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D5.2 Map of local stakeholder needs, drivers and barriers

ZSI

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Table of contents:

D5.2 Map of local stakeholder needs, drivers and barriers	0
1. Executive Summary	8
2. Introduction	9
3. Methodology	10
3.1 Research objective	10
3.2 Research context and data sources	10
3.3 Development of the interview guideline	11
3.4 Data collection	11
3.5 Data analysis	12
3.6 Report structure:.....	12
3.7 Methodological limitations	13
4. The 12 BIOLOC regional hubs at a glance	15
4.1 BIOLOC Hub in Bulgaria (Plovdiv region).....	16
4.2 BIOLOC Hub in Croatia (Adriatic region)	17
4.3 BIOLOC Hub in the Czech Republic (Moravian – Silesian region)	18
4.4 BIOLOC Hub in Germany (Baden – Württemberg region)	20
4.5 BIOLOC Hub in Greece (Western Macedonian region)	21
4.6 BIOLOC Hub in Hungary (Northern Hungary region)	23
4.7 BIOLOC Hub in Italy (Campania region)	25
4.8 BIOLOC Hub in the Netherlands (Apeldoorn region).....	26
4.9 BIOLOC Hub in Romania (Western Romania and Transilvanian region).....	27
4.10 BIOLOC Hub in Slovakia (Nitra region).....	29
4.11 BIOLOC Hub in Slovenia (the whole country)	30
4.12 BIOLOC Hub in Spain (Aragon region).....	32
5. The sample	34
6. Exploring CBE: Knowledge, awareness, and involvement among BIOLOC hub target groups	35
6.1 CBE knowledge and awareness	35
6.1.1 Lack of CBE knowledge and awareness	35
6.1.2 Basic understanding and awareness	35
6.1.3 In-depth understanding and application	37
6.1.4 Misunderstanding.....	38
6.2 Involvement of interview partners in CBE	39



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6.2.1	Lack of involvement	39
6.2.2	No indication of level of involvement but understanding of the potential	41
6.2.3	Involvement through personal and economic practices	41
6.3	Synthesis: CBE knowledge, awareness and involvement of the BIOLOC hub target groups	42
7.	Barriers to participate in social life	44
7.1.	Discrimination and prejudice:	44
7.1.1.	Gender discrimination:.....	44
7.1.2.	Ethnic and racial discrimination	45
7.1.3.	Health-based / disability-based discrimination:	46
7.1.4.	Socio-economic status-based discrimination:	46
7.1.5.	Age-based discrimination	47
7.2.	Limitation in infrastructure	47
7.2.1.	Transport issues.....	48
7.2.2.	Lack of supportive infrastructure for initiatives	48
7.2.3.	Physical accessibility	48
7.3.	Economic challenges and unemployment.....	49
7.3.1.	Economic challenges.....	49
7.3.2.	Lack of work experience.....	49
7.3.3.	Job scarcity.....	49
7.3.4.	Low wages	50
7.3.5.	The culture of poverty.....	50
7.4.	Education and skill gaps	50
7.4.1.	Limited access to education and training opportunities.....	51
7.5.	Impact of depopulation:	51
7.6.	Personality and social stigma:.....	52
7.7.	Obstacles to communication and community engagement.....	52
7.8.	Synthesis: Barriers to participate in social life.....	53
8.	CBE – Perceived potential, drivers, and challenges of the BIOLOC hubs target groups.....	58
8.1.	Perception of opportunities in CBE	58
8.1.1.	Potential for new funding streams	59
8.1.2.	Potential for business development.....	59
8.1.3.	Job creation	60



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8.1.4.	Educational and training	62
8.1.5.	Health and environmental benefits	63
8.1.6.	Community development and resilience	63
8.1.7.	Inclusivity and social integration	64
8.2.	Drivers.....	64
8.2.1.	Personal and professional development	65
8.2.2.	Economic opportunities	65
8.2.3.	Environmental awareness	66
8.2.4.	Health motivations	67
8.2.5.	Cultural continuity	67
8.3.	Challenges in fully participating in the CBE sector and their supportive measures	67
8.3.1.	Financial and economic barriers	67
8.3.2.	Educational and skills deficiencies	70
8.3.3.	Lack of knowledge and awareness.....	72
8.3.4.	Regulatory and bureaucratic challenges	74
8.3.5.	Infrastructure and technology limitations	77
8.3.6.	Social and cultural barriers	77
8.3.7.	Health and accessibility issues	78
8.3.8.	Synthesis: CBE – Perceived potential, drivers and challenges of the BIOLOC hubs target groups.....	79
9.	Needs in information, education, and training	81
9.1.	Receiving information on employment and business opportunities	81
9.1.1.	Topics of interest.....	81
9.1.2.	Information channels.....	82
9.2.	Education and Training	83
9.2.1.	Current skill sets.....	83
9.2.2.	Training interest	83
9.2.3.	Topics for training.....	84
9.2.4.	Training formats.....	85
9.2.5.	Barriers to taking training and support needed	86
9.3.	Synthesis: Needs in information, education, and training	91
10.	What can BIOLOC do?.....	93
10.1.	Education and capacity building	93



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10.1.1.	Practical and experiential learning and workshops	93
10.1.2.	Integration into educational curricula programmes	93
10.1.3.	Linking education to employment	93
10.1.4.	Provision of information and resources	94
10.2.	Awareness	94
10.2.1.	Support in raising environmental and CBE awareness	95
10.2.2.	Sharing of “best-practice” examples	95
10.3.	Support mechanisms for implementation	96
10.3.1.	Policy advocacy and administrative support	96
10.3.2.	Provision of essential technical tools	96
10.3.3.	Support in addressing environmental challenges	96
10.4.	Resource accessibility and networking	97
10.4.1.	Facilitating access to financial resources	97
10.4.2.	Highlighting opportunities within the CBE	97
10.5.	Inclusion and equality	98
10.5.1.	Supporting gender equality	98
10.5.2.	Facilitating the integration vulnerable groups into the CBE	98
10.6.	Synthesis: What can BIOLOC do?	99
11.	Conclusion and recommendations	100
12.	References:	101
Annex 1:	Questionnaire for individual persons of marginalised group	104
1.	Interview guidelines	104
1.1	Before the interview:	104
1.2	During the interview:	105
1.3	After the interview	110
2.	Question blocks	111
2.1	Background information	111
2.2	Personal situation in community and job market	112
2.3	Opportunities in circular bioeconomy (CBE)	113
2.4	Education & Training	114
2.5	Final question	115
3.	Optional part	115
3.1	Environmental issues	115



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3.2 Awareness on environmental issues in general	117
Annex 2: Questionnaire for REPRESENTATIVES of marginalized groups	118
1. Interview guidelines	118
2. Background information	118
3. Personal situation in community and job market.....	118
4. Opportunities in circular bioeconomy (CBE)	120
5. Education & Training.....	121
Annex 3: Questionnaire for REPRESENTATIVES of marginalized groups	122
1. Executive summary (1-3 paragraphs)	122
2. What is the case, what is the context (1 paragraph)?	122
3. Sample of interview partners and interview method	123
4. Interview findings	123
4.1 Background information	123
4.2 Opportunities in circular bioeconomy (CBE)	125
4.3 Education and Training	127
4.4 Contribution of the BIOLOC project	129
4.5 Optional part	129

Table of tables

Table 1: Selected marginalised groups of the BIOLOC regional hubs.....	15
Table 2: BIOLOC hub in Bulgaria.....	17
Table 3: BIOLOC hub in Croatia.....	18
Table 4: BIOLOC hub in Czech Republic	20
Table 5: BIOLOC hub in Germany.....	21
Table 6: BIOLOC hub in Greece	23
Table 7: BIOLOC hub in Hungary	24
Table 8: BIOLOC hub in Italy	26
Table 9: BIOLOC hub in the Netherlands	27
Table 10: BIOLOC hub in Romania	29
Table 11: BIOLOC hub in Slovakia	30
Table 12: BIOLOC hub in Slovenia	32
Table 13: BIOLOC hub in Spain	33
Table 14: Overview of interview sample for this report.....	34
Table 15: Overview of barriers to participation in social life by target groups of BIOLOC hu.....	57



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1. Executive Summary

This report's objective is to convey the findings and insights from the BIOLOC project's engagement with its target groups - primarily marginalised communities - in 12 regional BIOLOC hubs in the context of the circular bioeconomy (CBE). This report, prepared under Task 5.2 focuses on understanding the needs, barriers, and drivers that shape these groups' engagement with circular bioeconomy. Using qualitative methods, including interviews with individuals from marginalised groups and their advocates, the research identifies both systemic constraints and opportunities. The analysis captures a range of perspectives, reflecting the diverse contexts in which these communities operate.

The findings reveal significant disparities in awareness of CBE among marginalised populations, largely attributed to structural issues such as limited access to resources, education, and training. These challenges are further complicated by cultural, technological, market, and regulatory barriers. Despite these difficulties, many of these communities exhibit a strong desire for economic, social, and environmental advancement, highlighting their interest in participating in CBE initiatives.

The findings underscore the importance of the BIOLOC regional hubs in bringing interventions that consider regional differences, recognising that each group encounters challenges within their specific context. The role of BIOLOC hubs emerge as critical in closing knowledge gaps, increasing awareness, and supporting local resilience with tailored, localised strategies.

The report concludes that creating equitable opportunities for marginalised groups in the CBE requires inclusive strategies that address systemic barriers, emphasise co-creation, and provide region-specific education and training. These recommendations offer actionable guidance for policymakers, businesses, and practitioners aiming to integrate social equity into sustainability initiatives.



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2. Introduction

The life cycle is deeply intertwined with the environment and the lifestyles that communities adopt, influenced either by personal choices or the socio-economic conditions they face. While circular economy is discussed in developed country contexts, constant situations of scarcity of everyday resources in poorer regions often pushes individuals to implement resource-conserving innovative practices for retaining materials and goods. Marginalised communities, often facing systemic barriers and resource scarcity, are uniquely positioned in this dynamic. Korsunova et al., (2022) defined the necessity-driven circular economy, “as a set of locally embedded and interlinked formal and informal practices aimed at restoring and retaining the value of goods and materials for as long as possible, based on economic necessity and opportunities for income generation.” The study emphasises that little attention is given to local communities and their informal local practices, which are closely linked to their social and economic contexts. Circular bioeconomy, an evolution of circular economy principles, emphasises the sustainable use of renewable biological resources to create energy, materials, and products. However, as Hadley Kershaw et al., (2021) argue, the success of such transitions depends on inclusivity.

Addressing and understanding the systemic barriers faced by the marginalised communities is essential to enable these communities to participate in and benefit from circular bioeconomy initiatives. The BIOLOC regional hubs are contributing to create measurable impacts in local bioeconomy sectors and raise community awareness of these opportunities. This report explores the barriers and drivers of the targeted marginalised groups' of BIOLOC regional hubs, aiming to support a fair and inclusive bioeconomy transition. In this regard this study aims at answering the following research questions:

- What are the circular mindsets in our case studies and how do they impact circular bioeconomy development?
- Which economic necessities would drive circular bioeconomy practices?
- How do the unique needs, challenges, and opportunities of marginalised communities influence their pathways and contributions to the circular bioeconomy?

With this report we want to add a small piece to the puzzle of understanding how vulnerable communities in the BIOLOC project can use circular bioeconomy to improve their socio-economic situation and how local circular bioeconomies could be supported by awareness-raising and training activities.



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3. Methodology

3.1 Research objective

The main aim of this research was to understand the needs, barriers and drivers of marginalised groups targeted by the 12 BIOLOC regional hubs. A qualitative approach, based on in-depth interviews, was chosen to capture the complex experiences of these groups. Other project activities and their resulting deliverables (D2.1, D2.2, D2.3, D3.1 and D4.1) and hub-based exercises added context, shaping the interview guide.

3.2 Research context and data sources

This report builds on the preparatory work done in WP2, WP3 and WP4. The findings from these work packages, especially WP2 review of the BIOLOC regions including the socially marginalised groups, provided essential context for the research. This included gathering key information such as demographics, economic data, regional features, and social factors.

With this clear understanding of the local context, the regional hubs then selected specific marginalised groups to focus on within their regions. To guide this selection, the hubs received an exercise from ZSI. They were required to build on the analysis of marginalised groups in the survey carried in the framework of D2.2 as well as to consider the following key question to guide their selection of group(s) to focus on within their hubs.

- How can target groups better profit from the Bioeconomy sector or from concrete BIOLOC actions?
- What hinders target groups so far to participate in the Bioeconomy sector?
- Which factors are determining so that solutions are really useful for and adopted by the target groups?
- What do target groups need to be involved in creation of value by Bioeconomy?

The responses to these questions shaped the interview guide used in the next research stage. Additionally, members and representatives of the marginalised groups selected, were the subject of the research. The exact sample is described in Chapter 5 of this report.

Primary data for this research comes from interview reports submitted by the BIOLOC regional hubs. These reports contain summaries of interviews with both members of marginalised groups and their representatives. While most hubs provided synthesised summaries, some included direct participant quotes. In the analysis, excerpts from these reports are cited as "Country: '[excerpt]'" to maintain clear attribution.

Secondary data sources include:



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- Deliverable D2.1: Report on the analysis of the variety of bioeconomies in participating local communities
- Deliverable 2.2: Report on the regional bio-based systems cases description
- Deliverable 2.3: Report on the assessment of local needs, conditions, and opportunities
- Deliverable 3.1: Development of the factsheet template for the biobased catalogue
- Deliverable 4.1: Analysis of local context

Literature sources, cited in-line throughout the analysis, provide theoretical and contextual background.

3.3 Development of the interview guideline

The interview guide was developed through a multi-stage collaborative process:

1. The BIOLOC regional hub partners contributed questions based on their knowledge of local needs and challenges and specific aspects they wanted to understand their target groups better.
2. ZSI added insights from relevant literature, enhancing the guide with broader perspectives and drafted the interview guideline.
3. At the November 2023 monthly hub meeting, ZSI and regional partners reviewed each question to check its clarity, relevance, and the expected ability of respondents to provide informed responses. Feedback focused on three sections of the draft interview guideline:
 - a. Personal situation in the community and job market.
 - b. Opportunities and challenges in the community-based economy (CBE).
 - c. Education and training needs.
4. With the feedback from the discussions during the monthly hub meeting, ZSI refined and finalised the interview guideline.

As some of the regional hub partners indicated during the call that they had limited experience in implementing interviews, ZSI added a section at the beginning of the guideline including guidance and tips to facilitate effective interviews.

3.4 Data collection

The BIOLOC regional hub partners conducted interviews in their respective regions from November 2023 to February 2024 according to the final interview guideline (see Annex 1 and Annex 2). Each hub was required to:

1. Conduct at least three interviews with members of the target group,
2. Conduct one or more interviews with a representative from the target group, such as a social organisation.



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Table 11 in Chapter 5 of this report shows the number of people from the marginalised groups and their representatives that were interviewed. This varied depending on the access of the regional hubs to the interview partners.

3.5 Data analysis

To ensure that the interviews across the 12 BIOLOC regional hubs were documented in a uniform manner, ZSI provided the regional partners with a template for the reports (see Annex 3). This meant that the regional partners would provide short summaries of the interviews according to a number of topics, hence the first analysis of the interviews was carried out by the regional partners and documented in the template.

Following the completion of the interviews and receipt of the final reports, which were subject to delays that extended the timetable beyond the original Christmas deadline to the end of February, ZSI undertook the task of coding the data using MaxQDA software, which helped to identify themes while preserving participants' voices.

3.6 Report structure:

The findings are represented as follows:

1. **Overview of the regional hubs:** Providing a detailed overview of the context of each regional hub, this part of the report presents alphabetically organised snapshots that include case studies and contextual analysis. These snapshots provide insights into why specific target groups were selected, their relevance to the local CBE sector and the expected impact of BIOLOC on these groups. This section also highlights key challenges within the regions and the perceived role of CBE in addressing these challenges.
2. **The sample** Following the regional snapshots, this chapter shows the respondents over the regional hubs and a synthesis of the target groups' level of knowledge and awareness of CBE and their rate of involvement challenges. It discusses the interview sample, including participants' awareness of CBE, and concludes with recommendations for improving their engagement and participation in CBE based on their knowledge and awareness levels.
3. **Barriers to participate in social life:** Recognising the marginalised status of the target groups, this chapter looks at the social and systemic barriers that hinder their full participation in society. It includes extracts from the interview reports to provide authentic insights into the challenges faced by these groups, and to provide a basis for understanding the interventions needed to overcome these barriers.
4. **CBE - Needs, barriers and drivers:** As the core of the report, this chapter explores the perceived opportunities, drivers for engagement and challenges faced by the target groups



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to fully participate in the CBE. It outlines the supportive measures suggested by respondents, laying the groundwork for actionable strategies to facilitate their participation in CBE.

5. **Needs in information, educational and training:** Highlighting the crucial role of information, education, and training in empowering the target groups, this chapter describes their information needs, preferred learning channels and current skills gaps. It discusses topics of interest for further learning, preferred formats for education and training, and barriers to accessing these resources in the context of CBE.
6. **What can BIOLOC do?:** Based on the findings from the interviews, this chapter outlines the strategic interventions that BIOLOC can undertake as according to the respondents to enhance the engagement of the target groups in CBE.
7. **Conclusion:** The report concludes with a summary of the key findings, reflecting on the implications of these findings for the BIOLOC project and the wider agenda of engaging marginalised communities in CBE. It also outlines next steps and potential areas for future research and action.

This structured analysis paved the way for the synthesis of findings presented in this report, which follows a logical progression from presenting a snapshot of the regional hubs to delving into the specific needs, barriers, and drivers of the target groups. The structure of this report is carefully designed to convey the complexity and diversity of the target groups' experiences, enriched by direct extracts from the interview reports to ensure authenticity and context-specific insights.

3.7 Methodological limitations

The analysis presented in this report is inherently complex, involving multiple layers of interpretation. The research findings are the result of a two-stage analytical process: The regional partners first conducted interviews and created summaries of these conversations by topic as represented in the interview reports template. Most hubs provided synthesised summaries of interview results, while a few hubs submitted direct verbatim responses from interviewees. This initial layer of analysis involved the hubs' interpretation and condensation of the interview data. ZSI then conducted a qualitative analysis of these hub-produced summaries. This means the findings represent an "analysis of an analysis" - a secondary interpretation of the regional hubs' initial summaries.

These multiple layers of interpretation introduce several important limitations:

- The findings are filtered through two levels of subjective interpretation: First, by the regional hub partners who conducted and summarised the interviews. Then, by ZSI's research team during the secondary analysis.
- The original nuances and depth of interviewees' responses may be partially lost through these successive layers of summarisation and interpretation.



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As a result, it is important to note that the findings of this report are derived from the subjective opinions of the interviewees and the perceptions of the hub partners. Therefore, while they provide valuable insights into the needs and challenges of the target groups, the conclusions should not be interpreted as a comprehensive needs assessment of the regions. The methodology emphasises respect for participants' perspectives, ensuring that their voices are heard and valued throughout the project at the same time recognising the inherent complexities of a multi-layered analytical approach. Researchers and readers are encouraged to approach these findings with an understanding of the interpretative layers that shape the analysis, appreciating both its potential value and its methodological constraints.



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4. The 12 BIOLOC regional hubs at a glance

The BIOLOC regional hubs are presented below. Table 1 offers a concise summary of all the regions and their targeted marginalised target groups, organised into four distinct categories based on the hubs' areas of focus.

	Region	Marginalised group(s)	Group
1.	Bulgaria	Ethnic minorities, unemployed, homeless, small farmers and those who are not in their main profession	A, B, D
2.	Croatia	Students of the woodworking and mechanical school	B*
3.	Czech Republic	Unemployed young people	B*
4.	Germany	NEETs	B*
5.	Greece	People with disabilities	C
6.	Hungary	Inhabitants of small villages	D
7.	Italy	Agro-forestry workers and livestock farmers	D
8.	Netherlands	Female migrants, homeless people, unemployed people, elderly people	A, B, C
9.	Romania	Young people living in economically disadvantaged areas where pollution is a major problem	B*
10.	Slovakia	Homeless people and people from the Roma community	A, B
11.	Slovenia	Disadvantaged young people participating in the 'Productive Schools and Enterprises for Educational Inclusion' programme	B*
12.	Spain	Rural women over 40, people with disabilities and migrants	A, C

Table 1: Selected marginalised groups of the BIOLOC regional hubs

Groups:

A: Ethnic minorities and migrants

B: The unemployed and economically disadvantaged (Youth*)

C: People with disabilities and health issues

D: Rural and agricultural workers.



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4.1 BIOLOC Hub in Bulgaria (Plovdiv region)

<p>The case and the context:</p> <p>The Bulgarian BIOLOC hub focuses on a diverse group within marginalised communities, including ethnic minorities, the unemployed, the homeless, small farmers and those who have moved away from their main occupation. This group is motivated by a strong desire for personal development and a better quality of life, driven by a need for knowledge about new policies, environmental sustainability and the preservation of ancestral traditions. However, their engagement in the CBE sector is hampered by several systemic issues such as financial constraints, inadequate infrastructure, and a general lack of local and regional development initiatives.</p> <p>The case context is set against the backdrop of these individuals' deep connection to their regional traditions and their willingness to stay and contribute to their local economies despite facing significant challenges. These challenges include gender discrimination, particularly in relation to motherhood and employment, and the general male dominance of the labour market, which creates barriers to women's participation in CBE. In addition, poor infrastructure limits the development of bio-economic initiatives, making it difficult for these groups to actively participate in CBE.</p>
<p>Most pressing challenges in the region and role of CBE:</p> <p>The most pressing challenges in the region include:</p> <ul style="list-style-type: none"> ▪ Poor infrastructure ▪ Poor regional management ▪ Gender discrimination in employment ▪ Systematic challenges such as demographic changes, migration, and climate issues ▪ Male-dominated job market <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Economic empowerment ▪ Community engagement ▪ Gender equality and social inclusion ▪ Infrastructure development ▪ Regional resilience and sustainability
<p>Description of target group (challenges, skills, knowledge on CBE):</p> <p>The target group within the Bulgarian BIOLOC hub encompasses a wide range of marginalised people, including ethnic minorities, the unemployed, the homeless, small farmers and those who are not in their main profession, many of whom have only a basic level of knowledge. These individuals are driven by a strong desire to improve their lives through the CBE sector, motivated by a need for new political knowledge, lifestyle improvement, societal contribution, environmental sustainability and the continuation of ancestral traditions.</p>



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Despite their willingness, several systemic barriers hinder their active participation in the CBE sector. These barriers include lack of access to healthy food, financial constraints, and inadequate infrastructure, all of which hinder local and regional development. Key needs identified to facilitate their engagement include clear and comprehensive information about regional development opportunities, highlighting how such developments can tangibly benefit their personal and community growth.

These findings reveal a group who are deeply connected to their cultural roots and local communities, and who value the potential improvements that the CBE sector could bring to their lives and environment. However, in order to realise this potential, they need targeted support to overcome the structural barriers that limit their participation, as well as improved information resources to enable them to fully understand and take advantage of the opportunities within the CBE sector.

Table 2: BIOLOC hub in Bulgaria

4.2 BIOLOC Hub in Croatia (Adriatic region)

The case and the context:

The Croatia Hub has examined attitudes and motivations of students from the woodworking school in Rijeka, targeting them due to their connection to the industry and declining interest in vocational professions.

As future experts in the woodworking sector, students from the woodworking school can play a crucial role in implementing the principles of the CBE. Their education and professional development can be of essential importance for the implementation of sustainable practices in the woodworking sector, which can significantly contribute to the local context of the CBE.

Most pressing challenges in the region and role of CBE:

Most pressing challenges in the region:

- Limited resources and access to education
- Gender imbalance in vocational education
- Resistance to new concepts
- Lack of professional network and expertise
- Challenges in maintaining internships and accessing resources.

Perceived role of CBE in the region:

- Economic development
- Job creation
- Education empowerment



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- Integration of sustainable practices
- Promotion of sustainable industry practices
- Contribution to regional sustainability

Description of target group (challenges, skills, knowledge on CBE):

Students of the woodworking and mechanical school mostly come from families with lower socioeconomic status and face disadvantages in their educational path, such as a lack of resources or limited access to additional educational materials. Additionally, there are students with certain learning difficulties, and there may be challenges in keeping up with lessons and completing tasks. Female students are underrepresented. The school recognises the importance of diversity and implements certain promotional tools to encourage equal opportunities for all. There is a recognised need for providing mentorship support to female students who have chosen to build a career in a traditionally male-dominated sector.

Motivations for exploring opportunities in the CBE sector are primarily linked to awareness of environmental conservation and the need for new jobs in fields related to sustainability. Currently, their progress is hindered by a lack of knowledge about the concept of the CBE and by certain resistances towards the adoption of new technologies. They also cite the lack of a professional network and experts familiar with the CBE concept as a problem.

Table 3: BIOLOC hub in Croatia

4.3 BIOLOC Hub in the Czech Republic (Moravian – Silesian region)

The case and the context:

The hub in the Czech Republic selected young unemployed people in the Moravian-Silesian region as their main target group. The Moravian-Silesian Region is an industrial region that is historically above average dependent on large, traditional companies from the fields of metallurgy, mining, and engineering. The decline of traditional industries and the associated outflow of talented young people causes a decrease in the number of inhabitants by an average of 5-10 thousand per year. The Moravian-Silesian region had the highest number of unemployed in 2021 and 2021, and unemployment rose further in 2023. The age group of 15 to 44 years old persons represented². Currently, the region is slowly starting to prepare for the transformation of its economy. The Just transition Fund, among others, is supposed to help with this. The Just Transformation Operational Program is a completely new program in the period 2021-2027 aimed at solving the negative impacts of the shift away from coal in the most affected regions. This is why steps towards the bioeconomy are now being supported in the region.

