

CBE JU Key Performance Indicators HANDBOOK

v.3 – 12/2024

KPIs Handbook rationale and objectives

The purpose of this document is to provide (non-legally binding) guidance to applicants and beneficiaries on the CBE JU KPIs collection and reporting, and complement the information provided in the CBE JU [SRIA](#). If different interpretations would be found, the information provided in the SRIA always prevails.

This document supports the CBE JU Annual Work Programmes for what concerns the interpretation and subsequent reporting of the CBE JU key performance indicators (KPIs) from all types of actions (IAs, including Flagships, RIAs and CSAs), as part of the preparation of the CBE JU Annual Activity Reports.

This document will be updated on a yearly basis to include further clarifications and examples as required.

In case of any question, please contact the CBE Programme Office info@cbe.europa.eu

Table of Contents

KPIs Handbook rationale and objectives	1
KPI 1 - Strategic participation and integration of feedstock producers and suppliers towards large-scale valorisation of sustainable biomass.....	3
KPI 2 - Unlock sustainable and circular bio-based feedstock for the industry	5
KPI 3 - Ensure environmental sustainability of feedstock.....	7
KPI 4 - Improve environmental sustainability of bio-based production processes and value chains.....	11
KPI 5 - Expand circularity in bio-based value chains.....	16
KPI 6 - Increase innovative bio-based outputs and products	19
KPI 7 - Improve the market uptake of bio-based products	22
KPI 8 - Attract investment on the bio-based sector	23
KPI 9 - Increase resilience and capacity in the bio-based sector	24
KPI 10 - Improve participation of regions and countries with high unexploited potential and strategic interest to develop it	25
Annex I - Indicators for participation of EU 27 countries in the BBI JU programme (Call 2014-2020).....	27
Annex II - Indicators for participation of NUTS2 EU 'less developed' or 'transition' regions in the BBI JU programme (Call 2014-2020)	28

KPI 1 - Strategic participation and integration of feedstock producers and suppliers towards large-scale valorisation of sustainable biomass

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.1: Increase the intensity of cross-disciplinary research and innovation activities	1.1.1: Ensure the availability and quality of sustainable bio-based feedstock
1.2: Increase and integrate the research and innovation capacity of stakeholders across the Union	1.2.1: Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems
2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.1: Demonstrate the sustainable supply of bio-based feedstock
3: Ensure a high level of environmental performance of bio-based industrial systems	3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems

1.1. Number of primary producers, involved as project beneficiaries and/or engaged in value chains at project level

This KPI aims at monitoring the number of primary producers involved in the CBE JU funded projects. Involvement of these actors should be in line with the principles highlighted in the multi-actor approach,¹ i.e. ensuring genuine and sufficient involvement over the whole course of the project.

Type of actions	Contributions are mainly expected from IAs (including Flagships) and RIAs, but they should also be reported by CSAs if relevant.
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Primary producers

Definition	<p>Legal Entities operating in the primary sectors: agriculture, forestry, fisheries, and aquaculture, performing activities related to the production, harvest, handling, and storage of biological resources before being moved to either processing or distribution.</p> <p>To be considered a primary producer, the production of biological resources should be a key part of the activities of the entity.²</p> <p>Primary producers are involved in the first steps of the circular bio-based value chains (i.e., biomass supply) and can produce primary and/or secondary/residual biomass feedstock.</p>
Examples	<ul style="list-style-type: none"> - Individual farms/farmers/aquatic feedstock producers - Cooperatives (first and second degree) - Biomass producers' organisations

¹ For further information on the Multi-Actor Approach, please refer to the 'CBE Specific Requirements' outlined in the latest [CBE JU Annual Work Programme](#)

² Not considered as primary biomass producers: entities not directly involved in the production of biological resources, but only in their processing or transformation. Some examples of entities that are not considered primary producers are: farmers' associations, food processors or federations of agricultural cooperatives (which focus on representation, training and advocacy activities)

	- Local Action Groups implementing EIP AGRI actions ³
Types of involvement and engagement at project level⁴	
Beneficiaries	Beneficiaries (article 7 of the MGA)
	Affiliated Entities (article 8 of the MGA)
Third parties	Associated partners (article 9.1 of the MGA)
	Third parties giving in-kind contributions to the action (article 9.2 of the MGA), e.g. member of advisory board
	Subcontractors (article 9.3 of the MGA), e.g. long term agreements signed

1.2. Number of (bio)waste management actors, involved as project beneficiaries and/or engaged in value chains at project level

This KPI aims at monitoring the number of waste management actors in the CBE JU funded projects. Involvement of these actors should be in line with the principles highlighted in the multi-actor approach⁵, i.e. ensuring their genuine and sufficient involvement over the whole course of the project.

Type of actions	Contributions are mainly expected from IAs and RIAs, but they should also be reported by CSAs if relevant.
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Waste management actors

Definition	Private or publicly owned companies or municipalities involved in the collection, sorting, treatment, and/or recycling of municipal or industrial waste.
Examples	Actors engaged in: <ul style="list-style-type: none"> - Industrial composting - Recycling - Waste collection, sorting and/or treatment <p>For the definition of bio-waste please refer to the Waste Framework Directive.⁶ For examples of 'industrial and municipal bio-based residues and waste' as well as other types of bio-waste, please refer to the SRIA.⁷</p>

Types of involvement and engagement at project level⁸

Beneficiaries	Beneficiaries (article 7 of the MGA)
	Affiliated Entities (article 8 of the MGA)
Third parties	Associated partners (article 9.1 of the MGA)
	Third parties giving in-kind contributions to the action (article 9.2 of the MGA)
	Subcontractors (article 9.3 of the MGA)

³ See https://ec.europa.eu/enrd/lag_en.html

⁴ [general-mga_horizon-euratom_en.pdf \(europa.eu\)](https://ec.europa.eu/enrd/lag_en.html)

⁵ For further information, please refer to the 'CBE Specific Requirements' outlined in the latest CBE JU Annual Work Programme <https://www.cbe.europa.eu/reference-documents>

⁶ See [Waste Framework Directive](#) (art. 3).

⁷ See [SRIA](#) (Annex V. Table V.1: Potential feedstock for the bio-based industry)

⁸ [general-mga_horizon-euratom_en.pdf \(europa.eu\)](https://ec.europa.eu/enrd/lag_en.html)

KPI 2 - Unlock sustainable and circular bio-based feedstock for the industry

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.1: Increase the intensity of cross-disciplinary research and innovation activities	1.1.1: Ensure the availability and quality of sustainable bio-based feedstock
	1.1.2: Develop innovative production systems in the bio-based industry
	1.1.3: Develop innovative bio-based products
2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.1: Demonstrate the sustainable supply of bio-based feedstock
	2.1.2: Deploy innovative production technologies

2. Number of innovative bio-based value chains created or enabled based on sustainably-sourced biomass

This KPI aims at monitoring the innovative bio-based value chains created (KPI 2.1) or enabled (KPI 2.2) through CBE JU funded projects. The value chains should be strictly based on sustainably-sourced and used biomass, including primary, secondary, residual or waste biomass.

