



D2.2

Collection of co-created innovative art-integrated formats and activities on education, knowledge gain and innovative governance

Consortium:



Bay Zoltán
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 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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AUTHORS

Viola Pinzi (EAEA), Katalin Kálai (BZN), Nóra Hatvani (BZN), Judit Boros (MOME), Katalin Füleki (MOME), Alwin Gerritsen (WR), Remco Kranendonk (WR), Hubs partners for their outputs

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Contributors

NAME	ORGANISATION
Viola Pinzi	EAEA
Katalin Kálai	BZN
Nóra Hatvani	BZN
Judit Boros	MOME
Katalin Füleki	MOME
Alwin Gerritsen	WR
Remco Kranendonk	WR

Peer Reviews

NAME	ORGANISATION
Judit Boros	MOME
Katalin Füleki	MOME
All hub coordinators for their part	

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Partners short names

ZSI	Zentrum Fur Soziale Innovation Gmbh
WR	Stichting Wageningen Research
APRE	Agenzia per la Promozione della Ricerca Europea
BZN	Bay Zoltan Alkalmazott Kutatasi Kozhasznu Nonprofit Kft.
EAEA	European Association For The Education Of Adults
MOME	Moholy-Nagy Muveszeti Egyetem
artEZ	Stichting Artez
CLIC	Clic Innovation Oy
TMG	Business Upper Austria – OÖ Wirtschaftsagentur GmbH
MET	Metropolia Ammattikorkeakoulu Oy
UNIPA	Universita Degli Studi Di Palermo

Executive Summary

This Engage4BIO report is presenting the results of the four co-creation tasks carried out by each Hub (Austria, Finland, Hungary, Italy, and The Netherlands), in order to engage with quadruple helix stakeholders at local and regional level and involve them in a co-design process.

In terms of processes, as first step, these actors collaboratively developed hub specific visions on a strengthened and successful bioeconomy in the region. To reach these visions (1) (re-)training, mentoring and skills development formats, (2) awareness raising and knowledge gain, outreach and engagement processes and (3) action plans for innovative governance models and regional development were developed in the following steps. The co-creation process was based on an extensive *Guidelines for Hubs co-creation workshops*, available as Annex to this report, which provided practical and conceptual guidance for the preparation, implementation and follow-up of the workshops, as well as detailed concepts for each step of the cycle. The Hubs have carried out the co-creation process within local/regional workshops with relevant stakeholders in the period April 2023-December 2023. The content and design of the co-creation processes has been informed by the Map and Gap Analysis conducted in each Hub in the Spring 2023. The results of the workshops were then developed into models that will inform the implementation of activities on the same three pillars for 2024 and 2025 (training and mentoring, awareness raising and knowledge gaining campaigns, and innovation of governance models).

The results of the workshops, in terms of processes, have put in evidence similarities across the Hubs and relevant aspects for lessons learnt and recommendations. In terms of integration of arts and design in the co-creation activities, we can conclude that all Hubs embedded a variety of practices originated from creative practices and also specific practices from the fields of arts and design in their methods, even if with different levels or impact. On the other hand, we can observe that the engagement and participation of stakeholders representing creative industries and/or with creative roles within other sectors' stakeholders in the co-creation process were not fully linear. As for the formats of the workshops, it can be observed that there was quite some diversity, while all Hubs were able to align with the core principles of co-design activities and produce relevant results, for each phase of the process. We can therefore conclude that a high degree of flexibility in the formats is essential for adapting the processes to the local context, ensuring feasibility, and maintaining relevance for the specific stakeholders involved. Finally, in terms of the dynamics of the activities, it emerges clearly that a significant effort must be dedicated to creating safe spaces for exchange and to supporting positive group dynamics, even if, in some cases, this constitutes a trade-off with the level of depth of the discussions and with the level of complexity and elaboration of the results and solutions identified. It is evident that the familiarity of the participants in relation to the topics, the co-creation processes, and each other represents the most important aspects to consider for planning and implementing this type of process. In summary, the maturity level of the ecosystem where

the Hub operates in relation with the core purposes of the project/Hub development is crucial. In this regard, enabling and facilitating the evolution of the

ecosystem dynamics can become the main purpose of such activities, at least in the initial phase of such co-creation process. Similarly, for future activities, we can recommend allowing enough time for the overall process to unfold.

In terms of results and outputs and therefore of potential activities for implementation, it can be observed that there is a wide range of solutions and approaches developed by the Hub, while again similarities can be observed in terms of general aspects and processes.

It was clear that the Vision and Strategy process cannot be carried out without understanding the local circumstances. Accordingly, thorough mapping must precede the visioning process. Stakeholders from all sectors should be involved, in order to have different views represented. Although Engage4BIO hubs represent different value chains, their vision cannot be independent of the general local conditions. Cooperation with actors of other value chains and being embedded in the overall local ecosystem are inevitable. Finally, visions of the five different Engage4BIO hubs proved that arts and design can be an excellent way to support reaching the hub objectives. The added value of arts and design-related activities and approaches has not been exploited so far, which should be changed in the future.

For the training, as a general consideration, we see that most of the activities co-designed and foreseen are non-formal activities for adult learners. A strong focus seems to be as well on a relatively young population, for the training activities proposed, while since the European population is aging, it is important to focus also on other target ages and on intergenerational learning and learners. Finally, it can be noticed that while any learning materials and programmes exist already on these topics, the core/added value of the Engage4BIO training activities is on the specific pedagogical approach and innovative instructional design, strongly based on a co-creation process, starting from Map and Gap analysis conducted also with the relevant stakeholders.

The campaign designs supporting awareness and knowledge gain across regions reflect a concerted effort to address the gaps identified in understanding and outreach activities within the sustainability and bioeconomy realms. From fragmented knowledge systems to the challenge of adapting language for diverse audience groups, each region has tailored awareness-raising strategies to bridge comprehension gaps and generate interest and engagement effectively. By focusing on themes such as sustainable packaging in Finland, marine resource utilization in Italy, or bio-based textiles in the Netherlands, these campaigns aim to catalyse change in established practices and promote the transition to bioeconomy. Central to their success is the engagement of diverse target groups spanning art and design experts, decision-makers, researchers, and young adults, ensuring inclusivity and collaboration. Through immersive activities, multimedia storytelling, and strategic partnerships, these campaigns demonstrate a commitment to dynamic, engaging, and educational approaches, ultimately advancing the collective endeavour towards sustainable and innovative transitions in the bioeconomy sector.

Finally, for innovative governance, its definitions and the underlying concepts are not often discussed and partners in the Engage4BIO Hubs regions seem not to be very familiar with these concepts. Regions need more time to deepen these aspects and not all Hubs were able to define clear and concrete activities. This phase of the co-creation process is mostly seen as a starting point to work on the improvement of the governance of the regional bioeconomy. One of the main challenges seems to be the absence of a central organization responsible for the regional innovations.

Achievements in this area depend on the interplay and the synergies between various organizations representing the different domains, on the communality of directions and of the dynamics the partners are able to create. Finally, bridging the domains is not easily done. Active brokers are needed to create initiatives and collaborations and alignment will be needed, at strategic and operational levels, to ensure cooperation and to make the means available from different organizations, in order to create synergies.

1 Introduction

This Engage4BIO report presents the results of the four co-creation tasks carried out by each Hub (Austria, Finland, Hungary, Italy, and The Netherlands), in order to engage with quadruple helix stakeholders at the local and regional level and involve them in a co-design process.

In a first step, these actors collaboratively developed hub-specific visions on a strengthened and successful bioeconomy in the region. To reach these visions (1) (re-)training, mentoring and skills development formats, (2) awareness raising and knowledge gain, outreach and engagement processes and (3) action plans for innovative governance models and regional development were developed as described in the following, task by task.

T2.2 Co-creation of local bioeconomy vision and strategy approach

The primary objective of the first co-creation workshop aimed at developing a pathfinder manual for each hub, which will guide the project's co-creation and implementation activities. These manuals will serve as collections of useful, practical and innovative ideas and instructions for activities, supporting and enhancing regional bioeconomy development. The pathfinder manuals identify visions and main strategies for each hub to develop activities for training, campaigns, and innovative governance models.

T2.3 Co-creation of guidelines for training and mentoring for adults including skills development

The co-creation workshop on training aims at developing ideas and prototypes of concrete education activities to support the uptake of the Hub regional activities, based on the vision and strategy developed in the first co-creation phase and looking in detail at the results of the gap analysis and the learning scenario already initiated in that exercise. Each hub co-creates a set of guidelines for training in their area and the design of at least two training activities.

T2.4 Co-creation of local awareness raising, communication campaigns and art events with knowledge gain features linked to the defined bioeconomy vision and strategy

This workshop aims at developing the first draft of a blueprint for awareness-raising and communication campaigns targeting a wide audience (series of locally implemented activities including outreach activity) in order to enhance bi-directional knowledge gain by tackling local bioeconomy as the core challenge. Based on the visions including communication themes and challenges each hub outlined in the pathfinder manual, these co-creation workshops provide the opportunity for designing outreach activities to spread the word about the phenomenon and significance of bioeconomy in an understandable, appealing manner using out-of-the-box solutions integrating art and design approaches.

T2.5 Co-creation workshops on innovative governance models, supporting regional innovation, linked to the defined bioeconomy vision and strategy

The main objective of this step in the co-creation process is to address and find ways to improve

the management and coordination of the regional bio-based innovation

processes and how to ensure the inclusiveness and engagement of all domains and relevant partners. The topic is broad and can be applied differently in the E4B hubs, varying from the design of a new structure or an improved innovation ecosystem, to the definition of small measures or projects to improve some of the aspects, as enhancement of the capabilities and the engagement of partners, or the collaboration among partners.

The co-creation process is based on an extensive *Guidelines for Hubs co-creation workshops*, available as Annex II to this report, which provide practical and conceptual guidance for the preparation, implementation and follow-up of the workshops, as well as detailed concepts for each step of the cycle.

The Hubs have carried out the co-creation process within local/regional workshops with relevant stakeholders in the period of April 2023 to December 2023. The content and design of the co-creation processes have been informed by the Map and Gap Analysis conducted in each Hub in the Spring of 2023. The results of the workshops are then developed into models that will inform the implementation of activities across the same three pillars during the period 2024-2025 (training and mentoring, awareness raising and knowledge gaining campaigns, and innovation of governance models).

This report is organised in two main sections: Part 1 is dedicated to analysing the process itself, including the methods, participants and recommendations for future activities; Part 2 provides an overview of the results of the four processes across all Hubs. Finally, the outputs of each task are available in the Annexes, for each Hub, as well as the full Co-creation guidelines, created for the definition of the whole process.

2 Part 1 – Co-creation process

2.1 Implementing co-creation within five Regional Hubs

The 5 Engage4BIO Regional Hubs carried out the co-creation process within local/regional workshops with relevant stakeholders during the period of April 2023- December 2023.

The first step of the process was to define the specific design for each workshop (format, length, structure, etc.) based on the common *Guidelines*, but also the specificity of each context and group of stakeholders, as well as the needs and lesson learnt emerged already from the Map and Gap analysis practice. Preparation and definition of the workshop often started months in advance and was itself the result of a co-design process within the Hub teams. In some cases, the preparation activities included preliminary short meetings with the invited participants, to present the overall purpose and engage them in the overall idea of the project and approach, as well as in garnering the required commitment and generating interest (for example in the Austrian, Finnish and Italian Hub).

In terms of methods, although hub leaders were free to find the best suitable methods and approaches for implementing the co-creation process, there were several similarities between the twenty workshops held.

A variety of practices were applied, while the strong commonality was a general participatory approach, which is the basis for an appropriate implementation of co- design approaches (brainstorming, world cafe', Open Space technology, design thinking, prototyping, transition bridge technique, role-playing and simulation (also in combination), various type of canvases (for example, the ecosystem purpose canvas), posters and cards of various kind and purpose (exploration, gamification, etc.).

Another similarity was that in most cases Hubs used the results of their Map and Gap analysis as the baseline of their workshops. The Map and Gap analysis exercise provided a solid ground for the status quo of the regional situations and could help find the right path for the hubs and project activities for the next period. Furthermore, for the workshops on training, awareness raising and innovative governance, the Hubs embedded in the initial presentation also the core results of the Vision and Strategy workshop and Pathfinder, leveraging fully the co-creation cycle.

Sufficient attention, time and effort were dedicated to ice-breaking activities and to create a safe and comfortable exploration space (for example, working in small groups), particularly at the beginning, as well as to introduce the purpose of the project, the methods of the workshop and the reason for the engagement of the group, including a debrief on the previous steps and analysis, as mentioned above. In some cases, for example for the Hungarian workshop on training, also the presentation of existing practices was used to provide context and inspiration for the participants, in the Dutch vision workshop, printed materials on bioeconomy topics were also distributed and in the Finnish Hub a related project in Finland (sustainable packaging) was invited to present their research results to support the innovative governance workshop.

Some methods of the workshop were clearly inspired and/or directly derived from arts and creative practices, for example, brainstorming with visual/conceptual cards, thinking walks, 3D prototyping with different materials (for example building blocks, figurines, markers, strings, playdoh, etc.), Open Space technology (self-organisation of participants by topic of interest), sociometric constellations, persona development, user-centred design and design thinking methods, Future Thinking (in particular for the Vision workshops), various types of games and simulations.

Another aspect related to the method is the **role of the facilitators**. In some Hubs, the facilitators were members of the team (for example in Finland and in The Netherlands), while, in the case of the Italian Hub, each workshop had a different “Chair”, with specific expertise on the processes at hand. Finally, the Finnish Hub carefully considered the facilitation style, based on their experience in designing participatory activities.

In terms of formats, the project approach was to leave a certain flexibility for each Hub. In general, most workshops were held face-to-face.

The Finnish Hub decided explicitly not to allow participation online to ensure the equality of the participants. According to their experience, hybrid workshops create two different flows of results: one for face-to-face participants and another for online ones.

On the other hand, the Italian Hub conducted all workshops in a hybrid mode, to support wider participation.

A quick recap of the twenty workshops and their format and length is provided in the table below.

Table 1 - Recap of workshop organisation

	T22 - Vision	T23 - Training	T24 - Awareness	T25 - Governance
Austria	In person 8 hours	In person 8 hours	In person 8 hours	In person 3,5 hours
Finland	In person 3,5 hours	In person 3,5 hours	In person 3 hours	In person 3 hours
Hungary	In person 4 hours	In person 4 hours (combined with T25)	In person 3 hours	In person 4 hours (combined with T23)
Italy	In person 2 days	Hybrid 4 hours	Hybrid 4 hours	Hybrid 3 hours
The Netherlands	In person 4 hours	In person 3 hours	In person 6 hours	in person 1 hour (as part of a larger event of the Green Metropolitan Region)

A challenge that emerges across the Hubs and workshop is the delicate trade-off between ensuring participation and therefore feasibility of the activities proposed (for example in terms of length, travels needed, etc.) and ensuring sufficient space and time for in-depth discussion and co-design processes to be put in place. It was also noted that short workshops can have a strong role in the ideas generation process, rather than structural change implementation. Based on this consideration, the length

of workshops varied significantly across Hubs, from a minimum of 3 hours to a maximum of a full day (8 hours). In one case, for the Italian Hub on Vision, the engagement activities spanned across 2 days, in order to dedicate a significant amount of time also for participants to introduce themselves and their work and role in the local social and economic context.

Also, the challenge of the narrow timeline (4 months' timespan) for organising multiple workshops was identified (in particular when the same participants need to be involved). Due to this and with the specific challenge of the strong seasonality of the sector addressed (agriculture), the Hungarian Hub opted also for organising back-to-back or joint workshops for more than one purpose at once, for example, the training and the innovative governance workshops were conducted together, also considering the commonalities for the group of identified participants. In this regard, it is also relevant the alignment of the activities with current processes and initiative already established within the region. For example, the Dutch Hub was requested to organise one of the Engage4BIO workshops within a larger event.

Finally, in terms of location, the Dutch Hub notes how **the space of the co-creation workshop** can also have an impact on the success of the activity, for example being inspirational for the topic of the workshop (for example a very sustainable building), having sufficient and well-organised spaces (plenary and in small break out room). All Hubs have made considerations related to this aspect, as well as to creating a pleasant atmosphere, including in relation to catering solutions. It was noted that space, refreshments quality and general ambience may be particularly important in relation to the cultural context. Diverse locations for each workshop were also used, for example for the Italian and Dutch Hub activities.

2.2 Participants and engagement

The strategies applied in the co-creation activities were designed to involve interdisciplinary fields such as natural and human sciences, art and design, and culture within the bioeconomy sectors. This holistic approach fosters a comprehensive understanding and engagement with the multifaceted aspects of the bioeconomy.

Different stakeholder groups represented different points of view and were interested in different aspects of regional bioeconomy development and solutions. It is very important to include various perspectives in each co-creation process - not only experts in that matter and by topic - also to avoid experts assuming a strong leadership role, possibly preventing balanced participation and more innovative solutions.

For the workshops on Vision and Strategies, the intention was to involve as wide an audience as possible, and representatives of the quadruple helix participated at all workshops. For the other three workshops (training, campaign and innovative governance), the Hubs have achieved overall to engage all or most of the relevant quadruple helix stakeholders, while we can observe that in most cases the participants group was defined and selected also based on the workshop specific topic and objective, therefore it varies along the process lifespan in each Hub.

For most workshops, the main aim was to achieve a good mix of experts in the specific topic (bioeconomy) and experts on the processes at hand (education, awareness raising and governance models). Furthermore, other stakeholders were involved to complement this effort by providing valuable information about available resources and regional strategies, as well as insights into different target groups along the value chain and highlighting specific needs and nuances relevant to each group. In some cases, the experts in the processes (education, etc.) were predominant in the group.

A certain difficulty in engaging directly with business was noted in some Hubs, for example in The Netherlands and Hungary, with the business sector being represented more easily by intermediaries. In the Finnish Hub, businesses actively participated in the Map and Gap analysis. However, direct involvement of SMEs in the co-creation process was not feasible.

In terms of the engagement process, Hubs carried out a stakeholder analysis before the events and put emphasis on inviting different actors as well as a large pool of organisations, in the first phase of recruiting participants, to ensure sufficient representation, in terms of the number and stakeholder type. The process of identifying and inviting participants usually started several weeks before the workshops, in most cases between 1 and 3 months.

In most cases, we observe that the pre-existing networks and collaborations of the Hub partners were fundamental enablers for engaging relevant and sufficient participants. In some cases, leveraging existing events also proved to be successful.

In some of the Hubs, it is observed that the ratio of invitations/participants was in the range of 2:1 or 3:1, and even more in some cases, which confirms the need to dedicate sufficient time and effort to stakeholders' analysis and to the outreach and recruitment phase.

Another important aspect was also to be very clear upfront on how the results of the workshop are being used, which can serve as a further incentive as well. Participants should be aware from the first contact about the whole process they are asked to be involved in, to further the sense of commitment and the vision.

In some cases, for example **in the Austrian Hub**, the engagement/recruiting approach involved organizing both virtual and in-person meetings and preliminary interviews with these key stakeholders, and these interactions played a crucial role in garnering the required commitment and generating interest.

In the Hungarian Hub, the recruitment and engagement strategy focused on, on one hand, trying to engage experts from organizations and groups that were already in contact with the Hub partners (initially), but also conducting a desk research. After the initial phase, the invitations focused on organisations that had previously participated in the hub's workshops, while, at the same time, trying to expand the group through the Hub institution's extensive network of contacts, to bring in experts for the specific topic for each cycle. A specific challenge for the Hungarian Hub has also been to engage more business actors representing the agri-food industry.

The Finnish Hub also capitalised on existing activities, such as organising the first workshop in collaboration with a pre-established network in Finland.

The Italian Hub organised the first workshop in the frame of a bigger initiative (the European Maritime Day), together with awareness-raising activities for participants on the territory (including a visit to an art exhibition on the topic of bioeconomy). The Italian hub also started the recruiting process (for the first workshop) inviting some participants previously interviewed for the Map & Gap analysis.

A similar situation was reported by **the Dutch Hub**, which organized the workshop on awareness raising during an innovation festival, noticing that the festival itself facilitated the possibility of registering for the Engage4BIO workshop, and the innovative governance workshop during a larger event dedicated to Circular Economy.

2.3 Lessons learnt

This section provides an overview of the reflections and considerations shared by the Hubs in relation to the co-creation processes, based on each workshop report and also on collective reflection across the consortium organisations. The approach is also to indicate potential solutions for the main challenges identified, which were also partially embedded in the ongoing processes.

2.3.1 Engagement and participation

In terms of engagement, for the preparation phase, it was observed that it is important to have a clear value proposition for potential participants, with specific effort and preparation dedicated to this and to understand motivators for participating. As noted by the Austrian Hub (a reflection that applies across Hubs and workshops), sustainability, bioeconomy and circular economy are terms that contribute to the major common goal of the Sustainable Development Goals, while it can be difficult to translate them into regional measures and cooperation. This is possibly one of the main challenges.

Furthermore, this seems particularly important for business representatives, with the need to establish and make explicit the direct link between the focus of the co-creation activities (training, awareness, etc.) and the core business of the company contacted.

Some possible solutions were also recommended for supporting more engagement from the business sectors. Reaching out to them through intermediary bodies can be a good strategy, as also confirmed for the **Austrian Hub**, since intermediary associations can support this process with specific value propositions to their members. Another possibility is to organise the co-creation processes within existing business events and even to propose to do it at the business premises, together with study visits of their core activities.

Finally, in general, it was observed that the possibility to know who the other confirmed participants are may also motivate more invitees to join and developing a good space for networking and informal interactions can support more engagement during the activities.

The Hubs also reflected on the aspect of relevance and empowerment of participants more extensively. It was suggested that a clear identification of ownership of needs and

problems supports a more positive process. The ownership needs to be explicit for participants, before and in the workshop activities. In the **Austrian Hub**, the ownership aspect was embedded in the dynamics, and this was possible thanks to the preparation meetings before workshops (clear value proposition for participants beforehand). Also, **the Italian Hub** noted that when the problem ownership was clear, the whole process worked better, for example in the Training workshops with secondary schools.

To support ownership and relevance is also fundamental to do a proper follow-up. It should be clear how and when the results are available to participants, after the activities. **The Dutch Hub** suggested that specific methods be applied for this, for example, harvesting storytelling results and producing video as a follow-up/results-sharing tool, as well as asking participants for explicit feedback on the process. **The Austrian Hub** used a visualization tool for the results, to be able to share them in a structured way, since the results are also co-owned by all participants.

Finally, a common reflection in terms of engagement was that the focus on creating awareness was possibly the stronger transversal result across workshops and Hubs.

2.3.2 Integrating design approaches and perspectives into the co-creation activities

It was observed that the application of methods deriving from creative, and arts practices is to be embedded across the whole set of activities (not only in dedicated sessions), and to be encouraged also explicitly and directly with participants.

Furthermore, while during the co-creation workshops, the integration of art and design unfolded through various strategic aspects, beyond the facilitation methods and techniques, a common challenge seemed to be directly engaging stakeholders from the art and design sector in the whole co-creation process in a regular way, for the four workshops, beyond the organisations already involved in the consortium. The common denominator was a good level of involvement of representatives from art and design in the workshop for the awareness-raising campaigns (T24).

At the Austrian hub, expert speakers specializing in bioeconomy provided a foundational understanding, while professionals adept in public relations, science communication and campaigning also brought a strategic perspective to the discussions, although their involvement was different across the four workshops, with a focus on the awareness raising and innovative governance ones. Furthermore, most of the methods applied across the workshops and their session are inspired by creative activities. The methods employed in this first segment included activities such as prototyping using different material, sociometric constellations, picture associations, etc. Moreover, the workshop design aimed at providing diversified settings, letting participants move, and using the whole room to stimulate creative thinking. Thus, some visualisations took place on the floor, others on pin walls or tables others through role plays that were filmed. All furniture was movable in the room to adapt to the needs of the participants and the workshop formats.

Finally, **in the Finnish hub, various collaborative methods were employed, including** joint brainstorming, learning café and Open-space technologies. The latter, being a highly participatory, inclusive, and collaborative approach was utilized to structure the co-creation sessions, ensuring that participants gain ownership of the issues during the process and come up with applicable solutions. Furthermore, , experts in design and communication were also involved in the workshops on training and awareness campaigns.

In the case of the Hungarian and Italian hubs, representatives from the art and design sector actively participated in the workshops related to awareness raising, contributing valuable insights to the collaborative process. These workshops also showcased exemplary cases of collaboration between art and the bioeconomy, illustrating how these two domains can synergize. The participation of these actors was less relevant in the other workshops, for Hungary, while it was quite substantial for Italy in the Vision workshop as well. **The Hungarian Hub** also noticed that the presence of creative industry representatives and of MOME in the process, which can be seen as new players in the bioeconomy field, can possibly raise interest among the more established stakeholders, igniting curiosity for trying out cooperation. Finally, the Hungarian hub also applied methods directly deriving from the design sector, such as 'persona' development.

Finally, **at the Dutch hub,** as mentioned, the awareness-raising workshop was strategically aligned with a larger event focusing on innovations in technology, science, entrepreneurship, and sustainability. This collaborative approach not only highlighted the intersectionality of art and design with these sectors but also underscored the pivotal role of creative disciplines in bringing innovation to life. Beyond the awareness- raising workshop, the presence of art and design representatives in the co-creation process was mostly ensured by the presence of ArtEZ in the organisers group and other cultural institutions directly involved with the Hub activities.

2.3.3 Co-creation as awareness-raising and learning opportunity

In most cases, the level of understanding, knowledge and experiences of the different participants with bioeconomy topics and biobased value chains varied widely.

Therefore, it was clear that a comprehensive introduction and understanding of the bioeconomy was vital for the collective advancement of the group when involving experts on processes (education, campaigning, etc.) while not necessarily savvy in the bioeconomy aspects. In this perspective, the co-creation workshops also served the purpose of sharing understanding and/or communicating and engaging in bio- economics to the participants and, therefore, as an important awareness and learning activity. This was the case observed for the **Austrian and Italian Hub**.

In some cases, for example **in the Italian Hub,** also an initial activity to assess the knowledge level for the core bioeconomy topic was embedded at the beginning (poll, with analysis of questions and responses in plenary). In some other cases, an introduction to the project and possibly to local connected activities was also included. The Hub also indicated how the development of these activities constitutes a self- learning process in innovating its own processes, for the Hub itself.

In the Dutch hub, specific activities were dedicated to exploring further the specificity of the sector (biobased textile) and informative materials were distributed, during the first workshop, and to showcase inspirational examples of collaborations between art and science, at the awareness workshop.

In the Hungarian Hub, side activities embedded in the workshop on campaigns (T23) proved to be very useful as well, both in terms of engagement and raising awareness among participants of the role design can play in promoting bioeconomy (mini exhibition of bio-inspired projects of MOME staff and students).

2.3.4 Creation of a safe space for exploration

The attention and effort dedicated within the workshops to create a comfortable and inclusive environment have shown clear benefits, in terms of level of engagement and final results. The need to create such welcoming environments was carefully considered during the workshop design and then implemented through the methods that seemed more appropriate for each group, for example carrying out most of the development work in small groups or even in pairs, in some cases. It is also important to leave enough space for informal interactions.

Location, facilities and attention to the participants' well-being (for example in terms of catering solutions) were considered to have an impact on the overall ambiance (a positive impact, if well organised). The Dutch Hub notes also how it is important to be aware of the location structure and possible limitations, to consider it in the design of activities (large and smaller rooms, etc.). In general, it was considered how sufficient consideration of physical aspects and logistics is important, while this could be more or less relevant depending on the cultural context.

In the Austrian, Italian and Dutch Hubs, the importance of making participants feel comfortable as well as the establishment of an informal working environment was highlighted. Ice Breakers and 'Get to know each other' methods (such as Speed dating techniques, spatial positioning, dedicated sessions to introduce participants knowledge, roles and work etc.) clearly ease this identified need right at the beginning of the co-creation fostering trust and acceptance of each participant's competences and opinion. Similar observations regarding the importance of allowing enough time and space for participants to network were noted both by the **Finnish Hub**, (T22), and by the Dutch Hub (T22).

In one of the Hungarian workshops, a final session was dedicated to share final personal reflections, which led to an informal dialogue around the main ideas developed more structurally in the workshop flow.

2.3.5 Time management and flow

In the Austrian Hub, it was observed that a varied flow (with various shorter sessions in different formats and methods) keeps the workshop entertaining and interesting. Another important aspect was to provide participants with enough time to elaborate their input and sufficient breaks (with approximately 20 minutes break every 1.5 hours of activities).

2.3.6 Group dynamics

In terms of dynamics, it is also fundamental that the setup and methods enable participation from all participants to the extent of their comfort, while in some cases the emergence of stronger speakers and opinions, while demonstrating high motivation, can limit other participants' role, in terms of balanced engagement, and also the overall extension of the problem and solution space, in terms of results.

The **Austrian Hub** noted that a rather casual atmosphere supported participants in building up trust, which made them speak openly and supported everybody to share their concerns and thoughts. Furthermore, it is important to break up any hierarchy that may be emerging in the groups, to support different perspectives to emerge. They also suggested being careful about the processes applied to reduce complexity and to avoid the so-called "one word" approach.

In the **Finnish Hub**, it was noticed that, on one hand, working in small groups supported in-depth discussions, while, on the other, this approach leaves significant space for individual thoughts and ideas, which then also requires a dedicated session/method to validate the initial concepts with a wider group of hub participants. A challenge observed by the Finnish Hub was also about keeping in-depth discussions and that the workshop results do not remain too superficial, which is a risk present for short-length activities, often involving participants who have not met before.

Furthermore, the delicate balance between allowing debate and maintaining a positive and neutral ambiance should be maintained, also to avoid conflicting dynamics in the group. Some participants may also join the activities with a specific agenda, and this may affect and influence the dynamics and results. It is important to consider how to allow them to express their perspectives while again moving a step forward in the collaborative process and results.

In this regard, **the Dutch Hub** proposed an approach based on diverging and converging approaches, for the sessions and their flow, in order to create a funnel, in iteration.

Furthermore, the **Hungarian Hub** experience highlighted that, within the same workshop, it is advisable to have multiple groups working on the same design or purpose, to ensure a higher possibility to have quality results at the end.

A technique applied by **the Italian Hub** was to organise the groups also by main remit and expertise, for the first part of the co-design activities, to then integrate ideas in a following session. The Italian Hub also reiterated the importance of setting a sense of informality as a base for the meetings, for example through ice breakers aiming specifically at the informality mode.

Finally, role-playing-based activities are considered a good approach to support positive group dynamics, to face the challenges described in this section.

2.3.7 Moderation and facilitation approaches

One aspect that must be considered for the group dynamics is also the role of the facilitator, their expertise and the level of direct engagement of facilitators in the group activities.

In Austria, for example, as typical for prototyping sessions, the groups worked independently, with colleagues from the organizational team serving as observers rather than active moderators. Despite the satisfactory results for both the organizers and participants, the feedback highlighted the potential benefit of having dedicated group moderators at each table during this specific type of workshop. This can be addressed by ensuring the participation of strong moderators at every table, who briefed the team accordingly.

On the other hand, **the Hungarian Hub** found it useful to have a Hub team member facilitating the 'world café' method, on the occasion of the workshop on raising awareness.

Finally, **the Italian Hub** found it effective to designate a "chair" for each workshop, each time with a specific expertise on the matter at hand.

It can also happen that the participants are not ready or able to follow the predefined practices and templates for the co-design, therefore, in such cases, the flexibility of the facilitators and their ability to improvise and adapt are of paramount importance.

Finally, it was also noted that, no matter their specific field of expertise, a facilitator in such processes needs to have sufficient understanding of the various areas and topics at hand, to be able to bring together the whole expertise in the room and within the results.

2.4 Conclusions and recommendations

In terms of integration of arts and design in the co-creation activities, we can conclude that all Hubs embedded a variety of practices originated from creative practices and also specific practices from the fields of arts and design in their methods, even if with different levels or impact. On the other hand, we can observe that the engagement and participation of stakeholders representing creative industries and/or with creative roles within other sectors' stakeholders in the co-creation process were not fully linear, with some Hubs reinforcing this aspect only for some of the workshops.

As for the formats of the workshops, it can be observed that there was quite some diversity, while all Hubs were able to align with the core principles of co-design activities and produce relevant results, for each phase of the process. We can then here conclude that a good level of flexibility in the formats is fundamental to adapting the processes to the local context and ensuring feasibility and relevance for the specific stakeholders involved.

Finally, **in terms of dynamics**, it emerges clearly also that a significant effort must be dedicated to creating safe spaces for exchange and to supporting positive group dynamics, even if, in some cases, this constitutes a trade-off with the level of depth of the discussions and with the level of complexity/elaboration of the results and solutions identified. It is clear that the familiarity of the participants with the topics, the co-creation processes and with each other represents the most important aspects to consider for planning and implementing this kind of process (in sum, the maturity level of the ecosystem where the Hub operates in relation to the core purposes of the

project/Hub development). In this sense, enabling and facilitating the ecosystem dynamics to evolve can become the main purpose of such activities, at least in the initial phase of such co-creation process. Again, in this sense, for future activities, we can recommend allowing enough time for the overall process to unfold, including a relevant time span for the engagement phase and potential preparatory activities before the core co-creation process can take place.



3 Part 2 – Co-creation results

3.1 Visions and strategies for the development of bioeconomy regional hubs

3.1.1 Horizontal analysis of vision and strategies

Not only the visioning process (as described in Part 1), but also the co-created visions of the different Hubs show similarities, as well as differences. Different local circumstances and local ecosystems determine the visions and the possible actions to be carried out to reach the objectives.

