



Bioeconomy objective setting and identification of bioeconomy monitoring indicators

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Bioeconomy definition and existing bioeconomy strategies in the EU MS

EU Bioeconomy Strategy from 2018:

“Sustainable and circular bioeconomy covers all sectors and systems that rely on biological resources (animals, plants, micro-organisms and derived biomass, including organic waste), their functions and principles.

It includes and interlinks: land and marine ecosystems and the services they provide; all primary production sectors that use and produce biological resources (agriculture, forestry, fisheries and aquaculture); and all economic and industrial sectors that use biological resources and processes to produce food, feed, bio-based products, energy and services” Source [1]



Bioeconomy strategy objectives

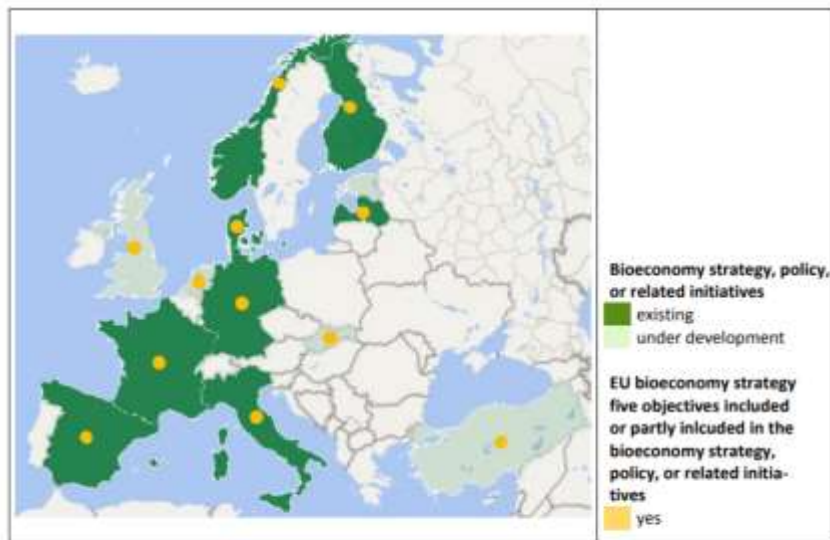


Figure 4 Survey results on existence of bioeconomy strategies, policies and/or related initiatives. EU bioeconomy strategy (2012 version) five objectives included or partly included in the national bioeconomy strategies, policies and/or related initiatives at EU and non-EU country level.

Table 3. Number of identified suitable key indicators and related indicators for describing the progress of a bioeconomy at national level for each EU bioeconomy strategy objective (EC 2012b).

EU bioeconomy strategy objective	Number of identified key indicators	Number of identified related indicators
Creating jobs and maintaining competitiveness	5	90
Reducing dependence on non-renewable resources	6	15
Mitigating and adapting climate change	6	8
Ensuring food security	7	22
Managing natural resources sustainably	5	26
SUM	29	161

Table 4. Survey results if EU bioeconomy strategy five objectives included in a region's bioeconomy strategy, policy and/or related initiative (included= "++"/ not included, but needed = "+"/not included, not needed = "-").

Region	Creating jobs and maintaining competitiveness	Reducing dependence on non-renewable resources	Mitigating and adapting climate change	Ensuring food security	Managing natural resources sustainably
Alto Tâmega (PT)	++	++	+	+	++
Campania (IT)	++	++	++	++	++
Castilla y León (ES)	++	++	++	++	++
Cataluña (ES)	++	++	++	++	++
Central Finland (FI)	++	++	++	++	++

Table 5. Survey results on regional specific bioeconomy objectives. The regional specific bioeconomy objectives were grouped afterwards under a possible general objective.

Possible general bioeconomy objective	Regional specific bioeconomy objective
Investments towards an innovative and self-efficient circular and sustainable bioeconomy	Analysing enablers and bottlenecks for the deployment of bio-based innovations
	Creating smart, material- and energy-efficient circular system
	Enhancing investments
	Increasing the self-sufficiency of the regions
	Launching pilot actions for the development of bioeconomies in rural, coastal and urban areas
	Replacing oil-based energy and products
Citizens' involvement in bioeconomy development	Enhancing rural development & sustainable cities and municipalities
	Ensuring long-term skills and competency through education, training and skills across the bioeconomy
	Involving citizens to increase the acceptance of the bioeconomy concept at regional level
	Reducing the gender imbalance
Understanding the regional and local boundaries of ecosystems	Enhancing benefits of biodiversity in primary production
Effectiveness policies and investments	Monitoring progress towards a sustainable bioeconomy

Source [4 and 5]

Monitoring bioeconomy objectives - indicators

“The monitoring and evaluation of the success of measures taken to achieve the strategy’s objectives [12,34–36] are decisive for the successful implementation of each strategy.

Relevant and expressive indicators therefore provide evidence for interested citizens, researchers, bioeconomy stakeholders (e.g., the bioeconomy primary sectors or the bio-based industry), national and regional agencies (e.g., EU Agencies), and national and regional policy and decision makers to facilitate their decision making.

The inherent complexity of the bioeconomy and the high ambition of national and regional bioeconomy strategies means progress towards the bioeconomy needs to be regularly monitored, based on indicators with easily available, reliable, and harmonized data and information. This provides a holistic view of all the dimensions of sustainability in every bioeconomy sector and highlights the eventual trade-offs between them [37].