Type of actions	Contributions should be reported by RIAs (value chains enabled) and IAs (value chains created).
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Innovative bio-based value chains

Definition	New bio-based value chains, ones created or enabled, with at least one element of novelty/innovation across the value chain.
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Additional definitions	Novel/Innovative value chain = a value chain applying new, emerging technologies or technologies which have been, so far, not developed or deployed in comparable existing value chain(s). This could be to provide benefits (advanced functional properties and/or environmental performance) versus existing benchmarks (where available) for existing or new market segments.
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Examples	Novelty/innovation across the value chain can refer to one or more of the following: <ul style="list-style-type: none"> - Type of sustainably-sourced feedstock - Bio-based processes applied - Bio-based outputs/products - Applications of bio-based outputs/products
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Sustainably-sourced biomass

Definition	Biomass sourced in a manner that enhances and creates benefits for the environment, economy, and/or society. Where applicable, and wherever possible, the sustainability of sourced biomass should be certified by a relevant independent third party.
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	In the context of environmental sustainability, feedstock must also comply with the environmental requirements, including the DNSH principle ⁹ , as set in the CBE Annual Work Programme.
Additional definitions	Secondary biomass: refers to bio-based feedstock, being waste or residues, that can be recycled in a circular economy context, therefore getting ‘injected’ back into the economy as secondary raw materials. In this context, secondary bio-based feedstock is residual or waste biomass that can be valorised in bio-based processes. ¹⁰
Examples	<ul style="list-style-type: none"> - Forest-based biomass originating from sustainably managed forests, as certified by FSC/PEFC - Bio-waste complying with the Regulation (EU) 2019/1009 (‘Fertilising products regulation’; i.e. “<i>bio-waste within the meaning of Directive 2008/98/EC resulting from separate bio-waste collection at source</i>”)

⁹ https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/guidance/programme-guide_horizon_en.pdf

¹⁰ See [EU Biorefinery Outlook to 2030](#) for classifications of feedstock.

KPI 3 - Ensure environmental sustainability of feedstock

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.3: Increase the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations	1.3.1: Protect and enhance biodiversity and ecosystem services in bio-based feedstock supply systems
3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.	3.1.1: Set effective and robust environmental sustainability and circularity criteria for bio-based systems
	3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems

3.1 Number of projects using feedstock generated with practices that contribute to enhance biodiversity

This KPI aims at monitoring the number of CBE JU funded projects which contribute to the enhancement of biodiversity. Projects can deliver via the development or improvement of (integrated) practices, and/or methodologies, and/or tools to enhance biodiversity within the provision of feedstock¹¹ to bio-based systems; for example, production, collection and supply (including any feedstock pre-processing prior to storage and transportation).

Type of actions Contributions should be reported by IAs and RIAs.

Practices, methodologies & tools that contribute to enhance biodiversity

Definition	<p>Innovative practices refer to primary and/or secondary biomass feedstock production and supply (including any feedstock pre-processing prior to storage and transportation), eventually also contributing to the EU Biodiversity strategy¹² and the Nature Restoration Law¹³ targets by enhancing biodiversity, preventing ecosystems degradation and restoring terrestrial as well as aquatic ecosystems, in rural, coastal and (peri)urban settings.</p> <p>Development or improvement of methodologies and/or tools:</p> <ul style="list-style-type: none"> - Projects may contribute via improving knowledge on the sustainable management of biotic resources and related ecosystems and/or knowledge on the causes of biodiversity loss and ecosystems degradation, related to bio-based systems. - Within the scope of CBE specific objective 3.1, and especially strategic priority 3.1.1, projects may also contribute via improving on metrics, science-based methodologies and tools to assess the ecosystem functions and impacts on biodiversity from bio-based systems and based on different types of feedstock.
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¹¹ For examples of potential feedstock for the bio-based industry, please refer to Annex V. Table V.1 in the SRIA: <https://www.cbe.europa.eu/strategic-research-and-innovation-agenda-sria>. In the context of environmental sustainability, feedstock must comply with the environmental requirements as set in the CBE Annual Work Programme.

¹² [Biodiversity strategy for 2030 \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020-0003) including the key commitments by 2030.

¹³ [Nature Restoration Law \(europa.eu\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32020-0003).

Additional definitions	Biodiversity enhancement ¹⁴ refers to reporting practices, methodologies and tool improvements relevant to the integration, assessment and improvement of biodiversity aspects related to bio-based systems (coming on top of the mandatory requirement of biodiversity protection ¹⁵).
Examples	<ul style="list-style-type: none"> - Remediation of contaminated soils - Pollinator-friendly crops and agronomic systems - Harmonised methodologies to better integrate the assessment and monitoring of any potential (reversible or irreversible) impacts on biodiversity from bio-based systems, together with assessing the potential of enhancing biodiversity. <p>Further examples could be found under</p> <ul style="list-style-type: none"> - The Commission Delegated Acts to the EU Taxonomy regulation¹⁶ - The Platform on Sustainable Finance reports¹⁷

3.2 Number of projects using feedstock generated with practices aiming at zero-pollution (soil, water, air) and/or at reducing water consumption

This KPI aims at monitoring the number of CBE JU funded projects which reduce pollution (soil, water, air) and/or water consumption due to improved feedstock¹⁸ production and supply practices (including any feedstock pre-processing prior to storage and transportation).

Type of actions	Contributions should be reported by IAs and RIAs.
Practices aiming at zero-pollution (soil, water, air)	
Definition	Biomass feedstock production and supply practices (including any feedstock pre-processing prior to storage and transportation) which contribute to the EU Zero Pollution and toxic-free environment ambitions ¹⁹ by reducing the pollution of soil, water and air.
Examples	<ul style="list-style-type: none"> - Avoid excessive fertiliser loads on soil and losses of N- and P-based fertilisers into water bodies. - Healthy soil: reduction in soil erosion and preventing impacts on the soil microbiome. - Cultivation of low-input biomass requiring reduced use of plant-protection products.

¹⁴ Restoring EU's ecosystems will help to increase biodiversity, mitigate and adapt to climate change, and prevent and reduce the impacts of natural disasters.

¹⁵ Biodiversity protection is further described as part of the mandatory environmental requirements, set in the CBE Annual Work Programmes

¹⁶ [EU taxonomy for sustainable activities | European Commission \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/eu-taxonomy-for-sustainable-activities)

¹⁷ [Platform on Sustainable Finance: Technical working group - Methodological report \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/platform-on-sustainable-finance-technical-working-group-methodological-report)

¹⁸ In the context of environmental sustainability, feedstock must comply with the environmental requirements as set in the CBE Annual Work Programmes. For examples of potential feedstock for the bio-based industry, please refer to Annex V. Table V.1 in the SRIA: <https://www.cbe.europa.eu/strategic-research-and-innovation-agenda-sria>

¹⁹ On 12 May 2021, the European Commission adopted the [EU Action Plan: "Towards a Zero Pollution for Air, Water and Soil"](https://ec.europa.eu/euro-observatory/en/eu-action-plan-towards-a-zero-pollution-for-air-water-and-soil). The action plan aims to strengthen the EU green, digital and economic leadership, whilst creating a healthier, socially fairer Europe and planet. It provides a compass to mainstream pollution prevention in all relevant EU policies, to step up implementation of the relevant EU legislation and to identify possible gaps.

	<ul style="list-style-type: none"> - Technologies which significantly reduce pollution during harvesting and on-site pre-processing of land-based biomass prior to storage, transportation and biorefining. - Remediation of polluted environments, including in urban and industrial sites. <p>Further examples could be found under</p> <ul style="list-style-type: none"> - The Commission Delegated Acts to the EU Taxonomy regulation²⁰ The Platform on Sustainable Finance reports²¹
Practices aiming at reducing water consumption	
Definition	Feedstock production and supply practices which contribute to reducing the water consumption; or processes (prior to feedstock storage and transportation) reducing intake of water, among other improvements.
Examples	<ul style="list-style-type: none"> - Selection, breeding and cultivation of drought-resistant biomass - Deploy reclaimed water use, e.g., facilities for harvesting rain and storm water and facilities for collection and treatment of grey water to be used for irrigation

3.3 Number of projects using feedstock generated with practices contributing to climate change mitigation and/or adaptation

This KPI aims at monitoring the number of CBE JU funded projects which contribute to improved climate related impacts, encompassing ILUC impacts, due to improved feedstock²² production and supply practices (including any feedstock pre-processing prior to storage and transportation).

