Milestone 6

Methodology for competency and biomass mapping is provided to the HUBs.

Funded by the European Union

Milestone 6	**Methodology for competency and biomass mapping is provided to the hubs.**
MILESTONE TYPE	Report
DUE DATE	31/10/2024
DATE OF SUBMISSION	22/11/2024
WORK PACKAGE	WP3
BENEFICIARY	DBFZ – BME
DISSEMINATION LEVEL	Public
AUTHORS	Laura García Laverde (DBFZ), Jennifer Juch (DBFZ), Ronja Wollnik (DBFZ), Nora Szarka (DBFZ), Balázs Imre (TTK), Emese Pregi (TTK), Ali Zarbali (BME), Ádám Csuvár (BME)
PROGRAMME	HORIZON EUROPE
GRANT AGREEMENT NUMBER	101133398
NAME OF THE PROJECT	BOOST4BIOEAST
PROJECT START	January 2024
PROJECT DURATION	36 Months

Contributors

NAME	ORGANISATION
Laura García Laverde	DBFZ
Jennifer Juch	DBFZ
Ronja Wollnik	DBFZ
Nora Szarka	DBFZ
Balázs Imre	TKK
Emese Pregi	TKK
Ali Zarbali	BME
Ádám Csuvár	BME

Peer Reviews

NAME	ORGANISATION
Korinna Varga	ÖMKI
Zsófia Kunya	ÖMKI

Revision History

VERSION	DATE	REVIEWER	MODIFICATIONS
1.0	25/11/2024	DBFZ – TKK	Initial version

Disclaimer

BOOST4BIOEAST is funded by the European Union's Horizon Europe research and innovation programme under Grant Agreement no. 101133398. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or European Research Executive Agency (REA). Neither the European Union nor the granting authority can be held responsible for them.

Table of Contents

Index of Tables (optional)

Abbreviations

R&D	Research and Development
EU	Europe
KoM	Kick-of-Meeting
GHG	Greenhouse gases
JF	Jour fixe

Introduction to the project

BOOST4BIOEAST *is a Coordination and Support Action funded by the European Commission developed to support the BIOEAST Initiative with the aim of empowering national stakeholders in the Central Eastern European and Baltic countries for the development of national bioeconomy action plans and to build long-lasting structures and spaces of dialogue for national and macro-regional cooperation. The project will enrich knowledge on the bioeconomy and stimulate related research and innovation across the macro-region.*

1 Introduction

As a framework to examine and assess sustainable biomass potential as well as a country's readiness for the bioeconomy, a set of indicators has been identified, prioritised (core indicators), and categorized with the support of hub coordinators. A guideline has been created to provide clear instructions on the overall indicator methodology and the assessment of each indicator. The guideline presents the core indicators related to social, technological and economic competencies, as well as biomass production and valorisation.

- **Social competencies** refer to skills and knowledge (human capabilities), particularly those required by public administrative bodies and bioeconomy sectors relevant to the countries. The main aim of the social competencies is to support the development of the bioeconomy within the country.
- **Technological competencies** refer to infrastructure regulated through existing bioeconomy activities, R&D as well as residue management. These competencies focus on existing infrastructure essential for bioeconomy activities and the innovation capacities that could boost the national bioeconomy.
- **Economic competencies** refer to bioeconomy business models and their systemic frameworks. This category includes indicators related to key business-enhancing characteristics, with a special focus on companies involved in the bioeconomy.
- **Biomass potential** refers to the existing biomass resources, including their production and valorisation at the national level, along with the associated environmental costs and ecological impacts. This subcategory also explores the availability and accessibility of detailed knowledge of biomass production and valorisation, highlighting the bio-resource opportunities in the country.

For each core indicator, a factsheet is presented in the guidelines with explanatory information about their purpose, definition, suggested assessment method, data sources and references.

The guideline is intended to be a living document and a reference for applying the bioeconomy readiness assessment framework. It is to be used alongside a reporting template to record indicator scoring results, as well as the resources used to define the scoring.

2 Methodology

2.1 Developing an initial indicator catalogue

As a first step, a literature review was conducted to gain insights into existing assessment methods for the predetermined monitoring areas set during the project proposal, namely bioeconomy-related competencies and biomass sources. In this step, exemplary projects and preliminary initiatives in the BIOEAST macro-region, as well as in other EU countries, were reviewed for the following categories:

- Social competencies
- Technological competencies
- Economic competencies
- Biomass potential

During the BOOST4BIOEAST Kick-Off meeting, a workshop was held to involve the whole consortium in the development of the indicator system. This workshop was carried out in a world café format, where each subcategory was discussed, and indicators could be recommended.

