D3.2

Integrated assessment w/ description of competency and biomass indices

D3.2	Integrated assessment w/ description of competency and biomass indices
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Abbreviations

AHP	Analytical Hierarchy Process
CEE	Central Eastern European
D	Deliverable
ESIF	European Structural and Investment Funds
GDP	Gross Domestic Product
GERD	Gross Domestic Expenditure on Research &Development
LULUC	Land Use And Land Use Change
R&D	Research and Development
T	Task
WP	Work Package

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.*

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Executive summary

This deliverable presents an integrated assessment of bioeconomy-related competencies and biomass potential across the BIOEAST macro-region. Building on the indicator mapping and analytical groundwork developed in *Deliverable (D) 3.1 - Results from multi-dimensional competency and biomass mapping* (Laverde *et al.* 2025), it applies a multilevel Analytical Hierarchy Process (AHP) framework to nationally assess both the *status quo* and the desired levels of bioeconomy readiness for 2030. The assessment covers eleven Central Eastern European (CEE) and Baltic countries and combines quantitative and qualitative indicators capturing sustainable biomass availability, data quality, and systemic social, technological, and economic competencies relevant to the bioeconomy.

A key contribution of this deliverable is the explicit comparison between current performance and nationally defined desired levels, enabling a structured gap analysis for each country. Desired levels were defined in collaboration with national HUB Coordinators. The HUB Coordinators serve as the main contact point and the official administrators of the HUB and oversee the kick-off, the management and the improvement of the HUB. They set desired levels for each indicator by consulting with national experts and considering existing strategies and policy objectives. This forward-looking perspective allows the framework to move beyond descriptive benchmarking and towards strategic planning, highlighting where targeted interventions are required to close gaps by 2030. Across countries, the results show ambitious improvement targets in almost all dimensions of bioeconomy readiness, with particularly strong aspirations in technological and economic competencies as well as in the sustainable valorisation of biomass resources.

An important methodological feature of the assessment is the incorporation of country-specific prioritisation of goals and sub-goals. Seven countries applied individual weightings to reflect national bioeconomy characteristics and strategic preferences. At the highest level, countries tend to balance biomass potential and competencies, with slight deviations depending on national contexts. At lower levels, a recurring pattern emerges: sustainable biomass provision is prioritised over detailed data availability, and technological competencies are weighted more strongly than social competencies. These prioritisation choices significantly influence aggregated results and underline the importance of flexibility in the framework to ensure policy relevance at national level.

Overall, the assessment framework provides a robust and adaptable decision-support tool for monitoring bioeconomy readiness in the BIOEAST macro-region. By combining *status quo* assessments, desired 2030 targets, and explicit prioritisation, it supports evidence-based policymaking and helps identify strategic leverage points for accelerating the transition towards a sustainable and circular bioeconomy. The framework is designed for repeated application,

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allowing progress to be tracked over time and enabling continuous refinement as data availability improves and national bioeconomy ambitions evolve.

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1 Introduction

For advancing a sustainable bioeconomy in the BIOEAST macro-region, it is vital to empower key stakeholders. The BOOST4BIOEAST project helps CEE and Baltic countries design national bioeconomy action plans but at the same time also strengthens national stakeholders by building knowledge in bioeconomy-related competencies and biomass. The region has great potential to use its abundant agricultural and forestry biomass resources supported by workforce skills, technological capacity, infrastructure, and innovative ecosystems for bio-based businesses.

While some information regarding biomass availability and utilization is already available in databases (e.g. Eurostat), a deeper understanding of the sustainability of biomass provision, the added value of biomass integration in bioenergy, biomaterial production system, and finally the quality of existing biomass-related data can yield additional information to decision-makers. Additionally, it is also key to assess a country's systemic capabilities to efficiently use these resources in a sustainable manner (i.e., bioenergy and biomaterials). Among the systemic competencies of the countries, three main categories have been selected in BOOST4BIOEAST, namely available workforce skills (social competencies), technological readiness (technological competencies), and business and innovation environments (economic competencies).

Building on the multi-dimensional competencies and biomass mapping reported in *D3.1*, this deliverable contains the overall assessment of the bioeconomy-related competencies and biomass indicators for all BIOEAST countries, both as *status quo* and desired levels for 2030, respecting individual country prioritisations of the sub-goals.

The bioeconomy readiness assessment framework is the outcome of Work Package (WP) 3 in the BOOST4BIOEAST project with the objective to carry out an overall assessment of the most relevant bioeconomy-related competencies and biomass indicators by means of an AHP. To examine a country's readiness for the bioeconomy, the *status quo* of the indicators was assessed. In the next step, the desired levels for each indicator were defined. After this, a gap analysis was performed to compare the *status quo* and the desired level of the indicators. Countries were given the opportunity to prioritize sub-goals over others in order to account for characteristics of the specific bioeconomy system in the country. For the seven countries that chose to do so (Croatia, Czechia, Estonia, Lithuania, Poland, Romania, and Slovenia), an individual assessment framework was applied to generate and analyse results.

The methodology for assessment framework development and application is described in Chapter 2. The results on the assessment framework application are presented in Chapter 3. A discussion of the main results including a critical reflection on the methodology can be found in Chapter 4 while Chapter 5 concludes the process with an outlook for next steps and the future of the framework.

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The decision-making framework tool developed within the project supports policy formulation by providing a structured basis for evaluating options and priorities in the bioeconomy sector. An extensive knowledge base regarding biomass availability and utilisation was established, offering reliable data and insights to inform stakeholders' choices and strategies. The identification and mapping of existing bioeconomy-related competencies—encompassing social, technological, and economic dimensions—enables a comprehensive understanding of the current landscape and highlights strengths and potential gaps in the sector.

This approach results in a long-lasting monitoring framework for tracking the transition of the BIOEAST macro-region towards a circular and sustainable bioeconomy. It allows not only the assessment of the current *status quo* but also the ongoing monitoring of trends and progress, thereby supporting forward-looking development and facilitating adaptive management for future challenges and opportunities. Through this integrated system, the region is better equipped to design targeted actions and measure their effects, accelerating the move toward a sustainable bioeconomy at both national and macro-regional levels.

The results of the indicator framework can significantly enhance decision-making processes. It can also enable the prioritisation of interventions in the macro-region tailored to each country's unique context, fostering regional collaboration and sustainable growth in the bioeconomy. This approach aims to empower policymakers, industry stakeholders, and researchers to make informed decisions, allocate resources effectively, and pursue strategic actions that align with both national and macro-regional bioeconomy objectives.

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2 Methodology

The methodology for development and application of the assessment framework is explained step-by-step below.

2.1 Development of the assessment framework and normalisation

The main needs for the indicator framework are presented in D3.1. They were used to develop and structure the core indicators for biomass and competencies monitoring, which are listed in D3.1. These represent the starting point of framework development.

Having the core indicators as baseline, an AHP goal system was developed in Task (T) 3.3 for both the social, technological, and economic bioeconomy-related competencies, as well as the biomass potential. An interactive version of the AHP goal system can be accessed via the following link: https://datalab.dbfz.de/boost4bioeast-dendrogram/.

As Figure 1 illustrates, the single indicators (Level 5) each contribute to one sub-goal (Level 4). The sub-goals (Level 4) contribute to aggregated superordinate sub-goals (Levels 2 and 3), which in turn contribute to an overall goal (Level 1). In order to measure the contribution of each indicator (Level 5), the indicator score was normalized on a scale between zero and 100%. Then, the normalized indicators of one sub-goal were averaged to give the score of the subordinate sub-goal (Level 4). In this step, it is possible to weight indicators more important than others. The sub-goal scores, which belong to aggregated goals, were averaged again to give the aggregated goal scores (Levels 2 and 3). In the last step, the average of the aggregated goal scores gives the overall goal score (Level 1).
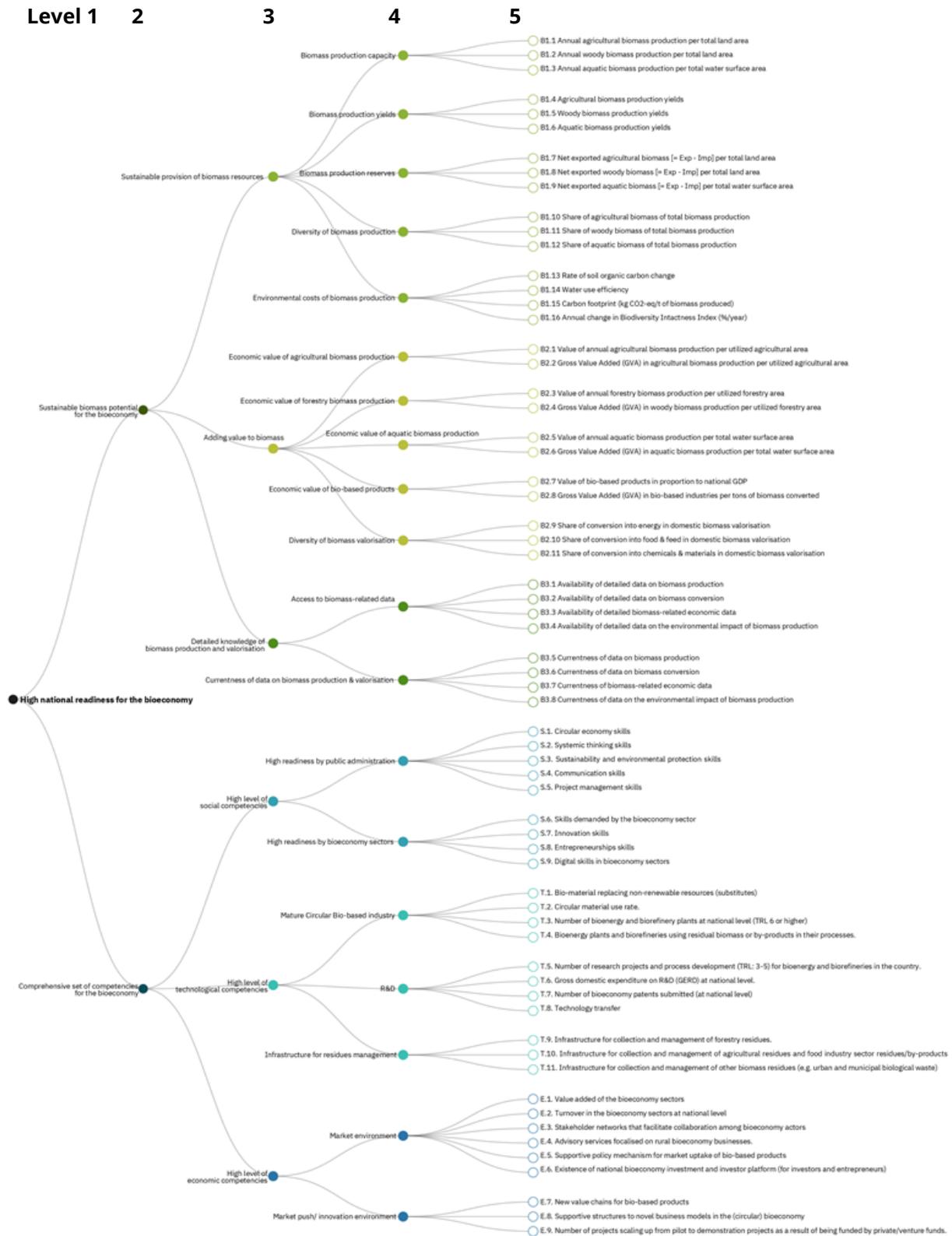
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Biomass production capacity
- B1.1 Annual agricultural biomass production per total land area
- B1.2 Annual woody biomass production per total land area
- B1.3 Annual aquatic biomass production per total water surface area

Biomass production yields
- B1.4 Agricultural biomass production yields
- B1.5 Woody biomass production yields
- B1.6 Aquatic biomass production yields

Sustainable provision of biomass resources

Biomass production reserves
- B1.7 Net exported agricultural biomass [= Exp - Imp] per total land area
- B1.8 Net exported woody biomass [= Exp - Imp] per total land area
- B1.9 Net exported aquatic biomass [= Exp - Imp] per total water surface area

Diversity of biomass production
- 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

Environmental costs of biomass production
- B1.13 Rate of soil organic carbon change
- B1.14 Water use efficiency
- B1.15 Carbon footprint (kg CO2-eq/t of biomass produced)
- B1.16 Annual change in Biodiversity Intactness Index (%/year)

Economic value of agricultural biomass production
- B2.1 Value of annual agricultural biomass production per utilized agricultural area
- B2.2 Gross Value Added (GVA) in agricultural biomass production per utilized agricultural area

Sustainable biomass potential for the bioeconomy

Economic value of forestry biomass production
- B2.3 Value of annual forestry biomass production per utilized forestry area
- B2.4 Gross Value Added (GVA) in woody biomass production per utilized forestry area

Adding value to biomass

Economic value of aquatic biomass production
- B2.5 Value of annual aquatic biomass production per total water surface area
- B2.6 Gross Value Added (GVA) in aquatic biomass production per total water surface area

Economic value of bio-based products
- 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

Diversity of biomass valorisation
- 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

Access to biomass-related data
- 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

Detailed knowledge of biomass production and valorisation

Currentness of data on biomass production & valorisation
- 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

High national readiness for the bioeconomy

High readiness by public administration
- S.1. Circular economy skills
- S.2. Systemic thinking skills
- S.3. Sustainability and environmental protection skills
- S.4. Communication skills
- S.5. Project management skills

High level of social competencies

High readiness by 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

Mature Circular Bio-based 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)
- T.4. Bioenergy plants and biorefineries using residual biomass or by-products in their processes.

High level of technological competencies

R&D
- T.5. Number of research projects and process development (TRL: 3-5) for bioenergy and biorefineries in the country.
- 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

Comprehensive set of competencies for the bioeconomy

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
- T.11. Infrastructure for collection and management of other biomass residues (e.g. urban and municipal biological waste)

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
- E.4. Advisory services focalised on rural bioeconomy businesses.
- E.5. Supportive policy mechanism for market uptake of bio-based products
- E.6. Existence of national bioeconomy investment and investor platform (for investors and entrepreneurs)

High level of economic competencies

Market push/ innovation environment
- E.7. New value chains for bio-based products
- E.8. Supportive structures to novel business models in the (circular) bioeconomy
- E.9. Number of projects scaling up from pilot to demonstration projects as a result of being funded by private/venture funds.

Figure 1. Full goal tree structure of the AHP assessment framework (for an enlarged version, click here: https://datalab.dbfz.de/boost4bioeast-dendrogram/)

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2.2   Normalisation

The main idea behind the normalisation is to convert all input values to a score between zero and 100%. For this, a minimum and maximum value was assigned to each indicator to serve as boundaries. This was based on country input data to reflect realistic ranges.

The following formula, a standard normalisation procedure, was applied to convert the input values to normalised values:

$$Normalized\ Value = \frac{(Input - Min)}{(Max - Min)}\ x\ 100$$

As an example of the application of this formula, the normalisation of the social competencies indicators, which are assessed on a scale of 1 (low) to 5 (high), is shown in Figure 2. The score 1 is converted to 0%, 2 to 25%, 3 to 50%, 4 to 75%, and 5 to 100%.
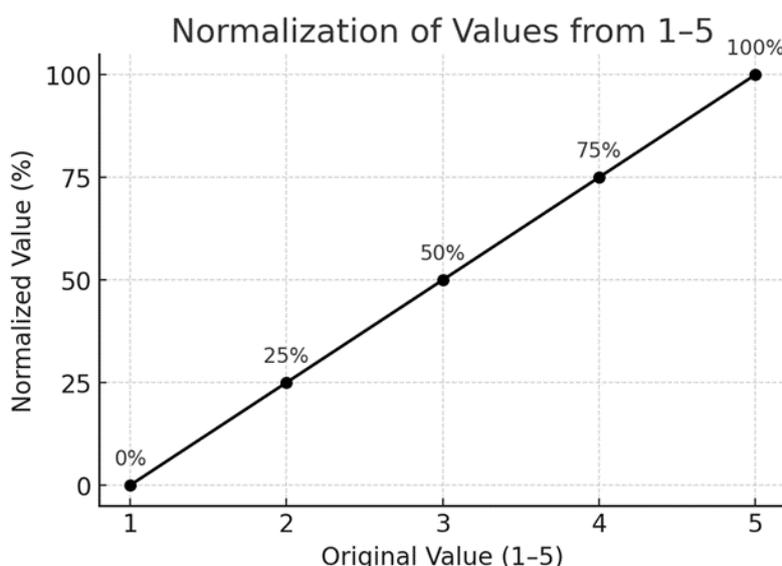

Figure 2. Normalization of the indicators assessed on a 1-5 scale, the result is a score between zero and 100%

Similarly, the defined minimum and maximum values allowed a normalisation for each indicator.

In case of data gaps, a default value of 30% was assumed for the indicator. If the value was below the defined minimum or above the defined maximum, it was set to zero or 100%, respectively.

2.3   Aggregation

After the normalisation of each indicator between zero and 100%, indicators (Level 5) under one sub-goal were averaged to give the score of the sub-goal (Level 4). The sub-goals of Level 4 were averaged to give the sub-goal scores for Level 3. The sub-goals from Level 3 were averaged to give the sub-goal scores for Level 2. These were then averaged to give the score of the overall

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goal in Level 1, *High national readiness for the bioeconomy.* The following formula for weighted average was applied for all aggregations:

$$Score\ at\ higher\ level = \sum_{i=1}^{n}(Score\ at\ lower\ level\ i \times w\ i)$$

The weights were set to give all indicators and sub-goals the same relative importance. For example, if four indicators are aggregated, each has a weight of 25%.

2.4   Data pre-processing

For some indicators, the country input data was pre-processed before normalisation. This was done to allow for better results comparison.

For some of the biomass indicators, an optimal range was defined. Values within that range led to a higher score, while values below or above the optimal range led to a lower score. Figure 3 illustrates the scoring for indicators B1.10[1] and B1.11[2] as examples. The score of 1-5 was then taken as input for the normalisation.
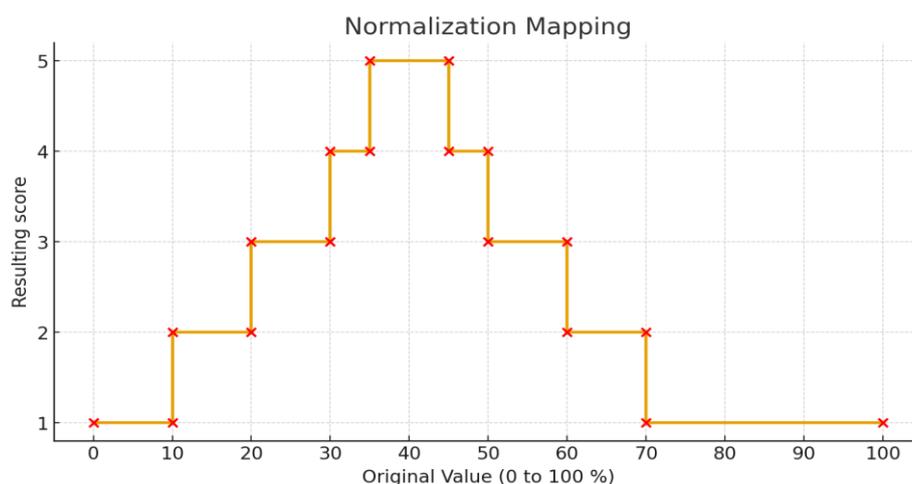

Figure 3. Illustration of the data pre-processing for indicators B1.10 and B1.11

This pre-processing was applied to a total of six indicators: B1.10, B1.11, B1.12, B2.9, B2.10, and B2.11 because for these indicators, *more* does not equal *better*. Instead, the optimal range was defined as receiving the highest score, while values outside the optimal range are assigned a lower score.

For the competencies' indicators, the number of biorefineries (indicators T.3 and T.4) and value chains (indicator E.7) were divided by country area. In an analogous way, the number of R&D projects (indicator T.5), bioeconomy patents (T.7), value added (E.1), and turnover (E.2) were

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[1] Share of agricultural biomass of total biomass production
[2] Share of woody biomass of total biomass production

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divided by a country's Gross Domestic Product (GDP) before normalisation. This pre-processing allowed for comparability of values across countries, which would have been difficult when working with the absolute raw values.

2.5 List of indicators with min/max values

Taking into account the data pre-processing for some indicators, the following min/max values were used as boundaries for the normalisation.

Table 1. List of min/max values of all indicators in the assessment framework

Indicator	Min	Max	Comment
B1.1	0	5.80	
B1.2	0	1.75	
B1.3	0	0.35	
B1.4	0	10	
B1.5	0	4.5	
B1.6	0	4.3	
B1.7	-1	1	
B1.8	-0.5	1	
B1.9	-0.25	0.25	
B1.10	1	5	5 for 35% - 45%, 4 for 30%-35% and 45% to 50%, 3 for 20% - 30% and 50% - 60%, 2 for 10% - 20% and 60%-70% and 1 for 0 - 10% and 70% to 100%
B1.11	1	5	5 for 35% - 45%, 4 for 30%-35% and 45% to 50%, 3 for 20% - 30% and 50% - 60%, 2 for 10% - 20% and 60%-70% and 1 for 0 - 10% and 70% to 100%
B1.12	1	5	5 for 20% - 25%, 4 for 15%-20% and 25% to 30%, 3 for 10% - 15% and 30% - 40%, 2 for 5% - 10% and 40%-50% and 1 for 0 - 5% and 50% to 100%
B1.13	-1	0.5	
B1.14	25	0	
B1.15	500	0	
B1.16	-0.1	0.5	
B2.1	0	3500	
B2.2	0	1300	
B2.3	0	2000	
B2.4	0	600	
B2.5	0	350	
B2.6	0	380	
B2.7	0	45	

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B2.8	0	800	
B2.9	1	5	5 for 35% - 45%, 4 for 30%-35% and 45% to 50%, 3 for 20% - 30% and 50% - 60%, 2 for 10% - 20% and 60%-70% and 1 for 0 - 10% and 70% to 100%
B2.10	1	5	5 for 35% - 45%, 4 for 30%-35% and 45% to 50%, 3 for 20% - 30% and 50% - 60%, 2 for 10% - 20% and 60%-70% and 1 for 0 - 10% and 70% to 100%
B2.11	1	5	5 for 35% - 45%, 4 for 30%-35% and 45% to 50%, 3 for 20% - 30% and 50% - 60%, 2 for 10% - 20% and 60%-70% and 1 for 0 - 10% and 70% to 100%
B3.1	1	3	
B3.2	1	3	
B3.3	1	3	
B3.4	1	3	
B3.5	1	3	
B3.6	1	3	
B3.7	1	3	
B3.8	1	3	
S.1	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.2	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.3	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.4	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.5	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.6	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.7	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].

S.8	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
S.9	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
T.1	0%	50%	Values were set based on the recent material flow accounts in the EU (Eurostat, 2025e). The recorded min was 5.16% for Latvia and the max was 41.04% for the Netherlands. The min. was set to 0 and max. to 50% assuming a country may have a maximum fossil-based material flow of 50% to include all the input values.
T.2	0%	35%	Values were set based on the recent circular material use rate in the EU (Eurostat, 2025b). The recorded min. was 1.3% for Romania and the max. was 30.6% for the Netherlands. The min. was set to 0 and max. to 35% to include all the values in all scenarios.
T.3	0	0.0005	Values were calculated by dividing the reported value by land area. Raw data was sourced from (Eurostat, 2025a). The calculated min. from the country input data was 0.000042 and max. was 0.00047. The min. was set to 0 and max. to 0.0005 to include all input values.
T.4	0	0.0005	Values were calculated by dividing the reported value by Land Area. Raw data was sourced from (Eurostat, 2025a). The calculated min. from the country input data was 0.000021 and max. was 0.00049. The min. was set to 0 and max. to 0.0005 to include all input values.
T.5	0	0.00025	Values were calculated by dividing the reported value by GDP. Raw data was sourced from (Eurostat, 2025d). The calculated min. from the country input data was 0.000023 and max. was 0.00019. The min. was set to 0 and max. to 0.00025 to include all input values.
T.6	0%	4%	Values were set based on the Gross Domestic Expenditure on R&D (GERD) in the EU (Eurostat, 2025c). The recorded min. was 0.52% for Romania and the max. was 3.6% for Sweden. The min. was set to 0 and max. to 4% to include all input values.

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T.7	0	0.003	Values were calculated by dividing the reported value by GDP. Raw data was sourced from (Eurostat, 2025d). The calculated min. from the country input data was 0.0000031 and max. was 0.00296. The min. was set to 0 and max. to 0.003 to include all input values.
T.8	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
T.9	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
T.10	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
T.11	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
E.1	0	0.12	Values were calculated by dividing the reported value by GDP. Raw data was sourced from (Eurostat, 2025d). The calculated min. from the country input data was 0.0368 and max. was 0.09776. The min. was set to 0 and max. to 0.12 to include all the input values.
E.2	0	350	Values were calculated by dividing the reported value by GDP. Raw data was sourced from (Eurostat, 2025d). The calculated min. from the country input data was 137.56 and max. was 320. The min. was set to 0 and max. to 350 to include all the input values.
E.3	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
E.4	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
E.5	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
E.6	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].