One of the main similarities of the visions is that the target audience of the actions is as wide as possible, focusing mainly on local actors. Representatives of the quadruple helix appear as target group in all visions, however, there are some differences between the three examined aspects, such as knowledge gain and awareness raising focusing mainly on the general public, while innovative governance was described more like to be addressed to all stakeholder groups.

Art and design were important elements of all visions, but their role and importance were emphasized more in the awareness raising. Those hubs, which have arts and design representatives within their boards could better find the role of these activities in all aspects.

Finally, an out-of-the-box approach has been found in all Pathfinder documents, and this was included in each of the examined aspects. Innovative learning pathways, design-based awareness raising or new collaborations in governance are mentioned.

Although the main aim of the Pathfinder document is to build a ground for the activities during the lifetime of the Engage4BIO project, it definitely looks beyond the project duration, as it articulates a longer-term vision of the hubs.

The detailed results of the visioning process are collected in the so-called “Pathfinder” documents, which are further analysed in the following and attached as Annexes.

3.1.2 Pathfinders for training and mentoring

Based on the Map and gap analyses, hubs have different state-of-the-art and different possibilities within training and mentoring. However, all hubs aimed at finding out-of-the-box methods and stepping out from the traditional learning pathways, taking into account the local environment and the existing formal and informal learning pathways. Adult and life-long learning perspectives can be found in the visions of all hubs.

Another similarity of the visions and actions of the five hubs was the intention to reach the widest possible audience through the activities planned.

The Austrian Hub stated that education should be shaped in a way that it becomes a personal, immersive experience, to ensure lasting implementation. A pivotal point of the

vision was the utilization of pre-existing educational structures and locating multipliers and providing them with training in bioeconomy and sustainable development. A successful educational strategy could involve reinforcing community

and community-based models, enabling community members to educate, share, and nurture the bioeconomy.

The Dutch Hub stated that there was growing attention in the Netherlands and within the Engage4BIO region on skill development, education and guiding the workforce for making the transition to a circular bio-based economy. The learning concept which is being used in the region is broad, varying from citizenship, social learning, creation of learning environments such as Living Labs, educational programmes linked to cultural activities, and regional human capital agendas. Engage4BIO activities follow this concept.

The Finnish hub focused on training and informing all actors in the sustainable packaging value chain. The hub set a vision for 2030 and planned certain actions to reach it. First, it will establish a regulation training for all value chain actors as well as decision-makers and regulators. Then, the hub will establish a common regional sustainable packaging criteria system with all value chain actors. This will be followed by collecting national statistical material for awareness raising and information for informed decision-making.

The Hungarian hub stated that education was the key to strengthening bioeconomy in the country. A lot of emphasis was given to children's education, mentioning that it should start from kindergarten, involving the whole family. Non-formal education and involvement of art and design can play an important role. The main take-away message of the discussion was that education should be freer, decentralized, there is no need for uniform systems. Education related to circular bio-based economy should follow the actualities and support creativity.

Finally, **the Italian Hub** set a specific vision stating that the training actions need to focus on specific blue value chains, characteristic of the region, having a relevant role in a social, artistic, economic and historical context. This action could help to reach more sustainable models in marine resource utilization, according to the principles of the circular economy. According to the hub's practical approach, it is advisable to start a stronger connection with the blue economy stakeholders at regional level by fixing periodic events for adult training and mentoring.

3.1.3 Pathfinders for awareness raising and knowledge gain

All hubs expressed the importance of awareness raising. The role of art and design sector was clearly mentioned in this part of the Pathfinders, as artists and designers can help interpret complex issues in an accessible and entertaining way for a wider audience and policymakers. As set in the Map and gap report, designers sometimes also take up the role of driving complex transition processes from a holistic, interdisciplinary approach. Using specific creative co-creation and design thinking methods, they develop shared visions, missions and concrete goals in collaboration with relevant stakeholders. A role they increasingly fulfil in so-called fields or living labs, often initiated by knowledge institutions for applied research that tries to bridge the gap between fundamental knowledge of universities and its application in concrete practical contexts.

The aim of the awareness raising can be providing a solid basic knowledge about circular bioeconomy.

The main stakeholders of the awareness-raising, and knowledge-gain activities will be the general public, however, other actors of the quadruple helix have to be included as well.

The Austrian Hub concentrated on the actors of the value chain and recognized the importance of raising awareness among stakeholders in the value chain who might lack awareness of their roles. The group highlighted the significance of establishing shared goals, resources, and responsibilities among the actor groups. The importance of tailoring formats specific to target groups, including planning games and excursions was also discussed and suggested for development, using existing resources. Besides the value chain actors, young adults, and journalists were noted as pivotal audiences for such efforts.

The Dutch Hub highlighted the importance of linking project activities to activities and festivals that are organised regularly in the region. They plan to link to activities that focus on different target groups in order to enlarge the number of people reached.

Special attention should be raised to connecting organisations and people that do not meet and collaborate, and also for reaching out to civil society, to inform them about and engage them in circular biobased textiles in the region.

The Finnish Hub's vision for awareness raising and knowledge gain focuses on changing the old practices and way of thinking by promoting collaboration and enhanced communication across the whole packaging value chain. Research results should be communicated clearly and understandably to decision-makers, companies, and society. Key elements of the vision are digitalization, "enlightened consumers" and design thinking. Innovative elements of the actions were the involvement of influencers and organising Virtual Reality visits.

The Hungarian Hub found awareness raising inevitable, as bioeconomy is not involved in the education in Hungary, moreover, even the term "bioeconomy" has no widely accepted translation. It was stated that there should be a general consensus on the importance of the circular bioeconomy. Finding an important and easy-to-understand message is necessary. As the hub focuses on the agro-food sector, the importance of soil can be a central element. Showcasing innovative ideas and good practices can also grab the attention of the audience. The involvement of art and design sector was emphasized during the discussion.

The Italian Hub aims to realize an artistic framework able to communicate the concepts related to circular economy and blue bio-based compounds at the social level. It also mentioned that the awareness-raising, and communication campaigns could target a wide audience putting local bioeconomy as the core challenge. The workshop underlined that the knowledge campaign is a useful opportunity to disseminate and spread the significance of bioeconomy in an understandable manner, integrating science with art and design approaches.

3.1.4 Pathfinders for innovative governance

Within the scope of the Engage4BIO project, "innovative governance" refers not exclusively to political governance but a much broader group of measures and activities that address and enhance the management of regional bio-based development processes, the inclusive engagement of all actors and the creation of good regional relations and trust.

Effective governance is key to long-term development. Governance has to involve all stakeholders, from politics and administration, through intermediary organizations including cluster organizations, research and development entities, to enterprises and businesses. It is important to cover the whole value chain, from producers to consumers, from innovative ideas to commercial exploitation.

Austrian Hub members agreed that the success of the governance system and the achievement of the vision within five years depends on the active involvement of key actor groups. Hub members defined the roles of the different actor groups, such as intermediary actors, policymakers, enterprises and businesses. The group collectively concluded that a comprehensive and multi-faceted approach, involving a variety of stakeholders and strategies, is necessary to drive sustainable change within the targeted timeframe. Regarding the spectrum of change, participants expressed that the steps they proposed are likely to result in incremental improvements rather than the transformative change that might be required.

The Dutch Hub aims to connect its innovative governance activities firmly to a planned pilot on circular textiles that will be run by the Green Metropolitan Region. This approach will ensure their visibility and inclusion in the regional agenda. During the workshop, a number of proposals and subjects for focus and comparative advantages in the region and for applying new innovative collaborative approaches were developed.

The vision of **the Finnish Hub** for innovative governance models is to have the entire value chain involved in building the innovation pathway from ideas to commercial exploitation. Motivation and commitment of all stakeholders of the quadruple helix need to be ensured. The joint target of the ecosystem is to accelerate the shift towards sustainable packaging practices in Finland, with clear criteria, effective communication, and a supportive regulatory framework in place by 2030. The group acknowledged the absence of common science-based criteria and metrics for sustainable packaging in Finland. To address this gap, a project funded by external support would be essential to develop these criteria. At the same time, they want to focus on effective communication to raise awareness and drive behavioural changes to minimize the environmental impacts of packaging on nature.

The Hungarian Hub's findings confirmed the outcomes of the Map and gap analysis, namely that bioeconomy strategy is very much needed as a reference document approved by the government and showing its commitment, accompanied by a realistic Action Plan, including reachable and practical targets and measures. According to the hub members, small, decentralized and efficient governance with small apparatus is needed. Local governance needs to be strengthened, as bioeconomy happens locally.

The importance of positive incentives was highlighted. Communication between quadruple helix actors was also emphasized.

Finally, **the Italian Hub** confirmed that only an innovative governance model could support local innovation, starting from a more collaborative effort within the quadruple helix actors. According to the hub, innovative governance starts from an appropriate selection of the potential stakeholders, focus on collaboration, governance of networks, the interplay of different domains, the position of intermediates for the governance of the transition, engagement of partners, and alignment of organizations. A very important aspect set by the hub is the connection between art/design and the blue economy sector.

3.1.5 Conclusions

The visioning process cannot be carried out without knowing the local circumstances. Accordingly, thorough mapping must precede the visioning process. Stakeholders from all sectors should be involved, in order to have different views represented.

Although Engage4BIO hubs represent different value chains, their vision cannot be independent of the general local conditions. Cooperation with actors of other value chains and being embedded in the overall local ecosystem are inevitable.

Within the Engage4BIO project, hubs set up their visions along three different aspects (i) training and mentoring, ii) awareness raising and knowledge gain and iii) innovative governance), nevertheless these subjects are connected in many ways. Training and education can be considered as awareness raising too, while governance includes the other two aspects as well. Pathfinder documents work as a framework for the vision, in which the connection with the different aspects can be taken into account.

Visions of the five different Engage4BIO hubs proved that arts and design can be an excellent way to support reaching the hub objectives. The added value of arts and design-related activities and approaches have not been exploited so far, which should be changed in the future.

3.2 Competences for bioeconomy and lifelong learning perspective

3.2.1 Horizontal analysis of training and mentoring initiatives

A holistic approach seems to be the most common, across Hubs, in terms of topics and learning outcomes. The activities proposed include the core principles of bioeconomy as well as circular economy, together with main opportunities for innovations and existing challenges, also in the broader picture of sustainability.

Another similarity across Hubs is that many of the education activities embed aspects of awareness raising and focus on experiential instructional design, in terms of methods, as well as, in most cases, the activities are short non-formal education, with only one exception in Finland.

Finally, the education activities proposals differ greatly in terms of main audiences (students, teachers, citizens, business, etc.), while the identification of the audience is often very much in line with the Map and Gap analysis results, and the need to start with the education activity that seems the most significant for the local contexts, in order to stimulate further development of the bioeconomy practices.

Finally, we can observe a lower level of integration of arts and design elements in the co-designed learning activities in comparison with the co-creation processes that generated those proposals.

The detailed results of the process are collected in the so-called “Training guidelines”, which are further analysed in the following and attached as Annexes.

3.2.2 Summary of core aspects of training design across Hubs

The Austrian Hub started from the consideration that while several existing endeavours promote collaboration among stakeholders in the region, these initiatives predominantly cater to professionals and individuals involved in the core value chains, or target those who are already interested or involved in bioeconomy-related subjects and the activities may not always align with the main themes or sectors of the Engage4BIO hub. In Austria, future educational initiatives should focus on enhancing the qualifications of employees in the recycling industry, providing support for building expertise among companies in the recycling and bioeconomy sectors, extending training opportunities to small businesses and employees in the field of green building, promoting the importance of implementing circular economy and bioeconomy initiatives based on internal expertise and, finally, tackle the application of circular economy concepts specifically in office settings, rather than solely in production processes. The primary objective is to expand the reach of these models beyond professionals in various sectors and redirect them towards non-formal educational activities that can cater to a wider community, while also integrating elements of art, design, creative practices, and non-formal education tailored specifically for adults, as well as hands-on learning experiences. The activities should also outline the best-practice examples in the region and encourage the wood and interior value chain stakeholders to learn from other sectors that are more advanced in this matter. Finally, workshop participants also emphasized the significance of enhancing the overall community by integrating bioeconomy

education, to establish a robust and enduring bioeconomy practice.

In Finland, the main objective and purpose of the training activities is to provide a holistic perspective on sustainability packaging along the value chain towards potential innovations in the field and new business models. This approach tackles the main need identified, which is to raise awareness about the overall picture of the packaging life cycle, both for actors in the industry as well as future professionals, as the holistic perspective needs to be taken and the different actors brought together to solve the sustainability challenges.

Furthermore, the training activities proposed are directly linked to a focus area of the Helsinki-Uusimaa regional development strategy (circular economy in Carbon Neutral Uusimaa 2030 roadmap).

For the Hungarian Hub, the proposed training activities are formulated according to the regional context and specific challenges, with the main aim of addressing the need for strengthening the role and importance of SMEs in both the region and the field, as well as applying the creative potential presented by the art & design sector to non- design areas for awareness raising. In this perspective, the training programs will focus on practical, hands-on, and experience-based learning and they will cover key aspects such as organic production and sustainable practices, both for farmers and small producers as well as career changers and newcomers to rural areas. The integration of slow-food and organic farming methods into our curriculum represents an innovative approach, to not only impart traditional knowledge but also foster innovation. This ensures that educational programs stay at the forefront of bioeconomy development, preparing learners to navigate and contribute to the evolving landscape of the agri- food industries.

The Italian Hub identified innovative training solutions in the Blue bioeconomy, with a particular focus on professional training and continuous training. The application of the circular economy principle "from waste to profit" is a commitment for the regional fishing, aquaculture and fish processing supply chains, in order to develop marine products of high biological value, with a reduced environmental impact and develop the Blue bioeconomy. The need to combine the sustainable management of marine resources appears increasingly pressing. Fishery and aquaculture processing by- products can represent unused or underused resources, still containing a large number of components with high nutritional value and bioactive compounds. The use of these resources could constitute a link to be added to the production chain of the fishing sector and the processing of fish products, generating development and economy from a resource otherwise destined to be disposed. The objective of the Italian HUB is to contribute to the dissemination of the knowledge acquired on the enormous unexpressed growth potential of the oceans, taking into account the three pillars of sustainability (environmental, social and economic), by involving experts in the scientific sector, secondary school teachers and blue biotech enterprises in training courses. In particular, the main focus will be the continuous training of secondary school teachers who have the role of inspiring young students toward the development of blue bioeconomy competencies and skills.

Finally, **for the Dutch Hub**, the co-created activities proposed to address various target groups in the school sector, at secondary school and (preparatory) vocational education,

where a major challenge is identified, since developing and implementing

activities in the school contexts requires a significant effort, in particular for the integration in existing curricula. A second important group of stakeholders identified is citizens, which could be reached with the support of various platforms present in the Hub, such as museums and art and design events. There is also an interest in involving families, as intergenerational groups learning together. As for the content of the learning activities, most of the proposals focus on awareness creation, indicating a strong link between learning activities and awareness campaigns and art events. In this perspective, artists and designers can be seen as experts who can bridge the gap between (scientific) knowledge about the bioeconomy and citizens understanding.

Based on the workshop result, the most promising proposals for the framework of the learning activities are to focus on a holistic view of the ecosystem, start from real experiences and familiar objects, use existing platforms to embed the new activities, to make it playful and also concrete through good practices and experiential activities (visits, excursions, cafés, etc.).

3.2.2.1 Topics and learning outcomes

A holistic approach is observed and welcomed in terms of topics and learning outcomes. Most education activities include the understanding of the core principles of bioeconomy as well as circular economy, together with main opportunities for innovations of value chains and business models (each Hub in its specific chain/bio- product) and existing challenges, also in the broader picture of sustainability.

In some cases, as per **the Austrian Hub**, the topics include business models, as final module after a progressive programme into bioeconomy and specific wood industries applications.

In **the Finnish Hub**, the holistic perspective is indeed the core aim of the training activities designed, as well as the full value chain. Furthermore, the second proposed activity also includes the consumer perspective and what is needed in terms of knowledge for citizens to make sustainable choices (in this case in relation to packaging).

In the case of **the Hungarian Hub**, while still in the overall sustainability and holistic approach, the program will focus on very hands-on topics, such as slow-food, organic farming methods, application of sustainable household practices, conscious purchasing, and reduction of the environmental footprint, etc. The programme also establishes a core connection between traditional and future activities, to support a holistic understanding of sustainable living.

The **Italian Hub** implements an additional aspect in the training, which is also at the core of the identified development strategy for the Hub: the focus on the "zero waste" objective, through the recovery of by-products and co-products from the fish processing industries and their use in other value chains, for example in the production of ingredients for food, feed, pharmaceuticals and cosmeceuticals. Furthermore, the concepts of overconsumption and overproduction are also tackled.

Finally, **the Dutch Hub** activities focus on very hands-on content, strongly linked to concrete objects, related to processes such as re-use, repair and upcycling that participants can

experience in their daily life and choices, with an addition of other

aspects of sustainability related to social and human components, such as working conditions.

3.2.2.2 *Instructional design and formats*

In terms of methods, we can observe that many of the education activities co-designed embed strong elements of awareness raising and experiential instructional design (field activities, learning by doing, etc.), which can be considered a positive outcome already recommended at the stage of analysis of the Map and Gap results (WP1).

In Austria, for example, co-designed activities include study visits/excursions and the training for business decision-makers is concluded with an idea development workshop.

In Finland, the Hub plans to establish a Sustainable Packaging visitors' point within a larger initiative in the Museum of Technology in Helsinki, and the main training activities will be developed as group assignments, with an opening and closing event open to everybody (business, researchers, citizens, etc.), to respectively kick-off and present the results.

The **Hungarian training programs** envisage interactive group work (workshops), learning through case studies, and practical demonstrations, as well as garden and farm visits and sensory experiences.

In Italy, in line with the experiential learning approach, a large part of the programmes proposed focuses on practical and laboratory activities, with the second potential programme using the Living Lab method and building upon an existing initiative, to expand and exploit further for the Engage4BIO purposes.

Finally, **the Dutch Hub**, approaches vary from awareness to gamification activities, again with a focus on very hands-on experiences and directly connected with real objects and daily activities, use of role models, visits to museums with related exhibitions and to clothes fairs, and challenge-based activities.

While formats vary, in most cases, the Hubs propose short non-formal education activities, with a lengths between some hours to a few days. The only exception in this regard is the activities proposed **for Finland**, where the training is meant to last for one or two study periods (3-6 months), and it is foreseen already to provide learners with 5 ECTS.

On another note, the majority of training is planned as face-to-face activities, with the exception of the **Hungarian activities**, which are planned in a blended way (physical and virtual mode or online learning), and the activities proposed by the **Dutch Hub**, where we can see a variety also online activities, also in asynchronous mode (such as online games).

3.2.2.3 *Stakeholders' collaboration and synergies in the ecosystem*

The overall approach to designing training activities seems to focus on collaborations that are directly linked to the main learner's group and to the core topic of the training,

often in a pairing between educational institution, on one side, and another type of stakeholders in the ecosystem, for example, education/business **in Austria** and **Italy**.

Furthermore, within the second learning activity proposed by **the Italian Hub**, the method of the Living Lab is meant to create local engagement between research, business and citizens, also as a continuation of an existing project, which developed a classroom for consumer testing and sensory analysis of Sicilian fish processing products, while the core engagement is again for education, research and business representatives.

In some cases, like **in Finland**, a general collaboration between education, business and public sector is envisaged, while the core activities proposed will be developed by the education institution involved in the Hub, with some guest lecturers.

As for **Hungary**, the proposed training activities rely on strong connections with industry partners (such as organic farmers and producers), local ecovillages, industry associations, and connections to art and design experts, with the aim of creating a collaborative ecosystem that supports the success of the training and mentoring initiatives and possibly the continuation of some activities as self-sustained. In fact, the main providers, beyond the course organisers from the Hub, will be farmers and producers.

3.2.2.4 *Target audiences*

While the overall approaches seem to be quite close and similar (learning activities as awareness tools, understanding bioeconomy opportunities, experiential and hands-on learning, etc.), the Hubs' education activities proposals differ greatly in terms of main audience. However, more globally, the identification of the audience also indicates the core purposes for the selected learning activities, often very much in line with the Map and Gap analysis results, and how the Hubs have carefully identified the most valuable action and entry point in the local ecosystem, to support the future uptake of bioeconomy practices, to make the most out of the Engage4BIO activities and resources.

In the Austrian Hub, one activity is address decision-makers, in the local business and in the development of local activities (for example, site managers, construction managers, architects), therefore it seems that the target audience is selected with a specific purpose in mind, to start with influencing short term decision making in the local economy.

In Finland, the primary target groups are university students as well as lifelong learners in the industry who will engage in collaborative learning and co-creation activities on the topic. The audience will comprise individuals from diverse disciplines such as chemical engineering, industrial design and logistics, supporting the aim for cross- sector collaboration.

For the **Hungarian Hub activities**, the primary audience will be 'career changers' and 'people with small gardens, or household farmers' categories. The very hand-on approach here seems to indicate an aim to start with concrete and feasible activities in

the local economy, whose development can be directly supported by participating in the Engage4BIO training.

The Italian Hub has chosen to focus the main training activity on an “intermediary” audience, that is, secondary school teachers, with the aim to support their knowledge and competence, in order to inspire future generations toward more sustainable perspectives, therefore focusing on a medium-long term purpose. Priority will be given to science, art and design and food technology teachers, in line with the multidisciplinary approach of the Engage4BIO method. A second potential activity is then addressed to fishery enterprise managers and fishery enterprise executives, while engaging education/research and citizens in the process.

As for the **Dutch Hub**, again a variety of audiences are considered, in line with the Hub’s overall approach of linking strongly learning and awareness-raising activities: students at secondary schools and middle vocational education, citizens, entrepreneurs and companies (including workshops for employees) in collaboration with VET providers (vocational education).

3.2.2.5 Integration of arts and design approaches into the co-created activities

The integration of arts and design practices in the co-designed activities proposed at this stage is not always obvious or as strong as observed in the co-creation process itself, as described in Part 1 of this report.

In some cases, it is embedded mostly through the participation of creative professionals or students from creative industries, like **in Finland** and **in Italy**.

In other cases, like **in Hungary**, the integration focuses more on the methods, for example, using design thinking, interactive workshops and playful learning, hands-on learning to promote critical thinking, problem-solving, and entrepreneurship, and tasting and sensory experiences. Similarly, **for the Dutch Hub**, the learning activities derive from the creative sector and other communities-based actions, such as gamifications, repair café, fashion fairs, simulations, etc.

Overall, we can observe a low engagement of representatives from this sector directly in the learning activities proposed.

3.2.3 Conclusions

As a general consideration, we see that most of the activities co-designed and foreseen are non-formal activities for adult learners. There seems to be a tendency to focus on a relatively young adult population, for the training activities proposed, while since the European population is aging, it is important to focus also on other target ages and on intergenerational learning and learners. Finally, it can be noticed that while any learning materials and programmes exist already on these topics, the core/added value of the Engage4BIO training activities is on the specific pedagogical approach and innovative instructional design, strongly based on a co-creation process, starting from Map and Gap analysis conducted also with the relevant stakeholders.

As for the future activities and implementation, opportunities to share methodological contents, learning contents and core materials across Hubs can also be seen as further development, while of course considering the differences in language and context, as

well as the use of good practices from other contexts in the implementation phase. Finally, from further reflection across the Hubs, it was also noted that the implementation of the co-designed activities in WP3 (in 2024/2025) may have the risk of reproducing the same core challenges identified for the co-creation process, for example in terms of engagement and participation of certain stakeholders groups, in particular in certain sectors, which constitute therefore also a recommendation to try to involve them more in the implementation phase.

3.3 Supporting awareness and knowledge gain

3.3.1 Horizontal analyses of the awareness-raising campaigns

The collaborative efforts within the five hubs have resulted in diverse outcomes in the co-creation of awareness-raising campaigns. These results span a broad spectrum of activities aimed at promoting awareness of the bioeconomy, encompassing both overarching bioeconomy themes and themes specific to each hub.

The campaigns undertaken within the project are designed to achieve several overarching objectives. For the Italian hub, the campaign is primarily centered around the implementation of novel communication strategies enriched by the integration of arts and design. Here, a key aim is to provide robust support to researchers, empowering them to effectively communicate diverse facets of the bioeconomy.

Through collaborative efforts involving citizens, young people, and industry representatives, the campaign fosters a collective exploration of the various dimensions of bioeconomy. Central to this approach is the aspiration to seamlessly integrate social, cultural, and scientific perspectives into the communication of bioeconomy themes. By doing so, the campaign seeks to transcend traditional boundaries, ensuring a holistic and inclusive dialogue. For the Finnish, Austrian, and Hungarian hubs, the core focus is on raising awareness and cultivating a critical understanding of the bioeconomy among the broader public. Through innovative and interdisciplinary communication methods, these campaigns aspire to not only inform but also engage and empower diverse audiences in navigating the complexities of bioeconomy-related concepts.

The detailed results of the process are collected in the so-called 'Blueprints for campaigns', which are further analysed in the following and attached as Annexes.

3.3.2 Core aspects of the campaign designs

In this section, the key aspects of the co-created campaigns are presented. This involves exploring how they connect to the challenges identified in the Map and Gap analysis, the communication strategies they use, and the main points they address. The identified target audiences are also detailed, along with the specific actions taken, and the artistic and design elements incorporated. Finally, a short conclusion section summarizes the main insights and lessons learned.

3.3.2.1 Connections to the Map and Gap analysis

The distinct gaps in understanding and outreach activities within the realm of sustainability and bioeconomy are identified as an overarching challenge for all hubs. For example, across

Finland, Hungary, and Austria, a common challenge is the lack of unified understanding regarding what sustainability and bioeconomy truly entail. The

complexity and diverse interpretations of bioeconomy pose a significant communication barrier, particularly with the current terminology on sustainability proving unclear and challenging for citizens to comprehend. In **Hungary**, a fragmented knowledge system was identified, further complicated by the perception that critical subjects, such as soil-related matters, may initially appear less engaging. Moreover, reaching out to economic operators, farmers, and larger companies presented difficulties. Similarly, in the **Dutch Hub**, the fragmentation among biobased textile sector and value chain (primary sector, industry, services) actors regarding sustainable strategies was mentioned as one of the key gaps, as well as the gap between scientific knowledge and its application. Also, the arts and design sector are not connected to main business activities within the region.

Addressing these gaps necessitates an enhanced focus on awareness raising, not only among stakeholders in the bioeconomy value chain but also extending to the broader population, as also seen in **Austria and Finland**. Additionally, there is a recognized need for improved science communication to convey research results effectively to decision-makers, companies, and society. **In the Italian hub**, the identified gaps center around the relationship between art, design, and the bioeconomy sector. It is stated to be crucial to explore and highlight the role of artists and the creative sector in supporting the bioeconomy. The need for activities fostering the participation of civil society and the quintuple helix is identified, as well as to development of new approaches that strengthen the connection between art, design, creative practices, and bioeconomy. **In the Finnish hub**, addressing gaps involves enhancing learning opportunities for designers on design thinking, business models, and regulatory environments.

A crucial aspect of tackling these gaps across all regions involves adapting language to cater to diverse audience groups, recognizing varied levels of familiarity, and ensuring tailored and accessible communication strategies to bridge comprehension gaps comprehensively and inclusively.

3.3.2.2 *Communication themes*

The co-created campaigns across the various regions showcase diverse communication themes tailored to address specific bioeconomy aspects. Each region's unique focus contributes to a comprehensive and nuanced exploration of bioeconomy, ensuring that communication is contextually relevant and impactful within their respective domains.

In **the Italian hub**, the focus revolves around the conscious and sustainable use of marine resources, emphasizing the reuse, recycling, and valorisation of waste from marine supply chains across sectors such as fashion, art, design, food, feed, cosmetics, and energy. In **the Finnish hub**, the focus is on communication about sustainable packaging, exploring the design, life cycle, end-of-life, recyclability, and composition of packaging materials. **The Austrian hub** emphasizes fostering a critical understanding of bioeconomy, differentiating it from the circular economy and recycling while delving into its role within the wood-based value chain. Communication activities extend to the role of bioeconomy materials in daily life, and the influence of actors along the wood-based value chain, including labelling, recycling, and optimizing side streams. **In the**

Dutch hub, the campaigns' focus is on the concept of bio-based textiles and the complexity of their value chain. Access to reliable information on sustainable textiles/garments and the effectiveness of storytelling in communication are also emphasized. Meanwhile, **in the Hungarian hub**, the central campaign theme is food, encompassing sub-themes such as the importance of soil health and quality, embracing slow living, and leveraging small, local community knowledge and capital.

3.3.2.3 *Goals of the campaigns (key points to address)*

The campaigns undertaken across the various regions share a common goal of advancing key aspects within the scope of bioeconomy. Each region's campaign goals contribute to the collective endeavour of advancing bioeconomy concepts and practices, aligning with the broader vision of sustainable and innovative transitions.

In **the Italian hub**, the campaign focus is on developing new best practices for applying bioeconomy concepts, with an overarching aim to promote the transition to bioeconomy. Similarly, in **the Finnish, Hungarian, and Dutch hubs**, the emphasis is on catalysing change in established practices by showcasing alternatives, consequences, and broadening perspectives. This transformation requires effective communication and collaboration, aiming to untangle the complexities of bioeconomy and make new best practices not only attractive but also practical by presenting concrete solutions.

The Finnish hub further prioritizes the communication of research results to decision-makers, companies, and society through dedicated science communication efforts.

Several hubs direct their efforts towards raising awareness of bio-based value chains (Austrian hub), the hidden, fragile, and depleting bio-based resources such as food and water (Hungarian hub), and concrete experiences through visual storytelling (Dutch hub). These hub's overarching themes are not only to promote bioeconomy but also to drive tangible shifts in practices, foster collaboration, and ensure the sustainability of bio-based resources.

3.3.2.3.1 *Target audience of the awareness-raising campaigns*

Through the map and gap analysis and vision workshops, several target groups crucial to the success of regional bioeconomy transitions were identified, aligning with the quadruple helix idea. **Rooted in the necessity** of interplay between the private sector, knowledge and research, government, and civil society, these target groups represent diverse perspectives and resources essential for the successful implementation, alignment, and acceptance of innovations. The identified target groups across the five hubs encompass art and design experts, teachers, and students, along with institutions, production/SMEs, non-profit organizations, decision-makers, researchers, and young adults. **In Hungary**, the inclusion of family farms, family businesses, and career changers highlights the comprehensive approach taken to involve a wide array of stakeholders. This holistic engagement with diverse target groups not only fosters collaboration across sectors but also ensures that the regional bioeconomy transition is informed, inclusive, and widely accepted, reflecting the interconnected nature of the quadruple helix model.

3.3.2.3.2 *Campaign action items and activities*

The diverse campaigns proposed by the five hubs embody a range of concrete action items, many of them building on strong collaboration and a platform-oriented

approach, (aligning with the campaigns' identified target groups). These initiatives showcase a commitment to implement activities with a 'platform' thinking, strategically connecting with existing organizations or events to maximize impact. The action items include immersive artistic performances, visual art installations, conferences, sustainability picnics, and cooking activities that engage the community, the establishment of visitor centers to enhance awareness, themed exhibitions, and the launch of theme weeks to amplify focus on specific aspects of bioeconomy.

Additionally, for example, the action item 'circular residencies' offers a unique space for sustained engagement, while web information platforms serve as dynamic repositories of knowledge. Furthermore, specific action items, such as bioeconomy challenges and design challenges spark creativity and innovation, while art and design workshops foster hands-on participation. Notably, the action of creating a learning environment within a museum underscores the commitment to education and knowledge dissemination. These action items collectively emphasize the power of collaboration and the strategic utilization of platforms to create a multifaceted and impactful approach toward promoting bioeconomy concepts.

The related activities within the bioeconomy campaigns showcase an array of specific art and design elements strategically aimed to amplify the impact of awareness-raising initiatives. These activities harness diverse mediums, including audio-video presentations that engage the senses, visually captivating imagery and graphic products, impactful exhibitions, and awards ceremonies, immersive expositions and installations, as well as cutting-edge VR/AR elements that bring bioeconomy concepts to life. Art performances, podcasts, and art and design laboratories further contribute to the multi-sensory experience. Testimonials should be emphasized in advertising efforts, while multimedia products tailored for students could create interactive learning opportunities. Showcasing the fusion of sustainability and creativity, show cooking events, artist residencies, and products designed to communicate sustainability aspects add a dynamic layer to the campaigns. Similarly, engaging videos and vlogs serve as dynamic storytelling tools, while theme-driven lectures and workshops provide in-depth explorations. Finally, the option of engaging in hackathons fosters innovation and collaboration, highlighting the dynamic integration of art and design elements to raise awareness of the bioeconomy in an impactful manner.

3.3.2.3.3 Art and design elements and implementation aspects

The campaigns across the five hubs incorporate a diverse array of specific art and design elements, ensuring a dynamic and engaging approach to raising awareness of bioeconomy concepts. These elements include interactive games, experience design to enhance participant engagement, the use of augmented and virtual reality, the application of design thinking methodology for innovative problem-solving, and the dynamic use of Pecha Kucha methodology for concise and impactful presentations.

Visual materials, including graphics and virtual tours, offer immersive ways to explore bioeconomy concepts. Physical installations, information points, and functional exercises provide tangible and hands-on interactions, contributing to a holistic understanding.

In summary, the proposed campaigns effectively utilize a strategic blend of art and design elements. The incorporation of event gamification, a strong emphasis on creating memorable experiences, visually depicting complex concepts, and the establishment of learning environments collectively underscore the hubs' commitment to a dynamic, engaging, and educational approach to promoting bioeconomy concepts.