¹ in 2021 it was 26.7 thousand people, which represented 17.7% of the total number of unemployed; in 2022, 23.1 thousand people, which amounted to 19.6 % of the total number of unemployed, <https://www.czso.cz/csu/czso/>

² in 2021 they 65.1% of the total number of unemployed, in 2022 than 61.4% of the total number of unemployed, <https://www.czso.cz/csu/czso/>



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The combination of both facts – high youth unemployment and economic transformation – is the reason why the hub set its goal on the involvement of active young people from the region into the successful transformation process of the Moravian-Silesian Region. A group of young job seekers is willing to undergo retraining and change their field of employment (or the field they graduated from).

Most pressing challenges in the region and role of CBE:

Most pressing challenges in the region:

- High rate of unemployment: The district of focus has - together with Karvinsko and Bruntálsko - the highest unemployment rate in the Czech Republic.
- Limited opportunities for young graduates with limited work experience and unrealistic job expectations graduates (they demand a high salary; many benefits and they prefer office work).
- Regional culture is rather conservative and there is resistance to change and innovation.
- Poor transport infrastructure (connections from villages to cities are not frequent and have a low frequency).
- Dependence on industries that are under decline.
- Limited access to information and education.

Perceived role of the bioeconomy:

- Potential for economic development and job creation.
- Opportunity to attract young talent and address unemployment in the region.
- Prevent outflow of people from the region.
- Potential to address environmental concerns and promote sustainability.
- Economic restructuring and diversification.
- Support in the development of a regional bioeconomy.

Description of target group (challenges, skills, knowledge on CBE):

The target group are often enrolled in part-time jobs outside their field due to the lack of job opportunities. They are looking for attractive, permanent, and well-paid jobs, and staying in the sector they graduated from is not a top priority for them. For this reason, the Czech Hub identified the CBE sector as an opportunity for attractive jobs for them.

The interviewed young persons have graduated from a secondary hotel school, a secondary school of nursing and a general secondary school. They have no direct experience of discrimination but are currently unemployed. As their biggest obstacles to find a job they mentioned their lack of working experience and the lack of offered positions (the situation is additionally complicated by the fact that, very often, the positions are filled by pensioners or students as there are tax benefits. This phenomenon happens, especially in tourism.). The interviewed partner from the health sector found her job physically demanding and wanted to change sector.

They did not know the meaning of CBE at the first mention but related it to environmental protection. CBE was mainly associated with waste management and environmental protection



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(sorting and recycling household waste, reduction of food waste and organic food). How CBE could contribute to their daily lives was not clear. They saw it as a role for businesses rather than having meaning and benefit for individuals.

Table 4: BIOLOC hub in Czech Republic

4.4 BIOLOC Hub in Germany (Baden – Württemberg region)

The case and the context:
<p>The German hub selected NEETs (Not in Employment, Education or Training) as their target group and wants to focus firstly on understanding opportunities for collaboration and finding strategies for engaging the target group. Offering NEETs opportunities in the CBE can give them a sustainable perspective for their future, as they are often looking for something meaningful. BIOLOC can support this by providing information about the CBE and the opportunity to participate in BIOLOC workshops.</p> <p>In order to benefit from the opportunities in the CBE sector, it is crucial to address the specific needs of the target group. This includes for example targeted support for NEETs with a migrant background, addressing language and cultural barriers, providing opportunities that match their ambitions. For those with health problems, there is a need for tailored solutions that take into account their specific circumstances. To address economic and social marginalisation of NEETs, increased awareness and collaboration among educational institutions, social service agencies, and employment agencies is essential. These institutions need to be informed and actively engaged in the CBE sector to ensure that opportunities for NEETs are created.</p>
Most pressing challenges in the region and role of CBE:
<p>Most pressing challenges in the region are:</p> <ul style="list-style-type: none"> ▪ Economic and social marginalisation of NEETs ▪ Limited access to fitting employment opportunities - employment agencies tend to look for the usual sectors, such as hotel and gastronomy, warehousing, and logistics, even the more low-level professions, in the social sector, including care. People from the target group themselves do not find these usual sectors that exciting. <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Provision of meaningful and sustainable opportunities ▪ Broadening the scope of employment and training opportunities
Description of target group (challenges, skills, knowledge on CBE):
<p>The target group is young people between the ages of 15 and 24 who are identified as NEETs (Not in Employment, Education or Training). This population is diverse, with different reasons for their NEET status. Sub-groups within the target population include those who are unable to work for</p>



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reasons such as illness or full-time caring responsibilities, those who are actively seeking a job or apprenticeship, and others who are not currently looking for work, perhaps due to a gap year or lack of direction. In addition, NEETs with a migrant background are a distinct subgroup who face challenges related to language, culture, and employment opportunities.

Several barriers prevent NEETs from taking up opportunities in the CBE sector. NEETs with migrant backgrounds often face job offers in specific sectors such as catering, storage, logistics or care, with language and cultural difficulties being a challenge. Those with lower educational profiles may find it difficult to find employment in their desired fields. NEETs with health problems cannot take advantage of opportunities in the CBE sector if they are unable to work because of their problems. Therefore, the target group is often economically marginalised because they are not engaged in work or education and/or socially marginalised because they may feel disconnected from society or isolated because they are not actively participating in education or work.

All in all, the target group of NEETs is quite heterogeneous, as are their motivations, the challenges they face and the needs that need to be addressed.

Table 5: BIOLOC hub in Germany

4.5 BIOLOC Hub in Greece (Western Macedonian region)

The case and the context:

The Greek hub's focus lays on people with disabilities in Western Macedonia. The context in which they are marginalised is referring to the societal and economic framework. Despite legal protections and efforts towards inclusivity, individuals with disabilities face various challenges in accessing education, employment, healthcare, and social opportunities. The lack of adequate infrastructure, transportation, and tailored support services further exacerbates their marginalisation. This context is relevant due to the need for equal participation and inclusion in the bioeconomy sector, ensuring that economic growth and development benefits all members of the society.

Through the BIOLOC activities, the following results are expected to be achieved for people with disabilities in Western Macedonia:

- Increased access to specialised education and training programs to enhance their skills and employability in the bioeconomy sector (direct result).
- Higher employment rates and improved job prospects within bioeconomy-related industries (indirect).
- Strengthened social inclusion through community engagement initiatives and awareness campaigns (direct result).



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- Integration of disability-inclusive practices within the bioeconomy sector, promoting diversity and innovation in regional strategies (indirect, perhaps we can also achieve a direct endorsement, although not easy).

Most pressing challenges in the region and role of CBE:

Most pressing issues in the region:

- Lack of accessible infrastructure and tailored work environments that accommodate physical impairments.
- Societal and professional underestimation of the capabilities of individuals with disabilities, leading to fewer employment opportunities.
- Limited logistical support such as transportation to and from work sites.
- Underutilisation of available programmes and resources.
- Depopulation due to region's transition away from lignite (a form of coal).
- Decline of living standards due to region's transition away from lignite (a form of coal).
- Social and economic decline as a result of region's transition from lignite.
- Mismatch between business needs and education.
- Energy challenges.

Perceived role of CBE in the region:

- Specialised training and education in the CBE sector specifically tailored for people with disabilities.
- Creation of inclusive and adaptive work environments to cater for people with physical impairments.

Description of target group (challenges, skills, knowledge on CBE):

The marginalised group under consideration is people with disabilities residing in the Western Macedonia region of Greece. This group encompasses individuals of varying ages, genders, income levels, and educational backgrounds who experience physical, sensory, cognitive, or intellectual impairments. The focus will be on those who face difficulties in accessing resources, opportunities, and participation due to their disabilities. Preferred are persons with physical impairment able to be actively involved in the production process with a workshop-based environment.

Their capabilities in the CBE sector are often underestimated, but many possess unique skills and perspectives that can contribute to innovative solutions. Adaptability, resilience, and a desire for meaningful engagement in the workforce are key characteristics of this group.

For many in this group, the primary motivation to engage in the CBE sector is the pursuit of meaningful employment that accommodates their physical abilities and offers a sense of contribution and independence. The CBE sector's emphasis on sustainability and innovation can be particularly appealing, aligning with a desire to contribute positively to environmental



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stewardship. Additionally, the sector's potential for creating inclusive job opportunities that value diversity and offer tailored work environments is a significant draw.

The primary barrier is the lack of accessible infrastructure and tailored work environments that accommodate physical impairments. There is also a prevalent issue of societal and professional underestimation of the capabilities of individuals with disabilities, leading to fewer employment opportunities – in fact without any financial motivation, very few employers would offer any employment possibility. Limited access to specialised training and education in the CBE sector specifically tailored for people with disabilities is another significant barrier. Additionally, logistical challenges, such as transportation to and from work sites, can impede access to opportunities.

To effectively engage this group in the CBE sector, several key needs must be addressed. First and foremost, there is a need for the development of accessible, inclusive, and adaptive work environments that cater to physical impairments. This includes ergonomic workplace design and assistive technologies. Tailored training programs and educational resources specific to the CBE sector, which are accessible to individuals with varying levels of physical ability, are also crucial. Furthermore, awareness-raising initiatives among employers in the CBE sector about the potential and capabilities of workers with disabilities can help break down societal barriers. Support services, such as accessible transportation and flexible working arrangements, would also enable greater participation. Lastly, policies promoting inclusivity and equal opportunities in the workplace are essential to facilitate their integration into the CBE sector.

Table 6: BIOLOC hub in Greece

4.6 BIOLOC Hub in Hungary (Northern Hungary region)

The case and the context:

The Hungarian hub performing its activities in Nógrád county, as being in the socio-economic sense one of the most disadvantageous counties (NUTS-3) among the 19 in Hungary. The peripheral situation of the villages in this county are marked by their population's social status (with the level of unemployment as high as 12.4 percent generally in the county, in contrast with the Hungary's 3.9 percent in 2023). Furthermore, the disadvantageous situation is marked by the peripheral location concerning commuting opportunities, job opportunities, as well as a low level of education in general. Many people, having the capacity and ability, moved away from these localities in the past 30 years, after the collapse of the socialist state-owned heavy industry plants which dominated the region's economy. In this region's context, energy poverty is a main issue. The prevalence of extreme poverty and a persistent culture of poverty create barriers for individuals to integrate into the labour market, compounded by a lack of even basic education. Moreover, the absence of substantial subsidies, whether from governmental or international sources, hampers the region's economic development. Climate change poses an additional challenge, as regional agriculture needs to be adapted to new environmental conditions. Additionally, the region grapples



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<p>with issues related to extremely poor health conditions and substance abuse, further complicating efforts to foster social and economic well-being.</p> <p>The northern region of Hungary is developing new bio-based value chains, but they are preliminary and not yet well established. This is an interesting opportunity for the BIOLOC project, as the hub could help with expanding the expertise regarding bioeconomy and possibilities in the local context. Regarding the marginalised social group, unemployed people living in peripheral rural settlements were targeted so far.</p>
<p>Most pressing challenges in the region and role of CBE:</p> <p>Most pressing challenge in the region:</p> <ul style="list-style-type: none"> ▪ Labour market integration ▪ Energy poverty: This is illustrated by the fact that marginalised individual's resort to burning stolen wood or trash, such as cloth and used car tires, to generate heat. This practice not only leads to extreme air pollution and health issues but also indicates a lack of access to affordable and sustainable energy sources. The government's response to this issue is e.g. providing social firewood. However, this solution is perceived as inadequate as the wood provided does not last for the whole winter and is sometimes sold at lower prices by marginalised individuals. Additionally, there is the practice of stealing electricity from the grids as a 'solution' to address energy poverty. ▪ The low level of the relative incomes from biomass industry (in contrast with food production) on behalf of farmers <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Making the opportunities lying in the biomass industry visible ▪ Providing best practices from the similar regions
<p>Description of target group (challenges, skills, knowledge on CBE):</p> <p>The Hungarian hub focuses on the inhabitants of small villages of the Nógrád county, one of the most disadvantaged counties in Hungary in socio-economic terms. The target group is marked by high levels of unemployment, limited job opportunities, poor commuting options, and low levels of education. Energy poverty is a major issue for the people living in this region. The issues of extreme poverty and poor health conditions further hinder the region's social and economic well-being. The development of new bio-based value chains in the northern region of Hungary supported by the BIOLOC project presents an opportunity to expand the region's bioeconomy expertise and possibilities. Unemployed people in peripheral rural settlements are therefore the target group. Unemployment gradually has become a kind of cultural phenomenon, and the 'culture of poverty' prevents people from participating in the labour market: for generations now, they do not have any memories of having anybody in the family with a decent job.</p>

Table 7: BIOLOC hub in Hungary



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4.7 BIOLOC Hub in Italy (Campania region)

<p>The case and the context:</p> <p>Agro-forestry workers and livestock farmers in the Campania Region play a crucial role in the local CBE. The region's rich agricultural and livestock farming traditions make it particularly well-suited for initiatives that promote environmental sustainability and economic development through circular practices. Residues and raw materials coming from the agro-forestry sector can empower farmers in providing biomasses for the production of biobased products such as biofuels, bioplastics, and biofertilisers. Currently, these materials remain unused, often being incinerated, leading to significant environmental impacts. The CBE presents a potential solution to this issue, providing agro-forestry and livestock farmers with the opportunity to utilise all secondary raw materials by exploring new markets and products, and consequently increasing their income. Moreover, innovative agricultural practices such as precision agriculture can contribute to reducing environmental impact and conserving biodiversity.</p> <p>Livestock farmers, on the other hand, play an essential role in the CBE cycle, as they manage other types of renewable resources such as manure and animal feed by-products, which can be transformed into biogas, organic fertilisers, and other bio-based products. Additionally, sustainable livestock farming can contribute to the conservation of native species and the maintenance of local ecosystems.</p> <p>In summary, actively involving agro-forestry workers and livestock farmers in the CBE initiatives of the Campania Region can not only lead to significant environmental benefits but also to economic and social opportunities for rural communities.</p>
<p>Most pressing challenges in the region and role of CBE:</p> <p>The most pressing challenges in the region include:</p> <ul style="list-style-type: none"> ▪ Limited knowledge of the sector ▪ Lack of awareness of the CBE opportunities ▪ Presence regulatory barriers ▪ Low access to education ▪ High rate of youth emigration ▪ Lack of recognition of the potential of internal areas <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Economic: Potential to increase income for the identified marginalised groups. ▪ Offers innovative opportunities for the development of agroforestry and livestock sectors. ▪ Addressing the small size and fragmentation of farms. ▪ Utilising valuable residues from agro-forestry and livestock production. ▪ Educates workers on the benefits of CBE.
<p>Description of target group (challenges, skills, knowledge on CBE):</p>



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The marginalised group of Campania region includes agro-forestry workers and livestock farmers who live in the province of Salerno and in an internal area called “Alta Irpinia”. This group was selected as agroforestry and livestock fields are the main economic sectors of the region.

This target group is characterised by a deep attachment to the territory and a strong interest in seeking opportunities to revitalise these areas. These workers primarily operate within small family entities and play a vital role in the primary sector. However, the target group exhibits different levels of education and limited knowledge of the applications and benefits generated by CBE. Additionally, there is a high level of business fragmentation that limits the economic sustainability of activities. CBE could serve as a catalyst for introducing a more sustainable economic model, enabling the valorisation of local resources, and creating long-term development opportunities for rural communities.

The target groups show a strong interest in exploring the new opportunities offered by the CBE, especially with the aim of increasing their income, creating added value from productions, stimulating the local economy with the creation of new job opportunities and contributing to the environmental sustainability of their territory. However, they encounter some challenges that limit their full adoption. The main one is the limited knowledge of the sector and the presence of possible regulatory barriers.

To make an effective transition to a more sustainable and efficient production and consumption model, the target group expresses the desire to gain awareness and confidence regarding the investments made, ensuring benefits both economically and environmentally. The need to overcome these challenges emphasises the importance of providing training, clear information, and regulatory support to facilitate the full participation of the target groups in the CBE sector.

Table 8: BIOLOC hub in Italy

4.8 BIOLOC Hub in the Netherlands (Apeldoorn region)

The case and the context:

Apeldoorn faces common challenges regarding the integration of vulnerable groups, especially migrant women. Although Apeldoorn is a relatively affluent region with a low unemployment rate, certain groups of people, especially those struggling with poverty, illness, disability, addiction, or mental health problems, still face difficulties on their way to full participation in society. These marginalised groups face barriers such as economic hardship, social exclusion, and difficulties in maintaining daily life. In addition, language barriers and cultural norms pose an additional challenge, especially for migrant women, limiting their access to employment and opportunities for social integration. Furthermore, community projects such as Havenpark, Da Capo and Sadika are at risk as they are run by volunteers and do not own their premises and could be demolished or sold, preventing them from planning for the future.



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Most pressing challenges in the region and role of CBE:
<p>Most pressing challenges in the region:</p> <ul style="list-style-type: none"> ▪ Uncertain future and limited investment capability for volunteer-run community projects ▪ Marginalised groups face barriers such as poverty, illness, disability, addiction, and cultural differences. ▪ Limited knowledge of the Dutch language hinders job opportunities for the vulnerable target group (migrant women) posing a barrier against their integration into the workforce. ▪ Cultural barriers e.g. expectations regarding gender roles, specifically ability of women to gain paid employment also hinders the integration of the target group into the labour market. ▪ Limited freedom due to limited mobility, lowering their ability to participate in employment or community activities. <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Offers potential employment opportunities for the marginalised group. ▪ Provides a platform for learning and skill development in the CBE sector. ▪ Addresses cultural and language barriers through inclusive practices. ▪ Promotes sustainable practices in kitchen gardens and cooking activities.
Description of target group (challenges, skills, knowledge on CBE):
<p>The marginalised group in focus in the Dutch hub comprises of women with diverse migrant backgrounds, encountering challenges related to participating in society or daily life for example language, cultural barriers, and limited transportation. The language barrier particularly hinders their job prospects, although obtaining a residence permit often improves their language skills and job opportunities. Furthermore, cultural barriers sometimes hinder their ability to work, especially if it unconventional for women to work in their home country. Limited transportation options restrict the mobility of many women, often relying on public transport or walking.</p> <p>Moreover, these women have limited knowledge about the CBE sector, despite working in kitchen gardens and having some experience with plants and flowers. While some know a little bit about composting or recycling, they are unfamiliar with the CBE concept. Their existing skills and interest in cooking in groups present opportunities for their involvement in CBE initiatives.</p>

Table 9: BIOLOC hub in the Netherlands

4.9 BIOLOC Hub in Romania (Western Romania and Transilvanian region)

The case and the context:
<p>In the western part of Romania, local communities have faced a number of challenges due to the closure of large industrial plants, including metallurgical, petrochemical, and steel platforms. These challenges are particularly acute in counties such as Caraş-Severin and Hunedoara, where population displacement due to the closure of the mining and metallurgical industries is a pressing issue. The resulting social unrest is exacerbated by factors such as insufficient skills, rigid working conditions and limited access to information, which contribute to a vicious cycle of relative poverty and marginalisation.</p>



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Additionally, heavily polluted land resulting from past industrial activities exacerbates the health risks and economic hardships of the local population. Communities from such areas are highly dependent on agriculture, facing a precarious situation as the soil is negatively affected by past industrial activities. Especially the soil contaminated with heavy metals, threaten the quality of food crops obtained in these marginal lands, heaving a negative effect in public health.

Furthermore, migration exacerbates socio-economic challenges by causing depopulation in vulnerable areas and widening disparities between the four counties in the western region.

However, these regions still have potential, especially in CBE. Solutions related to this, allow not only for the remediation of contaminated land and the revitalisation of local economies, but also for sustainable growth and the prevention of depopulation trends caused by the increasing lack of attractiveness of the region to the younger generations. By harnessing local resources and promoting innovative approaches to soil contamination, communities in the region can lay the foundations for a more resilient and prosperous future and be a model for other places facing similar challenges.

Most pressing challenges in the region and role of CBE:

Most pressing challenges in the region:

- Economic decline and social disruption: industrial closures have led to unemployment, depopulation, and relative poverty, exacerbating social inequalities and marginalising vulnerable communities.
- Pollution: Contaminated soil poses serious health risks, threatens agricultural productivity, and causes economic hardship and public health problems.
- Limited access to information and skills: Inadequate skills, inflexible working conditions and low levels of education hinder socio-economic mobility and perpetuate cycles of poverty and marginalisation.

Perceived role of CBE in the region:

- Soil remediation and environmental restoration: CBE offers innovative solutions to remediate contaminated soil hence enhancing agricultural productivity, reducing environmental contamination, and restoring (public) health.
- Economic regeneration and job creation: by promoting sustainable practices and the use of local resources, CBE initiatives can stimulate economic growth, create new jobs, and revitalise local economies.
- Skills development and community empowerment: CBE initiatives can strengthen marginalised groups, social cohesion, and resilience by providing access to education and resources, promoting lifelong learning and active participation in sustainable economic activities.
- Marginal lands, polluted areas, organic wastes, or unused by-products from agri-food sector should be regarded as resources for bioeconomy by developing processes and define value-chains to smartly convert such resources (currently wasted or inappropriately managed) into bio-based, sustainable products.



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Description of target group (challenges, skills, knowledge on CBE):
<p>The BIOLOC hub in this region will target educated young people living in economically disadvantaged areas where pollution is a major problem. They are educated in fields such as natural sciences, agriculture, veterinary science, and agri-food. Despite their education and skills, the backwardness of the regions where they live makes it difficult for them to find jobs in the bioeconomy sector.</p> <p>These people are environmentally conscious and aware of current environmental issues. They have the necessary skills to contribute effectively to CBE initiatives, but the lack of opportunities in the bioeconomy sector in their region prevents them from utilising their skills and knowledge.</p> <p>They want support to help them improve their knowledge of CBE principles and access relevant information. They also need support to fully engage with environmental issues specific to their communities. By providing support and resources appropriate to their needs, these individuals can be empowered to actively participate in CBE initiatives and contribute to the sustainable development of their communities.</p>

Table 10: BIOLOC hub in Romania

4.10 BIOLOC Hub in Slovakia (Nitra region)

The case and the context:
<p>Homeless people and Roma represent groups that are among some of the most vulnerable and discriminated against. The Roma in Slovakia are not a homogeneous group, differing in social status, educational level, level of integration, language, and religion. The aim is to gradually socialise them in the CBE sector, which could help to empower them and to mitigate health problems (e.g. addiction) common in socially marginalised communities. BIOLOC can set them on the right path and help them integrate into the community, while the INOVATO Hub will serve as a reference point.</p>
Most pressing challenges in the region and role of CBE:
<p>Most pressing challenges in the region:</p> <ul style="list-style-type: none"> ▪ Insufficient infrastructure, ▪ Social and economic marginalisation and exploitation of vulnerable groups ▪ Depopulation <p>Perceived role of CBE in the region:</p> <ul style="list-style-type: none"> ▪ Facilitating social inclusion and economic independence ▪ Empowerment through occupational therapy and dignity restoration
Description of target group (challenges, skills, knowledge on CBE):
<p>Homeless people and Roma experience discrimination in work and social life. Often, they are confronted with prejudice by employers (they are labelled with attributes such as lazy or irresponsible) who favour other candidates. It also occurs that employers exploit them and pay them minimum wages for their work or only give them alcohol in return for their work, which encourages addictions.</p>



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One homeless interview partner said that these are people with education who have fallen into drugs, gambling, alcohol, or debt. They are considered "trash". Even if they get an occasional job, they are paid a very low amount (e.g. 2€/day).

A Roma person said that a large part of them come from orphanages, they have no role models in the settlements and little education because their parents do not guide them to it. Often, they do not have working habits. If they do work, it is mostly menial work on construction sites. They work without a contract and are paid after the work is done.

For the homeless and Roma to be well paid for their work, they have to go through agencies that make sure they are not exploited.

Both homeless people and Roma need to be given the opportunity to be able to prove themselves in a work context. It is mainly physical work, which they perform.

People in the "Good Shepard" community are working:

- physically: in the fields, producing food, raising kettles, sheep, small livestock, processing sheep wool (insulation, construction, fertilisers)
- mentally: managers, therapists

Interviewees are often unfamiliar with the term "CBE", but after explaining what it means, they find that they use or have used some of the elements in their lives. They see the CBE concept as a return to the traditional economy, increasing livelihoods for the community. Discipline in the community is very important, which has a positive impact on resocialisation and also on the bioeconomy. For them, working in CBE is like occupational therapy, a source of livelihood but also a regaining of their dignity. People get involved in recycling chains, which causes a reduction in waste. Often, they can still make products from waste that they can then sell.

Table 11: BIOLOC hub in Slovakia

4.11 BIOLOC Hub in Slovenia (the whole country)

The case and the context:

In the Drava region of Slovenia, socially vulnerable young people experience great difficulties in accessing education and employment. They are marginalised due to early school leaving, parental abandonment or abuse, thereby lacking a support system necessary for success. In this context, the "Production Schools and Integrated Education Enterprises" programme run by the community organisation ETRI, represents a promising intervention for this target group. This initiative gives these young people the opportunity to complete their studies in a supportive environment and enter the labour market, particularly in the bioeconomy sector.

Committed to creating an inclusive society and promoting the principles of circular economy and bioeconomy, ETRI implemented a programme to integrate marginalised youth into Slovenia's



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circular economy. ETRI recognised that these young people have the potential to become part of the bioeconomy sector. ETRI aims to empower these young people through training and employment opportunities.

The hub established under the BIOLOC project specifically target young people at risk, recognising that their potential is often overlooked and that they need individual support to realise their potential and contribute positively to society.

Most pressing challenges in the region and role of CBE:

Most pressing challenges in the region:

- Social exclusion: Vulnerable young people in the Drava region face systemic barriers to education and employment due to factors such as parental neglect and abuse and a lack of support networks.
- Limited opportunities: Marginalised young people often lack access to educational resources and struggle to secure stable employment, perpetuating a cycle of poverty and social exclusion.
- Need for empowerment: There is a need to empower marginalised young people by providing them with the skills, resources, and opportunities to break the cycle of disadvantage and become active participants in the labour market and society.

