APRE
Agenzia per la Promozione della Ricerca Europea

Horizon Europe – Cluster 6
Focus on: Circular economy & Zero pollution

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Before starting…

Flavia La Colla

- In APRE since 2017
- Project Manager and Project Coordinator
- National Contact Point in the following Cluster of Horizon Europe:
  - Cluster 3 Civil Security for Society
  - Cluster 4 Digital, Industry and Space
  - Cluster 6 Food, Bioeconomy, Natural Resources, Agriculture and Environment

- Expert trainer for the «*Gender Dimension in Horizon Europe*»

- Last but not least 💙
Mommy of Roberto

Intellingence behind Cluster 6 Circular Economy and Zero Pollution 2024 topics

- Overview of the topics
- Players to be involved in the proposals
- Policy context
- Previous funded projects as best practices

Destination - Circular economy and bioeconomy sectors

Policies background 1/2

A key to strategic autonomy

Covid-19 challenges

Disruptions following the war in Ukraine

- Disruption of global supply chains
- Need to ensure strategic autonomy
- Job insecurity

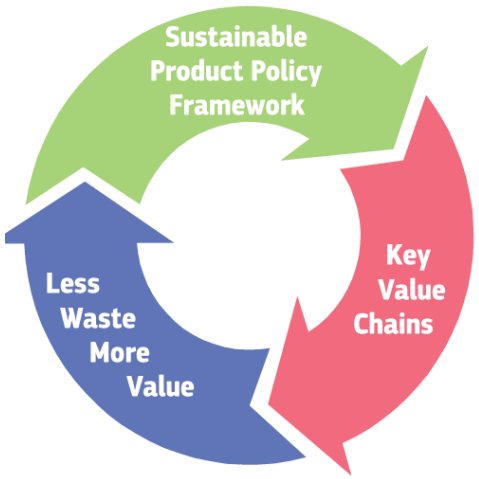
Circular economy is expected to:

Impacts

- A HEALTHIER PLANET
- LOCAL GOOD-QUALITY JOBS
- SOCIAL COHESION
- MORE VALUE FROM AND FOR EU INDUSTRY
- LESS POLLUTION
- NEW BUSINESS OPPORTUNITIES
- RESILIENT SUPPLY CHAINS

Policies background 2/2

Changing the way Europe produces and consumes



35 actions

Make sustainable products the norm in the EU
Empower consumers and public buyers
Sustainable production processes

Electronics and ICT
Batteries and vehicles
Packaging
Plastics
Textiles
Construction and buildings
Food, water and nutrients

Reduce Waste
Reduce Waste Exports
Boost market for high quality and safe secondary raw materials

R&I projects, Horizon Europe

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

Expected Impacts 1/2

- 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. Special attention should be paid to the **most sensitive/vulnerable and greenhouse gas-intensive regions.**

- European industrial sustainability, competitiveness and resource independence are strengthened by **reducing the use of primary non-renewable raw materials and greenhouse gases emissions and other pollutants**, achieving an improved environmental footprint, enabling zero pollution and higher resource efficiency. This will also be supported by **increasing circular and biobased practices**.

- Innovative and sustainable value-chains are developed in the bio-based sectors **replacing fossil-based value chains, increasing circular bio-based systems** from sustainably sourced biological resources, and replacing carbon-intensive and fossil-based systems.

Expected Impacts 2/2

- The benefit for consumers and citizens, including those in rural areas, are improved by **establishing circular and bio-based systems based on sustainability, inclusiveness, zero pollution** etc.

- Multi-functionality and management of forests in Europe are safeguarded based on **the three pillars of sustainability** (economic, environmental and social).

- Potential of marine and freshwater biological resources and **blue biotechnology** is enlarged.

HORIZON-CL6-2024-CIRCBIO-01-1 Circular Cities and Regions Initiative's project development assistance (CCRI-PDA)

POLICY CONTEXT

- Contributing to the objectives of **the European Green Deal, the Circular Economy Action Plan 2020 and the Bioeconomy Strategy**
- Supporting the territorial **implementation, demonstration and replication of systemic circular solutions**

EXPECTED OUTCOMES

- The demonstration of **bankable and investment-ready circular economy projects**, which have a **high degree of replicability**
- The **roll-out of innovative financing schemes** at local and regional scale across Europe

Objective:
Accelerating the transition towards a sustainable, regenerative, inclusive and just circular economy at local and regional scale

HORIZON-CL6-2024-CircBio-01-1

SCOPE

WHO

- Supporting **public/private project promoters**

WHAT

- in **developing their circular economy investment projects** at local and regional scale - focusing on sectors/product value chains relevant for accelerating the circular economy transition at local and regional level

HOW

- by **bringing technical, economic and legal expertise** (e.g. feasibility studies, business plans, preparation for tendering procedures)

WHAT FOR

- thus providing tangible showcases that should **trigger further market replication**.

KEEP IN MIND

- The successful proposal will form part of the pool of projects specifically supporting the implementation of the European Commission's Circular Cities and Regions Initiative (CCRI)
- Collaboration with the CCRI Office and other CCRI stakeholders, as well as participation in relevant CCRI activities will be a must.
- Proposals should ensure that all evidence, information and project outcomes will be accessible through the CCRI website
- The proposed investments should ideally be launched before the end of the project.