In terms of implementation aspects, platform-oriented thinking is evident across regions, leveraging already existing target events (**Italian hub**), collaborating with national mega-events (**Finnish hub**), and establishing connections with industry platforms, specifically in the fashion sector, and existing institutions such as museums (**Dutch hub**). Additionally, the creation of newly curated events amplifies the reach and impact of the campaigns. Collaboration with experts and influencers adds credibility and ensures a well-rounded perspective, emphasizing the commitment to a comprehensive and impactful approach in promoting bioeconomy concepts.

3.3.3 Conclusions

In conclusion, the campaign designs across regions reflect a concerted effort to address the gaps identified in understanding and outreach activities within the sustainability and bioeconomy realms. From fragmented knowledge systems to the challenge of adapting language for diverse audience groups, each region has tailored awareness-raising strategies to bridge comprehension gaps and generate interest and engagement effectively. By focusing on themes such as sustainable packaging in Finland, marine resource utilization in Italy, or bio-based textiles in the Netherlands, these campaigns aim to catalyse change in established practices and promote the transition to bioeconomy. Central to their success is the engagement of diverse target groups spanning art and design experts, decision-makers, researchers, and young adults, ensuring inclusivity and collaboration. Through immersive activities, multimedia storytelling, and strategic partnerships, these campaigns demonstrate a commitment to dynamic, engaging, and educational approaches, ultimately advancing the collective endeavour toward sustainable and innovative transitions in the bioeconomy sector.

3.4 Innovative governance models for bioeconomy regional development

3.4.1 Innovative governance within Engage4BIO process

One of the co-creation workshops was entirely dedicated to feedback loops of innovative governance models, to create and shape participatory activities and formats aiming at supporting information flow to/of existing regional innovation processes and strategic development, or even initiate possibly new emerging policies and strategies; thus, moving towards a balanced regional governance and a complete regional innovation ecosystem.

The main objective of this step was to address and find ways to improve the management and coordination of the regional bio-based innovation processes and to ensure inclusiveness and engagement of all domains and relevant partners, to ensure initiatives and dynamics, and to ensure the uptake of initiatives (ideation) from early stages towards maturity (upscaling).

The topic is broad and can be applied differently in the E4B hubs, varying from the design of a new structure or an improved innovation ecosystem, to the definition of small measures or projects to improve some of the aspects, as enhancement of the capabilities and the engagement of partners, or strengthening the collaboration among partners.

Governance capacities are understood as the collection of structures, processes, and capabilities.

Innovative governance is needed to implement the European Green Deal objectives and the new frame of mission-driven innovations, with a focus on the transformation process towards regional bio-economies, to be seen as a collective responsibility and collaborative effort. In fact, all domains are needed in the quadruple helix interplay: public and private sector, knowledge domain, and society. Representation and participation are needed as well in the governance structure within the region, as well in the processes on strategic and operational levels, as well to optimally apply the various means and capabilities from the different domains and from partners in the regional networks of bioeconomy.

Structures

- Organization of the regional innovation ecosystem.
- Quadruple helix interplay – connect the domains.
- Connect the Value Chain.
- Set up support services, intermediate organizations, and create facilities.

Processes

- From vision to implementation.
- From ideas to innovations and new applications.
- From biomass or waste to sustainable carbon neutral resources for different sectors to manufacture consumer products, to transform from fossil-based to biobased and to circular economies.

Capabilities

- Understand the needs for transition, put the mission central in the strategy of the region and in the strategy of committed organizations.
- Make the strategy operational, at the level of committed partner organizations and at the level of the region.
- Collect and attract resources for the transition from all domains.
 - o Capacities, Human capital.
 - o Finance, funding, investment.
 - o Knowledge, research, learning, education.
- Create dynamics.

Examples of potential outcomes for the output of this process are the development of a roadmap for improving the regional management; the definition of directions of completing the regional innovation ecosystem; development of new ways of collaborative working; new collaborative initiatives and/or agreement on principles of good governance and guidelines for regional operators and innovation developers on innovative governance models supporting particularly balanced regional potentials and innovation.

The detailed results of the process are collected in the so-called 'Innovative governance models', which are further analysed in the following and attached as Annexes.

3.4.2 Horizontal analysis of innovative governance models

In all hubs, the workshop seemed to be a good starting point for discussing the innovative governance challenges at the regional level. However, it is important to note that these workshops should be viewed merely as starting points. Often, time constraints and/or the limited representation of partners hindered the ability to reach a common conclusions or gain clear insights into improvements or measures.

Nonetheless, all regions have succeeded in defining directions and in planning follow-up activities aimed at enhancing governance. And partners have articulated intentions to be part of these follow-up initiatives. Most of the activities that have been developed in the co-creation workshops, focus on follow-up discussions and formulation of strategies, on improving the interplay among the domains including public sector, private sector, knowledge sector, while also addressing the less represented and articulated domain of civil society). Additionally, efforts are directed towards improving collaboration within the value chain.

Some regions have indicated initiatives to build platforms and organize events, to strengthen communications about regional bioeconomy opportunities, in order to arrive at a common understanding and common initiatives. In Hungary, existing projects have been identified which can be used as a driver to optimize the governance for regional bioeconomy uptake. There is a particular emphasis on to raising awareness and effectively communicating the benefits of bioeconomy. Furthermore, efforts are being made to translate these benefits into criteria and government regulations as observed in Finland.

Innovative governance is rarely the focal point of discussion in regional bioeconomy networks. Regional governance encompasses a wide range of relevant aspects simultaneously. Every regional Engage4Bio Hub is in a unique stage of their development and every Hub has different organizational structures, frames and ways of working, depending on their state establishment, their history and their cultural values. However, we can observe that the Hubs have applied the conceptual framework and have used the most relevant aspects depending on their specific situation, their needs and the relevant next steps to improve the regional governance, in order to create important conditions for bioeconomy uptake.

Within the **Dutch Hub** there are already some dynamics and initiatives on circular textiles, but very fragmented among the different domains. Also, the focus of the regional approach is missing. So, the main issue of innovative governance is to commonly determine the smart specialization, and to discover the comparative advantages of the region, over other regions. And to connect the value chain partners, connect the designers with the private sector, and improve the quadruple helix interplay within the region.

Within the **Hungarian Hub**, the term innovative governance is completely new. The workshop was dedicated to discovering the concept and the definition and to find out the relevant aspects for the specific situation in the country and in the region, as well to discover how to improve the governance, how to connect the different scales (local – national) and how to collaborate among partners.

The **Finnish Hub** is focusing on connecting with the value chain partners, recognising that the sustainable packaging cluster represents only one segment of the chain. In addition to this objective, the network partners have defined the aim to stimulate biobased and circular economy, with the focus on the utilising and processing natural fibers and biobased chemicals in packaging, This will be achieved through collaborative efforts to develop clear criteria for sustainability and circularity, effective communication, and advocating for a supportive regulatory framework.

In the **Austrian Hub**, the focus of the discussion was on awareness and on communication among partners in the value chain and to arrive at a common understanding. Also highlighted were the need for better alignment of the knowledge partners and the researchers on bioeconomy with the value chain partners and the cluster organization, in order to bring the knowledge and capacities on the regional potentials of sustainable, circular bioeconomy together.

Finally, in the **Italian Hub**, there is a need for better connections and interactions among the different domains of public sector, private sector and knowledge (research and education). More support is needed to optimize the interplay between the domains on the improvement of the sustainability of the fishing industry and the circular economy.

3.4.3 Conclusions

Innovative governance, the definitions, the aspects and the underlying concepts are not often discussed among partners in regions. Partners in the regions seem to be not

that familiar with these concepts. Innovative governance is a relevant but difficult subject for discussion and co-creation.

Regions need more time to deepen the aspects of regional governance; not all regions have arrived at clear and concrete activities. It is mostly seen as a starting point to work on the improvement of the governance and to complete the networks within the regional bioeconomy.

It seems to be difficult to address the regional problem of governance, as there is no central organization that is responsible for regional innovations. The success depends on interplay and the synergies between various organizations representing the different domains, on the commonality of directions and on the dynamics the partners are able to create.

Various concepts and perspectives are relevant at the same time, such as collaboration, specialization, innovation, strategies and implementations, and managing the innovation ecosystem, which should be made operational.

Bridging the domains is not easily done. Active brokers are needed to create initiatives and collaborations. Also, alignment, at strategic and at operational levels, will be needed to ensure cooperation and to make the means available from different organizations, in order to create synergies.

In every workshop, new participants show up, who need to be informed about the project and the Hub activities. The community is growing. Partners will have to keep people and partners involved, by informing them and including them in the activities.

4 Conclusions

The results of the co-creation workshops, in terms of processes, have put in evidence similarities across the Hubs and relevant aspects for lessons learnt and recommendations.

In terms of integration of arts and design in the co-creation activities, we can conclude that all Hubs embedded a variety of practices originated from creative practices and also specific practices from the fields of arts and design in their methods, even if with different levels or impacts. On the other hand, we can observe that the engagement and participation of stakeholders representing creative industries and/or with creative roles within other sectors' stakeholders in the co-creation process was not fully linear.

As for the formats of the workshops, it can be observed that there was quite some diversity, while all Hubs were able to align with the core principles of co-design activities and produce relevant results, for each phase of the process. We can then here conclude that a good level of flexibility in the formats is fundamental to adapting the processes to the local context and ensuring feasibility and relevance for the specific stakeholders involved.

Finally, in terms of the dynamics of the activities, it emerges clearly also that a significant effort must be dedicated to creating safe spaces for exchange and to support positive group dynamics, even if, in some cases, this constitutes a trade-off with the level of depth of the discussions and with the level of complexity and elaboration of the results and solutions identified. It is clear that the familiarity of the participants in relation to the topics, the co-creation processes and each other represents the most important aspects to consider for planning and implementing this kind of process (in sum, the maturity level of the ecosystem where the Hub operate in relation with the core purposes of the project/Hub development). In this sense, enabling and facilitating the ecosystem dynamics to evolve can become the main purpose of such activities, at least in the initial phase of such co-creation process. Again, in this sense, for future activities, we can recommend allowing enough time for the overall process to unfold.

In terms of results and outputs and therefore of potential activities for implementation, it can be observed that there is a wide range of solutions and approaches developed by the Hub, while again similarities can be observed in terms of general aspects and processes.

It was clear that the Vision and Strategy process cannot be carried out without knowing the local circumstances. Accordingly, thorough mapping must precede the visioning process. Stakeholders from all sectors should be involved, in order to have different views represented. Although Engage4BIO hubs represent different value chains, their vision cannot be independent of the general local conditions. Cooperation with actors of other value chains and being embedded in the overall local ecosystem are inevitable. Finally, visions of the five different Engage4BIO hubs proved that arts and design can be an excellent

way to support reaching the hub objectives. The added

value of arts and design-related activities and approaches have not been exploited so far, which should be changed in the future.

For the training, as a general consideration, we see that most of the activities co- designed and foreseen are non-formal activities for adult learners. There is a noticeable emphasis on targeting a relatively young population, for the training activities proposed. However, given the aging demographic of the European population, it is important to focus also on other target ages and on intergenerational learning and learners. Finally, it can be noticed that while any learning materials and programmes exist already on these topics, the core/added value of the Engage4BIO training activities is on the specific pedagogical approach and innovative instructional design, strongly based on a co-creation process, starting from Map and Gap analysis conducted also with the relevant stakeholders.

The campaign designs supporting awareness and knowledge gain across regions reflect a concerted effort to address the gaps identified in understanding and outreach activities within the sustainability and bioeconomy realms. From fragmented knowledge systems to the challenge of adapting language for diverse audience groups, each region has tailored awareness-raising strategies to bridge comprehension gaps and generate interest and engagement effectively. By focusing on themes such as sustainable packaging in Finland, marine resource utilization in Italy, or bio-based textiles in the Netherlands, these campaigns aim to catalyse change in established practices and promote the transition to bioeconomy. Central to their success is the engagement of diverse target groups spanning art and design experts, decision- makers, researchers, and young adults, ensuring inclusivity and collaboration. Through immersive activities, multimedia storytelling, and strategic partnerships, these campaigns demonstrate a commitment to dynamic, engaging, and educational approaches, ultimately advancing the collective endeavour toward sustainable and innovative transitions in the bioeconomy sector.

Innovative governance definitions and the underlying concepts are not often discussed and partners in the Engage4BIO Hubs regions seem not to be very familiar with these concepts. Regions need more time to deepen these aspects and not all Hubs were able to define clear and concrete activities. This phase of the co-creation process is mostly seen as a starting point to work on the improvement of the governance of the regional bioeconomy. One of the main challenges seems to be also that there is not a central organization responsible for the regional innovations and achievements in this area depends on the interplay and the synergies between various organizations representing the different domains, on the communality of directions and of the dynamics the partners are able to create. Finally, bridging the domains is not easily done. Active brokers are needed to create initiatives and collaborations and alignment will be needed, at strategic and operational levels, to ensure cooperation and to make the means available from different organizations, in order to create synergies.



5 Appendix

5.1 Annex 1 – Co-creation results

5.1.1 Pathfinder Manuals



Pathfinder manual for the Austrian Engage4BIO hub

Consortium:



Bay Zoltán
Nonprofit Ltd
for Applied Research



EUROPEAN ASSOCIATION
OF APPLIED RESEARCH



MOHOLY-NAGY
művészeti egyetem
university of art and
design budapest



University of Applied Sciences



Funded by
the European Union

 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



1 Introduction

The following section deals with the vision pathfinder for the Austrian Engage4BIO hub. The vision pathfinder document is building on (1) a “map and gap” analysis (see Deliverable 2.1) conducted in the well-connected regions Upper Austria, Styria and Salzburg and (2) on the results of a one-day vision-building workshop, which took place on the 20th of April 2023 in Linz.

(1) Results of the map and gap analysis

The Austrian Engage4BIO hub aims to enhance the circular bioeconomy along the value chain of wood and interior. Particular attention is paid to the integration of all components of the value chain, as there seems to be a lack of awareness for the bioeconomy among actors of the value chain in the region. The findings of the map and gap analysis in the Austrian regions are quite promising and indicate a strong foundation for the development of a thriving bioeconomy ecosystem in the region. Here are some key takeaways from the analysis:

1. **Diverse company network:** The hub benefits from a solid network of diverse companies that are engaged in various aspects of the wood-related bioeconomy value chain. This diversity suggests that the region has a comprehensive coverage of the bioeconomy spectrum, which can contribute to a resilient and versatile ecosystem.
2. **Value chain integration:** The involvement of companies across the value chain of the wood-related bioeconomy suggests a holistic approach to utilizing wood resources sustainably. This integration should be strengthened, as it is crucial for optimizing resource utilization and minimizing waste.
3. **Initiatives supporting awareness:** The establishment of numerous initiatives, events, fairs, and activities focused on circular bioeconomy reflects a commitment to promoting sustainability-related topics. These activities can raise awareness, foster collaboration, and display innovative practices within the bioeconomy domain.
4. **Support for transition:** Companies' need for increased support, including funding, during the green and digital transition is a common challenge faced by regions transitioning towards sustainability. Addressing this need is crucial to ensure that companies can effectively adapt to changing market demands and technological advancements.
5. **Multi-stakeholder engagement:** The presence of various types of cooperation, such as between companies, companies and designers, and designers and universities, indicates a multi-stakeholder approach to bioeconomy development. Clear commitment and collaboration among stakeholders are essential for driving meaningful progress.
6. **University education:** The existence of well-established university courses related to

sustainability, circular economy, and green and eco design demonstrates a

dedication to educating the next generation of professionals in relevant fields. This can contribute to a skilled workforce that is equipped to drive bioeconomy innovation.

7. **Gap in adult education:** While university-level education is strong, the absence of a focus on bioeconomy in adult education suggests a potential opportunity. Incorporating bioeconomy-related content into adult education programs could help upskill the existing workforce and foster continuous learning.

Overall, the analysis points toward a hub in Upper Austria that is well positioned to excel in the wood-related bioeconomy sector. The strengths in networking, collaboration, education, and sustainability initiatives provide a solid foundation for continued growth and innovation. However, strengthening governance, raising awareness, addressing the gaps in education and providing the necessary support for the green and digital transition will be important for the hub's sustained success.

(2) Co-creation workshop on vision building

The Austrian vision-building workshop was a one-day workshop (from 9:00 to 16:30) which aimed to collaboratively define a clear and shared vision for enhancing regional bioeconomic value chains in the field of timber construction and interior design. Three distinctive vision areas were in focus: (a) vision for innovative regional governance to advance the field, (b) vision for educational opportunities to strengthen the region, and (c) vision for effective awareness raising within the region. The workshop followed three distinctive key phases; (1) participants first were confronted with the present situation; insights from the map and gap analysis were shared. In this first phase, participants had the opportunity to provide feedback on the results. (2) In the second step, participants created visions for the upcoming five years in the above-mentioned areas (a, b and c). (3) In a third step, participants outlined concrete steps and activities toward the visions. Participants formed breakout groups in phase (2) and (3) to intensively work on one of these areas. In plenary sessions, ideas were exchanged, validated, and improved. The workshop structure encouraged lively interaction, probing, and idea discussion through interactive methods. Participants were also given quiet time to generate ideas individually or in pairs before sharing them collectively. For more detailed information on the workshop please look at the workshop report.

2 Hub vision and strategic aspects

Within this chapter, we delve into the outcomes derived from the vision workshop, and its three fundamental areas of vision development; namely (1) governance, (2) education and (3) awareness raising. Each sector articulates its distinctive vision, establishing a preliminary framework infused with initial concepts for potential endeavours. These outcomes will be integrated into the forthcoming series of co-creative workshops, synergising with the findings from the map and gap analysis phase. The components collectively outline the groundwork for charting our path towards a sustainable future.

2.1 Vision and strategy approach for innovative governance

- *"In five years, the political, legal, and economic framework will facilitate the establishment of regional cycles and new business models. Awareness of product reusability will be integrated, and companies will assume responsibility for their actions, encompassing products, processes, and social aspects."*

Future sentence for innovative governance

The group agreed that the success of the governance system and the achievement of the vision within five years depends on the active involvement of three key actor groups:

(1) Politics and administration at all hierarchical levels, (2) intermediary organizations including cluster organizations, research and development entities, and (3) enterprises and businesses. The group underlined that while acknowledging their importance and potential leverage to achieve change end consumers were not the primary focus.

The proposed steps, measures, and approaches were diverse yet interconnected. The discussion revolved around determining initiators, the mechanics, the impact, and the roles each actor should assume concerning these activities. Key points discussed for different actor groups:

Intermediary Actors

Role of Intermediary Organizations: Facilitate experience exchange, awards, and cooperation processes, connect politics/administration with companies, plan excursions and networking events, promote better trust and networking.

Strengthen intermediary organisations to stimulate shifts in business models. It was noted

that change is often limited when businesses are doing well, hence intermediary organisations need to play an active role. Establish "good practice" examples and

transparently present challenges and solutions. Lack of transparency in highlighting barriers and failures was recognised.

NGOs should plan and execute actions to draw political attention, accompanied by media coverage and raise awareness about lighthouse projects.

Research institutions should collaborate on developing new business models, particularly in traditional sectors like wood. Encourage change in traditional structures through showcasing examples and offering possibilities.

Politics

The future vision needs to be incorporated into regional and local policies and strategies ("*Standortstrategie*"). A legal framework adjustment is required to increase resource efficiency by 30%. National and federal governments/parliaments need to enact these regulations. All funding, organization alignments, educational financing, and cooperation should be based on these policies. Funding should incentivise and facilitate collaboration among small/regional businesses.

Enterprises and business

The participants stated that encouraging companies to take responsibility is challenging, especially in larger corporations. For intrinsic responsibility, education might be effective, but success is more likely in smaller, family businesses that are not noted on the stock market. Some companies prioritise short supply chains and sustainable materials.

Trust-building projects and processes are crucial among companies. Trust deficit is a common issue; many initiatives fail due to the inability to initiate joint changes. Initiatives like sharing product data and component information face challenges due to competitive concerns.

Lighthouse Projects funding is necessary for implementing lighthouse projects. Companies and intermediary organizations should lead these projects in areas such as traceability, life cycle assessment, service development, product development, and recycling.

Conclusion

In summary, it was recognized that achieving sustainability in industries using chipboard and wood composites presents a complex challenge. The group collectively concluded that a comprehensive and multi-faceted approach, involving a variety of stakeholders and strategies, is necessary to drive sustainable change within the targeted timeframe.

Regarding the spectrum of change, participants expressed that the steps they proposed are likely to result in incremental improvements rather than the transformative change that might be required. As one participant put it, these steps "*clear obstacles but do not*

pave the way." A potential avenue for radical change could be driven by directives from the EU, such as mandating a 30% increase in resource efficiency by 2030. The group noted that the EU tends to be bolder in such matters compared to Austrian politicians.

However, such an approach would necessitate a widespread movement, demanding greater efforts in awareness raising and education. Participants acknowledged that while the public may not have an assigned role on the bridge, their pressure and demand for radical change are pivotal factors in pushing for such transformation.

2.2 Vision and strategy approach for training and mentoring

"In five years, education will - through immersive and tangible formats - enable a collaborative, self-empowering experience that strengthens a regional sense of identity, involving all stakeholders within the region."

Future sentence for training and mentoring

The educational breakout group primarily focused on the broader approach of education and its societal or regional impact. The prevailing sentiment was that education should be shaped in a way that it becomes a personal, immersive experience, to ensure lasting implementation. Currently, traditional education places significant emphasis on theoretical inputs. Therefore, the group recommended a comprehensive analysis of the existing education-bioeconomy landscape and the exploration of engaging formats for all stakeholders.

A pivotal point was the utilization of pre-existing educational structures, excluding schools. Participants believed that schools are inundated with requests for innovative topics. Instead, they suggested employing structures for young individuals during their leisure time (such as clubs or meeting points).

Lobbying emerged as a vital third aspect. Leveraging established media serves as a central strategy for educating individuals of all ages, albeit requiring tailoring to specific target demographics (such as identifying influencers for youth through social media, and relying on articles or radio for older individuals). Lobbying efforts led by influential figures like politicians or notable personalities were identified as major steps towards fortifying the bioeconomy in the region. This particular suggestion overlaps with awareness raising.

An essential focal point was also locating multipliers and providing them with training in bioeconomy and sustainable development. This approach could reach a substantial number of individuals.

Notably, the necessity for tangible formats that foster collaborative, self-empowering learning was emphasised. The collaborative facet was particularly highlighted as crucial

for sustainable development and quality of life, extending beyond the realm of education. A successful educational strategy could involve reinforcing community and community-based models, enabling community members to educate, share, and nurture the bioeconomy.

2.3 Vision and strategy approach for awareness raising and knowledge gain

"In five years, people of Upper Austria are familiar with, knowledgeable about, and comprehend the Upper Austrian value chain, being able to trace its components. They possess a clear and well-informed understanding of resource consumption, scarcity, and availability. Everyday life incorporates a grounded

The *educational*
audience

Future sentence for awareness raising and knowledge gain

During the process of gathering ideas and requirements to realize the future vision, participants recognized the importance of raising awareness among stakeholders in the value chain who might lack awareness of their roles, such as wood owners. They emphasized the need to enhance networking among these individuals and help them grasp their impact. To address this, they suggested interactive workshop formats, taking into account the conservative tendencies of the Austrian target audience.

The group highlighted the significance of establishing shared goals, resources, and responsibilities among these actor groups. They put forth the idea of organizing events like citizen dialogues, involving influential figures from the Austrian community to foster engagement. To broaden the topic's reach and acknowledge diversity, the group agreed on involving a wider range of actors. They compiled a list of networks to access different target groups, including tourism, hiking, forest-related associations, and various affiliations. The focus of awareness-raising initiatives could centre around the question, "Where is wood contained?" Children, young adults, and journalists were noted as pivotal audiences for such efforts.

Tailored formats specific to target groups, including planning games, gaming materials, and excursions, are suggested for development using existing resources. Notably, media coverage, especially on topics like bioeconomy, timber construction, and interiors, was seen as highly significant. Participants stressed the importance of clarifying terminology, suggesting that the understanding of the term "bioeconomy" should be rooted in

research and linked to more familiar concepts like "thunderstorms" or "heat." These clarifications and definitions would be adapted for diverse target groups.



Pathfinder for the Finnish Engage4BIO hub

CLIC Innovation Ltd

Head of Bioeconomy Aila

Maijanen

aila.maijanen@clinnovation.fi



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Pathfinder manual

Introduction

The development of sustainable packaging is driven by a variety of opportunities and challenges. The expectations on packaging and its sustainability are often conflicting. Acceptance of fibre-based materials is critical. This depends on how consumers, brands, retailers, and regulators perceive the role and value of sustainable fibre-based packaging in the future. Importantly, agreed definitions for key terms should be established. The regulatory environment presents both opportunities and challenges due to its drive towards sustainable packaging and its unpredictability. Sustainable packaging development in the Finnish hub relies mainly on new and recycled wood-based fibres and biobased chemicals as feedstock. Both public and private funding sources are available for the development work. Specific facilities include research and piloting environments in the universities, research organizations and companies.

Bringing sustainable packaging innovations to market requires a seamless path from ideas to commercialisation. This requires interdisciplinary expertise in materials and technologies, design, economics, business strategies, engagement of customers and consumers and an in-depth understanding of application areas. Innovation should be driven by business cases that concretise opportunities and impacts, both on the business and society. New actors must emerge to increase cross-industry collaboration, challenge the status quo and promote holistic learning across the whole packaging value chain.

Design could support the shift to sustainable packaging, making them more understandable and meaningful. Sustainable design could support a user-driven and co-creative development approach, as well as holistic system design and encouraging customers to move from linear to circular models and practices.

Currently, learning opportunities on sustainable packaging are highly fragmented and learning activities are mostly lacking. Several learning activities have been identified to fulfil the critical gaps in consumer awareness, communication and design skills, innovative experimentation, EU regulatory follow up, innovation, and collaboration skills.

The scope of the Engage4Bio vision and strategy workshop was to develop a Pathfinder manual for the Finnish hub and engage the relevant stakeholders in the co-creation processes of sustainable packaging. The structure of the vision building workshop was divided into three parts:

1) Introduction, 2) Findings from the map and gap analysis, and 3) Visions for the future. In the first two parts, all workshop participants attended the first two parts, while the last was conducted in three parallel groups. Both digital and non-digital tools were used to ensure that the interaction flow was as fluent as possible. Padlet-software, post-it notes, and printed material were available.

The ecosystem purpose canvas from [CLIC Open innovation Playbook](#) was used to obtain the objectives of the vision-building workshop and identify the key characteristics of the three co-creation processes, i.e., training & mentoring, governance models and knowledge gain & awareness. The canvases were pre-prepared by the workshop organizers to inspire the discussion in small, parallel groups. The vision work from the existing [4Recycling ecosystem](#) was used as a basis for the discussion. The Gallery walk method was used to ensure that the subgroups shared their work, and more content could be added to the existing group work.

Hub vision and strategic aspects

1.1 Vision and strategy approach for training and mentoring

1.1.1 Vision (2030) for Training and Mentoring:

The vision for training and mentoring focuses on training and informing all the sustainable packaging value chain actors. Training and mentoring should be based on the joint criteria for sustainable packaging that the value chain actors have established.

Key elements of the vision include the following strategic aspects:

- Value chain actors have a common understanding regarding the interpretation of the related regulation
- The actors have a joint web site for the key information
- Sustainability has become a value increasing factor for a product or service

1.1.2 Activities for 2025-2027-2030 to reach the vision and to build strategy.



1.1.3 Activities for 2025-2027-2030 to reach the vision and relevant stakeholders

1. Establish a regulation training for all value chain actors as well as decision-makers and regulators. This should include a regulation update and discussion regarding its interpretation. The activity should be organized by 2025.
2. Establish a common regional sustainable packaging criteria with all value chain actors. The activity should be organized by 2027.

decision-making.

The stakeholders for these activities include all sustainable packaging value chain actors (from different companies to end users), regulators, decision-makers, and education providers, thus consisting of quadruple helix actors.

1.2 Vision and strategy approach for awareness raising and knowledge gain

1.2.1 Specific vision as identified in the workshop:

The vision for awareness raising and knowledge gain focuses on changing the old practices and way of thinking by promoting collaboration and enhanced communication across the whole packaging value chain. Research results should be communicated clearly and understandably to decision makers, companies, and society.

Key elements of the vision include the following strategic aspects:

- Digitalisation and data utilization: By 2030, there will be a strong focus on digital methods and data to support management of product and (sustainability) handprint data. Communication about recycling guidelines can be improved e.g., by implementing QR codes in packaging.
- “Enlightened consumer”: The objective is to build increased awareness and knowledge, and organize training programs to educate consumers on concrete measures “what, where, how” they can contribute to sustainability efforts. By increasing consumer awareness and transparency on current environmental situation, this initiative will create pressure for positive change.
- Design thinking: Design thinking will support creation of new collaboration within value chains; continuously identifying missing components of the value chain and promoting their incorporation.

1.2.2 Activities for 2025-2027-2030 to reach the vision and relevant stakeholders

- Awareness raising campaigns: Implement campaigns to educate the public about proper recycling practices and provide support for sorting waste. Organize national awareness weeks in schools, companies, and events to promote recycling initiatives by 2025.
- Visiting areas in recycling centres or VR visits: organise physical or virtual visits to recycling centers to increase transparency and knowledge about their operations by 2027.
- Collaboration with influencers on social media: Partner with social media influencers to spread awareness and advocate for sustainable packaging practices and recycling by 2027.
- Handprint and product data: collect and utilize data on product environmental handprints by 2030.
- Biodesign exhibitions: host exhibitions on biodesign e.g., in museums, universities, schools, libraries, and companies by 2030.

Relevant stakeholders identified in the workshop:

Decision makers, consumers, schools, museums, libraries, municipalities, universities, Finnish Heritage Agency, communications organizations (tv, radio, newspapers etc), society demand, gaming industry, social media influencers, research institutions, and operators (companies); specifically, the communications departments of research institutions and companies. The Engage4BIO consortium will also play an important role in driving these initiatives forward.

1.3 Vision and strategy approach for innovative governance

1.3.1 Vision (2030) for innovative governance models

The vision for innovative governance models is to have the entire value chain involved in building the innovation pathway from ideas to commercial exploitation. Motivation and commitment of all stakeholders of the quadruple helix needs to be ensured. Joint target of the ecosystem is to accelerate the shift towards sustainable packaging practices in Finland, with clear criteria, effective communication, and a supportive regulatory framework in place by 2030.

1.3.2 Activities for 2025-2027-2030 to reach the vision and relevant stakeholders

2025:

- Jointly developing a communication strategy as an integral part of the project
- Creation of shared sustainability criteria, which are adopted by all stakeholders, and developed and tested based on research.

2027:

- Continuously improving communication efforts targeted at different stakeholder groups.
- Creation of collaborative working space to support the management of transition in regional governance and enhance engagement of all stakeholders

2030:

- Market making: Influencing upcoming regulations and the regulatory environment to foster a market for sustainable packaging
- Science-based sustainable packaging indicators are being used by the relevant organizations from raw material suppliers to manufacturers, distributors, and retailers

The group acknowledged the absence of common science-based criteria and metrics for sustainable packaging in Finland. To address this gap, a project funded by external support would be essential to develop these criteria. The development process would involve thorough research and collaboration with companies to refine and test the criteria. By the year 2030 the indicators for sustainable packaging would be widely used and integrated into business practices across Finland.

At the same time, we want to focus on effective communication to raise awareness and drive behavioural changes to minimize the environmental impacts of packaging to the nature. The quadruple helix model approach to tackle the challenges will ensure that the systemic change happens, and all necessary parties are involved. We need to create impact and work towards sustainable regulatory environment throughout the process.

The stakeholders involved in these activities include companies throughout the entire value chain, regional decision-makers, government entities, research organizations, educational institutions, industrial federations, and food producers.

Contact and information

For further information about this activity and report, please contact:

- For all activities, CLIC Innovation Ltd, Eteläranta 10, 00130 Helsinki, Finland. Head of Bioeconomy Aila Maijanen, email: aila.maijanen@clinnovation.fi
- For training and mentoring part, Metropolia University of Applied Sciences, Mona Roman, email: Mona.Roman@metropolia.fi



Engage4BIO


Consortium :



ArtEZ



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Pathfinder manual for Italian Engage4BIO hub

UNIPA and APRE



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Pathfinder introduction

- **Key results of the map and gap analysis and how the results were used to create the vision**

The current state, the potential and the directions of the blue economy in the Italian HUB, were analysed by the map and gap (M&G) analysis.

Thanks to this approach, the Italian HUB was able to describe and understand the level of involvement, maturity and needs of the stakeholders of the blue bioeconomy sector, at regional level, for transition in the nearby future, by defining and analysing the potential for regional bioeconomy developments, knowledge and innovation and, at the same time, to focus on the gaps that limit the development.

Thanks to the canvas methodology, a framework to think and act, for future development scenarios towards a regional bioeconomy, was realized.

From the understanding of different concepts and needed actors in the M&G analysis, we identified the stakeholders belonging to the four prospective of the project: bioeconomy, regional development, art & design and lifelong learning. On the basis of these perspectives, questions for the interviews were selected and divided into 4 canvasses and interviews were set, or face to face or by online surveys.

The M&G analysis showed that the enterprises of the blue sector, in Sicily, are mostly grouped in association of producers, district, mostly represented by fishery and fish processing plants, highly concentrated in Western Sicily. This mapped situation highlighted that consequently, the production of marine by-products from fish processing plants as potential to be valorised in circular economy pathways. This opportunity could be supported by the role of the scientific partner UNIPA that has yet developed processes and technologies (from pilot to real scale, TRL 6-8), for the valorisation of marine by-products and sidestreams in new processes and products (Messina et al., 2022 a, b, c; Arena et al 2023). Nevertheless, Sicily, as the whole Italian region, miss a centralized systems able to coordinate, harmonize and address the use of biomasses from fishery and processing industries, to end-users (biorefineries, enterprises); furthermore, the marine biotech is poorly represented in Italy and growth opportunities for companies belonging to this area are not sufficiently guaranteed.