Type of actions	Contributions should be reported by IAs and RIAs.
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Practices contributing to climate change mitigation

Definition	Climate change mitigation consists of actions to limit climate change and its related effects. This involves primarily, reductions in emissions of greenhouse gasses (GHGs), and, accessorially, removal of CO ₂ from the atmosphere and storage in natural sinks, on land and sea, or other means.
Examples	<ul style="list-style-type: none"> - Reduced CO₂ and other GHGs emissions via research & innovation in feedstock production or supply - Sustainable forest management (e.g. afforestation and reforestation) incorporated in biomass feedstock production practices - A microalgae farm using CO₂ from a nearby industrial plant to feed its reactors - Agroforestry and other forms of mixed farming combining woody vegetation with crop and/or animal production systems - Use of catch crops, cover crops and conservation tillage - Conversion of cropland to fallow or permanent grassland & respective sustainable biomass supply

²⁰ [EU taxonomy for sustainable activities | European Commission \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/eu-taxonomy-for-sustainable-activities)

²¹ [Platform on Sustainable Finance | European Commission \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/platform-on-sustainable-finance)

²² In the context of environmental sustainability, feedstock must comply with the environmental requirements as set in the latest CBE Annual Work Programme <https://www.cbe.europa.eu/reference-documents>

	<ul style="list-style-type: none"> - Restoration of peatlands and wetlands combined with biomass generation (paludiculture) <p>For more examples relevant to climate change mitigation, refer also to:</p> <ul style="list-style-type: none"> - The Carbon Farming initiative and the Handbook²³ (Setting up and implementing result-based carbon farming mechanisms in the EU Technical guidance handbook) - The Sustainable carbon cycles Communication²⁴
Practices contributing to climate change adaptation	
Definition	<p>Climate change adaptation is the process of adapting to climate change, taking action to prepare for and adjust to both the current effects of climate change the predicted impacts in the future.</p> <p>For example, adaptation aims to moderate or avoid harm in humans' life, whereas humans may intervene to help adjustment and increase the resilience of ecosystems to climate change-related events (drought, temperature fluctuations, extreme weather conditions).</p>
Examples	<ul style="list-style-type: none"> - Breeding of more resistant biomass varieties - Cultivating low input crops <p>For more examples relevant to climate adaptation, refer also to:</p> <ul style="list-style-type: none"> - The Carbon Farming initiative and the Handbook (<i>Setting up and implementing result-based carbon farming mechanisms in the EU Technical guidance handbook</i>)¹⁹ - The Sustainable carbon cycles Communication²⁰

²³ [Setting up and implementing result-based carbon farming mechanisms in the EU - Publications Office of the EU \(europa.eu\)](https://ec.europa.eu/euro-observatory/publications/setting-up-and-implementing-result-based-carbon-farming-mechanisms-in-the-eu)

²⁴ https://ec.europa.eu/clima/system/files/2021-12/com_2021_800_en_0.pdf

KPI 4 - Improve environmental sustainability of bio-based production processes and value chains

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.1: Increase the intensity of cross-disciplinary research and innovation activities	1.1.2: Enhance production systems for bio-based chemicals, materials and products
1.3: Increase the research and innovation capacity for addressing environmental challenges and development of more sustainable bio-based innovations	1.3.2: Improve environmental performances of bio-based processes and products
2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.2: Deploy innovative production technologies
3: Ensure a high level of environmental performance of bio-based industrial systems	3.1.1: Set effective and robust environmental sustainability and circularity criteria for bio-based systems
	3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems

4.1 Number of projects with innovative & sustainable processes that contribute to GHGs emissions reduction

This KPI aims at monitoring the number of CBE JU funded projects which develop, demonstrate or scale-up bio-based processes with a reduced carbon footprint compared to the current benchmark(s).

Type of actions	Contributions should be reported by IAs (improvements demonstrated in a relevant/operational environment) and RIAs (prospective improvements validated at lab scale or in a relevant environment).
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Innovative & sustainable processes

Definition	A bio-based process may be considered innovative if it applies technologies (novel or existing but not yet applied in the context in scope) for the conversion of a particular bio-based feedstock or intermediate and at the targeted scale. The process is considered as sustainable if it enhances and creates benefits for the environment, society and the economy.
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Contribute to GHGs emissions reduction²⁵

Definition	A process offering reduced direct GHGs emissions compared to current benchmark(s). The benchmark may be a process using fossil-based inputs and/or an existing process converting bio-based feedstock.
Additional definitions	GHG emissions = GHGs comprise carbon dioxide (CO ₂), nitrous oxide (N ₂ O), methane (CH ₄) and fluorinated gases. In general, there are direct and indirect

²⁵ Targets (% reduction) and baselines defined at project level with appropriate benchmarks.

	emissions that need to be monitored and addressed, hereby we are focusing on scope 1, ²⁶ direct/process emissions.
Examples	<ul style="list-style-type: none"> - Demonstrating a process incorporating bio-catalysis for the production of a group of drop-in platform chemicals, reducing direct CO₂ emissions per kg of product, compared to the state-of-the-art benchmark. - Demonstrating significantly improved capture, purification of gaseous streams and catalysis concepts for bio-based processes implementing Carbon Capture and Use (CCU), based on gaseous biogenic carbon <p>Further examples could be found under</p> <ul style="list-style-type: none"> - the Commission Delegated Acts to the EU Taxonomy regulation²⁷ the Platform on Sustainable Finance reports²⁸

4.2 Number of projects developing innovative & sustainable processes that improve on resource efficiency and zero-waste

This KPI aims at monitoring the number of CBE JU funded projects which develop, demonstrate or scale-up bio-based processes which are more resource efficient and produce less waste than the current benchmark(s).

Type of actions	Contributions should be reported by IAs (improvements demonstrated in a relevant/operational environment) and RIAs (prospective improvements validated at lab scale or in a relevant environment).
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Improve resource efficiency (for bio-based processes)²⁹

Definition	Resource efficiency means using the Earth's limited resources sustainably, allowing to create more with less and deliver greater value with less input while minimising impacts on the environment. Improved resource efficiency can address technoeconomic feasibility along with environmental sustainability aspects. Using secondary raw materials and energy efficiency are also linked with the resource efficiency concept (see also KPI 4.4).
Examples	<ul style="list-style-type: none"> - Use of secondary raw materials, including all streams of waste - More efficient: <ul style="list-style-type: none"> o biomass feedstock valorisation (improving pre-treatment, conversion and downstream purification efficiency) o water/solvent/(bio)catalyst (re)use (reduce waste/product ratio)

Zero-waste

²⁶ Scope 1 greenhouse gas emissions are emissions coming directly from a company and its controlled entities (including process emissions). Scope 2 emissions come indirectly from the generation of purchased energy. Scope 3 emissions are all indirect emissions that are not included in scope 2 and occur in the value chain of the reporting entity, including both upstream and downstream emissions. Scope 2 and 3 emissions are outside the focus of this KPI.

