Projects4Future

Shaping tomorrow: Horizon Europe projects' contributing to boost the transition towards a circular bio-based economy

SUSTRACK

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Challenges and recommendations identified during the "Projects4Future" workshop

The "Projects4Future" workshop took place on 6th May 2025 and involved 19 projects dealing with Standardisation, Certification, Labelling, and Monitoring. This document, elaborated by SUSTRACK and EuBioNet and consolidating the workshop's results collected through an interactive session supported by MIRO Board tool (see an overview in the image below), was reviewed and complemented by the following projects: ARGONAUT, BioFairNet, BioINSouth, BIOTRANSFORM, CheMatSustain, COPilot, ESCIB, INNOVATE-EU, Pilots4U, ShapingBio, STAR4BBS, SUSTCERT4BIOBASED (part of the BIOBASEDCERT Cluster), SYMBA and 3-CO.
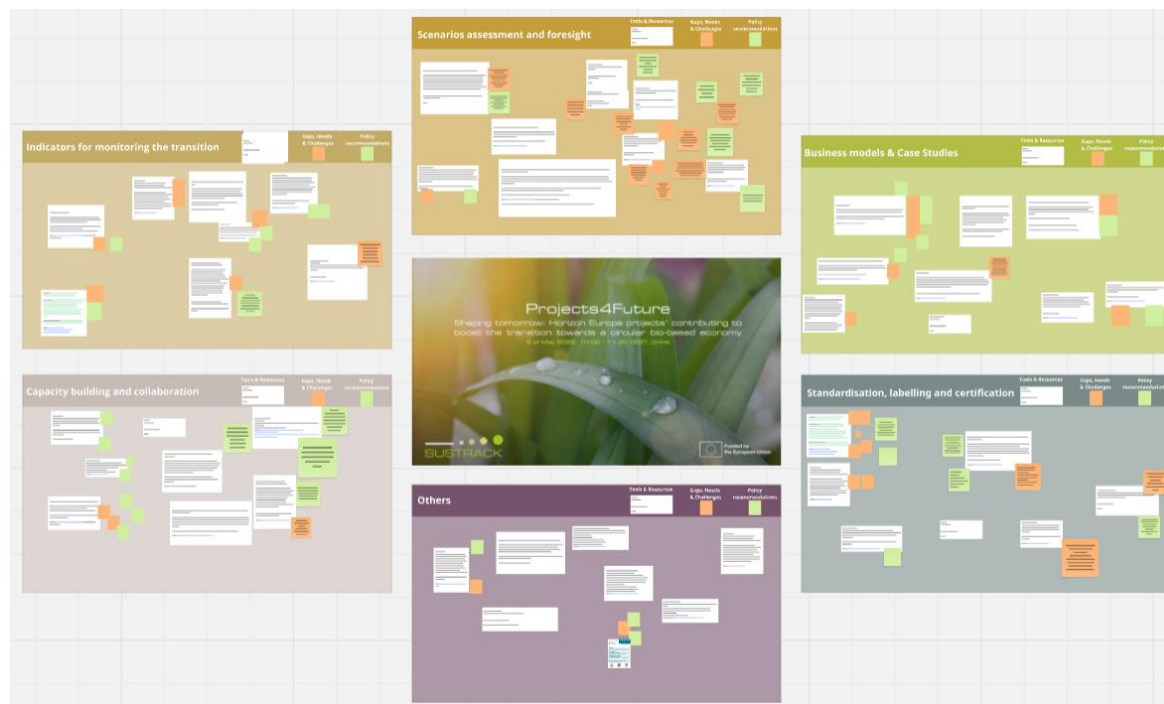
The recommendations collected during the workshop reflect the opinion of the projects' participating and shouldn't be considered exhaustive.

Macroarea	Topic	Challenge	Recommendation
Insufficient and not harmonised data and methodologies	Monitoring the transition: indicators	• Limited data availability at subnational level hinders full impact assessment. • Insufficient data on green and digital transition at national/regional levels hinder the full impact assessment.	Mandate regional resource flow mapping in collaboration with national statistics offices to establish a harmonised data baseline for circular bioeconomy monitoring.