For the regional development of the bioeconomy sector, Italy can boast a strong public science base for bioeconomy implementation, even if investments in research and innovation remains below the European average. The actors involved in the regional development of the blue bioeconomy belong to private companies, university, research sector, etc. but links between industry, research and society are still underdeveloped.

Since the dialogue and cooperation among the different sectors take place thanks to specific projects and programs, in line with the blue bioeconomy trajectories, the interaction among actors should be improved by common guidelines, further investments, policies actions and strong communication campaigns.

Promotion of art & design activities linked to the biobased sector is at an early stage in Sicily, due to a low level of maturity in exploring the relationship between art, design and bioeconomy. The island that hosts the biggest Italian marine protected area, supports tourisms, recreational activities, music, food festivals and art exhibition (tuna festival, couscous-fest) and could take advantage of the increasing number of projects promoted by the European Union on “Creativity, Design, Made in Italy” aiming to create new arenas for arts and aesthetic approaches in the civil society and to develop targeted communication strategies, able to intercept curiosity and creativity.

The M&G analysis has highlighted an ongoing adoption of bioeconomy practices in training programs as more and more initiatives, related to this topic, are promoted for specific training courses at universities and project level; however, to improve the gaining of roles and skills in the blue bioeconomy sector, new updated teaching programs are needed, together with adult education (training for professors) and more efficient communication strategies. In this regard, the Italian HUB could rely on the strong support of APRE, that is really expert in conduction of awareness campaigns and co-creation events related to blue-bioeconomy.

From the Map and Gap analysis the Italian hub, discovered that to create the vision, it is necessary to reinforce the collaboration among industry, research and education sectors. It is also important to develop new knowledge and technologies for marine sustainability and new professional figures with specific skills in blue bioeconomy Furthermore, the improvement of the role of artists and creative sector and their involvement in supporting bioeconomy is needed.

- **Participants and engagement approach**

The invited participants were selected from representative stakeholders of the regional blue bioeconomy sector: research, education, local Authorities, students, civil society and enterprises (represented by single SMEs, association of producers, productive clusters and FLAGs). To start to map the role of art and design at social level in the territory, experts of the same sectors were invited.

The local bioeconomy vision and strategy approach in the Italian hub was built by co-creation activities and all the involved participants (an average of 35 per day), representing 17 different organizations, took actively part in the workshop.

- **Description of co-creation activities**

The organization of the workshop started almost two months before, following the WP leader guidelines: individuation and selection of the stakeholders, definition of the co-creation activities, drafting of the event posters and other communication material, definition of the registration form and detailed agenda. Invitation letters, information sheets and registration links were sent to invited participants approximately one month before the event.

The workshop was organized into two days. The first day started at 9.00 am and lasted until 04.00 pm, organized into: workshop introduction (goals, activities, presentation of the facilitator teams and roles), project presentation, M&G analysis results of the Italian hub and starting of the co-creative activities supported by facilitators belonging to the education, art & design, research, governance and enterprises sectors of the blue value chain. For the launch of co-creative activities post-it were distributed to collect notes to be fixed on a flipchart divided into 6 quadrants: education, art & design, institution, civil society, enterprises and research. After lunch break, a Live Pool of 8 questions & answers was conducted by SLIDO platform.

During the second day, a large part of the morning was dedicated to the opening ceremony of the co-jointed event “European Maritime Day in my country”, projecting the Live Pool questions & answers conducted the day before by SLIDO, in order to promote a debate on the topic, to create the vision.

In the afternoon, participants were invited to the old city center in Trapani to a guided visit in an emblematic historical place in Trapani, linked to history, art and sea: Torre Ligny museum (<https://comune.trapani.it/turismo/torre-di-ligny/>). In the same period the museum was hosting a photographic exhibition on the saltpans protected area of Trapani and Paceco (Western Sicily) and its role both in salt production and in the conservation of migratory species, attesting the pivotal role of art in transferring messages to the citizens, related to the sustainability of local value-chains.

Afterwards, the participants walked together across the old city center to reach the Marine Biology Institute, where the laboratory of UNIPA teams is located, and ; the staff had prepared a guided tour in form of “laboratory experience” , showing the main technical steps, necessary to turn fish wastes in value added compounds in the blue biobased value chain: some examples of production of functional foods and cosmeceutics were showed, thanks also to the participation of two targeted enterprises connected to the lab.

Hub vision and strategic aspects

- **General statements and vision for the hub within Engage4BIO environment**
 The purpose/target of the Italian hub vision, within Engage4BIO environment, is to develop social engagement on blue bioeconomy and related value chains at local level. This activity will increase social awareness on blue bioeconomy, circular economy and is intended to stimulate the preparatory actions needed to implements and apply the good practices that will be drafted within the projects, for a new vision on knowledge, training and governance This will be obtained by boosting networking among all stakeholders and training both adults, productive sector and new professional figures, adopting, when possible, art and design as driver for connection, and elaboration of a new vision for knowledge campaigns, training and governance, specifically dedicated to marine biobased value-chains.
- **Core objectives for Engage4BIO activities to be developed within the hub (based on the vision)**
 The Blue Biobased engagement activity and workshops will provide participants key considerations in the development of sustainable blue circular products and service, increasing awareness on bioeconomy in connection with social development on the blue value chain. The networking of all stakeholders will help in developing innovative marine biobased products, promoting the utilization of regional marine resources and biodiversity and contributing to the environmental and social sustainability.
- **Vision and strategy approach for training and mentoring**
 The event was characterized by the participation of all stakeholders of the quadruple helix thanks to the strong networking of UNIPA at local level. As evidenced by the M&G analysis, the social engagement in blue economy needs to start by a proper adult education actions, directed to secondary school professors, enterprises managers, representatives of public institutions, aimed to train them on the most emerging issues, new perspectives and opportunities in the blue economy for a more sustainable utilization of the marine resources.
 - Specific vision: the training actions need to focus on specific blue value chains, characteristic of the region, having a relevance role in a social, artistic, economic and historical context. This action could help to reach more sustainable models in marine resource utilization, according to the principles of the circular economy.
 - Strategic aspects: the training and mentoring activity could stimulate the adoption of solutions aimed to utilize marine resources and marine by-products in sustainable way according to the SDG 2030 agenda, stimulating the sustainable consumption and the concept to turn “waste into profit”.
 - Useful, practical and innovative ideas and instructions: to start a stronger connection with the blue economy stakeholders at regional level by fixing periodic events for adults training and mentoring.
 - Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities: 3 potential training courses on blue economy for adult educations and skill development, targeted on: professors of the secondary school, managers of fishery enterprises, representative of the regional authorities. The format for training and skill development will be different in relation to the target. For professors one or more of the following format will be selected among lesson plans examples, practical and labs-like activities and internship/traineeship. For manager of fisheries internship/traineeship, for representative of the regional authorities the format could be case studies on how to embed bioeconomy practices and contents in the existing training practices of any level. For university and entities in charge for local/regional career services, some focus group on curricula creation and guide the career, to support adults in skilling, re-skilling and upskilling in the bioeconomy/bio-based related careers etc, will be organized.
 - In WP3 one or more of these training course will be implemented, giving priority to the course for professors of sciences -art and design and food technology of the secondary schools in Trapani. The training will be organized in form of seminars/workshop and laboratory experience, organized by UNIPA and APRE support.
 - Main stakeholders to be involved and roles, also by idea/proposal if relevant: 1) the manager of the direction of secondary schools in Trapani province, belonging to the ministry for education (Provveditorato agli studi), having the role to recruit the potential professors to be trained in the topics related to blue bioeconomy. 2) The President of the association of fishery producers in Sicily (AGCI pesca) and FLAGS, having the role to recruit the potential enterprises managers, to be trained in the topic related to blue-bioeconomy, issues and opportunities (sustainable fishery and consumption, fishery wastes valorization activating new production pathways). 3) The General Director of the Sicilian Department of fishery, that will be in charge to recruits the Region department’s representatives (department of productive activities, department of education and training, department of agriculture), that are responsible for activation of specific politics, social and economic actions at regional and

municipalities levels, that will be trained on the emerging topics, issues and opportunities for the blue-bioeconomy sector, in order that they can address proper measures and their applications in the society.

- **Vision and strategy approach for awareness raising and knowledge gain**

The co-creation workshop on vision and strategy was a really good occasion to introduce all participants to the context of marine bioeconomy, exchange good practices as well as factors hampering the scale-up of biobased products and processes. Thanks to the representatives of art and design sectors, some showcases of examples of how art and bioeconomy could cooperate was highlighted, and the basis for a new vision and strategy for awareness raising and knowledge campaign was fixed. In this area, APRE has the principle role, thanks to its experience in this field.

- Specific vision: realize an artistic framework able to communicate the concepts related to circular economy and blue biobased compounds at social level; the awareness raising and communication campaigns could target a wide audience putting local bioeconomy as the core challenge.
- Strategic aspects: how art can support the local bio-based activities to strengthen circular, sustainable bioeconomy and regional development? The vision and strategy workshop underlined that knowledge campaign are a useful opportunity to disseminate and spread the significance of bioeconomy in an understandable manner, integrating science with art and design approaches.
- Useful, practical and innovative ideas and instructions: how to reuse bio-material with an artistic purpose (session promoted by Art Institution/Professor/ art curator in Italy)
- Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities: local awareness raising, communication campaigns, art events with knowledge gain features linked to the defined bioeconomy vision and strategy.
- Main stakeholders to be involved and roles, also by idea/proposal if relevant: to ensure an efficient exchange of best practice and engagement, regional and local authorities and SMEs linked to blue economy, civil society, no profit organisations, University alliances and professionals' associations, knowledge providers, artists, designers and architects will be involved.

- **Vision and strategy approach for innovative governance**

- Specific vision: M&G analysis and the first co-creation workshop highlighted what is needed for innovation and to reach the next step and confirmed that only an innovative governance model could support local innovation, starting from a more collaborative effort within the quadruple helix actors.
- Strategic aspects: an innovative governance start for an appropriate selection of the potential stakeholder, focus on collaboration, governance of networks, interplay of different domains, position of intermediates for the governance of the transition, engagement of partners, alignment of organizations.
- Useful, practical and innovative ideas and instructions: what resources are needed? What facilities are needed? □ processing facilities? Living Labs? Social Labs? The upcoming co creation workshop on governance is going to clarify these aspects.
- Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities: increased connection among policy makers and authorities at regional level. Increased connection among enterprises, university and education sector at HUB level. Connection among art/design and blue economy sector. Implementation activities: Mediterranean conference on new Governance model in blue economy.
- Main stakeholders to be involved and roles, also by idea/proposal if relevant: policy makers, education, marine production (fishery and processing), blue-biotech enterprises, art and design.

Contact and information

For further information about this activity and report, please contact:

- University of Palermo, Department of Earth and Marine Sciences (DiSTeM), Laboratory of Marine Biochemistry and Ecotoxicology, via Barlotta n.4, Trapani (Italy). Prof. Concetta Maria Messina (concetta.messina@unipa.it); Dr Eleonora Curcuraci (eleonora.curcuraci@unipa.it) and Dr Simona Manuguerra (simona.manuguerra@unipa.it).
- APRE - Agenzia per la Promozione della Ricerca Europea (engage4bio@apre.it)



Engage4BIO

Consortium :



ArtEZ



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Pathfinder manual for the Hungarian Engage4BIO hub

 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction

This document is based on the workshop held on 12 June 2023 in Budapest, which aimed at co-creating a local bioeconomy vision and strategy approach of the Hungarian Engage4BIO hub.

Stakeholders invited were chosen to cover all levels of the quadruple helix, as different point of views and different approaches are very important for a fruitful discussion and for the effective co-creation procedure. 18 experts participated at the event.

The method, "Future thinking" was chosen to support the involvement of each participant, to initiate the "out-of-the-box-thinking" and to help concentrate on the future and the vision.

The workshop strengthened the main findings of the Map and Gap Analysis.

However, the participants agreed in the main points of the vision:

- education is a key, starting from kindergarten, involving the whole family, using also artificial intelligence and non-formal education
- awareness raising and mentality shaping are very important; art and design can play important role. There should be a clear message.
- Governance should be local, decentralized, and effective: county and settlement-level strategies, solutions and priorities are needed - all supported by national level vision and goals. Communication and cooperation have to be strong between the different actors.

Main findings of Map and Gap Analysis

The thorough analysis has made it clear that there are existing actors, activities and good practices in all the fields examined (i.e. bioeconomy, rural development, arts & design and learning perspectives) in Hungary. However, the mapping underlined in each field that these activities are fragmented in most cases, with very little – or even no – coordination, and organised individually. This situation is mainly caused by the fact that there is no bioeconomy strategy, strategic thinking and dedicated funds for them. Activities (including educational ones and art&design related ones) are often short-term and project based.

On the other hand, it was obvious that bioeconomy and related fields have lots of potential in the region and in the country, as there is knowledge, often infrastructure available, existing practices and active local actors. As for the bioeconomy itself, biomass is available locally. As for the challenges, the lack of dedicated funds and the lack of clarity of legal situation were identified. It was also agreed that the role and importance of SMEs in the region and in the field should be strengthened. Also, the need of new technologies, new value chains and higher value-added products should be appeared. There is a need for technology intensive companies as they catalyse the value creation.

Hub vision and strategic aspects

1.1 Vision and strategy approach for training and mentoring

According to the participants, approach for training and mentoring mostly covers aspects related to education, including adult education. Education is the key for strengthening bioeconomy in our country. One of the main findings of the Map and Gap analysis was the fact that bioeconomy or circular economy, as subject is missing from the education curriculum, in any level. Participants agreed that education needs to play leading role in any strategy related to bioeconomy.

The main strategic aspects resulted from the discussion were the following:

- Education should start from kindergarten, involving the whole family. Through this, an “internal demand” can be created. It is also important to respect the parents’ values. Intergenerational communication, social reflection, discussion within the society can be part of this.
- The importance of non-formal education was also mentioned. For example, forest schools can have important role in children's education. Another example is AI-based education, with human mentoring system. Lifelong learning, co-creation and co-sensing were also mentioned.
- Innovation-focused collaboration between design/art and science. Design can be the drive of innovation. Design projects should occur in education.
- Increasing economic skills:
 - Economic incubation of biomass-based innovations
 - Business approach for recycling
 - Systems thinking & analysis
- Motivation, arousing interest (pushing out from comfort zone can be beneficial). One example is: incentive credit system (discounts for those who take steps towards circularity – e.g. collection of points. Con: data-protection.) Raising awareness of social benefits is important.
- It is also important to present and discuss technologies (e.g. GMO etc.), which are often treated as buzzwords (pros & cons), in a way that is accessible and understandable to society.
- *The main take away message from the discussion: education should be freer, decentralized, there is no need for uniform systems. Education should follow the actualities and support creativity.*

1.2 Vision and strategy approach for awareness raising and knowledge gain

As for now, bioeconomy is not involved in the education in Hungary, even the term “bioeconomy” has no widely accepted translation. That is why awareness raising is inevitable. According to the Map and Gap report, Art&design activities should create new bridges between the different stakeholders and play very important roles in promoting bioeconomy. Art&design can help interpret complex issues in an accessible and entertaining way for a wider audience and policy makers.



Mentality shaping is necessary for a sustainable and circular economy – this can be achieved via massive awareness raising campaigns, which should include the following elements:

- The basic principle of bioeconomy should be known by everybody. A common understanding of the main bioeconomy-related terms that are often used by info sheets, awareness raising videos, governance tools etc. is the basis of this principal knowledge.
- There should be a general consensus on the importance of the circular bioeconomy.
- Important and easy-to-understand message is necessary. One example: What led to the collapse? EGO-centric instead of ECO-centric
- Soil can be the central element of the awareness raising.
- Innovative ideas should demonstrated for the whole society. Those channels should be used which are used by the majority of citizens.
- Awareness raising about recycling can be used as a good example. Couple years ago, it was less known, but now the population is aware and contributes responsibly.

1.3 Vision and strategy approach for innovative governance

Political governance system in Hungary is highly centralized. Regional level governance hardly exists, local level is weak and with limited possibilities. The apparatus of the central system is big, decision making process is slow. Tools, which can strenghten the bioeconomy are not used. The main finding of the Map and Gap analysis was that bioeconomy strategy is very much needed as a reference document approved by the government and showing its commitment, accompanied by a realistic Action Plan, including reachable and practical targets and measures.

The proposed new governance model should include the following aspects:

- Small, decentralized and efficient governance with small apparatus is needed. Local governance needs to be strenghtened, as bioeconomy happens locally, so as the governance should. National strategy and its actions should be implemented locally.
- Establishment of a carbon credit incentive system, which supports products that use sustainable, biomass-based economic solutions. Providing legal context seem very challenging.
- It is important to work on long-term goals. Common values are needed, lobby effects should not prevail. (There are contradictions between the short-term and long-term policies.)
- Consultation between policy-makers and science is inevitable. Consultation between the industry and the research and education organisations should be strengthened as well.
- Keep in mind that the most important actors of bioeconomy are SMEs and small producers/ smallholders, the role of large companies is not considerable. However, the lobby power of large companies is much bigger in policy making.
- Idea: Ministry of Circular Economy, which is responsible for production, education and collection of materials



- Policy makers should be aware of the demands of the society, policy should follow the changes and react to them.
- Innovation should be treated as priority. Innovative start-ups in the field bioeconomy should be supported.
- Goals of the “ideal bioeconomy policy” can be:
 - o lowering consumption
 - o equal access to healthy food
 - o more permissive, science-based GMO regulation
 - o creating PLA ecosystem
 - o Carbon exchange, verification system
 - o supporting the production of alternative proteins

However, within the scope of the Engage4BIO project, "innovative governance" refers not exclusively to political governance but a much broader group of measures and activities that address and enhance the management of regional bio-based development processes, the inclusive engagement of all actors and the creation of good regional relations and trust. When defining innovative governance models during the implementation of the project, this broader scope has to be beared in mind.





“ Multi-stakeholder engagement to strengthen regional bioeconomy value-chains ”

Consortium :



ArtEZ



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Pathfinder manual for the Dutch Engage4BIO hub

Wageningen Research and ArtEZ

Harriëtte Bos, Remco Kranendonk (WR) Jeroen

van den Eijnde, Tjeerd Veenhoven (ArtEZ)

 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Pathfinder introduction

This report presents the vision pathfinder for the Dutch Engage4BIO hub. The vision pathfinder document is building on a “map and gap” analysis (see Deliverable 2.1) and on the results and subsequent analysis of a one-day vision-building workshop, which took place in Arnhem on the 4th of July.

Results of the map and gap analysis

The Map and Gap analysis has made clear that there is attention for the different potentials of sustainable and circular textiles in the region. Focus is both on working with virgin biobased resources, as well as on collecting and valorising textiles waste, which has only recently gained interest at the level of the region. We found potential on specialization and profiling in three directions:

- Fashion and design
- Textiles in interior applications
- Collecting and valorising regional textile waste streams.

Biobased resources for textiles are very scarce in the region, and presently the production, both of textiles for interior applications as well as for fashion, sources raw materials from outside the region. Biobased textiles are applied, next to fossil based textiles, but there is limited focus on gearing towards the use of more biobased textiles.

Circular textiles are within the scope of policies and strategies development, but a clear focus or specialization within the region is missing. There is no clear alignment between policy levels at provincial, regional and local level. The map and gap analysis has shown that the circular textiles innovation is in early stages; there are various initiatives and pilots on circular textiles from small companies and from the arts and design sector, but the value chain perspective is missing, and upscaling towards a regional Demonstrator has not yet taken place.

The arts and design sector in the region is much present and dynamic, with a profile on fashion, and with much interest in working with new sustainable materials. Connection with other domains and economic sectors is limited. Also the outreach towards society can be enlarged.

Also at the knowledge domain there is interest in sustainable textiles. Both the use of biobased as well as of circular textiles is seen as a promising subject for research and innovation at Wageningen University and Research and at ArtEZ University of the Arts as part of the New Ecosystems in Textiles research community. Connection with the regional network and the complete innovation ecosystem in which partners from the quadruple helix are aligned, however, is limited. Higher education institutes are more aligned with the regional network. ArtEZ is representing the arts and design with a focus on fashion. HAN is offering regional support towards value creation, but still limited on the subject of circular textiles. The utilization or the application of technological knowledge and education within the region is strong, also within the wider region of East of the Netherlands.

Non-formal learning is on the agenda of the Green Metropolitan Region, with a focus on human capital in the region, but also focussing on meeting each other at events. The Green Metropolitan Region and Stichting Kiemt play an active role in these processes. There is attention for biobased and circular textiles, but with no clear and common focus. Circular and biobased textiles can easily become more prominent on the regional agenda, when the frames have been set and the support services become more focussed.

Co-creation workshop on vision building

Because the region does not have yet one or more clear production chains within the field of textiles, but rather a wide range of loosely or non-connected activities, the vision and strategy workshop was focussed at weaving connections between the various stakeholders active in the hub. Stakeholders from the province, from two municipalities, two cluster organisations active in the region, the regional development agency, various education partners, and three network organisations worked together on visioning concrete biobased or circular production chains. An added goal of this first workshop was to strengthen the network, and position the Engage4Bio project as a driver and facilitator in the network, well aligned with regional partners and initiatives. Results of this workshop are presented extensively in the workshop report.

Design of the three follow-up workshops

The following three workshops were then focused on the co-creation of activities to be executed in the remainder of the project time. The workshops were designed building upon the results of the co-creation workshop on vision building. For each of these workshops stakeholders present at the vision workshop were invited and in each case the group of participants was extended with other relevant stakeholders. The workshops on outreach (communication & awareness campaigns) and on innovative governance were both held during relevant larger regional events, which was instrumental in linking more relevant stakeholders to the development of the co-creation activities.

Hub vision and strategic aspects

As presented in the previous paragraph, the hub is in the course of developing more interconnections between various players and working towards tangible pilot activities in the field of sustainable textiles. In the following workshops we try to link Engage4Bio approach to strengthen already existing ideas and activities. Purpose of the hub is to help strengthen on the one hand the concrete activities to development of (circular) textile chains in the region, while at the same time using these activities to support development of a more innovative way of cooperation. The tangibility of these activities will furthermore form a firm basis for mentoring and (adult) education and outreach activities.

Vision and strategy approach for awareness raising and knowledge gain

The vision for these activities is that they should link, and build upon the activities and festivals that are organised regularly in the region. We will link to activities which focus on different target groups in order to enlarge the number of people reached. Special attention should be raised for connecting organisations and people that do not meet and collaborate, and also for reaching out to civil society, to inform them about and engage them in circular biobased textiles in the region. Various persons responsible for shaping these activities/festivals were already involved both in the stakeholder mapping and in the vision building workshop.

The awareness raising and knowledge gain workshop is organised as a side event of the Innovate festival in Arnhem in order to attract relevant stakeholders. Additional relevant stakeholders were part of the workshop. The activities that were co-created are presented in the workshop report.

Vision and strategy approach for innovative governance

The vision for these activities is to connect them firmly to a planned pilot on circular textile that will be run by the GMR. The workshop preparing for innovative governance approach is organised as a side event of the circular region event on November 8th. Next to a number of stakeholders

that were already involved in the stakeholder mapping and in the vision building workshop this co-creation activity attracted a lot of new stakeholders from various background. A number of proposals and subjects for focus and comparative advantages in the region and for applying new innovative collaborative approaches were developed. The activities that were co-created are presented in the workshop report.

Vision and strategy approach for training and mentoring

Training and mentoring in the Engage4Bio project is focused at at learners in the various fields of formal and informal education with special interest in combining these fields. There is growing attention in the Netherlands and within GMR on skill development, education and guiding the workforce for making the transition to a circular biobased economy. The learning concept which is being used in the region is broad, varying from citizenship, social learning, creation of learning environments as Living Labs, educational programmes linked to cultural activities, and regional human capital agenda's. Next to the current partner network, new partners representing regional educational institutes and learning, have participated in the regional workshop, December 12.

Due to effective use of means (financially, time-wise and commitment of people), the vision is to merge promising activities for learning as much as possible.

The activities that were co-created are presented in the workshop report. Next to these proposed ideas, Engage4Bio intends to connect to other ongoing activities in order to increase the number of participants that can be reached. For instance, university students will be involved via a challenge (hackaton) approach.



Engage4BIO


Consortium :



ArtEZ



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





5.1.2 Guidelines for training and mentoring activities

Guidelines for training and OER for the Austrian Engage4BIO Hub

ZSI & Biz-up



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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1. Introduction

The co-creation workshop on training which is highlighted in this report is part of a series of workshops taking place in the Upper Austria region.

In a prior analysis, which involved mapping and identifying gaps in the bioeconomy landscape of Upper Austria, key stakeholders have pinpointed various shortcomings in the current status quo of the wood-based bioeconomy in Upper Austria. Although numerous initiatives are already fostering cooperation among different parties, it has become apparent that there is room for improvement in engaging a wider audience.

Presently, there are several existing endeavours that promote collaboration among stakeholders in the region. However, these initiatives predominantly cater to professionals and individuals involved in the core value chains, including designers, academics, design students, and manufacturers. Furthermore, they primarily target those who are already interested or involved in bioeconomy-related subjects. Activities involving the general public tend to follow more traditional formats, such as courses offered by independent non-formal education providers. While some level of collaboration with other stakeholders does exist, it may not always align with the main themes or sectors of the Engage4BIO hub, such as design and interior, the wood supply chain, and forest conservation to support resource availability.

Moving forward, future activities should focus on education, communication, and policy actions. Based on the results of our map and gap analysis, educational initiatives should:

- Focus on enhancing the qualifications of employees in the recycling industry.
- Provide support for building expertise among companies in recycling and bioeconomy sectors.
- Address the challenges of extending training opportunities to small businesses.
- Offer training for employees in the field of green building.
- Promote the importance of implementing circular economy and bioeconomy initiatives based on internal expertise.
- Tackle the application of circular economy concepts specifically in office settings, rather than solely in production processes.

Based on the findings from the map and gap analysis, the vision-building workshop, which is focused on shaping the future of bioeconomy through education, has uncovered several noteworthy opportunities. Foremost among these is the potential to harness existing educational infrastructure and increase the collaboration with traditional educational institutions and initiatives.

The primary objective is to expand the reach of these models beyond professionals in various sectors and redirect them towards non-formal educational activities that can cater to a wider community. This approach also holds the promise of creating a more flexible and diverse funding model for educational initiatives. For example, it could involve securing small sponsorships from local industries, enlisting professionals as volunteer trainers, providing complimentary tickets to major events like design fairs, establishing internship agreements, and implementing other such strategies. This expansion would also entail integrating elements of art, design, creative practices, and non-formal education tailored specifically for adults. Moreover, it underscores the importance of promoting hands-on learning experiences and organizing visits to local activities to facilitate a truly sustainable implementation. Furthermore, workshop participants emphasized the significance of enhancing the overall community by integrating bioeconomy education. They believe that such integration can play a pivotal role in establishing a robust and enduring bioeconomy.

2. Participants and recruitment

The second co-creation workshop brought together a diverse group of participants representing various sectors within the quadruple helix, with a particular emphasis on experts in the field of education. For the recruitment of these participants, Business Upper Austria was responsible for it, due to the regional proximity and network. In the first step, research was done about the most important educational actors in the region, followed by an email invitation to the workshop and personal meeting. The approach involved organizing both virtual and in-person meetings with these key stakeholders. During these meetings, the aim was to introduce the Engage4BIO project, extend invitations to the workshop while emphasizing its value to them, and broach the topic of potential collaboration in the upcoming implementation phase next year. These face-to-face interactions played a crucial role in garnering the required commitment and generating interest.

Among them were prominent educational institutions from Upper Austria, including notable examples such as:

- Wirtschaftsförderungsinstitut (WIFI), which offers an extensive array of vocational training and continuing education opportunities.
- Berufsförderungsinstitut (BFI), the largest educational institution associated with Austrian workers' representation, receiving support from both the Chamber of Labour and the Austrian Trade Union Federation (ÖGB).
- Volkshochschule (VHS), a prominent institution in the adult education sector jointly operated by the City of Linz and the Chamber of Labour.
- Traunkirchen Forestry Training Centre (BFW).
- Institute for Vocational and Adult Education Research (IBE) in Linz offers social science services (research, development/consulting, evaluation, quality assurance) with a focus on people's living and working conditions.

While these institutions may not specialize in the field of bioeconomy, the workshop included an expert from the University of Natural Resources and Life Sciences in Vienna (BOKU) who was on hand to address any topic-specific questions, particularly those related to the content of the training.

In addition to these educational institutions, other key players along the wood value chain and in regional development also enriched the group. These included organizations such as holzbau austria, the Austrian trade magazine specializing in timber construction and sustainable architecture, as well as the Chamber of Agriculture, the Office of the Upper Austrian Provincial Government, and others.

The diverse mix of participants allowed us to develop two distinct training formats, with each participant contributing their expertise to their respective areas of specialization. The educational institutions played a vital role in shaping the formats due to their experience in identifying target groups, as well as in developing and implementing training programs. Regional development actors complemented this effort by providing valuable information about available resources, other training formats within the region, and regional strategies.

Furthermore, other stakeholders within the quadruple helix proved to be of utmost importance, as they provided insights into different target groups along the value chain and highlighted specific training needs and nuances relevant to each group. Please find in the annex a complete list of participants with their roles and respective institutions.

Therefore, the participants comprised a well-balanced blend of individuals with expertise spanning academia, educational institutions, and intermediaries. Interestingly, it seemed that within the group, experts from the education sector naturally assumed a leadership role, acting

as alpha leaders. However, this inadvertently resulted in some hesitations and a shortage of innovative contributions.

We also reached the consensus that a comprehensive introduction to and understanding of the bioeconomy at the outset was vital for the collective advancement of the group. A key takeaway from our experience was the necessity for co-creation workshops also serve to teach bioeconomics to the participants.

3. Description of co-creation activity

The second co-creation workshop was conducted in person and spanned a duration of 8 hours. Once the workshop goals were established, the ZSI team developed a workshop concept, while the Biz-Up team was responsible for reaching out to suitable participants (invitation text and workshop agenda in the annex).

The workshop adopted a resource- and solution-oriented methodological approach. In the initial segment of the workshop, participants had the opportunity to acquaint themselves with one another, identify the expertise within the team, and begin exploring the workshop's subject matter through a straightforward and accessible format. They also gained insights into the Engage4BIO project. The methods employed in this first segment included activities such as "finding commonalities in groups of three," sociometric constellations, picture associations, and presentations of results.

Following a break, the next segment began with the Engage4BIO team outlining the framework for the training formats. Following a concise presentation and essential clarifications, the participants actively participated in brainstorming sessions aimed at pinpointing the factors and qualities that make training and mentoring formats both innovative and attractive. Participants were paired up, and they conducted a brainstorming sessions choosing a working place indoor or outdoor. Subsequently, the results were presented and organized on a pinboard.

Before the prototyping session commenced, participants had the option to participate in a guided tour through the building of the Waldcampus, followed by a lunch break.

Participants were then divided into two groups, each tasked with prototyping a training or mentoring format. Initially, the groups delved into the elements, ideas, and characteristics they had gathered in the morning session. They collaboratively selected which elements to incorporate into their format. The remaining time (approximately 1.5 hours) was dedicated to prototyping the formats. Various materials were provided on the worktables for this process, but teams could also choose to document their ideas on paper. In a subsequent step, each group presented their prototype to the other group, which provided feedback and asked constructive questions to refine the format idea. Finally, both groups further refined their ideas and completed a prepared canvas. The workshop concluded with a feedback session and a glimpse into future Engage4BIO activities.

4. Results

The Austrian workshop participants decided to work on two training formats, which might include elements of mentoring.

4.1 Training format 1

Objective and purpose:

This first format's objective was to raise awareness among decision makers in businesses along the value chain towards a holistic bioeconomy, potential innovations in the field and new business models.

Target group:

The primary target group are decision makers in business along the value chain but also business where wood is used as substitute product.

Needs addressed and context:

Currently there is the need for awareness among businesses that wood-based bioeconomy is not necessarily sustainable. There is the need for understanding sustainable wood based bioeconomy and what business models are feasible.

Learning outcomes:

Based on the overall need to be addressed through the training the following topics will be addressed in the training: i) General bioeconomy, ii) Ecosystems (woods and forest), iii) Materials (saw), iv) Business models (building), v) consumption (furniture), and vi) circular economy (re- and upcycling)

Participants receive professional input and learn about new topics based on specific needs. They gain new knowledge, experience good practice examples and enlarge their networks.

In the six modules awareness raising is stimulated and participants are able to derive specific ideas for their own company, and find out which ones they really can implement.

The first module provides the basis for bioeconomy thus is dedicated to the topic of a holistic bioeconomy approach. This topic is interlinked to all other 5 modules. Participants learn what can be made out of wood, and get additional input in each module, to be able to also address side topics.

The main focus is awareness raising among the target group. What is finally included or implemented stays in the responsibility of the company.

Design and structure of training:

The training is following a modular structure. The first "basis module" is obligatory, all others can be chosen due to interest and relevance. All modules combine theory and practice and facilitate company visits along the value chain.

Learning methods:

Each module is a "learning journey": i) visit tour, ii) professional inputs, iii) networking.

Professional input is seen as a second asset besides the visit tour, which focusses on bioeconomy (e.g. in building businesses and bioeconomy) but also chances due to the raising field of bioeconomy.