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E.7	0	0.008	Values were calculated by dividing the reported value by Land Area. Raw data was sourced from (Eurostat, 2025a). The calculated min. from the country input data was 0.00004 and max. was 0.00774. The min. was set to 0 and max. to 0.008 to include all the input values.
E.8	1	5	Values were assigned based on a qualitative assessment scale where 1 represents [Lowest performance/Worst state] and 5 represents [Highest performance/Best state].
E.9	0	0.001	Values were calculated by dividing the reported value by Land Area. Raw data was sourced from (Eurostat, 2025a). The calculated min. from the country input data was 0.000016 and max. was 0.00094. The min. was set to 0 and max. to 0.001 to include all the input values.

2.6   Framework application: assessment of country inputs

D3.1 describes in detail the development of a Guideline (available on Sharepoint upon request) to support indicator assessment, as well as its test application and subsequent revision. The revised Guideline was shared with all countries to commence the **indicator assessment phase**. During that phase, support was provided in the form of regular online consultation meetings as well as review of initial results. Each country collected their input for the *status quo* assessment in a standardised Excel template (D3.1, Appendix 1) with shared access between all project partners. The Excel sheet not only contained an empty field for the input value, but also space for providing explanations, consulted materials, calculations, and an estimation of data quality regarding data currency, reliability, and consistency.

After receiving the country inputs and defining the min/max values for all indicators, the AHP framework was applied to assess the *status quo* of all sub-goals for each country, as well as the overall Level 1 goal, *high national readiness for the bioeconomy*. In practice, a tool developed by DBFZ for AHP goal systems was applied to perform the normalisation and aggregation. For this, country input data was converted to Java Script Object Notation (.json) files. Since the tool was developed in JavaScript, the json format is the most compatible data manipulation format. The tool outputs were downloaded as csv files and consolidated into Excel sheets. These results were reflected back to the countries and were used as a baseline for the **development of desired levels** for each indicator for the year 2030. In practice, templates were provided to all countries with the *status quo* input and output data, an empty field for the desired level of the indicator (before normalisation), and an empty field for providing explanations for the chosen desired level. An empty template is available in Appendix 1. The desired levels were delivered by the HUB Coordinators after revision of strategic national documents like national

bioeconomy strategies and consultation with HUB experts. The consultation took a variety of forms, including interviews, written consultation, surveys, and workshops.

In parallel, countries were given the opportunity to derive from the default weights and apply a **prioritisation** to all sub-goals, i.e., Levels 1 to 4 of the goal tree. A template was provided to HUB Coordinators for assigning new weights to the sub-goals. An empty template is available in Appendix 2. Seven countries set individual priorities for their respective bioeconomies (Croatia, Czechia, Estonia, Lithuania, Poland, Romania, and Slovenia; cf. Chapter 3.1 *Country input data and data gaps*). An overview of country inputs is given in Table 2. For the following gap analysis, the prioritized assessment framework version was applied for these seven countries, thus replacing the results generated with default weights.

For each country, the *status quo* and desired level was assessed for all indicators, sub-goals, and the overall goal (Levels 1-5). In practice, the tool developed by DBFZ for AHP goal systems was applied to perform the normalisation and aggregation and give the results as .json tables. This also involved data validation such as checking for correct units, outlier detection, consistency and completeness. The results were used to perform a **gap analysis** by displaying the *status quo* against the desired level (cf. Chapter 3.3 *Country assessment results of the status quo and desired levels of the bioeconomy readiness*).

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3   Results

This chapter starts with an overview of country input data and data gaps, followed by the results of the goal prioritisation performed by the countries. Next, country results on the *status quo* as well as desired levels will be presented reflecting the goal prioritisation. If no prioritisation was possible, non-weighted values are presented. The full set of input and output data is available in the Appendix 3, 4, and 5 (Table 3, Table 4, Table 5).

3.1   Country input data and data gaps

Table 2 gives an overview of input data and data gaps by country. An available dataset is marked with *yes*, while *no response* indicates that no dataset has been submitted. In the case of *no data*, further explanations are provided below.

Table 2. Overview of country input data and data gaps

Country	Status quo	Desired levels	Prioritisation
Bulgaria*	Yes	Yes	No data
Croatia	Yes	Yes	Yes
Czechia	Yes	Yes	Yes
Estonia	Yes	Yes	Yes
Hungary	Yes	No response	No response
Latvia**	Yes	No data	No data
Lithuania	Yes	Yes	Yes
Poland	Yes	Yes	Yes
Romania	Yes	Yes	Yes
Slovakia	Yes	No response	No response
Slovenia	Yes	Yes	Yes

*For Bulgaria, no prioritisation was necessary. Therefore, the non-prioritised values were the basis for analysis.

**For Latvia, it was not possible to define desired indicator levels for 2030 at this stage of the project. Consultations with national stakeholders did not result in agreed target values, as discussions on the selection, structure, and role of bioeconomy indicators are still ongoing. The absence of desired levels

for Latvia is reported as a data gap reflecting the current state of policy development rather than a limitation of the analytical framework.

3.2 Goal prioritisation results

The following countries have performed a prioritisation of goals and sub-goals: Croatia, Czechia, Estonia, Lithuania, Poland, Romania, and Slovenia. The full dataset for each country is available in the Appendix 2 (Table 4). The following three charts (Figure 3, Figure 4, and Figure 5) highlight the priorities set by countries at the higher levels of the goal tree (cf. Figure 2).
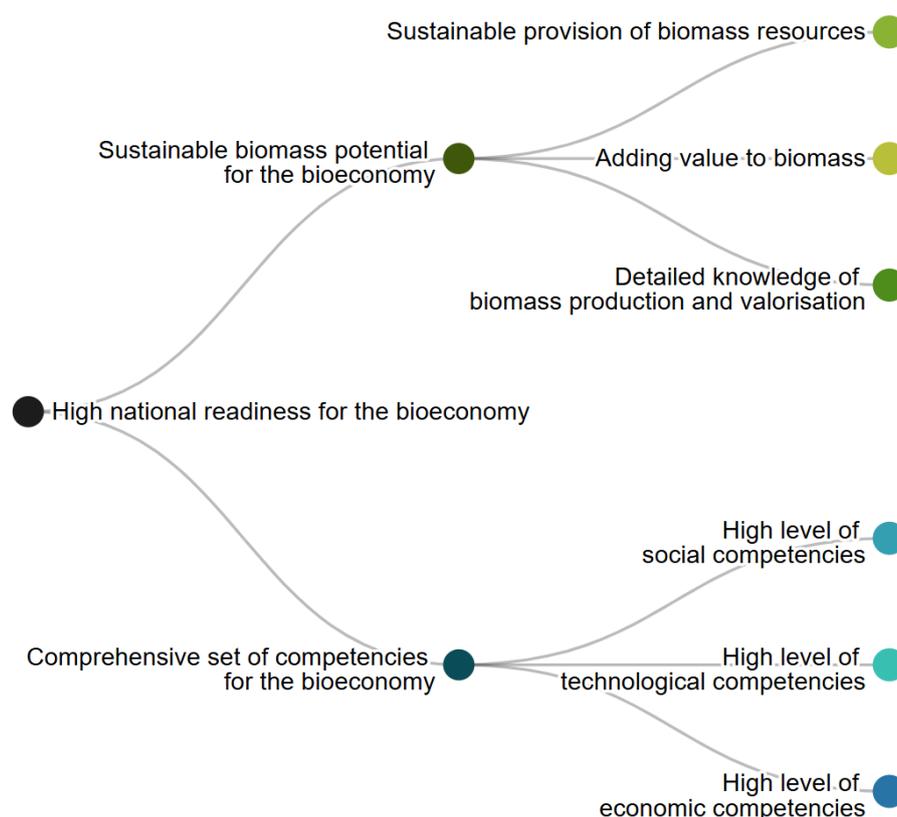
Figure 2. Level 1-3 goals of the AHP assesment framework

Starting from the Level 1 goal, Figure 3 presents the prioritisation results for the two Level 2 sub-goals. The *non-PR* values refer to the non-prioritized default of 50% weight for each of the two sub-goals. For each country, the values for the two sub-goals sum to 100%. Only one country (Estonia) choses the default 50/50 split. For three countries, the biomass potential has a slightly higher weight of up to 60% in reaching a high national bioeconomy readiness. The three remaining countries give a slightly higher weight of up to 60% to a comprehensive set of competencies.
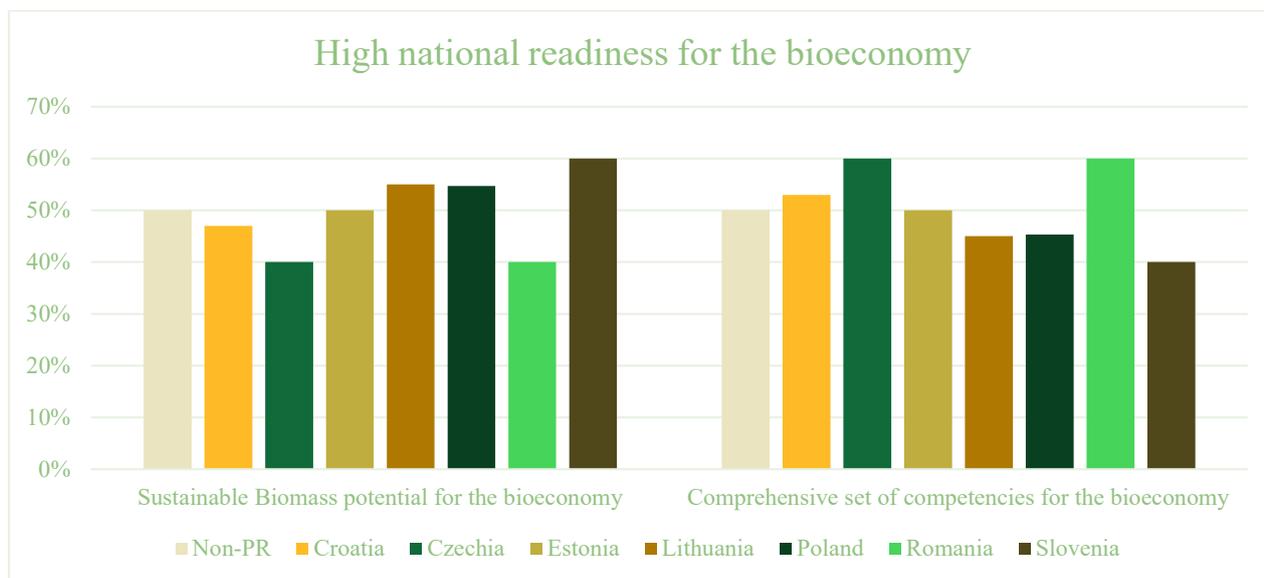
Figure 3. Prioritisation results for the Level 1 goal high national readiness for the bioeconomy

Having a closer look at the two Level 2 sub-goals, Figure 4 presents the results for the Level 3 sub-goals under the Level 2 sub-goal *sustainable biomass potential for the bioeconomy.* Again, the *non-PR* values refer to the non-prioritised default. Most countries slightly prioritise the sub-goal *sustainable provision of biomass resources*, with six out of seven countries choosing a value equal to or higher than the non-PR default. This goes at the expense of the sub-goal *detailed knowledge of biomass production and valorisation*, which receives an equal to or lower weight than the non-PR default by six countries.
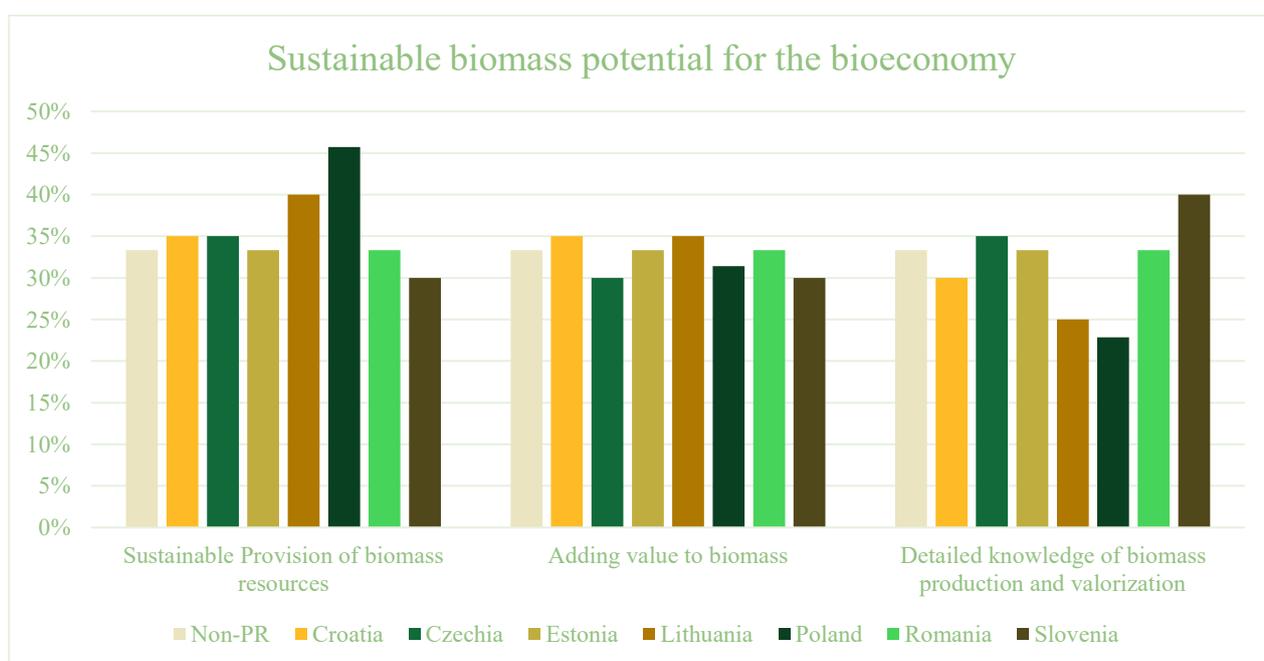
Figure 4. Prioritisation results for the Level 2 goal sustainable biomass potential for the bioeconomy

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Moving to the second Level 2 sub-goal, Figure 5 presents the results for the Level 3 sub-goals under the Level 2 sub-goal *comprehensive set of competencies for the bioeconomy*. Again, the *non-PR* values refer to the non-prioritised default. From the 33% default, countries assign values between 25% and 40% for the different Level 3 sub-goals. A high level of technological competencies is largely weighted higher, at the expense of social competencies which are weighted equal to or lower than the default by six out of seven countries.
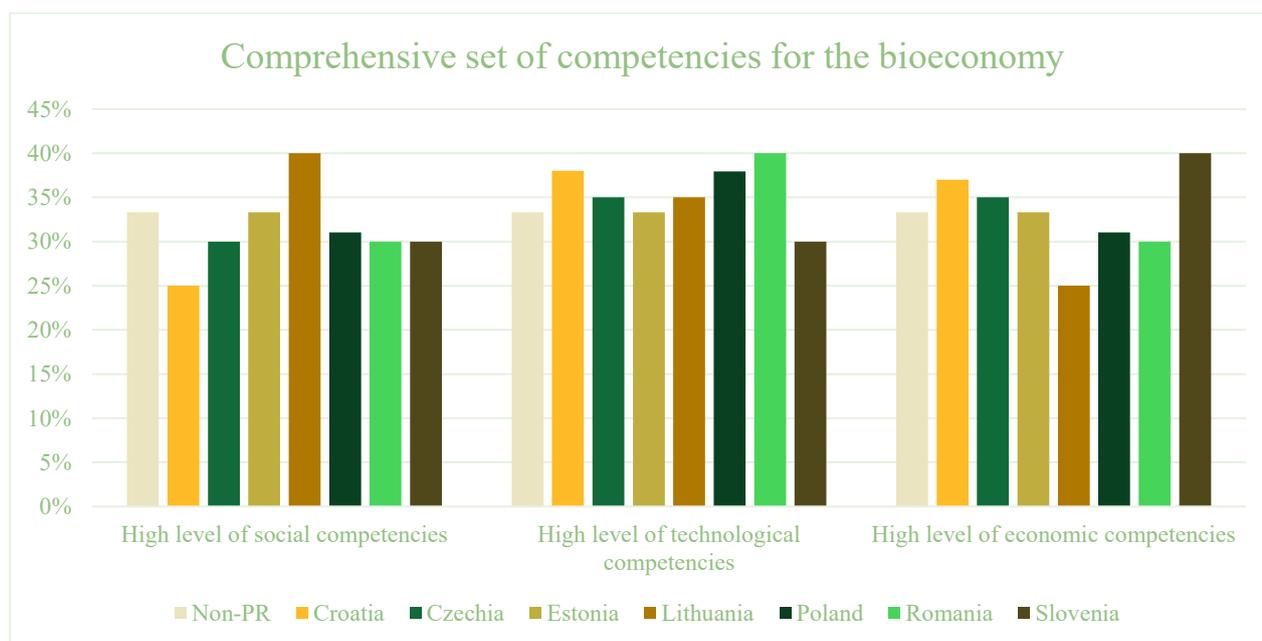
Figure 5. Prioritisation results for the Level 2 goal comprehensive set of competencies for the bioeconomy

3.3 Country assessment results of the *status quo* and desired levels of the bioeconomy readiness

The following results give an overview of aggregated results per country. All data can be found in Appendix 3 (Table 5).

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Funded by the European Union

3.3.1 Bulgaria

Figure 6 presents the aggregated results of the assessment for Bulgaria. The country has high ambitions in terms of increasing the national readiness for the bioeconomy, from an overall 39% at present to a desired level of 59% in 2030.
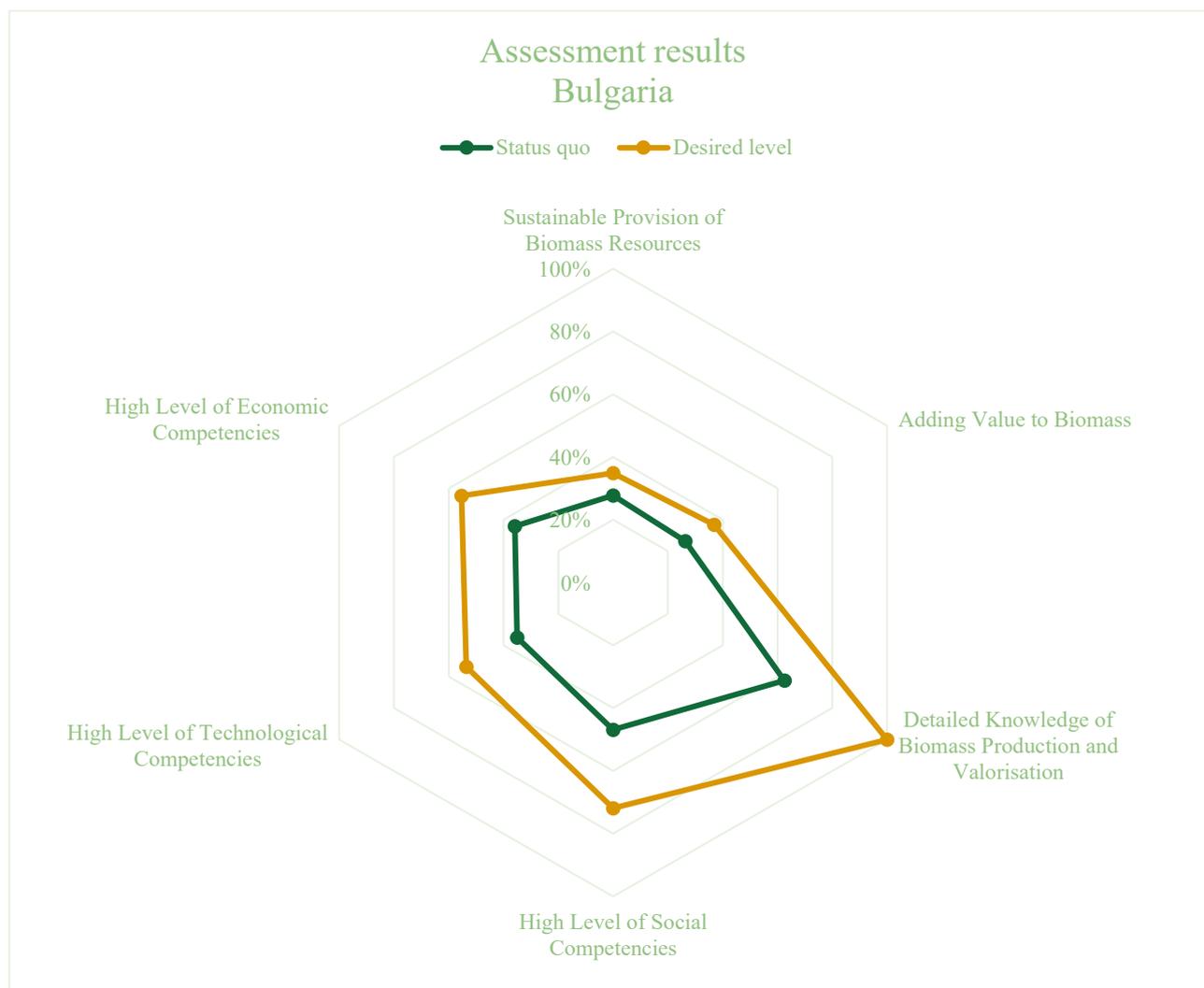
Figure 6. Bulgaria assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

3.3.2 Croatia

Figure 7 presents the aggregated results of the assessment for Croatia. Regarding the overall national readiness for the bioeconomy score, the country aims to increase from a current 35% readiness to a 49% readiness in 2030.

Figure 7. Croatia assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

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3.3.3 Czechia

Figure 8 presents the aggregated results of the assessment for Czechia. Currently, the overall national readiness for the bioeconomy is at 44%, with an ambitious desired increase to 69% by 2030 achieved by increases across all Level 3 sub-goals.

Figure 8. Czechia assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

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3.3.4 Estonia

Figure 9 presents the aggregated results of the assessment for Estonia. Overall, the national readiness for the bioeconomy is 41%, with a desired 52% readiness level in 2030. Main ambitions for increase, as can be drawn from the figure, are in the areas of knowledge on biomass production and valorisation, as well as social competencies.

