Horizon Europe programming R&I on bio-based and biodegradable plastics

Silvia Maltagliati

European Commission, DG Research&Innovation, Healthy Planet

Green transitions

Scope

- Bio-based

- Made from biomass/biological resources, i.e., animals, plants, micro-organisms and derived biomass, including bio-waste

- Biodegradable

- "*resulting ultimately in conversion into **carbon dioxide or methane**, in the absence of oxygen, **mineral salts, biomass and water** (PPWR)"; "plastic capable of undergoing physical, biological decomposition, such that it ultimately decomposes into **carbon dioxide (CO2), biomass and water**, and is, in accordance with European standards for packaging, recoverable through composting and anaerobic digestion" (SUP)";*

- Plastics

"'*a material consisting of a polymer as defined in (REACH), to which additives or other substances may have been added, and which can function as a main structural component of final products, with the exception of **natural polymers** that have not been chemically modified*"…"

R&I framework programmes

Horizon Europe Cluster 6 IA6 ‘Bio-based innovation system’ IA7 CE

European industrial sustainability, competitiveness and resource independence ..improved waste management, cascading use of biomass.. circular bio-based systems from sustainably sourced biological resources replacing carbon-intensive and fossil-based systems……..inclusive engagement of all

Horizon Europe Cluster 4 - Digital, Industry and Space

Industrial leadership and increased autonomy in key strategic value chains with security of supply in raw materials.. breakthrough technologies… dynamic industrial innovation ecosystems and advanced solutions for substitution, resource and energy efficiency

Circular Bio-based Europe Joint Undertaking https://www.cbe.europa.eu/

EUR 2 billion institutionalized European **partnership** between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries in Europe. 2021-2031

European Commission

HE, CBE JU bio-based, polymers/plastics, biodegradability; enabling technologies; social innovation

bio-based, polymers/plastics, biodegradability
approx (140+70) M€

HORIZON-CL4-2024-RESILIENCE-01-35: **Biodegradable polymers** for sustainable packaging materials. (IA, 31 M€, 4p).

HORIZON-CL6-2022-CIRCBIO-02-03-two-stage: Sustainable **biodegradable novel bio-based plastics**: innovation for sustainability and end-of-life options of plastics. (IA, 12 M€, 2p).

HORIZON-JU-CBE-2023-IA-04 Recycling **bio-based plastics** increasing sorting and recycled content (upcycling) (IA, 15 M€, 2p) .....

enabling technologies
approx 140 M€

HORIZON-CL4-2023-DIGITAL-EMERGING-01-40: Quantum Photonic Integrated Circuit technologies (RIA, 12M€)

social innovation
approx 220 M€

HORIZON-CL6-2023-ZEROPOLLUTION-01-7: Strategies to prevent and reduce plastic packaging pollution from the food system (RIA, 8M€)

HORIZON-CL6-2023-CircBio-02-1-two-stage: Circular Cities and Regions Initiative (CCRI)'s circular systemic solutions (IA, 58M€)

European Commission

Bio-based materials enabling the transition

1. replacement of fossil intensive resources by sustainable and renewable biomass, including bio-waste
2. substantially contribute to climate neutrality and biodiversity and environmental protection
3. enabled by the power of biotechnology combined with advances in information technology - including AI
4. enabling the equal distribution of benefits and revenues along the value chain, from the primary producers, to the industrial operators to end users, including local governments and citizens
5. increasing the level and appeal of jobs in agriculture, forestry and, potentially, fishery sectors, also due to the rapid deployment of digital tools for the primary production

Sustainability, resilience, and inclusion are the leading aspirations of the R&I programming of bio-based innovation

European Commission

(Bio-based) Plastics in policies

SUP Directive

REACH restriction to intentionally added microplastics

Proposal for a packaging and packaging waste regulation

COMM EU policy framework on biobased, biodegradable and compostable plastics

Regulation on fertilising products

Intergovernmental Negotiating Committee (INC) on Plastic Pollution

Regulation on sustainable finance

COMM Sustainable Carbon Cycles

R&I needs

SUP Directive

scientific and technical progress concerning criteria or a standard for biodegradability in the marine environment

REACH restriction to intentionally added microplastics

Polymers demonstrating ready biodegradation or inherent degradation; degradation under relevant environmental condition

Proposal for a packaging and packaging waste regulation

Packaging requirements: i) restriction on harmful substances; ii) recyclability: by design; collection, sorting and recycling; iii) recycled content in plastic packaging; iv) compostability

Regulation on fertilising products

Biodegradability criteria and test methods + mulch films to biodegrade in natural soil conditions and aquatic environments across the EU

R&I needs

COMM EU policy framework on biobased, biodegradable and compostable plastics

The Commission will promote research and innovation with the aim of designing circular bio-based plastics that are safe and sustainable by design and that allow for reusability, recyclability and biodegradability

Intergovernmental Negotiating Committee (INC) on Plastic Pollution

- international cooperation
- development of research and exchange of information
- promotion of technical and scientific cooperation

COMM Sustainable Carbon Cycles

develop methodologies and carry out an integrated EU bioeconomy land-use assessment

Further R&I perspectives

1. Circularity of bio-based materials and products: improve lifetimes of bio-based products towards long-live bio-based products
2. Contribution to carbon removal
3. Harmonize the measurement of bio-based content in bio-based products
4. Digitalisation of the bio-based value chains: information, monitoring, tracing, social acceptance
5. Improving environmental performances of bio-based value-chains
6. Industrial symbiosis
7. …

GREEN TRANSITIONS

Thank you

European Commission