After the 6 modules (explained above) a workshop with all participants follows. The workshop aims at developing ideas how to integrate the learned into the own business.

Framework for training:

6 to 7 dates, each one 14:00 – 18:00. For the specific target group, a whole day training does not suit. Thus, the group suggested to split them according to modules and to offer them in the afternoon.

Engaged educational institutions:

BOKU, Waldcampus Traunkirchen, Bfi, WK OÖ, LK OÖ

Possible collaborations with stakeholders from industry, networking, research, etc.

Companies along the value chain, BFW

4.2 Training format 2

Objective and purpose:

Participants should understand bioeconomy for own activities and implementation possibilities in their working/living environment but also be able to argue.

Target group:

The group decided whom to address after discussing about the group with the most leverage. They decided address planners (site managers, timber construction managers, architects, etc.). These groups influence decisions which materials are used and thus have big influence. The customers only marginally decide.

Needs addressed and context:

This format addresses the following needs:

- awareness for wood products
- competitive advantage,
- affordability of products
- understandable language

Learning outcomes:

Participants know what cascadic use means. They learn about legal framework in the bioeconomy, for instance Supply Chain Act, Eco-design Directive - what is allowed to do with the material (life cycle wood). They learn how to select material from an ecological point of view and understand ecological assessment methods or their results. They know where to find them and know indicators. Participants are aware of the potentials and can pass on good arguments for internal executors and external customers.

Design and structure/learning methods

The training starts by offering the first module in form of a teaser video or conference contribution (1 – 1,5 hours) on wood-based bioeconomy and its potentials. Once listeners are 'hooked' they can continue with interactive more detailed modular (crash) course lasting 3 days. Two days are theory and input focussed and one day is practice focussed. The module course needs to be spread through a clear call and must get a catchy title in order to be attractive to the target group. The modular course can be followed by in depth mentoring.

Framework for training:

- Teaser (30 min to 1,5 hours, depending on the format. This can be online (video, webinar) or at a conference.
- Modular (crash) course: 2-3 days, face to face seminar
- Excursion: 1 day (costs have to be covered by participants, e.g. bus)
- Budget: 3.000€

Possible collaborations with stakeholders from industry, networking, research, etc.

- Specialised organisations (BIC, ProHolz, ZT, ...)
- WKO
- Land OÖ
- Waldverband
- LK
- BOKU




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**Guidelines for training and OER
for the Finnish Engage4BIO
Hub
Metropolia**



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1. Introduction

The co-creation workshop on training and mentoring aimed at developing ideas and prototypes of concrete education activities to support the uptake of the Sustainable Packaging regional activities, based on the vision and strategy developed and the results of the gap analysis and the learning scenario initiated earlier in the project.

The gap analyses concluded the following areas require for improvement regarding training and mentoring.

1. Identifying the competences needed for successful RDI
 - Materials and technologies
 - (Circular) Design, economics, business strategies, commercialisation
 - Customers and consumers
 - Interdisciplinary approach
 - In-depth understanding of the application areas
 - User-driven and co-creative approach
2. Upskilling employees
 - Worklife satisfaction
 - Continuous employment
 - Understanding of the ongoing transition
 - New innovations
3. Training specialization is lacking
 - Adult education specifically

The vision workshop identified the following vision for the Sustainable packaging hub:

- Value chain actors have established a joint criteria for sustainable packaging.
- They have a common understanding regarding the interpretation of the related regulations
- The actors have a joint website for the key information
- Sustainability has become a value increasing factor for products and services

The following actions were identified to reach the vision: Establish a regulation training for all value chain actors as well as decision-makers and regulators. This should include a regulation update and discussion regarding its interpretation. The activity should be organized by 2025 (during the project lifetime). Establish a common sustainable packaging criteria with all value chain actors. The activity should be organized by 2027 (after the project lifetime). Collect national statistical material for awareness raising and information for informed decision-making by 2030 (after the project lifetime).

2. Participants and recruitment

The stakeholder mapping started in August. CLIC and Metropolia project staff identified potential stakeholders in the following quadruple helix actor groups.

- Companies
- Universities and research institutes
- Public sector
- Civil society

In total, 58 actors were invited to the workshop by e-mail of which 14 actors participated in the workshop representing different stakeholder groups (see table below).

Organisation	Role	Quadruple Helix group
Metropolia UAS	Specialist, Life-long learning	Universities and research institutes
VTT Research	Designer	Universities and research institutes
Metsä Spring	R&D Manager	Companies
Metropolia UAS	Principal Lecturer	Universities and research institutes
Metropolia UAS	Head of Degree Program	Universities and research institutes
Griffin	BU Director, CFO	Companies
Helsinki-Uusimaa Regional Council	Senior expert	Public sector
Forest Industry	Innovation Policy Manager	Companies
Metropolia UAS	Director, Innovation	Universities and research institutes
CLIC Innovation	Communications	Companies
CLIC Innovation	Head of Bioeconomy	Companies
Suomen kiertovoima	Communications Manager	Public sector
Metropolia UAS	Senior Lecturer	Universities and research institutes
CLIC Innovation	Project Specialist	Companies

We succeeded in reaching a diverse group of professionals, bringing together education, research, business and societal perspectives. The level of discussion was deep, and the participants actively contributed to all workshop activities, and there was a good atmosphere of networking and knowledge sharing.

3. Description of co-creation activity

The workshop included a brief generic project description and the presentation of the following learning scenarios identified in the map & gap analyses.

Scenario	Title	Description
1	Consumer awareness raising on sustainable packages	Involve non-formal education providers for the engagement of consumers for co-design and prototype testing
2	Communication and design skills	Education and training on communication and design skills for sustainable packaging
3	How to take new ideas/concepts into practice?	Education and training on taking new ideas/concepts into practice through innovative experiments
4	How to follow upcoming and new EU regulations in sustainable packaging?	Education and training on how to follow newest update about sustainable packaging EU regulations
5	Innovation and collaboration skills	Competence/skills regarding the lifecycle of packaging and the role of different actors in the value chain, facilitating collaboration and innovation between different actors in the packaging lifecycle

While the overall project scope and the previous work done, it was time to ask the participants what was still missing - whether there would additional competence and training needs for sustainable packaging. All participants received 5-10 minutes to reflect themselves any additional inputs.

Everyone presented their ideas, there was joint discussion about them and finally two training areas were selected based on voting by participants. All participants were able to vote, but needed to indicate which stakeholder group they present: Research or Education, Companies, Public Sector or Civil Society.

The final part of the workshop included joint brainstorming in the form of learning café on how to deliver the training. There were two round of discussions each having four participants representing different stakeholder groups. At the end, two initial training concepts were developed.

The key co-creation methods included: individual thinking, knowledge sharing and co-creation based on world café method. The latter one allowed us to create a safe, welcoming environment in which to intentionally connect multiple ideas and perspectives on a topic by engaging participants in several rounds of small-group conversation that were facilitated by Metropolia project staff members.

4. Guidelines for training and mentoring activities in the Sustainable Packaging hub and Training activities outlines (Open Educational Resources)

The Finnish workshop participants selected the following training courses as most important: 1) Sustainability in packaging life cycle and 2) Packaging Materials. The following guidelines describe the initial guidelines for these two different training concepts developed in the

workshop. They provide guidance for WP3 in which the training concept will be further developed so that it can be implemented.

a. Sustainability in packaging life cycle

Objective and purpose:

The objective and purpose of training is to provide a holistic perspective on sustainability packaging along the value chain towards potential innovations in the field and new business models. The primary target group are university students as well as life-long learners in the industry that would be brought together for learning and co-creation on the topic.

Needs addressed and context:

Currently there is the need for raising awareness about the big picture of packaging life cycle both for actors in the industry as well as future professionals, as the holistic perspective needs to be taken and the different actors brought together to solve the sustainability challenges.

Links with Hub and regional development strategies

The training is directly linked to the sustainable packaging theme and circular economy being a focus area of Helsinki-Uusimaa regional development strategy.

Links with Industry and Occupations

The training is linked with the industry needs raised in the co-creation workshop by industry actors themselves. Sustainable packaging requires collaboration along the whole value chain/network.

Synergies with other Hub activities

As part of WP3, our hub will establish Sustainable Packaging visitor point being part of a larger learning environment to be established in the Museum of Technology in Helsinki. This is something that can be linked to the training and mentoring as well.

Education providers involved and to involve

Metropolia University of Applied Sciences as primary educational institution, but including guest lectures from other universities in Finland or in Europe (possibly through U!REKA SHIFT European University Alliance).

Collaboration and Synergies with other stakeholders

Companies and public sector bodies that participated in the co-creation workshop, as well as U!REKA SHIFT European University Alliance coordinated by Metropolia. The training can be included in the open course catalogue of U!REKA SHIFT inter-university campus.

Learners' persona and learning outcomes:

The participants will get the holistic view on sustainable packaging, and the current challenges. They are able to tackle different angles related to sustainability challenges and learn to co-create new solutions together in multidisciplinary teams. The participants will come from different disciplines such as chemical engineering, industrial design and logistics.

Instructional design approaches

The course would start with joint webinar open for all (companies, students, researchers, citizens etc.), this would be followed by group assignments for students, and finally the assignments would be presented and discussed together in an open event for everyone to join (companies, students, researchers, citizens etc.).

Learning methods:

The training will involve lectures (webinar series), project assignment in a team and final conference with all actors present and the presentation and the evaluation of assignments.

Framework for training:

The training concept would last 3-6 months (one or two study periods) and consist of 5 study credits. The course language is English.

Creative practices:

The training will involve industrial design students using design methods. Innovative elements:

The training provides unique opportunity for participants to tackle the existing challenges in sustainable packaging from holistic perspective covering the full value chain perspective.

b. Packaging materials

Objective and purpose:

Participants should learn about the accessibility and characteristics of different packaging materials in order to be able to make sustainable choices. There will be focus on new packaging material and their environmental impact. The primary target group are university students as well as life-long learners in the industry that would be brought together for learning and co-creation on the topic.

Needs addressed and context:

This format addresses the following needs:

- awareness for different packaging materials
- understanding their accessibility and characteristics

This would in turn support that wholesale buyers are able to consider and make sustainable packaging choices.

Links with Hub and regional development strategies

The training is directly linked to the sustainable packaging theme and circular economy being a focus area of Helsinki-Uusimaa regional development strategy.

Links with Industry and Occupations

The training is linked with the industry needs raised in the co-creation workshop by industry actors themselves. Sustainable packaging requires collaboration along the whole value chain/network.

Synergies with other Hub activities

As part of WP3, our hub will establish Sustainable Packaging visitor point being part of a larger learning environment to be established in the Museum of Technology in Helsinki. This is something that can be linked to the training and mentoring as well.

Education providers involved and to involve

Metropolia University of Applied Sciences as primary educational institution, but including guest lectures from other universities in Finland or in Europe (possibly through U!REKA SHIFT European University Alliance).

Collaboration and Synergies with other stakeholders

Companies and public sector bodies that participated in the co-creation workshop, as well as U!REKA SHIFT European University Alliance coordinated by Metropolia. The training can be included in the open course catalogue of U!REKA SHIFT inter-university campus.

Learners' persona and learning outcomes:

The participants will get the holistic view on different alternative packaging materials. The participants are to try different materials as well as the recycling potential of different materials contributing their understanding and possibility make as well as to argue for sustainable choices. The participants will come from different disciplines such as chemical engineering, industrial design and logistics.

Instructional design approaches

The course would start with joint webinar open for all (companies, students, researchers, citizens etc.), this would be followed by group assignments for students, and finally the assignments would be presented and discussed together in an open event for everyone to join (companies, students, researchers, citizens etc.).

Learning methods:

The training will involve lectures (webinar series), project assignment in a team and final conference with all actors present and the presentation and the evaluation of assignments.

Framework for training:

The training concept would last 3-6 months (one or two study periods) and consist of 5 study credits. The course language is English.

Creative practices:

The training will involve industrial design students using design methods. Innovative elements:

The training provides unique opportunity for participants to tackle the existing challenges in sustainable packaging from holistic perspective covering the full value chain perspective.




Engage4BIO

Consortium :



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



Guidelines for training for the Italian Engage4BIO Hub on the Blue bioeconomy

UNIPA



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction

Key results of the MAP & GAP analysis based on the Vision and Strategy aspects of the Pathfinder manual

Based on the results of the MAP & GAP analysis (M&G) conducted by the Italian HUB, together with the results achieved during the vision and strategy co-creation workshop, it became clear that, in the Italian region there is a growing need to adopt innovative and regular training programs on the Blue bioeconomy topic, in order to support knowledge, best practices and sustainable blue jobs, to develop the necessary skillsets to support the European Green Deal initiatives promoting a sustainable Blue economy.

Although more and more initiatives related to the Blue bioeconomy topic are promoted for specific training courses at universities and at project level, however to improve the gaining of roles and skills in the Blue bioeconomy sector, updated secondary schools teaching programs and Teacher Training Courses and more efficient communication strategies are needed.

The training actions should focus on specific blue value chains, characteristic of the region, stimulating the adoption of solutions aimed to utilize regional marine resources and marine by-products in sustainable ways, according to the SDGs 2030 Agenda, to support a sustainable consumption of marine resources and to develop the concept of turning “waste into profit”.

This action could help to reach more sustainable models in marine resource utilization in a social framework. In this context, art appears to be as an important tool to communicate the concepts related to Blue bioeconomy and the relevance of the blue biobased compounds at social level. Unfortunately, the promotion of art & design activities linked to the Blue biobased sector in the Italian region is still at an early stage, but it is clear that the improvement of the role of artists and creative sector and their involvement in supporting bioeconomy is extremely needed also for professional training.

In light of these considerations, since the management of marine resources and understanding the potential related to blue bioeconomy requires the training of professionals with multidisciplinary skills related to marine science and key sustainability concepts, the goal of the Italian HUB in the framework of the project Engage4BIO is to implement new training systems and new communication approaches that will target adult education for secondary school teachers, business leaders, and representatives of public institutions, with the aim of training them on the most emerging themes, new perspectives and opportunities of the development of next generation of blue skills at regional level, aiming at contributing to the development of the Blue bioeconomy.

Participants and engagement approach

The co-creation workshop on guidelines for training and mentoring for adults, including skills development, organised by the University of Palermo, leader of the Italian HUB, in collaboration with the Italian partner APRE, was focused on an engagement activity in the Blue bioeconomy sector, involving key stakeholders from the education sector (managers and teachers), the production and institutional sector and local associations, in order to co-create guidelines for training and mentoring of adults and developing specific skills in the Blue bioeconomy sector.

A total of 36 participants took part in the workshop. Participants included some stakeholders who had previously contributed to the M&G analysis conducted by the Italian HUB. Among the participants, a predominant role was played by the educational sector, such as the head of the regional school office, and secondary school teachers. The industrial sector was represented by the Productive District of Enterprises related to the blue supply chains and by local enterprises of the fishery sector. Research sector was represented by full Professors, Postdocs, PhD students and Project members.

Description of co-creation activities

Workshop participants were guided in activities that included the co-creation of guidelines for training and mentoring and the design of 2 training activities, to be carried out in the regional hub with the final output being the acquisition of knowledge on the Blue bioeconomy and marine biobased products, to be transferred to students in future educational programmes.

The workshop was held at the University Campus of Trapani, a facility where, in addition to holding highly competitive university courses that attract students from all over the province, its objectives include fostering the creation of research facilities, promoting cultural activities and vocational training, and promoting cooperation with developing countries.

The workshop, that started at 9.00am and lasted until 2.00pm, was divided into two sessions structured as follows:

First session:

- Institutional greetings
- Engage4BIO project presentation and ice-breaking session
- Workshop objectives presentation
- Italian HUB framework: results of the M&G analysis
- The need for new skills and competencies for the development of the bioeconomy and blue supply chains in the regional hub
- UNIPA's successful case studies on co-creation applied to training and mentoring: the FORTHEM and Service Learning projects

Second session:

- Co-creation activities
- Wrap-up and conclusions

The co-creative activity was opened by a live pool questions&answers by SLIDO platform. Participants were asked to answer to 8 questions. At the end of the online questionnaire, each question was analyzed individually, together with the answers received. All participants were then asked to comment and/or elaborate on them.

Afterward, for co-creative activities, stakeholders were initially divided into two groups: the first group included producers and industries, the second group included schools and governance. To each participant, post-its were distributed to collect notes to be fixed on posters.

After an initial phase in which the groups worked separately, cross-tables were formed to co- create guidelines on training and mentoring with the aim of identifying and describing at least two training paths to be implemented in WP3.

The active participation in the co-creation activities of the managers of the Trapani District Authority of Regional school office (Provveditorato), teachers of various secondary schools in Trapani and its province, allowed the definition of contents and ideas to formulate the guidelines for the co-design of training courses in the field of marine bioeconomy, which will be implemented during 2024, thanks to the synergy with the USP of Trapani (Regional school office- Ufficio Scolastico Regionale per la Sicilia), which actively collaborated in identifying the best strategies to apply to promote empowerment and involvement in the process of social transformation starting from adult education and training. In parallel, co creation with representatives of enterprises, determined the definition of specific targeted training activities to implement new professional skills, adopting the Living LAB structure, where training is in charge of professionals of the blue sector.

Guidelines for training and mentoring activity proposals in the Italian HUB on the Blue bioeconomy

The co-creation workshop allowed the Italian HUB to identify innovative training solutions in the Blue bioeconomy, with a particular focus on professional training and continuous training. The co-creation activity made it possible to define contents and ideas that were useful in formulating guidelines for the co-design of training courses intended for adults, in the marine bioeconomy sector, which will be implemented during 2024.

Since social commitment in the Blue bioeconomy must start from an adequate adult education action, aimed at secondary school teachers, business managers and representatives of public institutions, the following guidelines aim is to increase awareness on Blue bioeconomy, working on training of all stakeholders and training of new professional figures based on the local production of marine biobased products.

The application of the circular economy principle "from waste to profit" is a commitment for the fishing, aquaculture and fish processing supply chains, in order to develop marine products of high biological value, with a reduced environmental impact and develop the Blue bioeconomy.

The need to combine the sustainable management of marine resources appears increasingly pressing. Fishery and aquaculture processing by-products can represent unused or underused resources, still containing a large quantity of components with high nutritional value and bioactive compounds. The use of these resources could constitute a link to be added to the production chain of the fishing sector and the processing of fish products, generating development and economy from a resource otherwise destined to be disposed of.

Taking into account the significant contribution of fishery, aquaculture and processing production to the economy of the Italian regional hub, given the strong localization of companies in Sicily, these guidelines have the general objective of providing a contribution to the increase of the sustainability of the local blue supply chain. Training courses will develop group work through social commitment on blue biobased products: local production of marine products, marine functional foods; contribution to the circular economy and the "zero waste" objective through the recovery of by-products and co-products from the fish processing industries and their use in industries dedicated to the production of ingredients for food, feed, pharmaceuticals and cosmeceuticals.

As a winning strategy, continuous training of secondary school teachers has the role of stimulating young students to see fruitful, green prospects in the development of blue skills, and for the promotion of new technologies applicable to the industrial sector.

The biobased industry is a significant example of circular bioeconomy. It contributes to the sustainability of industrial processes intended for the production of renewable biological resources generating, from marginal processes and waste or recovered materials, high value products that can be used as nutraceuticals and/or as functional foods.

The objective of the Italian HUB is to contribute to the dissemination of the knowledge acquired on the enormous unexpressed growth potential of the oceans, taking into account the three pillars of sustainability: environmental, social and economic, by involving in training courses experts in the scientific sector, secondary school teachers and blue biotech enterprises.

Thanks to the availability of dedicated equipment and specific research funds, the UNIPA team has developed expertise linked to technological innovation and services for businesses in blue biotechnology. These skills are made available to the trainees for whom specific training courses will be structured.

training courses, the Italian HUB hopes to guarantee coverage of training needs for the future development of research and innovation in the blue bioeconomy sector.

As suggested by the Sicilian Smart Specialisation Strategy – S3, to strengthen competitive control in these advanced sectors, considered strategic for the development and competitiveness of the Region, it is necessary to act with adequate support of high-level technical-scientific training in the field of the blue economy and biotechnology, to contribute to raising the rate of technological innovation of these areas of industrial production and the regional economy.

The courses, inspired by the principles of Blue Growth, aim to contribute to the conservation and enhancement of the natural environment and to the dissemination of naturally offered marine ecosystem services and biodiversity. The format for training and skills development will be different depending on the target.

As a final output of the training courses in the Italian HUB is expected the acquisition of knowledge on the Blue bioeconomy, by secondary school teachers, to be transferred to students in future educational paths using a method chosen among: lesson plans, practical and laboratory activities and internships; and to contribute to the construction of a close synergy between the production sector of intervention in blue biotechnology and scientific research by the application of the Living LAB methodology.

Training activities outline

Activity 1: Training course for secondary school teachers: adult education and skills development on the Blue bioeconomy

Since there is a need to improve acquisition of roles and skills in the blue bioeconomy, by updated curricula, adult education (teacher training) and more effective communication strategies, the objective of this training and mentoring activity is to stimulate in secondary school teachers, to be transferred to students in future educational paths, the sustainability and natural capital concepts with a specific focus on overconsumption of resources and overproduction. The course will introduce the adoption of solutions for the sustainable use of marine resources and by-products, in line with the SDG 2030 agenda, to promote the concept of sustainable consumption and “turning waste into profit”.

The training course, directed to secondary school teachers, will be structured in lessons, practical and laboratory activities. Priority will be given to science, art and design and food technology teachers from secondary schools in Trapani and Palermo Provinces. The training will be organized in the form of seminars/workshops and laboratory experiences, organized by UNIPA with the support of APRE.

Starting from the extreme importance that aquatic productions have in the balance of ecosystems, in production systems, in the food sector, in human health and in the Mediterranean economy, the course will explore issues of growing importance at an international and regional level: it will be highlighted the close correlation between circularity and sustainability and understand the main drivers of sustainability. Specifically, the sustainable use of aquatic resources and product quality, nutritional value for the consumer and importance for the local economy will be discussed.

The course will develop group work through social commitment on blue biobased products: local production of marine products, marine functional foods; contribution to the circular economy and the "zero waste" objective through the recovery of by-products and co-products from the fish processing industries and their use in industries dedicated to the production of ingredients for food, feed, pharmaceuticals and cosmeceuticals, to support sustainable growth.

The detailed outline of Activity 1 “Training course for secondary school teachers: adult education and skills development on the Blue bioeconomy” is showed in Table 1.

Table 1. Detailed outline of Activity 1: Training course for secondary school teachers: adult education and skills development on the Blue bioeconomy

Training course for secondary school teachers: adult education and skills development on the Blue bioeconomy
Type of activity: Workshop (lectures and practical activities)
Synergies with other Hub activities (within Engage4BIO or pre-existing): Existing teaching activity carried out at the Department of Earth and Marine Sciences (DiSTeM) and at the Department of Agricultural Food and Forest Sciences of the University of Palermo; tutoring activities for degree theses, internships, internships within the Erasmus+ and Forthem programmes, regional, national, international and cross-border projects, as well as support from members belonging to the board of the European Society for Marine Biotechnology (ESMB)
Education provider/s involved and other stakeholders: Experts of University of Palermo, Department of Earth and Marine Sciences and Department of Agricultural Food and Forest Sciences; Experts affiliated to European Society for Marine Biotechnology (ESMB)
Learners' persona: Secondary school teachers
Learning outcomes and competences: The training course will develop on secondary school teachers the ability to assimilate and critically rework the knowledge acquired on the interrelationships between the marine environment and its sustainability to be transferred to students in future educational paths.
Instructional design approach: During the training course it will be highlighted the close correlation between the sustainable use of marine resources and product quality, nutritional value for the consumer and importance for the local economy. The marine resources of fisheries, aquaculture, integrated multitrophic aquaculture and the implementation strategies aimed at their sustainable use will be presented. Practical activities will be dedicated to improve environmental sustainability and to diversify the production by the application of new transformation techniques and the valorisation of non-food resources and processing waste of fish products.
Methods (specific learning activities): 10 hours course developed as follows: lectures (8 hours) and practical activities (2 hours). By the end of this programme, secondary school teachers will be able to: Identify the sustainability concept and its relationship with society, environment and economy and understand how to build a culture of sustainability.
Creative practices and innovative elements: continuous and self-motivated learning approach for secondary school teachers supported by experts of the Blue bioeconomy sector and demonstrative visits to the Marine Biochemistry and Ecotoxicology laboratory of Trapani (UNIPA).

Activity 2: Training course for fishery enterprise managers and fishery enterprise executives by the Living LAB methodology

In order to strengthen collaborative relationships between fishery enterprises and research institutes in the Blue bioeconomy, the Italian HUB intends to develop a training course directed to managers of fishery enterprises involved in the marine biotechnology sector by exploiting the methodology of the “Living LAB”, defined as a research methodology that is “carried by the users”, co-creating and interacting with the final product or in a multifaceted real-life environment (Claude et al., 2017).

Thanks to the regional project “INNOVITTICA” (Project under the ownership of the Department of Mediterranean Fisheries of the Sicilian Region, funded by the European Maritime and Fisheries Fund 2014-2020, measure 1.26), to which the partner UNIPA has collaborated with the lead partner “Consorzio Universitario della Provincia di Trapani” (associated partner in Engage4BIO), together with other partners, a diffuse Living Lab for innovation and environmental sustainability of food production from aquatic organisms has been developed in the western side of Sicily. This Living LAB, through direct participation in the research and development paths of the enterprises, allows a capitalization of the results obtained from industrial research, ensuring the immediate transfer to production of the innovative products and processes developed.

Among the activities envisaged by the Living LAB set up within the “INNOVITTICA” project, there are also training, technology transfer and the promotion and dissemination of co-created innovative processes and products. To ensure proper and lasting capitalization of the results and their transfer, Living LAB has been equipped with a classroom for consumer testing and sensory analysis of Sicilian fish processing products.

The objective of the application of training courses utilizing the Living LAB Methodology is to build an Open Innovation Environment, in which innovative solutions, product and process innovations are co-created, explored, demonstrated and evaluated in a real production environment, generating direct and immediate spin-offs and leading to an increase in the competitiveness of Sicilian enterprises in the sectors involved in the blue value chain: fishing, aquaculture and processing of supply chain products by examining the basics of a circular economy and discovering the power of environmental sustainable business activities to “turning waste into profit”.

The construction of a widespread research infrastructure, initiated by the “INNOVITTICA” project, which can be implemented with training courses under the Engage4BIO project, is a guarantee of the durability of research actions and the enhancement of regional human and economic resources.

The detailed outline of Activity 2 “Training course for fishery enterprise managers and fishery enterprise executives by the Living LAB methodology” is showed in Table 2.

Table 2. Detailed outline of Activity 2: Training course for fishery enterprise managers and fishery enterprise executives by the Living LAB methodology

Training course for fishery enterprise managers and fishery enterprise executives by the Living LAB methodology
Type of activity: Living LAB methodology
Synergies with other Hub activities (within Engage4BIO or pre-existing): UNIPA, as part of the “INNOVITTICA” project, has access to a classroom for consumer testing and sensory analysis of Sicilian fish processing products. In addition, in order to develop innovative processed products, UNIPA, in collaboration with the Consorzio Universitario della Provincia di Trapani, has already initiated direct collaboration with some local enterprises at which equipment has been installed exclusively for research and innovation activities, the use of which is regulated by a special agreement.
Education provider/s involved and other stakeholders: University of Palermo, Department of Earth and Marine Sciences, experts; Experts affiliated to European Society for Marine Biotechnology (ESMB); Seafood transformation enterprises in the Trapani area that have already taken part in the “INNOVITTICA” project
Learners’ persona: Fishery enterprise managers and fishery enterprise executives
Learning outcomes and competences: the training course will develop the ability to support the innovation process for all stakeholders, from producers to end users, with a focus on SMEs, and to develop problem-solving skills for enterprise managers.
Instructional design approach: The training course aims to emphasize the importance of innovative technologies applied to fish productions in improving their quality, traceability, and economic and environmental sustainability. The fishery resources of Mediterranean artisanal and industrial fisheries, marine aquaculture and integrated multitrophic aquaculture and strategies to improve their production performance and sustainability will be presented. During the training course will be examined instrumental methodologies for rapid assessment of product quality in the industrial environment, new processing techniques (smart packaging, bioactive packaging, MAP, coldsmoking, slurry ice) for improving the value-chain, advanced technologies for the extraction of marine bioactive molecules, capable of supporting pathways virtuous circular economy.
Methods (specific learning activities): 10 hours course developed as follows: lectures (2 hours), laboratory demonstrations (2 hours), use of the classroom for consumer testing and sensory analysis, and working groups (6 hours). By the end of this programme, fishery enterprise managers and fishery enterprise executives will be able to: outline the steps for developing environmentally sustainable business activities.
Creative practices and innovative elements: Living Labs have emerged as a new research concept in which users, traditionally considered as observed subjects and end clients, become co-creators of the innovation process (Claude et al., 2017).

References:

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Engage4BIO

Consortium :



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



Guidelines for training and OER for the Hungarian Engage4BIO Hub

MOME



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction about the training

Key results of the map and gap analysis and with the Vision and Strategy aspects of the Pathfinder manual

The process of preparing the map and gap analysis proved instrumental in laying the ground-work for developing the Training and Mentoring co-creation workshop. This not only helped in defining clear goals but also established a contextual framework for designing the co-creation activities. Thus, we are confident that the workshop outcomes accurately reflect the identified needs and gaps. Consequently, we anticipate that the training activities outlined for WP3 will prove highly beneficial for the local context.

The findings of the map and gap analysis brought to light a key issue: the current landscape of educational and training activities within the bioeconomy sector is marked by fragmentation and isolation. This situation is primarily attributed to the absence of a national bioeconomy strategy, a lack of government-level strategic thinking, and dedicated funds in Hungary. As a result, there is a noticeable disconnect at the strategic level from academic, vocational, and adult learning activities. Examples we did uncover were often short-term and project-based, however, with well-established learning activities related to rural development. Thus, for our training and mentoring activities, we cannot rely on a national, top-down system, rather, we need to tailor these activities in a bottom-up approach.

Nevertheless, the local bioeconomy and its associated fields demonstrate substantial potential in the region. Despite the fragmented state, there exists valuable knowledge, established practices, and active local participants. However, it is crucial to underscore the need for strengthening the role and importance of SMEs in both the region and the field. Furthermore, the art & design sector is a noteworthy contributor, with artists, teachers, students, secondary schools, municipalities, and museums emerging as prime partners for potential involvement in learning and training activities. Their primary role should revolve around awareness raising, given the low general awareness and knowledge of the bioeconomy field among citizens.

Consequently, our Hub has identified this creative potential as applicable to non-design areas, proposing diverse learning scenarios in various formats. These scenarios are specifically tailored to engage the two main target groups of our proposed activities: students in higher education or young adults who are in-between educational programs and primary producers. Based on these target groups, the approach to training should focus on practical, hands-on, and experience-based learning, with methods that employ design thinking to address different learning styles and preferences.

In terms of agri-food themes (Hub themes), the training and mentoring activities should cover key aspects such as organic production, household farming, sustainable practices, and environmental awareness, tailored to the training and development needs of the target groups. These trainings should be delivered in a collaborative partnership ecosystem, involving educational institutions, NGOs, SMEs, and design and industry experts.

Participants and engagement approach

When inviting participants to the co-creation workshop, our goal was to engage a diverse group of stakeholders from all areas of the quadruple helix in designing events that promote the implementation of alternative educational programs and innovative governance tools. This group encompassed policymakers, the business sector, civil communities, and scientific experts.

Employing a comprehensive strategy, we primarily targeted experts affiliated with organizations and groups that had previously participated in the hub's workshops. In addition, we used our own institution's extensive network of contacts and partners to bring in experts from education, research, and adult learning. Notably, the Educators' Centre Association, an organization dedicated to promoting lifelong learning and non-formal education, contributed multiple participants, bringing expertise in testing non-formal adult learning and teaching methods. Expanding this spectrum, the Budapest University of Technology and Economics (BME) and an expert on vocational training from the Chamber of Agriculture were also integral contributors, providing valuable policy insights essential for the project's feasibility.

The joint workshop on training and mentoring and innovative governance started with short introductions. During these short presentations MOME, BZN, and the Educators' Centre Association shared insights into their activities, previous relevant projects, and strategies for addressing challenges related to the workshop's theme, aiming to inspire the participants. The introductory presentations were followed by a personal and professional introduction of the participants, including their work and motivation. The dialogue that emerged from the introductory round created a good atmosphere for the group work.

Three groups have been set up for the workshop. One group focused on innovative governance tools and the other two groups on education/training. For the tables on education, MOME team members (Judit Boros, Edit Blaumann) facilitated the group work, while the group on innovative governance tools was led by team members from BZN. During the group work, it was important that all participants could contribute equally to the discussion and the development of the training methods, so the workshop included both individual and group tasks.

Description of co-creation activities

The training and education groups worked on training activities within the same structured framework and timeline. Given the expansive nature of the subject, these sub-groups worked on a tight schedule, allowing for a focused exploration of methods, possibilities, and conditions for non-formal training. The dynamic schedule provided excellent dynamism for an efficient and seamless workflow.

Practical insights from previous workshops have shown that it is neither practical nor feasible to organize an activity for all. Therefore, the development of the activities started with the definition of the target group and the selection of the learner persona (hypothetical imaginary person exemplifying a target group). The target groups were personified by three pre-developed personas (climate-smart university student, young farmer, career changer) – complying with the results of the map and gap analysis. However, participants also had the freedom to define their own persona. Therefore, while group 1. chose the group of career changers, group 2. identified their own target group; people with small gardens, or household farmers, who are still a relatively closely connected group to the 'young farmer' category.

Throughout the workshop, the emphasis was on developing learner-centric training solutions.