Figure 9. Estonia assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

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3.3.5 Hungary

Figure 10 presents the aggregated results of the assessment for Hungary. Currently, the overall national readiness for the bioeconomy is 34%.
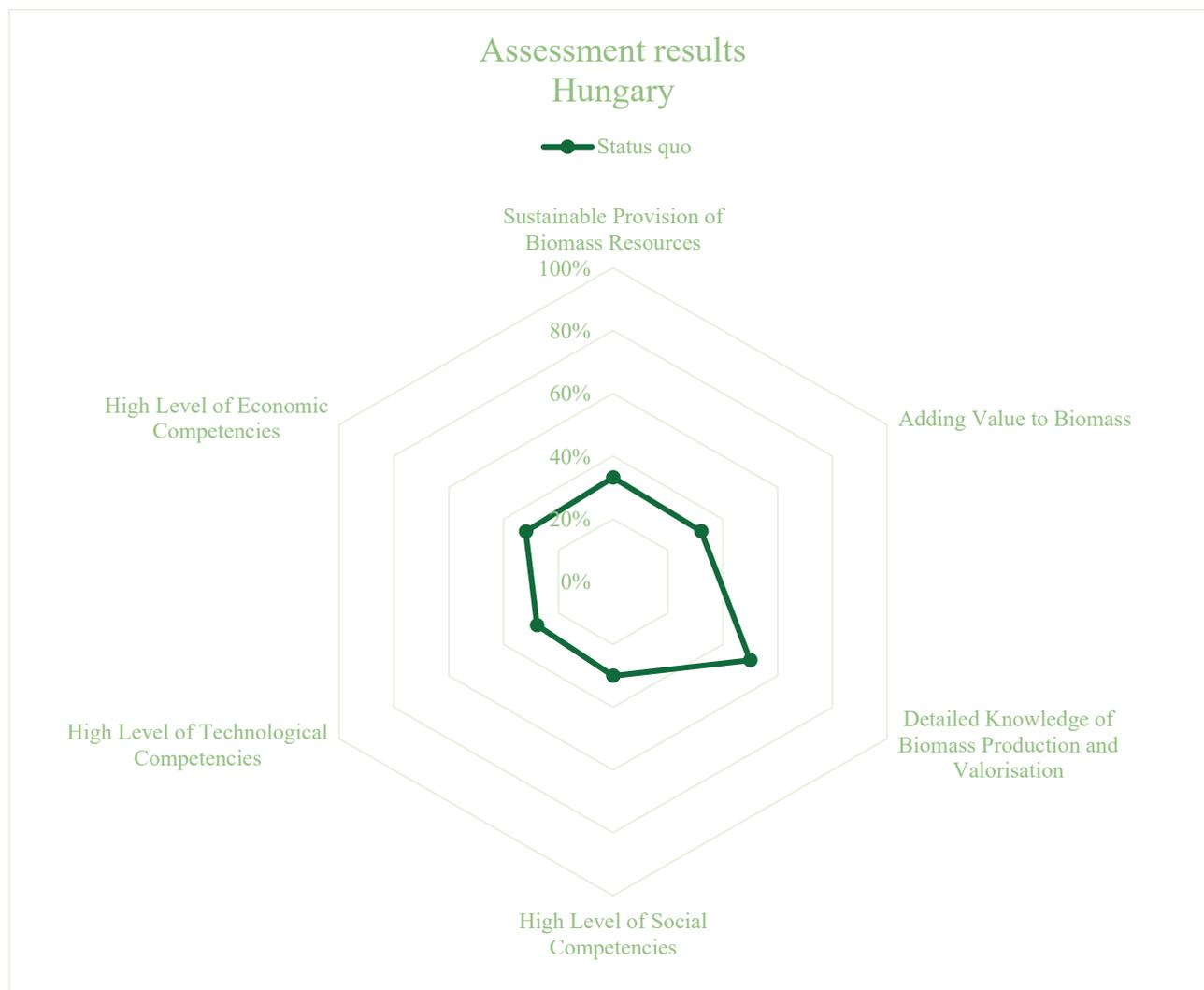
Figure 10. Hungary assessment results for the status quo *(displayed on Level 3 of the assessment framework)*

3.3.6 Latvia

Figure 11 presents the aggregated results of the assessment for Latvia. Currently, the overall national readiness for the bioeconomy is 42%.
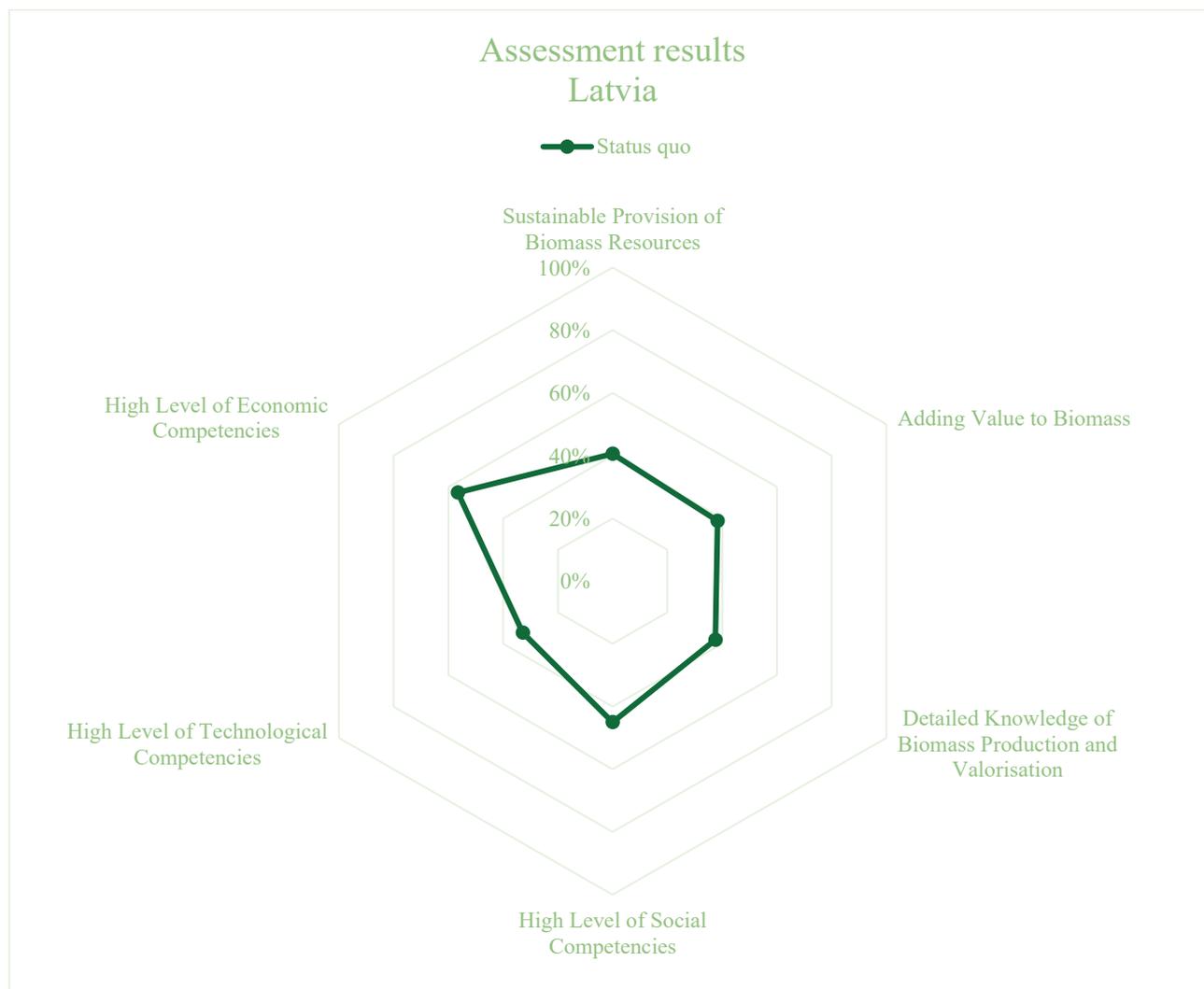
Figure 11. Latvia assessment results for the status quo *(displayed on Level 3 of the assessment framework)*

3.3.7 Lithuania

Figure 12 presents the aggregated results of the assessment for Lithuania. Overall, the country aims to increase from a current 47% national readiness for the bioeconomy to 70% in 2030, with desired increases in all Level 3 sub-goals.

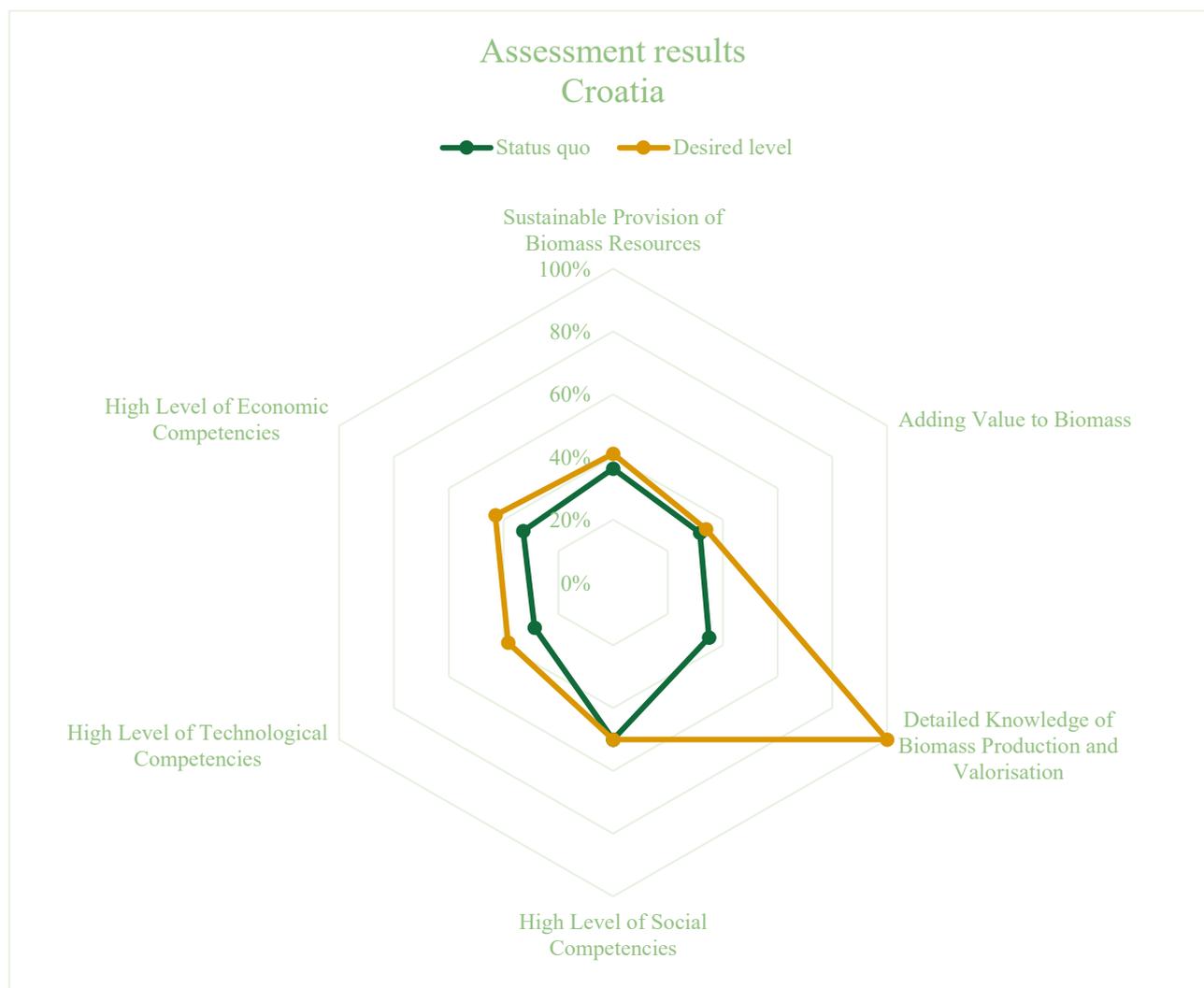*Figure 12. Lithuania assessment results for the* status quo *and desired levels (displayed on Level 3 of the assessment framework)*

Figure 13 presents the aggregated results of the assessment for Poland. The overall national readiness for the bioeconomy is currently at 41%, with a desired increase to 53% in 2030.

Figure 13. Poland assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

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3.3.9 Romania

Figure 14 presents the aggregated results of the assessment for Romania. Overall, the country aims to increase from a current 32% national readiness for the bioeconomy to 47% in 2030, achieved mainly by increases in the areas of social, technological, and economic competencies.
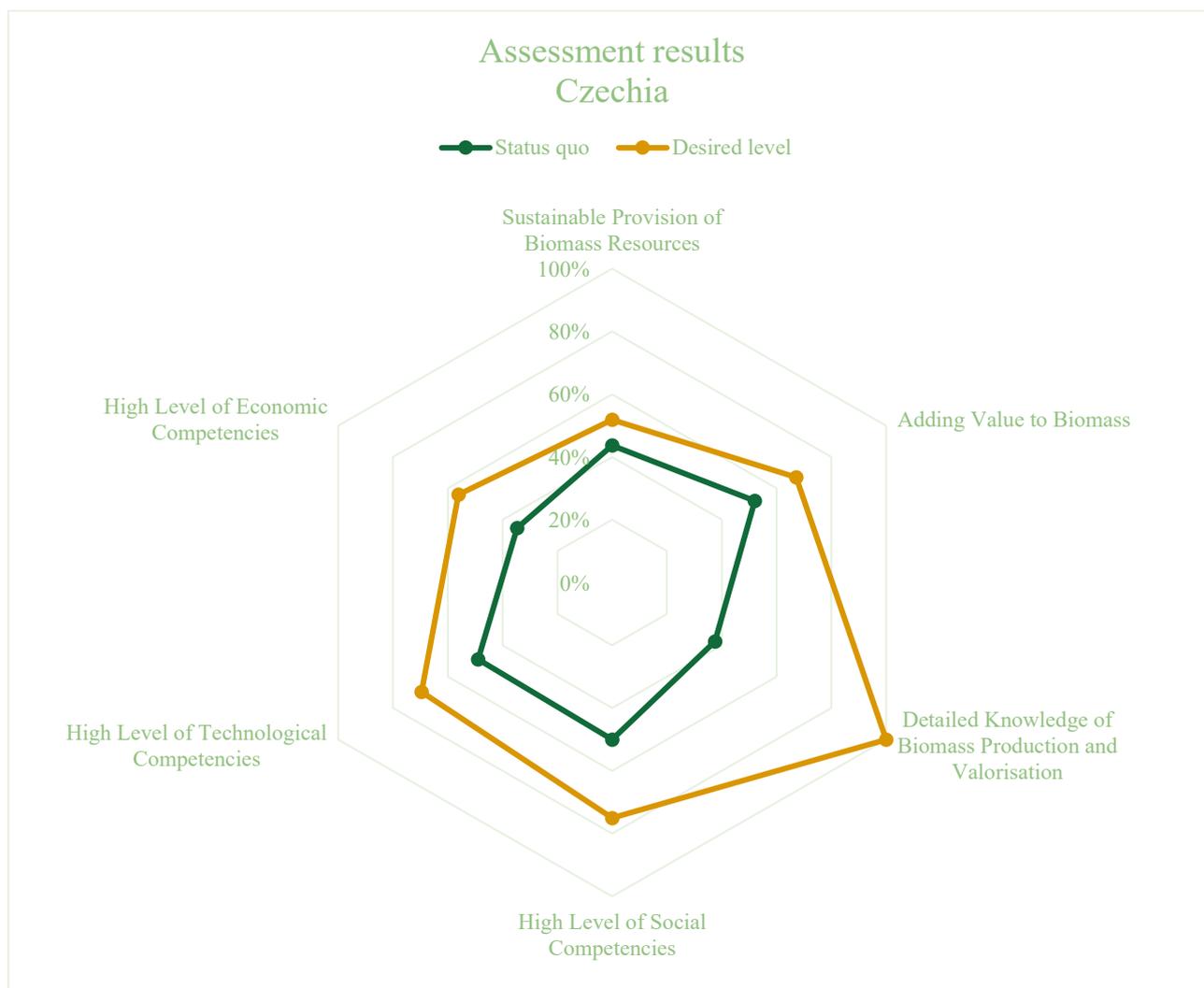

Figure 14. Romania assessment results for the status quo *and desired levels (displayed on Level 3 of the assessment framework)*

3.3.10 Slovakia

Figure 15 presents the aggregated results of the assessment for Slovakia. Overall, the country currently has a 41% readiness for the bioeconomy.
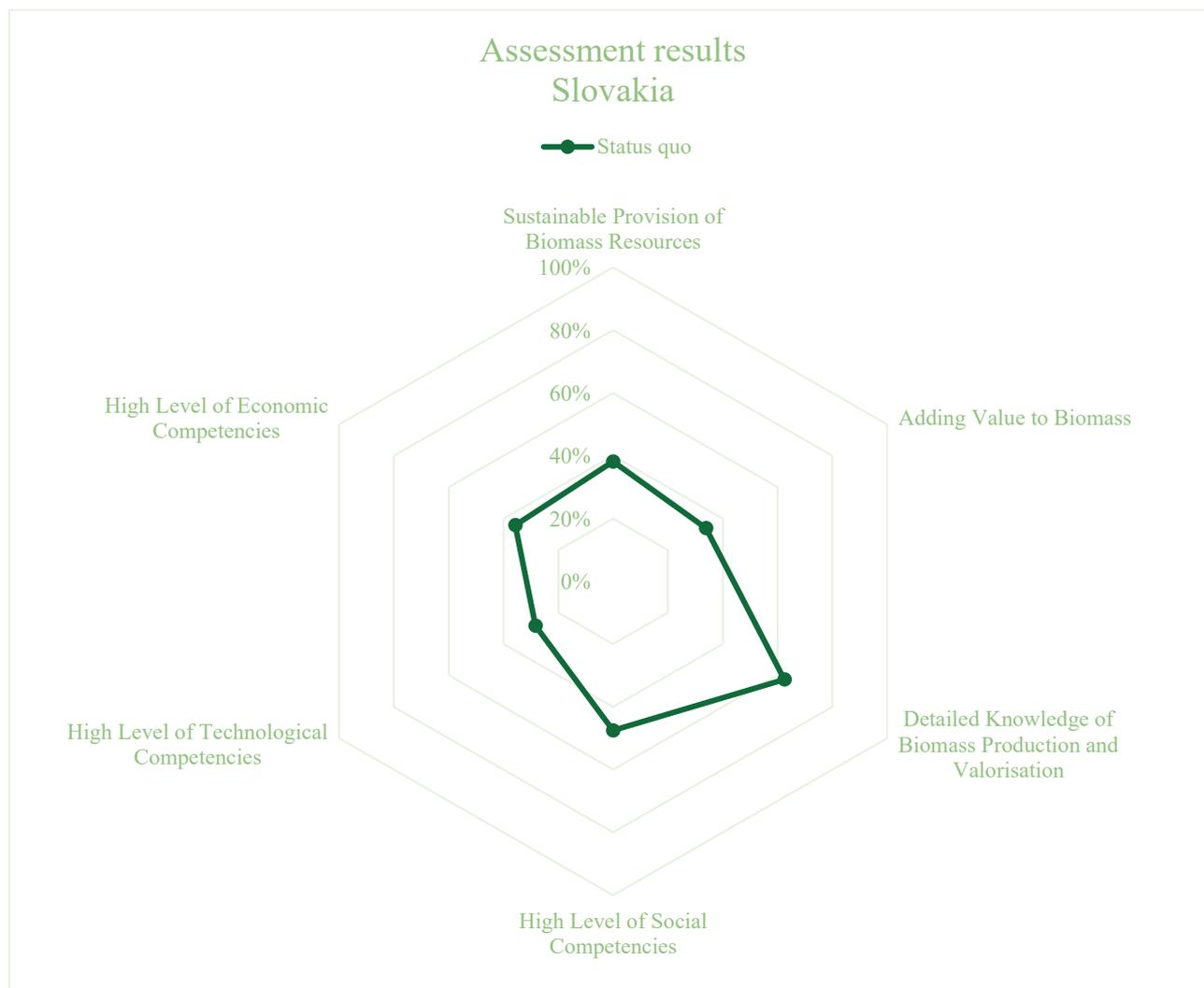
Figure 15. Slovakia assessment results for the status quo *(displayed on Level 3 of the assessment framework)*

3.3.11 Slovenia

Figure 16 presents the aggregated results of the assessment for Slovenia. Overall, the country aims to increase from a current national readiness for the bioeconomy of 52% to 71% in 2030.
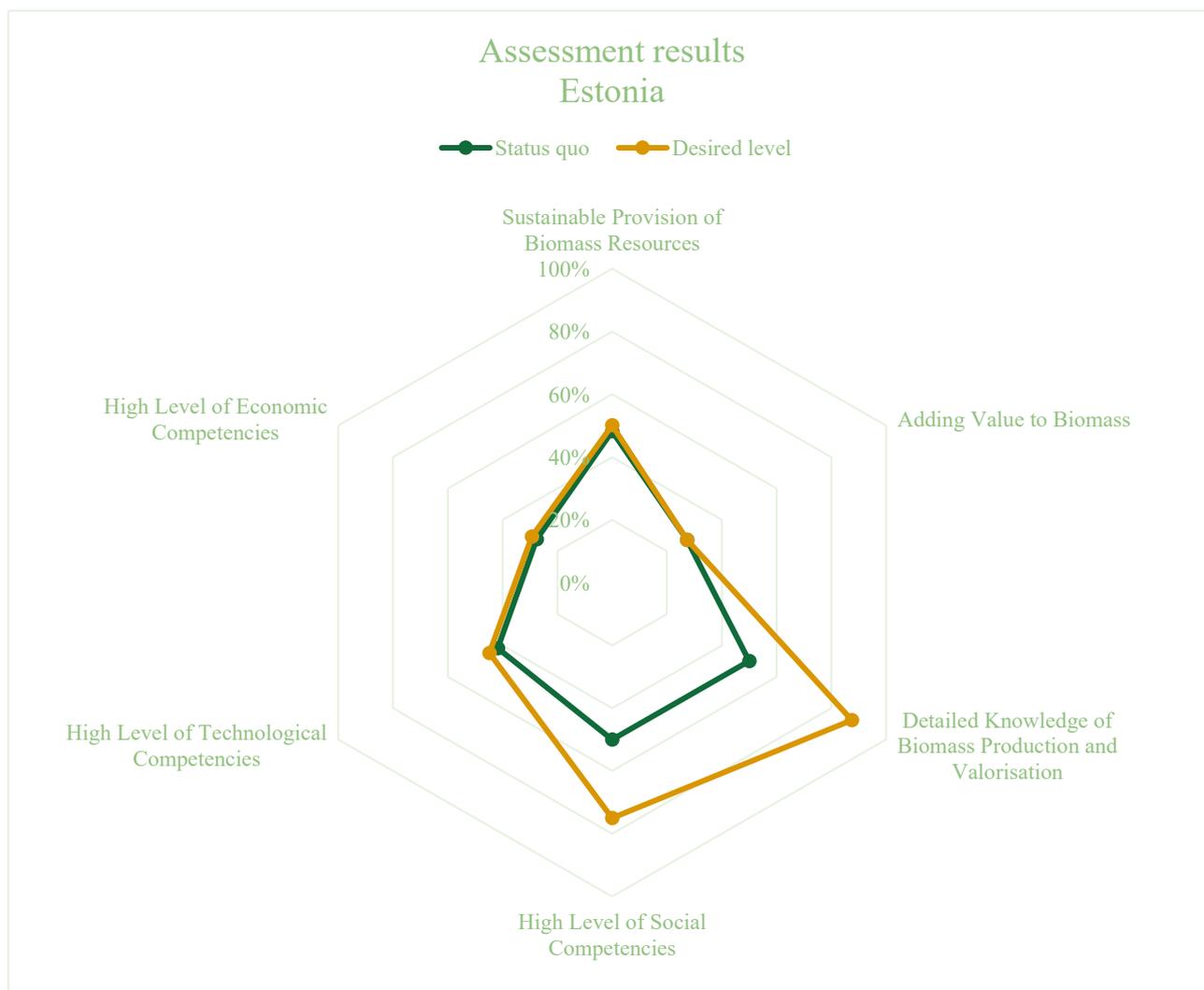