Relevant projects to take into account: CCRI Projects

CIRCULAR FOAM aims at the demonstration of a territorial cross-sectorial systemic solution for the circularity of high-performance plastics from diverse applications on the example of rigid polyurethane foams used as insulation in refrigerators and in construction.

ROBIN Project will help EU countries, regions and cities to set up governance models capable of accelerating their successful transition to a circular bioeconomy. A territorial approach, examining the social, economic, environmental and spatial characteristics of each region, will ensure more tailored and effective outcomes.

EU List of CCRI Projects: CCRI Projects | Circular Cities and Regions Initiative (europa.eu)

HORIZON-CL6-2024-CircBio-01-2 Circular solutions for textile value chains based on extended producer responsibility

POLICY CONTEXT

Circular Economy Action Plan
Textile Strategy
Waste Framework Directive

- EPR schemes
- Reuse, separate collection, sorting and recycling
- Labelling

EXPECTED OUTCOMES

- Recommendations on best innovative solutions for the identification of material composition embedded in the design of textile products
- Recommendations on design for recycling that allows the use of targeted extended producer responsibility schemes
- Recommendations on policy tools to reach EU greenhouse gas reduction targets for 2030 and 2050

Related impacts:

European industrial sustainability, competitiveness and resource independence
Consumer and citizen benefits

HORIZON-CL6-2024-CircBio-01-2

SCOPE

- Textiles are the fourth highest-pressure category for the use of primary raw materials and water and fifth for greenhouse gas emissions and a major source of microplastic pollution
- EPR schemes are a lever for circularity
- Increased amounts of separately collected textile waste are expected because of the Waste Framework Directive's obligation to separately collect textiles as of 2025
- Identify, develop and test innovative labelling of textile products
- Ease separate collection for re-use or end-of-life treatment that leads to high quality secondary raw materials
- Identify novel solutions for textile reuse

KEEP IN MIND

- Value chain cooperation
- Global material flows

Stakeholders to be involved

- waste collectors
- waste sorters, repair and reuse organisations

Relevant projects to take into account

RESYNTEX, a new circular economy concept, is all about reviewing the entire value chain of textiles, from their production and consumption, to their journey towards recycling and/or waste. It shows how a symbiosis between the textile sector and the chemical industry can lead to a reduction of textile waste, by changing the course of the unwearable and poorly recycled blends.

T-REX Project brings together 12 major players from across the entire value chain to create a harmonized EU blueprint and business opportunities for closed loop sorting, and recycling of household textile waste. Transforming end-of-use textiles, from waste, into a desired feedstock, and a commodity for new business models that can be adopted at scale.

HORIZON-CL6-2024-CircBio-01-3 Innovative circular solutions for furniture

POLICY CONTEXT

Circular Economy Action Plan
European Green Deal

- Waste disposal
- Waste incineration

Related impacts:

European industrial sustainability, competitiveness and resource independence
Consumer and citizen benefits

EXPECTED OUTCOMES

- Increased deployment and demonstrated benefits of advanced digital solutions
- Emergence of new value chains
- Increased recycling rates and upcycling
- Increased uptake of recycled and/or renewable material
- Increased deployment and market uptake of circular design
- Increased reuse, refurbishment and remanufacturing rates and diffusion of new circular business practices
- Increased resource efficiency, causing a measurable reduction in GHG emissions and pollution

HORIZON-CL6-2024-CircBio-01-3

SCOPE

- EU furniture industry predominantly consists of **SMEs**
- Employs around one million European workers and represents a EUR 84 billion market
- Furniture waste in the EU accounts for more than 4% of the total municipal solid waste stream
- 80-90% of the EU furniture waste in MSW is incinerated or sent to landfill
- Reuse mostly through commercial second-hand shops, social enterprise companies or charities
- Projects should demonstrate and deploy at large scale innovative solutions and designs
- Address the different perspectives of manufacturers, retailers, consumers and civil society organisations

KEEP IN MIND

- **Social innovation** is recommended
- Joint activities with CCRI projects are encouraged

Stakeholders to be involved

- **manufacturers,**
- **retailers,**
- **consumers**
- **Civil Society Organizations**

Relevant projects to take into account

INEDIT: open INnovation Ecosystems for Do It Together process. It aims to create an Open Innovation European DIT ecosystem for sustainable furniture co-creation. It channels the creativity of consumers, shapes it through designers' professional skills, and makes it viable by leveraging on the expertise of production specialists in order to deliver sustainable, smart and personalized new products in a shorter time to market.

EU List of CCRI Projects: CCRI Projects | Circular Cities and Regions Initiative (europa.eu)

HORIZON-CL6-2024-CircBio-01-4 Systemic circular solutions for a sustainable tourism

POLICY CONTEXT

Circular Economy Action Plan
European Green Deal

- Pollution, hazardous substances
- Waste, energy, land, water

Related impacts:

Regional, rural, local/urban and consumer-based transitions
European industrial sustainability, competitiveness and resource independence
Consumer and citizen benefits

EXPECTED OUTCOMES

- Diffusion of **circular tourism services**
- Deployment of replicable systemic solutions for cities and regions
- Increased circular, zero-pollution and climate-neutral practices among **providers and users of tourism services**
- Deployment of innovative solutions and new, affordable technologies including digital
- **Creation of jobs** that facilitate circularity for different sectors
- **Uptake, replication and visibility** of circular systemic solutions for sustainable tourism

HORIZON-CL6-2024-CircBio-01-4

SCOPE

- Proposals are expected to implement and demonstrate circular systemic solutions at the level of cities and regions
- Include several sectors providing services for visitors and residents such as hospitality, transportation, culture, attractions, nature-based activities
- Circular tourism should consider waste and water management, batteries and vehicles, electronics and ICT, packaging, plastics, construction and buildings, GHG emissions of local and long-distance mobility, accommodation and food services.
- Proposals should address at least one of these above-mentioned sectors
- Multiple key resource and commodity chains
- Solutions should address economic, social and environmental dimensions of the transition towards circular tourism and include science, technology, behavioural and governance components

KEEP IN MIND

- Joint activities with CCRI projects are encouraged

Stakeholders to be involved

- Providers of tourism services
- Sectors: hospitality, transportation, culture etc.