²⁷ [EU taxonomy for sustainable activities | European Commission \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/eu-taxonomy-for-sustainable-activities)

²⁸ [Platform on Sustainable Finance | European Commission \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/platform-on-sustainable-finance)

²⁸ [Platform on Sustainable Finance: Technical working group - Methodological report \(europa.eu\)](https://ec.europa.eu/euro-observatory/en/platform-on-sustainable-finance-technical-working-group-methodological-report) For examples of potential feedstock for the bio-based industry, please refer to Annex V. Table V.1 in the SRIA: <https://www.cbe.europa.eu/strategic-research-and-innovation-agenda-sria>

²⁹ Targets (% reduction) and baselines defined at project level with appropriate benchmarks.

Definition	Zero-waste ambition refers to significantly reducing/eliminating waste and by-products during production processes and making full use of input biomass as well as other process agents, thus also preserving natural resources.
Examples	<ul style="list-style-type: none"> - Applying the cascading use of biomass approach to fully valorise all biomass fractions - Recirculate any process streams back in the production processes - Industrial or industrial-urban symbiosis making use of each other's side and waste streams - Applying circularity to feed process biomass residues or waste back in a bio-based value chain - Optimisation, control and monitoring of bio-based processes by applying digitalisation concepts to improve on and ensure high process standards of resource efficiency and environmental protection.

4.3 Number of projects developing innovative & sustainable processes enabling to address zero pollution

This KPI aims at monitoring the number of CBE JU funded projects which develop, demonstrate or scale-up bio-based processes which are contributing to zero pollution ambition. Under this KPI, projects should report contributions **other than GHG emission reductions** which are already covered in KPI 4.1. Furthermore, this KPI is complementary to KPI 3.2 (with a focus on feedstock) and should only consider improvements in the process itself.

Type of actions	Contributions should be reported by IAs (improvements demonstrated in a relevant/operational environment) and RIAs (prospective improvements validated at lab scale or in a relevant environment).
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Address zero pollution

Definition	Contributing to the zero-pollution vision for 2050 ³⁰ by addressing the key 2030 targets to reduce air, water and soil pollution to levels no longer considered harmful to human health and ecosystems and that respect the planetary boundaries. Furthermore, contributions to mitigating noise and odour emissions, as well as light pollution at night may also be relevant.
Examples	<ul style="list-style-type: none"> - Reducing exhaust flows from bio-based processes through innovative technologies of extraction, recirculation, fractionation and conversion of such flows, thus reducing pollutants' emissions. - Reducing noise emissions - Reducing odour emissions - Replacing hazardous substances used in industrial processes with safe(r) and more sustainable bio-based ones

³⁰ See [Zero pollution action plan \(europa.eu\)](https://europea.eu).

4.4 Number of projects with innovative & sustainable processes with improved energy efficiency

This KPI aims at monitoring the number of CBE JU funded projects which develop, demonstrate or scale-up bio-based processes which are more energy efficient than current processes (the benchmark(s) may be addressing fossil- or bio-based feedstock).

Type of actions	Contributions should be reported by IAs (improvements demonstrated in a relevant/operational environment) and RIAs (prospective improvements validated at lab scale or in a relevant environment).
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Improved energy efficiency³¹

Definition	Reduced energy input while maintaining an equivalent level of an activity with regards to providing products and services. Improved energy efficiency can address technoeconomic feasibility along with environmental sustainability aspects.
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Examples	<ul style="list-style-type: none"> - A process occurring at milder conditions (e.g. catalyst optimisation to reduce required temperatures or pressures), thus lowering its energy consumption - A process using waste heat recovery to lower its overall energy consumption - Low carbon and renewable energy integration/electrification of bio-based processes
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4.5 Number of products with improved life cycle environmental performance

This KPI aims at monitoring the number of bio-based products demonstrated or scaled-up within CBE JU funded projects that improve environmental performance compared to the current (fossil- and/or bio-based) benchmarks. The improved performance of the product should be demonstrated via a dedicated LCA.³²

Type of actions	Contributions should be reported by IAs.
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Products³³

Definition	Final outputs of bio-based value chains (including B2B and B2C products)
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Examples	<ul style="list-style-type: none"> - Bio-based chemicals (e.g. platform chemicals, additives, solvents, surfactants) - Bio-based polymers and materials - Other bio-based end products
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Improved life cycle environmental performance

Definition	The product life cycle assessment (LCA) indicates improvements in at least one environmental impact category, with no negative impacts on other impact
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³¹ Targets (% reduction) and baselines defined at project level with appropriate benchmarks.

³² The scope of the LCA should be cradle-to-cradle or cradle-to-grave. Improved cradle-to-gate life cycle environmental performance may also be reported if justified by the product (e.g. drop-in bio-based product).

³³ Please refer to the [EU Biorefinery Outlook to 2030 | European Commission \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&plugin=1) for product classifications.

	<p>categories and while fulfilling all environmental sustainability requirements set out in the relevant Annual Work Programme.³⁴</p> <p>The life-cycle assessment (LCA) methods should be based on widely used standards and certifications, and they should make use of accepted and validated approaches. They should use, as a reference, Commission recommendations and the European norms³⁵, technical reports and technical specifications, but also the standards developed by CEN/TC 411 for bio-based products³⁶. Environmental LCA is complemented by life cycle costing assessment (LCCA), which aims to assess the economic impacts of a product/process/service, and by social life cycle assessment (S-LCA), which aims to evaluate social implications of a product/process/service.</p> <p>In the context of SRIA 2030 and CBE Annual Work Programme, depending on the type of impacts to be assessed, LCA methodologies can refer to:</p> <ul style="list-style-type: none"> - Life cycle assessment (LCA) to evaluate environmental impacts. - Life cycle costing (LCC) to evaluate economic impacts. - Social life cycle assessment (S-LCA) to evaluate social impacts.
Examples	<ul style="list-style-type: none"> - Bio-based products that show a carbon removal capacity (according with the forthcoming regulation on the certification of carbon removals) - climate change impacts (decreased global warming potential) - reduced pollution (e.g. acidification, eutrophication) - improved land/water use

³⁴ Targets (% reduction) and baselines defined at project level with appropriate benchmarks.

³⁵ E.g., the Product and Organisation Environmental Footprint methods as defined in the [EU Recommendation 2279/2021](#)

³⁶ [European Committee for Standardisation Technical Committee 411 on bio-based products](#)

KPI 5 - Expand circularity in bio-based value chains

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.1: Increase the intensity of cross-disciplinary research and innovation activities	1.1.3: Develop innovative bio-based products
2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.3: Scale up production and market uptake of innovative bio-based products
3.1: Ensure that circularity and environmental considerations, including contributions to climate neutrality and zero pollution objectives, are taken into account in the development and implementation of research and innovation bio-based projects and facilitate societal acceptance	3.1.1: Set effective and robust environmental sustainability and circularity criteria for bio-based systems
	3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems

5.1 Number of innovative products that are biodegradable, compostable, recyclable, reused or upcycled (circular-by-design)

This KPI aims at monitoring the number of bio-based products developed (RIA), demonstrated (low TRL IA), or upscaled to precommercial scale (high TRL IA) within CBE JU funded projects and with improved end-of-life options compared to the current fossil and/or bio-based benchmarks.