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		• The innovation ecosystem in bioeconomy of the EU is suffering from a strong fragmentation between innovation leader regions and emerging innovators. • Lack of a centralised regional overview with the absence of a designated body or individual at the regional (e.g., NUTS3) level to coordinate the bioeconomy. This results in fragmented policies where agriculture, waste, energy, and industry sectors operate in silos, hindering the development of symbiotic value chains.	• Setting up of regional hubs of bioeconomy which support the complexity of bioeconomy monitoring within thematic working groups in the field of bioeconomy, covering topics such as agroecology, food systems, biomaterials obtained from advanced processing of biological resources, education in bioeconomy, forestry, fisheries and aquaculture, renewable energies. This activity will be developed together with the national statistics offices. • Appoint regional "Transition Brokers"/"Ecosystem Enablers" or strengthen existing bioeconomy hubs to coordinate strategy, mediate between stakeholders (from agriculture, industry, waste, etc.), and align cross-sectoral policies to foster industrial symbiosis.
		• Dynamic LCA, prospective LCA and circularity metrics are not harmonised, so projects' results can't be compared. • Multitude of indicators make difficult the harmonisation. • Not harmonised metrics across sectors.	• Develop a clear set of comprehensive sustainability criteria for bio-based products. • Support the standardisation of circularity metrics and fund digital tools that facilitate consistent monitoring of circular initiatives. • Harmonise EU and national monitoring frameworks: promote the adoption of EU-based monitoring tools at the national level

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		● Scarce alignment between EU-based monitoring tools (e.g., the bioeconomy monitoring framework or SUSTRACK system) and national-based monitoring frameworks, limiting the exploitation of existing tools.	to ensure a more coherent and effective monitoring of the circular bio-based economy (CBBE).
		Data variability & unavailability for the nanomaterials, which are very different from normal ones.	
	Scenarios assessment and foresight	Insufficient regional data for dynamic modelling.	Support the development of interoperable tools for regional use.
		Different amount and quality of data regarding environmental impact assessment results for the different bio-products under study.	Further development of Product Environmental Footprint (PEF) guidelines for specific bio-based products.
		● Data gaps. ● Integration of data and knowledge: from product, to sector, to macroeconomic analysis. ● Granularity of the data, when looking into downstream impacts. ● Different applied foresight method for traceability of assumption formulation.	Promote uniformity and traceability of materials and assumptions.

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		Limited harmonisation of readiness level frameworks.	Standardise and expand readiness level frameworks (especially Commercial Readiness Level - CRL and Value Chain Readiness Level - VRL).
		Some sustainability assessment topics are not covered or out of scope with the PEF method (ecosystem services, occupational health and safety, social life cycle assessment and criticality), while there are others that have room for improvement (biodiversity, toxicity, carbon footprint and circular economy).	Support the development of the methodological procedures for the following assessment topics: ● Dynamic carbon footprint ● Occupational Health & Safety ● Social Life Cycle Assessment (Job Creation Potential) ● Toxicity characterization factors (CFs) ● Ecosystem services & biodiversity CFs ● Circular economy & criticality ● Life cycle economic indicators
	Standardisation, labelling and certification	Identification of the most relevant/appropriate certification model/scheme for reporting environmental impacts of bio-based products and how they can be integrated in other tools.	
		Machine learning functions struggle with a variety of label designs.	Mandatory machine readability for labels to ease technological hurdles.
		Mostly internal protocols are used and standards and OECD Test Guideline (TG) are not there.	For nanomaterials, standards and OECD TG/Guidance Document (GD) should be expedited. Safe and Sustainable by Desing (SSbD) needs a standardised way of testing.

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		Current certification schemes simply can't handle the land-use model with 300 m-grid inventories output.	
	Business models & Case studies	Business models and case studies in the bioeconomy are not sufficiently known.	Identification of bio-innovators or ecologic clusters within some events like pop-up stores and promoting them within projects, matchmaking events, ECCP-Clusters meet regions events, EU Cluster talks, etc.
		Some resources (biomasses) are difficult to identify at regional level as they are usually considered side-streams and therefore are not usually reported. Facilities availability at company level has been difficult to identify as well.	Establish national and regional databases to systematically map and quantify the availability, quality, and location of secondary biomass streams and underutilised infrastructure. This should be supported by standardised data collection guidelines and active engagement with private sector actors to report on side-streams.
		Identification of the most impactful environmental categories and hotspots activities particularised per bio-based sector and sustainability dimension.	Provision of a protocol and template for data collection.
Insufficient, not harmonised and fragmented tools	Monitoring the transition: indicators	The complexity of bioeconomy monitoring, which requires a multidimensional and multi-scaling analysis, from here the proliferation of a multitude of tools and indicators addressing one or the other aspects. This proliferation of indicators and tools obviously makes difficult the harmonisation.	• Recognition by the EC of tools developed by projects, such as: 　○ BMT (BIOBASEDCERT Monitoring Tool, developed jointly by SUSTCERT4BIOBASED, STAR4BBS and HARMONITOR projects): a co-regulation instrument promoting