Perceived role of CBE in the region:

- Empowerment through education: CBE empowers marginalised youth to acquire valuable skills and knowledge, paving the way for meaningful employment in the bioeconomy sector.
- Sustainable employment: By promoting the principles of circularity and the bioeconomy, CBE initiatives create sustainable employment opportunities that match the interests and skills of marginalised youth and provide a pathway to economic independence and social inclusion.
- Community integration: Engaging marginalised youth in CBE activities fosters a sense of belonging and community spirit, enabling them to make a positive contribution to their local economy and environment, while building valuable life skills and self-confidence.

Description of target group (challenges, skills, knowledge on CBE):

The target group of the hub in Slovenia includes disadvantaged young people among those who participate in the 'Productive Schools and Enterprises for Educational Inclusion' programme run by the local Institute of Education, Science and Technology. They face a number of challenges, including limited educational opportunities, parental neglect or abuse, and lack of employment opportunities. Despite these challenges, they have shown resilience and a desire to improve their situation.

Members of this group generally have no work experience, and few have been exposed to agricultural practices during their time on the farm. Their knowledge is limited due to their young age and lack of opportunities to improve their skills.



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CBE offers these young people a meaningful job or entrepreneurial opportunity that matches their interests and skills. CBE jobs are dynamic, offer opportunities for collaboration and innovation, and give these young people a chance to find work. Mentoring and a supportive working environment are key to their success, as they thrive in an environment where they feel valued and safe and are also expected to profit from learning work culture.

Table 12: BIOLOC hub in Slovenia

4.12 BIOLOC Hub in Spain (Aragon region)

The case and the context:

Aragón is one of the regions in Spain with the largest area classified as rural (>95% of the territory). The region represents 10% of the national territory yet accommodates only 3% of the Spanish population. The unemployment rate peaks at 9.4%, and it is estimated that 56% of the unemployed people in Aragón are women.

Around 32% of the Aragón population lives in rural areas, and, while agriculture and agroindustry are key economic activities in the region, this percentage has been decreasing over the years (-4.2% between 2000 and 2018). Accordingly, the continuous migration and aging of rural population is a pressing issue in the region, affected both by the lack of opportunities and extreme climate events (e.g. drought, soil erosion and loss of nutrients, etc) that negatively impact primary activities.

One of the region's most pressing challenges is the underrepresentation of women in the workforce, with only 13% in entrepreneurial or cooperative roles and 14% in salaried positions. Additionally, a significant portion of women employed work part-time, further exacerbating gender disparities. Rural women, particularly those over 40 years old, face obstacles in accessing opportunities, including limited participation in Rural Development Programs (PDR) which are aimed at modernising farms and involving young people in rural environments.

The widespread of agriculture and livestock activities has led these groups to explore the opportunities in the CBE sector. On the other hand, there are still barriers that limit these groups to develop activities related to bioeconomy such as lack of knowledge or skills, high initial investments, or the bureaucracy. Importantly, the social economy sector is well developed in Aragón, employing over 20,000 people, and generating 3.5% of GDP in the region. This ecosystem is favourable for integrating the CBE concept and its related opportunities to include marginalised groups while creating novel circular value chains within the local bioeconomy.

Most pressing challenges in the region and role of CBE:

Most pressing challenges in the region:

- Depopulation of rural areas: Aragon faces continuing rural-urban migration trends and an ageing population, which threatens the viability and economic sustainability of rural areas.



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- Gender inequality in employment: women are significantly under-represented in the workforce, particularly in entrepreneurial and paid positions, exacerbating rural depopulation and economic inequality.
- Limited employment opportunities for rural women: rural women, particularly those over 40, have limited access to employment opportunities, training and support programmes, contributing to their marginalisation.

Perceived role of CBE in the region:

- Economic diversification: CBE initiatives offer opportunities to diversify the economy by creating new jobs and new sources of income in sustainable agriculture, renewable energy, and waste management.
- Empowerment of marginalised groups: CBE can empower marginalised groups by providing access to education, employment, and resources to promote social inclusion and economic sustainability.
- Sustainable rural development: CBE practices promote sustainable land use, resource efficiency and environmental protection, contributing to the resilience of rural communities and mitigating the effects of climate change.

Description of target group (challenges, skills, knowledge on CBE):

The target group of the Spanish BIOLOC hub is Aragon's rural population, mainly women over 40 group who face problems such as limited access to the labour market and education due to the decline of the rural population. Although they have valuable experience in agriculture and rural entrepreneurship, it is difficult for them to participate in the Rural Development Programmes (PDR) from the government of Aragón activities due to a lack of skills and high investment costs needed in some cases. Initial support from experts and a reduction in bureaucracy are essential to encourage participation in civil society initiatives and promote inclusive and sustainable rural development.

The hub also seeks to involve other marginalised groups, such as people with disabilities and migrants. In addition, given the situation in rural areas, initiatives aimed at combating depopulation, such as language courses or children's schools, should be supported, particularly for migrant communities.

Table 13: BIOLOC hub in Spain



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5. The sample

In order to explore the needs, barriers and drivers of the groups targeted by the BIOLOC regional hubs, each hub was tasked with interviewing at least three individuals from marginalised groups and one representative. While the implementation varied according on the realities and access to target groups in different hubs, all hubs contributed valuable insights based on their local contexts and capacities. In some regions, such as Bulgaria and Romania, more interviews were conducted than originally planned. Several hubs, including Croatia, the Czech Republic, Slovakia, and Slovenia, reached their target sample size. Some hubs, such as Italy and the Netherlands, interviewed slightly fewer people from marginalised groups but included representatives. In some cases, such as in Germany and Spain, only representatives of marginalised groups were interviewed.

Country	Person from marginalised group	Representative of marginalised group
Bulgaria	5: Small farmers one of which is Roma	1 (Representative of small farmers in the region)
Croatia	3 (all students of the woodworking and mechanical school)	1 (A teacher familiar with the situation of the marginalised group in question)
Czech Republic	3 (all young unemployed, graduates without experience)	1 (Field social worker)
Germany	None	1 (Who worked together with the target group in an EU project)
Greece	1 (person from the national confederation of persons with disabilities)	2 (1 from University of Thessaly and 1 from disabled persons social enterprise "APANEMO")
Hungary	3 (1 small/forestry famer, 2 communal labourers one of which is Roma)	2 (Mayor of local village and 1 social organisation representative)
Italy	2 (1 small dairy farmer and 1 small livestock farmer)	1 (representative of agroforestry workers)
Netherlands	2 (1 elderly, unemployed and 1 teenage mother, unemployed)	2 (Representatives of two kitchen garden projects in region)
Romania	5 (all residents in polluted areas)	2 (1 with a business in CBE in the polluted area and 1 instructor in CBE)
Slovakia	3 (3 people who are homeless one of which is Roma)	1 (Representative of the Good Shepherd community project)
Slovenia	3 (young, marginalised individuals, one was in the foster system)	1 (Consultant of ETRI society)
Spain	None	3 (1 representing rural women seeking to achieve work-life balance, 1 representing immigrants and 1 representing people with intellectual disabilities)

Table 14: Overview of interview sample for this report



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6. Exploring CBE: Knowledge, awareness, and involvement among BIOLOC hub target groups

6.1 CBE knowledge and awareness

The understanding and awareness of the CBE among respondents in the twelve regional hubs shows significant variation, influenced by regional differences and individual characteristics. This variation in CBE knowledge and awareness can be categorised into four different levels: Basic understanding and awareness, in-depth knowledge, lack of knowledge and misunderstood. These diverse levels are described in more detail below. A notable finding is that many respondents were first introduced to the concept through the activities of the BIOLOC project hubs in their respective regions, indicating the potential of the hubs to have a significant impact.

6.1.1 Lack of CBE knowledge and awareness

In some BIOLOC regions and among some respondents (especially members of the selected marginalised groups when compared to their representatives) there is a notable lack of awareness or knowledge of CBE. Initially, some individuals had a vague idea that CBE might be related to environmental protection but did not understand the term precisely. A significant number of respondents had never heard of CBE at all, highlighting a significant knowledge gap. In addition, young, marginalised people with experience in agriculture or woodworking have limited knowledge of CBE, suggesting that their practical skills are not matched by an understanding of sustainable practices within a CBE framework.

Czech Republic: “They didn't know exactly at the first mention. Rather, they had an inkling that it was a term associated with environmental protection.”

Netherlands: “The people we spoke to, either don't know anything about CBE, or do some activities related to it, without knowing the term CBE. [...] The other REP and the 3 MPs had never heard of CBE, or anything related to it.”

Slovenia: “Knowledge of the interviewed young, marginalised individuals is not on high level, all three interviewees have finished elementary school but have experience in working in small farms or working with wood products. Two of them do not know much about CBE.”

6.1.2 Basic understanding and awareness

In some of the BIOLOC regions, participants demonstrate a basic understanding of the CBE, gained mainly through educational programmes and workshops. Education, both formal and informal, emerges as a valuable channel for disseminating knowledge about CBE. School discussions and BIOLOC workshops play a significant role in introducing the concept to students and community



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members, enabling individuals to grasp the potential benefits of CBE for personal development and regional growth.

However, despite this basic understanding, a notable gap exists between theoretical knowledge of CBE and its practical application. Many people, particularly students and marginalised groups, engage in activities that align with CBE principles—such as recycling or making products from leftover materials—without fully recognising these actions as part of a broader CBE framework.

While the term may be new, there is a general willingness among respondents to learn and adapt to the concept, highlighting an openness to integrating CBE principles into their lives. After initial exposure, individuals often recognise the environmental and economic benefits associated with CBE, although they acknowledge that their understanding remains superficial. This sparks an interest in further exploration and a deeper understanding of how CBE can be applied more systematically in their community engagement.

Bulgaria: “For them, the most important issue is to understand how they can contribute to the circular economy and the bioeconomy, as they believe this will improve their daily life conditions. [...] The information provided by our courses has helped them to realise that they can have the desired possibilities of leading a better life and feeling individually as a part of the regional development.”

Croatia: “All respondents reported that they generally have basic knowledge about the concept of ‘CBE’ acquired through participation in the BIOLOC workshop and within the school’s program offerings. Additionally, one respondent (MP2) heard about the concept of CBE through family discussions.”

“[...] CBE is always present in school discussions, and students are constantly reminded of its importance. Although the specific term ‘CBE’ is relatively new to students, they accept it to stay up to date. Members of the target group, students in woodworking disciplines, have some previous experience and involvement in activities related to the bioeconomy. For example, during the Christmas fair, students sold products they made from leftover material.”

Germany: “REP1 knows little about CBE, as they only found out about it through the invitation to the BIOLOC workshops and the interview. The interview served as an opportunity to explain the concept in more detail. [...] In general, this interview is already an example of how BIOLOC activities are helping to raise awareness of CBE in BW.”

Hungary: “All participants expressed some level of environmental awareness and recognised the importance of sustainable practices [...] the interviewees shared a collective understanding of the environmental and economic benefits of circular biobased economy, their individual roles and perspectives influenced their priorities and the challenges they emphasised.”



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Italy: *"MP1 and MP2 are aware of the concept of CBE, learned during the workshop organised as part of BIOLOC in November, but they are not familiar with its applications in various sectors, especially within their own work scope. They are unaware of the innovative techniques and technologies that bioeconomy offers, for example for the valorisation of production residues."*

"[...] REP 1 is familiar with the concept of bioeconomy, acquired through his extensive experience in Confagricoltura. He doesn't work directly on CBE, but he expresses openness to further explore specific applications, especially in support of the hub's targets."

Romania: *"Doesn't know what CBE is – BIOLOC interviewer explained the term of CBE."*

"CBE sounds familiar. After interviewer explained the term of CBE: didn't know that all these activities were called that."

"After interviewer explained the term of CBE: finds it interesting, with many applications."

Slovakia: *"Respondents are often unfamiliar with the term 'CBE,' but when we introduce it to them, they find that they use or have used some of the elements in their lives. They see the CBE concept as a return to the traditional economy, increasing livelihoods for the community."*

Slovenia: *"Knowledge of the interviewed young, marginalised individuals is not on high level, all three interviewees have finished elementary school but have experience in working in small farms or working with wood products [...] the third person has some knowledge, but has stated that for connecting a farm where he lives and works to the circular economy, he would need assistance, especially in management, as he lacks knowledge in that area."*

6.1.3 In-depth understanding and application

Some of the participants demonstrate a broader understanding and application of the principles of CBE in their daily lives and professional activities, which is influenced by several factors.

Firstly, there is a significant correlation between the educational background of individuals and their understanding of CBE. Those with higher education, particularly in specialised areas such as biotechnology, show a nuanced understanding that goes beyond basic concepts to include specific applications in sectors such as agriculture, energy, and health.

At a practical level, some individuals actively incorporate CBE principles into their daily routines, as exemplified by activities such as organic recycling and composting. This hands-on engagement demonstrates not just a theoretical understanding but a practical application of CBE, indicating a personal commitment to sustainable living and an intimate understanding of how these practices benefit both the environment and their quality of life.

At an organisational level, engagement with CBE varies considerably depending on the sector and mission of each organisation. For example, groups in the agri-food sector show a deep commitment



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to CBE through initiatives that promote innovation and sustainability. In addition, recognition in the form of awards or participation in significant sustainability projects serves as evidence of a company's commitment and contribution to the CBE landscape.

Greece: "All respondents within our sample possess a notable level of knowledge about the CBE, which can be primarily attributed to their higher education backgrounds. This group's familiarity with CBE extends beyond general concepts to specific applications, suggesting a comprehensive understanding likely acquired through academic study, professional exposure, or personal interest in sustainable practices and green technologies."

Romania: "Student in biotechnology with extensive knowledge in CBE, practicing organics recycling by composting at home."

"[...] Knows about the application of CBE in various fields: agriculture, energy, and health. Gained this knowledge studying and from online literature."

"The term CBE is well known, I know there is a big emphasis on recycling, now I know it is applied in agriculture, forestry, energy, health."

Spain: "There is a particular awareness of sustainability at all levels (environmental, social, and economic). The concept of the bioeconomy is known and managed, but how involved in the area depends on the nature of the organisation. In our case, we have interviewed a group whose aim is to integrate disabled people into the labour market. On the other hand, other group covers an aggregation of enterprises of the livestock sector; therefore, the implication on CBE is essential for them. One of the interviewed groups is involved in projects such as the Agrifood-Te Network (Agrifood Knowledge and Innovation Network) of CITA TERUEL, which focuses on accelerating innovation in the agri-food sector to promote the ecological, digital and CBE transition in the Teruel region. They are also working on the development of training content for vocational training in the specialities of agri-food and livestock sectors, oriented towards sustainable entrepreneurship. Otherwise, another group has won a regional award related to circularity. Regarding other specificities, one of the groups interviewed has a training centre that develops specific training based on the needs."

6.1.4 Misunderstanding

In some regions there is confusion about what CBE means, often due to language differences or lack of clear information. In the Czech Republic, for example, there is confusion because the translated term refers to organic farming. In Slovakia, respondents were unfamiliar with the term but recognised its elements when explained, indicating a gap between terminology and practice. In the Netherlands some of the respondents were only aware of the broader concept of 'circular economy' but unaware of 'CBE.'



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Czech Republic: *“A confusion typical of the Czech language is the perception of the bioeconomy as products from organic farming. They didn't know exactly at the first mention. Rather, they had an inkling that it was a term associated with environmental protection.”*

Netherlands: *“From all interviewees, only 2 people (REPs) knew the term ‘circular economy’. However, even they did not know circular bioeconomy.”*

6.2 Involvement of interview partners in CBE

Moving on from the discussion of respondents' knowledge and awareness of the CBE, this chapter shifts the focus to their level of involvement in CBE activities. While the previous chapter highlighted varying levels of familiarity with CBE concepts, ranging from basic understanding to in-depth knowledge, this section looks at how this understanding translates into actual engagement and participation.

Understanding CBE is one thing, but applying its principles has a direct impact on community livelihoods, environmental sustainability, and individual empowerment. As noted in the previous chapter, even those who were initially unfamiliar with the term ‘CBE’ recognised elements of it in their everyday practices once it was introduced. This recognition marks a crucial step from theoretical knowledge to practical engagement. Respondents' activities, such as participating in recycling chains and creating products from waste, show that CBE concepts are not just abstract ideas, but are integrated into daily life and work, contributing to community development and personal well-being.

This section aims to explore the degree of respondents' engagement with CBE. It examines the extent to which respondents are already involved in applying CBE practices. The responses collected show varying levels of engagement and commitment across countries and respondent groups, ranging from no engagement to engagement through individual and business practices.

6.2.1 Lack of involvement

Only the German, Romanian and Slovakian hub reports indicated that some of the respondents needed an initial explanation of the CBE sector during the interview process to assess their involvement. Following this clarification, respondents from Germany identified links with people involved in the CBE sector, suggesting potential points of contact. However, a general lack of awareness of the sector initially prevented them from recognising these links. This suggests that a lack of knowledge about the concept or the terminology used can lead to people within the sector failing to make the connection themselves, or even failing to exploit its potential. For the Slovenian respondents, the explanation of the concept led them to see its potential for them.

Germany: *“REP1 do not see themselves as being part of the CBE sector. However, after clarifying which sectors are part of the CBE, it was mentioned that they have contact with people who have an educational background in related disciplines, e.g. agribusiness.”*



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Therefore, there is a possibility that people in the target group have points of contact with the CBE without being aware of it."

Slovenia: "The interviewed youngsters do not consider themselves as part of CBE sector, but after explaining them the concept, they all quickly agreed to have positive thoughts regarding finding job opportunities in this sector, since they mostly have experience in working in the field of agriculture and forestry."

This lack of knowledge is echoed in the Dutch and Slovakian reports, where respondents showed limited knowledge of the CBE, with some unknowingly engaging in related activities. Only two respondents of the Dutch respondents were familiar with the term 'circular economy', but they lacked understanding of the broader concept of the CBE. This was similar to most of the Romanian respondents.

Netherlands: "The people we spoke to, either don't know anything about CBE, or do some activities related to it, without knowing the term CBE. From all interviewees, only 2 people (REPs) knew the term 'circular economy'. However, even they did not know circular bioeconomy. The other REP and the 3 MPs had never heard of CBE, or anything related to it."

Romania: "I do not consider myself part of the CBE field because I am not very informed about this subject; it is a new one for me."

Slovakia: "Low. Even though they work in the CBE sector, they often don't even realise it."

Respondents from Croatia, Hungary, some from Romania and Slovenia did not see themselves as part of the CBE sector. However, those from Croatia, for example, can see the potential of the bioeconomy and are eager to learn more about it and make the transition.

Croatia: "They do not consider themselves part of the CBE sector yet, but they believe that the CBE could offer interesting business opportunities, such as opening their own crafts business. They anticipate that with further education in the future, they will become part of that sector."

In contrast, the picture painted by the Hungarian report shows that respondents do not see themselves as part of the CBE, nor do they consider issues such as climate change, sustainability etc., which are often one of the arguments for CBE, to be important.

Hungary: "Interviews highlight that respondents and marginalised people living in the target area within the North Hungary region consider themselves as a part of the CBE sector in almost no extent. Above all, they are not even concerned regarding climate change and sustainability issues either, although some exception might be seen (e.g. farmer concerned about having to adapt crops and strategies to the changing natural environment and weather)."



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While CBE is generally viewed positively or as having potential, one respondent from Romania broke with this trend by not identifying as part of the CBE sector and seeing no opportunities for himself / herself in terms of jobs or business prospects; at the same time being open to educating students on the topic as he / she is a teacher. This attitude echoes that of the Hungarian respondent discussed in the previous paragraph, who showed little interest in the topic or in the wider issues of climate change and sustainability.

Romania: *“Doesn’t consider herself as being part of the CBE sector, nor CBE can bring any opportunities as jobs or business for herself but can promote CBE through education as it is a teacher.”*

6.2.2 No indication of level of involvement but understanding of the potential

The reports from Greece and Italy indicate that the respondents were familiar with the concept of the CBE. However, these reports did not specify the extent of the respondents' actual involvement in the sector. Nevertheless, there was a clear recognition among participants of the potential benefits and challenges associated with CBE.

Greece: *“The interview responses considering themselves or their community's involvement in the CBE sector, reveal a nuanced understanding and a conditional sense of belonging. They recognise the potential of the CBE sector to reshape the modern business environment and offer employment opportunities, but they also highlight certain prerequisites for their full integration and participation.”*

Italy: *“Although not fully aware of all aspects of the bioeconomy, all interviewees are aware that the primary sector, which includes agriculture, forestry, and livestock farming (the hub's target), is part of the CBE sector.”*

6.2.3 Involvement through personal and economic practices

Only respondents from the Czech Republic and some from Romania and Spain recognise their participation in the CBE. For those from the Czech Republic and Romania, this involvement is mainly manifested through individual practices, such as recycling and maintaining a mindset that aims to have a positive impact on the environment. Conversely, Spanish respondents associate their involvement in the CBE with economic activities.

Czech Republic: *“As part of CBE, they are considered only on a personal level - a personal contribution to the environment (sorting and recycling household waste*

Romania:



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“Recycling organics, composting are considered only personal actions part of the CBE sector.”

“Through an environmentally friendly mindset. When I want to purchase a product, I research its origin and practices; the benefit of sustainable products – quality.”

“Yes, consider myself to be part of CBE. Unfortunately, society at large doesn’t think about the good of the planet, we just do what has been done for generations as routines and customs.”

“The target group in general, involved only through individual actions, from their own households or small farms.”

Spain: *“These organisations considered themselves a part of CBE, as they are working on these fields and increasing the sustainability (environment, social and economical) of the region.”*

6.3 Synthesis: CBE knowledge, awareness and involvement of the BIOLOC hub target groups

This chapter explored the level of knowledge and awareness of the circular bioeconomy (CBE) among the target groups of the BIOLOC regional hubs, as well as their involvement in CBE-related activities. While it does not delve into the needs, barriers, and drivers of these groups—which is the overarching aim of this report—it provides essential context and a starting point for understanding the current state of awareness and engagement among stakeholders.

Drawing on interviews with the target groups and their representatives, the findings highlight a range of familiarity with circular bioeconomy (CBE) in the 12 European regions from complete unfamiliarity to active engagement. The results identified four categories of CBE awareness among the target groups of the BIOLOC regional hubs:

1. **Lack of awareness or knowledge:** Most people from the marginalised groups interviewed, showed a minimal awareness of CBE. Many associated the concept vaguely with environmental protection or had never heard of the term.
2. **Basic understanding and awareness:** This group, were often introduced to CBE through educational programmes or BIOLOC workshops, recognised its potential benefits but struggled to connect theory with practice. While many were engaged in CBE-related activities such as recycling or reusing materials, they often failed to see these actions in a broader context. However, there was a notable willingness to learn and adapt to the concept.
3. **In-depth understanding and application:** Some individuals, particularly those with a higher education background, demonstrated an advanced understanding of CBE. They actively integrated sustainable principles into their daily lives and professional practices.
4. **Misunderstanding:** Language and information barriers caused confusion. In some regions there were terminological challenges, with translations leading to misinterpretation or confusion with other concepts such as organic farming.

Involvement in CBE showed similar variation across the BIOLOC regions. Many respondents did not consider themselves part of the sector, although they were unknowingly involved in related activities. A smaller group participate in CBE through personal and business activities. Across all regions, most



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participants recognised the value of CBE once the concept was explained, highlighting the need for clearer communication and education.

Recommendations:

1. **Improve education and awareness:** Educational efforts need to be implemented to fill knowledge gaps, especially in regions and among groups where CBE awareness is lacking. Tailor-made educational programmes and community workshops such as those organised by the BIOLOC regional hubs should continue to be prioritised, as they have proven effective in introducing CBE concepts.
2. **Bridging theory and practice:** Demonstrating practical application is essential. Hands-on initiatives such as workshops and community projects, can help align theoretical concepts with everyday practice. For those already engaged in CBE-related activities, targeted training can help them see their actions in a broader context. Public campaigns highlighting simple, everyday contributions to CBE can encourage widespread adoption.
3. **Address misconceptions and language barriers:** Misunderstandings arising from unclear terminology or language differences highlight the need for accessible and multilingual educational materials. Simplified explanations and culturally sensitive communication can ensure that CBE principles resonate with diverse audiences.



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7. Barriers to participate in social life

Barriers to participation in social life can significantly affect an individual's quality of life and sense of belonging. Kirchherr et al., 2017 identifies cultural barriers as a primary challenge to the circular economy in the EU. Their study distinguishes four inter-related categories of barriers: cultural, technological, market and regulatory. Kirchherr et al., (2017) suggest that the interconnectedness of the four barriers can trigger a domino effect, where the failure of one element in this cycle can cause a chain reaction, leading to the failure of circular economy initiatives. However, examining these barriers not only advances the broader transition to a circular bioeconomy, as highlighted in the study, but also aligns with the findings from interviews conducted by several BIOLOC hubs, where cultural barriers emerged as significant obstacles, greatly limiting social participation in this transition process. The following sections break down the barriers the selected marginalised groups of the BIOLOC regional hubs face:

7.1. Discrimination and prejudice:

The interview responses reveal that various forms of discrimination pose significant barriers and challenges to participation in social life and employment. The findings demonstrate that discrimination manifests in diverse ways, influencing the ability of marginalised groups to engage in circular bioeconomy. Similarly, prejudices act as barriers, restricting their involvement in engaging with CBE. In the following sections, we will delve into these diverse forms of discrimination and prejudices and their role in shaping these experiences.

7.1.1. Gender discrimination:

Gender discrimination, particularly in the workplace, limits women's employment opportunities and participation in society. Prejudices about women's skills and concerns about maternity leave make it difficult for women to integrate into the labour market (Mulvey et al., 2010; Pinto et al., 2017; Verniers & Vala, 2018). Among the BIOLOC hubs, this obstacle is evident in three hubs: Bulgaria, Croatia, and Spain, highlighting the need for policies that promote gender equality and support women's full integration into the labour market.