Type of actions	Contributions should be reported by IAs and RIAs.
Innovative products	
Definition	Bio-based products with advanced properties or enhancements (including improved circularity-by-design) compared to existing benchmarks.
Examples	<ul style="list-style-type: none"> - Products based on materials and/or chemicals exploiting the natural variety and chemical functionality of bio-based molecules to confer unprecedented technical performance properties - Products containing active ingredients with new functional characteristics
Biodegradable products	
Definition	<p>A product is biodegradable if it can undergo biodegradation, which is the breakdown of an organic compound by microorganisms in the presence of oxygen into carbon dioxide, water and mineral salts of any other elements present (mineralization) and new biomass (EN 17033).</p> <p>The ultimate aerobic biodegradation occurs under specific environmental conditions.</p>
Examples	<ul style="list-style-type: none"> - Mulching tarps biodegrading under the right environmental conditions and also serving as soil nutrients after use. - Design for programmed biodegradation for bio-based plastics, improving on end-of-life and microplastics release.

Compostable products	
Definition	Compostable bio-based products able (and certified) to biodegrade under specific conditions in industrial composting plants (e.g. compostable packaging following the standard EN 13432) and/or home composting (an EU home composting standard does not exist, yet, but some MSs have it).
Examples	<ul style="list-style-type: none"> - Bio-based smart food packaging to reduce waste by monitoring and extending shelf-life, while being compostable.
Recyclable products	
Definition	Recycling means any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations. ³⁷
Examples	<ul style="list-style-type: none"> - Products incorporating bio-based plastic that is mechanically recyclable; either by the conventional plastic recycling routes (for PET, PP, LDPE, etc) or in dedicated recycling facilities - Cellulose-based products compatible with paper recycling streams
Reused products	
Definition	Products which are designed for re-use, without any pre-processing beyond cleaning/repairing operations.
Examples	<ul style="list-style-type: none"> - Bio-based bottles/packaging designed for reuse - Improving the durability/reparability of bio-based products
Upcycled products	
Definition	Products which can be converted into new ones with a higher value, including environmental value.
Examples	<ul style="list-style-type: none"> - Creating garments from recycled fabric, including from mixed bio-based fibers - Design furniture from scrap wood composites
Circular-by-design	
Definition	Including circular economy considerations at the design stage of a product and/or business model considering their lifecycle. It aims to minimise resource consumption intensity, waste generation, extend the lifetime of products and optimise production and logistics.
Examples	<ul style="list-style-type: none"> - Modular products allowing easy disassembly and reassembly. - Products incorporating materials designed with safer and more sustainable additives, facilitating recycling. - Improved bio-based materials' design to limit the number of materials (e.g., in multi-layered materials) and the need of chemical additives incorporated in the final product.

³⁷ See [Waste Framework Directive](#)

5.2 Number of projects developing circular production practices (incl. industrial & industrial urban symbiosis)

This KPI aims at monitoring the number of CBE JU funded projects which are demonstrating practices which improve production circularity and resource efficiency.

Type of actions Contributions should be reported by IAs (demonstrated practices). However, RIAs may also enable the development of circular production practices.

Circular production practices

Definition Circular production practices minimise resources input requirements (e.g. feedstock, process auxiliaries etc) and consumption as well as waste generation (outputs) of production processes. See also KPIs 4.2-4.4

Industrial symbiosis/ Industrial-urban symbiosis

Definition This concept covers both material and energy flows and can contribute to circular (bio)economy. It refers, partly, to a process by which waste or by-products of an industrial process or (peri)urban setting become the raw material or input for (another) industrial process.

Industrial symbiosis creates an interconnected network, even between different sectors, within which energy and materials cycles operate in a continuous mode, minimising waste production. Deploying industrial and/or industrial-urban symbiosis solutions for energy, water and waste and other by-products can also contribute to the regional development of circular bio-based systems.

Examples

- Biogenic gaseous carbon CCU deploying symbiosis networks
- A biorefinery producing lactic acid fed by the by-products for the dairy industry (whey permeate/de-lactosed whey permeate)
- A biorefinery recovering high added value from urban waste streams

KPI 6 - Increase innovative bio-based outputs and products

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.1: Increase the intensity of cross-disciplinary research and innovation activities	1.1.3: Develop innovative bio-based products
2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.3: Scale up production and market uptake of innovative bio-based products
3: Ensure a high level of environmental performance of bio-based industrial systems	3.1.2: Incorporate the environmental sustainability and circularity criteria in bio-based systems

6.1 Number of innovative bio-based dedicated outputs, with novel or significantly improved properties vs relevant alternatives

This KPI aims at monitoring the number of dedicated outputs developed (RIA), demonstrated (low TRL IA), or upscaled to precommercial scale (high TRL IA) within CBE JU funded projects.

Type of actions	Contributions should be reported by IAs and RIAs.
Dedicated outputs with novel or significantly improved properties	
Definition	Dedicated outputs here refer to bio-based outputs that are produced via a dedicated pathway and do not have an identical fossil-based counterpart available on the market. Given their functionalised structure, they can offer unique and/or superior properties that are unattainable with fossil-based alternatives. ³⁸
Additional Definition	Outputs refer to the following product categories: <ul style="list-style-type: none"> - Chemicals (platform chemicals, additives, solvents, surfactants...) - Polymers and materials - other products related with end use
Examples	<ul style="list-style-type: none"> - Furan dicarboxylic acid (FDCA) for polyethylene furanoate (PEF) - Polylactic acid (PLA) - Polyhydroxyalkanoates (PHA) - 5-Hydroxymethylfurfural (5-HMF) for phenolic (PF) resins
Relevant alternatives	
Definition	Bio- or fossil-based benchmarks currently used for the same or similar application(s).
Examples	<ul style="list-style-type: none"> - Phthalic acid for polyethylene terephthalate (PET)

³⁸ Definition adapted from the one of dedicated chemicals found in the 'Roadmap for the Chemical Industry in Europe towards a Bioeconomy': [RoadToBio_Drop-in_paper.pdf](https://www.roadtobio.eu/uploads/news/2017_October/RoadToBio_Drop-in_paper.pdf)

	- Formaldehyde for resins applications
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6.2 Number of innovative bio-based drop-in outputs meeting applications requirements

This KPI aims at monitoring the number of drop-in outputs developed (RIA), demonstrated (low TRL IAs), or upscaled to precommercial scale (high TRL IAs) within CBE JU funded projects.

Type of actions	Contributions should be reported by IAs and RIAs.
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Drop in outputs

Definition	Drop-ins (including smart drop-ins) are bio-based versions of existing petrochemicals which have established markets. They are chemically identical to existing fossil-based outputs. ³⁹
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Additional Definitions	<p>Smart drop-ins: A sub-group of drop-in chemicals. They are also chemically identical to existing chemicals based on fossil hydrocarbons, but their bio-based pathways provide advantages compared to the conventional pathways. Drop-in chemicals are 'smart drop-ins' if at least two of the following criteria apply: 1) the Biomass Utilization Efficiency from feedstock to product is significantly higher compared to other drop-ins. 2) Their production requires significantly less energy compared to other production alternatives. 3) Time-to-product is shorter due to shorter and less complex production pathways compared to the fossil-based counterpart or other drop-ins. 4) Fewer toxic chemicals are used or occur as by-products during their production process compared to the fossil-based counterpart or other drop-ins³⁴.</p> <p>Outputs refers to the following product categories:</p> <ul style="list-style-type: none"> - Chemicals (platform chemicals, additives, solvents, surfactants...) - Polymers and materials - other products related with end use
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Examples	<ul style="list-style-type: none"> - C2-C4 small molecules (e.g. bio-isobutene) - Alcohols (e.g. 1,4-butanediol as a smart drop-in) - Carboxylic acids (e.g. succinic acid, adipic acid) and esters - (Bio)-polyurethane (smart drop-in) - (Bio)-polymethyl methacrylate – (bio)-PMMA (smart drop-in)
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Meeting applications requirements