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			the harmonization of sustainability requirements for biobased products (in analogy with RED); ○ MOO framework (developed by CALIMERO project): to optimise (from a sustainability point of view) several conflicting objectives at the same time ○ SUSTRACK monitoring tool: it offers a user-friendly evaluation of country performance across critical management areas, such as environmental impacts, competitiveness and jobs, sustainable resource use, and the role of bio-based renewable resources, and it facilitates access to existing resources, including key indicators and datasets, to track the progress of the bioeconomy transition. ● Integrate and harmonise these tools and make them interoperable, to create a unique solution.
	Monitoring the transition: indicators	Most toolkits ignore innovations below TRL 5, leaving low-TRL solutions without decision support.	Include indicators other than Gross Domestic Product (GDP), including the regional resource use and cascading use of resources.

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	Business models & Case studies	Lack of harmonised standards and testing criteria.	
	Standardisation, labelling and certification		A standard on either or both, bio-based products and B2C could really foster uptake of good practice.
		A lack of standardised monitoring frameworks across EU regions makes comparison difficult.	Harmonisation and mutual recognition of certification system, as well as continuous monitoring of resource flows should be promoted.
		Adaptability of the tool for different sectors, value chain actors and feedstocks.	It is essential to carefully consider differences in scopes regarding, e.g., value chain actors, feedstocks and sustainability principles, to avoid unfair and inaccurate comparisons between certification schemes.
Sustainability of the tools	Standardisation, labelling and certification	Applicability of the tools, such as the BMT (BIOBASEDCERT Monitoring Tool) and the SUSTRACK tools, is time consuming and the projects, as well as fundings, are ending.	Policy makers should provide the right framework conditions for ensuring continuity of project results.
Stakeholders' involvement and empowerment	Standardisation, labelling and certification	● Making the different stakeholders aware of projects' results. ● Reaching network of stakeholders (e.g., consumers) to increase the impact and distribution of tools.	Researchers, practitioners and NGO representatives should join forces in educating and awareness raising of stakeholders (e.g., consumers) about certification and labelling in general. There are many knowledge gaps and misconceptions, and stakeholders (e.g., consumers and customers) are driving forces for change and influencing decision making.

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	Monitoring the transition: indicators	Scarce uptake of these tools from policy makers.	- Increase policymakers' awareness about the tools and resources developed by the research community. - Better exploit what R&D is developing across projects by endorsing these tools into EC/national institutional documents (not necessarily in a prescriptive way, but at least as recommendation to support one or the other goal).
	Scenarios assessment and foresight	Difficulty in involving diverse stakeholders in complex decision-making processes.	- Create dedicated value proposition for each stakeholders' category, making evident the benefit for them. - Adopt mobilisation and mutual learning formats ensuring effective and impactful collaboration among stakeholders (e.g., Projects2Policy format developed by EuBioNet). - Scenarios in bioeconomy should involve many stakeholders (including start-ups, scale-ups, local investors, local acceleration service providers, etc.) making foresight activities useful for policy option assessment.
		Discussing the trade-offs that models show to a non-technical audience.	Support policymakers and other non-technical stakeholders in understanding tools results and how these tools can inform and be implemented in their practice.