Relevant projects to take into account

The overarching goal of Be.CULTOUR is to co-create and test sustainable human-centred innovations for circular cultural tourism through collaborative innovation networks/methodologies and improved investments strategies.
Targeting deprived, remote, peripheral or deindustrialized areas and cultural landscapes as well as over-exploited areas, local Heritage innovation networks will co-develop a long-term heritage-led development project in the areas involved enhancing inclusive economic growth, communities' wellbeing and resilience, nature regeneration as well as effective cooperation at cross-border, regional and local level.

Be.CULTOUR
Beyond cultural tourism

HORIZON-CL6-2024-CircBio-01-5-two-stage Programmed biodegradation capability of bio-based materials and products, validated in specific environments

POLICY CONTEXT

EU circular economy action plan
Zero pollution action plan
Sustainable carbon cycles
European Green Deal
Bioeconomy strategy

- European industrial sustainability, competitiveness and resource independence
- Innovative and sustainable value-chains in the bio-based sectors

EXPECTED OUTCOMES

- Circular design of bio-based processes and products: efficiency, durability, re-use, re-manufacture, recycling, recycled content
- Decreased environmental impacts on **soil, water, and air quality, biodiversity and climate**
- Product information systems enabling the circularity, safety and environmental sustainability of manufacturing and of the use of products at consumers' level

Related impacts:

Circularity and sustainability by design

Bio-based solutions with reduced environmental impacts on soil, water, and air quality, biodiversity and climate

HORIZON-CL6-2024-CircBio-01-5-two-stage

SCOPE

- Optimized design of bio-based processes and bio-based products to improve their circularity (also recycled materials):
  - resources and energy efficiency,
  - high-quality recycling technologies,
  - durability of products, safely re-used and re-manufactured,
  - improving products end-of-life options,
  - increasing the safe recycled content in new products
- :Assess safety, environmental sustainability and climate neutrality of value chains
  - existing and validated methods, past and ongoing R&I projects,
  - GHG emissions reduction, carbon removals, energy efficiency
- Economic and social: increased economic value, circular patterns involving consumers, improved economic value of recycled materials, job opportunities
- Product information systems: safe and sustainable use of biological resources and the resource efficiency along value chains
- Societal acceptance and responsible and informed choices

KEEP IN MIND

- International cooperation is encouraged
- Contribute to the New European Bauhaus (NEB) initiative
- EU funded projects, including Circular Bio-based Europe Joint Undertaking, Processes 4 Planet and other partnerships
- ‘SSH’ flagged. Enhancing the societal impact
- Gender dimension not mandatory

Stakeholders to be involved

- Manufacturers
- Experts in AI and digital.
- SSH experts

HORIZON-CL6-2024-CircBio-01-6-two-stage Digital information systems for bio-based products

POLICY CONTEXT

EU Bioeconomy Strategy

Common Agricultural Policy

Promote new business models for the green transition in line with the European Green Deal objectives.

EXPECTED OUTCOMES

- **Replicable and scalable, innovative production and business models.**
- Enhanced **knowledge and awareness on feedstock availability and technology options.**
- Improved **innovation capacities and product portfolio extension** in primary production sectors and SMEs.
- Development of **new materials, products, and services** with considerably lower environmental impacts and at higher value.
- **Climate-neutral land sector by 2035** and **climate-neutral economy by 2050**.
- **Diversification and enhancement of incomes**

HORIZON-CL6-2024-CircBio-01-6-two-stage

SCOPE

- Develop new **business models for the economic-viable valorisation of local underutilised feedstock**.
- **Demonstrate processes and technologies** to produce high-value bio-based materials and products **in rural conditions**.
- Build-upon existing food, feed, or bioenergy value chains to further **strengthen their economic and environmental sustainability**.
- Improve the knowledge on the **requirements, harvesting, logistics, pre-treatment and conversion of the feedstock**.
- **Evaluate the environmental and socio-economic performance.**
- **Demonstrate the economic feasibility** of seeking access to sufficient quantities of raw materials needed to set-up new supply chains.
- Closely **interact with other selected projects** under this topic and **create a joint stakeholder platform** to promote best-practice examples for primary producers and SMEs at national and EU-level.