Definition	The bio-based solutions should be compliant with the specifications determined by the relevant end users and should perform comparably with regards to their functional performance and with an improved environmental performance than the current alternatives (bio- and/or fossil-based) in the same or similar applications.
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Examples	<ul style="list-style-type: none"> - Chemical/physical properties suitable for application, including applications with stringent requirements. - Cost performance in line with applications. - Sensory properties meet expectations.
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³⁹ Definition adapted from the one of drop-in chemicals found in the 'Roadmap for the Chemical Industry in Europe towards a Bioeconomy': [RoadToBio_Drop-in_paper.pdf](https://www.roadtobio.eu/uploads/news/2017_October/RoadToBio_Drop-in_paper.pdf)

	<p><i>Note: For all the above examples, meeting the additional requirement of an improved environmental performance vs state-of-the-art benchmarks.</i></p>
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KPI 7 - Improve the market uptake of bio-based products

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
2.1: Reinforce the integration of bio-based research and innovation in the Union bio-based industry and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.3: Scale up production and market uptake of innovative bio-based products
	2.1.4: Build policy makers' awareness and acceptance of bio-based solutions

7.1 Number of brand owners involved as project partners and/or engaged with other mechanisms

This KPI aims at monitoring the number of brand owners (B2C) involved in CBE JU funded projects, either as project partners or as a third party. Their involvement is a tool to increase consumers' awareness and uptake of bio-based products. Involvement of these actors should be in line with the principles highlighted in the multi-actor approach,⁴⁰ i.e., ensuring genuine and sufficient involvement over the whole course of the project.

Type of actions	Contributions should be reported by RIAs, IAs and CSAs.
Brand owners	
Definition	Refers to industrial stakeholders selling commodities under a registered brand. They may be existing or new stakeholders of bio-based value chains, contributing to the market uptake of bio-based products.
Examples	<ul style="list-style-type: none"> - Fast-moving consumer goods (FMCG) - Textile products - Retail chain - Construction and building materials - Automotive and transport
Types of involvement	
Examples	<ul style="list-style-type: none"> - Production of prototype consumer products in industrially relevant/operational environments - Providing specifications/requirements to materials producers
Project partners and/or engaged with other mechanisms at project level⁴¹	
Beneficiaries	Beneficiaries (article 7 of the MGA)
	Affiliated Entities (article 8 of the MGA)
Third parties	Associated partners (article 9.1 of the MGA)
	Third parties giving in-kind contributions to the action (article 9.2 of the MGA) e.g. member of advisory board
	Subcontractors (article 9.3 of the MGA)

⁴⁰ For further information, please refer to the 'CBE Specific Requirements' outlined in the latest CBE JU Annual Work Programme <https://www.cbe.europa.eu/reference-documents>

⁴¹ [general-mga_horizon-euratom_en.pdf \(europa.eu\)](https://www.cbe.europa.eu/reference-documents/general-mga_horizon-euratom_en.pdf)

KPI 8 - Attract investment on the bio-based sector

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
2.2: Reduce the risk for research and innovation investment in bio-based companies and projects	2.2.2: Develop investment tools and approaches that mitigate the investment risk in bio-based systems

8.1 Number of actions implemented at project level to attract investment and/or to create awareness in the investment/funding community

This KPI aims at monitoring the activities within CBE JU funded projects which are contributing to increased awareness of opportunities in the bio-based sector and/or increased investment into the bio-based sector.

Type of actions	Contributions should be reported by all types of action and especially CSAs.
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Actions implemented at project level to attract investment and/or to create awareness

Definition	Groups of actions which facilitate the engagement of investors and/or funding bodies with the bio-based sector. Reported contributions should clearly target these actors and go beyond communicating/disseminating project results.
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Examples	<ul style="list-style-type: none"> - Participate in or deliver events (e.g. pitch competitions) and/or open platforms, related with investment, increasing networking and funding opportunities - Campaigns to increase awareness of the investment/funding community about the opportunities and applications of innovative bio-based solutions - Events/platforms to exchange on best practices to attract investment and improve on scaling up innovation, replicability and market uptake. - Support to certification and/or labelling schemes.
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Investment/funding community

Definition	Institutions, private investors and investment products with a potential interest in financing the bio-based sector.
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Examples	<ul style="list-style-type: none"> - Financial institutions (public or private) - Venture Capitals/Business Angels/Investment banks - Private investment funds - Funding agencies and public procurement actors
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KPI 9 - Increase resilience and capacity in the bio-based sector

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.2: Increase and integrate the research and innovation capacity of stakeholders across the Union	1.2.2: Increase the awareness and capacity of national and regional research support agencies for industrial bio-based systems
	1.2.3: Facilitate the development of expertise in bio-based fields by improving higher education and skills development
2.2: Reduce the risk for research and innovation investment in bio-based companies and projects	2.2.1: Improve risk profile of bio-based projects
3.1: Ensure the integration of circularity and environmental sustainability requirements, contribution to climate neutrality and zero pollution ambition in the development and implementation of bio-based research and innovation and facilitate societal acceptance.	3.1.3: Facilitate social acceptance of bio-based applications

9.1 Number of projects contributing to develop the skills and capacity needed by the EU bio-based sector

This KPI aims at monitoring the number of CBE JU funded projects which are strengthening the EU bio-based sector through activities dedicated to developing skills and build capacity.

Type of actions Contributions should be reported by all types of action (IAs, RIAs and CSAs).

Develop skills and capacity needed by the EU bio-based sector

Definition	<p>Activities oriented to improve expertise and competences to meet current and future professional profiles' needs for the development and deployment of the bio-based sector.</p> <p>Moreover, bio-based capacity extends from R&I capacity and skills to awareness, policies and other capacity necessary to establish and expand the bio-based sector.</p>
Examples	<ul style="list-style-type: none"> - Educational programmes (higher education courses, summer schools etc.) - Vocational programmes and traineeships - Dedicated programmes for upskilling and reskilling - Platforms and ecosystems, connecting bio-based value chain stakeholders, and allowing for sharing knowledge and skills-related tools - Academia –industry exchange programmes - Training and mutual learning addressed to regional or national policy makers and governance actors - Harmonisation of bio-based systems-related standards and certifications

KPI 10 - Improve participation of regions and countries with high unexploited potential and strategic interest to develop it

Links with CBE Specific Objectives and SRIA Strategic Priorities:

CBE Specific Objective	SRIA Strategic Priority
1.2: Increase and integrate the research and innovation capacity of stakeholders across the Union	1.2.1: Stimulate research activities in countries and regions with underdeveloped R&I capacity for bio-based systems
	1.2.2: Increase awareness and capacity of national and regional research support agencies for industrial bio-based systems.
2.1: Reinforce the integration of bio-based research and innovation throughout industrial bio-based systems and increase the involvement of R&I actors including feedstock providers in the bio-based value chains	2.1.4: Build policy makers' awareness and acceptance of bio-based solutions

10.1 Number of participants from the underrepresented EU countries and regions

This KPI aims at monitoring the involvement in CBE JU funded projects of EU countries and regions which have been underrepresented, so far, in BBI and CBE JU calls as demonstrated by several indicators reported in Annex I and II.