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	Business models & Case studies Capacity building, collaboration and support	• Low awareness and misconceptions. • Knowledge fragmentation. • Limited participation from smaller or rural actors.	• Enhance awareness, education and training about bioeconomy opportunities. • Promote awareness of existing innovative solutions across value chains. • Fund regional hubs for skills development and knowledge exchange. • Include bioeconomy in educational curricula.
Support to policy and innovation ecosystem	Scenarios assessment and foresight	• Including stakeholders in foresight activities for policy option assessment. • Missing of (policy) quantitative goal system for foresight exercises. • Overall understanding of using foresight exercises as a picture of one possible future and not as a distinct projection of future developments.	Quantitative goals support distinctness of foresight exercises and support the application as decision support tool.
	Business models & Case studies	Bioeconomy innovation scale-up: administrative burdens and insufficient funding incentives slow down pilot scaling.	Expand support for pilot-to-scale funding, especially blending EU and national instruments, to de-risk innovative circular economy solutions.
		Financial viability, market acceptance, legal barriers in cross-sector cooperation.	Provide financial incentives for symbiotic partnerships beyond project duration.
		• Need to integrate bioeconomy into regional innovation ecosystems.	• Fund and institutionalise transition broker roles at NUTS 3 regional level to bridge

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	Capacity building, collaboration and support	• Need for stronger integration of transition brokers (ecosystem enablers) into formal governance structures. • Need to train ecosystem enablers.	gaps between governance, business, and civil society. • Dedicated capacity building for "neutral" ecosystem enablers, like innovation agencies, clusters, governmental bodies, etc.
		• Lack of support to scale-up infrastructures. • Lack of financing is a major issue for a successful bioeconomy development and introduction into the market of innovative bio-solutions.	• Keep scale-up infrastructures state-of-the-art instead of duplicating capabilities. • Raise awareness about the existing European scale-up infrastructure asset. • De-risk investments for private investors by co-funding the scale-up phase of bioeconomy innovators.
		Need to support collaboration.	• Strengthen knowledge-sharing platforms at EU level to accelerate replication of successful circular bioeconomy models across diverse regions. • Implement and promote matchmaking platforms across value chains.
Systemic and harmonised policy approach	Scenarios assessment and foresight	Bioeconomy is not fully integrated in a wider policy framework, ensuring sustainable growth and environmental protection.	• A more systemic policy package to avoid inefficiencies and promote synergies. • Bioeconomy should be included in the national strategies and action plans for sustainable growth in view to stimulate intersectoral collaboration.

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			- Consistent EU goals and national policy goals. - Distinct policy options for different parts of prospective value chains are important. - Ensure just transition considerations (societal impact).
	Business models & Case studies	Fragmented and outdated policy frameworks.	Use EU projects' results to inform a systemic and harmonised policy framework, including a combined fiscal package.
	Other	Guarantee transparency and safety to consumers.	Trustable legal framework reducing uncertainties among consumers based on solid LCA (e.g., Green Claims Directive, SSbD)

Tools and resources developed or in development by projects

Topic	Project	Description	Target stakeholders	Link
Scenarios assessment and foresight	ARGONAUT	It aims at developing an AI tool to measure the environmental impact of bio-based products, with capacity to assess existing and alternative scenarios	Small and medium size bio-based product producers	https://argonaut-project.eu/
	BioFairNet	The project emphasises stakeholder engagement, co-creation, and the development of digital tools to support sustainable transformation in key industries such as agriculture and mining. The project operates in pilot regions including Lesvos (Greece) and Réunion Island. Whilst Nova Scotia, Quebec (Canada) and Kenya are validation sites.	Workers, industry, policymakers, value chain actors, farmers, cooperatives, and consumers.	About BioFairNet Project - BioFairNet

		The BioFairNet project will create a digital network for collaboration. Through this platform, stakeholders may share insights, co-create solutions and map out sustainable practices. The project's goal is to support the transition of agriculture and mining, as well as industry adaptation, utilising a web-based tool developed in collaboration with those directly involved.		
	BIOTRANSFORM	Regional Transition Roadmaps: Roadmaps for 6 EU case study regions, outlining concrete steps, milestones, and expected impacts to guide the transition from fossil-based to circular bioeconomy systems.	Regional authorities, business clusters, NGOs.	https://www.biotransform-project.eu/
	CALIMERO	A series of industrial case studies of the European bio-based industry will be assessed by means of an improved PEF methodology, enhancing current environmental evaluation procedures, apart from integrating both social and economic perspectives in order to conduct an LCSA (holistic approach of the sustainability concept), while following a life cycle perspective.	Bio-based industry, policy makers and scientific community.	
	SUSTRACK	Systems mapping, causal loop diagrams	Research and policymakers	
		Cost-benefit analysis (CBA)	Research and policymakers	
		Impact of CBBE on ecosystem services using Geospatial forecasts	Research and policymakers	https://naturalcapitalproject.stanford.edu/software/invest
		Macroeconomic simulations using the Green Economy Model, a system dynamics model based on a policy portfolio scenario method approach	Researchers and Policymakers	https://www.ke-srl.com/gem