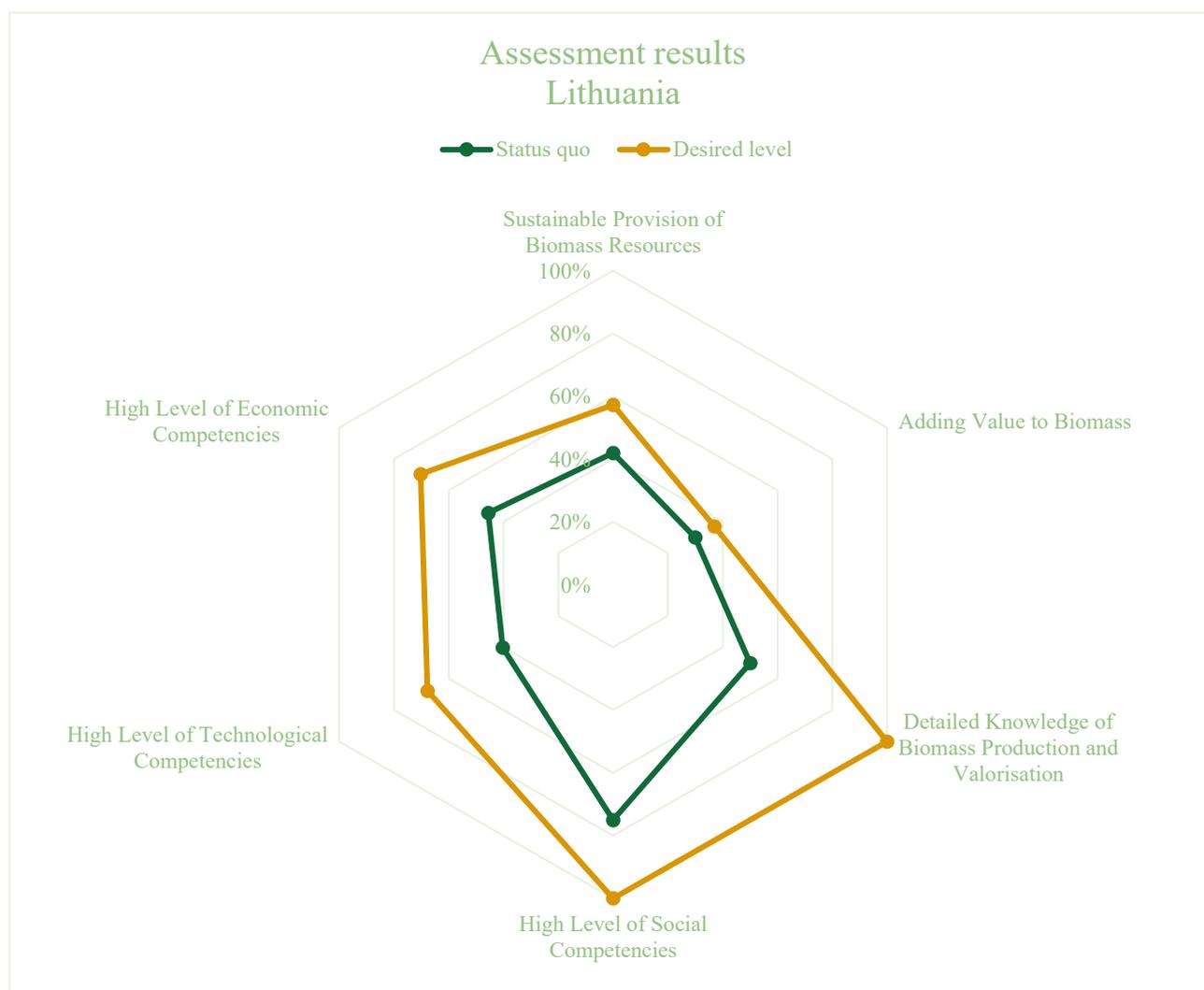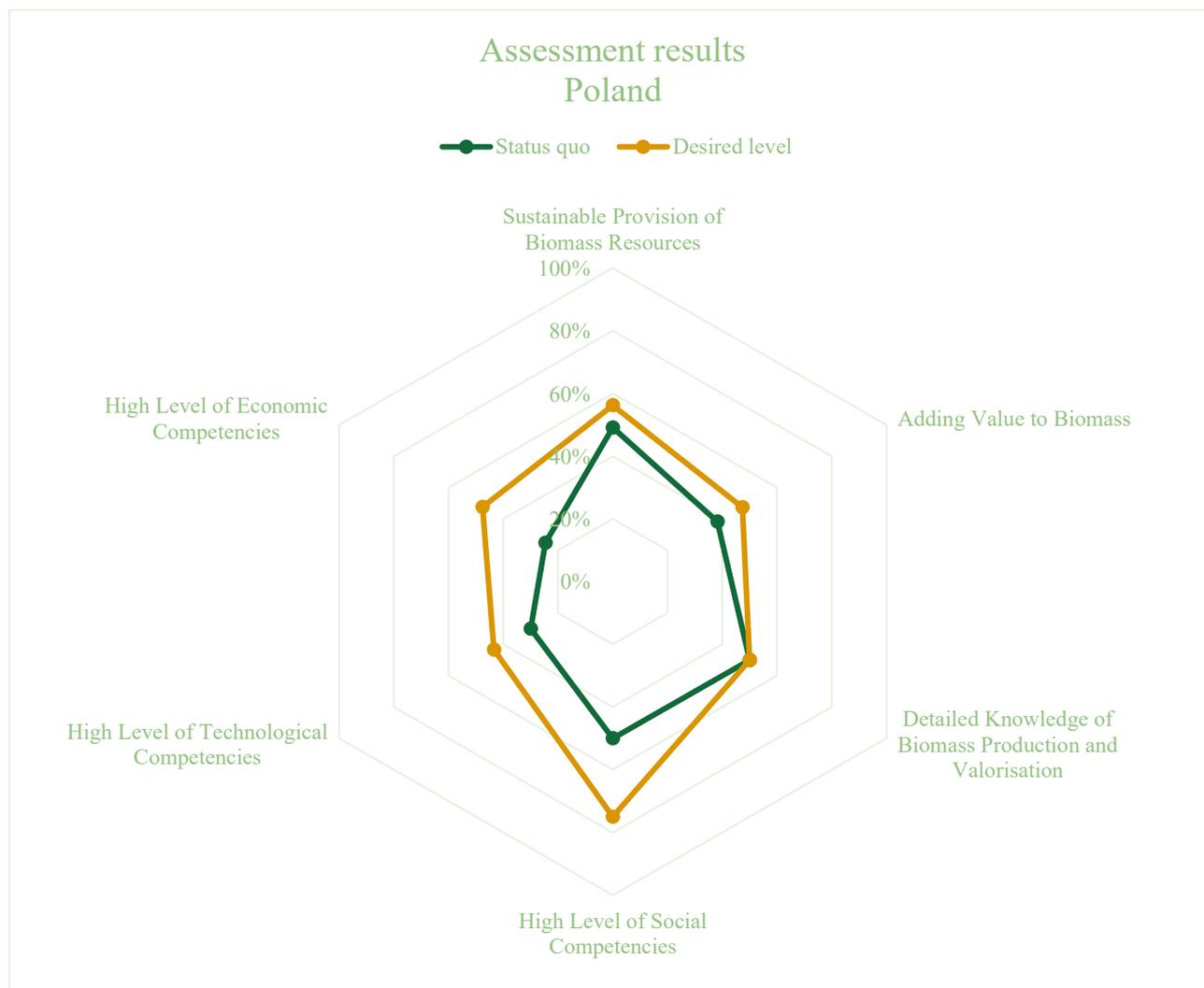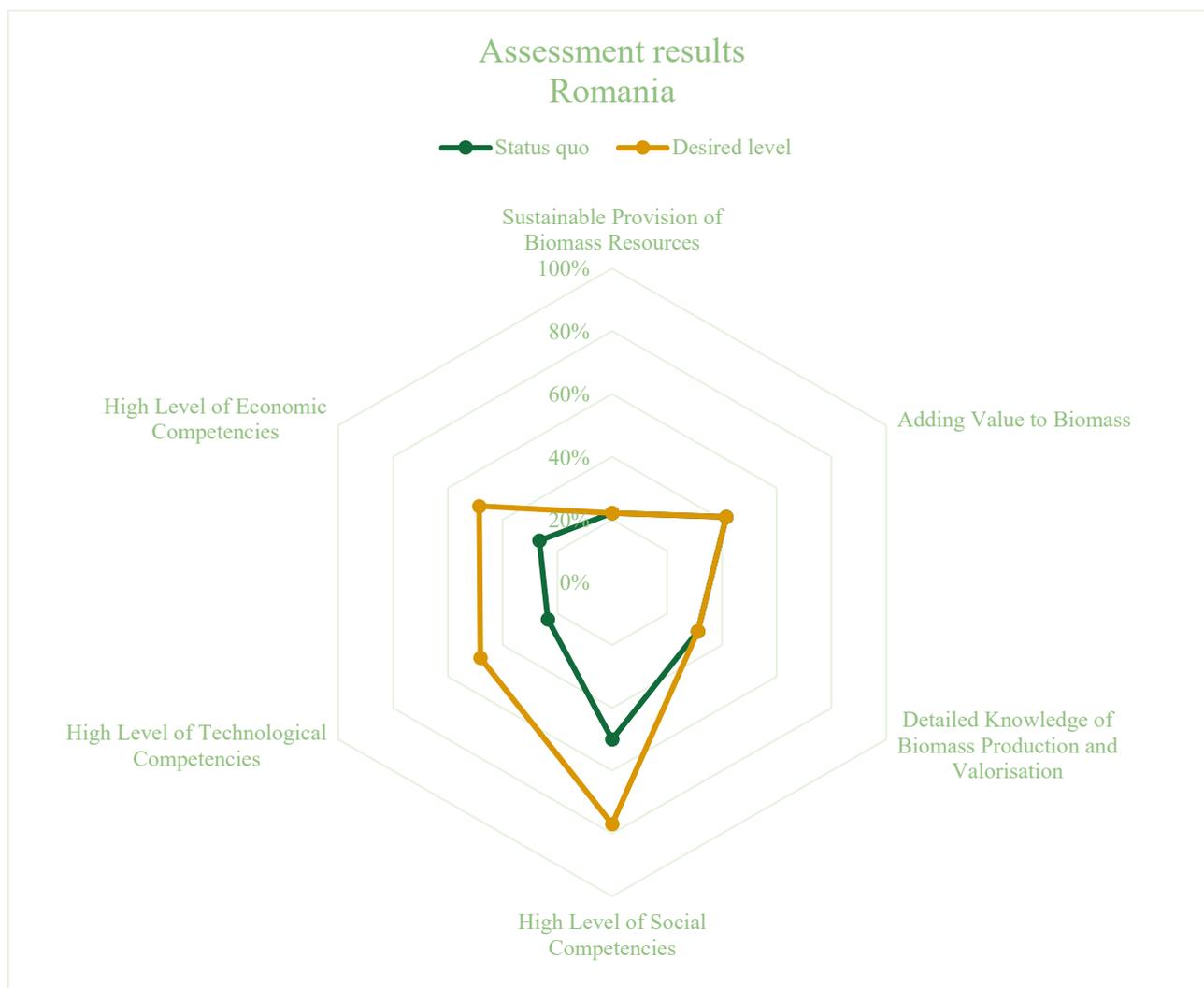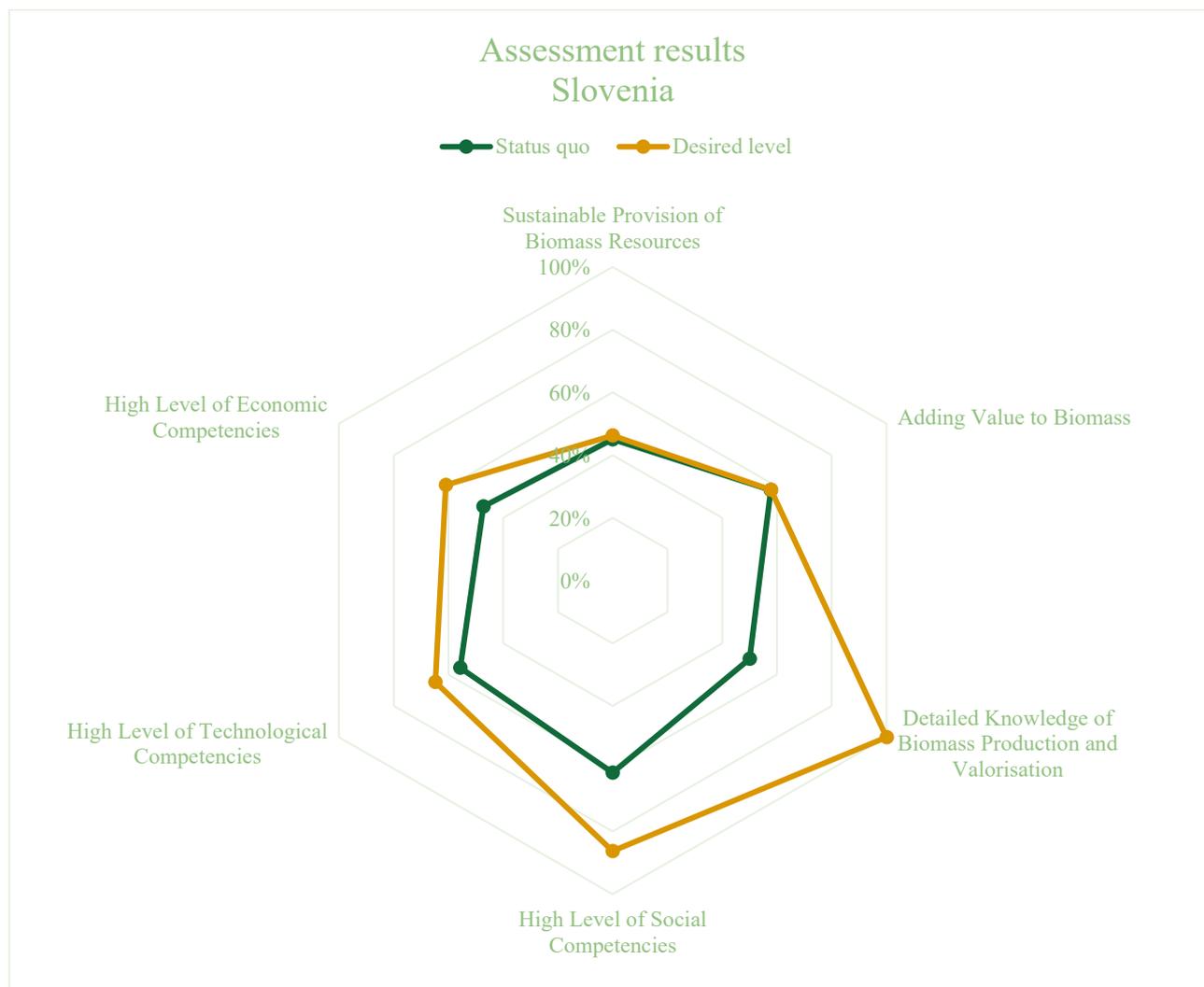*Figure 16. Slovenia assessment results for the* status quo *and desired levels (displayed on Level 3 of the assessment framework)*

4 Discussion

4.1 Recommendations to the current indicator framework

Based on the experience gained during the indicator assessment across the eleven BIOEAST countries, several areas for improvement have been identified regarding both the indicators themselves and the overall structure of the framework. The insights collected throughout this process have highlighted opportunities to enhance the robustness, coherence, and long-term applicability of the indicator system.

4.1.1 Improvements on biomass-related indicators

The current framework still shows limited attention to residual biomass. Given its strategic importance for circular bioeconomy development and resource efficiency, future updates should explicitly integrate residual biomass into the detailed assessment of available biomass resources. This inclusion would not only widen the understanding of resource potential but also align the assessment more closely with circularity principles.

Furthermore, the sub-goal related to the *economic value of bio-based products* should be re-examined. Its current classification under biomass indicators might no longer be appropriate. The indicators contributing to this sub-goal could instead be relocated under the *Economic* domain, particularly within the competencies section, to ensure conceptual consistency between production metrics and economic value creation.

Under the Level 2 sub-goal *Sustainable biomass potential*, additional sustainability aspects could be integrated to provide a more comprehensive evaluation. This includes a stronger consideration of land use and land use change (LULUC), links between biomass production and water utilization, and measures addressing soil erosion and ecosystem maintenance. Moreover, social dimensions should be better reflected, for example through indicators on employment in biomass-producing sectors and proxies for rural income and development. Such additions would help to portray the sustainability of biomass resources not only from an environmental but also from a socio-economic perspective.

4.1.2 Improvements on bioeconomy-related competencies

The experience from the indicator testing also underscored the relevance of social competencies within the bioeconomy. Many national set desired levels emphasised their importance, yet data collection through surveys with individual stakeholders—particularly in public administration and bioeconomy businesses—proved to be resource-intensive and dependent on respondent cooperation. To address this limitation, a long-term strategy should be developed to allow assessment of social competencies through e.g. proxy data. This would improve data consistency over time and enhance comparability across countries.

Incorporating circularity explicitly should go beyond accounting for residual biomass—to include indicators capturing resource recovery, reuse, and cascading use of materials within

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bio-based value chains. This shift would help track progress toward resource efficiency and the reduction of biomass losses throughout the system.

A further refinement involves expanding the granularity of skill categorisation within the bioeconomy sectors. Differentiating competences across major sectoral groups—such as agriculture, forestry, bio-based manufacturing, and bioenergy—would provide a more nuanced understanding of workforce capacities and gaps.

For technological and economic indicators, it would be advantageous to facilitate automatic retrieval and centralised collection of data for indicator scoring. Such an approach could significantly improve the efficiency of large-scale assessments and facilitate regular updates across all participating countries.

Finally, the framework would benefit from the inclusion of new indicators capturing key enabling assets of the bioeconomy. These could include elements such as:

- Infrastructure and logistics (e.g., transport networks, logistics centers, freight density).

- Business consolidation levels in established bioeconomy sectors (e.g., food and feed processing, wood processing, pulp and paper).

- Governance systems, such as policies in place and recognition of the circular bioeconomy in national strategies and initiatives (e.g., Smart Specialisation Strategies, European Structural and Investment Funds (ESIF) programming).

4.2 Limitations

The proposed bioeconomy readiness assessment framework is subject to several limitations that should be acknowledged when interpreting the results. A key constraint relates to data quality and availability, as the framework relies on heterogeneous data sources that vary in completeness, timeliness, and methodological consistency across countries. In some cases, proxy indicators had to be used due to data gaps, which may not fully capture the underlying bioeconomy dimensions. While efforts have been made to ensure transparency and robustness, improvements in data collection and harmonisation might prove beneficial to future iterations of the assessment.

Another limitation concerns the design and application of the scoring system, including decisions on indicator selection, weighting, and aggregation. Although the scoring approach was developed to balance scientific rigor with ease of use, such choices inevitably introduce a degree of subjectivity that may influence comparative outcomes. The pre-processing of indicator values at country level also represents a constraint, as it may mask national variations and regional specificities relevant to bioeconomy development.

From a conceptual perspective, the assessment method relies to a significant extent on inputs provided or validated by countries, which can introduce inconsistencies linked to differing

capacities, interpretations, and levels of engagement. Finally, these methodological limitations highlight the need to interpret the results as indicative rather than definitive, and to view the framework as an evolving tool that can be refined through continued stakeholder feedback and empirical testing.

5   Conclusion

The AHP indicator assessment framework provides a structured approach for assessing the national readiness for the bioeconomy in BIOEAST countries. By integrating key dimensions – social, technological, economic competencies, and biomass potential – the framework offers a comprehensive tool for national HUBs to identify strengths, gaps, and opportunities in their bioeconomy landscapes. The integration of both quantitative and qualitative indicators strengthens the capacity to measure bioeconomy readiness beyond simple economic metrics, incorporating aspects such as workforce skills, technological innovation, and environmental sustainability.

Defining sub-goals within the multilevel framework allowed countries to conduct consistent evaluations while also reflecting country-specific nuances. The tailoring to national priorities was enhanced by assigning country-specific weights to the sub-goals, thus increasing the policy relevance of the results in national discourses. The participatory process used to perform the assessment ensured that it is relevant, feasible, and aligned with national and macro-regional needs.

Building on this assessment framework, desired levels for bioeconomy readiness in 2030 were defined, providing a forward-looking benchmark against which current performance could be evaluated. Applying the framework to both the *status quo* and the 2030 targets enabled a clear visualisation of the gap between present conditions and long-term ambitions, thereby highlighting priority areas for intervention. The gap analysis revealed a consistent ambition among all assessed countries to improve performance in nearly all sub-goals, indicating an overall positive and upward trend in bioeconomy readiness. This analysis supports strategic planning by illustrating where policy efforts, investments, and capacity-building measures are most needed to accelerate the transition towards a mature and resilient bioeconomy by 2030.

Looking ahead, the BOOST4BIOEAST indicator framework results will support multiple strategic objectives within the project. The results from the indicator assessments will directly inform national bioeconomy action plans, contribute to gap analyses, and provide critical insights for policymakers. The direct applicability of results was ensured by selecting 2030 as a target year for desired values, which is in line with the action plans developed within BOOST4BIOEAST. Furthermore, the structured methodology and the possibility to set country-specific priorities within the framework enables continuous monitoring and future refinements, ensuring that the framework remains relevant as the bioeconomy evolves.

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The framework represents a significant advancement in the systematic assessment of bioeconomy readiness in the BIOEAST macro-region. By equipping national HUBs with the necessary tools and methodologies, it fosters data-driven decision-making and supports the transition toward a more sustainable, resilient, and competitive bioeconomy in the macro-region.

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7 Appendix

Appendix 1. Desired levels template

Indicator	Indicator Name	Current Value	Unit	Normalized Score	Desired Value	Unit	Explanation for the desired value
B1.1	B1.1 Annual agricultural biomass production per total land area		t/ha/yr			t/ha/yr	
B1.2	B1.2 Annual woody biomass production per total land area		t/ha/yr			t/ha/yr	
B1.3	B1.3 Annual aquatic biomass production per total water surface area		t/ha/yr			t/ha/yr	
B1.4	B1.4 Agricultural biomass production yields		t/ha/yr			t/ha/yr	
B1.5	B1.5 Woody biomass production yields		t/ha/yr			t/ha/yr	
B1.6	B1.6 Aquatic biomass production yields		t/ha/yr			t/ha/yr	
B1.7	B1.7 Net exported agricultural biomass [= Exp - Imp] per total land area		t/ha/yr			t/ha/yr	
B1.8	B1.8 Net exported woody biomass [= Exp - Imp] per total land area		t/ha/yr			t/ha/yr	
B1.9	B1.9 Net exported aquatic biomass [= Exp - Imp] per total water surface area		t/ha/yr			t/ha/yr	
B1.10	B1.10 Share of agricultural biomass of total biomass production		%			%	
B1.11	B1.11 Share of woody biomass of total biomass production		%			%	
B1.12	B1.12 Share of aquatic biomass of total biomass production		%			%	
B1.13	B1.13 Rate of soil organic carbon change		tC/ha/yr			tC/ha/yr	
B1.14	B1.14 Water use efficiency		m3/t of Biomass produced			m3/t of Biomass produced	
B1.15	B1.15 Carbon footprint (kg CO2-eq/t of biomass produced)		kg CO2-eq/t of Biomass produced			kg CO2-eq/t of Biomass produced	
B1.16	B1.16 Annual change in Biodiversity Intactness Index		%/yr			%/yr	
B2.1	B2.1 Value of annual agricultural biomass production per utilized agricultural area		€/ha/yr			€/ha/yr	
B2.2	B2.2 Gross Value Added (GVA) in agricultural biomass production per utilized agricultural area		€/ha/yr			€/ha/yr	
B2.3	B2.3 Value of annual forestry biomass production per utilized forestry area		€/ha/yr			€/ha/yr	
B2.4	B2.4 Gross Value Added (GVA) in woody biomass production per utilized forestry area		€/ha/yr			€/ha/yr	
B2.5	B2.5 Value of annual aquatic biomass production per total water surface area		€/ha/yr			€/ha/yr	
B2.6	B2.6 Gross Value Added (GVA) in aquatic biomass production per total water surface area		€/ha/yr			€/ha/yr	
B2.7	B2.7 Value of bio-based products in proportion to national GDP		%			%	
B2.8	B2.8 Gross Value Added (GVA) in bio-based industries per tons of biomass converted		€/t/yr			€/t/yr	
B2.9	B2.9 Share of conversion into energy in domestic biomass valorisation		%			%	
B2.10	B2.10 Share of conversion into food & feed in domestic biomass valorisation		%			%	
B2.11	B2.11 Share of conversion into chemicals & materials in domestic biomass valorisation		%			%	
B3.1	B3.1 Availability of detailed data on biomass production		Qualitative			Qualitative	
B3.2	B3.2 Availability of detailed data on biomass conversion		Qualitative			Qualitative	
B3.3	B3.3 Availability of detailed biomass-related economic data		Qualitative			Qualitative	
B3.4	B3.4 Availability of detailed data on the environmental impact of biomass production		Qualitative			Qualitative	
B3.5	B3.5 Currentness of data on biomass production		Qualitative			Qualitative	
B3.6	B3.6 Currentness of data on biomass conversion		Qualitative			Qualitative	
B3.7	B3.7 Currentness of biomass-related economic data		Qualitative			Qualitative	
B3.8	B3.8 Currentness of data on the environmental impact of biomass production		Qualitative			Qualitative	
S.1	S.1. Circular economy skills		Qualitative			Qualitative	
S.2	S.2. Systemic thinking skills		Qualitative			Qualitative	
S.3	S.3. Sustainability and environmental protection skills		Qualitative			Qualitative	
S.4	S.4. Communication skills		Qualitative			Qualitative	
S.5	S.5. Project management skills		Qualitative			Qualitative	
S.6	S.6. Skills demanded by the bioeconomy sector		Qualitative			Qualitative	
S.7	S.7. Innovation skills		Qualitative			Qualitative	
S.8	S.8. Entrepreneurships skills		Qualitative			Qualitative	
S.9	S.9. Digital skills in bioeconomy sectors		Qualitative			Qualitative	
T.1	T.1. Bio-material replacing non-renewable resources (substitutes)		%			%	
T.2	T.2. Circular material use rate.		%			%	
T.3	T.3. Number of bioenergy and biorefinery plants at national level (TRL 6 or higher) in the last five years		No of plants			No of plants	
T.4	T.4. Bioenergy plants and biorefineries using residual biomass or by-products in their processes.		No of plants			No of plants	
T.5	T.5. Number of research projects and process development (TRL: 3-5) for bioenergy and biorefineries in the country.		No of plants			No of plants	
T.6	T.6. Gross domestic expenditure on R&D (GERD) at national level		% of GDP			% of GDP	
T.7	T.7. Number of bioeconomy patents submitted (at national level)		No of patents			No of patents	
T.8	T.8. Technology transfer		Qualitative			Qualitative	
T.9	T.9. Infrastructure for collection and management of forestry residues		Qualitative			Qualitative	
T.10	T.10. Infrastructure for collection and management of agricultural residues and food industry sector residues/by-products		Qualitative			Qualitative	
T.11	T.11. Infrastructure for collection and management of other biomass residues (e.g. urban and municipal biological waste)		Qualitative			Qualitative	
E.1	E.1. Value added of the bioeconomy sectors		Mio €			Mio €	
E.2	E.2. Turnover in the bioeconomy sectors at national level		Thousand €			Thousand €	
E.3	E.3. Stakeholder networks that facilitate collaboration among bioeconomy actors		Qualitative			Qualitative	
E.4	E.4. Advisory services focalised on rural bioeconomy businesses		Qualitative			Qualitative	
E.5	E.5. Supportive policy mechanism for market uptake of bio-based products		Qualitative			Qualitative	
E.6	E.6. Existence of national bioeconomy investment and investor platform (for investors and entrepreneurs)		Qualitative			Qualitative	
E.7	E.7. New value chains for bio-based products		No of products			No of products	
E.8	E.8. Supportive structures to novel business models in the (circular) bioeconomy		Qualitative			Qualitative	
E.9	E.9. Number of projects scaling up from pilot to demonstration projects as a result of being funded by private/venture funds		No of products			No of products	

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Appendix 2. Prioritisation template

Indicator Prioritization				
Purpose:				
	This sheet allows you to adjust the relative importance (weights) of indicators under each main category. All indicators under a category must add up to 100%.			
How to Use:				
	1. Go to the sheet (e.g., Level 4 --> 3).			
	2. Find the category you want to work on.			
	3. Look at the indicators listed under it.			
	4. In the Weight (%) column, enter the relative weights for these indicators according to relative priority			
	- Example: If one indicator is more important, give it a higher weight.			
	- The total under each category must sum to 100%.			
	5. Check the 'sum' cell for each category. It should show 100% when correct.			
	6. Fill all the indicators and don't leave anything blank			
	7. Use the "explanation" column to justify the chosen weights.			
What the Weights Mean:				
	Higher weight = more influence within that category.			
	Weights control how much each sub-indicator affects the parent category's score in the AHP model.			
Example:				
	Under Sustainable Provision of Biomass resources:			
	- Biomass production reserves: 90%			
	- Environmental cost of Biomass production: 10%			
	This means reserves indicator has 9 times the impact of environmental cost for that group.			
Color Flags:				
	If weights sum to 100% (valid).			
	If weights do not sum to 100% (adjust as needed).			