Type of actions	Contributions by all types of action (IAs, RIAs and CSAs) will be monitored by the JU.
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Participants at project level

Definition	<ul style="list-style-type: none"> - Beneficiaries (article 7 of the MGA) - Affiliated Entities (article 8 of the MGA)
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Underrepresented countries

Definition	Refers to countries which have been underrepresented in the calls of the preceding Joint Undertaking (BBI JU). In practice, this refers to Widening countries ⁴² as supported by the indicators for participation (see Annex 1, Table 1). ⁴³
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Underrepresented regions

Definition	Refers to EU regions which have been underrepresented in the calls of the preceding Joint Undertaking (BBI JU). Specifically, this includes 'less developed' and 'transition' EU regions according to the Cohesion policy definition ⁴⁴ as supported by the indicators for participation (see Annex 1, Table 2). ⁴⁵
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⁴² https://rea.ec.europa.eu/horizon-europe-widening-who-should-apply_en

⁴³ While some Widening countries have an above average participation in the BBI JU programme, this selection is coherent with other EU indicators for innovation performance and the state-of-play of the bio-based sector: e.g. 'European Innovation Scoreboard', 'Distribution of the bio-based industry in the EU'.

⁴⁴ According to [Cohesion Policy](#). See [Commission Implementing Decision \(EU\) 2021/1130](#).

⁴⁵ Selection is coherent with other EU indicators for innovation performance: e.g. 'Regional innovation scoreboard'

10.2 Number of regional hubs, established and operated to process bio-based feedstock, and other cooperation aspects

This KPI aims at monitoring the number of regional hubs established through CBE JU funded projects. Contributions are mainly expected from IAs and RIAs, but should also be reported by CSAs if relevant.

Type of actions	Contributions are mainly expected from IAs and RIAs, but should also be reported by CSAs if relevant.
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Regional hubs

Definition	Regional Hubs are platforms for cooperation, information and collaboration, and bridging sectoral and bio-based value chain stakeholders as well as the civil society.
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Examples	<ul style="list-style-type: none"> - Large-scale infrastructures such as biorefineries, established to implement industrial cooperation and economy of scale, at regional level - Regional logistics units to connect biomass suppliers to biorefineries - Platforms for cooperation, information and collaboration, and bridging sectoral and value chain stakeholders as well as the civil society⁴⁶
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10.3 Number of projects with synergies with other funding programmes at EU, national or regional level

This KPI aims at monitoring the number of CBE JU funded projects which benefit from complementary funding invested at the EU, national or regional level such as funding for regional infrastructure/facilities.

Type of actions	Contributions are mainly expected from IAs and RIAs, but should also be reported by CSAs if relevant.
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Synergies with other funding programmes

Definition	Synergy = working together to create a greater combined contribution/ effect than could be achieved independently, confirmed by any formal arrangement (e.g. MoU or joint financing plan).
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Examples	<p>Project cofunded with other funding programmes:</p> <ul style="list-style-type: none"> - EU (e.g. ECBF, EIB, EBRD, CAP, CFP) - National (e.g. NextGenerationEU) - Regional level (e.g. cohesion and structural funds)⁴⁷ - European Forest Institute - Joint programming activities (e.g. with local/regional funding)
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⁴⁶ [POWER4BIO D5.3 Summaries-of-5-new-regional-bioeconomy-strategies_20201111_FV.pdf](#)

⁴⁷ [Staff Working Document \(europa.eu\)](#) on 'Synergies between Horizon Europe and ERDF programmes'

Annex I - Indicators for participation of EU 27 countries in the BBI JU programme (Call 2014-2020)

Country specific indicators above the EU 27 average are shown in green text, while those below are shown in orange text.

Widening countries are indicated by shaded blue cells.

Country Code	Number of participations	Participation per million population	Number of flagships	Success rate (% successful applicants cf. number of applicants per country)	Net Requested EU Contribution (M€)	Net Requested EU Contribution (€/M€ GDP)
Average	65	3,90	-	14,92	27,11	75,50
ES	320	6,18	1	18,92	113,08	93,70
IT	207	3,09	2	16,20	83,78	47,01
DE	198	1,88	0	19,17	77,95	21,64
NL	182	7,44	2	26,42	79,54	92,88
FR	181	2,34	4	22,82	92,83	37,12
BE	150	11,42	0	21,04	63,29	125,99
FI	76	11,20	0	17,80	26,29	104,53
AT	52	4,59	0	16,40	16,47	40,55
SE	52	2,89	0	16,88	14,55	27,10
PT	42	4,08	0	12,96	13,22	61,64
DK	39	5,31	0	13,13	14,62	43,43
IE	38	6,39	0	17,43	26,30	61,69
EL	31	2,90	0	7,87	8,67	47,73
PL	29	0,77	0	17,37	7,98	13,88
HR	19	4,71	0	18,81	4,76	81,75
EE	14	10,53	1	35,90	18,89	600,67
SI	12	5,69	0	9,38	4,73	90,51
SK	12	2,20	0	23,08	2,07	20,98
HU	10	1,03	0	14,29	0,79	5,13
CZ	9	0,84	0	9,78	3,03	12,71
RO	8	0,42	1	9,09	21,31	88,34
BG	6	0,87	0	10,71	0,42	5,87
LV	4	2,11	1	7,41	8,84	262,39
CY	4	4,46	0	10,53	1,04	43,22
LU	1	1,58	0	7,14	0,11	1,59
LT	1	0,36	0	2,38	0,37	6,56
MT	0	0,00	0	0,00	0,00	0,00

Data sources: CORDA (March 2022); 2021 [population](#) & [GDP](#) data were obtained from Eurostat.

Annex II - Indicators for participation of NUTS2 EU 'less developed' or 'transition' regions in the BBI JU programme (Call 2014-2020)

Widening countries are indicated by shaded blue cells.

Region specific indicators above the average are shown in green text, while those below are shown in orange text. Outermost regions have been excluded from the table.

Region code (NUTS 2)	Name	Number of participations	Participation per million population	Net Requested EU Contribution (M€)	Net Requested EU Contribution (€ per M€ GDP)
	Average	7	4	2.91	51.49
ES52	Comunidad Valenciana	48	9.51	16.88	161.20
ES61	Andalucía	28	3.29	6.32	41.96
FRL0	Provence-Alpes-Côte d'Azur	20	3.91	3.18	19.70
ES41	Castilla y León	15	6.28	6.40	115.57
ES11	Galicia	14	5.19	3.39	57.44
EE00	Eesti	14	10.53	18.89	703.87
EL30	Attiki	13	3.48	5.31	67.98
HR03	Jadranska Hrvatska	13	9.49	3.85	250.04
FRJ1	Languedoc-Roussillon	12	4.15	14.07	190.14
PT16	Centro	12	5.38	1.66	43.22
EL52	Kentriki Makedonia	11	5.92	1.69	74.65
PT11	Norte	11	3.08	2.67	44.26
FI1D	Pohjois- ja Itä-Suomi	11	8.63	2.12	46.26
FRE2	Picardie	11	5.71	4.09	85.57
BE33	Liège	10	8.98	4.08	131.79
ES23	La Rioja	10	31.63	3.03	373.04
ITF3	Campania	9	1.60	2.87	18.89
FI1C	Etelä-Suomi	9	7.84	7.86	180.70
FRE1	Nord-Pas de Calais	9	2.21	1.36	11.99
FRH0	Bretagne	9	2.66	3.55	35.61
DE40	Brandenburg	8	3.16	2.32	30.97
ES62	Región de Murcia	8	5.29	1.25	41.76
IE04	Northern and Western	8	9.04	3.82	144.59
DEE0	Sachsen-Anhalt	7	3.21	6.60	103.95
FRG0	Pays de la Loire	7	1.82	1.07	9.19
BE22	Limburg	6	6.79	1.33	47.53
FI19	Länsi-Suomi	6	4.35	1.97	37.80
FRF1	Alsace	6	3.13	1.00	16.75
FRJ2	Midi-Pyrénées	6	1.92	1.31	13.85
FRK1	Auvergne	6	4.37	18.84	506.69