KEEP IN MIND

- Cooperate with selected projects from topic **HORIZON-CL6-2021-CIRCBIO-01-08**
- **Multi-actor approach**
- Proposals may involve **financial support to third parties**
- Encouraged to include **regions where demonstrational sites and pilot plants are missing** or underrepresented
- **TRL 6-7** by the end of the project

Relevant projects to take into account: CBE & Process4Planet (1)

ABACUS Project:
- Define market opportunities and product specifications for algae-derived products
- Select the specific algae needed to meet these product specifications.
- Optimise the production process and design tools and procedures for process management
- Demonstrate cost-in-use acceptance of algal fractions for targeted lead applications (fragrances; nutraceuticals) and side-product streams
- Fully assess the acceptability of algae-derived products and production processes using comprehensive Technical Economical and Life Cycle Analyses
- Valorise the research and disseminate the results from ABACUS

- CBE List of projects: Projects | Circular Bio-based Europe Joint Undertaking (CBE JU) (europa.eu)
- Process4Planet projects: Projects | A.SPIRE (aspire2050.eu)

Relevant projects to take into account: CBE & Process4Planet (2)

I. To support regional actors (e.g., policy makers, innovators, farmers, foresters) to scale-up and develop local bio-based solutions → with a view to **boost rural development** at the regional and local level

II. To strengthen the cooperation among regional key actors and knowledge holders by establishing **9 Regional Hubs** in **6 EU countries,** where a set of **empowering activities** will be implemented (e.g., development of Actions Plans, trainings, mentoring, coaching, MML workshops, co-creative and networking events) to support development of local bio-economy initiatives

III. **Data mapping and development of One-Stop Shop** → an online matching tool gathering bio-economy related information (e.g.on biomass, business models, technologies, financial support) to help local stakeholders to effectively plan and implement their bio-based activities

Rural BioUp
Grow local, go global

HORIZON-CL6-2024-CIRCBIO-01-7 Demonstrating the fair and just transition from GHG-intensive economies facing challenges towards circular bioeconomy model regions

POLICY CONTEXT

- **European Green Deal priorities**, the EU's climate targets for 2030 and 2050, the objectives of the EU Biodiversity Strategy for 2030, 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), and the Council conclusions from April 2023 state 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

- Showcased solutions in **2-3** selected **coal mining regions** and/or **intensive agriculture regions**, ensuring geographical coverage of different regions.
- **Development of new bioeconomy structures** that generate local green growth in regions currently relying on GHG-intensive economic activities, focusing on coal mining and/or intensive livestock or crop production in agriculture;
- 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-CL6-2024-CircBio-01-7

SCOPE

- **Demonstrate** just and fair **bioeconomy solutions** in regions that face difficulties in the green transition to leave no person and no place behind.
- **Interact** with and draw on the logistical support of the CSA "**Supporting the fair and just transition from GHG-intensive economies facing challenges towards circular bioeconomy model regions**" with the overall goal to demonstrate the transition to a just and fair bioeconomy for in 2-3 selected coal mining regions and/or intensive agriculture regions.
- **Demonstrate** the feasibility of transforming regions towards sustainable and resource- efficient bioeconomy models, while **highlighting** the achievement of climate targets, as well as assessing trade-offs (e.g., food security or energy-security, strategic autonomy).
- Where relevant, activities should build and expand on the results of past and ongoing research projects.

KEEP IN MIND

- Multi-actor approach
- SSH disciplines
- Social innovation
- Cooperation with HORIZON-CL6-2023-Circbio-01-10

Relevant projects to take into account

TESS Project has designed a decision support system that can make it easy for policy makers to integrate local knowledge into their decision making, while also guiding and encouraging local activities that restore and maintain biodiversity and ecosystem services. TESS vision is to enlighten, encourage and empower local communities to support biodiversity restoration across Europe.

MAA – eligibility and excellence

- Introduction to Cluster 6 WP21-22: **wp-9-food-bioeconomy-natural-resources-agriculture-and-environment_horizon-2021-2022_en.pdf (europa.eu)**, page 19-21 (pdf version in the table with specific conditions; in online version below the topic)
- The MAA = **eligibility criterion** as indicated in the topic table: « proposals must use the MAA »
- The MAA is an integral part of the topic text and is counted as **criterion for excellence**:
  - Clarity and pertinence of the project's **objectives** (→ focus on needs and opportunities of end-users of project results)
  - Soundness of the proposed **methodology**, including **open science practices**, sharing and management of research outputs and engagement of citizens, civil society and end users where appropriate (→ focus on working according to MAA and plenty of broad communication and dissemination, in particular to end-users of project results)

European Commission

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MAA – requirements

- ✓ Project objectives must be targeting the **needs** of and **opportunities** for **end-users**
- ✓ Project concept and composition of the consortium must reflect a **balanced choice of key relevant actors with complementary knowledge**, able to ensure broad implementation. All actors actively involved all over the whole course of the project as from the planning to the end phase.
- ✓ Cross-fertilisation during the project must integrate **tacit** and **practical knowledge**: this must be illustrated with a sufficient number of high-quality **knowledge exchange activities** all along the project.
- ✓ Multi-actor engagement process must be facilitated by the **most appropriate methods**.