The results from the literature review and insights from the workshop were combined to develop an initial catalogue of indicators. A key focus was translating the identified needs and suggestions into measurable indicators, to ensure no critical elements were overlooked and were encouraged to identify national initiatives relevant to the proposed indicators. Their feedback and suggestions for improvement were integrated into refining the methodology and the final definition of the indicators.

To further strengthen the identified indicators, a second review of relevant initiatives, EU projects, academic papers and statistical sources was conducted. This aimed to validate the indicators and provide additional insights into potential measurement methods.

As a result of these steps, an initial indicator catalogue of 62 indicators was developed, covering social, technological and economic competencies, as well as 23 biomass-related metrics across 37 biomass types. Each indicator was accompanied by a description and references.

2.2 Identifying core indicators

The next step focused on identifying the most relevant indicators for monitoring bioeconomy readiness. To achieve this, hub coordinators were asked to prioritise all the indicators in the initial catalogue within each subcategory. This process was conducted using LimeSurvey, an online survey-tool, where each country ranked the indicators by importance within each subcategory.

The priority rankings from all hubs were collected and analysed to establish a common ranking order. This order was determined by calculating the average rank of each indicator across the hubs, which provided a clear picture of the key indicators of interest for each country. Finally, the indicators that after the prioritisation reached the Top 10 for the subcategories social, technological, economic and structural competencies were selected. Among the biomass-related indicators, 15 production-related, economics, use-related, and environmental cost-related metrics were selected across 20 high-priority biomass types. Indicators that were deemed highly important but excluded based solely on the rankings were also considered. These were either merged with others or retained as standalone indicators.

The core indicators, selected according to the countries' preferences, are presented below. For further details on the indicators, refer to the "Guidelines for indicator assessment":

Table 1 Prioritised social competencies indicators

Sub-category	Indicator
Public administration	S1. Circular economy skills
	S2. Systemic thinking skills
	S3. Sustainability skills
	S4. Communication skills
	S5. Public governance skills
	S6. Climate change and environmental protection skills
	S7. Project management skills
Bioeconomy sectors	S8. Bioeconomy skills and knowledge in rural areas
	S9. Skills demanded by bioeconomy sectors
	S10. Innovation skills
	S11. Science and technology development skills
	S12. Entrepreneurships skills
	S13. Digital skills in bioeconomy sectors

Table 2 Prioritised technological competencies indicators

Sub-category	Indicator
Mature Circular Bio-based (CBB) industry	T1. Bio-material replacing non-renewable resources (substitutes)
	T2. Circular material use rate.
	T3. Number of biorefinery developments for material use at national level with TRL 5 or higher
	T4. Bioenergy plants and biorefineries using residual biomass or by-products in their processes.
	T5. Connection between available biomass and suitable technologies.
R&D	T6. Number of pilot plant/demonstration facilities (TRL: 3-5) for bioenergy and bio-based products in the country
	T7. Gross domestic expenditure on R&D (GERD) at national level.
	T8. Number of patents submitted

	T9. Technology transfer rate
Infrastructure for residues management	T10. Infrastructure for collection and management of forestry residues.
	T11. Infrastructure for collection and management of food waste from the agriculture and food sector.

Table 3 Prioritised economic and structural competencies indicators

Sub-category	**Indicator**
Market environment	E1. Value added of the bioeconomy sectors
	E2. Stakeholder networks that facilitate collaborations among bioeconomy actors
	E3. Advisory services focalised on rural bioeconomy businesses
	E4. Fiscal and policy incentives for market uptake of bio-based products
	E5. De-risking bioeconomy projects
	E6. Public-Private partnerships
	E7. Knowledge of bioeconomy related institutions in the country
	E8. Turnover in the bioeconomy sectors at national level
	E9. Existence of national bioeconomy investment and investor platform (for investors and entrepreneurs)
Market push/innovation environment	E10. New value chains for bio-based products
	E11. Novel business models in the (circular) bioeconomy
	E12. Number of projects scaling up from pilot to demonstration projects as a result of being funded by private/venture funds