However, there has been no commonly agreed set of national indicators to measure the bioeconomy at regional (e.g., EU) or global level until now [12,34,38]. “

Source [6]

Monitoring bioeconomy objectives and related indicators

“Each objective in the bioeconomy strategy should have at least one indicator for quantification, progress monitoring, and assessment;”

Source [6]

Table 3. Number of identified suitable key indicators and related indicators for describing the progress of a bioeconomy at national level for each EU bioeconomy strategy objective (EC 2012b).

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Source [5]

Finnish Bioeconomy strategy 2014: key indicators. Bioeconomy output; Bioeconomy value added; The number employed; The share of BE employed in the national economy; Raw material inputs; value added to raw material streams; Raw material inputs used; Greenhouse gas emissions avoided; Total use of natural resources; Growth and harvested volumes of standing timber; Growth and harvested volumes of cereal crops; Growth and harvested volumes of fish bag; Endangered species; Urban waste; Ecosystem services; Environmental and resource efficiency

Source [7]

Monitoring bioeconomy objectives and related indicators

“Each objective in the bioeconomy strategy should have at least one indicator for quantification, progress monitoring, and assessment;”

Source [6]

Table 2. Results of indicators from MontBioeco survey conducted in 2017-2018

EU bioeconomy strategy objective	Identified most suitable key indicators
Creating jobs and maintaining competitiveness	Number of employed persons in rural and urban areas (number)
	Value added (EUR)
	Contribution to the GDP (EUR)
	Investment in research and innovation (EUR)
	Exports (EUR)
Reducing dependence on non-renewable resources	Import (EUR)
	Production of renewable energy and Production of biofuels and biogas combined (%)
	Material and waste recycling and recovery rates (tonnes)
	Material replacing non-renewable resources (tonnes)
	Public financial support and private (EUR)
Mitigating and adapting climate change	Investment in research and innovation (EUR)
	Carbon sequestration (CO ₂ eq. tonnes)
	Forest carbon emissions/sinks
	Greenhouse gas emissions from agriculture
	Water area carbon emissions/sinks
Ensuring food security	Public financial support and private investments (EUR)
	Investment in research and innovation (EUR)
	Domestic food supply of food commodities in terms of production, import/ stock change (EUR)
	Agricultural products
	Fish products
Managing natural resources sustainably	Non-wood forest products
	New food products
	Public financial support and private
	Investment in research and innovation
	Land cover (ha)
	Resource availability (unit defined by the resource)
	Sustainable resource use (unit defined by the resource)
	Environmental protection (unit defined by the resource)
	Public financial support and private investments for ecosystem services (EUR)
	Investment in research and innovation (EUR)

Source [8]

Bioeconomy strategy objective setting and suitable monitoring indicators

Nex steps

- identify existing national bioeconomy related strategies and their objectives
- identify possible national future objectives of national bioeconomy strategies
- identify socio-economic and ecological indicators to monitor the progress of national bioeconomy strategies



BIOEASTsUP objectives and indicators survey + background information on bio-based sectors of the economy to BAIMGs

Sources

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- [4] Lier, M.; Kärkkäinen, L.; Korhonen, K.T.; Packalen, T. Understanding the Regional Bioeconomy Settings and Competencies in 29 EU Regions in 11 EU Countries; Natural Resources and Bioeconomy Studies 88/2019
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- [8] Giuntoli, J., Robert, N., Ronzon, T., Sanchez Lopez, J., Follador, M., Girardi, I., Barredo Cano, J., Borzacchiello, M., Sala, S., M'Barek, R., La Notte, A., Becker, W. and Mubareka, S., Building a monitoring system for the EU bioeconomy, EUR 30064 EN, Publications Office of the European Union, Luxembourg, 2020, ISBN 978-92-76-15385-6, doi:10.2760/717782, JRC119056.



THANK YOU FOR YOUR ATTENTION.

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Where to go from here in the BAIMGs?

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BIOEASTSUP WP 1 - WORKFLOW

National Platform
for Bioeconomy
Strategy Development



Task 1.1



1
Consultation
Discussion
Suggestions
Training

BAIMG – contacts to leading persons received
NSG – five contacts to leading persons received, we hope to complete the list of contacts after Webinar 3,

WP1
Task 1.2



Tools were developed

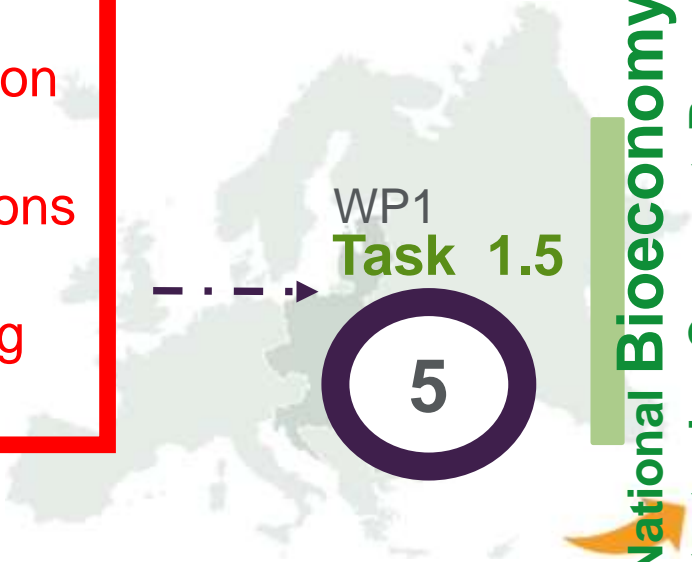
Indicators completed

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WP1
Task 1.5



**National Bioeconomy
Strategies Concept Papers**





Closing

Next webinar 15.6.2020 on
Developing multi-stakeholder partnerships and co-creation for
boosting the uptake of bioeconomy in BIOEAST





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