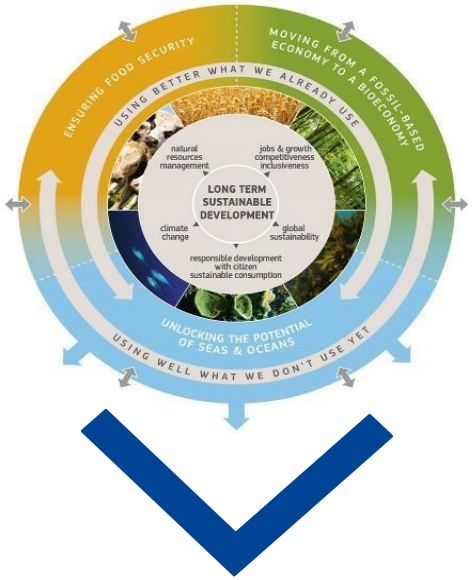
MAA – requirements

- ✓ Consortium must demonstrate its **added value**: how does the project complement existing research and best practices?
- ✓ Results must be **practical, easily understandable** and feed into the most used dissemination channels for end-users.
- ✓ For EU wide communication: "**practice abstracts**" in the common EIP format.
- ✓ Involve as much as possible **local interactive innovation groups** (EIP-AGRI Operational Groups under the CAP).

HORIZON-CL6-2024-CircBio-01-8 Bioeconomy project development assistance

POLICY CONTEXT

- EU Bioeconomy Strategy
- Progress Report of the EU Bioeconomy Strategy



Improve the deployment of sustainable bioeconomy business models and solutions, which will help rural and coastal areas in achieving a just, green transition

EXPECTED OUTCOMES

- Increased access to financial, legal and technical support for bioeconomy projects, leading to a higher number of successful bioeconomy flagship projects
- Alignment of actors and their goals in collaborative ventures on bioeconomy related projects
- Promotion and support of regional and national transitions from existing fossil-based socio-technical systems to bioeconomy-based systems

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-CL6-2024-CircBio-01-8

SCOPE

- Provide technical assistance for bioeconomy project development and facilitate synergies and linkages between different EU and national policy instruments and funding opportunities
- Bring together and align the goals of different stakeholders in bioeconomy projects along the whole value chain
- Provide expertise and consultancy services to promising bioeconomy projects
- Explore the barriers faced by novel bioeconomy solutions and provide strategies how to overcome barriers
- Projects benefiting from the assistance should contribute to the development of sustainable bioeconomy solutions

KEEP IN MIND

- Special focus to Member States where bioeconomy in underdeveloped
- Carry out the project assistance activities for the minimum duration of 5 years
- Multi-actor approach

Relevant projects to take into account

The EU-funded BIOBOOST project will boost the growth of the bioeconomy in Catalonia by offering project development assistance (PDA) services through a one stop shop office in Barcelona. The project will address the needs of these projects, providing a package of PDA services.

The aim of BERST is to take into account the bioeconomy potential and strategies of a range of different regions in Europe, and therefore to gain understanding of the possibilities and challenges related to the enhancement of biobased economies. The project also provides a support network in order to promote the development of smart specialization strategies based on regional bioeconomic potential.

HORIZON-CL6-2024-CIRCBIO-01-9 Circular bioeconomy start-up villages

POLICY CONTEXT

- EU Bioeconomy Strategy
- Long-term vision for the EU's rural areas
- New European Innovation Agenda

Support the development of circular systemic bioeconomy solutions in start-up villages across Europe

EXPECTED OUTCOMES

- Development and transfer of the concept of sustainable circular bioeconomy solutions in start-up villages
- Showcased novel governance and business models for circular systemic bioeconomy solutions
- Strengthened position of bioeconomy start-ups in rural innovation ecosystems
- Enhanced training opportunities and knowledge exchange and cooperation among rural innovators
- Improved rural innovation ecosystems to build a sustainable bioeconomy within ecological boundaries

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

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HORIZON-CL6-2024-CircBio-01-9

SCOPE

- Provide innovative circular, sustainable and socially fair bioeconomy solutions for:
  - food systems transformation
  - bio-based sectors
  - employing digital technologies and approaches
- Create and support of a thematic network of start-up villages based on bioeconomy concepts
- Provide assistance and advisory support for the development and linking of startup villages
- Develop the Start Up Village Forum initiative through a community of practice
- Develop a list of case studies of local and regional start-up villages focusing on bioeconomy
- Identify the challenges and development pathways for developing and scaling up of start-ups and SMEs for a sustainable bioeconomy

KEEP IN MIND

- Involve **at least three start-up villages** from three different countries
- Build on BioeconomyVentures and Pilots4U projects
- Synergies with the Startup Village Forum
- Explore available financing instruments

Relevant Project to take into account

BioeconomyVentures will develop a reference platform for bioeconomy-based start-ups and spin-offs seeking to gain access to finance. The platform will serve as a main meeting point for the bioeconomy entrepreneurship field. It is part of the project's overall goal of building a first of its kind bioeconomy entrepreneurship ecosystem, boosted by the BioeconomyVentures Ambassadors Programme. It will also create an assessment methodology to qualify and quantify the needs of the start-ups and spin-offs though the BioeconomyVentures evaluation matrix.

RRIstart project will focus on the value of RRI for the STEM entrepreneurship ecosystem. Specifically, it proposes a novel RRI model for start-ups blended with novel RRI-based impact investment indicators. The project will test the developed innovation through a translational piloting approach (from lab to market). Three pilots will be organized, covering environmentally sustainable start-ups from northern Europe, 3D printing and advanced materials in Italy, and **bioeconomy (agri-food) in Greece**. The overall aim is to bring society closer to science and innovation through impact investment.