Table 4 Prioritised biomass potential indicators - biomass types

Category	**Indicator**
Biomass sources	B.1. Cereals for the production of grain
	B.2. Pulses and protein crops for the production of grain
	B.3. Root crops (e.g., potatoes, sugar beet)
	B.4. Fresh vegetables, including vegetables cultivated for fruit (e.g., cabbages, melons, strawberries)
	B.5. Fruits, berries and nuts (e.g., apples, citruses, almonds, including grapes for wine)

	B.6. Industrial crops - Oil crops, excluding olives (e.g., rape, sunflower, soya)
	B.7. Industrial crops - Fibre crops (e.g., flax, hemp, cotton)
	B.8. Industrial crops - Energy crops
	B.9. Industrial crops - Other industrial crops (e.g., tobacco, hops, medicinal, culinary plants)
	B.10. Plants harvested green from arable land (fodder crops, e.g., grasses, lucerne, clover)
	B.11. Grazed biomass
	B.12. Harvested agricultural residues
	B.13. Non-harvested agricultural residues
	B.14. Roundwood, including bark
	B.15. Forestry residues
	B.16. Poultry, including eggs for consumption
	B.17. Livestock (e.g., bovine, goat, sheep, pig)
	B.18. Milk and milk products
	B.19. Collectible animal manure
	B.20. Food waste

Table 5 Prioritised biomass potential indicators - biomass metrics

Category	**Indicator**
Production-related metrics	M.1. Annual production
	M.2. Annual yields
	M.3. Net amount imported
	M.4. Net amount exported
	M.5. Crop area
	M.6. Animal populations
	M.7. Estimated production for the coming year
Economic value-related metrics	M.8. Total economic value
	M.9. Average price per unit

	M.10. Net value imported
	M.11. Net value exported
Use-related metric	M.12. Current domestic valorisation (e.g. food, feed, materials, bioenergy)
Environmental cost-related metrics	M.13. Land use
	M.14. Water use
	M. 15. GHG emission

2.3 Creation of the first version of the "Guidelines for indicator assessment"

The primary goal of the "Guidelines for indicator assessment" is to provide HUB coordinators with a sustainable framework for evaluating a country´s readiness for the bioeconomy. The guidelines offer detailed information on the indicator methodology, assessment methods, and resources that enable Hubs to conduct independent assessments of the indicators.

The guidelines include explanations for each category and sub-category, guidance on involving relevant actors for data collection, and detailed information for each indicator. A factsheet is provided for each indicator, following a consistent structure throughout the document. Each indicator factsheet contains the following information:

- Purpose,
- Operational definition,
- Assessment method,
- Type (quantitative, qualitative),
- Data sources/Examples
- References.

The **purpose** section briefly explains the expected outcome of each indicator.

The **operational definition** is based on information collected during the literature review and the initial indicator catalogue proposal. Further research was conducted to provide a clear and unambiguous definition, ensuring all hub coordinators fully understand what the indicator measures. Additional definitions and limitations are also provided to clarify specific terms.

Before defining the assessment method, the indicator is classified by **type** (quantitative or qualitative).

Quantitative indicators rely on pre-existing measurement methods or existing data sources from public databases like Eurostat.

For **qualitative indicators**, a three (1 = lowest value, 3 = highest value) or five-level scale (1 = lowest value, 5 = highest value) was developed, allowing qualitative performance to be

measured in quantitative form. For social, technological, economic and structural competences, survey protocols will be applied to determine the score in each country.

To ensure comprehensive assessments, additional data sources and examples of related initiatives are provided under the **Data sources/Examples** section.

In addition, an Excel template was created to help countries report their indicator results and relevant references.

2.4 Testing core indicators in selected countries

A testing phase was deemed essential to identify potential data gaps, issues with measurement methods and any ambiguities in the methodology. It also helped to account for country-specific factors, improving the likelihood of adopting the indicator framework in the future. Two countries were pre-selected during the proposal phase (Slovakia and Romania), and two more volunteered to participate in the testing phase (Hungary and Latvia). The "Guidelines for indicator assessment" was sent to the selected testing countries on the 08 of August 2024. To initialize the testing phase a Kick-off Meeting (online) was organised on the 18 of August 2024. During this meeting, the purpose of the indicator framework was explained, first impressions of the guidelines were discussed, and a work plan for the testing phase was agreed upon. Indicators from the social competences and biomass potential categories were distributed across the four countries, ensuring that at least two countries would test each indicator for comparability. A timeline was set for testing the indicators throughout August and September, with two follow-up meetings scheduled for clarifications and feedback.