	SYMBA	SYMBA will develop AI tools as part of the SYMBA monitoring tool, enabling the creation of data-models that predict environmental, social and economic impacts of the application of SYMBA IS approach in the bio-based value chains. This tool will be supported by a Multi-Criteria Decision Analysis (MCDA) framework to identify and prioritise the most suitable symbiotic bio-based technologies, using indicators such as: Technology Readiness Level (TRL), Commercial Readiness Level (CRL) and Value Chain Readiness Level (VRL).	Policy developers, regional planners, industry clusters, technology providers.	https://www.symbaproject.eu/
	SUSTCERT4BIOBASED	Proposed new CBA methodology that incorporates externalities was used in assessing the feasibility of sustainability certification schemes in three biobased value chains (i.e., sugarcane, cotton, wood).	Researchers, policy makers, industry	https://sustcert4biobased.eu/
	BioINSouth	It aims to define region- and sector-specific criteria for the assessment and monitoring of environmental impacts and circularity of bio-based industries. The assessment is complemented with biodiversity, Food security, Land Use and Land Use Change methods from the FAO (EX-ACT and B-INTACT).	Regional bioeconomy HUBs managers	https://www.bioinsouth.eu/
Business models & Case studies	ARGONAUT	6 use cases in Lithuania and Italy including 3 biomaterial/biochemical value chains (biopolymers, biomethane, nutraceutical), and 3 agro-food value chains (flour and byproducts, grass biorefinery and its byproducts, sauces and organic fertilisers from vegetables).		https://argonaut-project.eu/use-cases/
	BioFairNet	Sustainable Business Models and Pilot Demonstrations: Workpacks 1 and 6 explore existing and emerging sustainable business models in agriculture and mining.	Entrepreneurs, business associations, technology developers, farmers, SMEs,	About BioFairNet Project - BioFairNet

		Two pilot sites (Lesvos Island (Greece) and Réunion Island (France)) and validation sites (Canada and Kenya) serve as living labs to test, optimise, and scale innovative circular and bioeconomy-based business models.	cooperatives, and public-private partnerships	
	BIOTRANSFORM	Transition pathways in diverse EU regions by transforming secondary streams (underutilised) into high-value products. In Andalusia, Spain, olive residue, such as pruning debris and pomace, is utilised to produce polymer reinforcements and antioxidants, thereby supporting the development of bio-based materials. In the Charles Spa region of the Czech Republic, food waste is converted into biogas and compost. In Finland, the paper and pulp industry was focused, where black liquor was used to extract lignin for anodes, adhesives, and plasticisers. In the North Rhine-Westphalia region of Germany, the valorisation of sugar beet pulp into lactic acid. In Western Macedonia, Greece, wood biomass is utilised for the production of wood pellets and MDF boards, and sewage sludge is processed into hydrogen. In the Northern Burgenland, Austria, lake sediment is repurposed into construction bricks.	SMEs, entrepreneurs, and business incubators	https://www.biotransform-project.eu/case-studies
	CALIMERO	10 industrial case studies around Europe for five bio-based sectors: textile, woodworking, construction, pulp and paper and biochemicals.	Bio-based industry	https://calimeroproject.eu/work-packages/
	ESCIB	With the involvement of innovative industry partners in the consortium, which produce bio-based products in different sectors such as chemicals, textile, packaging materials and building materials, ESCIB will ensure high applicability of the method which can be used by	Bio-based industry, Certification organisations, Funding bodies and policy makers (e.g. European Commission).	