Level 3	Level 4	Weight (%)	Explanation
Sustainable Provision of Biomass resources	Biomass production capacity	20.00%	
	Biomass production yields	20.00%	
	Biomass production reserves	20.00%	
	Diversity of biomass production	20.00%	
	Environmental cost of Biomass production	20.00%	
	A sum	**100.00%**	
Adding value to Biomass	Economic value of agricultural biomass production	20.00%	
	Economic value of forestry biomass production	20.00%	
	Economic value of aquatic biomass production	20.00%	
	Economic value of bio-based products	20.00%	
	Diversity of biomass valorisation	20.00%	
	B sum	**100.00%**	
Detailed knowledge of biomass production & valorisation	Access to biomass-related data	50.00%	
	Currentness of data on biomass production & valorisation	50.00%	
	C sum	**100.00%**	
High level of Social Competencies	Public administration	50.00%	
	Bioeconomy sector	50.00%	
	D sum	**100.00%**	
High level of Technological Competencies	Mature Circular Biobased (CBB) industry	33.33%	
	R&D	33.33%	
	Infrastructure for residues management	33.33%	
	E sum	**100.00%**	
High level of Economic Competencies	Market enviornment	50.00%	
	Market push/innovation environment	50.00%	
	F sum	**100.00%**	

Level 2	Level 3	Weight (%)	Explanation
Sustainable Biomass potential for the bioeconomy	Sustainable Provision of biomass resources	33.33%	
	Adding value to biomass	33.33%	
	Detailed knowledge of biomass production and valorization	33.34%	
	A sum	**100.00%**	
Comprehensive set of competencies for the bioeconomy	High level of social competencies	33.33%	
	High level of technological competencies	33.33%	
	High level of economic competencies	33.34%	
	B sum	**100.00%**	

Level 1	Level 2	Weight (%)	Explanation
High national readiness for the bioeconomy	Sustainable Biomass potential for the bioeconomy	50.00%	
	Comprehensive set of competencies for the bioeconomy	50.00%	
	A sum	**100.00%**	

Appendix 3. Country input data on indicators for the *status quo* and desired level

Table 3 contains the input data on all indicators for the status quo and desired level, ordered by country in alphabetical order *pp* refers to pre-processed values. For details, please refer to Chapter 2.4 *Data pre-processing.*

Table 3. Country input values on all indicators for the status quo and desired level pp refers to pre-processed values

Indicator	Indicator Name	Raw value status quo	Raw value desired level	Unit
Bulgaria				
B1.1	Annual Agricultural Biomass Production	1.411	1.9	t/ha/yr
B1.2	Annual Woody Biomass Production	0.302	0.42	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.043	0.06	t/ha/yr
B1.4	Agricultural Biomass Production Yields	3.103	3.8	t/ha/yr
B1.5	Woody Biomass Production Yields	0.869	1.1	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.118	0.15	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	69.45	77.5	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	33	36.66667	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	27.6	35.392	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	1	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	2	2	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	77.53333	80.00	tC/ha/yr
B1.14 pp	Water Use Efficiency	38.044	48.00	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	36.7296	50	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.221	0.5	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1155.809	1450	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	544.912	700	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	117.984	160	€/ha/yr

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B2.4	Gross Value Added (GVA) in Woody Biomass Production	51.598	75	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	145.119	200	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	3.121	10	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	17.818	25	%
B2.8	Gross Value Added (GVA) in Bio-based Industries	201.371	300	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	3	4	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	2	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	2	
B3.1	Availability of Detailed Data on Biomass Production	2	3	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	3	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	3	4	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	3	Qualitative
B3.5	Currentness of Data on Biomass Production	3	4	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	3	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	3	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	3	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	3	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	4	Qualitative
S.4	Communication Skills	3	4	Qualitative
S.5	Project Management Skills	3	4	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	2	3	Qualitative
S.7	Innovation Skills	3	4	Qualitative
S.8	Entrepreneurships Skills	3	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	32.40%	20.00%	%
T.2	Circular Material Use Rate	4.90%	11.70%	%

T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000225	0.000361	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	0.00018	0.000316	No of plants per land area
T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	0.000193	0.000337	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.79%	1.50%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.000395	0.000675	No of patents per GDP
T.8	Technology Transfer	3	4	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	2	3	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	2	3	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	2	3	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.059182	0.08677	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	173.4838	337.4372	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	2	3	Qualitative
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	3	4	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	4	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	3	4	Qualitative
E.7 pp	New Value Chains for Bio-based Products	4.51E-05	9.02E-05	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	4	5	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.71E-05	9.02E-05	No of products per land area

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Croatia				
Indicator	Indicator Name	Raw value status quo	Raw value desired level	Unit
B1.1	Annual Agricultural Biomass Production	1.048	1.10794	t/ha/yr
B1.2	Annual Woody Biomass Production	0.658	0.685	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.0087	0.0091	t/ha/yr
B1.4	Agricultural Biomass Production Yields	4.096	5.1457	t/ha/yr
B1.5	Woody Biomass Production Yields	1.349	1.39895	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.0087	2.9837	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	30.9	35.05	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	55.8	59.8	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	50.32	51.6152	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	2	2	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	4	5	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	66.69267	66.69	tC/ha/yr
B1.14 pp	Water Use Efficiency	45.072	50.56	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	17.359	30.616	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.0816	0.0816	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1978.275	2433	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	654.082	800	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	150.29	120	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	101.243	120	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	65.354	75	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	41.293		€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	1.824	1.85	%

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B2.8	Gross Value Added (GVA) in Bio-based Industries	529.085		€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	3	5	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	3	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	2	
B3.1	Availability of Detailed Data on Biomass Production	3	3	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	3	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	3	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	1	3	Qualitative
B3.5	Currentness of Data on Biomass Production	2	3	Qualitative
B3.6	Currentness of Data on Biomass Conversion	1	3	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	3	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	1	3	Qualitative
S.1	Circular Economy Skills	3	3	Qualitative
S.2	Systemic Thinking Skills	3	3	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	3	Qualitative
S.4	Communication Skills	3	3	Qualitative
S.5	Project Management Skills	3	3	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	3	Qualitative
S.7	Innovation Skills	3	3	Qualitative
S.8	Entrepreneurships Skills	3	3	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	3	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)			%
T.2	Circular Material Use Rate	6.20%	8.00%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	8.83E-05	8.83E-05	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	5.3E-05	5.3E-05	No of plants per land area

T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	5.84E-05	0.00014	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	1.39%	2.00%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)			No of patents per GDP
T.8	Technology Transfer	3	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	2	3	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	2	3	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	3	3	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.058918	0.097233	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	176.7358	315.7647	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	3	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	3	3	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	3	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	3	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products	0.000124	0.000212	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	2	3	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds			No of products per land area

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Czechia				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	2.275	5.813	t/ha/yr
B1.2	Annual Woody Biomass Production	1.285	2.25	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.038	0.08	t/ha/yr
B1.4	Agricultural Biomass Production Yields	4.28	5	t/ha/yr
B1.5	Woody Biomass Production Yields	3.783	4.95	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.038	0.07	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	21.7	40	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	69.6	69.6	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	18.4	45	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	2	3	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	5	5	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	66.66667	76.67	tC/ha/yr
B1.14 pp	Water Use Efficiency	96.044	96.50	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	33.4354	47	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.243	0.4	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1722.8	2100	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	680	825	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	1461	1800	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	471	575	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	258	325	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	198.478	275	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	4.32	6.5	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	385.943	525	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	4	4	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	3	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	2	
B3.1	Availability of Detailed Data on Biomass Production	2	4	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	4	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	1	4	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	4	Qualitative
B3.5	Currentness of Data on Biomass Production	2	4	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	4	Qualitative
B3.7	Currentness of Biomass-related Economic Data	1	4	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	4	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	3	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	4	Qualitative
S.4	Communication Skills	3	4	Qualitative
S.5	Project Management Skills	3	4	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	4	Qualitative
S.7	Innovation Skills	3	4	Qualitative
S.8	Entrepreneurships Skills	3	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	15.20%	23.50%	%
T.2	Circular Material Use Rate	12.80%	19.00%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000431	0.000469	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	0.000431	0.000495	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries		0.000109	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	1.83%	2.35%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.002376	0.002962	No of patents per GDP
T.8	Technology Transfer	1	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	2	4	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	3	4	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	4	4	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.043772	0.054561	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	164.5026	210.4497	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	4	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	3	4	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	4	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	1	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products			No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	2	4	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds			No of products per land area

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Estonia				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	0.701	1.2	t/ha/yr
B1.2	Annual Woody Biomass Production	1.417	1.5	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.067	0.1	t/ha/yr
B1.4	Agricultural Biomass Production Yields	3.024	3.024	t/ha/yr
B1.5	Woody Biomass Production Yields	2.573	2.573	t/ha/yr
B1.6	Aquatic Biomass Production Yields	3.455	3.455	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	57.5	57.5	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	80.26667	80.26667	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	65.4	65.4	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	4	4	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	2	2	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	38	38.00	tC/ha/yr
B1.14 pp	Water Use Efficiency	95.556	95.56	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	62.8584	62.8584	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.023	0.023	%/yr
B2.1	Value of Annual Agricultural Biomass Production	803.204	803.204	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	166.519	166.519	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	522.663	522.663	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	278.561	278.561	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	18.838	18.838	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	146.83	146.83	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	4.99	4.99	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	111.55	111.55	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	3	3	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	3	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	3	3	
B3.1	Availability of Detailed Data on Biomass Production	3	4	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	3	4	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	1	2	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	3	Qualitative
B3.5	Currentness of Data on Biomass Production	2	3	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	3	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	3	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	1	2	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	3	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	4	Qualitative
S.4	Communication Skills	3	4	Qualitative
S.5	Project Management Skills	3	4	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	4	Qualitative
S.7	Innovation Skills	3	4	Qualitative
S.8	Entrepreneurships Skills	3	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	45%	45%	%
T.2	Circular Material Use Rate	18.10%	18.10%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000111	0.000111	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	6.63E-05	6.63E-05	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	0.000127	0.000127	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	1.75%	3.00%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.000101	0.00038	No of patents per GDP
T.8	Technology Transfer	3	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	3	3	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	3	3	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues			Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.067145	0.088585	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	286.5027	286.5027	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	2	2	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	2	2	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	2	2	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	2	2	Qualitative
E.7 pp	New Value Chains for Bio-based Products	0.000111	0.000111	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	2	2	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.21E-05	2.21E-05	No of products per land area

Hungary				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	2.98	2.98	t/ha/yr
B1.2	Annual Woody Biomass Production	0.476	0.476	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.067	0.067	t/ha/yr
B1.4	Agricultural Biomass Production Yields	5.251	5.251	t/ha/yr
B1.5	Woody Biomass Production Yields	2.059	2.059	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.86	0.86	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	55	55	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	30.86667	30.86667	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	43.6	43.6	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	1	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	2	2	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	38.66667	38.67	tC/ha/yr
B1.14 pp	Water Use Efficiency	22.8	22.80	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	56.326	56.326	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.21	0.21	%/yr
B2.1	Value of Annual Agricultural Biomass Production	2042.27	2042.27	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	721.48	721.48	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	339.26	339.26	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	159.32	159.32	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	113.36	113.36	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	71.35	71.35	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	6.51	6.51	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	385.9	385.9	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	2	2	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	2	2	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	2	
B3.1	Availability of Detailed Data on Biomass Production	3	3	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	3	3	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	3	3	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	1	1	Qualitative
B3.5	Currentness of Data on Biomass Production	2	2	Qualitative
B3.6	Currentness of Data on Biomass Conversion	1	1	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	2	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	1	1	Qualitative
S.1	Circular Economy Skills			Qualitative
S.2	Systemic Thinking Skills			Qualitative
S.3	Sustainability and Environmental Protection Skills			Qualitative
S.4	Communication Skills			Qualitative
S.5	Project Management Skills			Qualitative
S.6	Skills Demanded by the Bioeconomy Sector			Qualitative
S.7	Innovation Skills			Qualitative
S.8	Entrepreneurships Skills			Qualitative
S.9	Digital Skills in Bioeconomy Sectors			Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	6%	6%	%
T.2	Circular Material Use Rate	5.90%	5.90%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)			No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products			No of plants per land area

T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries			No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	1.39%	1.39%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)			No of patents per GDP
T.8	Technology Transfer			Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues			Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure			Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues			Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.069104	0.069104	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	87.97023	87.97023	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors			Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses			Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products			Qualitative
E.6	National Bioeconomy Investment and Investor Platform			Qualitative
E.7 pp	New Value Chains for Bio-based Products			No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy			Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds			No of products per land area

Latvia				
Indicator	Indicator Name	Raw value status quo	Raw value desired level	Unit
B1.1	Annual Agricultural Biomass Production	0.89	0.89	t/ha/yr
B1.2	Annual Woody Biomass Production	1.05	1.05	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.001	0.001	t/ha/yr
B1.4	Agricultural Biomass Production Yields	2.91	2.91	t/ha/yr
B1.5	Woody Biomass Production Yields	1.89	1.89	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.14	0.14	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	54.5	54.5	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	94	94	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	53.8	53.8	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	5	5	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	3	3	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	5.8	5.80	tC/ha/yr
B1.14 pp	Water Use Efficiency	64.104	64.10	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	50.742	50.742	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.028	0.028	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1261.67	1261.67	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	457.78	457.78	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	688.79	688.79	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	261.52	261.52	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	2.43	2.43	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	57.67	57.67	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	35.6	35.6	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	179.75	179.75	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	4	4	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	2	2	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	4	4	
B3.1	Availability of Detailed Data on Biomass Production	2	2	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	2	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	2	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	2	Qualitative
B3.5	Currentness of Data on Biomass Production	1	1	Qualitative
B3.6	Currentness of Data on Biomass Conversion	1	1	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	2	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	2	Qualitative
S.1	Circular Economy Skills	2	2	Qualitative
S.2	Systemic Thinking Skills	3	3	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	3	Qualitative
S.4	Communication Skills	3	3	Qualitative
S.5	Project Management Skills	2	2	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	2	2	Qualitative
S.7	Innovation Skills	3	3	Qualitative
S.8	Entrepreneurships Skills	4	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	3	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)			%
T.2	Circular Material Use Rate	5%	5%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000232	0.000232	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	0.000232	0.000232	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	2.49E-05	2.49E-05	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.30%	0.30%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.000696	0.000696	No of patents per GDP
T.8	Technology Transfer	3	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	2	2	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	3	3	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	3	3	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.097758	0.097758	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	320.0075	320.0075	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	4	4	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	4	4	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	3	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	3	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products	0.007744	0.007744	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy			Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	1.55E-05	1.55E-05	No of products per land area

Lithuania				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	2.878	3.8	t/ha/yr
B1.2	Annual Woody Biomass Production	0.69	0.9	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.104	0.2	t/ha/yr
B1.4	Agricultural Biomass Production Yields	6.2	7.5	t/ha/yr
B1.5	Woody Biomass Production Yields	1.9	2.3	t/ha/yr
B1.6	Aquatic Biomass Production Yields	2.74	3.2	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	76.5	80	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	47.33333	43.33333	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	48	60	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	2	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	2	3	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	28.86667	73.33	tC/ha/yr
B1.14 pp	Water Use Efficiency	91.548	93.20	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	56.21	70	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.105	0.3	%/yr
B2.1	Value of Annual Agricultural Biomass Production	897.6	1200	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	442.34	600	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	240.71	350	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	95.51	150	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	7.55	25	€/ha/yr

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B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	25.27	50	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	4.8	10	%
B2.8	Gross Value Added (GVA) in Bio-based Industries	184.62	250	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	5	4	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	5	5	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	3	
B3.1	Availability of Detailed Data on Biomass Production	2	4	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	4	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	4	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	4	Qualitative
B3.5	Currentness of Data on Biomass Production	2	4	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	4	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	4	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	4	Qualitative
S.1	Circular Economy Skills	4	5	Qualitative
S.2	Systemic Thinking Skills	4	5	Qualitative
S.3	Sustainability and Environmental Protection Skills	4	5	Qualitative
S.4	Communication Skills	4	5	Qualitative
S.5	Project Management Skills	4	5	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	4	5	Qualitative
S.7	Innovation Skills	4	5	Qualitative
S.8	Entrepreneurships Skills	4	5	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	4	5	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)			%
T.2	Circular Material Use Rate	3.90%	15.00%	%

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T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0,000199081	0.000383	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	1.84E-04	3.06E-04	No of plants per land area
T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries		0.00051	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.99%	1.50%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0,000165796	0.000319	No of patents per GDP
T.8	Technology Transfer	4	5	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	3	5	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	4	5	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	4	5	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.059176	0.082898	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	196.1426	280.5772	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	5	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	4	5	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	4	5	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	3	5	Qualitative
E.7 pp	New Value Chains for Bio-based Products	6.13E-05	0.000184	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	4	5	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	0.000107	0.000306	No of products per land area

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Poland				
Indicator	Indicator Name	Raw value status quo	Raw value desired level	Unit
B1.1	Annual Agricultural Biomass Production	3.198	3.91	t/ha/yr
B1.2	Annual Woody Biomass Production	1.02	1.24	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.25	0.29	t/ha/yr
B1.4	Agricultural Biomass Production Yields	6.25	7.45	t/ha/yr
B1.5	Woody Biomass Production Yields	3.5	3.97	t/ha/yr
B1.6	Aquatic Biomass Production Yields	2.3	2.83	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	90	93.5	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	62	67.33333	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	54	54	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	1	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	3	3	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	73.33333	74.67	tC/ha/yr
B1.14 pp	Water Use Efficiency	58.8	67.36	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	-36.896	22.654	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.016	0.02	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1312.5	1662.94	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	900	1042.65	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	510	667.59	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	315	382.57	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	258.17	294.57	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	153.47	193.37	€/ha/yr

B2.7	Value of Bio-based Products in Proportion to National GDP	9	11.97	%
B2.8	Gross Value Added (GVA) in Bio-based Industries	210	274.89	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	2	3	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	2	1	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	3	
B3.1	Availability of Detailed Data on Biomass Production	2	2	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	2	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	2	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	2	Qualitative
B3.5	Currentness of Data on Biomass Production	2	2	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	2	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	2	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	2	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	3	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	4	Qualitative
S.4	Communication Skills	3	4	Qualitative
S.5	Project Management Skills	3	4	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	4	Qualitative
S.7	Innovation Skills	3	4	Qualitative
S.8	Entrepreneurships Skills	3	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Bio-material Replacing Non-renewable Resources (Substitutes)	32.5%	38.5%	%
T.2	Circular Material Use Rate	12.20%	15.86%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000221	0.000278	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	1.92E-05	2.88E-05	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	5.32E-05	7.21E-05	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.001%	0.001%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.000329	0.000458	No of patents per GDP
T.8	Technology Transfer	2	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	3	4	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	2	3	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	3	4	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0	0.151729	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	331	353	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	4	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	2	3	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	2	3	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	1	1	Qualitative
E.7 pp	New Value Chains for Bio-based Products	4E-05	5.44E-05	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	2	3	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	1.92E-05	2.56E-05	No of products per land area

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Romania				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	1.6	1.6	t/ha/yr
B1.2	Annual Woody Biomass Production	0.32	0.32	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.0237	0.0237	t/ha/yr
B1.4	Agricultural Biomass Production Yields	2.83	2.83	t/ha/yr
B1.5	Woody Biomass Production Yields	1.09	1.09	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.17	0.17	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	50.07	50.07	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	37.62	37.62	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	40.22	40.22	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	1	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	2	2	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	66.66667	66.67	tC/ha/yr
B1.14 pp	Water Use Efficiency	-135.76	-135.76	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	11.188	11.188	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	-0.015	-0.015	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1645.57	1645.57	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	742.13	742.13	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	422.08	422.08	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	229.83	229.83	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	67.01	67.01	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	281.28	281.28	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	8.8	8.8	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	317.42	317.42	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	4	4	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	3	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	2	2	
B3.1	Availability of Detailed Data on Biomass Production	2	2	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	1	1	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	2	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	1	1	Qualitative
B3.5	Currentness of Data on Biomass Production	2	2	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	2	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	2	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	1	1	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	2	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	4	5	Qualitative
S.4	Communication Skills	3	4	Qualitative
S.5	Project Management Skills	3	4	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	4	Qualitative
S.7	Innovation Skills	3	4	Qualitative
S.8	Entrepreneurships Skills	3	4	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)			%
T.2	Circular Material Use Rate	1.30%	4%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	4.19E-05	6.29E-05	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	2.1E-05	4.19E-05	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	2.26E-05	4.52E-05	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.52%	4%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	3.11E-06	1.13E-05	No of patents per GDP
T.8	Technology Transfer	3	4	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	2	4	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	3	4	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	3	4	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.05061	0.058202	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	161.4567	185.6758	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	4	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	3	4	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	2	4	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	1	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products			No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	2	4	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.94E-05	5.87E-05	No of products per land area

Slovakia				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	2.326	2.326	t/ha/yr
B1.2	Annual Woody Biomass Production	0.766	0.766	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.05	0.05	t/ha/yr
B1.4	Agricultural Biomass Production Yields	6.25	6.25	t/ha/yr
B1.5	Woody Biomass Production Yields	1.92	1.92	t/ha/yr
B1.6	Aquatic Biomass Production Yields	1.14	1.14	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	55.1	55.1	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	36.73333	36.73333	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	8.2	8.2	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	1	1	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	3	3	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	66.66667	66.67	tC/ha/yr
B1.14 pp	Water Use Efficiency	79.16	79.16	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	70.834	70.834	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.141	0.141	%/yr
B2.1	Value of Annual Agricultural Biomass Production	1454.59	1454.59	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	756	756	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	286.6	286.6	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	200.13	200.13	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	57.57	57.57	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	93.21	93.21	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	9.67	9.67	%

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B2.8	Gross Value Added (GVA) in Bio-based Industries	234.7	234.7	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	3	3	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	3	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	3	3	
B3.1	Availability of Detailed Data on Biomass Production	3	3	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	2	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	2	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	3	3	Qualitative
B3.5	Currentness of Data on Biomass Production	2	2	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	2	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	2	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	2	Qualitative
S.1	Circular Economy Skills	2	2	Qualitative
S.2	Systemic Thinking Skills	3	3	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	3	Qualitative
S.4	Communication Skills	3	3	Qualitative
S.5	Project Management Skills	3	3	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	3	Qualitative
S.7	Innovation Skills	3	3	Qualitative
S.8	Entrepreneurships Skills	3	3	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	3	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	13%	13%	%
T.2	Circular Material Use Rate	10.60%	10.60%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	6.12E-05	6.12E-05	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products			No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	7.63E-05	7.63E-05	No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	1.03%	1.03%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	6.11E-05	6.11E-05	No of patents per GDP
T.8	Technology Transfer	3	3	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	3	3	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	2	2	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	2	2	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.038172	0.038172	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	114.5168	114.5168	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	3	3	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	3	3	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	3	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	3	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products			No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	3	3	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.04E-05	2.04E-05	No of products per land area