HORIZON-CL6-2024-CircBio-01-10 Targeting aquatic extremophiles for sourcing novel enzymes, drugs, metabolites and chemicals

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

- Contribution to the **sustainable exploration of biodiversity hotspot regions**;
- Advances in the development of the next generation of sampling methods and technologies;
- Better preparedness to **support green industrial bioprocessing** with more sustainable bio-based products through bio discovery of novel sources and new biotechnology processes and applications;
- Expansion of bioprospecting from the screening for new chemicals into biological function;
- Advancement in understanding the ecology of marine or other aquatic ecosystems;
- **Increased commitment to conserve and sustainably use the ocean’s genetic diversity**.

HORIZON-CL6-2024-CircBio-01-10

SCOPE

- Explore marine or other aquatic ecosystems with complex and extreme conditions with focus on extremophilic organisms capable of thriving/surviving in such extreme environments (e.g., deep hydrothermal vents, hypersaline lagoons, sub-seafloor sediments).
- Develop or optimize tailor-made sampling methods
- Explore the metabolic, physiological and other adaptation mechanisms to such extreme ecological conditions
- Look for novel and highly efficient metabolites, drugs, enzymes and chemicals for industrial application.
- Compliance with EU regulations on access to genetic resources and the fair and equitable sharing of benefits arising from their utilization in the EU.

KEEP IN MIND

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

Relevant projects to take into account

BLUEGENICS's aim (with a industry-driven integrating approach) is to combine the knowledge in marine genomics, chemo genetics and advanced chemistry to produce recombinantly prepared novel secondary metabolite (lead) compounds and analogous from them, as well as pharmacologically active peptides, and to bring them up to the pre-clinical, and hopefully also to the clinical studies.

Destination – Clean Environment and Zero Pollution

CALLS CLEAN ENVIRONMENT AND ZERO POLLUTION WP2024

POLICY CONTEXT

- European Green Deal
- Zero pollution action plan
- Bioeconomy strategy
- Circular economy action plan
- Farm to fork strategy
- Soil strategy
- Marine Strategy Framework Directive
- EU water policy
- EU Missions: Soil, Ocean & Waters

EXPECTED IMPACT (STRATEGIC PLAN)

Sustainable and circular management and use of natural resources as well as **prevention and removal of pollution** are mainstreamed, unlocking the bioeconomy's potential, ensuring competitiveness and **guaranteeing healthy soil, air, and fresh and marine water for all**, through

i) better understanding of planetary boundaries and

ii) deploying innovative technologies and other solutions, notably in primary production, forestry and bio-based systems

IMPACT AREAS (STRATEGIC PLAN)

- Climate change mitigation and adaptation
- Enhancing ecosystems and biodiversity on land and in water
- Good health and high-quality accessible healthcare
- **Clean and healthy air, water and soil**
- A resilient EU prepared for emerging threats
- Inclusive growth and new job opportunities
- Circular and clean economy
- Sustainable food systems from farm to fork on land and sea

Expected impacts

- Achieving clean, unpolluted surface water and groundwater bodies by understanding and pointing sources of water pollution in a global and climate change context
- Balanced **N/P flows** within safe ecological boundaries at regional and local level
- Move towards **clean, unpolluted oceans and seas**
- Strengthen **circular bio-based systems** to operate within planetary boundaries
- **Substitute harmful chemicals** for safer and more sustainable alternatives
- **Reduce the environmental impact of food systems**

HORIZON-CL6-2024-ZEROPOLLUTION01-1 Demonstrating how regions can operate within safe ecological and regional nitrogen and phosphorus boundaries

POLICY CONTEXT

European Green Deal
Zero pollution action plan

- Increasing ambitions in pollution prevention: Air Quality Directive, Industrial Emissions Directive, Soil Health Law, Urban Waste Water Treatment Directive, Sewage Sludge Directive, Integrated nutrient management action plan
- 50% nutrient losses reduction by 2030

EXPECTED OUTCOMES

- Best practice reducing nitrogen and phosphorus emissions into water, air and soil from all emitting sectors
- Environmental, economic and behavioural effects
- Local and regional sustainability and circular economy schemes
- Guidance and recommendations

Related impacts:

Halt and eliminate pollution, clean and healthy soils, air, fresh and marine water for all; sustainable and circular use of natural resources

Balance N/P flows within safe ecological boundaries at regional and local level, helping restore ecosystems

HORIZON-CL6-2024-ZEROPOLLUTION01-1

SCOPE

- Implement: methodology to identify input of N/P at regional/river basin scale within safe ecological and regional boundaries
- Demonstrate region-specific practices in all relevant N/P sectors
- Showcase innovative governance models managing N/P:
  - ecologically responsible and sustainable use, recovery and exchange,
  - services and infrastructures between urban/industrial and rural/coastal environments
- Test innovative practices and technologies producing N and P-based fertilisers from organic waste, wastewater, biological residues or by-products
- Guidelines and recommendations:
  - encourage behavioural change and public acceptance,
  - effective problem-solving mechanisms,
  - regional twinning, mentoring
- **Local and regional authorities, municipalities, environmental organisations, farmers and other practitioners, industry, civil society**
- Disseminate results and best practice vs regional policies and regulatory instruments

KEEP IN MIND

- Different regional clusters per project and consortia involving a **wide range of stakeholders**
- EU funded projects, including Mission “Restore our Ocean and Waters"
- Part of the demonstration projects for the implementation of the European Commission’s Circular Cities and Regions Initiative (CCRI)
- ‘SSH’ flagged.