1. Women and technology: In Croatia, the concern is related to gender biases that manifest in assumptions about women's abilities to perform tasks related to technical fields such as "*working with machines.*"
2. Women and motherhood: In Bulgaria, the interview partners expressed that this discrimination is associated with "*potential future motherhood*", which affects their employment prospects due to concerns related to maternity and filial leave.
3. Intersectional discrimination: In Spain, emphasis was placed on the intersection between gender, constraints of living in rural areas and effects of depopulation in these areas as



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expressed in the Spanish hub's report: *"Women in the rural world suffer from a triple set of problems: those derived from the rural environment (limitations of connectivity, average age, scarcity of services, difficulties of conciliation, etc.), those derived from depopulation (scarcity of services, scarcity of employment options, etc.) and those derived from their condition as women (the role of women, difficulties of conciliation, etc.)."*

7.1.2. Ethnic and racial discrimination

7.1.2.1. Societal attitudes and stereotypes:

Existing stereotypes against certain groups, particularly those based on ethnicity and race, contribute to social exclusion (Bracic, 2022; Mulvey et al., 2010). This issue has been especially highlighted by three of the BIOLOC regional hubs, namely: Hungary, Germany, and Slovakia. The German hub that focuses on NEETs highlighted in their report that *"NEETs with a migrant background, in particular experience discrimination in their daily lives."* The Hungarian report highlights the recognition of the interview partners of the *"existence of discrimination against people living in poverty, especially with regard to Roma people."* In the Slovakian report this statement stemming from the interviews is mentioned reflecting the deep-rooted stereotypes associated with the Roma community: *"Roma and homeless people are among the groups that are considered lazy and inconsistent and irresponsible. [...] There are only a few individuals who want to change something. There are prejudices against the Roma ethnic group. Still, there are programs dedicated. But they don't want to work; only to receive."*

Other than the stereotypes that come from "outside" an "internalised" challenge is mentioned in the Netherlands report. In this case internalised refers to the group's own belief systems. For some migrant women difficulty to join the labour market stems from the culture in their countries of origins of women not being expected or allowed to join the workforce: *"There also is a cultural barrier sometimes to get to work when in their home country it is often not expected of women to work at all."*

Migrants and minorities tend to come from lower socio-economic backgrounds, which increases their vulnerability to discrimination. This intersectionality between ethnic identity and economic status reinforces the barriers they face in accessing opportunities for social inclusion and employment.

7.1.2.2. Language and integration barriers:

Especially for migrants, the lack of proficiency in the national language of the host country not only poses a challenge in terms of social interactions, but also makes personal and professional development more difficult as it limits their ability to also participate in training, employment and support services (Bloemen, 2023; Gazzola, 2017). Among the BIOLOC hubs, this issue was highlighted by the hub in the Netherlands, which focuses on migrant women, as well as the hub in Spain, which focuses on rural women, some of whom are migrants. The Spanish report notes that *"the main obstacle they [rural women with a migrant background] have to face is language."* The Dutch hub



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report specifies this challenge by noting that *"it is difficult to find a job in the Netherlands without having sufficient knowledge of the language."*

7.1.3. Health-based / disability-based discrimination:

Discrimination on the basis of the health status or presence of disability among the marginalised groups being supported by the BIOLOC regional hubs is an additional obstacle. This is particularly a problem in Greece where the primary marginalised group of the hub are people with disabilities.

"The context in which people with disabilities in Western Macedonia are marginalised is referring to the societal and economic framework... individuals with disabilities face various challenges in accessing education, employment, healthcare, and social opportunities."

Although not the primary focus of the BIOLOC hub in Spain, the hub also plans to support individuals with intellectual disabilities, who face significant challenges when it comes to participating in social life in Spain. Their disability itself acts as a major obstacle, impacting various aspects of their lives including employment, education, and social interactions. This disability often limits their opportunities for personal and professional growth, making it difficult for them to fully integrate into society.

In the Czech Republic, while not the central focus of the hub's efforts, the acknowledgment of a respondent facing health issues sheds light on a broader reality: marginalised groups often confront discrimination stemming from multiple factors. This recognition underscores the complexity of their challenges faced by marginalised groups. *"One respondent has health problems with her spine so I cannot work in the field, and I am waiting to see if suitable retraining is available."*

7.1.4. Socio-economic status-based discrimination:

The reports from the BIOLOC regional partners on interviews with members of their selected marginalised groups and their representatives also unmask discrimination on the basis of socio-economic status which inhibits social and economic integration. This challenges access to education, employment, and community engagement contributing to social exclusion. As a result, individuals from lower socio-economic backgrounds face systemic barriers that limit their ability to engage fully in societal activities and access opportunities that are more readily available to those from more privileged backgrounds (Farkas et al., 2001; Timothy M. Smeeding, 2016). This phenomenon is outrightly mentioned by the reports from Croatia, Hungary, and Slovakia:

Croatia: *"Interview partner has experienced social discrimination so far where people often judge others based on their financial status and family connections"*

"Students of the woodworking and mechanical school mostly come from families with lower socioeconomic status and face challenges such as a lack of resources, limited access to additional educational materials or the need for support."



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Hungary: *"All participants recognised the existence of discrimination against people living in poverty especially with regard of Roma people."*

Slovakia: *"Homeless people and Roma are among the discriminated groups in society. Employers prefer to choose 'normal' employees because they consider them more responsible. Roma and homeless people are among the groups that are considered lazy and inconsistent and irresponsible."*

The quote above from the Hungarian report, highlights the intersectionality between socio-economic status and ethnic background. This issue has been especially highlighted by three of the BIOLOC regional hubs, namely: Hungary, Germany, and Slovakia. The Slovakian report added a specification of the *"people living in poverty"* by acknowledging that the homeless, are often regarded as *"trash"* despite many being well-educated individuals, but who unfortunately are affected by issues such as *"drugs, gambling, alcohol or debt"*.

7.1.5. Age-based discrimination

Young individuals in Slovenia also face discrimination in both social interactions and the job market. They are often perceived as strange or unwilling to work by society, contributing to feelings of inadequacy and discouragement (e.g. Blackham, 2019) This negative perception leads some individuals to give up on job searching altogether, as they constantly receive feedback reinforcing the belief that they are not valued or capable. Discrimination and societal prejudices exacerbate their challenges, further limiting their opportunities for social participation and economic advancement as depicted from the following excerpt from the Slovenian hub report: *"They are facing discrimination, both in social life and on the job market. Society perceives them as strange or as if they don't want to work. That is why some of them have given up and stopped looking for a job, because they constantly get feedback that they are not good enough."*

7.2. Limitation in infrastructure

Access to basic infrastructure is essential for social and economic participation. Many of the BIOLOC hubs have been established in rural areas where poor infrastructure which can hinder access to, for example, education and training programmes and employment opportunities was mentioned. This has been identified as a major challenge to social inclusion and access to services and employment. This is an issue that has also been identified academic literature (e.g. Bock, 2016; Di Cataldo & Rodríguez-Pose, 2017; Elrod & Fortenberry, 2017; Torre, 2015). The reports of the interviews from the Bulgarian, Hungarian, Italian, Romania, Spanish hubs directly address the limitations related to infrastructure. These challenges can be broadly grouped into two, namely, transport issues and lack of supportive infrastructure for the development of initiatives.



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7.2.1. Transport issues

Insufficient infrastructure and transportation limit the mobility and access of marginalised groups to employment, education, and social activities, exacerbating their isolation.

Czech Republic: *“Lack of frequent transportation connections from rural areas.”*

Hungary: *“[Interview partners] claimed that poor people face limited opportunities for employment, the hardship of commuting in the absence of good transportation services.”*

Italy: *“People living in internal areas may encounter challenges when attempting to participate in society due to the underdeveloped public transportation infrastructure in these areas.”*

Romania: *“Poor rural infrastructure limits access to social and employment opportunities.”*

Spain: *“Those derived from the rural environment (limitations of connectivity, average age, scarcity of services, difficulties of conciliation [difficulties in reconciling work and family life are prevalent], etc.).”*

The BIOLOC hub in Greece focusses on people with disabilities. Among others, the report describes the barriers they face in accessing physical spaces and transport networks that reflect systemic issues and societal attitudes that lead to discrimination in both social life and the labour market. The fact that this group is comprised of people who are differently-abled means that the challenges they already face in social and economic participation are significantly aggravated by the mobility issues: *“challenges in accessing the physical environment and transportation systems further hinder their full participation.”*

7.2.2. Lack of supportive infrastructure for initiatives

In Bulgaria, the lack of infrastructure is mentioned as a key obstacle to the development of circular and bio-economic initiatives, impacting the community's overall development and integration: *“Poor infrastructure in some regions is hindering the development of circular and bio-economic initiatives.”*

7.2.3. Physical accessibility

The BIOLOC Greece hub, deals with people with disabilities and as such the report highlights barriers related to physical access and transportation hinder engagement in social activities. Addressing these barriers requires systemic changes, community education programs, and economic initiatives to promote inclusivity and equal opportunities.



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7.3. Economic challenges and unemployment

Discrimination in the labour market is a factor that has emerged from the interviews carried out by the BIOLOC regional hubs. This kind of discrimination has been shown to be related to a number of characteristics of the participants which are also presented as obstacles on their own rights in the rest of the chapter, such as ethnic background, gender, socio-economic status, cultural perspectives etc. (Dahl & Krog, 2018). Nevertheless, a number of factors that emerged from the interviews are more related to the theme: Lack of employment opportunities, economic challenges, wage discrimination and lack of job experience.

7.3.1. Economic challenges

Economic challenges including job scarcity increases vulnerability and hinders social participation, especially of marginalised groups (Gesthuizen et al., 2011; Howell & Kalleberg, 2019). Among the BIOLOC hubs, this factor is especially highlighted by regions that have faced major change in the economic activity e.g. decline in local industries. For example, in Hungary *“the collapse of socialist state-owned heavy industry plants [which dominated the region’s economy] has caused many people with higher capabilities to move away from this region in the past 30 years.”* In Romania, the region relied on huge chemical and fossil energy industry metallurgy, mining, coal powered power plant for a long time. These plants are now closed, leading to among others economic hardships. The region under the focus of BIOLOC in Greece is also transitioning away from lignite (a form of coal).

Not only as a result of closed industries, but also as a result of other factors such as underdevelopment of the regions, many BIOLOC hubs report a lack of meaningful job opportunities which is another obstacle for inclusivity especially for groups that are anyway marginalised due to a number of factors.

7.3.2. Lack of work experience

Notably, although the interview respondents in the Czech Republic unanimously answered that they were not exposed to any form of discrimination, in the interview process, it emerged that *“their specialisation, lack of practice, and experience prevent them from applying and working full-time.”*

7.3.3. Job scarcity

Lack of meaningful job opportunities is another obstacle for inclusivity especially for groups that are anyway marginalised due to a number of factors. In Hungary, the hub has been established in one of the most disadvantaged counties in the country, which is characterised by *“high levels of unemployment, limited job opportunities [...] the hardship of commuting in the absence of good transportation services.”* This is a similar reality to one of the respondents in Romania who indicated living *“in an area affected by industrial pollution, rural-urban migration, limited job opportunities.”* Factors such as discrimination, lack of education, and inadequate transportation infrastructure



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contribute to limited job prospects and economic instability, further perpetuating cycles of poverty and social exclusion.

7.3.4. Low wages

The reports from the interviews also unveil the discrimination of workers from marginalised groups such as from the Roma community and homeless in that when they do find their way into the labour market, they are often exploited. This exploitation takes advantage of the workers' possible vulnerabilities, such as financial desperation or addiction.

Slovakia: "Homeless people and Roma are among the discriminated groups in society[...] Employers exploit them and give them minimum wages for their work. Often, they only give them alcohol in return for their work, which encourages their addiction."

In answering the question of which are the most pressing issues in the region, a respondent from Romania indicated *"Both limited employment opportunities, jobs being few and paid at the minimum wage in the economy."*

In Italy, interviewees acknowledge the absence of discrimination based on personal characteristics such as gender, religion, or language. However, they highlight the presence of wage discrimination, with workers being inadequately paid. *"The interviewees agree that there are no discriminations based on specific personal characteristics such as gender, religion, or language. The only discrimination present is in terms of wages, as workers are not paid adequately."*

7.3.5. The culture of poverty

In Hungary, the aspect of 'generational poverty' emerged from the interviews (Lewis, O. 1963). One of the interview partners *"emphasised the need for systemic changes and local governance policies that foster inclusivity and equal opportunities. He stressed that unemployment gradually has become a cultural phenomenon, and the 'culture of poverty' prevents people to participate in the labour market. [...] For generations, people don't have any memories of having anybody in the family with a decent job."*

7.4. Education and skill gaps

The interview reports from the BIOLOC hubs show a prevalence of obstacles related to education and skills which exacerbates unemployment and social exclusion. In Germany for example, the marginalised group selected by the hub, NEETs, struggle with finding suitable employment opportunities due to their educational and skill levels: *"NEETs with a low level of education often receive offers from the authorities for certain types of jobs in catering, warehousing, logistics, or care."* Despite possessing qualifications for more advanced roles, those with a migrant background find their credentials not being accredited in their new country, leading them to accept positions below their



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skill level perpetuating inequality (Bergseng et al., 2019): *“NEETs with a migrant background in particular experience discrimination in their daily lives. When we look at NEETs with a migrant background, we sometimes come across a unique situation where they have the same qualifications as the general population, but because they have come to BW/Germany, they have no access to the labour market, to society, etc. In this situation, NEETs with a migrant background are often discriminated against in everyday life.”*

7.4.1. Limited access to education and training opportunities

In Croatia and Hungary, obstacles to social participation are linked to limited access to vocational education and employment opportunities, particularly for marginalised groups. In Croatia, specific barriers exist for students in woodworking disciplines, including limited information about professions, gender disparities, and a lack of awareness about CBE priorities: *“Specific obstacles for students in woodworking disciplines are that information about woodworking professions often remains within narrow circles, making it difficult for interested students to access...There is a low percentage of girls in woodworking disciplines (8 girls out of 60 students), and a declining trend has been observed.”*

In Hungary, discrimination against people living in poverty, especially Roma individuals, leads to limited employment opportunities and challenges in accessing education and community engagement. These obstacles hinder individuals' ability to participate fully in vocational education and secure meaningful employment, perpetuating cycles of social exclusion and economic hardship: *“All participants recognised the existence of discrimination against people living in poverty, especially with regard to Roma people...Poor people face limited opportunities for employment, the hardship of commuting in the absence of good transportation services. Furthermore, the lack of reachable education opportunities and community engagement, contribute greatly to their social exclusion.”*

7.5. Impact of depopulation:

Depopulation exacerbates the challenges in rural areas. As communities dwindle, essential services become scarcer, and employment opportunities diminish. Depopulation compounds the existing difficulties, making it increasingly challenging people to thrive in rural settings. This is an obstacle faced by all BIOLOC hubs based in rural areas.

Bulgaria: *“In terms of the most pressing challenges in the region, interview partners perceive [...] migration, climate, etc. as the main challenges and obstacles that are systematic rather than personal for their area/sector.”*

Greece: *“One significant challenge identified is the underutilisation of available programs and resources. This underutilisation, coupled with the consequences of the region's transition away from lignite (a form of coal), has led to a shrinking population and a decline in living standards.”*



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Italy: *"Additionally, youth migration from the inland areas of Campania poses a significant challenge for the region. Young people leaving these areas often seek better opportunities elsewhere, contributing to the loss of human resources and the economic stagnation of local communities."*

Romania: *"These regions became unattractive for young generation, causing high rates of emigration. [...] Rural-urban migration".*

Slovakia: *"Respondents ranked the following as the main obstacles: [...] migration for work."*

Spain: *"Women in the rural world suffer from a triple set of problems [...] those derived from depopulation (scarcity of services, scarcity of employment options, etc.) and [...]"*

7.6. Personality and social stigma:

In Slovenia, young individuals encounter obstacles that are more closely tied to their personal experiences and characteristics rather than specific regional factors. Many of them struggle with feelings of alienation and avoidance from their community due to past difficulties in their lives, including challenges with education and personal growth. These individuals tend to exhibit traits such as withdrawal, discomfort in crowded spaces, difficulty engaging in conversations, and learning difficulties. These personal challenges contribute to a sense of social isolation and hinder their ability to participate fully in social life: *"Obstacles are not as much connected to the region. They are connected more to the personality of youngsters who have the feeling people in their community are avoiding them because they had difficulties in their lives, growing up, studying. [...] Some problems quoted by the youngsters: 'tend to quickly withdraw, don't like being in crowded spaces, find it difficult to engage in conversations, struggle a lot with learning'."*

7.7. Obstacles to communication and community engagement

In Greece, obstacles to participating in social life are compounded by difficulties in communication and exchanging ideas. This challenge extends beyond mere physical communication barriers and encompasses broader societal attitudes and the absence of platforms for open dialogue. The lack of effective channels for communication restricts individuals' ability to express opinions, share perspectives, and engage in meaningful collaborations within their communities. As a result, social interactions may be limited, and opportunities for collective problem-solving and community engagement may be hindered.

Greece: *"Compounding these issues is the difficulty in communication and exchanging ideas. This barrier is not just about physical communication challenges but also pertains to the broader societal attitude and the lack of platforms for open dialogue. This lack of effective communication channels restricts their ability to express opinions, share perspectives, and engage in meaningful collaborations within their communities."*



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Additionally, the report from Greece shows a significant obstacle to social participation is the increasing tendency of people to drift away from a sense of community and solidarity. This trend of social disconnection is exacerbated by a lack of comprehensive information, particularly among youth, which hinders their ability to effectively engage in societal issues and feel a sense of belonging. The erosion of community bonds and solidarity contributes to feelings of isolation and disengagement from social life, impacting individuals' ability to participate fully in their communities.

Greece: "A significant challenge highlighted is the increasing tendency of people to drift away from a sense of community and solidarity. This social disconnection is compounded by an absence of comprehensive information, making it difficult for individuals, particularly the youth, to engage effectively in societal issues and feel a sense of belonging."

The barriers to social participation have been dissected into barriers and forms of discrimination. The BIOLOC hubs reveal a persistent system of exclusion that deeply impacts marginalised groups, calling for substantial, systemic change. These communities face multiple, overlapping barriers—discrimination based on gender, ethnicity, health, and socio-economic factors—that restrict their access to social and economic opportunities. This situation is worsened by inadequate infrastructure and rural depopulation, creating a reinforcing cycle of disadvantage. To break this cycle, there must be a focused effort to address cultural biases, expand educational and employment opportunities, and foster true community inclusion. Only by tackling these core issues can the transition to a circular bioeconomy become inclusive and equitable.

7.8. Synthesis: Barriers to participate in social life

This chapter does not directly address the primary objective of understanding the needs and motivations of marginalised groups targeted by the BIOLOC regional hubs. Instead, it explores why these groups were chosen by examining the barriers they face to social participation. The analysis highlights a complex web of challenges that significantly limit their ability to engage fully in social and economic life.

Seven different categories of barriers have been identified, working both independently and interdependently to create systems of exclusion. **Discrimination and prejudice** stand out, intersecting with dimensions of **gender, ethnicity, health, socio-economic status, and age**. These intersections often reinforce disadvantages, as in the case of rural women over 40 in Spain, who face gender discrimination, geographical isolation and age-related barriers. Lack of **infrastructure** worsens these problems, particularly in rural and economically disadvantaged regions, where inadequate transportation, limited facilities and limited accessibility contribute to the exclusion of groups such as people with disabilities in Greece or residents of small villages in Hungary.

Economic challenges and unemployment are systemic barriers, particularly in regions undergoing industrial transition (e.g. Hungary, Romania, and Greece). These manifest themselves not only in immediate financial constraints but also in deep-rooted issues such as job scarcity, wage



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discrimination, and generational poverty. **Education** and **skills gaps** further contribute to these problems, with limited access to training limiting opportunities for groups such as NEETs in Germany and students in Croatia's woodworking schools. Depopulation, which affects several BIOLOC regions, worsens these challenges by reducing services, employment opportunities and community cohesion. Barriers such as **stigma** and **personal challenges** – though less frequently highlighted – pose significant obstacles especially to young people. In Slovenia, for instance, past experiences of exclusion lead many young people to feel alienated and disengaged. Similarly, **communication and community engagement** issues, especially evident in Greece, hinder social inclusion by limiting dialogue and the exchange of information.

For the BIOLOC hubs, this nuanced understanding has informed the selection of the target groups and highlights the multifaceted nature of the challenges that need to be addressed to promote meaningful social inclusion.

Recommendations:

1. **Tailor systemic interventions:** Develop context-specific solutions that address the interconnected barriers to social inclusion, ensuring equitable participation and benefit sharing.
2. **Social inclusion focus:** Go beyond technological and economic innovation to prioritise social inclusion as a core component of sustainable development.

The Table below represents the overview of the barriers of the BIOLOC hub target groups to participate in social life according to hub and target group, offering an overview of the challenges at play.



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Barriers to participate in social life	Target groups
1. Discrimination and prejudice	
1.1 Gender discrimination	Bulgaria: Ethnic minorities, unemployed, homeless, small farmers and those who are not in their main profession Croatia: Students of the woodworking and mechanical school Spain: Rural women over 40, people with disabilities and migrants
1.2 Ethnic and racial discrimination	Hungary: Inhabitants of small villages Germany: NEETs Netherlands: Migrant women Slovakia: Homeless people and people from the Roma community
1.3 Health-based / disability-based discrimination	Czech Republic: Unemployed young people Greece: People with disabilities Spain: Rural women over 40, people with disabilities and migrants
1.4 Socio-economic status-based discrimination	Croatia: Students of the woodworking and mechanical school Hungary: Inhabitants of small villages Slovakia: Homeless people and people from the Roma community
1.5 Age-based discrimination	Slovenia: disadvantaged young people participating in the 'Productive Schools and Enterprises for Educational Inclusion' programme
2. Limitation in infrastructure	
2.1 Transport issues	Czech Republic: Unemployed young people Greece: People with disabilities Hungary: Inhabitants of small villages Italy: Agro-forestry workers and livestock farmers Romania: Young people living in economically disadvantaged areas where pollution is a major problem



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	Spain: Rural women over 40, people with disabilities and migrants
2.2 Lack for supportive infrastructure for initiatives	Bulgaria: Ethnic minorities, unemployed, homeless, small farmers and those who are not in their main profession
2.3 Physical accessibility	Greece: People with disabilities
3. Economic challenges and unemployment	
3.1 Economic challenges	Greece: People with disabilities Hungary: Inhabitants of small villages Romania: Young people living in economically disadvantaged areas where pollution is a major problem
3.2 Lack of work experience	Czech Republic: Unemployed young people
3.3 Job scarcity	Hungary: Inhabitants of small villages Romania: Young people living in economically disadvantaged areas where pollution is a major problem
3.4 Low wages	Italy: Agro-forestry workers and livestock farmers Romania: Young people living in economically disadvantaged areas where pollution is a major problem Slovakia: Homeless people and people from the Roma community
3.5 The culture of poverty	Hungary: Inhabitants of small villages
4. Educational and skills gaps	
4.1 Limited access to education and training opportunities	Croatia: Students of the woodworking and mechanical school Germany: NEETs Hungary: Inhabitants of small villages
5. Impact of depopulation	Bulgaria: Ethnic minorities, unemployed, homeless, small farmers and those who are not in their main profession Greece: People with disabilities



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	Italy: Agro-forestry workers and livestock farmers Romania: Young people living in economically disadvantaged areas where pollution is a major problem Slovakia: Homeless people and people from the Roma community Spain: Rural women over 40, people with disabilities and migrants
6. Personality and social stigma	Slovenia: disadvantaged young people participating in the 'Productive Schools and Enterprises for Educational Inclusion' programme
7. Obstacles to communication and community engagement	Greece: People with disabilities

Table 15: Overview of barriers to participation in social life by target groups of BIOLOC hu



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8. CBE – Perceived potential, drivers, and challenges of the BIOLOC hubs target groups

Circular bioeconomy provides a pathway to sustainable development by using renewable resources, reducing waste, and regenerating ecosystems. Muscat et al., (2021) points out that this shift requires not just technological innovation but a profound societal transformation, with active collaboration across sectors and communities. Interview findings reveal that the BIOLOC hubs, perceive the potentials in CBE quite differently, in the following we have categorised the perceived potentials and challenges based on different themes.

8.1. Perception of opportunities in CBE

Only a few respondents were “uncertain” about the specific opportunities the CBE might offer them and exhibited a wait-and-see attitude (Czech Republic).

Czech Republic: “They don't really see specific opportunities and advantages, rather they wait for what will be offered to them. They are not determined for a single sector and rather expect what will be offered to them and what they will find interesting. [...] How CBE could contribute to their daily lives was not clear to the respondents. They saw it as a role for businesses rather than having meaning and benefit for individuals. They related the association of the term CBE to the reduction of food waste and organic food.”

The reports from Greece and the Netherlands did not provide this information altogether due to the respondents’ limited knowledge about the sector.

The respondents from Spain were from organisations that aim to “generate value and employment in rural areas,” meaning that they already work in the sector and are trying to exploit new opportunities that they identify locally. All the others could identify potentials of the sector.

Spain: “As one of the aims of the organisations is to generate value and employment in rural areas, the organisation does not have a specific objective as developing new value chains. However, they analyse which opportunities are the most interesting on the rural area (mostly related to bioeconomy), and then, they try to exploit.”

Croatia: “All surveyed students believe that bioeconomy can have a positive impact on their daily lives, work, and the local community by creating new jobs and business opportunities. The concept sounds promising to them.”

Greece: “Regarding the impact of CBE on their daily lives, work, and community, the respondents likely perceive it as a significant contributor to both personal and collective well-being.”