ES42	Castilla-La Mancha	5	2.44	1.75	44.18
BE32	Hainaut	5	3.70	0.63	18.99
DED2	Dresden	5	3.14	6.04	119.21
FRF2	Champagne-Ardenne	5	3.82	0.57	15.53
BG41	Yugozapaden	4	1.92	0.34	11.12
CY00	Kýpros	4	4.46	1.04	48.18
CZ06	Jihovýchod	4	2.35	0.78	24.52
EL53	Dytiki Makedonia	4	15.26	1.06	318.53
PL51	Dolnośląskie	4	1.40	1.46	33.35
LV00	Latvija	4	2.11	8.84	300.04
PL42	Zachodniopomorskie	4	2.40	0.89	46.11
PL71	Łódzkie	4	1.65	1.40	43.14
DEG0	Thüringen	4	1.89	1.50	24.14
DK02	Sjælland	4	4.77	0.98	31.22
FRD1	Basse-Normandie	4	2.73	0.70	18.10
FRF3	Lorraine	4	1.73	0.32	5.68
SE31	Norra Mellansverige	4	4.66	2.52	80.64
HR05	Kontinentalna Hrvatska (NUTS 2016)	3	3.71	0.76	43.19
HU31	Észak-Magyarország	3	2.70	0.02	2.32
RO21	Nord-Est	3	0.95	0.52	22.71
ES43	Extremadura	3	2.84	1.59	82.20
ITG2	Sardegna	3	1.89	9.49	239.16
DE80	Mecklenburg-Vorpommern	3	1.86	1.39	29.85
DE93	Lüneburg	3	1.74	0.17	3.45
DED4	Chemnitz	3	2.12	0.73	17.76
FRB0	Centre - Val de Loire	3	1.17	0.70	9.77
FRC2	Franche-Comté	3	2.55	0.90	29.87
ITF1	Abruzzo	3	2.34	4.85	204.42
BE34	Luxembourg	2	6.86	0.58	83.65
CZ08	Moravskoslezsko	2	1.68	0.86	46.00
EL43	Kriti	2	3.14	0.33	40.28
HR02	Panonska Hrvatska	2	1.91	0.14	15.02
HU22	Nyugat-Dunántúl	2	2.01	0.43	32.30
HU33	Dél-Alföld	2	1.64	0.21	16.54
ITI3	Marche	2	1.33	0.56	6.68
NL12	Friesland	2	3.07	1.81	86.09
PL52	Opolskie	2	2.14	0.20	19.22
PL92	Mazowiecki regionalny	2	0.87	0.65	24.04
SK03	Stredné Slovensko	2	1.50	0.23	12.96
ITF4	Puglia	2	0.51	0.82	22.14
PL41	Wielkopolskie	2	0.58	0.05	1.01
PT15	Algarve	2	4.57	1.17	134.89

BE35	Namur	1	2.00	0.17	12.82
ES53	Illes Balears	1	0.82	0.26	9.60
FRC1	Bourgogne	1	0.62	0.25	5.48
FRI1	Aquitaine	1	0.28	0.00	0.00
FRI2	Limousin	1	1.38	0.00	0.00
FRI3	Poitou-Charentes	1	0.55	0.00	0.00
ITI2	Umbria	1	1.16	0.38	12.13
NL23	Flevoland	1	2.34	0.00	0.00
BG34	Yugoiztochen	1	0.98	0.01	1.54
BG42	Yuzhen tsentralen	1	0.71	0.06	6.93
EL61	Thessalia	1	1.41	0.27	31.45
HR06	Grad Zagreb	1	1.23	0.01	1.67
PL22	Śląskie	1	0.22	2.03	33.27
CZ03	Jihozápad	1	0.81	0.00	0.00
PL61	Kujawsko-pomorskie	1	0.49	0.32	13.91
PL62	Warmińsko-mazurskie	1	0.72	0.00	0.00
PL72	Świętokrzyskie	1	0.83	0.05	4.55
PL81	Lubelskie	1	0.48	0.27	13.97
PT18	Alentejo	1	1.43	0.20	16.35
RO11	Nord-Vest	1	0.39	0.15	5.40
RO31	Sud - Muntenia	1	0.35	0.20	8.13
SI03	Vzhodna Slovenija	1	0.90	0.13	6.56
SK02	Západné Slovensko	1	0.55	0.00	0.00
SK04	Východné Slovensko	1	0.61	0.00	0.00
AT11	Burgenland	0	0.00	0.00	0.00
DEB2	Trier	0	0.00	0.00	0.00
ES12	Principado de Asturias	0	0.00	0.00	0.00
ES13	Cantabria	0	0.00	0.00	0.00
ES63	Ciudad Autónoma de Ceuta	0	0.00	0.00	0.00
ES64	Ciudad Autónoma de Melilla	0	0.00	0.00	0.00
FRD2	Haute-Normandie	0	0.00	0.00	0.00
FRM0	Corse	0	0.00	0.00	0.00
ITF2	Molise	0	0.00	0.00	0.00
ITF5	Basilicata	0	0.00	0.00	0.00
ITF6	Calabria	0	0.00	0.00	0.00
ITG1	Sicilia	0	0.00	0.00	0.00
BG31	Severozapaden	0	0.00	0.00	0.00
BG32	Severen tsentralen	0	0.00	0.00	0.00
BG33	Severioiztochen	0	0.00	0.00	0.00
CZ02	Střední Čechy	0	0.00	0.00	0.00
CZ04	Severozápad	0	0.00	0.00	0.00
CZ05	Severovýchod	0	0.00	0.00	0.00

CZ07	Střední Morava	0	0.00	0.00	0.00
EL41	Voreio Aigaio	0	0.00	0.00	0.00
EL51	Anatoliki Makedonia, Thraki	0	0.00	0.00	0.00
EL54	Ipeiros	0	0.00	0.00	0.00
EL62	Ionia Nisia	0	0.00	0.00	0.00
EL63	Dytiki Ellada	0	0.00	0.00	0.00
EL64	Stereia Ellada	0	0.00	0.00	0.00
EL65	Peloponnisos	0	0.00	0.00	0.00
HU12	Pest	0	0.00	0.00	0.00
HU21	Közép-Dunántúl	0	0.00	0.00	0.00
HU23	Dél-Dunántúl	0	0.00	0.00	0.00
HU32	Észak-Alföld	0	0.00	0.00	0.00
LT02	Vidurio ir vakarų Lietuvos regionas	0	0.00	0.00	0.00
PL21	Małopolskie	0	0.00	0.00	0.00
PL43	Lubuskie	0	0.00	0.00	0.00
PL63	Pomorskie	0	0.00	0.00	0.00
PL82	Podkarpackie	0	0.00	0.00	0.00
PL84	Podlaskie	0	0.00	0.00	0.00
NL13	Drenthe	0	0.00	0.00	0.00
RO12	Centru	0	0.00	0.00	0.00
RO22	Sud-Est	0	0.00	0.00	0.00
RO41	Sud-Vest Oltenia	0	0.00	0.00	0.00
RO42	Vest	0	0.00	0.00	0.00
EL42	Notio Aigaio	0	0.00	0.00	0.00
MT00	Malta	0	0.00	0.00	0.00

Data sources: CORDA (March 2022); 2021 [population](#) & [GDP](#) data were obtained from Eurostat.