feasibility** (at different potential biorefinery scales) & showcase/ensure process flexibility to cope with the **composition heterogeneity** of the chosen **NLBM feedstock**.
- Apply **ex ante life-cycle assessment** to ensure **gains** in **environmental performance** (incl. biodiversity), but also assess socio-economic aspects, as well ensure safety for the **consumers** and **operators**.
- Enable participatory approaches and **knowledge sharing** across **circular bio-based value chains** & Aim for **comprehensive scoping of challenges** (multiple dimensions) and **opportunities** of valorising NLBM and NLBM waste.



## KEEP IN MIND

- TRL 5 by end of the project.
- Production of biofuels & bioenergy, as main production focus: out of scope (cascading biomass use in scope though).
- Food/feed ingredients, cosmetics-related compounds, nutraceuticals: in scope, provided toxicological & nutritional safety assessed and guaranteed at EU level.
- SSH, social innovation aspects: should be considered for this topic.
- Two-stage proposals.
- Synergies with Cluster 6 topics (incl. BBI JU/CBE JU PPP), LIFE & H2020.
- Plan on how to collaborate with other projects funded under this topic (and other related topics too, as relevant).

# Thank you!



Any questions after the Info Days?

- Check the [FAQ](#)
- Contact the [Research Enquiry Service \(RES\)](#)
- Contact the [National Contact Points \(NCPs\)](#)