Afterwards, the testing period was extended until the end of November 2024, due to feedback received, adjustments and revisions to newer versions of the core indicators.

Two group follow-up meetings took place, one on the 01 and 25 October 2024. Bilateral meetings to revise the assigned indicators were organised with each country between 13 and 20 November 2024.

Feedback based revisions of core indicators

Feedback of testing countries was collected either during the follow-up or bilateral meetings, as well as through email during the testing phase (August to November). The key insights that have been incorporated into the revised guidelines include:

- **Biomass potential**: Feedback received made clear that the final list of indicators can be reduced from the initially proposed matrix of 15 metrics across 20 biomass types. The comments also highlighted that most indicators can be directly extracted from various databases, are already being monitored by other initiatives, and it is unclear whether they sufficiently describe a country's biomass potential. Therefore, in the revised

guidelines, the indicators in this subcategory were reworked into a set of 35 more complex core-indicators common to all countries, to explore biomass production and valorisation at the national level. Information on the environmental impact of biomass production, as well as the accessibility and currentness of relevant biomass-related data will also be gathered.

- **Proposal to conduct surveys in addition to expert interviews for qualitative questions**: Instead of relying solely on expert interviews and desk research, testing countries proposed using surveys targeted at public administrations and the bioeconomy sector. In the revised guidelines, survey protocols are provided, to be translated in national languages by hub coordinators. Likewise, indications about preparation, conduction and analysis of surveys have been included in the guidelines
- **Definition of criteria to specify level of expertise** Some indicators require expert responses, either for the surveys or interviews. A set of criteria has been stablished to guide the identification of "experts" in each country, ensuring consistency and homogeneity in the assessment process.

2.5 Revised "Guidelines for indicator assessment"

After gathering feedback from the testing countries, the document "Guidelines for indicator assessment" was refined to incorporate the suggested improvements.

Two major changes were implemented:

1. Deleting, merging and switching indicators

From the core-indicators, and based on the feedback collected during the testing phase, some indicators were merged to facilitate the collection of information, some indicators have been deleted, and the order of some indicators has been changed:

Social competencies indicators:

- Indicator S.3. (Sustainability skills) has been merged with former S.6. (Climate change and environmental protection skills). Final indicator S.3. is now called "Sustainability and environmental protection skills".
- Indicator S.5. (Public governance skills) has been taken out of the core indicators, due to the difficulty to evaluate it from a self-assessment survey. Results might be biased by attitude of respondents (they are asked about skills they need for their work, people might be tempted to assess themselves better than they are).
- Indicator S.8. (Bioeconomy skills and knowledge in rural areas) has been taken out of the core indicators, due to the difficulty of assessment through a survey directed to

individuals in national ministries and agencies. Data to make viable this indicator will most likely be collected through interviews and surveys directed to rural actors.

- Indicator S.11. (Science and technology development skills) has been taken out of the core indicators due to difficulty to interpret results. In the survey directed to individuals working in the bioeconomy, respondents will reply according to their acquired competencies for their position. This will not be representative indication about bioeconomy industrial sectors being equipped with skilled people for innovation, research, and development.

Technological competencies indicators:

- Name of indicator T.3. changed from "Number of biorefinery developments for material use at national level with TRL 5 or higher" to "Number of bioenergy and biorefinery plants at national level (TRL 6 or higher)". This indicates also a change of scope of the indicator to focalised on TRL 6-8: pilot and demonstration plants as well as TRL 9: Commercial plant/product. Now, it also includes bioenergy plants (i.e. biomethane, advanced liquid biofuels) and biorefineries producing biochemicals for the material side.
- Previous indicator T.5. (Connection between available biomass and suitable technologies) has been moved from the technological competencies to economic competencies due to its market character. Now it is merged with the indicator E3.
- New indicator T.5. (former indicator T.6. (Number of pilot plant/demonstration facilities (TRL: 3-5) for bioenergy and bio-based products in the country)) is renamed "Number of research projects and process development (TRL: 3-5) for bioenergy and biorefineries in the country."
- Previous indicator T.8. (Technology transfer rate) has been renamed to "Technology transfer" due to the character of the indicator.
- Indicator T.10. (Infrastructure for collection and management of food waste from the agriculture and food sector) had a slight change of name to "Infrastructure for collection and management of agricultural residues and food industry sector residues/by-products" to facilitate comprehension of the indicator. The scope remains the same.
- Indicator T.11. (Infrastructure for collection and management of other biomass residues (e.g. urban and municipal biological waste) has been added. This indicator was introduced in response to feedback from the testing countries and closes a gap in indicators T.9. and T.10. with regard to different biomass waste options.