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8.1.1. Potential for new funding streams

The interviews also show that respondents recognise the potential of the transition into CBE and the new funding opportunities specifically targeted at supporting said transition. These funding streams, likely in the form of grants, are designed to encourage initiatives that align with sustainability and environmental goals. The availability of such financial support is seen as a key factor that can contribute to community development and the broader adoption of sustainable practices.

Hungary: “The mayor recognises the potential for securing grant funding and support for circular biobased projects. This opportunity aligns with environmental and sustainability grant opportunities and can contribute to the overall development of the community.”

8.1.2. Potential for business development

Respondents from several countries (Croatia, Hungary, Romania, and Slovenia) recognise the potential of CBE as a catalyst for significant changes in the agricultural and economic landscape in terms of expanding economic activities and new income generation opportunities.

There is a clear recognition of the entrepreneurial opportunities within the CBE sector. Respondents see it as an attractive area for setting up new businesses, particularly in profitable niches, which could lead to better wages and more flexible working hours.

They see the potential for CBE to encourage the creation of new businesses or the expansion of existing ones, particularly through the adoption of sustainable practices such as organic farming and the development of local bio-based industries, such as those focused on renewable energy production.

Respondents also highlight the valorisation of waste as a significant economic benefit, pointing out that the conversion of agricultural and livestock by-products into biofuels, biomaterials and other valuable products can contribute to waste reduction and open new income opportunities, thereby improving the overall value chains within the CBE.

Respondents also recognise the benefits of going beyond traditional business models to provide opportunities for innovation and development in different sectors, including animal health, suggesting that the applications of CBE are diverse and can support cross-industry innovation.

Hungary: “The small farmer respondent recognises the potential for additional income streams through sustainable farming practices such as organic agriculture or renewable energy generation in the circular biobased sector. This indicates the possibility of expanding economic activities beyond traditional farming methods.”



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Italy: *“Waste valorisation and increase in income -> Through the production of biofuels, biomaterials etc. from agricultural and livestock by-products.”*

Romania: *“Development of own business [...] of finding a job in CBE are considered interesting opportunities [...] To open a company in areas that can bring money. Salary and flexible schedule [...] As a future veterinarian, I believe that the CBE is a field that can discover many products, thus being beneficial for animals as well.”*

Slovenia: *“CBE could offer interesting employment or business opportunities. The interviewees also see some interesting business opportunities connected to the farms where they live and work. They would also like to explore opportunities in energy industry or in factories producing goods.”*

8.1.3. Job creation

There is a clear recognition among respondents from the BIOLOC hub countries that moving into the CBE sector can create new jobs. This is particularly interesting for those people who feel restricted to certain sectors, e.g. the target group of the German hub, namely (migrant) NEETs who feel 'forced' to work in certain sectors due to unrecognised qualifications or low educational attainment. This transition offers them a wider range of career opportunities.

In terms of specific job opportunities, CBE has been identified as a source of new roles for e.g. agro-forestry workers, livestock farmers and professionals in sectors such as research, technology development and waste management. These jobs have key features such as competitive salaries, adequate infrastructure and extensive training opportunities that make them particularly attractive.

CBE also plays an important role in community development and personal livelihoods. Activities associated with CBE, such as manufacturing goods from corporate waste, farming, and food management, not only provide employment but also promote sustainable lifestyles. For example, communities such as Good Shepherd integrate diverse groups, including the homeless and recovering addicts, by involving them in various CBE activities, fostering community bonds and providing meaningful work.

Germany: *“They see an opportunity for the target group to explore other occupations than those that are usually chosen for them. In addition, especially for the younger NEETs, it could be interesting for them to get to know this field for their own orientation.”*

Italy: *“Job creation -> new job opportunities for agro-forestry workers and livestock farmers, as well as for professionals in related sectors such as research, technology development, and waste management.”*



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Romania: *"Finding a job in CBE are considered interesting opportunities. Non-negotiable job characteristics are salary, adequate infrastructure, training."*

Slovakia: *"CBE is a source of livelihood for them, income for the budget, employs them in activities. They create products from company waste, cleaning sheep's wool etc. They work on farms where they grow their own food."*

Slovenia: *"CBE could offer interesting employment or business opportunities."*

A good example: the "Good Shepherd" community

The "Good Shepherd" includes homeless, Roma and people who are addicted to alcohol, drugs, and gambling. The aim is to integrate people into the community through work. They take care of their own food, animals. They also make straw pellets, repair furniture for the baths and more. People participate in CBE; they take it as a lifestyle. An example of a CBE is the food bank from the Tesco chain, who give them food just before or after the expiry date - they use the food for their own consumption or as cattle feed. They get, grow, or buy some of the food from what they earn from sales.

The ideal conditions for employment in the CBE sector, as identified in the interviews, emphasise the importance of a holistic approach to job design and employee well-being. At the forefront is the emphasis on competitive salaries, recognised as a fundamental aspect in not only attracting professionals to the sector, but also retaining them.

Equally important are working conditions, particularly working hours. There's a clear call for flexibility and moderation to accommodate individual life circumstances, especially those with family responsibilities.

The working environment also plays a key role in defining the ideal job. A pleasant, flexible, and motivating environment is advocated, where respect for individual beliefs and cultures is paramount. This nurturing environment is seen as crucial to promoting diversity, inclusivity, and employee satisfaction.

Professional development is another important pillar. The availability of necessary equipment and access to a wide range of training opportunities are highlighted as essential for career growth and adaptation to changing job demands. The value of active mentoring is emphasised, fostering an environment of continuous learning and professional development.

Croatia: *"Salary is highlighted as an important aspect, and a low salary can be a reason for leaving the woodworking industry. Increasing salaries can contribute to retaining professionals in the industry. Shortened working hours or flexible working hours can be crucial, especially for those with family obligations."*



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Romania: *“First of all, the salary is the first important thing; it can give you the full security of tomorrow. Likewise, the work schedule must not be tiring, so that anything done in excess leads to decadence [...] Non-negotiable job characteristics are salary, working hours, respect for beliefs, vacation [...] Salary, adequate infrastructure, respect for cultures and beliefs, access to opportunities. Important aspects of a job: pleasant, flexible, attractive, motivational professional environment, access to transversal training opportunities, salary negotiation based on clear and transparent criteria.”*

Slovenia: *“CBE could offer interesting employment or business opportunities. It is essential to emphasise that not only the field of work but also the manner of work is crucial. Youngsters should work under active mentorship, where work processes evolve and change. The interviewees also see some interesting business opportunities connected to the farms where they live and work.”*

8.1.4. Educational and training

Respondents highlight the importance of tailored education and training in the transition to a CBE, emphasising the role of workshops, training programmes and information campaigns in empowering communities and promoting sustainable practices. The feedback highlights the need for access to essential equipment and a wide range of training opportunities to ensure that individuals are well prepared and informed, thus facilitating effective engagement in CBE activities. There is also a strong interest in hands-on learning experiences, particularly in the energy and manufacturing sectors, indicating a shift towards practical, experiential learning over traditional textbook methods.

Germany: *“They were curious and immediately saw opportunities for NEETs to find employment and training in areas that employment agencies do not normally think of when supporting the target group. Therefore, it might be important to educate not only the target group about CBE, but also the people and agencies they are in contact with.”*

Hungary: *“Interviewees also acknowledge the importance of workshops, training programs, and informational campaigns, which can empower the community to embrace and benefit from sustainable practices.”*

Romania: *“Access to necessary equipment, access to transversal training opportunities.”*

Slovenia: *“They would also like to explore opportunities in energy industry or in factories producing goods. It would mean a lot to them to have the chance to learn from practical experience rather than just from books.”*



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8.1.5. Health and environmental benefits

Respondents see the transition to a CBE as a crucial step towards improving the quality of life by creating a cleaner environment and promoting sustainable lifestyles. This transition is significantly supported by initiatives such as recycling, which are seen as key to moving towards a CBE. These efforts aim to improve the quality of life by ensuring clean soil, water, and food, leading to ecologically sound regions free from environmental hazards.

The respondents also highlight the focus on environmental sustainability within the CBE framework, with particular emphasis on reducing waste production, minimising resource depletion and reducing greenhouse gas emissions from agricultural and livestock activities. This holistic approach reflects a concerted effort to promote a sustainable and environmentally friendly future.

Bulgaria: "As a part of the adaptive process towards a CBE, the benefits that are being foreseen are aligning with the goal of a better quality of life. This includes having clean soils, water, and food through recycling initiatives that have been initiated. The ultimate aim is to create ecologically clean regions where people can live without the threat of environmental hazards."

Hungary: "All participants recognise the potential for sustainable practices such as adopting environmentally friendly farming techniques, reducing waste."

Italy: "Environmental sustainability -> by reducing waste generation, minimising resource depletion, and mitigating greenhouse gas emissions from agricultural and livestock activities."

Romania: "Applying circular economy at home, at work and in local community will have a healthier environment."

"The bioeconomy can contribute to everyday life with a positive impact on the population's health, with less pollution."

"CBE outcomes: Improving health through outdoor activities, obtaining healthy food, strengthening collaborative relationships within the community, a healthier and cleaner environment that makes the locality more attractive, reducing migration."

8.1.6. Community development and resilience

The potential of the CBE to promote community development and resilience is evident from a number of perspectives. Interviews highlight the prospects for establishing community-supported agriculture systems and small-scale bio-based industries, particularly emphasising their role in building local economic resilience. This approach promotes self-sufficiency and reduces dependence on external resources, contributing to the sustainability of communities.

In addition, CBE initiatives are seen as instrumental in the socio-economic development of rural communities. By stimulating local economies, creating employment opportunities, and encouraging



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entrepreneurship, particularly among agro-forestry workers and livestock farmers, CBE contributes to the overall strength and resilience of communities.

Hungary: “Both the mayor and social worker emphasise the prospect of building community-supported agricultural systems or small-scale bio-based industries. This fosters local economic resilience by promoting self-sufficiency and reducing dependency on external resources.”

Italy: “Community development -> CBE initiatives can contribute to the socio-economic development of rural communities by stimulating local economies, creating employment opportunities, and fostering entrepreneurship among agro-forestry workers and livestock farmers.”

Romania: “The more the emphasis on the bioeconomy is developed, the more jobs there can be, as there can be more factories, enterprises, etc. All these, put together, contribute to the development of the whole society.”

8.1.7. Inclusivity and social integration

Interviews from BIOLOC regions have highlighted the potential of the CBE to promote inclusivity and social inclusion, particularly through sustainable agriculture and local bioenergy initiatives. These efforts are praised for providing employment opportunities tailored to the diverse skills of individuals, thereby supporting economic empowerment, and enhancing social inclusion. This is in line with the objectives of the BIOLOC project, which aims to promote social innovation and revitalise European communities with a focus on the integration of marginalised groups.

Greece: “Additionally, the sector’s potential for creating inclusive job opportunities that value diversity and offer tailored work environments is a significant draw. [...] For many in this group, the primary motivation to engage in the CBE sector is the pursuit of meaningful employment that accommodates their physical abilities and offers a sense of contribution and independence.”

Hungary: “Interviewees acknowledge that initiatives like sustainable agriculture or local bioenergy projects can create inclusive employment opportunities by tailoring roles to their abilities. This demonstrates the potential for economic empowerment and social inclusion.”

8.2. Drivers

This chapter explores the diverse motivations and drivers behind engagement in the CBE in different BIOLOC regions and target groups. Motivations include, for example, the desire for personal and professional development, the pursuit of economic opportunities through sustainable job creation, and the collective aspiration for a healthier and greener life. In addition, cultural heritage and social



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enhancement are emerging as important drivers for communities to explore bioeconomy opportunities.

8.2.1. Personal and professional development

A key motivator for engaging in the CBE sector is personal development. This is depicted in the desire to increase knowledge and skills, reflecting an ongoing commitment to personal growth and adaptability. Individuals are driven by the desire to transform and improve their lives, seeking not only to improve their circumstances but also to enhance their standing within their communities. There is also a strong desire for independence, with some wanting to start their own families and live a life free from the constraints of dependency.

Bulgaria: “[...], a desire to change and reorganise their lives in a better way, to prove themselves to their local/regional society.”

Croatia: “Furthermore, the desire to acquire new professional knowledge in their own sector plays a crucial role. Students recognise the importance of adapting and adopting bio-based approaches in their work practices and are motivated by proactive engagement in the learning process. This effort for additional professional development reflects a desire for competitiveness in the job market and building a career based on sustainability and innovation.”

Czech Republic: “They would like to become independent (start their own family, not depend on their parents), so they look for opportunities and offers everywhere.”

8.2.2. Economic opportunities

Another driver of CBE engagement is the search for economic opportunity. There's a strong motivation for new, sustainable employment opportunities, as individuals seek stable and environmentally friendly employment in line with the changing global economic landscape. This is coupled with an entrepreneurial spirit, where opening new businesses within the emerging CBE sector is seen as a promising avenue for economic advancement and innovation. There's also a focus on improving financial well-being by increasing income and adding value to existing production. This not only aims to increase personal wealth, but also contributes to the broader goals of sustainable development and environmental protection.

Croatia: “Motivations for exploring opportunities in the CBE sector are primarily linked to [...] the need for new sustainable jobs. Individuals see an opportunity for employment in this rapidly growing sector or even the opening of their own businesses.”

Czech Republic: “They are looking for an attractive, permanent and well-paid job, and staying in the sector they graduated from is not a top priority for them.”



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Greece: *"For many in this group, the primary motivation to engage in the CBE sector is the pursuit of meaningful employment that accommodates their physical abilities and offers a sense of contribution and independence."*

Italy: *"The target groups show a strong interest in exploring the new opportunities offered by the CBE, especially with the aim of increasing their income, creating added value from productions, stimulating the local economy with the creation of new job [...]."*

Slovenia: *"We believe that CBE could offer interesting employment or business opportunities [...]."*

Slovakia: *"The main motivation for engaging in CBE is [...] working on farms."*

Spain: *"The widespread of agriculture and livestock has led these groups to explore the opportunities in the CBE sector."*

8.2.3. Environmental awareness

A strong awareness of and commitment to environmental sustainability is a key driver for respondents to engage in CBE. Individuals are drawn to the CBE sector by a common desire to lead a greener lifestyle, conserve natural resources and actively contribute to the health and sustainability of their environment. This interest is fuelled by an awareness of today's environmental challenges.

Bulgaria: *"To live an environmentally friendly life."*

Croatia: *"Motivations for exploring opportunities in the CBE sector are primarily linked to awareness of environmental conservation. Respondents are motivated by a desire to contribute to sustainable development, reduce ecological impact, and create positive changes in their local community."*

Greece: *"The CBE sector's emphasis on sustainability and innovation can be particularly appealing, aligning with a desire to contribute positively to environmental stewardship."*

Italy: *"The target groups show a strong interest in [...] contributing to the environmental sustainability of their territory."*

Romania: *"They are conscious about modern environmental issues."*



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8.2.4. Health motivations

Related to environmental motivations, respondents are also motivated by the health benefits associated with engagement in CBE - individuals are attracted to CBE because of its potential to create a cleaner, more sustainable living environment, which in turn can lead to better health outcomes both at a personal and community level. This also includes CBE's ability address the negative health impacts of poor environmental conditions.

Bulgaria: "The motives of the targeted group are primarily related to a healthy and environmentally friendly life."

Hungary: "The issue of extreme poverty and poor health conditions further hinder the region's social and economic well-being. [...] . Energy poverty stands as a significant challenge in the region. This is illustrated by the fact that marginalised individuals resort to burning stolen wood or trash, such as cloth and used car tires, to generate heat. This practice not only leads to extreme air pollution but also indicates a lack of access to affordable and sustainable energy sources."

Romania: "They are willing to be supported by relevant information necessary to understand CBE and need support to better understand the pollution issues in their area."

Slovakia: "The main motivation for engaging in CBE is to change one's life situation and producing food for their own consumption [...]."

8.2.5. Cultural continuity

Another motivation is the idea of upholding and preserving ancestral traditions. These respondents obviously see the connection between CBE and traditional methods, especially in agriculture.

Bulgaria: "The motives of the targeted group are primarily related to [...] continue the traditions inherited from their ancestors."

8.3. Challenges in fully participating in the CBE sector and their supportive measures

8.3.1. Financial and economic barriers

According to the BIOLOC Hub interviews, financial concerns are a key barrier to the adoption and integration of CBE practices. This includes issues such as lack of available funding for the transition and fear of the costs involved.

Bulgaria: "The main reasons that cause concern and act as barriers are usually of financial origin."]



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Hungary: *"The small farmer mentioned practical obstacles such as initial investment costs and the need for support mechanisms."*

Italy: *"There is a need for financial resources and technical support to invest in new technologies and infrastructure necessary for transitioning to more sustainable practices."*

Romania: *"Fear of costs."*

Slovakia: *"Lack of funding for new technologies. Support [needed]: financial and human resources, grants."*

In relation to financial barriers, economic barriers are characterised by unattractive economic outcomes associated with CBE practices compared to traditional, non-CBE ventures that offer immediate financial returns, low profit margin costs and attractive business plans. These economic challenges inhibit the transition to and investment in CBE ventures.

Hungary: *"[...] the low level of the relative incomes from biomass industry (in contrast with food production) on behalf of farmers[...] for farmers and people working in forestry sector, almost everything else is more profitable than to produce crops for the biomass industry. [Additionally], Interviewees stress, that among the socially disadvantaged group, a certain pattern of considering only the problems of today leads to not be able to think even in a years' term or a year ahead, leading to a hopeless situation. Within this, it is incredibly hard to convince anybody to engage in a market that does not trail short-term benefits. And here, short-term usually means an immediate, current-day benefit."*

Romania: *" [...] concerns: unattractive business plans, unprofitable activities or with insignificant profit margin due to lack of subsidies and support schemes".*



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Support measures to join or fully participate in the CBE sector

- ❖ It is not surprising that the respondents of the BIOLOC hubs interviews suggested **'financial assistance'** as a supportive measure to combat financial and economic barriers. Other than the mention of 'grants,' and 'subsidies', details into how this assistance should look like or what form it should take, were not provided.

Bulgaria: "The interviewed partners identified financial support [...] as essential for the development of a CBE."

Romania: "Funds, [...], subsidy system. Economic support. CBE investment financing programs."

Slovakia: "[For those not involved:] Financial resources. [For those already involved:] Ensuring a minimum wage, provision of food and accommodation."

Slovenia: "[For those not involved:] Salary. due to concentration issues, breaks and shorter working hours are important."

- ❖ The financial and economic barriers described above include both the fact that there is a lack of financial capacity to develop CBE in the regions. In addition, there is an element of the CBE field being perceived as less financially attractive because the financial benefits are either lower or not immediate compared to conventional fields. In order to improve this 'attractiveness', the **introduction of incentives** such as subsidies and other financial incentives down to the consumer level was suggested by respondents, especially for sectors such as agriculture that are under competitive pressure, to help bridge income gaps and make CBE ventures more attractive.

Hungary: "[...] To introduce subsidies or financial incentives for farmers engaging in biomass industry activities would be a good first step. especially concerning that other types of crop production is highly subsidised, and this creates a bad competitive surrounding. Subsidising the biomass sector can help bridge the income gap and make biomass production more financially attractive compared to traditional food production."



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8.3.2. Educational and skills deficiencies

Another barrier to the integration of CBE in the BIOLOC regions is deficiencies in education, skills, and knowledge. This includes not only formal educational programs, but also professional training and information dissemination about the CBE sector. Such deficiencies prevent students, entrepreneurs, and workers from acquiring necessary knowledge and skills.

The lack of specialised training programmes for the CBE sector is a significant obstacle. It hinders further interest and awareness of the business opportunities in the sector, and thus the effective engagement of both producers and consumers with the industry. This problem also affects a wider range of people with lower qualifications or those whose qualifications are not recognised within the sector. These individuals are often restricted to job opportunities in unrelated sectors, where they may face additional challenges. Their limited educational background and lack of relevant work experience further complicates their ability to find meaningful employment in preferred fields, including those related to the CBE.

Croatia: "[...] The lack of resources or educational programs focused on the CBE can also be a barrier. It is important to provide educational resources and information to stimulate students' interest and awareness of business opportunities in the CBE sector."

Hungary: "[...] lack of education and trainings provided for local entrepreneurs, social service providers and unemployed people. the complete lack of education and information regarding the biomass industry forestalls both producers and consumers to engage with the industry."

Germany: "Challenges that NEETs face is manifold. NEETs with migrant backgrounds often face job offers in specific sectors such as catering, storage, logistics or care, with language and cultural difficulties being a challenge. Therefore, they do not even have access to the CBE sector. Those with lower educational profiles may find it difficult to find employment in their desired fields even though they look for a meaningful job. And the most obvious challenge might be the lack of professional experience, or the lack of education related to the CBE."

Romania: "Information and professional training in the field of new technologies that are part of the CBE (biorefineries, biomethane, biomaterials, advanced fuels, new foods, etc.) [is needed]."

The lack of specialised training in the CBE sector implies a corresponding lack of skilled labour in the regions, which stands out as a prominent barrier to the transition to CBE, as vividly illustrated in the BIOLOC hub interview reports. The brief reference to '*untrained staff. Supervision required*' in Slovakia's responses highlights the widespread problem of inadequate skills within the sector and underlines the need for improved supervision and specific training programmes to develop a workforce capable of driving CBE initiatives forward.



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Support measures to join or fully participate in the CBE sector

1. From the interviews, there is a strong emphasis on the need for **education, professional training**, and development opportunities to equip individuals with the knowledge and skills required for the CBE. The acquisition of new professional skills, particularly in sectors moving towards bio-based approaches, is encouraged, motivated by the desire for professional competitiveness and sustainability.

Croatia: "Furthermore, the desire to acquire new professional knowledge in their own sector plays a crucial role. Students recognise the importance of adapting and adopting bio-based approaches in their work practices and are motivated by proactive engagement in the learning process. This effort for additional professional development reflects a desire for competitiveness in the job market and building a career based on sustainability and innovation."

Romania: "Information and professional training in the field of new technologies that are part of the CBE (biorefineries, biomethane, biomaterials, advanced fuels, new foods, etc.)."

2. Key support measures include **targeted training, courses, and re-qualification programmes**, particularly for those new to the sector or undecided about their career path. These training initiatives aim to provide the necessary skills and knowledge to work effectively in the CBE sector. In addition, there is a push for diversification into agricultural activities and biomass cultivation, coupled with training in sustainable practices and crop management to improve productivity and environmental sustainability.

Czech Republic: "Support measures for people who are not yet in the sector should focus on training, courses, and requalification. The selected marginal group is often undecided in which sector they would like to operate."

Hungary: "Further, by providing support programs that encourage farmers to diversify their agricultural activities, including biomass cultivation can be accompanied by training on sustainable practices and crop management to optimise biomass yields. Education is therefore an important step, but not only for government and private sector stakeholders, but for dwellers, too."

Slovakia: Staff support

Slovenia: "[For those not involved:] opportunities for further education to kickstart their career. learning new skills."



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Support measures to join or fully participate in the CBE sector

3. The support for participation in the CBE (CBE) sector encompasses more than just educational initiatives; it includes a broad strategy that recognises and incorporates the varying needs and qualifications of individuals into the job market. This approach underlines the importance of **collaboration** between educational institutions, social organisations, and employment agencies to ensure a smooth transition and effective integration into the CBE sector. The goal is to create a knowledgeable, skilled, and motivated workforce that can actively contribute to the growth of the CBE. Additionally, this support is complemented by economic measures, such as financing programs aimed at fostering investments in the CBE projects, thereby broadening opportunities for individual participation and contribution to the sector.

Germany: "Recognising and addressing the diverse needs [...] is crucial. Support measures might encompass tailored training programs or acknowledging their qualifications and interests when facilitating access to the job market. Collaboration with various stakeholders, including educational institutions, social organisations, and employment agencies, is essential."

Slovakia: "engaging with more companies across the county/Slovakia".

8.3.3. Lack of knowledge and awareness

Knowledge and awareness are critical to the adoption and integration of CBE practices, yet there is a noticeable lack in these areas in various BIOLOC regions regarding the benefits of CBE and its impact on environmental and health outcomes. The gap in understanding and awareness has a direct impact on the readiness and willingness of different stakeholders to adopt and apply CBE principles.

Italy: "[...] Lack of knowledge and awareness regarding the benefits of CBE emerged as a significant challenge, suggesting the need for awareness-raising and training for agro-forestry workers and livestock farmers."

Romania: "[There is] uncertainty of positive impact on the environment and health."



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Support measures to join or fully participate in the CBE sector

1. This section highlights that the BIOLOC regions lack not only education and training in the CBE (CBE), but also general knowledge and awareness about CBE, including its benefits, challenges, and optimal implementation strategies. Therefore, one of the supporting measures suggested by the BIOLOC Hub interviewees is to **initiate or strengthen awareness-raising and information campaigns**. These initiatives are designed to guide especially undecided individuals towards the CBE sector by illustrating its possibilities through engaging campaigns and transparent communication about its benefits and available opportunities, especially regarding sustainable practices and biomass-related activities. By dispelling misconceptions and providing tangible, understandable examples the community can be motivated to participate more actively in CBE.

Czech Republic: "The selected marginal group is often undecided in which sector they would like to operate. It is therefore necessary to direct their decision-making towards CBE in the form of attractive campaigns that portray the sector as promising."

Hungary: "As the interview analyses reveal, awareness campaigns to inform the local community about the benefits and opportunities within the biomass industry will trail a dispel of misconceptions and create a positive perception, encouraging more people to engage in biomass-related activities."

2. In addition, it is crucial to foster a sense of motivation and ownership among potential participants. This involves raising awareness through events and workshops that **highlight the meaningful opportunities in the sector and its alignment with environmental protection, sustainable development, and local community improvement**. Financial support for extracurricular activities, the provision of materials and the involvement of experts can further facilitate practical learning and the adoption of best practices in sectors such as woodworking.