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Slovenia				
Indicator	**Indicator Name**	**Raw value status quo**	**Raw value desired level**	**Unit**
B1.1	Annual Agricultural Biomass Production	1.07	1.13	t/ha/yr
B1.2	Annual Woody Biomass Production	1.165	1.262	t/ha/yr
B1.3	Annual Aquatic Biomass Production	0.0457	0.0474	t/ha/yr
B1.4	Agricultural Biomass Production Yields	3.549	3.728	t/ha/yr
B1.5	Woody Biomass Production Yields	1.89	1.98	t/ha/yr
B1.6	Aquatic Biomass Production Yields	0.905	0.932	t/ha/yr
B1.7 pp	Net Exported Agricultural Biomass [= Exp - Imp]	24.8	25.92	t/ha/yr
B1.8 pp	Net Exported Woody Biomass [= Exp - Imp]	67.86667	69.85897	t/ha/yr
B1.9 pp	Net Exported Aquatic Biomass [= Exp - Imp]	1.6	3.536	t/ha/yr
B1.10 pp	Share of Agricultural Biomass of Total Biomass Production	5	5	
B1.11 pp	Share of Woody Biomass of Total Biomass Production	3	3	
B1.12 pp	Share of Aquatic Biomass of Total Biomass Production	1	1	
B1.13 pp	Rate of Soil Organic Carbon Change	94.53333	94.53	tC/ha/yr
B1.14 pp	Water Use Efficiency	96.068	96.19	m^3/t of Biomass produced
B1.15 pp	Carbon Footprint	22.8	26.4	kg CO_2-eq/t of Biomass produced
B1.16	Annual Change in Biodiversity Intactness Index	0.124	0.124	%/yr
B2.1	Value of Annual Agricultural Biomass Production	2586.01	2715.34	€/ha/yr
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	957.69	1005.39	€/ha/yr
B2.3	Value of Annual Forestry Biomass Production	657.06	699.70	€/ha/yr
B2.4	Gross Value Added (GVA) in Woody Biomass Production	349.12	372.21	€/ha/yr
B2.5	Value of Annual Aquatic Biomass Production	246.33	254.02	€/ha/yr
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	169.68	174.99	€/ha/yr
B2.7	Value of Bio-based Products in Proportion to National GDP	15.26	16	%

B2.8	Gross Value Added (GVA) in Bio-based Industries	606.24	606.24	€/t/yr
B2.9 pp	Share of Conversion into Energy in Domestic Biomass Valorisation	3	3	
B2.10 pp	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	4	3	
B2.11 pp	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	3	3	
B3.1	Availability of Detailed Data on Biomass Production	2	3	Qualitative
B3.2	Availability of Detailed Data on Biomass Conversion	2	3	Qualitative
B3.3	Availability of Detailed Biomass-related Economic Data	2	3	Qualitative
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	2	3	Qualitative
B3.5	Currentness of Data on Biomass Production	2	3	Qualitative
B3.6	Currentness of Data on Biomass Conversion	2	3	Qualitative
B3.7	Currentness of Biomass-related Economic Data	2	3	Qualitative
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	2	3	Qualitative
S.1	Circular Economy Skills	3	4	Qualitative
S.2	Systemic Thinking Skills	3	4	Qualitative
S.3	Sustainability and Environmental Protection Skills	3	4	Qualitative
S.4	Communication Skills	4	5	Qualitative
S.5	Project Management Skills	4	5	Qualitative
S.6	Skills Demanded by the Bioeconomy Sector	3	4	Qualitative
S.7	Innovation Skills	4	5	Qualitative
S.8	Entrepreneurships Skills	4	5	Qualitative
S.9	Digital Skills in Bioeconomy Sectors	3	4	Qualitative
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	53%	53%	%
T.2	Circular Material Use Rate	10.20%	11.4%	%
T.3 pp	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	0.000345	0.000345	No of plants per land area
T.4 pp	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	0.001628	0.001628	No of plants per land area

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T.5 pp	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries			No of plants per GDP
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	2.00%	2.03%	% of GDP
T.7 pp	Number of Bioeconomy Patents Submitted (at National Level)	0.000896	0.001045	No of patents per GDP
T.8	Technology Transfer	3	4	Qualitative
T.9	Infrastructure for Collection and Management of Forestry Residues	4	5	Qualitative
T.10	Agricultural & Food Industry Residue Collection Infrastructure	3	4	Qualitative
T.11	Infrastructure for Collection and Management of Other Biomass Residues	4	5	Qualitative
E.1 pp	Value Added of the Bioeconomy Sectors	0.051246	0.053808	
E.2 pp	Turnover in the Bioeconomy Sectors at National Level	133.3471	138.0371	
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	4	5	Qualitative
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	3	4	Qualitative
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	3	4	Qualitative
E.6	National Bioeconomy Investment and Investor Platform	2	3	Qualitative
E.7 pp	New Value Chains for Bio-based Products	0.000345	0.000414	No of products per land area
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	3	4	Qualitative
E.9 pp	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	0.000888	0.000937	No of products per land area

Appendix 4. Input data on prioritisation of sub-goals

Table 4 contains the country input data on the sub-goals prioritisation. For ease of reference, the default non-prioritized value is included. The weights for Level 4, Level 3, and Level 2 sub-goals are reported, i.e., all sub-goals across the entire tree structure.

Table 4. Country input data on the sub-goals prioritisation

Level 3	Level 4	Non-prioritised (default)	Croatia	Czechia	Estonia	Lithuania	Poland	Romania	Slovenia
Sustainable Provision of Biomass resources	Biomass production capacity	20%	21%	30%	25%	25%	19%	20%	20%
	Biomass production yields	20%	20%	20%	20%	20%	19%	20%	20%
	Biomass production reserves	20%	23%	25%	15%	15%	19%	20%	10%
	Diversity of biomass production	20%	21%	10%	20%	20%	19%	20%	20%
	Environmental cost of Biomass production	20%	15%	15%	20%	20%	25%	20%	30%
Adding value to Biomass	Economic value of agricultural biomass production	20%	22%	30%	20%	25%	18%	20%	20%
	Economic value of forestry biomass production	20%	26%	25%	20%	20%	18%	20%	20%
	Economic value of	20%	12%	5%	15%	10%	18%	20%	10%

	aquatic biomass production							
	Economic value of bio-based products	20%	25%	25%	25%	25%	18%	20%	30%
	Diversity of biomass valorisation	20%	15%	15%	20%	20%	27%	20%	20%
Detailed knowledge of biomass production & valorisation	Access to biomass-related data	50%	40%	50%	50%	55%	50%	50%	50%
	Currentness of data on biomass production & valorisation	50%	60%	50%	50%	45%	50%	50%	50%
High level of Social Competencies	Public administration	50%	40%	40%	50%	55%	56%	40%	50%
	Bioeconomy sector	50%	60%	60%	50%	45%	44%	60%	50%
High level of Technological Competencies	Mature Circular Biobased (CBB) industry	33%	35%	35%	40%	40%	36%	25%	30%
	R&D	33%	35%	40%	30%	35%	36%	45%	50%
	Infrastructure for residues management	33%	30%	25%	30%	25%	27%	30%	20%
High level of Economic	Market enviornment	50%	45%	60%	60%	55%	67%	45%	50%

Compete ncies	Market push/inno vation environm ent	50%		55%	40%	40%	45%	33%	55%	50%
Level 2	**Level 3**									
Sustaina ble Biomass potential for the bioecono my	Sustainab le Provision of biomass resources	33%		35%	35%	33%	40%	46%	33%	30%
	Adding value to biomass	33%		35%	30%	33%	35%	31%	33%	30%
	Detailed knowledg e of biomass productio n and valorisati on	33%		30%	35%	33%	25%	23%	33%	40%
Compreh ensive set of compete ncies for the bioecono my	High level of social competen cies	33%		25%	30%	33%	40%	31%	30%	30%
	High level of technolog ical competen cies	33%		38%	35%	33%	35%	38%	40%	30%
	High level of economic competen cies	33%		37%	35%	33%	25%	31%	30%	40%
Level 1	**Level 2**									
High national readiness for the bioecono my	Sustainab le Biomass potential for the bioecono my	50%		47%	40%	50%	55%	55%	40%	60%

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Comprehensive set of competencies for the bioeconomy	50%		53%	60%	50%	45%	45%	60%	40%

Appendix 5. Output with and without prioritisation

Table 5 contains the output values for all countries in alphabetical order. Output data on the *status quo* and desired levels, both with and without prioritisation, is provided.

Table 5. Country output data on status quo *and desired levels, with and without prioritisation*

Bulgaria			
Level / Indicator	**Indicator Name**	**Status quo**	**Desired level**
1	High National Readiness for the Bioeconomy	39.05%	58.75%
2	Sustainable Biomass Potential for the Bioeconomy	38.85%	57.23%
2	Comprehensive Set of Competencies for the Bioeconomy	39.25%	60.28%
3	Sustainable Provision of Biomass Resources	27.76%	34.86%
3	Adding Value to Biomass	26.31%	36.86%
3	Detailed Knowledge of Biomass Production and Valorisation	62.50%	100.00%
3	High Level of Social Competencies	46.88%	71.88%
3	High Level of Technological Competencies	35.00%	53.63%
3	High Level of Economic Competencies	35.88%	55.34%
4	Biomass Production Capacity	17.96%	24.63%
4	Biomass Production Yields	17.69%	21.98%
4	Biomass Production Reserves	43.35%	49.85%
4	Diversity of Biomass Production	8.33%	8.33%
4	Environmental Costs of Biomass Production	51.45%	69.50%
4	Economic Value of Agricultural Biomass Production	37.47%	47.64%
4	Economic Value of Forestry Biomass Production	7.25%	10.25%
4	Economic Value of Aquatic Biomass Production	21.14%	29.89%
4	Economic Value of Bio-based Products	32.38%	46.53%
4	Diversity of Biomass Valorisation	33.33%	49.99%
4	Access to Biomass-related Data	62.50%	100.00%

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4	Currentness of Data on Biomass Production & Valorisation	62.50%	100.00%
4	High Readiness by Public Administration	50.00%	75.00%
4	High Readiness by Bioeconomy Sectors	43.75%	68.75%
4	Mature Circular Bio-based Industry	39.99%	52.17%
4	R&D	40.01%	58.75%
4	Infrastructure for Residues Management	25.00%	49.99%
4	Market Environment	45.66%	73.97%
4	Market Push/Innovation Environment	26.09%	36.71%
B1.1	Annual Agricultural Biomass Production	24.33%	32.76%
B1.2	Annual Woody Biomass Production	17.26%	24.00%
B1.3	Annual Aquatic Biomass Production	12.29%	17.14%
B1.4	Agricultural Biomass Production Yields	31.03%	38.00%
B1.5	Woody Biomass Production Yields	19.31%	24.44%
B1.6	Aquatic Biomass Production Yields	2.74%	3.49%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	69.45%	77.50%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	33.00%	36.67%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	27.60%	35.39%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%	0.00%
B1.11	Share of Woody Biomass of Total Biomass Production	25.00%	25.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	77.53%	80.00%
B1.14	Water Use Efficiency	38.04%	48.00%
B1.15	Carbon Footprint	36.73%	50.00%
B1.16	Annual Change in Biodiversity Intactness Index	53.50%	100.00%
B2.1	Value of Annual Agricultural Biomass Production	33.02%	41.43%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	41.92%	53.85%
B2.3	Value of Annual Forestry Biomass Production	5.90%	8.00%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	8.60%	12.50%
B2.5	Value of Annual Aquatic Biomass Production	41.46%	57.14%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	0.82%	2.63%
B2.7	Value of Bio-based Products in Proportion to National GDP	39.60%	55.56%
B2.8	Gross Value Added (GVA) in Bio-based Industries	25.17%	37.50%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	50.00%	75.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	25.00%	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%

B3.1	Availability of Detailed Data on Biomass Production	50.00%	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	100.00%	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%	100.00%
B3.5	Currentness of Data on Biomass Production	100.00%	100.00%
B3.6	Currentness of Data on Biomass Conversion	50.00%	100.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	100.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%	100.00%
S.1	Circular Economy Skills	50.00%	75.00%
S.2	Systemic Thinking Skills	50.00%	75.00%
S.3	Sustainability and Environmental Protection Skills	50.00%	75.00%
S.4	Communication Skills	50.00%	75.00%
S.5	Project Management Skills	50.00%	75.00%
S.6	Skills Demanded by the Bioeconomy Sector	25.00%	50.00%
S.7	Innovation Skills	50.00%	75.00%
S.8	Entrepreneurships Skills	50.00%	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	64.80%	40.00%
T.2	Circular Material Use Rate	14.00%	33.43%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	45.09%	72.14%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	36.07%	63.12%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	77.13%	100.00%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	19.75%	37.50%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	13.18%	22.50%
T.8	Technology Transfer	50.00%	75.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	25.00%	50.00%

T.10	Agricultural & Food Industry Residue Collection Infrastructure	25.00%	50.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	25.00%	50.00%
E.1	Value Added of the Bioeconomy Sectors	49.32%	72.33%
E.2	Turnover in the Bioeconomy Sectors at National Level	49.57%	96.41%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	25.00%	50.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	50.00%	75.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%	75.00%
E.6	National Bioeconomy Investment and Investor Platform	50.00%	75.00%
E.7	New Value Chains for Bio-based Products	0.56%	1.13%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	75.00%	100.00 %
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.71%	9.02%

Croatia					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	36.41 %	34.97%	51.79 %	49.21%
2	Sustainable Biomass Potential for the Bioeconomy	35.04 %	34.30%	59.03 %	56.23%
2	Comprehensive Set of Competencies for the Bioeconomy	37.78 %	35.57%	44.55 %	42.99%
3	Sustainable Provision of Biomass Resources	36.20 %	36.29%	41.19 %	41.04%
3	Adding Value to Biomass	31.43 %	31.72%	35.93 %	33.90%
3	Detailed Knowledge of Biomass Production and Valorisation	37.50 %	35.00%	100.0 0%	100.00 %
3	High Level of Social Competencies	50.00 %	50.00%	50.00 %	50.00%
3	High Level of Technological Competencies	28.95 %	28.73%	38.93 %	38.38%

3	High Level of Economic Competencies	34.39%	32.84%	44.72%	43.00%
4	Biomass Production Capacity	38.43%	38.43%	20.28%	20.28%
4	Biomass Production Yields	23.71%	23.71%	50.64%	50.64%
4	Biomass Production Reserves	45.67%	45.67%	48.82%	48.82%
4	Diversity of Biomass Production	33.33%	33.33%	41.66%	41.66%
4	Environmental Costs of Biomass Production	39.85%	39.85%	44.53%	44.53%
4	Economic Value of Agricultural Biomass Production	53.42%	53.42%	65.53%	65.53%
4	Economic Value of Forestry Biomass Production	12.19%	12.19%	13.00%	13.00%
4	Economic Value of Aquatic Biomass Production	14.77%	14.77%	25.71%	25.71%
4	Economic Value of Bio-based Products	35.09%	35.09%	17.06%	17.06%
4	Diversity of Biomass Valorisation	41.66%	41.66%	58.33%	58.33%
4	Access to Biomass-related Data	50.00%	50.00%	100.00%	100.00%
4	Currentness of Data on Biomass Production & Valorisation	25.00%	25.00%	100.00%	100.00%
4	High Readiness by Public Administration	50.00%	50.00%	50.00%	50.00%
4	High Readiness by Bioeconomy Sectors	50.00%	50.00%	50.00%	50.00%
4	Mature Circular Bio-based Industry	19.00%	19.00%	20.28%	20.28%
4	R&D	34.53%	34.53%	46.52%	46.52%
4	Infrastructure for Residues Management	33.33%	33.33%	49.99%	49.99%
4	Market Environment	49.94%	49.94%	61.89%	61.89%
4	Market Push/Innovation Environment	18.85%	18.85%	27.55%	27.55%
B1.1	Annual Agricultural Biomass Production	18.07%	18.07%	19.10%	19.10%

B1.2	Annual Woody Biomass Production	94.74%	94.74%	39.14%	39.14%
B1.3	Annual Aquatic Biomass Production	2.49%	2.49%	2.60%	2.60%
B1.4	Agricultural Biomass Production Yields	40.96%	40.96%	51.46%	51.46%
B1.5	Woody Biomass Production Yields	29.98%	29.98%	31.09%	31.09%
B1.6	Aquatic Biomass Production Yields	0.20%	0.20%	69.39%	69.39%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	30.90%	30.90%	35.05%	35.05%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	55.80%	55.80%	59.80%	59.80%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	50.32%	50.32%	51.62%	51.62%
B1.10	Share of Agricultural Biomass of Total Biomass Production	25.00%	25.00%	25.00%	25.00%
B1.11	Share of Woody Biomass of Total Biomass Production	75.00%	75.00%	100.00%	100.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	66.69%	66.69%	66.69%	66.69%
B1.14	Water Use Efficiency	45.07%	45.07%	50.56%	50.56%
B1.15	Carbon Footprint	17.36%	17.36%	30.62%	30.62%
B1.16	Annual Change in Biodiversity Intactness Index	30.27%	30.27%	30.27%	30.27%
B2.1	Value of Annual Agricultural Biomass Production	56.52%	56.52%	69.51%	69.51%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	50.31%	50.31%	61.54%	61.54%
B2.3	Value of Annual Forestry Biomass Production	7.51%	7.51%	6.00%	6.00%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	16.87%	16.87%	20.00%	20.00%
B2.5	Value of Annual Aquatic Biomass Production	18.67%	18.67%	21.43%	21.43%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	10.87%	10.87%	30.00%	30.00%
B2.7	Value of Bio-based Products in Proportion to National GDP	4.05%	4.05%	4.11%	4.11%

B2.8	Gross Value Added (GVA) in Bio-based Industries	66.14%	66.14%	30.00%	30.00%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	50.00%	50.00%	100.00%	100.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	50.00%	50.00%	50.00%	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%	25.00%	25.00%
B3.1	Availability of Detailed Data on Biomass Production	100.00%	100.00%	100.00%	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	0.00%	0.00%	100.00%	100.00%
B3.5	Currentness of Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.6	Currentness of Data on Biomass Conversion	0.00%	0.00%	100.00%	100.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	0.00%	0.00%	100.00%	100.00%
S.1	Circular Economy Skills	50.00%	50.00%	50.00%	50.00%
S.2	Systemic Thinking Skills	50.00%	50.00%	50.00%	50.00%
S.3	Sustainability and Environmental Protection Skills	50.00%	50.00%	50.00%	50.00%
S.4	Communication Skills	50.00%	50.00%	50.00%	50.00%
S.5	Project Management Skills	50.00%	50.00%	50.00%	50.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00%	50.00%	50.00%	50.00%
S.7	Innovation Skills	50.00%	50.00%	50.00%	50.00%
S.8	Entrepreneurships Skills	50.00%	50.00%	50.00%	50.00%

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S.9	Digital Skills in Bioeconomy Sectors	50.00%	50.00%	50.00%	50.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	30.00%	30.00%	30.00%	30.00%
T.2	Circular Material Use Rate	17.71%	17.71%	22.86%	22.86%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	17.67%	17.67%	17.67%	17.67%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	10.60%	10.60%	10.60%	10.60%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	23.36%	23.36%	56.07%	56.07%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	34.75%	34.75%	50.00%	50.00%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	30.00%	30.00%	30.00%	30.00%
T.8	Technology Transfer	50.00%	50.00%	50.00%	50.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	25.00%	25.00%	50.00%	50.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	25.00%	25.00%	50.00%	50.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	50.00%	50.00%	50.00%	50.00%
E.1	Value Added of the Bioeconomy Sectors	49.10%	49.10%	81.03%	81.03%
E.2	Turnover in the Bioeconomy Sectors at National Level	50.50%	50.50%	90.22%	90.22%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%	50.00%	50.00%	50.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	50.00%	50.00%	50.00%	50.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%	50.00%	50.00%	50.00%
E.6	National Bioeconomy Investment and Investor Platform	50.00%	50.00%	50.00%	50.00%
E.7	New Value Chains for Bio-based Products	1.55%	1.55%	2.65%	2.65%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	25.00%	25.00%	50.00%	50.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	30.00%	30.00%	30.00%	30.00%

Czechia					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	44.89%	44.17%	70.61%	69.20%
2	Sustainable Biomass Potential for the Bioeconomy	45.41%	44.02%	74.67%	73.29%
2	Comprehensive Set of Competencies for the Bioeconomy	44.38%	44.27%	66.54%	66.48%
3	Sustainable Provision of Biomass Resources	45.06%	43.67%	53.56%	51.86%
3	Adding Value to Biomass	53.69%	52.05%	70.46%	67.14%
3	Detailed Knowledge of Biomass Production and Valorisation	37.50%	37.50%	100.00%	100.00%
3	High Level of Social Competencies	50.00%	50.00%	75.00%	75.00%
3	High Level of Technological Competencies	49.52%	48.94%	70.42%	69.59%
3	High Level of Economic Competencies	33.63%	34.68%	54.23%	56.07%
4	Biomass Production Capacity	41.17%	41.17%	45.17%	45.17%
4	Biomass Production Yields	42.58%	42.58%	45.23%	45.23%
4	Biomass Production Reserves	36.56%	36.56%	51.53%	51.53%
4	Diversity of Biomass Production	41.66%	41.66%	49.99%	49.99%
4	Environmental Costs of Biomass Production	63.33%	63.33%	75.88%	75.88%
4	Economic Value of Agricultural Biomass Production	50.77%	50.77%	61.73%	61.73%
4	Economic Value of Forestry Biomass Production	75.78%	75.78%	92.92%	92.92%
4	Economic Value of Aquatic Biomass Production	62.97%	62.97%	82.61%	82.61%
4	Economic Value of Bio-based Products	28.92%	28.92%	40.03%	40.03%

4	Diversity of Biomass Valorisation	49.99%	49.99%	74.99%	74.99%
4	Access to Biomass-related Data	37.50%	37.50%	100.00%	100.00%
4	Currentness of Data on Biomass Production & Valorisation	37.50%	37.50%	100.00%	100.00%
4	High Readiness by Public Administration	50.00%	50.00%	75.00%	75.00%
4	High Readiness by Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
4	Mature Circular Bio-based Industry	59.85%	59.85%	73.51%	73.51%
4	R&D	38.74%	38.74%	62.78%	62.78%
4	Infrastructure for Residues Management	49.99%	49.99%	74.99%	74.99%
4	Market Environment	38.92%	38.92%	63.45%	63.45%
4	Market Push/Innovation Environment	28.33%	28.33%	45.00%	45.00%
B1.1	Annual Agricultural Biomass Production	39.22%	39.22%	39.22%	39.22%
B1.2	Annual Woody Biomass Production	73.43%	73.43%	73.43%	73.43%
B1.3	Annual Aquatic Biomass Production	10.86%	10.86%	22.86%	22.86%
B1.4	Agricultural Biomass Production Yields	42.80%	42.80%	50.00%	50.00%
B1.5	Woody Biomass Production Yields	84.07%	84.07%	84.07%	84.07%
B1.6	Aquatic Biomass Production Yields	0.88%	0.88%	1.63%	1.63%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	21.70%	21.70%	40.00%	40.00%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	69.60%	69.60%	69.60%	69.60%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	18.40%	18.40%	45.00%	45.00%
B1.10	Share of Agricultural Biomass of Total Biomass Production	25.00%	25.00%	50.00%	50.00%
B1.11	Share of Woody Biomass of Total Biomass Production	100.00%	100.00%	100.00%	100.00%

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B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	66.67%	66.67%	76.67%	76.67%
B1.14	Water Use Efficiency	96.04%	96.04%	96.50%	96.50%
B1.15	Carbon Footprint	33.44%	33.44%	47.00%	47.00%
B1.16	Annual Change in Biodiversity Intactness Index	57.17%	57.17%	83.33%	83.33%
B2.1	Value of Annual Agricultural Biomass Production	49.22%	49.22%	60.00%	60.00%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	52.31%	52.31%	63.46%	63.46%
B2.3	Value of Annual Forestry Biomass Production	73.05%	73.05%	90.00%	90.00%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	78.50%	78.50%	95.83%	95.83%
B2.5	Value of Annual Aquatic Biomass Production	73.71%	73.71%	92.86%	92.86%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	52.23%	52.23%	72.37%	72.37%
B2.7	Value of Bio-based Products in Proportion to National GDP	9.60%	9.60%	14.44%	14.44%
B2.8	Gross Value Added (GVA) in Bio-based Industries	48.24%	48.24%	65.63%	65.63%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	75.00%	75.00%	75.00%	75.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	50.00%	50.00%	75.00%	75.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%	75.00%	75.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	0.00%	0.00%	100.00%	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%	50.00%	100.00%	100.00%

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B3.5	Currentness of Data on Biomass Production	50.00 %	50.00%	100.0 0%	100.00 %
B3.6	Currentness of Data on Biomass Conversion	50.00 %	50.00%	100.0 0%	100.00 %
B3.7	Currentness of Biomass-related Economic Data	0.00%	0.00%	100.0 0%	100.00 %
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00 %	50.00%	100.0 0%	100.00 %
S.1	Circular Economy Skills	50.00 %	50.00%	75.00 %	75.00%
S.2	Systemic Thinking Skills	50.00 %	50.00%	75.00 %	75.00%
S.3	Sustainability and Environmental Protection Skills	50.00 %	50.00%	75.00 %	75.00%
S.4	Communication Skills	50.00 %	50.00%	75.00 %	75.00%
S.5	Project Management Skills	50.00 %	50.00%	75.00 %	75.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00 %	50.00%	75.00 %	75.00%
S.7	Innovation Skills	50.00 %	50.00%	75.00 %	75.00%
S.8	Entrepreneurships Skills	50.00 %	50.00%	75.00 %	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00 %	50.00%	75.00 %	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	30.40 %	30.40%	47.00 %	47.00%
T.2	Circular Material Use Rate	36.57 %	36.57%	54.29 %	54.29%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	86.22 %	86.22%	93.84 %	93.84%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	86.22 %	86.22%	98.90 %	98.90%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	30.00 %	30.00%	43.64 %	43.64%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	45.75 %	45.75%	58.75 %	58.75%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	79.20 %	79.20%	98.73 %	98.73%
T.8	Technology Transfer	0.00%	0.00%	50.00 %	50.00%