Economic competencies indicators:

- Most parts of the Economic competencies section have been restructured regarding the order of the indicators. This new order enhances the coherence of this section.

- Indicator T.5. (Connection between available biomass and suitable technologies) has been moved to the economic competencies and merged with current E3. indicator.

Biomass potential indicators:

- For the indicators assessing biomass potential, an entirely new concept was developed and a new list of indicators created. In this new approach, the focus is no longer on specific types of biomasses or their various characteristics, quantities, and properties.
- Instead, the new indicators are more generally applicable and explore three broad types of biomasses: agricultural, woody and aquatic biomass.
- As the metrics in the first version, indicators are defined in four categories related to biomass production, environmental impact, valorisation, and economic significance.
- In addition, the availability and quality of information on biomass production, utilization, economic metrics, and environmental impact is described through a dedicated subset of indicators.
- The new indicators are aimed to be informative, easy to comprehend, and based on readily accessible data. As a result, even with limited capacities available for assessment, a country's biomass potential can be reasonably estimated by the methodology developed.
- Furthermore, biomass-related indicators have been organized in a tiered structure at four levels, following the same approach as with the social, technological, and economic competencies-related indicators.

An updated indicator catalogue can be found below.

Table 6 Final list of social competencies indicators

Sub-category	Indicator
Public administration	S.1. Circular economy skills
	S.2. Systemic thinking skills
	S.3. Sustainability and environmental protection skills *(indicator S.3 has been merged with former indicator S.6.)*
	S.4. Communication skills
	S.5. Project management skills
Bioeconomy sectors	S.6. Skills demanded by the bioeconomy sector
	S.7. Innovation skills
	S.8. Entrepreneurships skills

	S.9. Digital skills in bioeconomy sectors

Table 7 Final list of technological competencies indicators

Sub-category	Indicator
Mature Circular Bio-based (CBB) industry	T.1. Bio-material replacing non-renewable resources (substitutes)
	T.2. Circular material use rate.
	T.3. Number of bioenergy and biorefinery plants at national level (TRL 6 or higher) *(slight change in name and scope)*
	T.4. Bioenergy plants and biorefineries using residual biomass or by-products in their processes.
R&D	T.5. Number of research projects and process development (TRL: 3-5) for bioenergy and biorefineries in the country. *(renamed)*
	T.6. Gross domestic expenditure on R&D (GERD) at national level.
	T.7. Number of bioeconomy patents submitted (at national level)
	T.8. Technology transfer *(renamed)*
Infrastructure for residues management	T.9. Infrastructure for collection and management of forestry residues.
	T.10. Infrastructure for collection and management of agricultural residues and food industry sector residues/by-products *(slight change in name, same scope)*
	T.11. Infrastructure for collection and management of other biomass residues (e.g. urban and municipal biological waste) *(new indicator)*

Table 8 Final list of economic and structural competencies indicators

Sub-category	Indicator
Market environment	E.1. Value added of the bioeconomy sectors
	E.2. Turnover in the bioeconomy sectors at national level
	E.3. Stakeholder networks that facilitate collaboration among bioeconomy actors *(merged with former technological competence indicator T.5 "Connection between available biomass and suitable technologies)*
	E.4. Advisory services focalised on rural bioeconomy businesses.
	E.5. Financial and policy supportive mechanism for market uptake of bio-based products.
	E.6. Knowledge of bioeconomy institutions in the country.