Relevant projects to take into account

P2GreeN will develop new circular governance solutions for the transition from fork to farm to halt and eliminate N & P pollution by connecting blue urban with green rural infrastructure, focusing on circular nutrient flows of nitrogen (N) and phosphorus (P). This objective will be achieved through the implementation and exploration of innovative N & P recovery solutions for the utilisation of human sanitary waste from urban settlements and its conversion into safe bio-based fertilisers for agricultural production in three pilot regions

HORIZON-CL6-2024-ZEROPOLLUTION01-2 Best available techniques to recover or recycle fertilising products from secondary raw materials

POLICY CONTEXT

European Green Deal
Zero pollution action plan

- Increasing ambitions in pollution prevention: Air Quality Directive, Industrial Emissions Directive, Soil Health Law, Urban Wastewater Treatment Directive, Sewage Sludge Directive, Integrated nutrient management action plan
- 50% nutrient losses reduction by 2030

EXPECTED OUTCOMES

Alternative **fertilising products** recovered from secondary raw materials enabling:

- Lower environmental impacts on soil, water, and air quality, biodiversity and climate
- Circularity
- Best available techniques recovering/recycling: technical feasibility, environmental performance and socioeconomic aspects
- Collection and sharing EU and international stakeholders

Related impacts:

Halt and eliminate pollution, clean and healthy soils, air, fresh and marine water for all; sustainable and circular use of natural resources

Balance N/P flows within safe ecological boundaries at regional and local level, helping restore ecosystems

HORIZON-CL6-2024-ZEROPOLLUTION01-2

SCOPE

- Collect data on case studies of existing installations converting secondary raw materials into fertilising products in Europe and outside. Range in sizes and types
- Urban and industrial wastewater and sewage sludge, bio-waste, digestate, treated manure
- Technical aspects, costs for installation, maintenance and upgrade. Focus on the environmental performances
- Comparison with conventional processes producing nitrogen- and phosphorus-based fertilisers
- Market uptake: market and regulatory framework analysis, availability of supply
- Select the best available technologies. Deliver specific datasheets.
- Recommendations: **ensure the deployment of the best available technologies preventing the emissions of nitrogen and phosphorus to soil, water and air**
- **Establish a forum of stakeholders from Europe and outside**

KEEP IN MIND

- International cooperation is encouraged
- EU funded projects
- Links with the Mission “Restore our Ocean and Waters
- Links with the Mission ‘A Soil Deal for Europe’
- Projects funded under the topic: synergies, common datasheet formats, recommendation and forum.
- ‘SSH’ flagged. Enhancing the societal impact
- Gender dimension not mandatory

Relevant projects to take into account

It aims to provide solutions to help overcome challenges related to food production, climate change and waste reuse. Based on the circular economy model, SEA2LAND project promotes the production of large-scale fertilisers in the EU from own raw materials.

FER-PLAY is working to protect ecosystems, decrease EU dependence on fertiliser imports, and improve resource efficiency through the promotion of alternative fertilisers. The project will map and assess alternative fertilisers made from secondary raw materials and highlight their multiple benefits to foster their wide-scale production and application.

NOVAFERT project aims to review at least two dozen alternative fertilising products that contain recovered nutrients from different waste streams. It will demonstrate the technical, economic and environmental feasibility and safe use of alternative fertilising products to facilitate the replacement of synthetic and mineral fertilisers.

HORIZON-CL6-2024-ZEROPOLLUTION01-3 Environmental impacts of food systems

POLICY CONTEXT

- European Green Deal
- Zero pollution action plan
- Farm to fork strategy
- European climate pact
- Common agricultural policy
- Common fisheries policy
- Food 2030 initiative

EXPECTED OUTCOMES

- Increased **overall knowledge of the environmental and climate impacts stemming from food systems**
- Robust **evidence-based understanding** of the impacts of food systems related **to direct and indirect pollution**
- **Improved capacity to reduce** the environmental and climate impacts of food systems
- **Support to actors across the food systems** through new available knowledge, shared existing data and identification of innovative solutions

HORIZON-CL6-2024-ZEROPOLLUTION01-3

SCOPE

- **Collect relevant qualitative and quantitative data** on environmental and climate impacts stemming from food systems
- **Increase the accessibility of relevant life-cycle inventory data** according to FAIR principles and the EU's open science policy
- **Provide new data** based on the requirements for **Environmental Footprint** compliant datasets /methods
- **Assess the impacts of food systems from a life-cycle perspective**
- **Identify and map opportunities and innovative solutions**, including existing good practices, addressing the identified impacts and promoting the uptake of sustainable food production and/ or food supply practices
- **Identify and map opportunities and innovative solutions**, including existing good practices, that **maximise synergies** among the three dimensions of sustainability

KEEP IN MIND

- **Multi-actor approach**
- Inter-disciplinary research
- Build on existing research projects/ relevant initiatives
- International cooperation is encouraged

Relevant projects to take into account

The main aim of TRUE is to identify and enable transition paths to realise successful legume-supported production systems and agri-feed and -food chains. This is achieved via: a true multi-actor approach that balances environmental, economic- and social-securities by minimising environmental impact; optimising diversity and resilience in commercial and environmental terms throughout the supply chain

General objective of the project is to integrate advancement in scientific knowledge about the impact of food chains with application of knowledge to practice to increase food chains sustainability through public policies and private strategies.