		certification organisations to label and certify products for the benefit of consumers and society.		
	SUSTRACK	11 case studies across 4 sectors of interest (chemicals, textile, construction, plastics) are used to test the monitoring framework and feed policy recommendations	Policy makers and authorities; Policy advisors; Scientific community; Businesses; Construction, textile, chemical and plastic industries	https://sustrack.eu/case-studies/
	SYMBA	SYMBA develops and tests circular bio-based business models across selected regions in different EU regions, including case studies of symbiosis implementation. This feeds the business cases through a needs' assessment of the regions. Sectors: textile, wastewater, packaging and agrifood	Entrepreneurs, SMEs, investors, clusters	Will be published on the SYMBA website upon completion
	SYMBIO	Tool for integrating big data and artificial intelligence, SYMBIO shapes 10 symbiotic business models with high-profilability sustainability replicable at the EU level to increase bio-based products on the market. The tool is called VALUE CHAIN GENERATOR and gathers info from resources, available facilities and products along Europe to develop new value chains based on industrial symbiosis.	Companies, clusters, Start-ups and entrepreneurs, investors	https://www.symbioproject.eu/
	BioINSouth	8 regional bioeconomy HUBs in the context of southern Europe, involving at least 15 Quadruple Helix stakeholders per region	Bio-based industry stakeholders	https://www.bioinsouth.eu/
Standardisation, labelling	ARGONAUT	It aims to make the environmental impact information of the assess bio-products visible and trustworthy through Digital Product Passports.	Small and medium sized bio-producers	https://argonaut-project.eu/

and certification	BIOBASEDCERT Cluster: STAR4BBS / SUSTCERT4BIOBASED / HARMONITOR	The BIOBASEDCERT Cluster has developed a BIOBASEDCERT Monitoring Tool (BMT) for assessing the effectiveness, comprehensiveness and robustness of existing international and EU sustainability certification schemes and labels (CSLs), applicable to biological feedstock and bio-based materials and products. A web-based version of the BMT tool will be available by the end of July 2025. The BMT was tested on selected 9 CSLs.	Certification scheme owners, Policymakers, Industry actors, Certification bodies, Industry	https://star4bbs.eu/, https://sustcert4biobased.eu/
	CALIMERO	Provide feasible solutions with better sustainability performance and the procedures to monitor them. In addition, a series of guidelines and recommendations will be provided to three different stakeholders.	Bio-based industry, policy makers and scientific community.	https://calimeroproject.eu/work-packages/
	CheMatSustain	Gap analysis of Standardisation is still going on. Some guidance from another project - if anyone would like to get the help for SPSF for OCED TG/DG, we can help		https://chematsustain.eu/
	ESCIB	Developing robust environmental sustainability and circularity assessment methodologies for industrial bio-based systems that are aligned with existing certification standards (ISO, CEN) and designed for integration into labelling and certification schemes used by organisations for consumer transparency.	Bio-based industry, Certification organisations, Funding bodies and policy makers (e.g. European Commission), Universities and Research Organizations, LCA community, Trade bodies, Consumers' organisations, Consumers, general public, civil society, technical committees/ standardization bodies (e.g. ISO and CEN), Investors	https://www.escib.eu/

	3-CO	3-CO has developed a concise consumer app to support eco-conscious purchasing decision. This app helps you understand the environmental impact of the based products you buy by analysing their labels and certifications. You can get real-time information on eco-certifications and bio-based products, ensuring that your purchasing decisions align with a more responsible lifestyle.	Citizens, consumers	https://3co-project.eu/consumer-app/
	BioFairNet	WP2 develops comprehensive life cycle assessments (LCA), including environmental LCA, economic life cycle assessment (LCC), and social (S-LCA) assessments for bio-based value chains. It includes the creation of decarbonisation toolkits and indicators for tracking stakeholder transitions, based on real-time pilot data and stakeholder feedback.	Policymakers, farmers, cooperatives, SMEs, communities, workers, technology providers, and researchers.	About BioFairNet Project - BioFairNet
Indicators for monitoring the transition	BIOTRANSFORM	The assessment framework is built around environmental, economic, and social sustainability criteria. This framework serves as a preliminary tool for early-stage policy development and decision-making in the sustainable transition of regions. Designed to function effectively even in contexts with limited data involving experts in a structured qualitative approach. Also, offering components adaptable for quantitative analysis when data permits offers a balance between scientific rigour and implementation feasibility	Regional policymakers, project developers, funding agencies, consulting businesses.	https://www.biotransform-project.eu/ - more details available soon
	CALIMERO	CALIMERO aims to create a common framework for all bio-based industries to evolve in terms of sustainability working with PEF indicators as well as with those proposed by CALIMERO. This frameworkn named as Multi-Objective Optimization, is the combination of	Bio-based industry, policy makers, researchers, citizens	https://calimeroproject.eu/