	E.7. Existence of national bioeconomy investment and investor platform (for investors and entrepreneurs)
Market push/innovation environment	E.8. New value chains for bio-based products
	E.9. Supportive structures to novel business models in the (circular) bioeconomy
	E.10. Number of projects scaling up from pilot to demonstration projects as a result of being funded by private/venture funds. (In the last year)

Table 9 Final list of sustainable biomass potential indicators

Category	Indicator
Sustainable provision of biomass resources	B1.1 Annual agricultural biomass production per total land area (Mt/ha/year)
	B1.2 Annual woody biomass production per total land area (Mt/ha/year)
	B1.3 Annual aquatic biomass production per total water surface area (Mt/ha/year)
	B1.4 Agricultural biomass production yields (t/ha/year)
	B1.5 Woody biomass production yields (t/ha/year)
	B1.6 Aquatic biomass production yields (t/ha/year)
	B1.7 Net exported agricultural biomass [= Exp - Imp] per total land area (Mt/ha/year)
	B1.8 Net exported woody biomass [= Exp - Imp] per total land area (Mt/ha/year)
	B1.9 Net exported aquatic biomass [= Exp - Imp] per total water surface area (Mt/ha/year)
	B1.10 Share of agricultural biomass of total biomass production (%)
	B1.11 Share of woody biomass of total biomass production (%)
	B1.12 Share of aquatic biomass of total biomass production (%)
	B1.13 Rate of soil organic carbon change (t C/ha/year)
	B1.14 Water use efficiency (m^3/t of biomass produced)
	B1.15 Carbon footprint (kg CO_2-eq/t of biomass produced)
	B1.16 Annual change in Biodiversity Intactness Index (%/year)
	B2.1 Value of annual agricultural biomass production per utilized agricultural area (€/ha/year)

Adding value to biomass	B2.2 Gross Value Added (GVA) in agricultural biomass production per utilized agricultural area (€/ha/year)
	B2.3 Value of annual forestry biomass production per utilized forestry area (€/ha/year)
	B2.4 Gross Value Added (GVA) in woody biomass production per utilized forestry area (€/ha/year)
	B2.5 Value of annual aquatic biomass production per total water surface area (€/ha/year)
	B2.6 Gross Value Added (GVA) in aquatic biomass production per total water surface area (€/ha/year)
	B2.7 Value of bio-based products in proportion to national GDP (%)
	B2.8 Gross Value Added (GVA) in bio-based industries per tons of biomass converted (Eur/t/year)
	B2.9 Share of conversion into energy in domestic biomass valorisation (%)
	B2.10 Share of conversion into food & feed in domestic biomass valorisation (%)
	B2.11 Share of conversion into chemicals & materials in domestic biomass valorisation (%)
Detailed knowledge of biomass production & valorisation	B3.1 Availability of detailed data on biomass production
	B3.2 Availability of detailed data on biomass conversion
	B3.3 Availability of detailed biomass-related economic data
	B3.4 Availability of detailed data on the environmental impact of biomass production
	B3.5 Currentness of data on biomass production
	B3.6 Currentness of data on biomass conversion
	B3.7 Currentness of biomass-related economic data
	B3.8 Currentness of data on the environmental impact of biomass production

2. Application of 5-step scales and surveys

As proposed by the testing countries, surveys were developed to establish a standardized method for measuring indicators and to collect information and further background on indicators in a standardised manner. Hub coordinators will distribute these surveys to experts according to predefined characteristics in public administrations, bioeconomy sectors and other targeted groups, which have been indicated per question.

A 5-step scoring scale has been developed and must be applied, when indicated in the guidelines, within the assessment method.

The survey application can be distinguished between the Social competences and the Technological and Economic competences:

- **Social competences:** The survey is mandatory. The survey is sent out to a) Public administration employees fulfilling certain criteria (see guidelines) or b) Bioeconomy sector employees fulfilling certain criteria. Each indicator has two questions. The first one is intended as a "warm-up" question to get into the specific topic and generates additional information. The first question is not used to identify the score. The second question is important to generate the scoring. Here, survey participants are asked to rank their skill on a scale from 1 to 5. To analyse the results of these Likert Scala type of questions, the median answer for each question is calculated and indications are provided to translate these results into the final scoring of the indicator. For details see guidelines Annex I and Annex III.a.
- **Technological and Economic competences:** The survey is not mandatory but serves to collect information to back-up results from the desk-research. Some survey questions are developed in a similar manner as the social competence survey. For some indicators a different question style was selected, depending on what suits best to collect helpful information. Additionally, target groups for each indicator have been defined, to ensure a knowledgeable group of respondents. For details see guidelines Annex II and Annex III.b.