HORIZON-CL6-2024-ZEROPOLLUTION-02-1-two-stage Holistic approaches for effective monitoring of water quality in urban areas

POLICY CONTEXT

- European Green Deal
  - ✓ Zero Pollution Action Plan
- EU water-related policies (e.g. Water Framework Directive, Urban Wastewater Treatment Directive, Sludge, Industrial emission)

Develop and demonstrate a European wide 'whole system monitoring approach' to address emerging water pollution and water quality assurance in various urban areas

EXPECTED OUTCOMES

- Enhance urban water quality with a view of providing better guidance for policy making and prioritisation by developing **integrated urban water quality monitoring management plans**
- **Sound, safer and risk-based urban water quality management plans** supported by enhanced holistic monitoring, advanced novel methods and digital solutions, modelling and evidence-based scenarios
- Increase uptake of **digital tools** in the water sector to support water management decisions for all stakeholders.

Related impact: Move towards achieving clean, unpolluted surface water and groundwater bodies in the EU

HORIZON-CL6-2024-ZEROPOLLUTION-02-1-two-stage

SCOPE

- Develop and demonstrate a **European wide 'whole system monitoring approach' to address emerging water pollution** and water quality assurance in various urban areas
- **New systemic concepts and holistic strategies** to enhance urban water quality should be integrated and demonstrated in an operational environment.
- Advanced monitoring and control system, **going beyond the conventional pollutants, linking drinking and wastewater urban cycles**, integrating risk management approaches and exploiting upgraded digital solutions to support urban water quality management.
- Develop better methods to access chemical data to **track the use or the flows of chemicals** in urban areas
- Develop new and refined analytical tools and monitoring methods (e.g. **effect- based monitoring, biological monitoring**) to analyse broad spectrum of contaminants of emerging concerns
- Explore and consolidate the capabilities of **real-time monitoring of water quality** through earth observations technologies, online sensors, artificial intelligence, digital twins, digital data spaces, etc

KEEP IN MIND

- Action should bring together a **wide range of relevant stakeholders** with active participation and engagement to maximise impact.
- Participation of urban and catchment/river basin managing water **authorities** and **utilities** is essential
- Synergies with projects funded under **HORIZON-CL6-2021-ZEROPOLLUTION-01-03** and **HORIZON-CL6-2022-ZEROPOLLUTION-01-04**

Relevant projects to take into account

WATERUN aims to develop an innovative methodology to contribute to the implementation of urban water runoff (UWR) management plans in cities based on the Water-Sensitive Urban Design (WSUD) concept. This methodology will provide preventive and mitigation solutions and best management practices adopting a holistic perspective (from source identification to decision making) for diffuse water pollution control in urban catchments.

The EU-funded StopUP project will define pollution pathways in urban catchments to propose targeted interventions. The project will implement advanced monitoring concepts, online sensors, and data processing and analysis to increase knowledge about pollutants. Moreover, it will develop and test innovative technologies for pollution prevention and deliver tools to support the selection and implementation of pollutant mitigation measures.

HORIZON-CL6-2024-ZEROPOLLUTION-02-2-two-stage Innovative technologies for zero pollution, zero- waste biorefineries

POLICY CONTEXT

EU circular economy action plan

Bioeconomy strategy

European Green Deal

Zero pollution action plan

- Climate targets
- Safe and sustainable by design chemicals and materials
- Waste
- Chemicals strategy for sustainability

EXPECTED OUTCOMES

- Enhanced environmental performances of bio-based processes approaching the **zero-waste, zero-pollution** ambition.
- Integrated pollution prevention and control in bio-based systems targeting soil, water and air quality as well as noise levels.

Related impacts:

Circular bio-based systems to operate within planetary boundaries, mitigating climate change, and protecting air, water and soil quality

HORIZON-CL6-2024-ZEROPOLLUTION-02-2-two-stage

SCOPE

- Design integrated technical solutions reducing exhaust flows towards **zero-pollution**: extraction, recirculation, fractionation and conversion (including hot water, vapours, odours etc.)
- Reduction of impacts on climate change (GHG emissions reduction of and carbon removals) and biodiversity
- Replacement of hazardous substances with safe biobased ones
- Design biorefinery operations to re-circulate, increase energy efficiency
- Reduce noise emissions
- Design biorefinery operations towards **zero-waste**: circularity including symbiosis; best practices, including in other EU research and innovation projects
- Case-study: integrated zero-pollution solutions in a selected biorefinery, design the adaptation to all scales
- Piloting and validating digital innovation
- Integrated monitoring systems: reduction of pollutant emissions (affecting soil, water and air quality, noise levels) and waste production

KEEP IN MIND

- EU funded projects, including Circular Bio-based Europe Joint Undertaking and other partnerships

Stakeholders to be involved

- Research institutions
- Digital companies

Relevant projects to take into account

The MODEL2BIO project will develop and validate an innovative model-based decision support tool that predicts the physicochemical characteristics of the bio-based residual streams generated in the agri-food sector. It will explore the available alternative options for their valorisation as feedstock and propose the appropriate steps. The proposed approaches will take into account social, economic, environmental and regulatory criteria, including logistics.

SUSTAINEXT aims to transform the production plant of lead partner, Natac, at Hervás, Spain, into a multi-product biorefinery with an industrial-scale processing capacity of 20 000 tonnes a year. Based on a circular model integrating the whole supply chain, the refining process will be optimised according to feedstock composition in order to deliver maximum value with minimum environmental impact.

Projects | Circular Bio-based Europe Joint Undertaking (CBE JU) (europa.eu)

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