Croatia: "Motivations for exploring opportunities in the CBE sector stem from a deep awareness of the importance of environmental conservation through this innovative concept. Respondents are motivated by a desire to contribute to sustainable development, reduce ecological impact, and create positive changes in their local community. Understanding the need for new, sustainable jobs is a key driver, and they see an opportunity for employment or even starting their own businesses in the woodworking sector. Financial support for extracurricular activities, such as material procurement or engaging experts, could significantly facilitate ongoing education. This support would enable practical experience and learning from concrete examples of best practices."

Germany: "[...] cultivating awareness through information events, interactive workshops can foster the intrinsic motivation by showcasing the meaningful opportunities within the CBE sector."

Slovenia: "Young people are open to take new challenges, especially practical training, workshops, discussions with employees, visits to companies in the field of CBE."



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Support measures to join or fully participate in the CBE sector

3. Finally, there is a clear need to **share success stories and practical examples** of companies that have successfully transitioned to CBE practices. This approach not only educates, but also inspires agro-forestry workers, livestock farmers and other stakeholders by highlighting the tangible benefits and challenges overcome. In addition, marginalised groups need to be recognised and supported by public administrations or local governments, emphasising their importance in societal change and empowering them to actively participate in the CBE sector.

Croatia: "It would be important for them to learn about the challenges the company (coming from a similar context) has faced, but above all, the benefits it has gained from CBE."

Italy: "Agro-forestry workers and livestock farmers who have not yet developed CBE solutions believe that the primary factor that would support them in making this choice is the sharing of best practices and seeing practical examples of companies that have already transitioned. It would be important for them to learn about the challenges the company (coming from a similar context) has faced, but above all, the benefits it has gained from CBE. Moreover, the marginalised group requires substantial support from the public administration or local government to feel valued and empowered. They should be recognised as integral player in societal change."

8.3.4. Regulatory and bureaucratic challenges

Complex procedures, controls, and lack of coherent legislative frameworks that support and promote CBE initiatives have also been indicated as barriers to the development of CBE in the BIOLOC regions. Additionally, lack of experience with management and administrative tasks necessary is an added barrier. Their apprehension about assuming full responsibility and accountability acts as a major deterrent to innovating and implementing new technologies and work processes. This fear of responsibility and the administrative burden can hinder progress towards integrating sustainable practices in farming.

Italy: "Diversification of activities and exploration of new market opportunities may be hindered by regulatory and bureaucratic barriers requiring institutional and political support to overcome."



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Romania: *"A coherent legislative framework that promotes and supports, including economically, the market penetration of new technologies that are part of the CBE (biorefineries, biomethane, biomaterials, advanced fuels, new foods, etc) CBE investment financing programs [are needed]."*

Slovakia: *"State: bureaucracy, controls"*

Slovenia: *"When it comes to integrating the farm with circular economy principles, they would need a lot of help, especially in management, as they lack experience in dealing with paperwork and similar matters. They are afraid of taking on all responsibilities and being entirely accountable for everything."*



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Support measures to join or fully participate in the CBE sector

- ❖ Given respondents' concerns about regulatory and bureaucratic barriers, recommended actions include the creation of a regulatory environment that is favourable to the development of CBE. This includes the **development of clear, supportive policies** aimed at facilitating the market penetration of new CBE technologies and practices.

Hungary: "CBE in a development framework supported coherently by the political, administrative, legal, economic environment."

Romania: "A coherent legislative framework that promotes and supports, including economically, the market penetration of new technologies that are part of the CBE (biorefineries, biomethane, biomaterials, advanced fuels, new foods, etc.) Support coming through political initiatives driven by a functional legal and economic framework."

- ❖ Promoting **collaboration between various stakeholders**, including governmental bodies, private sector, educational institutions, and NGOs, **to ensure that regulatory frameworks are developed in a participatory manner and are well understood by all parties involved**.

Czech Republic: "Collaboration with various stakeholders, including educational institutions, social organisations, and employment agencies, is essential."

- ❖ In addition, respondents highlighted the importance of **tailor-made local and regional policies specifically designed to support the growth of the CBE**. These policies should not only take into account the unique environmental, economic and social conditions of each region, but also provide a structured framework that encourages the adoption of CBE principles.

Bulgaria: "For them, the most important issue is to understand how they can contribute to the circular economy and the bioeconomy, as they believe this will improve their daily life conditions. They believe that the only way to achieve this is by being a part of the local or regional circular and bioeconomy."



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8.3.5. Infrastructure and technology limitations

Inadequate infrastructure and technological barriers also stand in the way of transitioning to a CBE. Issues such as outdated vehicles, low transport capacity, and a general lack of modern technology hinder operational capabilities and sustainable practices. This was outlined clearly by the Slovakian report: *"Logistics: old cars (few funds for replacement), low transport capacity, lack of people."*

Italy: *"There is a need for financial resources and technical support to invest in new technologies and infrastructure necessary for transitioning to more sustainable practices."*

Support measures to join or fully participate in the CBE sector



- ❖ According to the barrier described above, transition to a more sustainable CBE is hampered by inadequate infrastructure and outdated technology. To overcome this challenge the respondents from the BIOLOC regional hubs advocate for investment in modern technology and infrastructure.

Slovakia: *"Logistics: old cars (few funds for replacement), low transport capacity, lack of people."*

Italy: *"There is a need for financial resources and technical support to invest in new technologies..."*

8.3.6. Social and cultural barriers

A rather interpersonal barrier was also noted specially from the Hungarian report; namely: envy This feeling, within the framework of social attitudes and cultural norms, presents a considerable obstacle to the advancement of the CBE. The resistance from the community, alongside a deep-rooted preference for traditional methods as opposed to innovative solutions, undermines collaborative endeavours and the integration of new technologies and practices.

Romania: *"Developing initiatives in CBE, probably neighbours would be against it. People are generally envious."*

Italy: *"[...]many companies operating in these target sectors are comprised of individuals who are closely tied to traditional techniques..."*



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Support measures to join or fully participate in the CBE sector



- ❖ According to the barrier described above, transition to a more sustainable CBE is hampered by inadequate infrastructure and outdated technology. To overcome this challenge the respondents from the BIOLOC regional hubs advocate for investment in modern technology and infrastructure.

Slovakia: "Logistics: old cars (few funds for replacement), low transport capacity, lack of people."

Italy: "There is a need for financial resources and technical support to invest in new technologies..."

8.3.7. Health and accessibility issues

Some reports from the BIOLOC hubs noted that specific individuals may be hindered from participating in the CBE field due to health-related issues. Interestingly, this came from the German hub whereas it was expected to be more of a challenge to other hubs like the Greek hub which focussed on people with disabilities.

Germany: "Individuals with health conditions [...] are precluded from leveraging opportunities within the CBE sector due to their incapacity to work."



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Support measures to join or fully participate in the CBE sector

- ❖ According to the barrier described above, transition to a more sustainable CBE is hampered by inadequate infrastructure and outdated technology. To overcome this challenge the respondents from the BIOLOC regional hubs advocate for investment in modern technology and infrastructure.

Slovakia: "Logistics: old cars (few funds for replacement), low transport capacity, lack of people."

Italy: "There is a need for financial resources and technical support to invest in new technologies..."

- ❖ Greece's report highlights certain prerequisites for their full integration and participation. One viewpoint emphasises the importance of inclusive policies and legislative measures specifically designed to support individuals with chronic illnesses, and their families. This perspective suggests that the integration into the CBE sector is contingent upon the sector's adaptability and willingness to implement policies that cater to the unique needs of these groups.

The CBE presents a transformative pathway for sustainable development, with the potential to drive economic growth, environmental sustainability, and social inclusion. However, its success depends on addressing key barriers, including financial constraints, gaps in education and skills, outdated infrastructure, and regulatory complexity. Strategies that combine education, financial support, simplified policies, and active community participation are essential to unlock CBE's benefits in general, and particularly for the marginalised group.

8.3.8. Synthesis: CBE – Perceived potential, drivers and challenges of the BIOLOC hubs target groups

This chapter explored the perceived opportunities, motivations and challenges associated with the engagement with CBE. Findings reveal how the transition to CBE is seen both as a pathway for sustainable development and as a driver for socio-economic transformation. However, significant disparities in awareness, preparedness and integration capacity were evident across regions and target groups. In the following, key findings from each section are identified:



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- **Perceived opportunities:** CBE is valued to drive funding, business growth, job creation, and community resilience. Benefits like cleaner environments, inclusivity, and community development are evident, though awareness of personal gains varies.
- **Motivational drivers:** Engagement stems from desires for economic stability, sustainability, and community well-being. Job creation, entrepreneurship, environmental benefits, and cultural preservation are prominent motivators.
- **Challenges:** Barriers include financial constraints, limited training opportunities, bureaucratic hurdles, inadequate infrastructure, and social challenges like discrimination and health issues.

Recommendations:

1. **Enhance awareness and education:** Launch targeted awareness campaigns and training programs to improve understanding of CBE's benefits and practical implications, ensuring inclusivity for all demographics.
2. **Increase funding and incentives:** Provide financial support through grants, low-interest loans, and tax incentives to encourage entrepreneurship and sustain economic viability in the CBE sector.
3. **Simplify bureaucratic processes:** Streamline regulations and improve infrastructure to reduce barriers to participation, fostering a supportive and equitable environment for stakeholders.



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9. Needs in information, education, and training

This chapter presents the information, education, and training needs of the target groups. The interview guidelines specifically focused on this aspect, recognising that the BIOLOC regional hubs hold the position to have the greatest impact in these areas. This chapter covers the perceived skills of the target groups, their training interests and preferred training formats, as well as the information they are interested in and their preferred communication channels. In addition to identifying these needs, this chapter will feed directly into Task 5.4 of the BIOLOC project, which will develop the education and training component of the project.

9.1. Receiving information on employment and business opportunities

9.1.1. Topics of interest

The interview partners focussed on specific topics that were identified as areas of greater interest in their regional context.

Employment and business opportunities are among the most frequently mentioned topics of interest for target groups in most of the BIOLOC regional hubs. In most of the regions is the most mentioned topic target groups are interested in. It ranges from company visits and discussions with entrepreneurs to engaging with more companies across the country.

In the Croatia case students at the woodworking school expressed that during company visits *“they would have the opportunity to personally experience work environments, ask questions, and engage in conversations with people in the industry. This approach would provide them with practical insights into the CBE sector, allowing for a better understanding of business dynamics and employment in that field”* (excerpt from the Adriatic BIOLOC regional hub (HR) interviews report). Direct communication with entrepreneurs and business owners would provide them with *“the opportunity to ask questions, exchange experiences, and create valuable contacts in the industry. This approach also supports hands-on learning and gaining firsthand information, which can significantly enrich their understanding of the CBE sector”* (excerpt from the Adriatic BIOLOC regional hub (HR) interviews report).

These activities could also support different target groups in gaining insights into the world of employment and business, acquire practical experiences as well as broaden their horizons. Also, better **understanding CBE, its possibilities for integrating the different marginalised groups and opportunities for funding** are topics of interest of the interviewed persons and relevant for the hub activities.



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9.1.2. Information channels

Furthermore, to the topics of interest, interviewees were also asked about their preferred form of receiving this information.

Most of them prefer a **direct face to face setting**. Interview partners name different forms of **trainings** and **workshops**, **study visits**, **direct consultations with experts**, **presentations at events** and **awareness raising campaigns**. These forms of information transfer could either happen directly in the environment of the target groups as in schools or working premises, but also in the offices or companies of the experts.

Stakeholders and members of the target groups highlighted the importance of workshops, training programs, and informational campaigns in empowering communities to adopt sustainable practices. There is also potential for knowledge sharing and capacity building within communities. They prefer practical, hands-on learning experiences over theoretical education, as it was mentioned e.g. in the Hungarian case regarding small farmers interested in biomass cultivation. However, there is a divergence in preferences, with some favouring formal educational programs led by experts, while others emphasise on-the-ground training and local initiatives. Learning from examples and best practices is valued, but it is crucial that best practices are relevant and relatable to the local context. Practical training, workshops, and hands-on learning are deemed most important for capacity building.

Another focus is laid on obtaining information through company visits and discussions with entrepreneurs. The interviewees believe that visiting companies in person provides practical insights into the sector, allows for direct communication with industry professionals, and facilitates the creation of valuable contacts. This hands-on approach is highly valued as it enriches their understanding of the sector. For example, students at the woodworking school of the Croatian hub, often having lower economic backgrounds, appreciate school-sponsored trips and company visits, viewing them as opportunities to broaden their horizons, stimulate their entrepreneurial spirit, and gain practical experiences beyond the classroom.

Despite the direct setting, also **online channels** were mentioned for receiving information on the topics of interest. Some stakeholders generally prefer receiving information online, particularly through **digital media**. e.g. there is interest in learning more about employment and business opportunities in the CBE sector through **digital information campaigns**. Also creating a LinkedIn profile for the regional hubs is recommended to keep stakeholders informed.



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9.2. Education and Training

9.2.1. Current skill sets

Interview partners were asked about their skillset with respect to the skillset of their target groups, and whether they think that this skillset can equip them to leverage opportunities in CBE. The marginalised groups are as diverse as their skillset, from high-level education to primary-level education, reflecting their life experiences. The following examples give an overview of the skillsets of some selected marginalised groups:

- **NEETs (Not in Education, Employment, or Training), German Hub:** They have a diverse skill set influenced by factors such as education, motivation, and social circumstances. NEETs vary widely in their aspirations and readiness for employment, with some actively seeking opportunities while others lack direction. Those with migration backgrounds may face additional challenges such as language barriers and discrimination.
- **Students at the woodworking school, Croatian Hub:** They have practical experience that prepares them well for entering the job market. Their expertise is shaped through hands-on experience, making them relevant in the industry.
- **Homeless people and Roma, Slovakian Hub:** They are noted for their hard work and ability to quickly learn new tasks, engaging especially in physical work within their communities.

In general, when it comes to the topic of CBE, the interviewees express a need for more intensive and long-term information provision to understand the CBE concept fully. While some participants feel prepared for work in the CBE sector with their current skillset, others acknowledge the importance of further practice and continuous learning, especially in adapting to the CBE's dynamic environment.

9.2.2. Training interest

Interview partners were asked whether they would be interested in training or gaining more profound knowledge and experience about a more bio-based approach. In general, the interviewees express eagerness for trainings on the CBE sector and in its development. The interviews reveal a clear interest in training initiatives related to the CBE, driven by motivations for personal and professional development, economic advancement, and community benefit.

Primarily the younger respondents, which are lacking extensive experience, are open to changing their focus and are interested in jobs that appeal to them, although they may not have a clear idea of what those jobs entail. Despite the varying levels of preparation and reasons, such as improving job prospects, increasing income, and contributing to the community, there is a shared interest among interviewees in transitioning towards opportunities that include a more bio-based approach.

However, it is noted that individuals living in poverty may show less interest in the CBE sector.



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9.2.3. Topics for training

Interview partners were asked which topics or aspects of the CBE they would like to receive training in. The topics of interests vary from biological and ecological issues to economic and political aspects. A major focus is on topics in the field of green activities. Training in different aspects of biomasses is required:

- Production of primary commodities for the biomass industry
- Sustainable heating solutions for private houses
- Energy community solutions
- Low-cost energy production and consumption
- Renewable Energy Integration
- Training in biogas and biofuels technologies
- Waste valorisation methods
- Anti-pollution solutions and products
- Overall sustainability
- Ecological and environmental education
- Composting, anaerobic digestion, and soil remediation

The students at the woodworking school of the Croatian hub expressed a strong interest in training that specifically addresses topics related to the wood sector within the framework of the CBE.

Another important topic in the field of biomass are sustainable agricultural practices. Needs in this sector include training on organic farming, agroecology, integrated pest management, and crop cultivation practices to minimise environmental impact and enhance soil health.

Other key areas of training needs mentioned by the interview and training needs include:

- Circular supply chains: Understanding and implementing principles to enhance sustainability and resilience from raw material sourcing to distribution.
- Sustainable resource management: Techniques for efficient and minimal waste use of agricultural, forestry, and dairy resources.
- Community engagement: Building partnerships across the value chain for collaborative sustainable solutions.
- Policy and regulatory frameworks: Understanding relevant policies and regulations related to waste management, renewable energy, and sustainable agriculture.

Additionally, there is also interest in connections with tourism and hospitality, particularly in food waste management. Furthermore, respondents expressed interest in receiving information about starting up a new business. Specific skills desired include machine operation and digital skills.



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9.2.4. Training formats

Interview partners prefer both, in person training as well as online training.

Those voting for in **person trainings** favour them for their effectiveness. Live training sessions are preferred for their interactive nature, allowing for direct experience, interaction, and the opportunity to ask questions. In-person training close to the field is seen as beneficial, particularly for learning skills related to the biomass industry. Personal training with professionally trained individuals is highlighted as essential for marginalised groups, providing tailored support, and understanding of their specific needs.

Other interviewees highlight their desire for **online trainings**. They stress the importance of online courses and informational events as supplementary resources. Especially for the target group of the Italian hub online courses are particularly valued for their flexibility, enabling individuals to access materials at their own convenience, which is beneficial for those with busy schedules such as small-scale farmers or livestock breeders.

The interview partners of the Greek hub expressed a preference for a **hybrid training** format that combines in-person education with online courses. This approach seems to be favoured due to its flexibility and the ability to accommodate various learning styles and schedules.

Overall, there is a strong interest in both in-person and online training opportunities. The emphasis on personalised, practical, and interactive approaches to training is to maximise learning outcomes, particularly for marginalised groups. But also, the convenience and accessibility offered by online courses is recognised, especially for individuals with time constraints. For some marginalised groups, e.g. the Dutch hub, low-key initiatives near their homes are seen as important for some marginalised groups, providing a safe space for joint activities.

Regarding formats of the trainings there are various needs and desires. **Learning from best practices** and examples is highly valued. In general, there is a strong preference for **practical, personalised, and hands-on training methods** tailored to the specific needs of individuals and communities for empowering and supporting them to become members of the CBE sector. Some individuals prefer short and intensive courses, others prefer examples and demonstrations. However, some also advocate for a **blend of theoretical practical and collaborative learning** to ensure a well-rounded educational experience covering knowledge base, practical skills, and teamwork abilities. E.g. representatives interviewed by the Hungarian hub, favour formalised educational programs with external collaborations and expert-led workshops.

The young target group of the Croatian hub also prefers a combination of practical and theoretical learning, with an emphasis on hands-on work. They prioritise interactive materials and videos, believing that this format effectively facilitates understanding complex information about CBE concepts.



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The impression given is that interest in long-term training programs is rather low, but still the necessity of lifelong learning and continuous training is considered. E.g. one interview partner of the Greek hub acknowledges the importance of education and the acquisition of deep knowledge in the field, indicating a commitment to ongoing personal and professional development.

Another important issue mentioned is the **need for mentorship**. Mentoring and accompaniment are highlighted as essential components to provide tailored answers and apply fitting solutions and to understand the specific needs of the marginalised group.

Furthermore **workshops**, using for example **participatory methods**, are mentioned by some interviewees. E.g. the representative of the target groups of the German hub emphasises engaging the target group of NEETs effectively through workshops utilising methods such as storytelling and co-creation. Storytelling prompts participants to share personal narratives about their daily lives and challenges, fostering meaningful discussions. Co-creation involves collaborative idea generation and problem-solving, aiming to transfer essential knowledge on core competences. Additionally, the interviewed target groups prefer a traditional approach to training, especially in workshops, emphasising hands-on learning deeper understanding. They believe in the importance of **practical and interactive methods** to maximise their educational experience.

Other training format mentioned were retraining courses, cooperation with regional governments and a focus on networking.

9.2.5. Barriers to taking training and support needed

This section looks at the challenges to participation in training identified through interviews conducted by the BIOLOC regional hubs. The focus is on outlining these challenges, while also discussing the support required to make CBE training possible for the target groups. The description of the barriers implicitly indicates the type of support required, hence understanding these challenges is crucial for identifying support needs.

9.2.5.1. Educational and cognitive challenges

Interviews conducted by the BIOLOC regional hubs revealed that a common barrier for different stakeholders is the different levels of understanding based on different educational backgrounds. This was particularly evident in the interviews, where participants often needed additional time to understand complex bioeconomy concepts and expressed a need for practical examples to demonstrate how theoretical knowledge could be applied in their specific regional context.

Bulgaria: “During the interviewing process, we faced some obstacles related to the varying levels of education among the representatives. Some of them required more time to understand the information that was provided to them. Additionally, most representatives



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wanted us to provide examples of how the theory would work in practice, specifically concerning the bioeconomy issues and how it could be implemented in their region."

9.2.5.2. Educational priorities

The interviews revealed a challenge faced by individuals, particularly those still in formal education, who are forced to focus on basic educational achievements or developmental tasks. This typically involves securing standard educational qualifications or meeting essential academic requirements. These essential priorities often overshadow consideration of specialised training programmes, such as those within the CBE sector. This reveals a common obstacle where the urgency of immediate educational commitments or basic developmental stages overrides the ability or willingness to undertake further, niche educational pursuits.

Germany: "One barrier is the need for some NEETs to prioritise other aspects, such as obtaining an educational degree or completing school obligations, before considering participation in bioeconomy-related training or activities."

9.2.5.3. Motivational and attitude barriers

The interviews highlighted varying levels of enthusiasm and motivation towards CBE training. While in some regions the interviewees reported high motivation and eagerness to learn, others showed a lack of cultural and attitudinal inclination towards education and employment altogether often influenced by the local social contexts, which could impede engagement in such training.

Croatia: "There are no obstacles regarding participation in training in the CBE sector. They eagerly look forward to engaging in the training and enthusiastically prepare for future sessions related to the concept of the CBE. Their openness and motivation to participate indicate a positive attitude toward learning and skill development in this area."

Hungary: "People living in poverty: they in many cases lack even the culture and the overall attitudes towards both education and having job. This is nevertheless a social work issue that is unrelated to the biomass industry topic. However, building biomass-related developments (even educative ones) on local governments and local social work might be a solution."

9.2.5.4. Lack of orientation

A lack of clear direction or guidance in navigating education in general is another barrier identified. This deficit can prevent individuals, from engaging effectively in CBE training due to uncertainty or lack of awareness about how to access and benefit from such opportunities.

Germany: "[...] a lack of orientation could contribute to barriers, hindering their ability to engage in and benefit from relevant CBE activities."



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9.2.5.5. *Financial constraints*

Financial barriers were frequently mentioned, particularly the costs associated with training programmes. Stakeholders expressed concern about investing in training without the assurance of job prospects after training, highlighting the challenge for individuals without stable employment.

Czech Republic: *“The main barrier would be the financial fee for the training. These people do not have a permanent job and investing in training when they are not sure that they will get a job after completing it is limiting for them.”*

Romania: *“Financial support [with regards to what would be needed to take part in CBE training opportunities].”*

Slovakia: *“Lack of finance.”*

9.2.5.6. *Time constraints*

From the interviews conducted by the BIOLOC regional hubs, time constraints also emerged as a barrier for individuals considering training in the CBE. Stakeholders reported that existing work commitments, family responsibilities or other personal or professional obligations limit the time they can devote to training. This highlights the need for flexible training schedules or programmes that can accommodate the varying time availability of potential participants.

Romania: *“Limited time, actually involved in other job.”*
“Lack of time.”

9.2.5.7. *Preference for other professional fields*

Another clear barrier identified in the interviews with the BIOLOC regional hubs is the preference for other professional fields. Some stakeholders indicated that other sectors may be more attractive due to factors such as better pay, perceived prestige, or personal interest, which draws attention and resources away from CBE training. This also ties in with the fact that CBE is in some cases is perceived to only involve waste management. To address this, the bioeconomy sector needs to be made more attractive and clear career paths and benefits need to be demonstrated.

Romania: *“Other professional fields more attractive, considered to be fashionable, or better paid.”*

9.2.5.8. *Fear of transition*

Interviews with different stakeholders within the BIOLOC regional hubs revealed that a significant barrier to CBE training is the fear of the unknown, particularly the fear of leaving one's familiar



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environment. This issue is particularly pronounced among individuals, especially young people, who are reluctant to leave their family environment or agricultural lifestyle to pursue training. It underlines the need to develop training modalities that are more accessible and tailored to the specific needs of people living in remote or rural areas, such as local educational opportunities or online learning platforms, in order to reduce the intimidation of venturing into unfamiliar territories.

Slovenia: “One youngster pointed out that the obstacle is that he would have to leave the farm and home.”

9.2.5.9. Cultural norms

Interviews from BIOLOC regional hubs, particularly in the Netherlands, highlighted issues where some migrant women face cultural conflicts between the expectations of their country of origin, where they may not be expected to pursue education or employment, and the needs and expectations of the host countries. This discrepancy can affect their willingness to engage in certain types of training or employment, especially in sectors where they are expected to take on roles that are culturally sensitive or different from their traditional norms.

Netherlands: “[...] There also is a cultural barrier sometimes to get to work, when in their home country it is often not expected of women to work at all. [...] However, there could be cultural barriers for (Muslim) women. In the Netherlands, women are expected to be able to touch (e.g. washing, showering) men. This could be a problem and a reason for immigrants to not want a job in healthcare. The most-wanted type of job and education is in the healthcare sector.”

9.2.5.10. Scepticism about CBE

A notable barrier to training that emerged from interviews with the BIOLOC regional hubs is scepticism or mistrust of the concept of the CBE. Without a clear understanding of its benefits, individuals may be reluctant to pursue training opportunities in this area.

Italy: “One significant barrier that may hinder interview partners or their communities from pursuing relevant training is a sense of mistrust or scepticism towards the concept of CBE. This scepticism could stem from a lack of understanding or awareness of the practical benefits that CBE principles can bring to their activities. Without a clear comprehension of how adopting CBE practices can positively impact their businesses or communities, individuals may be hesitant to invest time and resources in training initiatives related to this field. Overcoming this barrier would require targeted efforts to educate and demonstrate the tangible advantages of CBE approaches, thereby instilling confidence and motivation to engage in relevant training opportunities.”