To ensure the same survey framework and the same analysis of the survey results, a methodology was developed, which can be found in the guidelines Annex III.a and III.b. The most important information from the transfer of the questionnaire into an online programme to the evaluation of different questions is compiled here.

All these changes and additions were made in close consultation with the test countries. During the process, joint and bilateral meetings were held to discuss and implement problems and requests.

2.6 Application of the "Guidelines for indicator assessment" in all countries

With the delivery of the guideline to all Hub coordinators by 29 November 2024, the assessment period begins. To facilitate the comprehension of the guidelines, a meeting with all Hub partners will be scheduled at the beginning of December.

Likewise, a weekly JF with voluntary participation will be set by Task 3.1 and Task 3.2 leaders, in order to be available for Hub coordinators and solve doubts or promote exchange about the indicator assessment process until the end of the tasks, by Month 18.

3 Outlook

The methodology and indicator framework will facilitate the assessment of biomass monitoring and bioeconomy-related competences, serving as a measure of each country's readiness for bioeconomy development. With this milestone achieved, the implementation of indicators in each country is expected to begin.

Further insights and a detailed explanation of the framework's development will be presented in the first deliverable of WP3. The indicator framework will also play a crucial role in Task 3.3, helping to identify not only the status of bioeconomy development but also the desired levels of growth, gaps for improvement, and areas of opportunity. The methodology is designed as a decision-making tool that Hubs can use to guide data collection and inform their priorities for the years ahead.

Overall, the collection of guidelines is a dynamic document that will evolve with each reporting period. Continuous feedback from countries is essential to ensure the indicators remain relevant and up to date.

BIO east

BOOST 4BIOEAST

Boosting the bioeconomy transformation for the BIOEAST region

www.bioeast.eu

korinna.varga@biokutatas.hu

#BOOST4BIOEAST

ÖMKi

BIO EAST HUB

HUN REN ttk Természettudományi Kutatóközpont

AKI Institute of Agricultural Economics

Ministerstvo pôdohospodárstva a rozvoja vidieka Slovenskej republiky

Eesti Maaülikool EMU Estonian University of Life Sciences

Селскостопанска академия Agricultural Academy

Latvia University of Life Sciences and Technologies

Energy Institute Hrvoje Požar

Circular Change

Národné lesnícke centrum National Forest Centre

Műegyetem 1782

Trust-IT Services communicating to markets

Vytautas Magnus University

DBFZ

4CF The Futures Literacy Company

APRE Agenzia per la Promozione della Ricerca Europea

EFI

Sustainable INNOVATIONS

ICEADR A.S.A.S.

INCDSB

NPPC

Republika Slovenija Ministrstvo za kmetijstvo, gozdarstvo in prehrano

Lietuvos Respublikos Žemės ūkio ministerija

CZU Czech University of Life Sciences Prague

Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej Państwowy Instytut Badawczy

Bio-based Industries Consortium

HPK Hrvatska poljoprivredna komora

Funded by the European Union

BIO east

BOOST 4BIOEAST

Boosting the bioeconomy transformation for the BIOEAST region

www.bioeast.eu

korinna.varga@biokutatas.hu

#BOOST4BIOEAST

ÖMKi

BIO EAST HUB

HUN REN ttk Természettudományi Kutatóközpont

AKI Institute of Agricultural Economics

Ministerstvo pôdohospodárstva a rozvoja vidieka Slovenskej republiky

Eesti Maaülikool EMU Estonian University of Life Sciences

Селскостопанска академия Agricultural Academy

Latvia University of Life Sciences and Technologies

Energy Institute Hrvoje Požar

Circular Change

Národné lesnícke centrum National Forest Centre

Műegyetem 1782

Trust-IT Services communicating to markets

Vytautas Magnus University

DBFZ

4CF The Futures Literacy Company

APRE Agenzia per la Promozione della Ricerca Europea

EFI

Sustainable INNOVATIONS

ICEADR A.S.A.S.

INCDSB

NPPC

Republika Slovenija Ministrstvo za kmetijstvo, gozdarstvo in prehrano

Lietuvos Respublikos Žemės ūkio ministerija

CZU Czech University of Life Sciences Prague

Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej Państwowy Instytut Badawczy

Bio-based Industries Consortium

HPK Hrvatska poljoprivredna komora

Funded by the European Union