



BIORADAR

**MONITORING SYSTEM OF THE
ENVIRONMENTAL AND SOCIAL
SUSTAINABILITY AND CIRCULARITY OF
INDUSTRIAL BIO-BASED SYSTEMS**

CALL: HORIZON-JU-CBE-2022
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TOTAL MONTHS: 36 MONTHS



**Circular
Bio-based
Europe**
Joint Undertaking



Co-funded by
the European Union

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SUMMARY

BIORADAR project, funded and managed by the Horizon Europe programme and the Circular Bio-based Europe Joint Undertaking (CBE JU), takes a system perspective for monitoring and evaluating circularity and sustainability within the industrial bio-based systems, aiming

to identify opportunities for optimisation across the entire value chain and measuring the subsequent economic and social impacts. With a specific focus on material circularity carbon emissions, indirect land-use change (iLUC) risks and social impacts, the project aims to provide

bio-based industries, policymakers and investors a universal and transparent Bio-based Transition Indicators (BTI) framework, and several useful tools such as the 'global bio-based systems regulatory tracker', 'AI-driven benchmarking' and 'Self-assessment'.



PROJECT SCOPE



The EU faces challenges due to limited land and biological resources, needing a sustainable and equitable approach to the development of bio-based systems. BIORADAR is a pioneering initiative aimed at assessing and monitoring the sustainability of industrial bio-based systems within the EU. The project is driven by the imperative outlined in the EU Green Deal to foster a bio-based economy, which seeks to reduce dependency on non-renewable resources, bolster food

security, and mitigate carbon emissions. BIORADAR takes a holistic approach to address these challenges, focusing on developing digital monitoring tools to aid industry, policymakers and investors in making informed decisions. Through its innovative methodologies, BIORADAR aims to facilitate the integration of circularity principles into the design and operation of bio-based systems, enabling a transition towards more sustainable and resilient models.



OBJECTIVES

BIORADAR's main objective, as a coordination and support action, is to develop a comprehensive monitoring system for transition indicators and metrics for sustainability and circularity of industrial bio-based systems. This will be achieved by:

- Improving metrics and frameworks for assessing environmental impacts and risks.
- Defining circularity indicators and develop circularity assessment framework.
- Evaluating the economic impact of closing the loop and climate change mitigation.
- Address the social implications of circularity and sustainability.
- Providing an overview of current policies in the bio-based field.
- Identifying patterns, best practices and up-scaling opportunities to form part of policy recommendations.
- Developing a set of integrated digital tools taking into account the interconnectivity of all impacts.
- Demonstrating the digital tools in bio-based textile, packaging, and fertilisers sectors.

PROJECT TECHNICAL DESCRIPTION & IMPLEMENTATION

BTI FRAMEWORK

The Bio-Based Transition Indicator (BTI) framework involves metrics to monitor industrial bio-based systems for sustainability (environmental, economic, and social) and circularity aspects. The BTI framework will be composed of three types of metrics:

1 Strategic/Core Indicators:

- Verdict on performance.
- Focus on key indicators.

2 Performance Indicators:

- Evaluate underlying physical processes.
- Cover entire value chain (e.g., recycling rates, material use).

3 Process Indicators:

- Monitor transition to bio-based systems.
- Include diverse indicators for various aspects of change.

BIORADAR project will develop three digital tools based on the BIORADAR BTI Framework:

Self-assessment

This tool aims to provide users with a user-friendly service enabling them to independently assess and analyze several metrics pertinent to their interests. Users can input data regarding key parameters, and the tool will facilitate secure analysis within a self-contained environment.

AI-driven (data-driven) benchmarking

This tool will feature modular and micro-modular architectures equipped with Artificial Intelligence (AI)

algorithms. These algorithms will facilitate a more reliable and experience-based assessment of the production, consumption, and impact of bio-based materials targeted by the tool.

Global bio-based systems regulatory tracker tool

This tool will conduct institutional analysis to monitor regulatory frameworks in selected countries. It will assess the social and legal feasibility of current policies concerning circular bio-based industries. This initiative responds to the increasing importance of transparent corporate disclosures and evolving policy dynamics within the bio-based industry.



IMPACT

BIO-BASED INDUSTRIES

BIORADAR adopts a comprehensive system perspective to bridge indicator gaps concerning material circularity and to evaluate environmental and social impacts within industrial bio-based systems. Through the development of tailored digital tools, benchmarking systems, a self-assessment platform, and a regulatory tracker tool, BIORADAR addresses the specific needs of stakeholders in the bio-based industry.

STANDARISATION PRACTICES

BIORADAR's standardization efforts have the potential to pave the way for the establishment of new standards concerning the circularity of bio-based products and systems.

CONTRIBUTION TO EU POLICES

BIORADAR's contributions are in perfect alignment with key EU policies, such as the Circular Economy Action Plan, the Climate Action Plan under the EU Green Deal, the Farm to Fork Strategy, and the Single Market Strategy. By enhancing the adoption of bio-based products, fortifying circular bio-based systems, and integrating sustainability metrics into pertinent policies, the outcomes of the project are poised to significantly bolster the EU's sustainability agenda.






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