		three interconnected modules: industrial process simulation, LCSA indicators and optimization itself.		
	CheMatSustain	Innovative tools for safety and sustainbility assessment of Nano materials. Insilico Modelling + RA/LCA + Footprint scorecard will be prepared		https://chematsustain.eu/
	BIOBASEDCERT Cluster: STAR4BBS / SUSTCERT4BIOBASED / HARMONITOR	The content level of the BIOBASEDCERT Monitoring Tool (BMT) includes a comprehensive list of sustainability principles, criteria and requirements categorized in 4 dimensions: environment, circularity, social and economic. The coverage of these requirements is tested on 9 selected sustainability certification schemes and labels.	Certification scheme owners, Policymakers, Industry actors, Certification bodies	https://star4bbs.eu/, https://sustcert4biobased.eu/about-
	ESCIB	ESCIB develops methodologies focused on holistic life-cycle assessments, environmental sustainability and circularity, contributing indirectly to the standardisation of indicators for monitoring bioeconomy transitions	Bio-based industry, Certification organisations, Funding bodies and policy makers (e.g. European Commission), Universities and Research Organizations, LCA community, Trade bodies, Consumers' organisations, Consumers, general public, civil society, technical committees/ standardization bodies (e.g. ISO and CEN), Investors	https://www.escib.eu/
	SUSTRACK	The SUSTRACK monitoring system supports a sustainable transition to a circular bio-based economy (CBBE), offering a country-level assessment of key areas and indicators. Additionally, it identifies indicators and data currently available for monitoring and evaluating the CBBE.	(National) policy makers, researchers, technicians.	https://sustrack.eu/monitoring-system/

	SYMBA	SYMBA Methodology will build upon existing sustainability assessment frameworks to measure key sustainability parameters, enhance efficiency and reduce waste. The methodology is based on multi-step methodological approach (literature review->regions' needs assessment->tailored methodology tested on case studies). The accompanying guidelines aim to provide companies within these sectors with an actionable foundation for initiating and advancing IS practices	Industrial actors, researchers, policymakers, regional authorities	Not complete, will be available on SYMBA website
	BioINSouth	The environmental impact assessment methodology integrates 16 impact categories based on the Product Environmental Footprint (PEF) method. Circularity indicators follow ISO 59020:2024 Agricultural sustainability indicators are based on FAO's EX-ACT and B-INTACT tools.	Policy makers, investors, HUB managers.	https://www.bioinsouth.eu/
Capacity building and collaboration	BioFairNet	Through work pack 7 (WP7), BioFairNet establishes a *Community of Practice* and a thematic forum to foster sustained engagement among stakeholders (quadruple helix), organise workshops and local events, and support collaboration with other EU projects. It builds capacity through training, co-creation workshops, and dissemination of practices across Europe and beyond.	Local and regional authorities, industry representatives, NGOs, community leaders, academic and research institutions	About BioFairNet Project - BioFairNet
	BIOTRANSFORM	Train-the-Trainer & Transition Broker: Building capacity for regional transition brokers to act as intermediaries between stakeholders, complemented by workshops and peer-learning activities.	Regional managers, cluster managers, development agencies.	https://www.biotransform-project.eu/

	Pilots4U powered by COPILOT	The europe-wide network & database of open access multipurpose pilot and demo infrastructures for the european bio-economy	Innovators, PDIs	https://biopilots4u.eu/
	INNOVATE-EU - Strengthening European Startups through interconnected and inclusive innovation ecosystems	EU-funded project aimed at reducing the innovation gap between regions in Europe by bridging the gap between innovation leader regions and emerging innovators by fostering interconnected and inclusive innovation ecosystems . Main focus is in supporting deep-tech start-ups and scale-ups in Baden-Württemberg (Germany), Lithuania, Aragon (Spain), Latvia, and Northeast Romania, with the goal of connecting these areas to a wider European network of innovation and providing the right support for these companies to grow.	Deep-tech start-ups and scale-ups, investors, innovation actors	https://innovateeu.eu/
	ShapingBio	New Insights on Strengthening Research-Industry Collaboration in the European Bioeconomy; Structural support programmes for bio innovators and scale-up infrastructures	Industry, Academia	https://www.linkedin.com/posts/shapingbio_pdf-activity-7325067463090388992-Gd57?utm_source=share&utm_medium=member_desktop&rcm=ACoAABToRQQBqkIWuV4CG3BT_D-mvUU3b8coA58
	SUSTRACK	SUSTRACK stakeholder engagement strategy stems from more than 300 past experiences in several EU-funded projects, to ensure the engagement of the most suitable participants to reach the objectives foreseen by the project. As a first step, a database of the	Other EU-funded projects and initiatives	