T.9	Infrastructure for Collection and Management of Forestry Residues	25.00%	25.00%	75.00%	75.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	50.00%	50.00%	75.00%	75.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	75.00%	75.00%	75.00%	75.00%
E.1	Value Added of the Bioeconomy Sectors	36.48%	36.48%	45.47%	45.47%
E.2	Turnover in the Bioeconomy Sectors at National Level	47.00%	47.00%	60.13%	60.13%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%	50.00%	75.00%	75.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	50.00%	50.00%	75.00%	75.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%	50.00%	75.00%	75.00%
E.6	National Bioeconomy Investment and Investor Platform	0.00%	0.00%	50.00%	50.00%
E.7	New Value Chains for Bio-based Products	30.00%	30.00%	30.00%	30.00%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	25.00%	25.00%	75.00%	75.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	30.00%	30.00%	30.00%	30.00%

Estonia					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	40.59%	40.80%	52.07%	52.34%
2	Sustainable Biomass Potential for the Bioeconomy	42.48%	41.82%	55.49%	54.95%
2	Comprehensive Set of Competencies for the Bioeconomy	38.70%	39.79%	48.65%	49.73%
3	Sustainable Provision of Biomass Resources	49.72%	48.20%	51.24%	50.10%
3	Adding Value to Biomass	27.74%	27.26%	27.74%	27.26%
3	Detailed Knowledge of Biomass Production and Valorisation	50.00%	50.00%	87.50%	87.50%

3	High Level of Social Competencies	50.00 %	50.00%	75.00 %	75.00%
3	High Level of Technological Competencies	41.51 %	41.79%	44.89 %	44.83%
3	High Level of Economic Competencies	24.59 %	27.60%	26.07 %	29.38%
4	Biomass Production Capacity	37.40 %	37.40%	44.99 %	44.99%
4	Biomass Production Yields	55.92 %	55.92%	55.92 %	55.92%
4	Biomass Production Reserves	67.72 %	67.72%	67.72 %	67.72%
4	Diversity of Biomass Production	33.33 %	33.33%	33.33 %	33.33%
4	Environmental Costs of Biomass Production	54.23 %	54.23%	54.23 %	54.23%
4	Economic Value of Agricultural Biomass Production	17.88 %	17.88%	17.88 %	17.88%
4	Economic Value of Forestry Biomass Production	36.28 %	36.28%	36.28 %	36.28%
4	Economic Value of Aquatic Biomass Production	22.01 %	22.01%	22.01 %	22.01%
4	Economic Value of Bio-based Products	12.52 %	12.52%	12.52 %	12.52%
4	Diversity of Biomass Valorisation	49.99 %	49.99%	49.99 %	49.99%
4	Access to Biomass-related Data	62.50 %	62.50%	87.50 %	87.50%
4	Currentness of Data on Biomass Production & Valorisation	37.50 %	37.50%	87.50 %	87.50%
4	High Readiness by Public Administration	50.00 %	50.00%	75.00 %	75.00%
4	High Readiness by Bioeconomy Sectors	50.00 %	50.00%	75.00 %	75.00%
4	Mature Circular Bio-based Industry	44.28 %	44.28%	44.27 %	44.27%
4	R&D	36.94 %	36.94%	47.07 %	47.07%
4	Infrastructure for Residues Management	43.33 %	43.33%	43.33 %	43.33%
4	Market Environment	39.64 %	39.64%	42.62 %	42.62%

4	Market Push/Innovation Environment	9.53%	9.53%	9.53%	9.53%
B1.1	Annual Agricultural Biomass Production	12.09%	12.09%	20.69%	20.69%
B1.2	Annual Woody Biomass Production	80.97%	80.97%	85.71%	85.71%
B1.3	Annual Aquatic Biomass Production	19.14%	19.14%	28.57%	28.57%
B1.4	Agricultural Biomass Production Yields	30.24%	30.24%	30.24%	30.24%
B1.5	Woody Biomass Production Yields	57.18%	57.18%	57.18%	57.18%
B1.6	Aquatic Biomass Production Yields	80.35%	80.35%	80.35%	80.35%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	57.50%	57.50%	57.50%	57.50%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	80.27%	80.27%	80.27%	80.27%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	65.40%	65.40%	65.40%	65.40%
B1.10	Share of Agricultural Biomass of Total Biomass Production	75.00%	75.00%	75.00%	75.00%
B1.11	Share of Woody Biomass of Total Biomass Production	25.00%	25.00%	25.00%	25.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	38.00%	38.00%	38.00%	38.00%
B1.14	Water Use Efficiency	95.56%	95.56%	95.56%	95.56%
B1.15	Carbon Footprint	62.86%	62.86%	62.86%	62.86%
B1.16	Annual Change in Biodiversity Intactness Index	20.50%	20.50%	20.50%	20.50%
B2.1	Value of Annual Agricultural Biomass Production	22.95%	22.95%	22.95%	22.95%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	12.81%	12.81%	12.81%	12.81%
B2.3	Value of Annual Forestry Biomass Production	26.13%	26.13%	26.13%	26.13%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	46.43%	46.43%	46.43%	46.43%
B2.5	Value of Annual Aquatic Biomass Production	5.38%	5.38%	5.38%	5.38%

B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	38.64 %	38.64%	38.64 %	38.64%
B2.7	Value of Bio-based Products in Proportion to National GDP	11.09 %	11.09%	11.09 %	11.09%
B2.8	Gross Value Added (GVA) in Bio-based Industries	13.94 %	13.94%	13.94 %	13.94%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	50.00 %	50.00%	50.00 %	50.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	50.00 %	50.00%	50.00 %	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	50.00 %	50.00%	50.00 %	50.00%
B3.1	Availability of Detailed Data on Biomass Production	100.0 0%	100.00 %	100.0 0%	100.00 %
B3.2	Availability of Detailed Data on Biomass Conversion	100.0 0%	100.00 %	100.0 0%	100.00 %
B3.3	Availability of Detailed Biomass-related Economic Data	0.00%	0.00%	50.00 %	50.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00 %	50.00%	100.0 0%	100.00 %
B3.5	Currentness of Data on Biomass Production	50.00 %	50.00%	100.0 0%	100.00 %
B3.6	Currentness of Data on Biomass Conversion	50.00 %	50.00%	100.0 0%	100.00 %
B3.7	Currentness of Biomass-related Economic Data	50.00 %	50.00%	100.0 0%	100.00 %
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	0.00%	0.00%	50.00 %	50.00%
S.1	Circular Economy Skills	50.00 %	50.00%	75.00 %	75.00%
S.2	Systemic Thinking Skills	50.00 %	50.00%	75.00 %	75.00%
S.3	Sustainability and Environmental Protection Skills	50.00 %	50.00%	75.00 %	75.00%
S.4	Communication Skills	50.00 %	50.00%	75.00 %	75.00%
S.5	Project Management Skills	50.00 %	50.00%	75.00 %	75.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00 %	50.00%	75.00 %	75.00%

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S.7	Innovation Skills	50.00%	50.00%	75.00%	75.00%
S.8	Entrepreneurships Skills	50.00%	50.00%	75.00%	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	90.00%	90.00%	90.00%	90.00%
T.2	Circular Material Use Rate	51.71%	51.71%	51.71%	51.71%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	22.12%	22.12%	22.11%	22.11%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	13.27%	13.27%	13.27%	13.27%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	50.64%	50.64%	50.62%	50.62%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	43.75%	43.75%	75.00%	75.00%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	3.37%	3.37%	12.66%	12.66%
T.8	Technology Transfer	50.00%	50.00%	50.00%	50.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	50.00%	50.00%	50.00%	50.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	50.00%	50.00%	50.00%	50.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	30.00%	30.00%	30.00%	30.00%
E.1	Value Added of the Bioeconomy Sectors	55.95%	55.95%	73.82%	73.82%
E.2	Turnover in the Bioeconomy Sectors at National Level	81.86%	81.86%	81.86%	81.86%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	25.00%	25.00%	25.00%	25.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	25.00%	25.00%	25.00%	25.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	25.00%	25.00%	25.00%	25.00%
E.6	National Bioeconomy Investment and Investor Platform	25.00%	25.00%	25.00%	25.00%
E.7	New Value Chains for Bio-based Products	1.38%	1.38%	1.38%	1.38%

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E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	25.00 %	25.00%	25.00 %	25.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.21%	2.21%	2.21%	2.21%

Hungary		
Level / Indicator	**Indicator Name**	**Status quo**
1	High National Readiness for the Bioeconomy	34.16%
2	Sustainable Biomass Potential for the Bioeconomy	38.43%
2	Comprehensive Set of Competencies for the Bioeconomy	29.89%
3	Sustainable Provision of Biomass Resources	33.17%
3	Adding Value to Biomass	32.12%
3	Detailed Knowledge of Biomass Production and Valorisation	50.00%
3	High Level of Social Competencies	30.00%
3	High Level of Technological Competencies	27.80%
3	High Level of Economic Competencies	31.89%
4	Biomass Production Capacity	32.57%
4	Biomass Production Yields	39.42%
4	Biomass Production Reserves	43.15%
4	Diversity of Biomass Production	8.33%
4	Environmental Costs of Biomass Production	42.36%
4	Economic Value of Agricultural Biomass Production	56.92%
4	Economic Value of Forestry Biomass Production	21.76%
4	Economic Value of Aquatic Biomass Production	25.58%
4	Economic Value of Bio-based Products	31.35%
4	Diversity of Biomass Valorisation	25.00%
4	Access to Biomass-related Data	75.00%
4	Currentness of Data on Biomass Production & Valorisation	25.00%
4	High Readiness by Public Administration	30.00%
4	High Readiness by Bioeconomy Sectors	30.00%
4	Mature Circular Bio-based Industry	22.21%
4	R&D	31.19%
4	Infrastructure for Residues Management	30.00%
4	Market Environment	33.79%
4	Market Push/Innovation Environment	30.00%
B1.1	Annual Agricultural Biomass Production	51.38%
B1.2	Annual Woody Biomass Production	27.20%
B1.3	Annual Aquatic Biomass Production	19.14%
B1.4	Agricultural Biomass Production Yields	52.51%

B1.5	Woody Biomass Production Yields	45.76%
B1.6	Aquatic Biomass Production Yields	20.00%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	55.00%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	30.87%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	43.60%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%
B1.11	Share of Woody Biomass of Total Biomass Production	25.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%
B1.13	Rate of Soil Organic Carbon Change	38.67%
B1.14	Water Use Efficiency	22.80%
B1.15	Carbon Footprint	56.33%
B1.16	Annual Change in Biodiversity Intactness Index	51.67%
B2.1	Value of Annual Agricultural Biomass Production	58.35%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	55.50%
B2.3	Value of Annual Forestry Biomass Production	16.96%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	26.55%
B2.5	Value of Annual Aquatic Biomass Production	32.39%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	18.78%
B2.7	Value of Bio-based Products in Proportion to National GDP	14.47%
B2.8	Gross Value Added (GVA) in Bio-based Industries	48.24%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	25.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	25.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%
B3.1	Availability of Detailed Data on Biomass Production	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	0.00%
B3.5	Currentness of Data on Biomass Production	50.00%
B3.6	Currentness of Data on Biomass Conversion	0.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	0.00%
S.1	Circular Economy Skills	30.00%
S.2	Systemic Thinking Skills	30.00%
S.3	Sustainability and Environmental Protection Skills	30.00%
S.4	Communication Skills	30.00%
S.5	Project Management Skills	30.00%
S.6	Skills Demanded by the Bioeconomy Sector	30.00%

S.7	Innovation Skills	30.00%
S.8	Entrepreneurships Skills	30.00%
S.9	Digital Skills in Bioeconomy Sectors	30.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	12.00%
T.2	Circular Material Use Rate	16.86%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	30.00%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	30.00%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	30.00%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	34.75%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	30.00%
T.8	Technology Transfer	30.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	30.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	30.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	30.00%
E.1	Value Added of the Bioeconomy Sectors	57.59%
E.2	Turnover in the Bioeconomy Sectors at National Level	25.13%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	30.00%
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	30.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	30.00%
E.6	National Bioeconomy Investment and Investor Platform	30.00%
E.7	New Value Chains for Bio-based Products	30.00%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	30.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	30.00%

Latvia		
Level / Indicator	Indicator Name	Status quo
1	High National Readiness for the Bioeconomy	41.80%
2	Sustainable Biomass Potential for the Bioeconomy	38.80%
2	Comprehensive Set of Competencies for the Bioeconomy	44.80%
3	Sustainable Provision of Biomass Resources	40.58%
3	Adding Value to Biomass	38.34%
3	Detailed Knowledge of Biomass Production and Valorisation	37.50%

3	High Level of Social Competencies	45.00%
3	High Level of Technological Competencies	32.87%
3	High Level of Economic Competencies	56.55%
4	Biomass Production Capacity	25.21%
4	Biomass Production Yields	24.78%
4	Biomass Production Reserves	67.43%
4	Diversity of Biomass Production	49.99%
4	Environmental Costs of Biomass Production	35.49%
4	Economic Value of Agricultural Biomass Production	35.63%
4	Economic Value of Forestry Biomass Production	39.01%
4	Economic Value of Aquatic Biomass Production	7.94%
4	Economic Value of Bio-based Products	50.79%
4	Diversity of Biomass Valorisation	58.33%
4	Access to Biomass-related Data	50.00%
4	Currentness of Data on Biomass Production & Valorisation	25.00%
4	High Readiness by Public Administration	40.00%
4	High Readiness by Bioeconomy Sectors	50.00%
4	Mature Circular Bio-based Industry	34.30%
4	R&D	22.67%
4	Infrastructure for Residues Management	41.66%
4	Market Environment	70.50%
4	Market Push/Innovation Environment	42.60%
B1.1	Annual Agricultural Biomass Production	15.34%
B1.2	Annual Woody Biomass Production	60.00%
B1.3	Annual Aquatic Biomass Production	0.29%
B1.4	Agricultural Biomass Production Yields	29.10%
B1.5	Woody Biomass Production Yields	42.00%
B1.6	Aquatic Biomass Production Yields	3.26%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	54.50%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	94.00%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	53.80%
B1.10	Share of Agricultural Biomass of Total Biomass Production	100.00%
B1.11	Share of Woody Biomass of Total Biomass Production	50.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%
B1.13	Rate of Soil Organic Carbon Change	5.80%
B1.14	Water Use Efficiency	64.10%
B1.15	Carbon Footprint	50.74%
B1.16	Annual Change in Biodiversity Intactness Index	21.33%
B2.1	Value of Annual Agricultural Biomass Production	36.05%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	35.21%
B2.3	Value of Annual Forestry Biomass Production	34.44%

B2.4	Gross Value Added (GVA) in Woody Biomass Production	43.59%
B2.5	Value of Annual Aquatic Biomass Production	0.69%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	15.18%
B2.7	Value of Bio-based Products in Proportion to National GDP	79.11%
B2.8	Gross Value Added (GVA) in Bio-based Industries	22.47%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	75.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	25.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	75.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%
B3.5	Currentness of Data on Biomass Production	0.00%
B3.6	Currentness of Data on Biomass Conversion	0.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%
S.1	Circular Economy Skills	25.00%
S.2	Systemic Thinking Skills	50.00%
S.3	Sustainability and Environmental Protection Skills	50.00%
S.4	Communication Skills	50.00%
S.5	Project Management Skills	25.00%
S.6	Skills Demanded by the Bioeconomy Sector	25.00%
S.7	Innovation Skills	50.00%
S.8	Entrepreneurships Skills	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%
T.1	Bio-material Replacing Non-renewable Resources (Substitutes)	30.00%
T.2	Circular Material Use Rate	14.29%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	46.46%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	46.46%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	9.95%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	7.50%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	23.21%
T.8	Technology Transfer	50.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	25.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	50.00%

T.11	Infrastructure for Collection and Management of Other Biomass Residues	50.00%
E.1	Value Added of the Bioeconomy Sectors	81.50%
E.2	Turnover in the Bioeconomy Sectors at National Level	91.43%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	75.00%
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	75.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%
E.6	National Bioeconomy Investment and Investor Platform	50.00%
E.7	New Value Chains for Bio-based Products	96.25%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	30.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	1.55%

Lithuania					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	47.18%	46.82%	71.91%	70.04%
2	Sustainable Biomass Potential for the Bioeconomy	40.26%	39.72%	64.00%	60.83%
2	Comprehensive Set of Competencies for the Bioeconomy	54.10%	55.49%	79.82%	81.29%
3	Sustainable Provision of Biomass Resources	42.77%	41.89%	57.35%	57.20%
3	Adding Value to Biomass	28.02%	29.91%	34.67%	37.00%
3	Detailed Knowledge of Biomass Production and Valorisation	50.00%	50.00%	100.00%	100.00%
3	High Level of Social Competencies	75.00%	75.00%	100.00%	100.00%
3	High Level of Technological Competencies	43.30%	40.28%	71.55%	67.77%
3	High Level of Economic Competencies	44.03%	45.56%	67.93%	70.29%
4	Biomass Production Capacity	39.58%	39.58%	58.02%	58.02%

4	Biomass Production Yields	55.98%	55.98%	66.84%	66.84%
4	Biomass Production Reserves	57.27%	57.27%	61.10%	61.10%
4	Diversity of Biomass Production	8.33%	8.33%	25.00%	25.00%
4	Environmental Costs of Biomass Production	52.70%	52.70%	75.80%	75.80%
4	Economic Value of Agricultural Biomass Production	29.84%	29.84%	40.22%	40.22%
4	Economic Value of Forestry Biomass Production	13.98%	13.98%	21.25%	21.25%
4	Economic Value of Aquatic Biomass Production	4.40%	4.40%	10.15%	10.15%
4	Economic Value of Bio-based Products	16.87%	16.87%	26.74%	26.74%
4	Diversity of Biomass Valorisation	74.99%	74.99%	74.99%	74.99%
4	Access to Biomass-related Data	50.00%	50.00%	100.00%	100.00%
4	Currentness of Data on Biomass Production & Valorisation	50.00%	50.00%	100.00%	100.00%
4	High Readiness by Public Administration	75.00%	75.00%	100.00%	100.00%
4	High Readiness by Bioeconomy Sectors	75.00%	75.00%	100.00%	100.00%
4	Mature Circular Bio-based Industry	29.44%	29.44%	52.66%	52.66%
4	R&D	33.82%	33.82%	62.03%	62.03%
4	Infrastructure for Residues Management	66.66%	66.66%	99.99%	99.99%
4	Market Environment	59.24%	59.24%	91.56%	91.56%
4	Market Push/Innovation Environment	28.83%	28.83%	44.30%	44.30%
B1.1	Annual Agricultural Biomass Production	49.62%	49.62%	65.52%	65.52%
B1.2	Annual Woody Biomass Production	39.43%	39.43%	51.43%	51.43%
B1.3	Annual Aquatic Biomass Production	29.71%	29.71%	57.14%	57.14%

B1.4	Agricultural Biomass Production Yields	62.00%	62.00%	75.00%	75.00%
B1.5	Woody Biomass Production Yields	42.22%	42.22%	51.11%	51.11%
B1.6	Aquatic Biomass Production Yields	63.72%	63.72%	74.42%	74.42%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	76.50%	76.50%	80.00%	80.00%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	47.33%	47.33%	43.33%	43.33%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	48.00%	48.00%	60.00%	60.00%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%	0.00%	25.00%	25.00%
B1.11	Share of Woody Biomass of Total Biomass Production	25.00%	25.00%	50.00%	50.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	28.87%	28.87%	73.33%	73.33%
B1.14	Water Use Efficiency	91.55%	91.55%	93.20%	93.20%
B1.15	Carbon Footprint	56.21%	56.21%	70.00%	70.00%
B1.16	Annual Change in Biodiversity Intactness Index	34.17%	34.17%	66.67%	66.67%
B2.1	Value of Annual Agricultural Biomass Production	25.65%	25.65%	34.29%	34.29%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	34.03%	34.03%	46.15%	46.15%
B2.3	Value of Annual Forestry Biomass Production	12.04%	12.04%	17.50%	17.50%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	15.92%	15.92%	25.00%	25.00%
B2.5	Value of Annual Aquatic Biomass Production	2.16%	2.16%	7.14%	7.14%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	6.65%	6.65%	13.16%	13.16%
B2.7	Value of Bio-based Products in Proportion to National GDP	10.67%	10.67%	22.22%	22.22%
B2.8	Gross Value Added (GVA) in Bio-based Industries	23.08%	23.08%	31.25%	31.25%

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B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	100.00%	100.00%	75.00%	75.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	100.00%	100.00%	100.00%	100.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%	50.00%	50.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.5	Currentness of Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.6	Currentness of Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%	50.00%	100.00%	100.00%
S.1	Circular Economy Skills	75.00%	75.00%	100.00%	100.00%
S.2	Systemic Thinking Skills	75.00%	75.00%	100.00%	100.00%
S.3	Sustainability and Environmental Protection Skills	75.00%	75.00%	100.00%	100.00%
S.4	Communication Skills	75.00%	75.00%	100.00%	100.00%
S.5	Project Management Skills	75.00%	75.00%	100.00%	100.00%
S.6	Skills Demanded by the Bioeconomy Sector	75.00%	75.00%	100.00%	100.00%
S.7	Innovation Skills	75.00%	75.00%	100.00%	100.00%
S.8	Entrepreneurships Skills	75.00%	75.00%	100.00%	100.00%
S.9	Digital Skills in Bioeconomy Sectors	75.00%	75.00%	100.00%	100.00%

T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	30.00%	30.00%	30.00%	30.00%
T.2	Circular Material Use Rate	11.14%	11.14%	42.86%	42.86%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	39.82%	39.82%	76.57%	76.57%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	36.80%	36.80%	61.20%	61.20%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	30.00%	30.00%	100.00%	100.00%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	24.75%	24.75%	37.50%	37.50%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	5.53%	5.53%	10.63%	10.63%
T.8	Technology Transfer	75.00%	75.00%	100.00%	100.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	50.00%	50.00%	100.00%	100.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	75.00%	75.00%	100.00%	100.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	75.00%	75.00%	100.00%	100.00%
E.1	Value Added of the Bioeconomy Sectors	49.31%	49.31%	69.08%	69.08%
E.2	Turnover in the Bioeconomy Sectors at National Level	56.04%	56.04%	80.16%	80.16%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%	50.00%	100.00%	100.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	75.00%	75.00%	100.00%	100.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	75.00%	75.00%	100.00%	100.00%
E.6	National Bioeconomy Investment and Investor Platform	50.00%	50.00%	100.00%	100.00%
E.7	New Value Chains for Bio-based Products	0.77%	0.77%	2.30%	2.30%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	75.00%	75.00%	100.00%	100.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	10.72%	10.72%	30.63%	30.63%

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Poland					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	40.19%	40.76%	52.67%	53.14%
2	Sustainable Biomass Potential for the Bioeconomy	46.46%	45.89%	51.86%	52.00%
2	Comprehensive Set of Competencies for the Bioeconomy	33.92%	34.56%	53.49%	54.52%
3	Sustainable Provision of Biomass Resources	49.88%	49.13%	56.86%	56.19%
3	Adding Value to Biomass	39.51%	38.19%	48.75%	47.35%
3	Detailed Knowledge of Biomass Production and Valorisation	50.00%	50.00%	50.00%	50.00%
3	High Level of Social Competencies	50.00%	50.00%	75.00%	75.00%
3	High Level of Technological Competencies	30.98%	30.01%	45.37%	43.44%
3	High Level of Economic Competencies	20.79%	24.67%	40.13%	47.59%
4	Biomass Production Capacity	61.61%	61.61%	73.70%	73.70%
4	Biomass Production Yields	64.58%	64.58%	76.17%	76.17%
4	Biomass Production Reserves	68.66%	68.66%	71.60%	71.60%
4	Diversity of Biomass Production	16.66%	16.66%	16.66%	16.66%
4	Environmental Costs of Biomass Production	37.87%	37.87%	46.17%	46.17%
4	Economic Value of Agricultural Biomass Production	53.37%	53.37%	63.86%	63.86%
4	Economic Value of Forestry Biomass Production	39.00%	39.00%	48.57%	48.57%
4	Economic Value of Aquatic Biomass Production	57.07%	57.07%	67.52%	67.52%
4	Economic Value of Bio-based Products	23.13%	23.13%	30.48%	30.48%