Employing design thinking methodology and its fundamental tools, a brief brainstorming session ensued after defining and discussing the persona profiles, concentrating on co-creating the theme of

the training activity.

Altogether, the topics covered a broad spectrum within the bioeconomy sectors:

- Organic production and processing
- Bio-based heating systems
- Sustainable wastewater management
- Waste recycling and use
- Sustainable forest management and promotion of wood use
- Processing in biorefineries
- Building sustainable communities

The purpose of the training activities was also discussed at this point:

- Knowledge transfer
- Building communities
- Dispelling misconceptions
- Educating a new generation
- Transformative education
- Getting concrete, usable knowledge
- Building a self-sustaining system

Following this, each group selected one idea from the pool of information and ideas. These selected concepts were then elaborated in detail, aligning with the workshop template points. The developed training ideas were presented in the final phase of the workshop, accompanied by an opportunity for participants to share personal reflections. This led to an informal dialogue surrounding the presented training ideas.

Guidelines for training and mentoring activities in the Hungarian Hub

Short introduction on purpose and objectives of the guidelines

These guidelines aim to provide a comprehensive framework for the planning, execution, and evaluation of training and mentoring activities within the Hungarian Hub. The primary goal is to foster skill development, innovation, and collaboration within the bio-based sector. These guidelines serve as a foundational document to ensure the success and relevance of training and mentoring activities delivered with the help of the Hungarian Hub.

Detailed description of the training core design aspects

The training programs will focus on practical, hands-on, and experience-based learning, crafted along with the learner personas' needs and aligned with the local agri-food industry's particularities. The proposed training and mentoring activities cover key aspects such as organic production and sustainable practices. The teaching methods employ design thinking to address different learning styles and preferences and to comply with the requirements of learner-centered and experience-based teaching and learning.

Needs addresses and context

The proposed training activities are formulated according to the regional context and specific challenges faced by the Hungarian Hub. They aim to address the need for strengthening the role and importance of SMEs in both the region and the field, as well as applying the creative potential presented by the art & design sector to non-design areas for awareness raising.

Our aim was to ensure that the proposed training and mentoring activities are closely tied to the

already available expertise within the Hub.

Links with industry and occupations (if relevant)

The proposed training activities rely on strong connections with industry partners (such as organic farmers and producers), local ecovillages, industry associations, and connections to art and design experts to ensure that training aligns with current and future workforce demands, fostering a skilled workforce for the bioeconomy sector.

Synergies with other Hub activities (within Engage4BIO or pre-existing)

Numerous synergies exist with other Hub activities at the local level, including speculative design training focused on the future of food, as well as academic endeavours in biodesign and biofutures. Furthermore, colleagues have actively participated in collaborative research initiatives, such as the FoodWave project, and previous scholarly investigations into school and community gardening. We are confident that these synergies will significantly augment the overall impact and effectiveness of our training activities.

Education provider/s involved/to involve

The goal when creating the training activities was to find collaboration opportunities with other educational providers or national organizations to deliver high-quality content. The National Chamber of Agriculture (NAK) is one of such potential collaborators. However, the trainings designed do not require the immediate involvement of NAK (to be able to proceed quickly with their delivery). Nevertheless, in the long run, NAK's involvement would be highly beneficial in upgrading the trainings to official programs and for high outreach.

We also identified potential ways for expanding the training portfolio after the trainings have finished, in the form of a self-sustaining program that the actors involved in the project (farmers, organic farmers, associations, etc.) can continue, as they will possess the tools, structure and experiences for conducting the programs.

Collaboration and synergies with other stakeholders

For delivering the training activities, engagement with NGOs, design, and industry experts is indispensable (for example, organic farmers, and ecovillages). The aim is to create a collaborative ecosystem that supports the success of the training and mentoring initiatives.

Learners' persona

Our learners' personas are defined specifically for the training programs, considering diverse backgrounds and skill levels, according to the needs explored in the Map and Gap analysis. The target groups are personified by 'career changers' and 'people with small gardens, or household farmers' categories.

Learning outcomes and competences mapping

The expected learning outcomes and competencies that participants will gain upon completion of the trainings are:

- theoretical and practical knowledge in organic production and processing
- the application of sustainable household practices (e.g., meal planning, storage techniques, and creative ways to reuse food)
- guidelines for conscious purchasing and reduction of the environmental footprint
- environmental awareness in the everyday
- basic overview of the bio-based agri-food sector, to map further educational possibilities

Instructional design approach/es

For delivering the training activities, the following innovative instructional design methodologies are utilized to ensure an engaging and effective learning experience for participants:

- Learner-centered teaching approach
- Experience-based learning

- Learning-by-doing
- Blended learning

Methods (specific learning activities)

The learning activities include participating in interactive group work (workshops), learning through case studies, and practical demonstrations, to address different learning styles and preferences and comply with the requirements of learner-centered and experience-based teaching and learning. Additionally, the training is delivered in a blended way (physical and virtual mode), to promote self-learning and teamwork, and boost digital intelligence and the acquisition of digital skills.

Creative practices to embed (as per Engage4BIO approach)

The creative practices embedded in the learning activities include interactive workshops and playful, hands-on learning to promote critical thinking, problem-solving, and entrepreneurship, aligning with the Engage4BIO approach.

Innovative elements (as per Engage4BIO approach)

The integration of slow-food and organic farming methods into our curriculum represents an innovative approach. By incorporating organic technologies and methodologies, we not only impart traditional knowledge but also foster innovation. This ensures that our educational programs stay at the forefront of bioeconomy development, preparing learners to navigate and contribute to the evolving landscape of the agri-food industries.

Training activities outlines (Open Educational Resources)

TOPIC 1: Organic production and processing: Scalable practical and theoretical organic farming knowledge from experienced farmers and producers.

Training outline

NUMBER OF PARTICIPANTS: max. 25 DURATION OF THE TRAINING: 4 days / 12 hours
OPTIMAL DATE(S): Weekends

This training program delves into the domain of organic production and processing, offering scalable practical and theoretical knowledge with the help of seasoned farmers and producers. Limited to a maximum of 25 participants, the 4-day, 12-hours training is strategically scheduled on weekends to enhance accessibility for adult learners. The project's leadership during its duration comprises experienced farmers and producers, fostering self-organization and sustainability post-project. Collaboration extends to ecovillages, national gardening associations, and organic farms, creating a comprehensive network of stakeholders.

The targeted audience is individuals with small gardens or household farmers. Emphasizing a learner-centered teaching approach, experience-based learning, and learning-by-doing, the program employs diverse methods such as practical demonstrations, interactive group work, and Q&A sessions. Additionally, innovative elements include garden and farm visits, sensory experiences, and playful learning through interactive workshops, collectively shaping a holistic educational experience for participants.

Synergies with other Hub activities (within Engage4BIO or pre-existing) Academic endeavours in biodesign and biofutures.

- For the duration of the project: farmers and producers

- After the project: self-organised, and self-sustained, the education offered free of charge in the project can be continued at a cost by the actors involved in the project (farmers, organic farmers, associations, etc.).

Cooperators:

- Ecovillages: Gyűrűfű, Somogyfajsz, Gömörszőlős, Visnyeszéplak
- KKOSZ: National Association of Gardeners and Garden Friends
- Organic Farms

Learners' persona

„People with small gardens / household farmers who want to improve their knowledge”.

- The leading question that guided the brainstorming activities: *„What are the challenges of people with small gardens / household farmers in organic production and processing, and how could it help them acquire the knowledge to apply sustainable farming practices more effectively in their daily gardening activities?”*

Learning outcomes and competences

The training aims to provide household farmers or, in general, people with small gardens with a few suitable courses to acquire theoretical and practical knowledge in the field of organic production and processing. The course emphasizes the importance of practical knowledge transfer, using existing knowledge and market actors to provide participants with skills that can be applied at home and used effectively in their gardens.

Instructional design approach

- Learner-centered teaching approach
- Experience-based learning
- Learning-by-doing

Methods (specific learning activities)

- Theoretical foundations
- Practical demonstrations
- Interactive group work
- Exchange of experiences and Q&A
- Involvement of existing knowledge and market actors
- Incentives and next steps
- Activities: short films and presentations, practical demonstrations, Q&A with experts, exchange of experiences

Creative practices and innovative elements

garden and farm visits, tasting and sensory experiences, interactive workshops, playful learning

TOPIC 2: Sustainability in the household: managing and reducing food waste

Training outline

NUMBER OF PARTICIPANTS: max. 25

DURATION OF THE TRAINING: 12 hours total

attendance training: 2 days / 6 hours online

learning material: 6 hours

OPTIMAL DATE(S): Weekends

This training program focuses on "Sustainability in the household: managing and reducing food waste". Tailored for a maximum of 25 participants, the comprehensive 12-hour training spans two days of in-person attendance (6 hours) and an additional 6 hours of online learning material,

strategically scheduled on weekends for optimal accessibility.

Collaborating with leaders such as Tavirózsás Tanya and Kóspallag, alongside ecovillages, national associations, organic farms, and local small-scale producers, the initiative engages diverse stakeholders. Targeting career changers and newcomers to rural areas, the training addresses the central question of how to effectively manage and reduce food waste in everyday life while facilitating knowledge transfer for sustainable households. Learning outcomes encompass meal planning, storage techniques, and creative food reuse methods, fostering an understanding of conscious purchasing and environmental awareness. The instructional design embraces a learner-centered approach, experience-based and hands-on learning, and a blended learning model.

Specific learning activities incorporate gaining theoretical foundations, practical demonstrations, and unique experiences such as visits to model farms, canteens, and markets showcasing good practices. The program also integrates innovative (reaching back to traditional) elements like community gardening, composting, fermenting, preserving, and kitchen practices to impart a holistic understanding of sustainable living. Through this multifaceted approach, participants gain practical skills and knowledge, contributing to the reduction of food waste and the promotion of sustainable lifestyles in everyday household practices.

Synergies with other Hub activities (within Engage4BIO or pre-existing)

Speculative design training focused on the future of food, participation in collaborative research initiatives, such as the FoodWave project, and previous scholarly investigations into school and community gardening.

Education provider/s involved and other stakeholders:

Leaders:

- Tavirózsás Tanya, V. Topor Erika (kiskertem), Kóspallag (Plachi Attila), Homebakker (Bocskorás Bea), Pálik Ferenc (szápár, ökogazda), Pregi Emese, Biobia

Cooperators:

- Ecovillages: Gyűrűfű, Somogyfajsz, Gömörszőlős, Visnyeszéplak
- KKOSZ: National Association of Gardeners and Garden Friends
- Organic Farms: Tavirózsás Tanya
- Local small-scale producers

Learners' persona

„Career changers, new entrants in rural areas”.

- The leading question that guided the brainstorming activities: *„How can food waste be managed and reduced more effectively in everyday life and how can this knowledge be transferred to others, thus contributing to a sustainable household?”* (see persona profile in the Workshop Report)

Learning outcomes and competences

The aim of the training is to learn and apply sustainable household practices. During the training, participants will learn meal planning, storage techniques, and creative ways to reuse food to help reduce unnecessary food waste. In addition, the program encourages conscious purchasing and environmental awareness, thus promoting sustainable lifestyles and reducing the environmental footprint of everyday life.

Instructional design approach

- Learner-centered teaching approach
- Experience-based learning
- Learning-by-doing
- Blended learning

- Blended teaching and learning (48 hours study journey + 12 hours online learning material)
- Theoretical foundations,
- Practical demonstrations,
- Activities: model farm, canteen, market (demonstration of good practices), Location, Gyűrűfű ökofalu, Szérűskerti Arborétum

Creative practices and innovative elements

community gardening, composting, fermenting, preserving, kitchen practices, cooking




Engage4BIO

Consortium :



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



Guidelines for training for the Dutch Engage4BIO Hub

WUR, ArtEZ, Learning for Life



Introduction

On Tuesday December 12, 2023 WUR, ArtEZ and Learn for Live jointly organized the co-creation workshop on learning & mentoring activities regarding a bio-economy ecosystem for fashion and textiles on behalf of the Dutch Hub. It was the fourth workshop in a series of four co-creation sessions, part of WP2. The main goal of the workshop was to create a framework with some inspirational ideas for the intended learning & monitoring activities which are feasibly organized in the timeframe of WP3 (2024 and beginning of 2025).

The workshop event was held in collaboration with the Holland Air Museum, one of the Engage4BIO partners. The location was a small room (max. 20 persons) in one of the museum buildings: De Hanekamp Inn.



Holland Open Air Museum, workshop location

Participants and engagement approach

Invitations were sent out to the core participants of the previous workshops and to some additional persons who are involved in formal and non-formal training programs. Finally, a group of 18 persons joined the workshop, consisted of 6 male and 12 female participants. They come from educational and cultural institutions, governments, and intermediary organizations. Additional partners were Learning for Life (focus on adult education) Spectrum (focus on citizens participation & learning) and some new people from HAN University of Applied Sciences. See Annex for the complete list of participants. ArtEZ organized and lead the workshop. Representatives of ArtEZ, WUR and Learning for Life took the role of moderators during the table sessions of the workshop.

Co-creation activities

Ice-breaker

After a welcome and introduction of the program (see Annex), we continue with an ice-breaker to learn who is in the room and with which goal and expectations. The moderator asked participants different questions related to their role as (possible) educators.

Question 1: Do you work for an organization which offers education or learning activities? If yes, please, stand up, tell your name, position and the organization.

Question 2 (for the standing people): What kind of non-formal and formal learning activities do you offer (primary and secondary school, middle & higher vocational education, academic training)

Question 3: Is there already any connection to bio-based or circular learning activities?

Question 4 (to everyone): What are your needs for learning activities related to bio-based and circular textile?



Moderator explaining the goals of the workshop

Co-creation workshop session 1

Moderator Jeroen van den Eijnde

Setting Four mixed group of 4/5 people sitting at separated tables. Each table with a moderator

Goal Getting a clear picture which target group is most relevant for learning activities for bio-based and circular textile. After determining the most relevant target group(s), participants will discuss the most relevant content of the learning activities, related to knowledge and skills for the transition to a bio-economy.

For determining the target groups, participants worked with cards with predefined target groups (pupils and students of all levels of formal education, entrepreneurs, citizens, policy makers, employees, returners to the labour market, and a joker for unexpected target groups, see Annex).

The cards were used to discuss the different target groups and finally for putting the most relevant target groups on a canvas (see Annex). The same canvas was used to describe the most relevant knowledge and skills gaps related to the chosen target group(s).

Co-creation workshop session 2

Moderator Jeroen van den Eijnde

Setting Three (new) mixed group of 4/5 people sitting at separated tables. Moderators stayed on the same table of session 1.

Goal Developing further the previous canvas from another group by putting type of activities related to the described target groups and gaps of knowledge and expertise.

For determining the different types of activities we used a second canvas (see Annex) to build on the outcomes of the previous completed canvas. In this canvas participants had to fill in as concrete as possible type of activity (workshop, hackathon, minor, living lab, etc.), context of execution (on site, online, hybrid), conditions (free/paid, etc.), and duration (for preparation and participation, in hours, days or weeks, etc.).

After completed both canvasses, the moderator of each group presented the outcomes in a 5 minutes presentation (which are recorded for documentation). See Annex for the summaries of these presentations.

Lesson learnt

Challenges and obstacles

Participants mentioned various target groups from students/pupils at secondary school and (preparatory) vocational education. There is a big challenge to organize learning and mentoring activities for schools. Developing and implementing activities in school contexts requires time consuming organisation and implementation. Activities which are directly related to existing curricula, are difficult to manage.

Enablers

A second important group of stakeholders are citizens which could be reached by the various platforms in the hub like museums and art and design events. There was a specific interest in families as intergenerational groups in which older and younger people can learn together. Especially, the Holland Air Museum offers interesting opportunities to address families and to connect them to learning activities.

Looking at the content of learning activities, most of the participants focus on awareness creation. As a consequence, in the Dutch hub is no clear distinction between learning activities at one side, and awareness and communication campaigns, and art events on the other side. Especially when we consider the role of art(ist) and design(ers), some participants see them as experts who can bridge the gap between (scientific) knowledge about the bio-economy and the people's understanding for the necessity for the intended transition.

Based on the workshop result, the most promising ingredients of a framework for learning activities are:

- Make it playful (as a game), not with a pointing finger who to act and behave;
- Start with daily experiences and objects (like people's garments) of the citizens themselves. Use them to explain aspects of material and production (w);
- Use existing platforms, activities etc. to embed the new activities;
- Focus on aspects of the whole ecosystem/value chain (from raw material to wardrobe, and the various R-strategies after use) to create a clear understanding of the complexity and challenges of a sustainable, biobased textile system;
- Make best practices for a biobased textile ecosystem visible by excursions along relevant actors like design studio, production factory, farmers, repair cafés, collecting and recycling companies, etc.

Improvements proposed for following workshops

- The workshop space was a bit too tiny

Future opportunities (emerged from the workshop)

- Using the museums and art and design events already partner in the hub as platforms for learning activities related to the mentioned target.

Summaries of training activities

Group 1: Moderator: Tjeerd Veenhoven (ArtEZ)

Target groups:

- Students middle vocational education and citizens. Difficult for these groups to understand the content, necessity, benefits, and impact of the transition to a bioeconomy. Which role can they play in this transition?
- Experts: a professional in the biobased transition who is involved in accessible and understandable dissemination activities. The expert could be an artist or designer who is involved in biobased activities and has the communicative skills to educate layman people.

Content: Focus on bottom-up awareness creation on actual costs, true pricing, skills for R- strategies (repair, repurpose, recycling, etc.) and on the question 'How can I do good?' in relation to sustainable behaviour. Avoid specific jargon like 'value chain'. Better to speak about 'van grondstof naar garderobe' (from raw materials to the wardrobe).

Activities:

- Online and/or live game (Gamification) with the possibilities to be rewarded. For instance by buying a garment, you have to play the game and by winning it you will get the garment for free. So, you have to think about an interesting incentive for participants to learn more about biobased and sustainable clothing. Type of game could be also an escape room. Only by giving right answers or doing right things in the escape room related to sustainability, you can leave the shop.
- Activities focusing on awareness by creating metaphors understandable and known by the target groups, for instance related to garments.
- Focus on concrete daily objects, materials and behaviour instead of abstract scientific numbers related to the biobased transition. Offering insights in the globalized value chain and the role of social behaviour in fashion consumption.
- Activities which support real sustainable choices for consumption.
- Creating role models for the target groups.

Group 2: Moderator Maarten Kooistra (WUR)

Target groups:

- citizens
- pupils secondary schools

Content: Stimulating awareness related to clothing (different values, less consuming, reuse, repair, re- and upcycling).

Activities:

For citizens:

- World Repair Days (repair café) for textile and garments (already existing for devices) on a permanent physical location with online support (tutorials).
- Format 'The Great British Bake Off' for sewing clothes

For pupils:

- School workshops to learn how to pimp your garments, with a final fashion show with an introduction about pimp techniques (prints, embroidery, etc.)
- Fashion Fairs to change second-hand garments

Excursions to relevant companies for repair, recycling, collecting textile

- Board game about the making of your garments
- Assignment to make a passport about the travel of your own garment from raw material to the use phase

Group 3: Moderator Margreet Broens (Learning for Life)

Target group:

- pupils secondary school and preparatory vocational education (age 12-16).

Content: Focus on creating awareness and knowledge about the raw materials and production process of garments, related to real costs, position in the value chain, labor conditions, social/human component is important. How can we change the bad situation now into good for the future?

Activities:

- Making an inventory of pupil's own wardrobe at home, counting total amount of pieces, registering which one you are still wearing or not, and analysing the garment labels, etc. Working in small groups en presenting results for pupils, teachers and parents. Possibility to connect such a project to relevant excursions (Holland Open Air Museum Arnhem, Knitwit Stable Baambrugge)
- Learn how to upgrade their own clothes by traditional, biobased textile techniques
- The T-shirt challenge related to existing subjects at school like Geography (Where does my garment come from?) and Biology (What are biobased materials?). Experience-based education.
- Garment library at school to change and give away the clothing of pupils and teachers (once a week or month).
- A biobased safari (excursion) to discover and experience the textile value chain (from cultivation to production). Could be an in-school activity, organized by guest teachers.

Group 4: Moderator Jeroen van den Eijnde (ArtEZ)

Target groups:

- Entrepreneurs/companies in collaboration with formal educational partners (especially middle and higher vocational education, not academic), and citizens.
- Visitors of Holland Open Air Museum have an interesting profile (families, mix of educational levels and different ages/generations).
- The own organizations of the participants (government, university, school, etc.). Employees are not very involved in the biobased transitions, students much more. They can function as biobased ambassadors for the own organization. Urgency for a biobased transition only felt in small group of employees (researchers, policy makers circular and sustainable economy). These big organizations could make big impact, for instance by sustainable purchase strategies for work clothes, interior textiles, etc.

Content:

- For companies and students: Focus on knowledge and application about the ecosystem for textile.
- For visitors NOM/families: Focus on awareness campaigns related to wearing, repairing, real costs of garments. Campaigns have to be simple accessible and comprehensive for a wide audience (differences in ages, educational level, cultural background). Craft labs of the Holland Air Museum could play a role in this. There will be in 2024 repair activities. See: <https://www.immaterieelerfgoed.nl/nl/ambachtenlab>.
- For own organizations: Focus on awareness campaigns for employees.

Activities:

- For companies and students: e-learning activities, gaming (to develop in collaboration with students middle and higher vocational institutes), Important to have playful activities, not forcing people too much.
- For visitors NOM/families: showing a garment journey from raw material to wardrobe.
- For own organizations: internal courses and workshops for employees. Basic condition of an activity: start with recognizable objects/behaviour related to their own daily experiences and create an incentive for the employees. Think about activities like a garment library or passport.
- For all: for organizing feasible activities in time and money, they have to be part of existing events or programmes.

Key words

In a last round of the workshop all participants were asked to give two key words which sounds the most important of the whole co creation session. Results: awareness creation, nice, think about what is already available, showing best practices for giving insight, repair, and now?, attention, action-driven, bio-based safari, itch (the reason why people will scratching theirs skin. In other words: what will be the incentive, trigger to participate), easy (easy to repair, to make, to understand), costs/money, connected to people's own (daily) experiences, an intergenerational approach/community spirit, material passport, scalable/reach of people, budget, forward to the past (we can learn from the past for a sustainable future), putting own clothing central in the activities, gaming, world repair café, billboards.



5.1.3 Knowledge gain, awareness raising and communication campaigns

BLUEPRINT FOR AWARENESS CAMPAIGN

HUB NAME: Austria

CREATED BY: co-created by participants

DATE: 09.11.2023

ABOUT THE CAMPAIGN	MAP AND GAP	COMMUNICATION THEMES
<p>What is the campaign trying to achieve?</p> <p>The three campaigns aim to raise awareness on the wood-based value chain, but especially foster critical understanding of bioeconomy and what it means for Austria, the people, the nature, the economy, and rural areas.</p>	<p>What were the identified gaps linked to outreach activities, target groups, awareness etc.?</p> <p>Uncertainties surround the concept of bioeconomy, particularly in distinguishing it from the principles of a circular economy. The significance of bioeconomy varies along the entire value chain, with different perspectives emerging from key stakeholders.</p> <p>For instance, designers grapple with challenges such as disassembly techniques, the selection of sustainable materials, and fostering consumer awareness. On the other hand, forest owners often unknowingly practice sustainable forest management, but there is a need to explore and integrate future tree species into their strategies.</p> <p>These identified gaps highlight the complexity and diverse interpretations of bioeconomy, emphasizing the necessity for a comprehensive understanding and collaborative efforts across stakeholders to bridge these conceptual and practical divides.</p> <p>Identified gaps in communication revolve around the complexity of the concept itself. The need for clear and straightforward communication emerges as a crucial factor, emphasizing the importance of distilling complex ideas into easily understandable messages.</p> <p>Addressing these gaps involves adapting language to cater to diverse audience groups.</p>	<p>What were the identified communication themes during the vision building process?</p> <ul style="list-style-type: none"> 0 Critical understanding of bioeconomy 0 Difference between bioeconomy and circular economy, recycling, etc. whether the sufficiency is inherent to the concept 0 Which role bioeconomy plays in the current wood-based value chain in Austria and what could be improved 0 The role of bioeconomy materials in everyday life 0 Role and influence of actors along the wood-based value chain on bioeconomy, e.g. how to label materials, how to recycle materials, how to better use side streams, etc.

	Recognizing the varied levels of familiarity and understanding within different audiences becomes essential, prompting a call for communication strategies that are tailored and	
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	accessible to all. By bridging these gaps, we can enhance the effectiveness of communication, ensuring that the intricacies of the concept are conveyed comprehensively and inclusively.	
GOAL OF THE CAMPAIGN	TARGET AUDIENCE OF THE CAMPAIGN	CAMPAIGN ACTION ITEMS
What key points does the campaign address? What is the goal of implemented a campaign?	Who needs to be addressed by the campaign and in what capacity? <ul style="list-style-type: none"> • Actors along the value chain • Broader public • Communication stakeholders 	How will we achieve the purpose? What activities will be undertaken? <ul style="list-style-type: none"> • Circular residency (arts exhibition) • Web-information platform • Sustainability in play – bioeconomy challenge

AWARANESS RAISING ACTIVITY NR. 1: Circular Residency

<p>Working title of the activity</p> <p>Circular Residency</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <ul style="list-style-type: none"> The activity aims to span the arc from citizens, through craftsmen, to art Also Schools and architects, as well as Designers are target groups The broad public in Linz 	<p>Timing of the activity</p> <p>Preparation</p> <ul style="list-style-type: none"> Dec 2023 - Oct 2024 Organize cooperation with a partner for co-financing. Gather information: City of Linz, Environmental considerations. Clarify framework conditions. 	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> Vernissage and arts exhibition, interlinked with content discussion Digital documentation for real-time and future use through time lapse documentation of the process via Live Cam 	<p>Art and design elements of the activity</p> <ul style="list-style-type: none"> To actively invite people who have been part of the history of the material is a goal of the art concept Different artists decide about the next transformation process Artists from different professional specialisations use and transform art with the same material as artist before. Transformation process
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <ul style="list-style-type: none"> reclaimed wood, making the material's transformation processes visible, information/history from the material. 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> Old materials from public buildings (Collaboration with Mareiner Altholz?) --> Utilizing vacant spaces in Linz as a resource (Materials from the soon-to-be-demolished mini-golf course or the vacant space near the Linz highway entrance). Budget for artists (approximately €15,000 - €25,000). Local artists from Linz. Sponsorship opportunities. Collaboration with 	<p>Implementation</p> <ul style="list-style-type: none"> Mar 2025 - Apr 2025 Location and materials are confirmed. Opening exhibition and panel discussion on the topic. Artists sequentially transform the artwork. Biomass remains constant; appearance can change radically. Minimum of 3 iterations. Info Wall stimulates discussions. Accompanying program: Exhibition and photos. <p>Follow up</p> <ul style="list-style-type: none"> Submission for AIDA + International 	<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> Digital documentation for real-time and future use through time lapse documentation of the process via Live Cam Info Wall for content and core topic of wood-based bioeconomy 	

	<p>the Tabakfabrik.</p> <ul style="list-style-type: none">• Budget for on-site support.	<p>Engage4BIO Award Ceremony.</p>		
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	<ul style="list-style-type: none">• Collaborative partners: Kunstuni Linz, HTL1 Bau und Design, Festival der Regionen, Salzamt, Kulturbeirat Linz, Innovationshauptplatz, Architekturforum, Creative Region.			
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AWARANESS RAISING ACTIVITY NR. 2

<p>Working title of the activity</p> <p>Sustainability Game – “Bioeconomy challenge”</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>2 Phases!</p> <p>2nd phase: Fair visitors (e.g. Energy Saving Fair 2025, Change Maker Festival, etc...)</p> <p>General public</p>	<p>Timing of the activity</p> <p>Preparation</p> <ul style="list-style-type: none"> Establishing a framework for the competition Idea competition with university institution Prototyping game nights <p>Implementation</p> <ul style="list-style-type: none"> Raise budget Search for partners Realize production Marketing Evaluation 	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> The game is in circulation and available in shops Eventually specific website 	<p>Art and design elements of the activity</p> <p>Package is developed in a idea competition. examples: card game, map, symbols.</p>
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <ul style="list-style-type: none"> Steps towards the bioeconomy - Vision Bioeconomy Factor for a sustainable, strengthened, regional value chain Understanding that resources are limited 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> Uni+ students Create a briefing Project operators Game experts Search for funding sources (e.g., Climate Fund, EU funding sources, etc.) 	<p>Follow up</p> <ul style="list-style-type: none"> If well-received -> reproduce Possibly adapt the concept -> regulars' table -> online version 	<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Pictures, feedback of users</p>	

AWARANESS RAISING ACTIVITY NR. 3

<p>Working title of the activity</p> <p>BE Infoplattform</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <ul style="list-style-type: none"> • Broad public • Multipliers <ul style="list-style-type: none"> o Businesses o Education providers o Media o Municipalities o Regions o Teachers 	<p>Timing of the activity</p> <p>Preparation</p> <ul style="list-style-type: none"> • Searching for collaboration partners • Develop project team and project management for this specific activity <p>Implementation</p>	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>Through media and contacts</p>	<p>Art and design elements of the activity</p> <p>Explainer videos, podcasts,</p> <p>What do I, we, the country, the world, nature gain by 2050</p> <p>Circular Residence</p>
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <ul style="list-style-type: none"> • What is Bioeconomy? Basics • Why is it necessary? • Examples • In-depth or background information • Glossary • Download for media and teachers (photos, texts) 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> • Bioeconomy Austria as a cooperation partner & Open Science • Editorial (Website + Social Media) • Programming (FH Hagenberg) • Design (AD) • Contact Person 	<ul style="list-style-type: none"> • Hagenberg • Concepts, timeline and budget • Text, Design, Lectures • Funding <p>Follow up</p> <ul style="list-style-type: none"> • Long-lasting website 	<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Recording, going online</p>	

BLUEPRINT FOR AWARENESS CAMPAIGN

HUB NAME: FI Sustainable packaging Hub

CREATED BY: CLIC Innovation Ltd

DATE: 12.01.2024.

ABOUT THE CAMPAIGN	MAP AND GAP	COMMUNICATION THEMES
<p>What is the campaign trying to achieve?</p> <p>The aim of the campaign is to raise awareness about sustainable packaging. What sustainable packaging means and, on the other hand, what it is not.</p> <p>This includes identifying the materials used in packaging, what they are made of and how they can be recycled at the end of the lifecycle.</p> <p>We identified these aims and activities in the workshop, but they are tentative and will be further developed in collaboration with the relevant stakeholders.</p> <p>This blueprint does not describe the activities from the Activity Catalogue, but the outcomes of the co-creation workshop on knowledge gain and awareness raising campaigns held in October 2023 in Finland.</p> <p>Connections to Finnish hub innovative governance model development, training and mentoring activities and to</p>	<p>What were the identified gaps linked to outreach activities, target groups, awareness etc.?</p> <p>During the map and gap analysis, it was identified that communication and collaboration are crucial to create transition towards sustainability in packaging development.</p> <p>Design could be used as a tool to increase customer awareness. This requires also enhancing learning opportunities on design thinking, business models and regulatory environment for the designers and manufacturers.</p> <p>There is a lack of common understanding about what sustainability means when talking about packaging. There are also different views as to what can be called sustainable feedstock in the production. Developing new materials and recycling methods can be hindered by high costs.</p> <p>The current terminology about sustainability is not clear and especially</p>	<p>What were the identified communication themes during the vision building process?</p> <ol style="list-style-type: none"> 1. Designing a sustainable packaging 2. Life cycle of a packaging 3. End-of-life of a packaging and recyclability 4. What is sustainable packaging 5. What is packaging made of

the Activity Catalogue will be discussed before the actual implementation during 2024.

difficult to understand for consumers. The Green Claims regulation is expected to



	make this more manageable. But still, there is a need for a common terminology to be created.	
GOAL OF THE CAMPAIGN	TARGET AUDIENCE OF THE CAMPAIGN	CAMPAIGN ACTION ITEMS
<p>What key points does the campaign address? What is the goal of implemented a campaign?</p> <p>In the vision workshop, the following vision was established for the sustainable packaging hub with the focus on communications campaigns: Changing the old practices requires collaboration and enhanced communication along the whole packaging value chain. Also, research results need to be communicated for decision makers, companies, and society.</p>	<p>Who needs to be addressed by the campaign and in what capacity?</p> <p>Several target groups were identified during the map and gap analysis and the vision workshop. These include students, other con, companies, decision makers and researchers.</p> <p>Creating different kinds of campaigns for different target groups is essential to achieve best results.</p>	<p>How will we achieve the purpose? What activities will be undertaken?</p> <p>Collaboration is essential in creating successful campaigns. Several collaborator organizations have already been identified.</p> <ol style="list-style-type: none"> 1. Exhibition about sustainable packaging at Tekniikan museo (The Museum of Technology), Helsinki. 2. Communications campaign about the life cycle of a packaging. Collaboration with SUMI and Finnish Packaging Association foreseen. 3. Communications campaign about the end-of-life of a packaging. Collaboration with SUMI and Finnish Packaging Association foreseen. 4. Participating in Helsinki Design Week event. Metropolia Arabia campus is a good collaborator. 5. Creating a packaging game to identify materials and recyclability of packaging. Tekniikan museo can include this in the planned exhibition.