| | | relevant stakeholders was created, with the collaboration of all project's partners, ensuring the representativeness of the four dimensions defined by the SUSTRACK model in the figure below, namely quadruple helix stakeholders, at different geographical levels, sectors of interest, and expertise. These dimensions were built specifically on SUSTRACK project needs and allowed to categorise, cluster and select the stakeholders in relation to the objectives and expected outcomes of each stakeholder engagement activity.

In detail, the four dimensions refer to:

- Quadruple helix dimension: different types of stakeholders (research, business, policy, civil society);
- Level: geographical scope of stakeholders' activities (European, National, Regional, Local);
- Sectors: the four SUSTRACK target sectors (Textile, Construction, Chemicals, Plastic);
- Expertise: in relation to the stakeholder engagement activity and expected outcomes foreseen (e.g., validation, prioritisation, co-creation, foresight). | | |
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| | SUSTCERT4BIOBASED | SUSTCERT4BIOBASED Network of Interest brings together stakeholders from across industrial biobased value chains and the broader sustainability system community. Through bi-annual thematic meetings, it fosters international networking, facilitates dialogue, and promotes knowledge exchange among individuals and organizations interested in sustainability certification for biobased systems. | Industry, sustainability system actors, policy makers, regional bioeconomy actors | https://sustcert4biobased.eu/ |

	SYMBA	Through webinars, bootcamps, workshops and digital platforms, SYMBA fosters collaboration and skills development among value chain actors. A digital collaborative forum has been developed in cooperation with Hubs4Circularity, an open forum for discussion, sharing resources and best practices. Target stakeholders: All actors of the circular bio-based ecosystem.	General public, industry representatives, policymakers	https://app.h4c-community.eu/login.
	3-CO	A set of guidelines for Label and Certification Scheme (LCS) owners to inform their decision making for creating Business to Consumers (B2C) Labels for bio-based products.	Main stakeholders are scheme owners, with political decision makers and researchers as secondary target groups	Under development
Others	BioFairNet	Work pack three (WP3) develops a digital *Green Information Factory platform*, including prediction tools for emissions, AI-assisted analytics, and an open hardware architecture. It facilitates continuous monitoring, modelling, and adaptation of green transitions using live pilot data and stakeholder interaction.	Digital tool developers, smart agriculture and energy system operators, data scientists, civil society	About BioFairNet Project - BioFairNet
	CheMatSustain	Description: Insilco Computational Modelling QSAR	SSbD users	https://chematsustain.eu/
	ESCIB	Developing environmental sustainability & circularity assessment methodologies for industrial bio-based systems	Bio-based industry, Certification organisations, Funding bodies and policy makers (e.g. European Commission), Universities and Research Organizations, LCA community, Trade bodies, Consumers' organisations,	https://www.escib.eu/

			Consumers, general public, civil society, technical committees/ standardization bodies (e.g. ISO and CEN), Investors	
	ShapingBio	Policy Recommendation: a better understanding and information basis of the bioeconomy innovation eco-system by providing a comprehensive mapping and analysis. - Policy and governance - Applied R&D and technology transfer - Collaboration (cross-sectoral) Financing	Quadruple helix	https://www.shapingbio.eu/events/
	3-CO	A digital Tool/App to scan labels at the point of sale and receive a wide range on information about the labels its criteria, scope etc. The goal is to enable consumers to access the credibility and coverage of different sustainability focussed product labels and thereby foster sustainable consumption and purchasing decisions.	Consumers	https://3co-project.eu/consumer-app/