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9.2.5.11. Accessibility problems

Interviews with the BIOLOC regional centres highlighted the importance of overcoming barriers to accessibility to facilitate training in the CBE. The need for training venues and materials to be accessible to everyone, especially people with different abilities, was a prominent theme. This emphasis on accessibility stems from the fact that people with disabilities are the target group of the Greek hub and the Spanish hub is considering adding this group to its focus.

Greece: “Accessibility is also highlighted as a priority, ensuring that the training venues and materials are easily accessible to all, including those who might have disabilities or other limitations. This emphasis on accessibility reflects a broader understanding of inclusivity and the need to make educational opportunities available to a diverse range of participants.”

9.2.5.12. Logistical problems

Interviews with BIOLOC regional hubs indicate that logistical challenges such as transport and childcare are significant barriers to participation in training programmes. Stakeholders highlighted the importance of logistical support to enable participation, especially for those with family responsibilities or travel constraints, demonstrating the need for comprehensive solutions that address these logistical challenges to facilitate wider participation.

Greece: “[...] transportation support was mentioned as significant considerations, especially for those who might have family responsibilities or travel constraints. [...] Childcare.”

Netherlands: “For many women, there is a limited freedom due to lack of transportation. These women are often dependent on public transport or walking.”

Romania: “Transport [with regards to what would be needed to take part in CBE training opportunities].”

9.2.5.13. Health barriers

The interviews suggest that health issues can affect an individual's ability to participate in training programmes, including those in the CBE sector. This barrier directly affects an individual's ability to participate in or benefit from training opportunities.

Germany: “Additionally, factors such as health issues.”

9.2.5.14. Language barriers

Language skills emerge as a key barrier in the interviews, particularly for individuals whose first language is not the medium of instruction in training programmes. This can create significant barriers



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to understanding content, engaging with trainers, and collaborating with peers, thereby preventing full participation in training initiatives.

Germany: *“language barriers.”*

Netherlands: *“In general, our main finding is that to the marginalised group, it is difficult to find a job in the Netherlands without having sufficient knowledge of the language. This is the biggest struggle for most of the women. This makes it harder to find a job, but also to integrate in society or to start education. This is also a reason for them to stay vulnerable and more dependent.”*

9.2.5.15. Administrative issues

Challenges such as complex administrative procedures were identified as barriers that can discourage both organisations and individuals from participating in training programmes.

Slovakia: *“complicated administration.”*

9.2.5.16. Human resources issues

Interviews with the BIOLOC regional hubs revealed that human resources are a significant barrier to training for the CBE. This includes both the lack of staff and the presence of insufficiently qualified staff in organisations and training institutions.

Slovakia: *“lack of staff. inadequately qualified staff.”*

9.2.5.17. Guidance and training

The lack of adequate guidance or mentoring was cited as a major barrier, with stakeholders expressing concern that they did not know where to turn for support in navigating the training landscape.

Slovenia: *“Another reported that he fears not to be able to know whom to turn to, he does not know mentors who could guide him in terms of training. This would be a significant challenge for him, and that's why he wouldn't even attempt it.”*

9.3. Synthesis: Needs in information, education, and training

The stakeholders of the BIOLOC regional hubs expressed diverse needs for information, education, and training, underscoring the great willingness of including CBE principles for improvement in their life. Access to both formal and informal education is identified as a critical enabler for CBE



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engagement. However, findings indicate that communities living in poverty often exhibit limited interest in the CBE sector. While this is understandable, it highlights the critical need to design inclusive strategies that actively engage and empower these communities in accordance with their circumstances, ensuring they are not excluded from the social and economic benefits that CBE initiatives can provide.

Findings also reveal strong interest among students in pursuing careers within the CBE sector, yet there is a lack of clear understanding about the roles and opportunities available. To bridge this gap, education and training efforts must focus on demystifying CBE job profiles. Participants consistently express a preference for diverse and hands-on learning methods, such as workshops, face-to-face training sessions, company visits, and other interactive formats.

Recommendations:

1. **Tailored community outreach programs:** Develop awareness campaigns and outreach activities that address specific challenges and priorities of impoverished communities, recognising the CBE as an opportunity aligned with their immediate needs and aspirations.
2. **Comprehensive career pathways:** Create clear, **accessible** guides and resources about CBE job profiles, complemented by career counselling services, to help students and other interested individuals make informed decisions and navigate potential career opportunities.



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10. What can BIOLOC do?

BIOLOC regional hub partners extended the interviews by looking at the respondent's perception in relation to what BIOLOC project can do to support the implementation of CBE in the regions. The section below presents the outcomes. These outcomes are directly linked to the results presented in the previous two chapters.

10.1. Education and capacity building

10.1.1. Practical and experiential learning and workshops

Respondents emphasise the importance of incorporating practical exercises and real-world scenarios into educational programmes to deepen the understanding and application of CBE principles. They advocate the implementation of workshops that combine theoretical knowledge with practical experience within the BIOLOC project. This approach is in line with the general attitudes, motivations and barriers to the CBE identified in earlier sections of the report.

Croatia: "A recommendation for the BIOLOC project could involve organising workshops focused on hands-on learning for the target group of woodworking students. This workshop should combine theory with concrete examples of product creation from materials like straw, giving students the opportunity to apply their skills and knowledge in real-world scenarios."

Romania: "Practical training on composting."

10.1.2. Integration into educational curricula programmes

The feedback from the German interviews underlines the urgent need to embed Circular Bio-Economy (CBE) content in educational curricula. This approach aims to equip future generations with a thorough understanding of CBE principles and their applications, and to integrate this crucial knowledge into their academic careers. By doing so, educational institutions can prepare students for future challenges and opportunities within the CBE, ensuring they are well-versed in sustainable practices and principles. There is a clear belief that the activities of the BIOLOC regional hubs have the potential to influence, or at least begin to influence, education systems in this direction by integrating CBE-related information in educational and orientation activities.

Germany: "[...] potential actions could include engaging with schools, as suggested by REP1, to integrate CBE-related information into educational programs and orientation activities."

10.1.3. Linking education to employment



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Interviewees from the BIOLOC regional hubs underline the importance of matching educational content with tangible job opportunities in the CBE sector. BIOLOC could concretely support this by increasing the visibility of the sector and providing clear examples of career paths so that students can gain a deeper understanding of how their studies apply to the real labour market. In this context, respondents also recommend that BIOLOC support the creation of platforms that facilitate direct, real-time exchanges between students and industry professionals, further bridging the gap between academic learning and professional practice in the CBE. Respondents highlight the importance of tailored support, such as matching individuals with professionally trained mentors who understand the specific challenges faced by these groups, ensuring proper workplace integration, and providing personalised support.

Croatia: “Students express a strong interest in education, enriching their experience through practical exercises, creating a platform for real-time discussions with entrepreneurs [...]. They want more opportunities to learn from examples of good practice to better understand the application of CBE in practice. They particularly emphasise the need for live conversations with entrepreneurs to gain insights into real experiences and challenges in the sector.”

Czech Republic: “To connect specific companies with specific job positions. To make the CBE sector more visible and attractive, many people have no idea what this sector offers. To present employment examples of the CBE sector.”

Slovenia: “Above all, the crucial aspect is the proper integration into the company and the field of work with a professionally trained mentor who possesses both expertise and an understanding of the specifics of the vulnerable group. They would also need assistance on an individual level.”

10.1.4. Provision of information and resources

Other than the suggestion of mode of learning as above, the access to information and resources about the CBE is suggested by the respondents as a meaningful additional learning tool to enhance understanding and application of CBE. Considering the organisation and mission of the BIOLOC regional hubs and the fact that each hub has a national webpage, this proposal is considered both meaningful and feasible.

Croatia: “Access to resources is considered a crucial element for their education, emphasising the importance of access to information, tools, and support that will enable them to better understand and apply CBE.”

10.2. Awareness



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10.2.1. Support in raising environmental and CBE awareness

Interviewees from the BIOLOC regional hubs emphasise the importance of raising awareness of environmental issues and the CBE. This includes educating target groups about the impacts of climate change, the principles of sustainable living and the benefits of engaging in a CBE. The support envisioned from the BIOLOC project includes the development of educational programmes, workshops and awareness-raising campaigns that can effectively communicate these important concepts to a wide audience, thereby fostering a more informed and engaged public.

Bulgaria: *“They also mentioned the importance of receiving regular updates from local bioeconomy centres.”*

Croatia: *“They also express a desire to raise awareness of climate change and the importance of new sustainable concepts among their target group*

Germany: *“Moreover, the project could organise information events, extending beyond traditional sectors, to showcase diverse opportunities within the CBE, aligning with the aspirations of NEETs and contributing to their meaningful participation in the project and the broader CBE sector.”*

Slovakia: *“[...] awareness-raising conferences”.*

10.2.2. Sharing of “best-practice” examples

The interviews conducted by the BIOLOC regional hubs highlight the importance of sharing best practices as a key area where respondents believe BIOLOC can provide substantial support. This includes the dissemination of successful strategies, innovations and methodologies that have proven effective in different sectors of the CBE. Stakeholders underline the value of sharing these best practices to inspire others, avoid repeating past mistakes and accelerate the transition to sustainable and efficient practices. Furthermore, contributions from Spain confirm this need and indicate that organisations with CBE experience could serve as prime examples. This reflects a greater willingness of such experienced entities to participate in the sharing process, thereby increasing the relevance and applicability of best practices. BIOLOC could organise targeted workshops to enable these organisations to share their expertise and solutions to specific challenges, thereby reinforcing the collective call for the dissemination of best practices and ensuring the active engagement of those with first-hand success in the CBE.

Hungary: *“[...] Best practices from the region originating from areas similar to theirs.”*

Italy: *“[...] at the same time to promote the exchange of best practices.”*

Netherlands: *“They now exchange information and knowledge about gardening.”*



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Spain: *"BIOLOC could be an interesting support partner because by these workshops 1 by 1 we could help to answered particular questions or problems that have been identified during the development of the project."*

10.3. Support mechanisms for implementation

10.3.1. Policy advocacy and administrative support

BIOLOC can support the development and implementation of local strategies to promote the CBE according to the respondents of the interviews among the BIOLOC regional hubs. This includes advocating for the creation or refinement of regional strategies where they do not exist, to ensure that bioeconomy initiatives are well integrated into local development goals. In addition, BIOLOC can work towards reducing administrative burdens to facilitate the implementation and operation of CBE initiatives, making them more accessible and less cumbersome for local stakeholders.

Bulgaria: *"The interviewees suggested that they would benefit from support related to the implementation of local policies that promote the CBE in their region. They also mentioned [...] reducing administrative burdens at the local level and receiving support from the local government in promoting the CBE in their region."*

Slovakia: *"Support in contacting public resources in respect of public resources planning. Preparation of the legislative environment."*

10.3.2. Provision of essential technical tools

The interviews underline the importance of the BIOLOC project in providing essential tools to enable industries to effectively address unique challenges and seize distinct opportunities. This means providing companies and individuals with vital resources, information about advanced technologies and the necessary infrastructure to foster innovation, improve operational efficiency and fully adopt sustainable practices. Such support is essential to drive technological progress, manage resources sustainably and implement effective waste reduction strategies. Particularly in sectors such as agro-forestry, dairy and biomass, there is a strong need for technologies to enable the efficient conversion of residual streams into valuable resources and to assess their economic viability.

Italy: *"The project can provide essential tools to entities in the agro-forestry and dairy sectors of the inland areas of Campania to enhance their profitability. The interview partners proposed exploring ways to transform their production residues and evaluating the economic feasibility of such transformations [...]."*

10.3.3. Support in addressing environmental challenges



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Based on feedback from interviews with BIOLOC regional hubs, there is a significant need for direct support to address specific environmental challenges. These include pollution remediation, sustainable soil management and innovative waste treatment methods such as composting and anaerobic digestion. Respondents see BIOLOC as a key initiative to provide the necessary resources, expertise, and logistical support to address these issues effectively.

Romania: *“Remediation of the polluted zone of the residence of interviewed.”*

“Actions in solving environmental issues, soil, organic residues.”

“Free soil analyses to determine the degree of pollution, practical training on composting, anaerobic digestion, remediation of polluted soils.”

10.4. Resource accessibility and networking

10.4.1. Facilitating access to financial resources

Based on the reports from the interviews conducted by the BIOLOC regional hubs, there is a notable demand for financial support to advance CBE projects. These interviews suggest that some interviewees may not be fully aware that BIOLOC, as a funded project, cannot provide direct financial support. Nevertheless, there is a significant opportunity for BIOLOC to assist by researching, identifying, and informing target groups about potential funding sources. In addition, BIOLOC can facilitate links between these groups and the identified funding opportunities.

Netherlands: *“They would like to receive extra help by means of funds, courses or material.”*

Romania: *“Financial support and transportation.”*

Slovakia: *“[...] the necessary staff capacity. higher funding.”*

10.4.2. Highlighting opportunities within the CBE

The interview reports from the BIOLOC regional hubs underline the potential of the project to identify and communicate the different opportunities available within the CBE. Stakeholders perceive BIOLOC as a key resource for demonstrating the potential and benefits of engaging in CBE. This support includes providing detailed insights into industry-specific opportunities, facilitating understanding of the scope of the bioeconomy and highlighting how regions can exploit these opportunities for sustainable development. The expectation is that BIOLOC can act as a guide, showing regions how to harness the potential of the bioeconomy to promote economic growth, inclusiveness, and environmental sustainability.

Hungary: *“Outputs on the general description of opportunities lying in the biomass industry.”*



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10.5. Inclusion and equality

10.5.1. Supporting gender equality

The interviews by the BIOLOC regional hubs show a clear recognition of the potential of BIOLOC to promote gender equality in the CBE. This reflects a broader commitment to promoting equal opportunities and participation at all levels and in all sectors, with a particular focus on sectors where gender imbalances are more pronounced. The support foreseen will include initiatives aimed at creating a more inclusive environment that promotes the equal participation of all genders, particularly in sectors traditionally dominated by one gender, such as the wood industry.

Croatia: “Additionally, they highlight the importance of gender balance in the wood industry, aiming to promote equal opportunities and participation for all, regardless of gender.”

10.5.2. Facilitating the integration vulnerable groups into the CBE

Insights from the BIOLOC regional hub interview reports show that respondents see great potential in the inclusion of marginalised groups in the CBE. This is in line with the main objective of the BIOLOC Regional Hubs, which is to support these groups to become active participants in the CBE. The interviews indicate a significant demand for targeted support for various marginalised communities, including NEETs, unemployed youth, ethnic minorities, and those facing social barriers. BIOLOC is recognised for its ability to provide support in a variety of ways, including providing tailored training, working with educational and social organisations, and facilitating the provision of diverse and inclusive employment opportunities. While these aspects have been discussed individually in previous sections to outline how BIOLOC can support different regions, it is important to emphasise them again because of their central role in the activities of the hubs and the project as a whole. The regional hub reports confirm this mission and highlight its alignment with regional needs and expectations, as demonstrated by specific quotes from the interview reports reflecting stakeholders' views on how BIOLOC can support their regions.

Germany: “Tailoring training programs to address the unique needs and interests of NEETs would be instrumental. Additionally, the BIOLOC project could incorporate participants from REP1's workshops into its own project activities, creating a seamless transition and providing ongoing support for the target group.”

Slovakia: “[...] education of Roma children. Cooperation with universities, children's homes, youth prisons, increase street activities - helping homeless. Education and training of the homeless.”

Slovenia: “Young individuals from the vulnerable group represent a very specific cohort, but they can showcase their potential with appropriate treatment. It seems important to find work that is diverse and spans across various areas, while considering certain limitations related to



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responsibility. Therefore, the work does not necessarily need to be tied to a specific economic sector. Above all, the crucial aspect is the proper integration into the company and the field of work with a professionally trained mentor who possesses both expertise and an understanding of the specifics of the vulnerable group.”

10.6. Synthesis: What can BIOLOC do?

The regional BIOLOC hubs consistently demonstrate a strong commitment to engaging with the circular bioeconomy, both personally and professionally. When asked about the role BIOLOC could play, several key needs were identified, though not entirely new – as they are similar to those identified in the rest of the chapters. Education, capacity building, and raising awareness in the field of circular bioeconomy emerged as top priorities. Equally critical are the establishment of support mechanisms, access to resources, and a focus on inclusivity—particularly in addressing the systemic inequalities faced by marginalised communities. These insights should inspire future hub initiatives to adopt a more inclusive approach and remain attentive to the persistent challenges these communities face.



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11. Conclusion and recommendations

This study reveals the challenges and opportunities faced by marginalised communities in engaging with the Circular Bioeconomy (CBE). Task 5.2, in the context of the BIOLOC project, conducted a detailed collection of the needs, drivers, and barriers faced by marginalised communities in engaging with the Circular Bioeconomy (CBE).

Regional variability in CBE awareness, ranging from basic understanding to misconceptions, emphasises the importance of localised interventions. BIOLOC hubs have already played and continue to play a critical role in raising awareness and addressing knowledge gaps, positioning them as catalysts for change. Evidence from previous studies indicates that marginalised communities often face systemic barriers, such as limited access to resources, education, and opportunities, which hinder their ability to fully participate in and benefit from emerging economic models like the circular bioeconomy. The interview findings add depth to this understanding by revealing how systematic barriers, particularly cultural ones, technological, market, and regulatory challenges, influence their participation to CBE. Despite these obstacles, the strong willingness of communities to engage with CBE reflects their aspirations for economic, environmental, and social progress, highlighting the need for inclusive participation in sustainable development.

However, this study has limitations. The methodology involved multi-layered interpretation, with regional hubs representatives and ZSI researchers analysing data sequentially, potentially leading to a loss of nuance. As such, the findings should be seen as ‘an analysis of an analysis.’

Going forward, the regional hubs diligence in the BIOLOC project not only pave the path towards inclusive CBE, but also reinforces the critical role of the BIOLOC hubs in steering this transformative journey in 12 regions of Europe. The commitment to innovation, collaboration and inclusivity will be paramount in redefining the engagement of marginalised communities in CBE, promising not only a more sustainable economy but also a more equitable society.

Future work should focus on directly involving marginalised communities in co-creating solutions, validating these findings across diverse contexts, and expanding studies of CBE initiatives. These findings can guide policymakers, businesses, and practitioners in developing region-specific educational programs, reducing barriers, and fostering equitable participation in CBE for all, with a focus on marginalised groups who are critically underserved and face systemic inequities.



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Annex 1: Questionnaire for individual persons of marginalised group

1. Interview guidelines

Dear regional partners,

Please interview at least three individuals from the marginalised group.

In pages 8 to 12 (Chapter 2) of this document you will find the main questions for the needs assessment of marginalised groups in your areas or regions. The questions in Chapter 14 are optional. Additionally, depending on the needs of your hubs and your marginalised groups, you may add respective questions.

As this exercise should be implemented as a qualitative interview and more importantly, to ensure that we are able to draw out the real needs, drivers and barriers of your marginalised groups, it is vital that the questions are posed in as open a manner as possible. You will notice that many of the questions include examples (in brackets, italics and highlighted in green). **These have only been included to support you as the interviewer.** On one hand to enable you to understand the context of the question and therefore have an idea of what kinds of answers are expected for the questions and on the other hand, in case your interview partner is stuck or does not understand the question very clearly, the examples could aid in the process. Nevertheless, only use these examples for these purposes only. Otherwise, we may encounter “response option endorsement bias”. As your interview partners are human, like all of us, they may go for the easy option by just taking one or a number of those examples as their answers, hence not allowing us to see the real picture of their needs, drivers and barriers.

We are sure that many of you are experienced in conducting interviews, nevertheless, for those who need it, below are some guidelines for conducting the interviews – also, refreshment in memory and some tips won’t hurt 😊

1.1 Before the interview:

Before the interview begins, ensure participants are aware of what's coming. Let them know approximately how long it will last, where it will take place (if necessary, how to get there) provide a general idea of the questions (without going into too much detail), and explain what happens afterward. This clarity reduces any concerns or uncertainty. Obtain their agreement to participate by having them review and sign the informed consent form. Additionally, decide on the most suitable method for capturing the information, whether it's through audio recording, video recording, or taking notes.



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1.2 During the interview:

1.2.1 Introduction:

Begin with a warm welcome and clear introduction to the purpose and importance of the interview i.e., What the BIOLOC project is and the aim of the interview. Additionally, assure participants of confidentiality and explain the recording process.

“Good morning/ Good afternoon etc., My name is XX XX and I work at XX. We are currently working on a project called BIOLOC which is a project dedicated to rejuvenating rural areas, with a specific focus on disadvantaged groups. The project aims to explore the role of circular bioeconomy in fostering both regional development and personal growth among the involved communities. Simultaneously, it seeks to understand how individuals can actively contribute to the advancement of a circular bioeconomy within their regions, thereby creating a reciprocal relationship that benefits both the community and the sustainable development of the circular bioeconomy.

Before we begin, I want to assure you that your participation in this interview is completely confidential. Your identity and responses will be treated with the utmost respect and will only be used for the purposes of this research. Additionally, for accuracy and to capture all the valuable information you'll be sharing, we will be recording this interview. Please rest assured that these recordings will be securely stored and accessible only to the research team. If you have any concerns or questions about confidentiality or the recording process, please feel free to let me know.”

1.2.2 Establishing rapport

Establishing rapport in an interview setting is the process of building a positive and trusting relationship between the interviewer and the participant. It is a crucial step in qualitative research as it creates a comfortable environment, encourages open communication, and facilitates the sharing of genuine and meaningful insights. Rapport-building helps participants feel at ease, leading to more authentic responses and a more productive interview. This is done by:

1. **Provide clear information beforehand:** Ensure that participants have a clear understanding of the interview process, including the expected duration, the type of questions, and any follow-up steps. Clear communication reduces uncertainty and anxiety.
2. **Introduction and warm greetings:** See section above.
3. **Clear communication of the purpose of the interview and the how the respondent's input is valuable to the purpose:** See section above.
4. **Establish trust:** Clearly communicate that the information shared during the interview will be kept confidential and used only for research purposes. Building trust is essential for participants to feel comfortable sharing their experiences. See section above.



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5. **Create a comfortable environment:** Ensure that the interview setting is comfortable and free from distractions. Pay attention to factors like lighting, seating arrangements, and noise levels to create a conducive atmosphere.
6. **Build a personal connection:** Start the conversation with some small talk or casual conversation to break the ice. This could involve discussing non-sensitive and neutral topics to create a sense of familiarity.
7. **Express genuine interest:** See section below.
8. **Adapt to the respondent's communication style:** Be attentive to the participant's communication style and adapt accordingly. Some individuals may prefer a formal tone, while others may respond well to a more informal approach.
9. **Use open and inviting body language:** See section below.
10. **Acknowledge the participant's contributions and validate their experiences.** This helps participants feel heard and valued, fostering a positive connection. See section below.
11. **Be empathetic:** Show empathy by understanding and acknowledging the participant's emotions. See section below.

1.2.3 Practice active listening

Active listening is a communication technique that involves fully focusing, understanding, and responding to a speaker. It goes beyond simply hearing words; it involves paying attention to the speaker's words, tone, and non-verbal cues to comprehend the message accurately. The goal is to show the speaker that their thoughts and feelings are being valued and understood. In the context of qualitative interviews, active listening is crucial for building rapport, encouraging participants to share their experiences openly, and obtaining rich and detailed data.

1. **Pay attention:** The first step of active listening is making a conscious decision to listen to the speaker and at the same time avoid your attention being swayed by any distractions in your mind e.g., thinking of counter-arguments, thinking of unrelated things, or your surroundings e.g. side-conversations, or being the source of distraction yourself e.g. fidgeting around, constantly looking at your watch or phone, reading etc. These distractions might also throw off the speaker and other listeners.



If you are struggling to focus, try repeating the speaker's message mentally or taking notes.



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2. **Show that you are listening:** In one-to-one conversations, especially, it is important to give the speaker the impression that you are interested in what they are saying. This encourages them, gives them reassurance, increases their confidence and improves their interaction with you in general; if they feel that they are being taken seriously. To generate the impression that one is attentive, one can make use some verbal and non-verbal signs.

Note: The appropriate use of these signs depends on the situation and might also vary between cultures. Therefore, consider the situation and take the culture of the speaker into consideration! These signs should also not be used in an exaggerated manner to avoid distracting the speaker and coming off as pretentious.



Non-verbal signs of attentiveness:

- **Eye contact:** Look at the speaker directly. For some speakers, too much eye contact can be intimidating, hence consider how much eye contact is appropriate and combine eye contact with other non-verbal signs such as smiling, nodding etc.
- **Facial expressions:** Depending on the content of the message of the speaker you can occasionally smile or use other context-suitable facial expressions to show the speaker that he or she is being listened to and that his or her message is being understood. Like, with eye contact, this non-verbal sign can be combined with others e.g., nodding.
- **Nodding:** The right nod depending on the speaker's message can also help the listener to pay attention and the speaker to feel heard and acknowledged. As with the other non-verbal signs, this too can be combined.
- **Posture:** Leaning forward or slightly tilting the head slightly or resting the head on one's hand can also indicate attentiveness. Occasionally tilting the head sideways, depending on the context may indicate curiosity or disagreement to the message.
- **Body mirroring:** Mirroring is a sign that one uses instinctively, often being unaware of it. In active listening, for the listener, mirroring refers to unconsciously mimicking the facial expressions and body language of the speaker. This shows empathy especially in emotional situations as well as attentiveness.

Note: Forced mimicry or conscious mimicry signals to inattentiveness and non-genuineness to the speaker.



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- **Silence:** Be patient, don't jump in with questions or remarks as soon as the speaker stops speaking. Embrace pauses and short periods of silence from the speaker, they might need time to explore and formulate their thoughts and feelings.