4	Diversity of Biomass Valorisation	25.00%	25.00%	33.33%	33.33%
4	Access to Biomass-related Data	50.00%	50.00%	50.00%	50.00%
4	Currentness of Data on Biomass Production & Valorisation	50.00%	50.00%	50.00%	50.00%
4	High Readiness by Public Administration	50.00%	50.00%	75.00%	75.00%
4	High Readiness by Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
4	Mature Circular Bio-based Industry	36.96%	36.96%	45.93%	45.93%
4	R&D	14.32%	14.32%	23.53%	23.53%
4	Infrastructure for Residues Management	41.66%	41.66%	66.66%	66.66%
4	Market Environment	32.44%	32.44%	62.51%	62.51%
4	Market Push/Innovation Environment	9.14%	9.14%	17.74%	17.74%
B1.1	Annual Agricultural Biomass Production	55.14%	55.14%	67.41%	67.41%
B1.2	Annual Woody Biomass Production	58.29%	58.29%	70.86%	70.86%
B1.3	Annual Aquatic Biomass Production	71.43%	71.43%	82.86%	82.86%
B1.4	Agricultural Biomass Production Yields	62.50%	62.50%	74.50%	74.50%
B1.5	Woody Biomass Production Yields	77.78%	77.78%	88.22%	88.22%
B1.6	Aquatic Biomass Production Yields	53.49%	53.49%	65.81%	65.81%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	90.00%	90.00%	93.50%	93.50%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	62.00%	62.00%	67.33%	67.33%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	54.00%	54.00%	54.00%	54.00%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.11	Share of Woody Biomass of Total Biomass Production	50.00%	50.00%	50.00%	50.00%

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B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	73.33%	73.33%	74.67%	74.67%
B1.14	Water Use Efficiency	58.80%	58.80%	67.36%	67.36%
B1.15	Carbon Footprint	0.00%	0.00%	22.65%	22.65%
B1.16	Annual Change in Biodiversity Intactness Index	19.33%	19.33%	20.00%	20.00%
B2.1	Value of Annual Agricultural Biomass Production	37.50%	37.50%	47.51%	47.51%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	69.23%	69.23%	80.20%	80.20%
B2.3	Value of Annual Forestry Biomass Production	25.50%	25.50%	33.38%	33.38%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	52.50%	52.50%	63.76%	63.76%
B2.5	Value of Annual Aquatic Biomass Production	73.76%	73.76%	84.16%	84.16%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	40.39%	40.39%	50.89%	50.89%
B2.7	Value of Bio-based Products in Proportion to National GDP	20.00%	20.00%	26.60%	26.60%
B2.8	Gross Value Added (GVA) in Bio-based Industries	26.25%	26.25%	34.36%	34.36%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	25.00%	25.00%	50.00%	50.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	25.00%	25.00%	0.00%	0.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%	50.00%	50.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%	50.00%	50.00%	50.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	50.00%	50.00%	50.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%	50.00%	50.00%	50.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%	50.00%	50.00%	50.00%
B3.5	Currentness of Data on Biomass Production	50.00%	50.00%	50.00%	50.00%

B3.6	Currentness of Data on Biomass Conversion	50.00%	50.00%	50.00%	50.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	50.00%	50.00%	50.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%	50.00%	50.00%	50.00%
S.1	Circular Economy Skills	50.00%	50.00%	75.00%	75.00%
S.2	Systemic Thinking Skills	50.00%	50.00%	75.00%	75.00%
S.3	Sustainability and Environmental Protection Skills	50.00%	50.00%	75.00%	75.00%
S.4	Communication Skills	50.00%	50.00%	75.00%	75.00%
S.5	Project Management Skills	50.00%	50.00%	75.00%	75.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00%	50.00%	75.00%	75.00%
S.7	Innovation Skills	50.00%	50.00%	75.00%	75.00%
S.8	Entrepreneurships Skills	50.00%	50.00%	75.00%	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	65.00%	65.00%	77.00%	77.00%
T.2	Circular Material Use Rate	34.86%	34.86%	45.31%	45.31%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	44.13%	44.13%	55.65%	55.65%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	3.84%	3.84%	5.76%	5.76%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	21.29%	21.29%	28.85%	28.85%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	0.03%	0.03%	0.03%	0.03%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	10.96%	10.96%	15.25%	15.25%
T.8	Technology Transfer	25.00%	25.00%	50.00%	50.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	50.00%	50.00%	75.00%	75.00%

T.10	Agricultural & Food Industry Residue Collection Infrastructure	25.00%	25.00%	50.00%	50.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	50.00%	50.00%	75.00%	75.00%
E.1	Value Added of the Bioeconomy Sectors	0.00%	0.00%	100.00%	100.00%
E.2	Turnover in the Bioeconomy Sectors at National Level	94.57%	94.57%	100.00%	100.00%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%	50.00%	75.00%	75.00%
E.4	Advisory Services Focalised on Rural Bioeconomy Businesses	25.00%	25.00%	50.00%	50.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	25.00%	25.00%	50.00%	50.00%
E.6	National Bioeconomy Investment and Investor Platform	0.00%	0.00%	0.00%	0.00%
E.7	New Value Chains for Bio-based Products	0.50%	0.50%	0.68%	0.68%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	25.00%	25.00%	50.00%	50.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	1.92%	1.92%	2.56%	2.56%

Romania					
Level / Indicator	**Indicator Name**	**Status quo**	**Prioritized status quo**	**Desired level**	**Prioritized desired level**
1	High National Readiness for the Bioeconomy	32.68%	32.09%	44.76%	46.81%
2	Sustainable Biomass Potential for the Bioeconomy	31.63%	31.63%	31.63%	31.63%
2	Comprehensive Set of Competencies for the Bioeconomy	33.73%	32.39%	57.89%	56.93%
3	Sustainable Provision of Biomass Resources	22.07%	22.07%	22.07%	22.07%
3	Adding Value to Biomass	41.59%	41.59%	41.59%	41.59%
3	Detailed Knowledge of Biomass Production and Valorisation	31.25%	31.25%	31.25%	31.25%

3	High Level of Social Competencies	50.00%	50.00%	77.50%	77.00%
3	High Level of Technological Competencies	23.75%	23.51%	46.32%	48.16%
3	High Level of Economic Competencies	27.44%	26.62%	49.86%	48.57%
4	Biomass Production Capacity	17.55%	17.55%	17.55%	17.55%
4	Biomass Production Yields	18.82%	18.82%	18.82%	18.82%
4	Biomass Production Reserves	42.63%	42.63%	42.63%	42.63%
4	Diversity of Biomass Production	8.33%	8.33%	8.33%	8.33%
4	Environmental Costs of Biomass Production	23.01%	23.01%	23.01%	23.01%
4	Economic Value of Agricultural Biomass Production	52.05%	52.05%	52.05%	52.05%
4	Economic Value of Forestry Biomass Production	29.70%	29.70%	29.70%	29.70%
4	Economic Value of Aquatic Biomass Production	46.58%	46.58%	46.58%	46.58%
4	Economic Value of Bio-based Products	29.62%	29.62%	29.62%	29.62%
4	Diversity of Biomass Valorisation	49.99%	49.99%	49.99%	49.99%
4	Access to Biomass-related Data	25.00%	25.00%	25.00%	25.00%
4	Currentness of Data on Biomass Production & Valorisation	37.50%	37.50%	37.50%	37.50%
4	High Readiness by Public Administration	50.00%	50.00%	80.00%	80.00%
4	High Readiness by Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
4	Mature Circular Bio-based Industry	11.57%	11.57%	15.60%	15.60%
4	R&D	18.04%	18.04%	48.37%	48.37%
4	Infrastructure for Residues Management	41.66%	41.66%	74.99%	74.99%
4	Market Environment	35.56%	35.56%	62.77%	62.77%

4	Market Push/Innovation Environment	19.31%	19.31%	36.95%	36.95%
B1.1	Annual Agricultural Biomass Production	27.59%	27.59%	27.59%	27.59%
B1.2	Annual Woody Biomass Production	18.29%	18.29%	18.29%	18.29%
B1.3	Annual Aquatic Biomass Production	6.77%	6.77%	6.77%	6.77%
B1.4	Agricultural Biomass Production Yields	28.30%	28.30%	28.30%	28.30%
B1.5	Woody Biomass Production Yields	24.22%	24.22%	24.22%	24.22%
B1.6	Aquatic Biomass Production Yields	3.95%	3.95%	3.95%	3.95%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	50.07%	50.07%	50.07%	50.07%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	37.62%	37.62%	37.62%	37.62%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	40.22%	40.22%	40.22%	40.22%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.11	Share of Woody Biomass of Total Biomass Production	25.00%	25.00%	25.00%	25.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	66.67%	66.67%	66.67%	66.67%
B1.14	Water Use Efficiency	0.00%	0.00%	0.00%	0.00%
B1.15	Carbon Footprint	11.19%	11.19%	11.19%	11.19%
B1.16	Annual Change in Biodiversity Intactness Index	14.17%	14.17%	14.17%	14.17%
B2.1	Value of Annual Agricultural Biomass Production	47.02%	47.02%	47.02%	47.02%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	57.09%	57.09%	57.09%	57.09%
B2.3	Value of Annual Forestry Biomass Production	21.10%	21.10%	21.10%	21.10%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	38.31%	38.31%	38.31%	38.31%

B2.5	Value of Annual Aquatic Biomass Production	19.15%	19.15%	19.15%	19.15%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	74.02%	74.02%	74.02%	74.02%
B2.7	Value of Bio-based Products in Proportion to National GDP	19.56%	19.56%	19.56%	19.56%
B2.8	Gross Value Added (GVA) in Bio-based Industries	39.68%	39.68%	39.68%	39.68%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	75.00%	75.00%	75.00%	75.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	50.00%	50.00%	50.00%	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	25.00%	25.00%	25.00%	25.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%	50.00%	50.00%	50.00%
B3.2	Availability of Detailed Data on Biomass Conversion	0.00%	0.00%	0.00%	0.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%	50.00%	50.00%	50.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	0.00%	0.00%	0.00%	0.00%
B3.5	Currentness of Data on Biomass Production	50.00%	50.00%	50.00%	50.00%
B3.6	Currentness of Data on Biomass Conversion	50.00%	50.00%	50.00%	50.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	50.00%	50.00%	50.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	0.00%	0.00%	0.00%	0.00%
S.1	Circular Economy Skills	50.00%	50.00%	75.00%	75.00%
S.2	Systemic Thinking Skills	25.00%	25.00%	75.00%	75.00%
S.3	Sustainability and Environmental Protection Skills	75.00%	75.00%	100.00%	100.00%
S.4	Communication Skills	50.00%	50.00%	75.00%	75.00%
S.5	Project Management Skills	50.00%	50.00%	75.00%	75.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00%	50.00%	75.00%	75.00%

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S.7	Innovation Skills	50.00%	50.00%	75.00%	75.00%
S.8	Entrepreneurships Skills	50.00%	50.00%	75.00%	75.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	30.00%	30.00%	30.00%	30.00%
T.2	Circular Material Use Rate	3.71%	3.71%	11.43%	11.43%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	8.39%	8.39%	12.58%	12.58%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	4.19%	4.19%	8.39%	8.39%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	9.04%	9.04%	18.09%	18.09%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	13.00%	13.00%	100.00%	100.00%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	0.10%	0.10%	0.38%	0.38%
T.8	Technology Transfer	50.00%	50.00%	75.00%	75.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	25.00%	25.00%	75.00%	75.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	50.00%	50.00%	75.00%	75.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	50.00%	50.00%	75.00%	75.00%
E.1	Value Added of the Bioeconomy Sectors	42.18%	42.18%	48.50%	48.50%
E.2	Turnover in the Bioeconomy Sectors at National Level	46.13%	46.13%	53.05%	53.05%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%	50.00%	75.00%	75.00%
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	50.00%	50.00%	75.00%	75.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	25.00%	25.00%	75.00%	75.00%
E.6	National Bioeconomy Investment and Investor Platform	0.00%	0.00%	50.00%	50.00%
E.7	New Value Chains for Bio-based Products	30.00%	30.00%	30.00%	30.00%

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E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	25.00%	25.00%	75.00%	75.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.94%	2.94%	5.87%	5.87%

Slovakia		
Level / Indicator	Indicator Name	Status quo
1	High National Readiness for the Bioeconomy	41.02%
2	Sustainable Biomass Potential for the Bioeconomy	44.86%
2	Comprehensive Set of Competencies for the Bioeconomy	37.18%
3	Sustainable Provision of Biomass Resources	38.16%
3	Adding Value to Biomass	33.92%
3	Detailed Knowledge of Biomass Production and Valorisation	62.50%
3	High Level of Social Competencies	47.50%
3	High Level of Technological Competencies	28.34%
3	High Level of Economic Competencies	35.72%
4	Biomass Production Capacity	32.72%
4	Biomass Production Yields	43.89%
4	Biomass Production Reserves	33.34%
4	Diversity of Biomass Production	16.66%
4	Environmental Costs of Biomass Production	64.21%
4	Economic Value of Agricultural Biomass Production	49.86%
4	Economic Value of Forestry Biomass Production	23.84%
4	Economic Value of Aquatic Biomass Production	20.49%
4	Economic Value of Bio-based Products	25.41%
4	Diversity of Biomass Valorisation	49.99%
4	Access to Biomass-related Data	75.00%
4	Currentness of Data on Biomass Production & Valorisation	50.00%
4	High Readiness by Public Administration	45.00%
4	High Readiness by Bioeconomy Sectors	50.00%
4	Mature Circular Bio-based Industry	24.63%
4	R&D	27.08%
4	Infrastructure for Residues Management	33.33%
4	Market Environment	44.10%
4	Market Push/Innovation Environment	27.34%
B1.1	Annual Agricultural Biomass Production	40.10%
B1.2	Annual Woody Biomass Production	43.77%
B1.3	Annual Aquatic Biomass Production	14.29%

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B1.4	Agricultural Biomass Production Yields	62.50%
B1.5	Woody Biomass Production Yields	42.67%
B1.6	Aquatic Biomass Production Yields	26.51%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	55.10%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	36.73%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	8.20%
B1.10	Share of Agricultural Biomass of Total Biomass Production	0.00%
B1.11	Share of Woody Biomass of Total Biomass Production	50.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%
B1.13	Rate of Soil Organic Carbon Change	66.67%
B1.14	Water Use Efficiency	79.16%
B1.15	Carbon Footprint	70.83%
B1.16	Annual Change in Biodiversity Intactness Index	40.17%
B2.1	Value of Annual Agricultural Biomass Production	41.56%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	58.15%
B2.3	Value of Annual Forestry Biomass Production	14.33%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	33.36%
B2.5	Value of Annual Aquatic Biomass Production	16.45%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	24.53%
B2.7	Value of Bio-based Products in Proportion to National GDP	21.49%
B2.8	Gross Value Added (GVA) in Bio-based Industries	29.34%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	50.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	50.00%
B3.1	Availability of Detailed Data on Biomass Production	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	100.00%
B3.5	Currentness of Data on Biomass Production	50.00%
B3.6	Currentness of Data on Biomass Conversion	50.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%
S.1	Circular Economy Skills	25.00%
S.2	Systemic Thinking Skills	50.00%
S.3	Sustainability and Environmental Protection Skills	50.00%
S.4	Communication Skills	50.00%
S.5	Project Management Skills	50.00%

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S.6	Skills Demanded by the Bioeconomy Sector	50.00%
S.7	Innovation Skills	50.00%
S.8	Entrepreneurships Skills	50.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%
T.1	Bio-material Replacing Non-renewable Resources (Substitutes)	26.00%
T.2	Circular Material Use Rate	30.29%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	12.24%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	30.00%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	30.54%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	25.75%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	2.04%
T.8	Technology Transfer	50.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	50.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	25.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	25.00%
E.1	Value Added of the Bioeconomy Sectors	31.83%
E.2	Turnover in the Bioeconomy Sectors at National Level	32.72%
E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	50.00%
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	50.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%
E.6	National Bioeconomy Investment and Investor Platform	50.00%
E.7	New Value Chains for Bio-based Products	30.00%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	50.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	2.04%

Slovenia					
Level / Indicator	Indicator Name	Status quo	Prioritized status quo	Desired level	Prioritized desired level
1	High National Readiness for the Bioeconomy	53.13%	52.09%	70.03%	70.62%
2	Sustainable Biomass Potential for the Bioeconomy	49.97%	50.83%	67.13%	71.22%

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2	Comprehensive Set of Competencies for the Bioeconomy	56.29%	53.98%	72.94%	69.71%
3	Sustainable Provision of Biomass Resources	41.92%	45.05%	43.21%	46.26%
3	Adding Value to Biomass	58.00%	57.73%	58.19%	57.82%
3	Detailed Knowledge of Biomass Production and Valorisation	50.00%	50.00%	100.00%	100.00%
3	High Level of Social Competencies	61.25%	61.25%	86.25%	86.25%
3	High Level of Technological Competencies	60.39%	55.68%	71.57%	64.78%
3	High Level of Economic Competencies	47.25%	47.25%	61.01%	61.01%
4	Biomass Production Capacity	32.69%	32.69%	35.04%	35.04%
4	Biomass Production Yields	32.84%	32.84%	34.31%	34.31%
4	Biomass Production Reserves	31.42%	31.42%	33.10%	33.10%
4	Diversity of Biomass Production	49.99%	49.99%	49.99%	49.99%
4	Environmental Costs of Biomass Production	62.68%	62.68%	63.61%	63.61%
4	Economic Value of Agricultural Biomass Production	73.78%	73.78%	77.46%	77.46%
4	Economic Value of Forestry Biomass Production	45.52%	45.52%	48.51%	48.51%
4	Economic Value of Aquatic Biomass Production	57.52%	57.52%	59.31%	59.31%
4	Economic Value of Bio-based Products	54.85%	54.85%	55.67%	55.67%
4	Diversity of Biomass Valorisation	58.33%	58.33%	49.99%	49.99%
4	Access to Biomass-related Data	50.00%	50.00%	100.00%	100.00%
4	Currentness of Data on Biomass Production & Valorisation	50.00%	50.00%	100.00%	100.00%
4	High Readiness by Public Administration	60.00%	60.00%	85.00%	85.00%
4	High Readiness by Bioeconomy Sectors	62.50%	62.50%	87.50%	87.50%

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4	Mature Circular Bio-based Industry	74.55%	74.55%	75.41%	75.41%
4	R&D	39.97%	39.97%	47.65%	47.65%
4	Infrastructure for Residues Management	66.66%	66.66%	91.66%	91.66%
4	Market Environment	46.80%	46.80%	64.06%	64.06%
4	Market Push/Innovation Environment	47.70%	47.70%	57.96%	57.96%
B1.1	Annual Agricultural Biomass Production	18.45%	18.45%	19.48%	19.48%
B1.2	Annual Woody Biomass Production	66.57%	66.57%	72.11%	72.11%
B1.3	Annual Aquatic Biomass Production	13.06%	13.06%	13.54%	13.54%
B1.4	Agricultural Biomass Production Yields	35.49%	35.49%	37.28%	37.28%
B1.5	Woody Biomass Production Yields	42.00%	42.00%	44.00%	44.00%
B1.6	Aquatic Biomass Production Yields	21.05%	21.05%	21.67%	21.67%
B1.7	Net Exported Agricultural Biomass [= Exp - Imp]	24.80%	24.80%	25.92%	25.92%
B1.8	Net Exported Woody Biomass [= Exp - Imp]	67.87%	67.87%	69.86%	69.86%
B1.9	Net Exported Aquatic Biomass [= Exp - Imp]	1.60%	1.60%	3.54%	3.54%
B1.10	Share of Agricultural Biomass of Total Biomass Production	100.00%	100.00%	100.00%	100.00%
B1.11	Share of Woody Biomass of Total Biomass Production	50.00%	50.00%	50.00%	50.00%
B1.12	Share of Aquatic Biomass of Total Biomass Production	0.00%	0.00%	0.00%	0.00%
B1.13	Rate of Soil Organic Carbon Change	94.53%	94.53%	94.53%	94.53%
B1.14	Water Use Efficiency	96.07%	96.07%	96.19%	96.19%
B1.15	Carbon Footprint	22.80%	22.80%	26.40%	26.40%
B1.16	Annual Change in Biodiversity Intactness Index	37.33%	37.33%	37.33%	37.33%

B2.1	Value of Annual Agricultural Biomass Production	73.89%	73.89%	77.58%	77.58%
B2.2	Gross Value Added (GVA) in Agricultural Biomass Production	73.67%	73.67%	77.34%	77.34%
B2.3	Value of Annual Forestry Biomass Production	32.85%	32.85%	34.99%	34.99%
B2.4	Gross Value Added (GVA) in Woody Biomass Production	58.19%	58.19%	62.04%	62.04%
B2.5	Value of Annual Aquatic Biomass Production	70.38%	70.38%	72.58%	72.58%
B2.6	Gross Value Added (GVA) in Aquatic Biomass Production	44.65%	44.65%	46.05%	46.05%
B2.7	Value of Bio-based Products in Proportion to National GDP	33.91%	33.91%	35.56%	35.56%
B2.8	Gross Value Added (GVA) in Bio-based Industries	75.78%	75.78%	75.78%	75.78%
B2.9	Share of Conversion into Energy in Domestic Biomass Valorisation	50.00%	50.00%	50.00%	50.00%
B2.10	Share of Conversion into Food & Feed in Domestic Biomass Valorisation	75.00%	75.00%	50.00%	50.00%
B2.11	Share of Conversion into Chemicals & Materials in Domestic Biomass Valorisation	50.00%	50.00%	50.00%	50.00%
B3.1	Availability of Detailed Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.2	Availability of Detailed Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.3	Availability of Detailed Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.4	Availability of Detailed Data on the Environmental Impact of Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.5	Currentness of Data on Biomass Production	50.00%	50.00%	100.00%	100.00%
B3.6	Currentness of Data on Biomass Conversion	50.00%	50.00%	100.00%	100.00%
B3.7	Currentness of Biomass-related Economic Data	50.00%	50.00%	100.00%	100.00%
B3.8	Currentness of Data on the Environmental Impact of Biomass Production	50.00%	50.00%	100.00%	100.00%
S.1	Circular Economy Skills	50.00%	50.00%	75.00%	75.00%

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S.2	Systemic Thinking Skills	50.00%	50.00%	75.00%	75.00%
S.3	Sustainability and Environmental Protection Skills	50.00%	50.00%	75.00%	75.00%
S.4	Communication Skills	75.00%	75.00%	100.00%	100.00%
S.5	Project Management Skills	75.00%	75.00%	100.00%	100.00%
S.6	Skills Demanded by the Bioeconomy Sector	50.00%	50.00%	75.00%	75.00%
S.7	Innovation Skills	75.00%	75.00%	100.00%	100.00%
S.8	Entrepreneurships Skills	75.00%	75.00%	100.00%	100.00%
S.9	Digital Skills in Bioeconomy Sectors	50.00%	50.00%	75.00%	75.00%
T.1	Biomaterial Replacing Non-renewable Resources (Substitutes)	100.00%	100.00%	100.00%	100.00%
T.2	Circular Material Use Rate	29.14%	29.14%	32.57%	32.57%
T.3	Number of Bioenergy and Biorefinery Plants at National Level (TRL 6 or Higher)	69.06%	69.06%	69.06%	69.06%
T.4	Bioenergy Plants and Biorefineries Using Residual Biomass or By-products	100.00%	100.00%	100.00%	100.00%
T.5	R&D Projects (TRL: 3-5) for Bioenergy and Biorefineries	30.00%	30.00%	30.00%	30.00%
T.6	Gross Domestic Expenditure on R&D (GERD) at National Level	50.00%	50.00%	50.75%	50.75%
T.7	Number of Bioeconomy Patents Submitted (at National Level)	29.86%	29.86%	34.84%	34.84%
T.8	Technology Transfer	50.00%	50.00%	75.00%	75.00%
T.9	Infrastructure for Collection and Management of Forestry Residues	75.00%	75.00%	100.00%	100.00%
T.10	Agricultural & Food Industry Residue Collection Infrastructure	50.00%	50.00%	75.00%	75.00%
T.11	Infrastructure for Collection and Management of Other Biomass Residues	75.00%	75.00%	100.00%	100.00%
E.1	Value Added of the Bioeconomy Sectors	42.67%	42.67%	44.84%	44.84%
E.2	Turnover in the Bioeconomy Sectors at National Level	38.10%	38.10%	39.44%	39.44%

E.3	Stakeholder Networks That Facilitate Collaboration Among Bioeconomy Actors	75.00%	75.00%	100.00%	100.00%
E.4	Advisory Services Focalized on Rural Bioeconomy Businesses	50.00%	50.00%	75.00%	75.00%
E.5	Supportive Policy Mechanism for Market Uptake of Bio-based Products	50.00%	50.00%	75.00%	75.00%
E.6	National Bioeconomy Investment and Investor Platform	25.00%	25.00%	50.00%	50.00%
E.7	New Value Chains for Bio-based Products	4.32%	4.32%	5.18%	5.18%
E.8	Supportive Structures to Novel Business Models in the (Circular) Bioeconomy	50.00%	50.00%	75.00%	75.00%
E.9	Projects Scaling Up from Pilot to Demo as a Result of Private/Venture Funds	88.80%	88.80%	93.72%	93.72%

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