		6. Participating in Sustainability café event. The event is organized by Aalto University and University of Helsinki.
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ART EVENTS AND COMMUNICATION CAMPAIGNS ACTIVITIES NR. 1, 2 and AWARENESS RAISING ACTIVITY NR. 3

<p>Working title of the activity</p> <p>Helsinki Design Week</p> <p>Participating as a part of this event (PARTICIPATION IN 1 BIG EVENT). Participating in the <i>pecha kucha</i> event (ACTIVITY 1) and a workshop series (ACTIVITY 3) at Metropolia Arabia campus about packaging design.</p> <p>Metropolia Arabia campus is already a part of Helsinki Design Week, collaboration might lower the cost of participation.</p>	<p>For whom the activity is intended? (Target audience and stakeholders)</p> <p>consumers, design professionals, packaging designers</p>	<p>Timing of the activity</p> <p>Preparation</p> <p>Workshop planning 1-2 months before the event.</p> <p>Implementation</p> <p>6-15 September 2024 during the Helsinki Design Week</p> <p>Follow-up</p> <p>Collecting feedback from the participants via Webropol. QR code can be presented at the workshops or sent to the participants afterwards.</p> <p>Reporting of event in selected channels.</p>	<p>How will be the activity visible? (Quality photos, video, creative communication)</p> <p>Workshop</p> <p><i>Pecha kucha</i> event</p>	<p>Art and design elements of the activity</p> <p><i>Pecha kucha</i> event participation. These are video collages which include several images that are shown 20 seconds at a time. Speakers are allowed to present 20 images in total.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>Raising awareness about sustainable packaging in consumers and packaging designers.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Workshop planning:</p> <p>1-2 persons to plan and run the workshops. Number of workshops during the event needs to be clarified.</p> <p><i>Pecha kucha</i> show:</p> <p>Video can be produced from photos quite easily. Even power point can be utilized. 1 person to attend the event as a speaker.</p> <p>Collaboration needed: Metropolia, Helsinki Design</p>		<p>How will be the activity documented? (Quality photos, video, creative communication)</p> <p>(ACTIVITY 2) Article about the event will be published on CLIC Innovation website and newsletter. The article will include a video collage (<i>pecha kucha</i>), and photos.</p> <p>Possible collaboration with <i>Uusiouutiset</i> magazine.</p>	

	Week, Uusioutiset			
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AWARANESS RAISING ACTIVITY NR. 4 and 5

<p>Working title of the activity</p> <p>Participating in Sustainability Café during Sustainability Science Days 10-14.6.2024 arranged by University of Helsinki and Aalto University (ACTIVITY 4).</p>	<p>For whom the activity is intended? (Target audience and stakeholders)</p> <p>University students and personnel</p>	<p>Timing of the activity</p> <p>Preparation</p> <p>Creating the visual materials for the stand in advance. Materials need to be ready at least a week before the event.</p> <p>Implementation</p> <p>Sustainability Science Days 10-14.6.2024</p>	<p>How will be the activity visible? (Quality photos, video, creative communication)</p> <p>Creating an information stand for the event. Core activity is engaging stand visitors in discussions.</p>	<p>Art and design elements of the activity</p> <p>Visual materials.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>Informing students and university personnel about bioeconomy and sustainable packaging.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Creating the visual materials for the stand requires graphic designer services. These can include e.g. a poster and a flyer.</p> <p>1-2 persons at the stand at all times.</p> <p>Collaboration needed: Metropolia, University of Helsinki, Aalto University, Uusiouutiset</p>	<p>Follow-up</p> <p>Collecting feedback and insights from the participants via Mentimeter. QR code can be presented at the stand.</p> <p>Reporting of event in selected channels.</p>	<p>How will be the activity documented? (Quality photos, video, creative communication)</p> <p>(ACTIVITY 5) An article on the event will be published on CLIC Innovation website and newsletter. The article will include the visual materials created for the event, along with photos.</p> <p>Possible collaboration with <i>Uusiouutiset</i> magazine.</p>	

AWARANESS RAISING ACTIVITY NR. 6 & ART EVENTS AND COMMUNICATION CAMPAIGNS ACTIVITY NR. 7

<p>Working title of the activity</p> <p>Learning environment about packaging in Tekniikan museo – Museum of Technology (ACTIVITY 6)</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>Especially for schools (upper comprehensive school pupils), but also other museum visitors.</p>	<p>Timing of the activity</p> <p>Preparation</p> <p>Planning in January, first tests during February, marketing materials (power point to promote the learning environment for teachers) ready in March/April.</p> <p>Implementation</p> <p>Fall 2024</p> <p>Follow-up</p> <p>Changing the learning environment gradually after the first implementation.</p>	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>Marketing materials will be created for teachers.</p> <p>If possible, a video can be created about the environment and posted to social media.</p> <p>The learning environment will also be promoted and visible through the museum’s communication channels.</p>	<p>Art and design elements of the activity</p> <p>At this point, the plan is to build a circular path in the museum. There will be information points and functional exercises in the path.</p> <p>The plan is to utilize the sustainable food packaging criteria created in the PackageHeroes project. In addition to the physical information points and exercises, there will be a tablet in which different kinds of content can be created for different age groups of users.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>What is sustainable food packaging? What are the sustainable materials to produce packaging. How are different kinds of packaging recycled.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Collaboration with PackageHeroes project experts to plan the learning path is needed. Several persons from the project group are needed for planning.</p> <p>Materials from packaging manufacturers or brand owners to create immersive experience.</p> <p>Educational experts from Tekniikan museo are needed to plan the pedagogical</p>		<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>(ACTIVITY 7) Collaboration with Uusiouutiset magazine. Social media campaign about the learning environment.</p> <p>News published on CLIC Innovation website and newsletter.</p>	

	<p>materials of the learning path.</p> <p>Collaboration needed with Uusiouutiset-magazine to spread knowledge about the learning environment.</p>			
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ART EVENTS AND COMMUNICATION CAMPAIGNS ACTIVITY NR. 8

<p>Working title of the activity</p> <p><i>(ACTIVITY 8)</i> Packaging game</p> <p>Can be implemented as a part of the learning environment (mentioned in activity nr 3).</p>	<p>For whom the activity is intended? (Target audience and stakeholders)</p> <p>Especially young people but can be used by other people as well.</p>	<p>Timing of the activity</p> <p>Preparation</p> <p>Planning in January, first tests during February, marketing materials (power point to promote the learning environment for teachers) ready in March/April.</p> <p>Implementation</p> <p>Fall 2024</p> <p>Follow-up</p> <p>Updates will be made after getting feedback from museum visitors.</p>	<p>How will be the activity visible? (Quality photos, video, creative communication)</p>	<p>Art and design elements of the activity</p> <p>Physical materials in the learning environment. The tablet can also be utilized for the game.</p> <p>The tablet version can be utilized in different kinds of events outside the museum as it can be changed according to the user.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>Getting to know packaging materials. What can it be used for? How the packaging is made and how it can be recycled.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>6-8 people are needed to plan the game. PackageHeroes materials can be utilized.</p>		<p>How will be the activity documented? (Quality photos, video, creative communication)</p> <p>Collaboration with Uusioutiset magazine. Social media campaign about the learning environment.</p> <p>News published on CLIC Innovation website and newsletter.</p>	

ART EVENTS AND COMMUNICATION CAMPAIGNS ACTIVITY NR. 9

<p>Working title of the activity</p> <p>Life-cycle of the packaging</p> <p>Social media campaign <i>(ACTIVITY 9)</i></p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>Citizens, especially young adults</p>	<p>Timing of the activity</p> <p>TBD – During 2024</p> <p>Preparation</p> <p>Implementation</p> <p>Follow up</p>	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>Social media posts. Either an animation or an influencer collaboration video.</p>	<p>Art and design elements of the activity</p> <p>Possibly a virtual tour of a packaging manufacturers factory or an animation of such.</p> <p>An influencer collaboration could be utilized.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>What is the packaging made of? What is the purpose of packaging.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Collaboration with manufacturers is essential.</p> <p>A video camera or an animator service is needed to produce the video.</p> <p>Communications campaign collaboration with SUMI is essential.</p> <p>For planning the campaign, a small team is needed, 2-5 people from the project.</p>		<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Social media posts. Either an animation or an influencer collaboration video.</p>	

ART EVENTS AND COMMUNICATION CAMPAIGNS ACTIVITY NR. 10

<p>Working title of the activity</p> <p>End of life of packaging A social media campaign <i>(ACTIVITY 10)</i></p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>Citizens, especially young adults</p>	<p>Timing of the activity</p> <p>TBD – During 2024.</p> <p>Preparation</p> <p>Implementation</p>	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>Social media posts. Either an animation or an influencer collaboration video.</p>	<p>Art and design elements of the activity</p> <p>A virtual tour of a packaging recycling plant or an animation.</p> <p>An influencer collaboration could also be utilized.</p>
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <p>What happens to the packaging after it is not used anymore.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Collaboration with recycling operator is essential.</p> <p>A video camera or an animator service is needed to produce the video.</p> <p>Influencer collaboration is possible.</p> <p>Communications campaign collaboration with SUMI is essential.</p> <p>For planning the campaign, a small team is needed. 2-5 people from the project.</p>	<p>Follow up</p>	<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Social media posts. Either an animation or an influencer collaboration video.</p>	

BLUEPRINT FOR AWARENESS CAMPAIGN

HUB NAME: Italian HUB

CO-CREATED BY participants

DATE: 13.12.2023.

ABOUT THE CAMPAIGN	MAP AND GAP	COMMUNICATION THEMES
<p>What is the campaign trying to achieve?</p> <p>The campaign is intended to apply new communication strategies, using dissemination events, art events and the support of researchers to explore together with fishing industry representatives, citizens and young people various aspects of the local Blue bioeconomy from a social, cultural and scientific perspective in an integrated approach.</p>	<p>What were the identified gaps linked to outreach activities, target groups, awareness etc.?</p> <p>Among the main gaps highlighted by the M&G analysis emerged that the promotion of Art & Design activities linked to the blue biobased sector, in the Italian HUB, is still at an early stage, such as the level of maturity in exploring the relationship between Art & Design and the bioeconomy in the region.</p>	<p>What were the identified communication themes during the vision building process?</p> <p>The identified communication campaigns themes were based on two main topics:</p> <ul style="list-style-type: none"> • “Conscious and sustainable use of marine resources” • “Re-use, recycling and valorisation of waste from marine supply chains in different sectors (fashion, art, design, food, feed, cosmetics, energy)”
GOAL OF THE CAMPAIGN	TARGET AUDIENCE OF THE CAMPAIGN	CAMPAIGN ACTION ITEMS
<p>What key points does the campaign address? What is the goal of implemented a campaign?</p> <p>The campaigns will be addressed in order to implement the following key points:</p> <ul style="list-style-type: none"> • the development of new sustainable good practices for the application of the “turning waste into profit” concept • the promotion of the sustainable blue bioeconomy and the development of the transition towards the circular economy in 	<p>Who needs to be addressed by the campaign and in what capacity?</p> <ul style="list-style-type: none"> • Experts from the Art & Design sector • Teachers • Students • Institutions • Production (SMEs) • No-profit organizations 	<p>How will we achieve the purpose? What activities will be undertaken?</p> <ul style="list-style-type: none"> • Artistic performances (immersive exhibitions, visual art, permanent installations) • Art associated to cooking activities • Conferences

the Mediterranean Sea

- to provide a contribution to promote the sustainable management of marine resources and by-products

and waste from fisheries and aquaculture sectors		
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AWARENESS RAISING ACTIVITY Nr. 1 "Conscious and sustainable consumption of marine resources"

<p>Working title of the activity</p> <ul style="list-style-type: none"> • Re-Mare • Sosteni_amo 	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <ul style="list-style-type: none"> • All identified target • Transversal targets • Young people • Researchers 	<p>Timing of the activity</p> <p>Preparation: March 2024/July 2024</p> <p>Implementation: September 2024/February 2025</p> <p>Follow up:</p> <ul style="list-style-type: none"> • sending out satisfaction questionnaires • sending summary event reports • producing video summaries of activities 	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> • Graphic products (printouts and web) • Audio-video products • Exhibition, ephemeral and permanent installation (immersive experience) • Corner speaks and dedicated pages to exchanges ideas and suggestions 	<p>Art and design elements of the activity</p> <ul style="list-style-type: none"> • Graphic products • Audio-video products • Museum exhibition • Local permanent and non-permanent exhibitions with art installations also using immersive augmented reality • Art performances • Podcasts on radio • Images to increase health protection
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <ul style="list-style-type: none"> • Sustainability (reuse e recycle..) • Raising awareness on sea health condition and the human activities impact • The need of the equilibrium between living species • Green transition • Health and skills in the bioeconomy 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> • Economic resources • Statistical surveys • Specialized human resources • Urban, landscape and virtual spaces • Innovative technological and digital tools (e.g. VR viewers) • Horizon Europe programme • PNRR new social system 		<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> • Graphic products (printouts and web) • Audio-video products/ pictures/ photos 	

	<ul style="list-style-type: none">• Regional development funds			
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AWARENESS RAISING ACTIVITY Nr. 2 "Reuse, recycling and valorisation of the waste produced by marine supply chains in various fields

<p>Working title of the activity</p> <ul style="list-style-type: none"> • Second life 	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <ul style="list-style-type: none"> • All targets • Transversal targets • Schools 	<p>Timing of the activity</p> <p>Preparation: March 2024/July 2024</p> <p>Implementation: September 2024/February 2025</p> <p>Follow up:</p> <ul style="list-style-type: none"> • sending out satisfaction questionnaires • sending summary event reports • producing <p>video summaries of activities</p>	<p>How will be the activity visible? (Quality photos, video, creative communication)</p> <ul style="list-style-type: none"> • Graphic products • Audio-video products • Immersive exhibition • Video dissemination • Themed conferences • Installations in urban areas • Visual art 	<p>Art and design elements of the activity</p> <ul style="list-style-type: none"> • Graphic products • Audio-video products • Immersive exhibition • Art and design laboratories • Advertising campaigns with well-known testimonials • Multimedia products accessible to students
<p>What is the core message the activity intends to transmit about bioeconomy?</p> <ul style="list-style-type: none"> • Valorisation and promotion of new supply chains • Green transition • Raising awareness on sea issues • Accountability on human activities that have an impact on the sea health • Food education • Waste materials can generate virtuous cycles (circular economy and 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> • Economic resources • Statistical surveys • Specialized human resources • Urban and virtual spaces • Innovative technological and digital tools (e.g. VR visors) • National and European funds dedicated to specific programs • Human 		<p>How will the activity be documented? (Quality photos, video, creative communication)</p> <ul style="list-style-type: none"> • Graphic products • Audio-video products • Immersive exhibition • Dissemination with video related to the sea • Conferences • Installations in urban areas • Visual art 	

sustainability) • Regeneration-resilience	resources trained and able to guide consumer choices • Policies fostering the bioeconomy			
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ART AND COMMUNICATION CAMPAIGNS Nr. 1 Scarti che meraviglia (What a wonderful waste)

<p>Working title of the activity</p> <ul style="list-style-type: none"> • Scarti che meraviglia (What a wonderful waste) • Sea vision performance of the sea • Sea waste on stage • SeaNets (Reti di mare) 	<p>For whom the activity is intended? (Target audience and stakeholders)</p> <ul style="list-style-type: none"> • University students • Secondary school students • Restaurant owners • Civil society 	<p>Timing of the activity</p> <p>Preparation: March 2024/July 2024</p> <p>Implementation: September 2024/February 2025</p> <p>Follow up:</p> <ul style="list-style-type: none"> • sending out satisfaction questionnaires • sending summary event reports • producing <p>video summaries of activities</p>	<p>How will be the activity visible? (Quality photos, video, creative communication)</p> <ul style="list-style-type: none"> • Communication network with the use of appropriate tools • Social media 	<p>Art and design elements of the activity</p> <ul style="list-style-type: none"> • Show cooking • Artistic performances on art and cooking activities • Video
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <ul style="list-style-type: none"> • Upcycling- of sea waste • It is not waste if you do not treat it as waste 	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> • FORTHEM (5000 euro /year) • Local Stakeholders (SME and restaurants) • Private sponsors • Open call 		<p>How will be the activity documented? (Quality photos, video, creative communication)</p> <ul style="list-style-type: none"> • Video • Photo • Video with materials made by students and infographics 	

BLUEPRINT FOR AWARENESS CAMPAIGN

HUB NAME: Hungary

CREATED BY: MOME Team

DATE: 12.12.2023.

ABOUT THE CAMPAIGN	MAP AND GAP	COMMUNICATION THEMES
<p>What is the campaign trying to achieve?</p> <p>Raise awareness on the biobased agri-food economy</p>	<p>What were the identified gaps linked to outreach activities, target groups, awareness etc.?</p> <ul style="list-style-type: none"> • Fragmented knowlegde system • Critical subjects may seem less exciting at the first glance (e.g., soil) • Difficulty to reach out economic operators, farmers, larger companies 	<p>What were the identified communication themes during the vision building process?</p> <ul style="list-style-type: none"> • Importance of Soil (health and quality) • Slow Living • Small, Local Community Knowledge and Capital
GOAL OF THE CAMPAIGN	TARGET AUDIENCE OF THE CAMPAIGN	CAMPAIGN ACTION ITEMS
<p>What key points does the campaign address? What is the goal of implemented a campaign?</p> <ul style="list-style-type: none"> • Show an alternative to current practices, widening the perspective • make new good-practices attractive and practical by presenting best practices and concrete solutions • raise awareness on hidden, fragile, and depleting agri-food resources (e.g., food, water etc.) 	<p>Who needs to be addressed by the campaign and in what capacity?</p> <ul style="list-style-type: none"> • Family farms, family businesses • Small, Local Communities • Young Adults, Career Changers • Decision Makers 	<p>How will we achieve the purpose? What activities will be undertaken?</p> <ul style="list-style-type: none"> • Art and design workshops • Sustainable picknicks linked to existing events • Engaging design challenges, sprints for young entrepreneurs • Podcasts

AWARANESS RAISING ACTIVITY NR. 1

<p>Working title of the activity</p> <p>Living materials No.1.</p> <p>Hidden agri-food resources and bio-based materials: The Soil</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>Audience: Families and small communities, local farmers</p> <p>Stakeholders:</p> <p>Researchers, teachers, local community organisers</p>	<p>Timing of the activity</p> <p>Szántóiföldi Napok (optional)</p> <p>June 2024.</p> <p>Preparation</p> <p>Agreement with the organisers Procurement of materials Contacting and inviting experts</p>	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>Photos (50)</p> <p>HD Video (mp4, 1920x1080) + English subtitles (2min)</p>	<p>Art and design elements of the activity</p> <p>Soil chromatography workshop and exhibition combined with Citizen Science Workshop around the topic of Soil</p>
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <p>Raise awareness of the vulnerability and importance of soil as a base of the agri-food economy.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <p>Experts</p> <p>Workshop facilitators (250 EUR)</p> <p>Artist</p> <p>Video and photographer (300 EUR)</p> <p>Participation fee of the exhibition</p>	<p>Implementation</p> <p>Event logistics</p> <p>Facilitation of the workshops</p> <p>Follow up</p> <p>Post-promotion of the event through social media</p> <p>Follow-up questionnaire for the participants</p>	<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Photos (50)</p> <p>HD Video (mp4, 1920x1080) + English subtitles (2min)</p>	

	Personnel costs of MOME team (preparation + implementation 1PM)			
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AWARANESS RAISING ACTIVITY NR. 2

Working title of the activity	For whom the activity is intended? (<i>Target audience and stakeholders</i>)	Timing of the activity	How will be the activity visible? (<i>Quality photos, video, creative communication</i>)	Art and design elements of the activity
<p>Agri-food bioeconomy Hackaton</p>	<p>Young adults</p> <p>University Students</p> <p>Young Entrepreneurs</p> <p>Career Changers</p>	<p>April 2024</p> <p>Preparation</p> <p>Agreement with the organisers</p> <p>Promotion of the event</p> <p>Contacting and inviting experts</p> <p>Implementation</p> <p>Keynote talks and presentations</p> <p>Mentoring</p> <p>Judging</p> <p>Follow up</p> <p>Post-promotion of the event through social media</p> <p>Follow-up questionnaire for the participants</p>	<p>Photos (50)</p> <p>HD Video (mp4, 1920x1080) + English subtitles (2min)</p> <p>Social communication</p> <p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>Photos (50)</p> <p>HD Video (mp4, 1920x1080) + English subtitles (2min)</p> <p>Ppt presentations</p> <p>Social communication</p>	<p>Design thinking methodology used</p>

	Communication costs (social media posts etc)			
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BLUEPRINT FOR AWARENESS CAMPAIGN

HUB NAME: Dutch Hub for sustainable textile

CREATED BY: Jeroen van den Eijnde

DATE: 16 February 2024

ABOUT THE CAMPAIGN	MAP AND GAP	COMMUNICATION THEMES
<p>What is the campaign trying to achieve? Main objectives:</p> <ul style="list-style-type: none"> • Understanding and experiencing the complexity of the bio-based transition for textile for actors in the ecosystems and the broader audience. • Making scientific and technological knowledge and concepts about the bio-economy accessible and understandable. • Empowering people for taking sustainable actions from their position in the ecosystem. • Storytelling as useful method for information and communication. 	<p>What were the identified gaps linked to outreach activities, target groups, awareness etc.?</p> <ol style="list-style-type: none"> 1. Regional fragmentation between actors In the triple helix in the textile sector. Gap between vision, strategy and policy plans regarding to sustainable (circular and bio-based) textile. 2. Gap between existing scientific knowledge about sustainable (bio-based) textiles and the understanding and use by actors in the quadruple helix: industry, government and consumers. 3. Gap between the potential of creative professionals (artists, designers) and effective alearning, communication and awareness campaigns to shine light on the complexity, challenges and opportunities of the production and (re)use of sustainable bio-based textile. 	<p>What were the identified communication themes during the vision building process?</p> <ul style="list-style-type: none"> • Understanding the concept of bio--based textiles; • Understanding the complexity of a bio-based value chain; • Reliable information about what make textiles/garments really sustainable; • Storytelling as useful method for information and communication.
GOAL OF THE CAMPAIGN	TARGET AUDIENCE OF THE CAMPAIGN	CAMPAIGN ACTION ITEMS
<p>What key points does the campaign address? What is the goal of implemented a campaign?</p> <ul style="list-style-type: none"> • Understanding complexity of a bio-based economy as a wicked problem without easy solutions; • Creating awareness by concrete experiences by visual storytelling and best practices what the consequences are (not) to change to a bio-economy for textile; • To empower people to take actions for the transition to a bio-based economy for textile. 	<p>Who needs to be addressed by the campaign and in what capacity?</p> <ul style="list-style-type: none"> • Actors in the quadruple, especially industry, consumers/users; • Actors in the value chain for textile, especially fashion designers (students & professionals) related to their supply chain; 	<p>How will we achieve the purpose? What activities will be undertaken?</p> <p>We don't make a strong division between art events, communication and awareness campaigns. Artist and designers are involved in all activities. We have now a list of 10 existing and co-created activities: a vlog, a pop-up expo, a value chain safari, a bio-based textile workshop, a textile surgery activity, a podcast, a textile race against waste, a hackaton, and an activity related to the State of Fashion biennale (big event), a video lectures programme.</p>

AWARANESS RAISING ACTIVITY NR. 1

Working title of the activity	For whom the activity is intended? (<i>Target audience and stakeholders</i>)	Timing of the activity	How will be the activity visible? (<i>Quality photos, video, creative communication</i>)	Art and design elements of the activity
VLOG	<ul style="list-style-type: none"> - <i>Fashion shop owners</i> - <i>Consumers and users of fashion</i> - <i>fashion students</i> 	<p>September - October 2024</p> <p>Preparation</p> <ul style="list-style-type: none"> - Organizing 2 workshops about videomaking and using video as a tool for observation and Interviewing - Fieldwork video observations by fashion students - Editing final video's <p>Implementation</p> <ul style="list-style-type: none"> - Executing two workshops and doing the fieldwork. <p>Follow up</p> <ul style="list-style-type: none"> - Edited video's will be used for another activity 	<ul style="list-style-type: none"> - <i>final video's</i> - <i>framework to present the video's during various activities</i> 	<ul style="list-style-type: none"> - a creative video maker is involved\ - fashion design students are involved

<p>What is the core message the activity intend to transmit about bioeconomy?</p> <p>- the unfamiliarity by most people (fashion salers, consumers, users) with the concept of a bio-based economy for fashion</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> - professional video maker - design researcher - fashion design students - people in shops and in the street - ca. € 5000,- 		<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <p>- <i>photos and video's</i></p>	
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AWARANESS RAISING ACTIVITY NR. 2

<p>Working title of the activity</p> <p>POP-UP EXPOSITION</p>	<p>For whom the activity is intended? (<i>Target audience and stakeholders</i>)</p> <p>- <i>all actors in the quadruple helix and the value chain for textile</i></p>	<p>Timing of the activity</p> <p>Sept. 2024 - Febr. 2025</p> <p>Preparation</p> <ul style="list-style-type: none"> - Spatial and graphic expo design which is easy to disassemble, to transport, and to store. - Developing sustainable/durable exhibits 	<p>How will be the activity visible? (<i>Quality photos, video, creative communication</i>)</p> <p>- as an temporarily exhibition</p>	<p>Art and design elements of the activity</p> <p>- artist and designers are involved for the design of the pop-up expo</p>
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		<p>Implementation</p> <ul style="list-style-type: none"> - Pop-up expo will be showed during various festivals, design weeks, etc. <p>Follow up</p> <ul style="list-style-type: none"> - can be used for future presentations 		
<p>What is the core message the activity intend to transmit about bioeconomy?</p> <p>The pop-up expo will people experience an very easy and accessible way the problem of fuel-based textiles, the complexity of sustainable claims by fashion labels (green washing) and the opportunities for more sustainable, bio-based textile applications.</p>	<p>Which resources (HR + financial + etc) are needed to undertake the activity?</p> <ul style="list-style-type: none"> - Spatial and graphic designers - Researchers (for scientific based information) - ca. € 6500,- 		<p>How will be the activity documented? (<i>Quality photos, video, creative communication</i>)</p> <ul style="list-style-type: none"> - <i>Photos and video's</i> 	



5.1.4 Innovative governance models

Innovative governance models for the Austrian Engage4BIO Hub

ZSI & Biz-up



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction

- **Key results of the map and gap analysis and with the Vision and Strategy aspects of the Pathfinder manual related to innovative governance.**

The Map & Gap Analysis explored the relationship between regional development and the economy, centering on intermediaries, NGOs, research institutions, political entities, and businesses.

Regional Development: Intermediaries, NGOs, Research Institutions, Politics

Institutions, such as the Biz-up, Innovation Salzburg, NGOs, and research institutions emerged as crucial players in regional development. They facilitate knowledge exchange and collaboration, significantly contributing to sustainable development. Moreover, their involvement attracts political attention and drives the implementation of flagship projects aimed at raising bioeconomy awareness.

Political influence proved to be a substantial force in this analysis. Notably, Austria's bioeconomy strategy and action plan exemplify the integration of (EU) forward-thinking visions into regional policies. However, a significant challenge lies in securing sustainable, long-term funding for the effective implementation of these strategies, according to interviewed companies.

Economy

The focus on the economic landscape centered on businesses. Encouraging companies to develop service-oriented business models emerged as a crucial aspect for fostering sustainability and bioeconomy. Challenges identified encompassed various areas, including inflation, logistical complexities, inventory management, labor shortages and limited resource availability. Moreover, exemplary models deserve recognition, specifically, Grüne Erde and Strasser Steine serve as noteworthy examples within the bioeconomy sector, showcasing best practices.

Based on these results, the participants of the workshop were encouraged to create a "future sentence" on how the ideal political and economic state in 5 years should look like. The sentence was the following:

"In five years' time, the political, legal and economic framework conditions will enable the development of regional cycles and new business models. Awareness of the reusability of products will prevail and companies will take responsibility for their actions, which encompass products, processes and social aspects."

The statement above anticipates a shift in consciousness where awareness regarding the reusability of products becomes predominant. It underscores a critical shift towards companies taking comprehensive responsibility for their actions. This responsibility encompasses not just their products but

also their operational processes and social impacts.

By emphasizing the need for an enabling framework that supports regional cycles and novel business models, the statement reflects a governance approach

centered on sustainability, circularity, and social accountability. This model fosters and promotes a thriving bioeconomy.

- **Participants and engagement approach (participants description with roles, engagement strategy, how the participants contributed to the process, to which part, at which level etc.).**

The governance workshop gathered a diverse group of stakeholders, with a primary focus on entities engaged in environmental sectors, local governance, regional management, waste associations, and NGOs. The workshop featured organizations such as Business Upper Austria, Umweltdachverband, Stadt Linz, alchemia nova, mkrz lab, OÖ. Zukunftsakademie, and Landwirtschaftskammer OÖ, each showcasing their unique contributions.

Concerning the main action areas of the main participants of the workshop: Business Upper Austria highlights the #upperVISION2030 economic strategy and its adaptable, annually evolving approach.

Umweltdachverband emphasizes its commitment to environmental and nature conservation interests. Stadt Linz details measures for climate protection and sustainable initiatives. alchemia nova focuses on advancing circular economy principles, while mkrz lab crafts collaborative spaces for creative activities. The Upper Austrian Future Academy (OÖ Zukunftsakademie) aimed to strengthen future expertise, and the Upper Austrian Chamber of Agriculture represented agriculture and forestry in the region.

Despite diverse perspectives, participants found the bioeconomy a challenging subject. This complexity was acknowledged as a significant challenge by the participants during the workshop. Still, every participant effectively leveraged their expertise and insights in three distinct activities (“activities supporting regional development paths”). These initiatives aligned with the provided project framework and budget. Participants enjoyed the liberty to innovate, either by creating new regional activities, modifying existing ones, or providing exemplary ones. At the end, three detailed activities emerged, developed by three diverse groups encompassing diverse participants.

- **Description of co-creation activities (preparation, workshop/s, time, method applied).**

The workshop was designed as a half day workshop closing with lunch (3,5 hours working time). ZSI has set up the design of the workshop and finalised it after feedback loops with the Biz-up team.

After a short welcome, outlining the agenda, goals, non-goals and workshop etiquette, 20 min were dedicated for participants to get to know each other. First in small groups and afterward in the plenary. This introduction round was followed by presentations, on the project, the map and gap results and

results from the vision workshop which already worked on governance. We dedicated some time to explain and discuss the terms bioeconomy, circular economy and governance.

In groups of three, participants entered the topic. We dedicated 30 minutes to further focus on challenges in Austria and potential reasons for them. This session aimed at getting a common understanding of the problem to be able to develop activities that could contribute to solutions in a next step. The groups of three had

20 minutes to discuss and note their thoughts on coloured moderation cards. Afterwards they came together and presented and clustered their thoughts in plenary. After a break we continued with presenting the specific framework for the activities and aspects to be considered. Following the 6-3-5 brainstorming method we collected ideas and activities on how to overcome these problems within the projects resources. However, we have slightly adapted the method. First, we have made teams of two and second we have asked them for only two ideas and not three. We dedicated 40 minutes to the brainstorming and summarising of ideas. After presenting all ideas, participants voted for the ones they would like to co-create in more depth. Using provided canvas they discussed and visualised detailed aspects for the prioritised three ideas. All ideas were presented and the workshop closed. For this session we had planned 70 minutes in total.

Innovative governance models for the region

One prevalent theme that emerged was the significant lack of common understanding and communication structures among stakeholders along the value chain. Additionally, participants highlighted the need for better connections between researchers who have already gained valuable knowledge on the potentials of sustainable, circular bioeconomy.

Participants generated a list of ideas that aimed to support the existing steering and communication patterns.

Three ideas were further elaborated:

1. Face2face networking event:

This event aimed at connecting bioeconomy projects and stakeholders in Austria. This event, resembling a conference format, aims to expand existing networks and facilitate connections between researchers, regions, and various actors within the bioeconomy value chain. By fostering collaboration and knowledge exchange, the event seeks to eliminate redundancies, ensuring a swift and efficient dissemination of research results across Austrian regions. The goal is to initiate a knowledge circle that helps to spread innovation and research findings across bioeconomy projects but also with industry and business, and to foster continuous collaboration in potential future projects. The target audience includes individuals from regional development, project partners in bioeconomy initiatives, research funders, policymakers, demonstrator regions, and representatives from industry and businesses.

The main aim of this activity is to avoid parallel activities and to support a necessary network, that goes beyond the existing ones. The activity implemented within Engage4BIO is only a starting point. Subsequent networking events will help to bring innovation to businesses, who could take them up and develop them further in following (regional) projects. Building up this community with the help of regular networking events should contribute to a necessary knowledge circle.

2. Decision guidance tool

This tool focused on linking consumers to the wood-based bioeconomy value chain by providing guidelines in making informed purchasing decisions concerning wood-based products. This involves establishing a connection with experts, conducting an innovation check, and offering guidance on general inquiries about

bioeconomy. Incentives will be provided to encourage conscious decision-making. However, this tool could also be adapted to the needs of municipalities and support policy makers in their decision-making processes. The format could be a brochure, poster or digital guide.

Through developing and implementing such tool, transparency should be strengthened. It helps to find the right arguments for a (regional) sustainable value chain. Moreover, it could provide incentives for conscious decisions and could contribute to the definition of values and attitude. Thus, the guidance tool is a knowledge transfer tool.

3. Sustainable economic strategies

This idea revolved around connecting various knowledge-sharing institutions to empower educators and trainers with information on bioeconomy and its potential. The concept entails a “mini conference” if possible back to back with a host event/ conference where knowledge-sharing institutions meet. The “mini conference” provides information on bioeconomy and its potential, it enables exchange on good practice to make the bioeconomy visible and raise awareness. The goal is establish a network that enhances understanding of bioeconomy. The aim is to embed the concept of bioeconomy in educational institutions, exchange knowledge, unleash pioneering effects, promote awareness, and build a robust community of practice.