Verbal signs of attentiveness:

- **Positive reinforcement:** Occasionally saying "very good", "yes" or "in-deed" can indicate that one is paying attention.
 - **Rejoinders:** These are short sounds that one makes to show the speaker that one is listening or to encourage him or her to continue narrating e.g. "Mmmhmm", "Uh-huh", "Oh", "Wow!", "Really?" or "I know!". When using rejoinders, one should pay attention to the tone of voice because the tone conveys an emotion.
3. **Avoid interruptions:** Allowing the participant to complete their thoughts without interruption. Avoiding interruptions demonstrates respect for the participant's perspective and encourages them to share more freely.
 4. **Reflection:** Before responding appropriately, it is important for the listener to reflect and fully understand the speaker. One can do this after the speaker is finished narrating by doing one of the following, which additionally affirms the speaker that the listener was paying attention and that their message was understood correctly and if not, they still have a chance to clear-up any mix-ups:
 - a. **Clarifying questions:** If a part of the narration is unclear, one can ask clarifying questions related directly in a non-judgemental way to what is being said by saying for example: "What did you mean when you said...", "Could you repeat...?", "I want to make sure I understand. Could you tell me more about...". This shows that one is paying attention and is really interested in understanding what is being said correctly. When asking clarifying questions, don't jump in with your feedback or your own examples, wait until the speaker has finished explaining and clarifying.
 - b. **Paraphrasing:** To ensure and show comprehension, one can paraphrase what the speaker has said by e.g. "What I'm hearing is..." or "Sounds like you are saying..." or "So, if I understand correctly, you are saying that..."



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You can take some notes during longer exchanges, to help you jog your memory and to prevent you from unnecessarily interrupting the speaker!

- c. **Summarising:** This involves reviewing key points in the conversation. It not only reinforces understanding but it also gives the speaker the chance to correct any misinterpretation and may also give the speaker the chance to reflect on their own narration. You can do this by for example saying “Let me recap what we’ve discussed so far...”.

5. **Respond appropriately:** When the speaker is finished narrating and the listener has clarified reflected on the message by clarifying, paraphrasing and summarising, then it is the listener’s turn to respond and to give appropriate feedback. The process of active listening is about respect and understanding. Even, if the listener doesn’t agree with the speaker, it is not necessary to dismiss or discount their experiences portrayed in the narration. More important is to give honest, candid and respectful feedback.

Approach sensitive topics with empathy and respect. “**Empathetic responses**” such as “I can imagine that must have been a difficult situation for you” or “It sounds like that experience was really challenging for you” demonstrates understating and compassion, creating a supportive environment for the respondent and also validates the respondent’s feelings and encourages them to share more about their emotional experiences.

1.2.4 Flexibility

During interviews, it's crucial to be flexible. Instead of sticking strictly to the interview guideline, focus on really listening to what the person is saying. If something important comes up that isn't in your guide, feel free to talk about it. No need to ask questions in the guideline again if they've answered them already, but if you're not sure about something, ask for more details. Being flexible helps make sure you get the most genuine and useful information during the interview.

1.2.5 Thanking and debriefing

This is an important part of the interview process. It involves the interviewer expressing gratitude for the respondent’s time and provides an opportunity for any final thoughts or questions e.g.

"Thank you so much for taking the time to share your experiences with us today. Your insights are incredibly valuable to our research. Before we conclude, is there anything else you'd like to add or any questions you have about the interview process or the study?"



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1.3 After the interview

After the interview, it is recommended to promptly jot down the information shared in response to each question. If needed, review the interview recording to ensure completeness. Transcribing the entire interview is not mandatory; the key is to document responses in a manner that suits you best. This documentation will facilitate the summarization process for inclusion in the reports due by Christmas, which will serve as the output of this exercise.



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2. Question blocks

2.1 Background information

1. Have you heard the term "circular bioeconomy" before?

If yes,

a. How much do you know about it and its application in various sectors such as agriculture, energy, healthcare, forestry?

b. How did you get this knowledge on the topic?

(e.g., through training, work experience, implementing bio-based or sustainable practices or products in your farming or forestry activities, etc.)

If no, [interviewer gives brief definition to interviewee e.g., *Bioeconomy involves using renewable biological resources sustainably to produce food, energy, and products. The circular bioeconomy involves the recycling of organic residues to reduce environmental negative impact and generate useful products for society such as bioenergy-biofuels (biogas, biodiesel, bioethanol, etc.), organic fertilizers (digestate, compost, vermicompost), biomaterials (biodegradable packaging, bioplastic, construction materials, etc.).*]

How does this concept sound to you?

2. How do you think bioeconomy can contribute to your daily life, work and local community?

3. Are you currently in (a) education or training or (b) employment?

if b) (i.e., in employment) **What is your profession? How many years of working experience do you have?**

if a) (i.e., in education or training) **What kind of programme?**

(If the interview partner is unemployed):

a. Why would you say you are currently unemployed?

b. Are you currently looking for employment opportunities?

4. What is your current level of education?



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2.2 Personal situation in community and job market

5. Are there any unique obstacles related to your background or circumstances that you encounter when trying to participate in society? Which ones?

(e.g., age, language, discrimination or bias based on race, ethnicity, gender, limited access to education and skills development, physical or mental health challenges, economic disadvantages, lack of social support networks, cultural or religious constraints, transportation, child-care, environmental etc.)

a. Are there any gender-specific challenges related to these obstacles [specify based on the obstacles mentioned above] *(e.g., aged men vs. aged women)?*

b. Are there resources, assistance, or programs that you think would be beneficial in addressing these needs [obstacle mentioned above]?

6. What are the most pressing challenges you face living in your area/region?

(e.g., rural-urban migration, poor infrastructure, limited employment and education opportunities, limited access to services and opportunities (other than employment and education such as socializing, networking, awareness raising, participatory approach in decision making, etc.), environmental challenges related to farming, natural disasters, climate change, etc.)

a. What motivates you to stay in your area/region despite the challenges?
[instead of migrating]

7. Have you experienced any discrimination on the job market or in your job/profession?

If yes, how? on what basis?

8. What aspects of a job do you consider important / are non-negotiable to you?

(e.g., wage, bonus, other assets such as leave, reduced working hours, proper infrastructure, childcare, respect to cultures and beliefs, access for working wear and necessary equipment, access to transversal training opportunities e.g.)



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2.3 Opportunities in circular bioeconomy (CBE)

9. Do you consider yourself as being part of the circular bioeconomy (CBE) sector?

If yes, what opportunities and benefits does it offer to explore new value chains/markets or products in CBE?

[only for business owners]

- a. What are the main challenges in adopting new technologies such as those used in the circular bioeconomy sector?
(e.g., missing knowledge, fear of costs, administrative issues, etc.)
- b. What challenges do you experience in exploring new markets and products in the circular bioeconomy sector?
(e.g., machinery, funds, labour force, subvention system, selling of products, etc.)
- c. What specific resources or support would you require to venture into new markets or value-added products or adopting new technologies in the circular bioeconomy sector?

if no, [give context to the interview partner!]

Do you think CBE could offer interesting job (or business) opportunities for you? Under which circumstances?

If no, → Why not? What concerns or barriers make you hesitant about pursuing opportunities in the circular bioeconomy sector? would prevent you from embracing bioeconomy opportunities?

[for business owners]:

- a. What would motivate you to consider diversifying into the bioeconomy sector and exploring new value chains/markets or products?
- b. What keeps you from adopting new technologies such as those used in the circular bioeconomy sector?
(e.g., missing knowledge, fear of costs, administrative issues etc.)
- c. What challenges do you foresee that might impede you from exploring new markets and products in the bioeconomy sector?
(e.g., machinery, funds, labour force, subvention system, selling of products etc.)?
- d. What specific resources or support would you require to venture into new markets or value-added products or adopting new technologies in the circular bioeconomy sector?



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10. Would you be interested in receiving more information on the employment and business opportunities in the circular bioeconomy sector in your region?

If yes, in what form would you like to receive such information? (e.g., Events? through job shadowing opportunities like study visits, practical training, seminars, workshops etc.? Career talks from current employees? Guided company visits? through Information campaigns in the media digital, social,

2.4 Education & Training

11. What is your current skill set and does it equip you well to join the labour market or take advantage of job opportunities?

12. Are you interested in training and acquiring more profound knowledge and experience to transition toward a more bio-based approach?

If no, why not? [no need to do the next block on training formats]

If yes:

- a. What specific aspects of the bioeconomy are you interested in learning more about or gaining training in?
- b. Would you also be interested in finding out about relevant EU and national funding opportunities?
- c. What challenges or barriers might prevent you from accessing education or training opportunities related to bioeconomy?

2.4.1 Training formats

13. What kind of training would you like to receive? What would this training look like?

(e.g., in-person training, online courses, shorter information events, intensive workshops, in-depth courses, theory-based, traditional classroom learning, vocational training, hands-on, collaborative or independent learning, etc.)

- a. Are there specific formats or requirements for learning materials that you would require?
(e.g., specific language, Braille, large print, audio, sign language, etc.)
- b. What kind of support or resources do you think would make it easier for you to pursue education or training in the bioeconomy sector?
(e.g., childcare, financial support, transport and accessibility)



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2.5 Final question

14. Do you wish for any specific actions in BIOLOC? How could actions of the project be useful for you?

3. Optional part

3.1 Environmental issues

3.1.1 *Romania: Soil and organic waste*

1. Do you grow food and vegetables for your own consumption in the region?

If yes, what are the primary reasons why you choose to grow and consume home-grown food?

either way [i.e., if no or yes], [proceed to the next question]

2. Are you aware of any environmental or health issues related to growing and consuming food in your area? or that the soil in your area might be polluted?

if no, [interviewer please give the interviewee context]

if yes:

- a. What are your concerns?
- b. What kind of assistance or support would be helpful in addressing soil pollution and restoring the health of the soil in your community?
3. Do you know that polluted, degraded soils can be remedied (healed) by applying digestate resulting from biogas production, compost, or composted manure?

If yes,

- a. Are you aware that the organic waste you produce can be converted into biogas and compost which can then be used to remedy the soil?
- b. Do you believe the local administration has established an effective system for recycling organic waste in your area?
- c. Do you think these methods are readily available and accessible for use in your area?
- d. Do you believe you, your community, or local residents can play a role in contributing to the soil remediation process?



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- e. Would you be willing to implement various soil remediation measures in your household or enterprise for this purpose?
- f. What resources, information, or support do you believe would be necessary for you and your community to actively participate in the soil remediation process?
- g. What motivates you to consider supporting this process?
- h. Can you identify any challenges or obstacles that might prevent the involvement of you or your community in this process? If not, do you want to know more about it?

2.

3.1.2 Energy [Croatia, Hungary, Romania]

1. Are you currently confronted by challenges relating to energy access / availability / affordability / use? Does this challenge count to one of your top day-to-day concerns?

If yes,

- a. What resources or assistance do you believe would be most helpful in solving these concerns?
- b. [Hungary] Are you aware of the potential health and environmental hazards associated with using traditional stoves for heating, such as burning low-quality wood or coal?

If no, [interview gives context]

either way [i.e., if yes or no]

- a. Are you willing to take steps towards adopting alternative heating sources to improve air quality and reduce health risks in your community?
- b. Are there particular challenges you face that require support or solutions to make this transition feasible for you and your neighbours?
- c. What resources or assistance do you believe would be most helpful in transitioning away from traditional stoves and improving air quality in your community?



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3.2 Awareness on environmental issues in general

- 1. How concerned are you about the environmental impact of actions e.g. your farming or forestry practices etc.?**
- 2. Do you think environmental problems affect all members of your community equally?**
- 3. Do you feel you can influence local policies related to environment and ecological sustainability? How?**
- 4. Would you get active in your community to help the environment or the climate?**
- 5. How do you inform yourself about issues concerning the environment, energy use, climate change etc.?**
- 6. Are there specific environmental goals or regulations you are trying to meet?**



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Annex 2: Questionnaire for REPRESENTATIVES of marginalized groups

1. Interview guidelines

Please interview at least ONE representative of the marginalised group or a person who has good insights on their plights (e.g. farmers association, social organisation, etc.).

2. Background information

1. What is your job and your task related to [target group xyz]?
2. How long have you been working with [target group xyz]?
3. How much do you know about CBE and its application in the sector of the target group (e.g., agriculture, energy, healthcare, forestry)?
4. Have members of [target group xyz] or your community had any prior experience or involvement in bioeconomy related activities? Which ones?
5. How do you think bioeconomy can contribute to the daily life, work and local community of [target group xyz]

3. Personal situation in community and job market

6. Are there any unique obstacles for [target group xyz] related to their background or circumstances when trying to participate in society? Which ones?

(e.g. age, language, discrimination or bias based on race, ethnicity, gender, limited access to education and skills development, physical or mental health challenges, economic disadvantages, lack of social support networks, cultural or religious constraints, transportation, child-care, environmental etc.)

- a. Are there any gender-specific challenges related to these obstacles [specify based on the obstacles mentioned above] (e.g. aged men vs. aged women)?
- b. Are there resources, assistance, or programs that you think would be beneficial in addressing these needs [obstacle mentioned above]?

7. What are the most pressing challenges that [target group xyz] faces living in the area/region?

(e.g. rural-urban migration, poor infrastructure, limited employment and education opportunities, limited access to services and opportunities (other than employment and education such as socializing, networking, awareness raising, participatory approach in decision making, etc.), environmental challenges related to farming, natural disasters, climate change, etc.)



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- a. What motivates them to stay in their area/region despite the challenges? [instead of migrating]
8. Does [target group xyz] regularly experience any discrimination on the job market or in the job?

If yes, how? on what basis?

9. What aspects of a job do you consider important / are non-negotiable for [target group xyz]? *(e.g. wage, bonus, other assets such as leave, reduced working hours, proper infrastructure, child care, respect to cultures and beliefs, access for working wear and necessary equipment, to transversal training opportunities et.c..)*



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4. Opportunities in circular bioeconomy (CBE)

10. Is [target group xyz] already part of the circular bioeconomy (CBE) sector?

If [target group xyz] is already part of the CBE sector: What opportunities and benefits do you think does it offer for them to explore new value chains/markets or products in CBE?

[only for business owners]

- a. What are their main challenges of adopting new technologies such as those used in the circular bioeconomy sector? (*e.g., missing knowledge, fear of costs, administrative issues, etc.*)
- b. What challenges do they experience in exploring new markets and products in the bioeconomy sector? (*e.g., machinery, funds, labour force, subvention system, selling of products, etc.*)
- c. What specific resources or support would they require to venture into new markets or value-added products or adopting new technologies in the circular bioeconomy sector?

If [target group xyz] is NOT part of the CBE sector:

- a. Generally what kind of jobs are members of the [target group xyz] interested in?
- b. Do you think CBE could offer interesting job (or business) opportunities for them? Under which circumstances?

If no, → Why not? What concerns or barriers make you hesitant about their opportunities in the circular bioeconomy sector? would prevent them from embracing bioeconomy opportunities?

[for business owners]:

- a. What would motivate them to consider diversifying into the bioeconomy sector and exploring new value chains/markets or products?
- b. What keeps them from adopting new technologies such as those used in the circular bioeconomy sector (*e.g., missing knowledge, fear of costs, administrative issues etc.*)
- c. What challenges do you foresee that might impede them from exploring new markets and products in the bioeconomy sector (*e.g., machinery, funds, labour force, subvention system, selling of products etc.*)?



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- d. What specific resources or support would they require to venture into new markets or value-added products or adopting new technologies in the circular bioeconomy

5. Education & Training

11. What would you consider to be the average education level of the [target group xyz]?

12. What is the average skill set of [target group xyz] and does it equip them well to join the labour market or take advantage of job opportunities?

13. What additional skills would be most relevant for them to be able to take advantage of job opportunities in the CBE sector?

14. What challenges or barriers might prevent [target group xyz] from accessing education or training opportunities related to bioeconomy?

15. What kind of training would suit [target group xyz] best?

(e.g., in-person training, online courses, shorter information events, intensive workshops, in-depth courses, theory-based, traditional classroom learning, vocational training, hands-on, collaborative or independent learning, etc.)

16. Are there specific formats or requirements for learning materials that [target group xyz] would require?

(e.g., specific language, Braille, large print, audio, sign language, etc.)

17. What kind of support or resources do you think would make it easier for you to pursue education or training in the bioeconomy sector?

(e.g., childcare, financial support, transport and accessibility)

18. Final question

If you have explained the BIOLOC project before] **Do you have any recommendations for the BIOLOC project? Would you like a specific activity from the project for [target group xyz]?**



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Annex 3: Questionnaire for REPRESENTATIVES of marginalized groups

1. Executive summary (1-3 paragraphs)

A meaningful synthesis of the certainly very rich material, which you got out of the interviews. Please summarize your main findings. The focus lies on the following questions:

- (a) What are the characteristics of your target group?
- (b) What motivates (or drives) your target group to explore opportunities in the CBE sector?
- (c) What prevents them from seizing opportunities in the CBE sector?
- (d) What do they need to better benefit from opportunities in the CBE sector?

2. What is the case, what is the context (1 paragraph)?

Please give a short summary on the context of the interviews, meaning the rationale why you singled out a specific target group and what relevance this group has in the context of the local CBE sector, respectively how BIOLOC will have impact on this group. [Please refer to your completed “exercise on marginalised group” and add any extra information that you may have extracted from the interview]



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3. Sample of interview partners and interview method

Give some basic information about your interview partners but make sure that anonymity of individual person is maintained. We need to know how many persons you interviewed, why you selected them. Additionally, please indicate how you conducted the interviews (face to face, online, telephone, group interviews, etc.) and how long they lasted.

Please also give some background on the interview partners; i.e. which socio-economic groups they represent. [Summary of questions 3 and 4 in the guideline for interviews].

Code	Main reason for marginalisation (e.g. Roma, homeless, immigrant, small farmers etc.)	gender	Profession or job situation	Level of education	Any relevant background information	Interview form (face-to-face, online, telephone, group)	Duration of interview
MP1		m					
REP1		f					
MP2							
...							

*MP= marginalised person; REP= representative of marginalised group

4. Interview findings

Please summarise your main interview findings in the next section. See if you can make summarized statements of clustered groups of interview partners (e.g. marginalised people see the main challenge in xy, whereas representatives see the main challenges in yz OR younger interview partners are more open to the concept xyz as older interviewees; female interview partners put a stronger focus on xy, etc.). If answers to a question differ a lot between all interview partners you may simply write: MP1 identified topic x as crucial, MP2 identified topic y as most important....

4.1 Background information

CBE knowledge, awareness, attitude:

Please summarise how much knowledge your sample has on CBE in general and regarding specific applications and how they gained this knowledge. Summarise how the concept sounds to them. Additionally, summarise how the respondents think that circular bioeconomy can contribute to their daily lives, work and community [summary of questions 1 and 2]



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Personal situation in community and job market and situation of marginalisation:

- **Obstacles and challenges to participate in social life:**

Summarise any obstacles that interview partners face when trying to participate in society.

Are these obstacles related to specific personal characteristics (gender, race, health, etc.).

[Deduce from answers to question 5 & 5a in the interview guideline].

Do they experience discrimination in social life or on the job market? [Deduce from answers to question 7 in the interview guideline]

Please summarise solutions suggested by the interview partners. [Deduce from answers to question 5b in the interview guideline]

- **Most pressing challenges in the region:**

How do interview partners perceive main challenges and obstacles that are systematic (rather than personal) for their area/sector (concerning infrastructure, regional management, demographic change, migration, climate, etc.)? What makes the interview partners stay in the region despite the challenges? What makes them consider leaving? Please explain.

[Deduce from answers to question 6 and 6a in the interview guideline]



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4.2 Opportunities in circular bioeconomy (CBE)

4.2.1 *Involvement in circular bioeconomy*

In how far do your interview partners consider themselves or the community they represent as being part of the CBE sector? [Deduce from answers to question 9 of the interview guideline]

4.2.2 *Perception of opportunities in circular bioeconomy*

What **opportunities and benefits** do they see in CBE: e.g., regarding exploring new value chains/markets or products? Regarding job opportunities? [Deduce from answers to question 9 “if yes,...” of the interview guideline]

Under which circumstances does CBE offer interesting job opportunities? What aspects of a job does your sample consider important? Which job characteristics are non-negotiable for them? (work life balance, pay, infrastructure, etc.) [Deduce from answers to question 8 of the interview guideline]

(If your interview partners DON'T consider themselves or their communities being part of the CBE sector, after you gave them context, can they imagine opportunities for themselves or their community in the sector? Which ones? [Deduce from answers to question 9 “if no,...(i)” of the interview guideline])

4.2.3 *Challenges in fully participating in the CBE sector*

Please summarise the **challenges** found in the interviews related to exploitation of CBE opportunities, in general and specifically with regards to adopting new technologies [Deduce from answers to question 9a of the interview guideline] and in exploring new markets and products [Deduce from answers to question “if yes,...” à 9a and 9b of the interview guideline].

For business owners, please additionally indicate the reasons that keep them from adopting new technologies as well as the challenges that they foresee with regards to exploring new



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markets and products [Deduce from answers to question “if no,...” à 9b and 9c of the interview guideline].

(if interview partners do not consider themselves as being part of the CBE sector: please summarise the **concerns and barriers** mentioned with regards to pursuing opportunities in the CBE sector as well as the aspects that would prevent them from pursuing related opportunities What concerns or barriers did they mention? [Deduce from answers to question 9 “if no,...(ii)” of the interview guideline].

4.2.4 Support measures to join or fully participate in the CBE sector

Please summarise the **motivating factors, support or resources** the interview partners would need either to join the CBE sector in the first place [Deduce from answers to question “if no,...” à 9a and 9b of the interview guideline] or to fully participate in the sector, if they are already involved [Deduce from answers to question “if yes,...” à 9c of the interview guideline]. Please ensure that the differentiate if the support measures relate to people not yet in the sector or people already in the sector in the text.

- Interest in receiving more information on employment and business opportunities in the CBE sector in their region

Please indicate whether the interview partners are interested in receiving more information on employment and business opportunities in the CBE sector in their region and in what form



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they would prefer to receive this information. [Deduce from answers to question 10 of the interview guideline]

4.3 Education and Training

4.3.1 *Current skill set*

Please summarise the skillset of your interview partners (in case of members of marginalised group) or what the representative of the marginalised group considers to be the skillset of the members of his or her community and whether they think that this skillset can equip them to take advantage of opportunities in CBE. [Deduce from answers to question 11 of the interview guideline]

- **Interest in training for the CBE sector: and more profound knowledge and experience to transition toward a more bio-based approach?**

Please summarise whether the interview partners would be interested in training or gaining more profound knowledge and experience to transition toward a more bio-based approach in general. Either way, please provide the reasons that the interview partners give [Deduce from answers to question 12 à “if no,...” of the interview guideline]



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4.3.2 Topics of interest

Please summarise the topics or aspects of the CBE that the interview partners would like to receive training in [Deduce from answers to question 12a and 12b of the interview guideline]

4.3.3 Barriers in undertaking training opportunities

Please indicate the barriers that would prevent the interview partners or their communities from undertaking relevant training [Deduce from answers to question 12c of the interview guideline]

4.3.4 Training formats

Please describe the training formats preferred by the interview partners. Did they mention any specific formats, requirements for learning materials? What kind of support or resources would help them in pursuing education or training in bioeconomy? [Deduce from answers to question 13a and 13b of the interview guideline]



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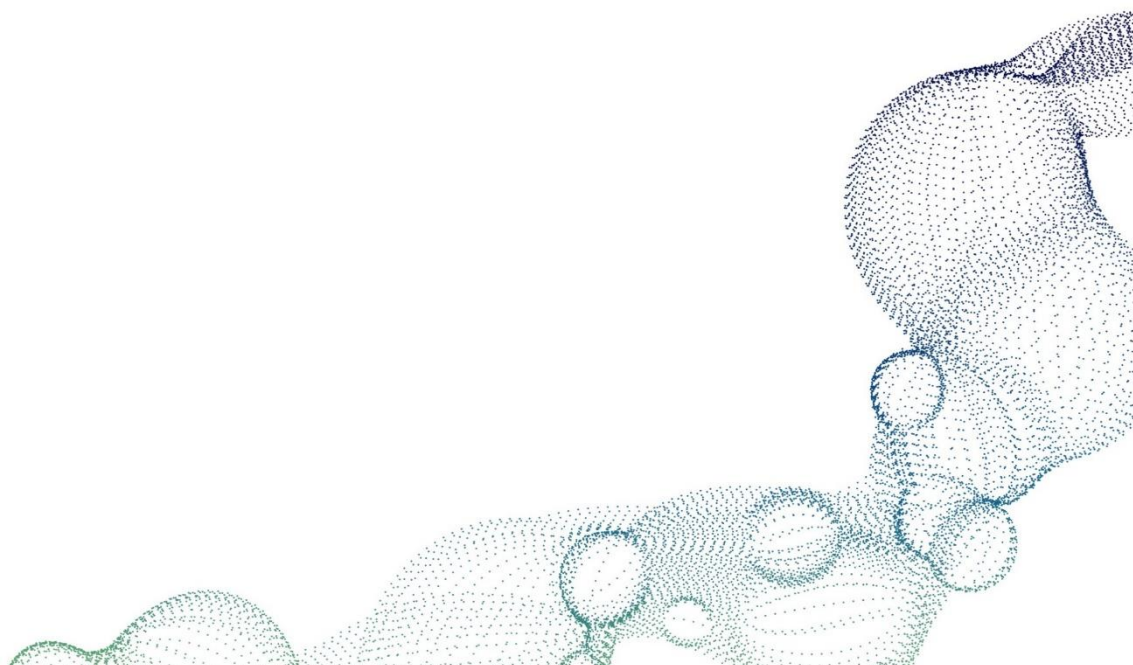
4.4 Contribution of the BIOLOC project

Please indicate any actions suggested by the interview partners that could support them

[Deduce from answers to question 14 of the interview guideline]

4.5 Optional part

Please summarize the findings of the optional part of the interview guideline.





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