This activity contributes to the organisation and coordination of the regional value chain, supports educational governance by fostering the integration of knowledge on bioeconomy into educational institutions. It contributes to awareness raising and to overcome scepticism towards alternatives.




Engage4BIO

Consortium :



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Innovative governance models for the FI Sustainable packaging Hub

CLIC Innovation Ltd.

Aila Maijanen



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction

The Finnish Sustainable Packaging Engage4BIO Hub mapped the existing relevant activities in the region and analysed the possible gaps in Spring 2023. Based on the analysis, the following key results were presented in the previously published report "Map and Gap" analysis.

Key guidelines and recommendations for the coming activities of the Finnish sustainable packaging hub are:

- Strengthen the full value chain coverage of the ecosystem all the way from sustainable feedstock to brands and retailers as well as involvement of a more mixed group of companies regarding size (also middle-sized companies) to ensure the successful work of the hub with a real-life impact on packaging.
- Ensure strong motivation of companies, research organisations, higher education institutions, and other partners to commit to the full innovation/development path needed to bring ideas to the real-life, also to more risky innovation.
- Exploit design in making the shift towards sustainable packaging more understandable, meaningful, and desirable as well as to better support environment-conscious decision-making and supporting understanding on the critical role that packaging has in the society.
- Consider how work and activities on sustainable packaging in Finland is best coordinated across different initiatives (see textile industry for a best practice in Finland). This discussion could also include how the availability and quality of data on sustainable packaging could be strengthened.
- Define a feasible and sustainable funding and operating model for the hub itself.

In addition, the vision and strategy aspects related to innovative governance approach were discussed in the Pathfinder manual published in July 2023. The vision for innovative governance models is to have the entire value chain involved in building the innovation pathway from ideas to commercial exploitation. Motivation and commitment of all stakeholders of the quadruple helix needs to be ensured. Joint target of the ecosystem is to accelerate the shift towards sustainable packaging practices in Finland, with clear criteria, effective communication, and a supportive regulatory framework in place by 2030.

Our planned activities for 2025-2027-2030 to reach the vision and relevant stakeholders 2025:

- Jointly developing a communication strategy as an integral part of the project
- Creation of shared sustainability criteria, which are adopted by all stakeholders, and developed and tested based on research.

2027:

- Continuously improving communication efforts targeted at different stakeholder groups.
- Creation of collaborative working space to support the management of transition in regional governance and enhance engagement of all stakeholders.

2030:

- Market making: Influencing upcoming regulations and the regulatory environment to foster a market for sustainable packaging
- Science-based sustainable packaging indicators are being used by the relevant organizations from raw material suppliers to manufacturers, distributors, and retailers

We also acknowledged the absence of common science-based criteria and metrics for sustainable packaging in Finland. To address this gap, a project funded by external support

would be essential to develop these criteria. The development process would involve thorough research and collaboration with companies to refine and test the criteria. By the year 2030 the indicators for sustainable packaging would be widely used and integrated into business practices across Finland.

At the same time, we want to focus on effective communication to raise awareness and drive behavioural changes to minimize the environmental impacts of packaging to nature. The quadruple helix model approach to tackle the challenges will ensure that systemic change happens, and all necessary parties are involved. We need to create impact and work towards sustainable regulatory environment throughout the process. The stakeholders involved in these activities include companies throughout the entire value chain, regional decision-makers, government entities, research organizations, educational institutions, industrial federations, and food producers.

Participants and engagement approach

The relevant stakeholders were identified during the vision-building workshop in June 2023. In addition, the CLIC and Metropolia project personnel identified additional potential stakeholders in the following quadruple helix actor groups in August and September 2023.

- Companies
- Universities and research institutes
- Public sector
- Civil society

In total, 148 actors were invited to the vision building workshop by e-mail, of which 18 actors participated in the workshop representing different stakeholder groups. The in-depth discussion was active but included partially contradictory views, especially regarding the use of wood-fiber-based materials as substitutes for plastics, which may exert pressure to increase wood harvesting for forest biomass. Moreover, all the workshop participants contributed to canvas creation independently and as group members.

Finnish research project, Package-Heroes, is a research project funded by the Strategic Research Council functioning under the Academy of Finland. It is a five-year project finishing by the end of 2023. This project developed criteria for sustainable food packaging. As an introduction to the group work on sustainability criteria, one of the Package Heroes researchers shared the study's general findings.

Co-creation activities

The workshop preparation included two small group meetings among CLIC personnel. In addition, the guidelines presented earlier by the Wageningen team regarding the innovative governance workshops were reviewed.

During the workshop, after the introduction and background presentations, each participant's expectations were gathered by the tour de table method. After the tour of the table, the participants were divided into two groups, one focusing on creating the collaboration space concept and the other on building a project proposal for the sustainable packaging criteria.

Both groups were using concept creation canvases (see Annex) adapted to the group's topic to collectively co-create the scope, objectives, target groups, and implementation ideas for the activity. At the end of the group work, the Gallery walk method was used to introduce the outcomes to the other group and all participants.

- Methods and materials (description of the method applied, event flow, etc.)

Main results

We identified three goals for our future activities starting in 2024 in the Engage4BIO project: to support the development of collaboration working space, to support the development of a common criteria for sustainable packaging and to acknowledge the latest regulatory development both at national and European level to foster a market for sustainable packaging.

Collaboration working space

Need: The need for a platform enabling collaboration was confirmed in the group. The group identified the need for a matchmaking platform to be the most important. The aim should be to bring together actors with similar interests.

To whom: The platform could serve as a matchmaking platform for companies, but also as a place to share information from researchers or companies to other stakeholders. The content could vary by identification of the user.

Scope of the project: Matchmaking could be utilized to find different kinds of collaborators. For example, for testing novel materials, preparing co-innovation projects, sharing information, finding collaboration possibilities between students and companies, etc. In addition, we could further develop the existing RDI roadmap developed earlier by the 4Recycling ecosystem.

Funding sources: Financing should be long term, because such a platform needs time to be sufficiently known among the stakeholders. A financing solution consisting of partly government funded and partly from company participant fees. Some discussion was also about commercial funding from brand owners to support the citizen interface of the portal.

Planning a project (pre-study) to create common sustainability criteria for packaging Need: We

have identified a need to develop an ultimate sustainability criterion combining climate effects, carbon footprint and biodiversity aspects, as well as societal aspects, based on full LCAs, aiming to get rid of sub-optimization and holistically considering sustainability of packaging, products, and logistics as a system. Criteria would support the aim to create a roadmap for sustainable development in packaging.

To whom: Users, producers, logistics operators, policy makers, brand owners, recycling companies, designers, and raw materials providers were identified as target groups.

Scope of the project: Project should be planned to reach at least a scope on European level, including one-to-two-year pre-study, giving basis for global optimization, starting from concept level definitions, identifying gaps to be filled for future but starting from analysis of the current status. It should include references to existing or passed projects.

By whom: Work should be done in wide collaboration with companies, SMEs, and researchers. A consortium of industries could be formed. Pre-study work could form a basis for a PhD thesis. Consumers could also be engaged. Eventually, an EU-wide project would be needed, with experts from various countries.

Deliverables: Project should deliver a list of definitions and concepts, review of current status, regulatory guidelines for companies, in the form of a booklet (e-booklet) and public report, web site, and relevant communications activities.

(RIA or CSA) were identified as potential sources of funding.

Regulation node events

Need: Stakeholders have a common need to acknowledge the latest regulation development at the national and European level.

To whom: Involved parties should come from industry, academia, and policy makers. Scope of the project: to follow continuity, path-dependency, clarity and coherence of regulatory development and share information through informal peer-to-peer group discussions and online seminars. Particularly, the following topics and work-in-progress of the regulatory development emerged during the workshop:

- Taxonomy
- Company/corporate sustainability reporting methodology, product environmental footprint (PEF)
- Packaging and packaging waste regulation (PPWR)
- Recycled content approach
- Extended producer responsibility (EPR)
- UN Plastic treaty
- Ecodesign directive

By whom: Content could be delivered to policy makers and/or researchers focusing on regulatory development, and by involving industry experts to reflect on the given content. Deliverables: online webinars (ministry, industry, branch organizations) in 2024

Innovative governance models for the region

Structures: description of organizational and co-ordination aspects of regional governance.

The core of the hub includes companies and branch organizations as well as universities, research organizations, and educational institutes. The wider context includes other packaging-related ecosystems (e.g., ExpandFibre, PackageHeroes, and Kiertotalous-Suomi) as well as government and administration (e.g., in the context of the Finnish Bioeconomy Strategy).

There is a need to connect more actors of the quadruple helix. As new sustainable packaging value chains arise, new actors are needed to complement the value chains. The hub is coordinated and facilitated by CLIC Innovation. There is good trust between public-private actors and a culture of open collaboration. However, we need a platform enabling more active collaboration and matchmaking. The aim is to bring together actors with similar interests, as the platform could serve as a matchmaking platform for companies and as a place to share information from researchers or companies with other stakeholders.

In addition, we identified the need to develop an ultimate sustainability criterion combining climate effects, carbon footprint, biodiversity, and societal aspects based on full LCAs. With this criterion, the aim is to eliminate sub-optimization and holistically consider the sustainability of packaging, products, and logistics as a system.

Considering the existing relevant structures in Finland, 4Recycling is a national innovation ecosystem targeting solving the Plastics Challenge. The ecosystem strives to build new solutions for enhanced plastics recycling and to develop bio-based materials to replace plastics. The ecosystem is open to organizations interested in finding new businesses or building new competencies in plastic

recycling and bio-based alternatives. One focus area of the ecosystem is sustainable packaging. In the Engage4BIO project, our aim to collaborate

with this ecosystem and improvements of the existing structures is emphasized, particularly as 4Recycling connects different domains, has a quadrable helix approach, and provides facilitation services.

Processes: description how the regional network is supporting the processes of innovation, valorization, and implementation processes

4Recycling ecosystem program has developed RDI roadmaps and market shaping strategies, with clear missions, on two linked areas: 1) Functional bio-based and circular solutions for retail packaging and 2) Recycling technologies for retail packaging. The processes could be supported by sharing information and utilizing a collaborative workspace. According to our region's strategy, Helsinki-Uusimaa, we will act resource wisely. Therefore, the collaboration space is developed within the existing structures and facilitation services of the 4Recycling ecosystem (see above).

Capabilities: description how the region will enhance capabilities for transformation towards circular regional bio-economies.

In the Engage4BIO project, capabilities needed for transition in relevant structures and processes could be supported by sharing information using a collaborative workspace. By doing so, we enhance capabilities that are also essential when following regulatory development and developing sustainability criteria.




Engage4BIO

Consortium :



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Innovative governance models for the Italian Engage4BIO Hub on the Blue bioeconomy

UNIPA



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO



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Introduction

In order to define the guidelines for “Innovative Governance models for the Blu bioeconomy Engage4BIO HUB”, the Italian HUB has followed the scheme proposed by the project, starting from co-creation process with the main stakeholders of the value chain, to find ways to improve the management and coordination of the regional biobased innovation processes and to ensure inclusiveness and engagement of all domains and partners.

The workshop was intended both to design a new structure and/or to ameliorate the innovation ecosystem, towards the definition of small measures or projects to improve the capabilities and the engagement of partners, or the collaboration among partners. Starting from the key results of the Map & Gap analysis (M&G) and referring to the Vision and Strategy aspects of the Pathfinder manual related to innovative governance, the participants were chosen and engaged in the co-creation activities, in relation to their roles in the regional Blue bioeconomy value chains and their potential contribution to the process of implementation.

Key results of the map and gap analysis: thanks to this approach, the Italian HUB was able to describe and understand the level of involvement, maturity and needs of the stakeholders of the Blue bioeconomy sector, at regional level, for transition in the nearby future, by defining and analysing the potential for regional bioeconomy developments, knowledge and innovation and, at the same time, to focus on the gaps that limit the development. The M&G analysis showed that the enterprises of the blue sector, in Sicily, are mostly grouped in association of producers, district, mostly represented by fishery and fish processing plants, highly concentrated in Western Sicily. This mapped situation highlighted that consequently, the production of marine by-products from fish processing plants has the potential to be valorised in circular economy pathways. This opportunity could be supported by the role of the scientific partner UNIPA that has yet developed processes and technologies (from pilot to real scale, TRL 6-8), for the valorisation of marine by-products and sidestreams in new processes and products. Nevertheless, Sicily, as the whole Italian region, miss a centralized systems able to coordinate, harmonize and address the use of biomasses from fishery and processing industries, to end-users (biorefineries, enterprises); furthermore, the marine biotech is poorly represented in Italy and growth opportunities for companies belonging to this area are not sufficiently guaranteed. For the regional development of the bioeconomy sector, Italy can boast a strong public science base for bioeconomy implementation, even if investments in research and innovation remains below the European average. From the M&G analysis the Italian HUB, highlighted that to create the vision, it is necessary to reinforce the collaboration among industry, research and education sectors. It is also important to develop new knowledge and technologies for marine sustainability and new professional figures with specific skills in Blue bioeconomy. Furthermore, the improvement of the role of artists and creative sector and their involvement in supporting bioeconomy is needed.

• Participants and engagement approach

Thanks to the canvas methodology, a framework to think and act, for future development scenarios towards a regional bioeconomy, was realized. From the understanding of different concepts and needed actors in the M&G analysis, we identified the stakeholders and the actors involved in the regional development of the Blue bioeconomy: these belong to public regional institutions, private companies, university, research sector, etc., but links between industry, research and society are still underdeveloped. Since the dialogue and cooperation among the different sectors take place thanks to specific projects and programs, in line with the Blue bioeconomy trajectories, the interaction among actors should be improved by common guidelines, further investments, policies actions and strong communication campaigns.

In order to co-create and start to plan the future actions indispensable to implement an innovative governance for Blue bioeconomy, the following partners were engaged:

- regional partners from all domains of quadruple helix network: public, private sector; knowledge sector, society and among these:
 - public institutions responsible, at regional level, for the blue value chains and for the strategic management of measures for transition towards a regional circular bioeconomy (regional public partner)
 - research and innovation sector representatives
 - representatives of the education sector
 - private sector-enterprises representatives, productive districts related to the blue value chains
 - regional development agencies
 - regional department in charge for the ideation and implementation of the regional smart specialization strategies, circular bioeconomy strategies, and who are actively supporting the innovation processes in the region.

The engagement started with the M&G analysis and continued thanks to multiple B2B meetings between the HUB and each participant, that guaranteed to ameliorate the awareness and trust of the participants on the benefit of the circular economy principles.

• Description of co-creation activities

The “Innovative governance models” workshop aimed at involving local actors and stakeholders of the Blue bioeconomy framework, in the elaboration of guidelines and good practices for innovative governance models at regional level that can support opportunities and innovation in terms of economic, social and environmental impact. During the workshop, the current regional organization of the Blue bioeconomy and the management of the transition to circular economy were analysed and discussed. After the M&G analysis, the co-creation started, with discussion around structures, processes, and capabilities for the design of innovative governance.

The sessions of the workshop focused the following core aspects.

- Development of vision or design of the process of organization and management of the transition
- Definition and selection of measures, initiatives, or arrangements to improve or complete the regional governance

The participants discussed about:

- How to create conditions for innovation, smart specialization, mobilization of partners and for initiative and dynamics, from the perspectives of public sector, private sector, knowledge domain, civil society, and intermediate organizations
- Missing elements, organizations, and partners to complete and upscale the innovation ecosystem
- Which resources could be collected and mobilized for the transition: knowledge, financial, capacities, and capabilities
- Accelerating the development and implementation of the circular Blue bioeconomy
- Responsibilities co-ordination and collaboration.

Innovative governance models for the region

Starting from the definition of “Innovative Governance”, as the governance capacities involving structures, processes, and capabilities, the co-creation workshop let us to define some actions that could drive innovations and the transformation process towards regional bioeconomies, starting from a collective responsibility and collaborative effort.

The co-creation was useful to identify and suggest measures, initiatives, or arrangements to improve or complete the regional governance, as:

- Enhance engagement and alignment among the diverse actors of the helix
- Improve collaboration
- Enlarge the resources available
- Create collaborative working space to experience innovative governance.

Innovative governance paths must refer to the 3P model (People, Planet and Profit), a framework for measuring sustainability goals that goes beyond traditional measures to include environmental and social dimensions. Based on this model, an innovative governance structure has to take into account the following scheme (Figure 1):

- **People** by social measures prevision
- **Planet** by marine environmental measures prevision
- **Profit** by economic and financial measures prevision

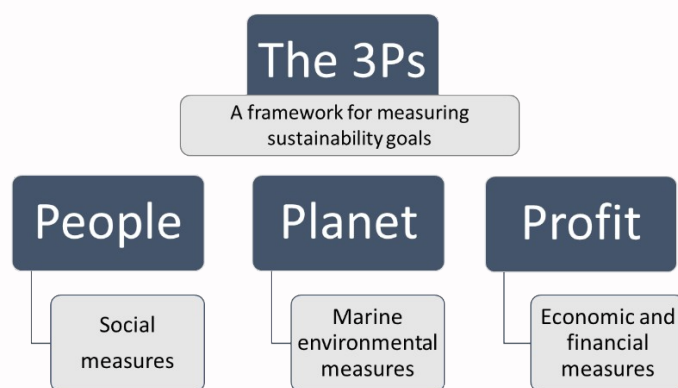


Figure 1. The 3Ps framework - People, Planet and Profit

In order to draft the innovative governance models, we co-created approaches to define a description of organizational and co-ordination aspects of regional governance, a description of how the regional network could support the processes of innovation, valorization, and implementation processes and how the region will enhance capabilities for transformation towards circular regional bio-economies, as follows:

• Structures

The organization of the regional innovation ecosystem of the Blue bioeconomy can be composed by a quadruple helix structure and each stakeholder needs to be well connected to others of the diverse domains.

The actors of the blue value chain (from primary production –fishery, aquaculture- to consumers) can be coordinated and better networking to boost cooperation and increased awareness at regional level. There is a weak dialogue among the productive sector and scientific research (except the occasions related to research projects) and between these two components and regional decision makers.

Structure and spaces dedicated to collect biomass and/or centralize the actions indispensable to activate circular economy processes are missing.

Outcome: the realization of a living lab, as ecosystem able to support “spaces- events-occasions” for mutual discussion in circular economy pathways in blue value-chains. The living lab is an Open Innovation Environment, in which innovative solutions, product and process innovations will be co-created, explored, demonstrated and evaluated in a real production environment, generating direct and immediate spin-offs and leading to an increase in the competitiveness of Sicilian enterprises in the sectors involved in the project: fishing, aquaculture and processing of supply chain products. Among the activities of the Living lab, training, animation technology transfer and the promotion and dissemination of co-created innovative processes and products are planned. Living lab includes the implementation of communication and dissemination actions and events.

- **Processes**

The M&G analysis evidenced that in Sicily there is lack of a concrete perception that the circular economy, in general, and the use of fish by-products, are a resource and an opportunity to feed new productive processes and should be part of the production cycle.

The region needs a space/institution/guidelines to address and encourage the circular economy pathways in the blue value chain.

The waste management is not coordinated at regional level and lack of direct facilitation for companies to reuse it (to pay for the disposing of the wastes is easier).

Outcome: In order to facilitate the vision implementation in the regional ecosystem, we propose the drafting of a road map for the circularity in the blue economy, that can be applied by a regional action plan: from marine by-products biomass to marine biobased production and sustainable resources for different sectors, to achieve circular economy path- ways at regional level.

- **Capabilities**

In Sicily, while the research sector has high level of knowledge and TRL for valorization of by-products in high-value added compounds (for cosmetic, food ingredients and pharmaceuticals), the productive sector is lacking in capabilities and professional figures for management of fishery by-products. Entities like business accelerator are missing.

In view of the low capabilities for business networks, only O.P. (organization of fishery producers) and the trade associations can have in charge the coordination of some innovative actions, as was done in previous projects.

There has been and there will be a large availability of funds for innovation for the processing and aquaculture sector, much less for the harvesting sector.

Enhancement and strengthening of smart specialisation skills and knowledge transfer, reformulation of competences and the promotion of advanced vocational training courses (curricula creation) must be incentivated.

Outcome: In order to update and innovative capabilities for governance, we propose the institution of a “Community of Practice”, linked to the living lab, that will co-design, in collaboration among researchers, education, enterprises, civil society, new circular productions, characterized by a strong link with the local production, territory and social attitude, where feedback loops will guarantee the optimization of the social, environmental and economic performances.

Co-created activities, to be implemented in WP3:

- Innovative governance structure: living labs, for mutual discussion in circular economy pathways in blue value- chains.
- Innovative processes structure: road map for the regional circularity in the blue economy, that can be applied by a regional action plan.
- Innovative capabilities structure: the realization of a “Community of Practice, “linked to the living lab, that will co-design, in collaboration among researchers, education, enterprises, civil society, new circular productions.



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**Innovative
Governance models
for the Hungarian
agri-food
Engage4BIO Hub**



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Introduction

The co-creation workshop related to the innovative governance models within the Hungarian Engage4BIO hub was organised on 12 December 2023 in Budapest. This workshop was a combined event, the other subject discussed was training and mentoring. The workshop was designed in a way that participants had the opportunity to learn about both subjects, as the introductory section and the summary and reflection sections were organised as plenary sessions, jointly for the experts in both subjects discussed in parallel sessions during the workshop.

The workshop aimed at discussing the background and prerequisites of establishing innovative governance models. Another objective was to find collaboration opportunities for concrete activities related to the subject, which will be implemented in 2024.

As "innovative governance" can be understood in different ways, in our workshop we used the following description, created and applied within the scope of the Engage4BIO project:

"Innovative governance refers to innovative social measures and activities that address and enhance the management of regional bio-based development processes, the inclusive engagement of all actors and the creation of good regional relations and trust. The measures and activities shall in the end lead to an improved quality of substantial decisions."

Key results of previous Engage4BIO activities related to the subject

When designing the workshop, we used the findings of the Vision building workshop, which were the following:

- Small, decentralized and efficient governance with small apparatus is needed. Local governance needs to be strengthened, as bioeconomy happens locally, so as the governance should. National strategy and its actions should be implemented locally.
- Incentive systems are very important, which supports products that use sustainable, biomass-based economic solutions. Providing legal context seem very challenging.
- It is important to work on long-term goals. Common values are needed, lobby effects should not prevail. (There are contradictions between the short-term and long-term policies.)
- Consultation between policy-makers and science is inevitable. Consultation between the industry and the research and education organisations should be strengthened as well.
- Keep in mind that the most important actors of bioeconomy are SMEs and small producers/ smallholders, the role of large companies is not considerable. However, the lobby power of large companies is much bigger in policy making.
- Idea: Ministry of Circular Economy, which is responsible for production, education and collection of materials
- Policy makers should be aware of the demands of the society, policy should follow the changes and react to them.
- Innovation should be treated as priority. Innovative start-ups in the field bioeconomy should be supported.
- Goals of the "ideal bioeconomy policy" can be:
 - o lowering consumption
 - o equal access to healthy food
 - o more permissive, science-based GMO regulation
 - o creating PLA ecosystem
 - o Carbon exchange, verification system

o supporting the production of alternative proteins

Participants and engagement approach

During the previous Engage4BIO activities, a stakeholder pool was created by the Hub leaders (BZN and MOME). This pool was used when sending out the invitation, however some experts with specific expertise were invited as well.

The workshop was organised jointly together with the training and mentoring workshop (related to Task 2.3.), registrations were managed together. 19 participants showed up for the two workshops. (The reason behind joint organisation of the two workshops is given in section “Lessons learned” in the “Workshop report” document.) Attendees were free to decide, which discussion they were interested in. The “innovative governance” subject attracted 7 participants. The gender was balanced, with 3 female and 4 male participants.

Participants description and roles were the following:

Organization	Description of the organization	Position of the participant	Stakeholder group
Bay Zoltan Nonprofit Ltd. (BZN)	Division of Biotechnology is one of the most important research actors in the field of bioeconomy in the country, implementing different research projects in the bioeconomy discipline. It also the management organization of the Hungarian Bioeconomy Cluster.	Researcher Cluster manager Project manager	Research and Development
Moholy-Nagy University of Arts and Design Budapest (MOME)	MOME is the Art and Design partner of the Hungarian Engage4BIO hub.	Researcher	Education
Budapest University of Technology (BME)	BME is another important actor of bioeconomy-related R&D in Hungary, implementing different research projects.	Researcher	Education
Geonardo Environmental Technologies Ltd.	Geonardo is an innovation and technology company active in the energy, environment and sustainable development fields.	Project managers	SME/ Industry

Active participation was expected from all attendees, and they contributed equally. They had the opportunity to freely share their opinion, ideas, point of view; as well as they could argue or support the different approaches.

Description of co-creation activities

As the workshop aimed at covering the subjects, the organisers emphasised the importance of both subjects and gave opportunities to introduce both of them. The workshop started with plenary session, in which participants learned about the Engage4BIO project and introductory presentations of both subjects. Afterwards, the group work started.

The introductory presentation on innovative governance models subject was made by Dr Nóra Hatvani, senior researcher of Bay Zoltan Nonprofit Ltd. (BZN). The definition of innovative governance models was presented, and some examples were shown. Nora talked about the definition of innovative governance within the Engage4BIO project, possible activities involved, target groups and tools, and existing governance practices that might be a good example when elaborating models in our project.

During the group work, a targeted discussion was carried out. Discussion was led by BZN representatives and directed by different - partly pre-defined - questions, along the

following logic: definition → tools → actors → actions. Attendees participated actively, shared their thoughts and experiences, argued and asked questions. Vivid discussion evolved.

After the group work, the findings were presented, and the participants of the parallel workshop had the opportunity to reflect and ask questions related to the other topic.

Innovative governance models for the region

The expression “innovative governance models” is a new definition. Participants of the workshop agreed that it was difficult to apply something, which is not known. Nevertheless, the importance of the definition was argued, as we found several successful projects, which are running without being labelled as innovative governance actions.

Innovative governance models have to be inclusive and **bottom-up**; but in the meantime, have to be supported by top-down actions. Governance is supposed to be an innovative leadership model which provides guidance but not control.

The bottom-up approach has to follow the following logic: level of individuals → small communities → towns → regions → national level. This approach is suitable for forcing changes in a smaller scale, in the frame of pilot projects. Small projects can be effective, models can work locally. This bottom-up approach has especially high importance when the national strategy development suffers a cumbersome process. Identification of such existing local practices can be a good starting point to develop innovative governance models.

One of the main outcomes of the visioning workshop was that “**bioeconomy happens locally**”. The main question was: what is the lowest local level, which can be effective in inducing changes? It was agreed that in case of bioeconomy, in line with Michael Porter’s cluster theory, the radius of actions is approximately 60-100 km, as this is the distance for effective transport of biomass. This magnitude can be applied in the regional governance as well. However, it was also agreed that bioeconomy-related activities are very different in towns and on the farms. This difference has to be taken into account when governance models are developed and applied: different models are needed for the different entities (individuals, small local communities, companies, villages, cities, regions etc.) as well as the needs and opportunities of an urban community and a farmers’ community are unlike.

Innovative governance can be supported by different **tools**, such as:

- a) digital tools
- b) data, datasets
- c) incentives

a) Digital tools are different platforms which are used for multiple purposes. There are several available tools, local models thus future activities should not build their own tools, instead, should use the already available ones.

b) An enormous amount of data has been produced along the bioeconomy value chain. How can these data be used to define the directions of the local governance? Research actors can be involved into the governance models at this point: they have the knowledge and capability to analyse the data and support assigning the direction with the help of the science, on a bottom-up basis.

c) Positive incentives (not necessarily monetary but measurable rewards encouraging

behaviours that make people better off) are very important tools for supporting governance models. These can be credits, quotas or different instruments. If they are applied locally, they have to be part of a local ecosystem, as they have to be monitored, maintained or audited. Different incentives work in different circumstances – the most suitable ones have to be chosen for the certain community. Local, non-financial incentives can work very well. An interesting idea was that local services (such

as parking) should be cheaper for those who recycle their waste. Citizens have to be personally interested in participating in the initiative, as they gain something.

Ongoing, finished or planned **actions** were collected by the workshop participants. These are local initiatives, with strong social impact. One common point was found in the existing pilot projects: they are initiated by one or several enthusiastic provincialists, which wanted to do something for their own communities and acted like catalysts on the whole process. These individuals are the key for the successful initiatives.

The following projects and documents were consulted during the preparation phase of the workshop, and they will be taken into consideration in the later phase of the Engage4BIO project:

- [Smart Rural 21](#) project
- [ROBIN](#) project
- [OECD: Towards a National Circular Economy Strategy for Hungary](#)

There are pilot projects, whose results can be taken into the Engage4BIO activities:

- BÜKK-MAK Leader project – bio-based energy for marginal communities in North-East Hungary
- “basket communities” – close collaboration between urban citizens and farmers
- processed food products made by students from fruits and vegetables produced at the small vocational training farm run by the local high school in Makó, Hungary (“[Helyi Diák Terméke](#)”)

Possible collaborations for Engage4BIO project in the subject of innovative governance:

- [CEE2ACT](#) project
- [BOOST4BIOEAST](#) project
- [BIOLOC](#) project
- [Greet CE](#) project
- Association of Hungarian

Municipalities Possible activities:

- podcast
- gamification
- showcasing good practices for different stakeholders



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Consortium :



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 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





Innovative Governance

D2.3 workshop overview

March 2024

Wageningen Research

Remco Kranendonk

Alwin Gerritsen

Consortium:



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 www.engage4bio.eu

 info@engage4bio.eu

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1 Introduction

Objective

In this part we will describe and review the results of the Engage4Bio regional workshops on governance (T2.5), supporting regional innovation, linked to the defined bioeconomy vision and strategy.

The main objective of this step in the co-creation process is to address and find ways on how to improve the management and coordination of the regional bio-based innovation processes and how to ensure inclusiveness and engagement of all domains and relevant partners.

The topic is broad and can be applied differently in the E4B hubs, varying from the design of a new structure or an improved innovation ecosystem, towards the definition of small measures or projects to improve some of the aspects, as enhancement of the capabilities and the engagement of partners, or strengthening the collaboration among partners.

Definition

Governance capacities are understood as **the collection of structures, processes, and capabilities.**

Innovative governance is needed to implement the European Green Deal objectives and the new frame of mission driven innovations, with a focus on the transformation process towards regional bio-economies, to be seen as a collective responsibility and collaborative effort. In fact, all domains are needed in the quadruple helix interplay: public and private sector, knowledge domain, and society. Representation and participation is needed as well in the governance structure within the region, as well in the processes on strategic and operational level, as well to optimally apply the various means and capabilities from the different domains and from partners in the regional networks of bio-economy.

Structures

- Organization of the regional innovation ecosystem.
- Quadruple helix interplay – connect the domains.
- Connect the Value Chain.
- Set up support services, intermediate organizations, and create facilities.

Processes

- From vision to implementation.
- From ideas to innovations and new applications.
- From biomass or waste to sustainable carbon neutral resources for different sectors to manufacture consumer products, to transform from fossil based to biobased and to circular economies.

Capabilities

- Understand the needs for transition, put the mission central in the strategy of the region and in the strategy of committed organizations.
- Make the strategy operational, at the level of committed partner organizations and at the level of the region.
- Collect and attract resources for the transition from all domains.
 - Capacities, Human capital.
 - Finance, funding, investment.
 - Knowledge, research, learning, education.
- Create dynamics.

Workshop design

As for the workshop's participants, the suggested stakeholders are as follows.

- Regional partners from quadruple helix network, all domains should be represented.
- Persons responsible for strategic management of working on transition towards a regional circular bioeconomy (regional public partner, local administration, knowledge partner responsible for strategy on valorization and programs on research and innovation, private sector representatives, cluster organizations and/or regional development agencies)
- Persons who are active with the operational aspects to implement regional smart specialization strategies, circular bio-economy strategies, and who are actively supporting the innovation processes in the region.

The sessions of the workshops should tackle the following core aspects.

- Discuss current regional organization and management the transition to a bio-economy - starting point Map and Gap analysis regional development. Co- creation methods: discussion techniques, create an overview of gaps and group around structures, processes, and capabilities, starting point for design phase.
- Development of vision on or design of the process of organization and management of the transition

- o Create conditions for innovation, smart specialization, mobilization of partners and for initiative and dynamics, from the perspectives of public sector, private sector, knowledge domain, civil society, and intermediate organizations.
- o Completing and upscaling of the innovation ecosystem; what are missing elements, organizations, and partners?
- o Collection and mobilization of resources for the transition: knowledge, financial means, capacities, and capabilities.
- o Accelerating the development and implementation of the circular bioeconomy.
- o Responsibilities and tasks; co-ordination and collaboration.
- Definition and selection of measures, initiatives, or arrangements to improve or complete the regional governance.
 - o Enhance engagement.
 - o Enhance alignment.
 - o Tasks and responsibilities.
 - o Improve collaboration.
 - o Enlarge the resources available.
 - o Create collaborative working space (Community of Practice, Living Lab ...) to experience innovative governance.

Examples of potential outcomes are development of a roadmap for improving the regional management; definition of directions of completing the regional innovation ecosystem; development of new ways of collaborative working; new collaborative initiatives and/or agreement on principles of good governance and guidelines for regional operators and innovation developers on innovative governance models supporting particularly balanced regional potentials and innovation.

Outcomes

One of the co-creation workshops will be entirely dedicated to feedback loops of innovative governance models (co-creation workshop 4, WP2). It will create and shape participatory activities and formats aiming at supporting information flow to/of existing regional innovation processes and strategic development, or even initiate possibly new emerging policies and strategies; thus moving towards a balanced regional governance.

Innovative governance is not often subject of discussion in regional bio-economy networks. The regional governance incorporates a broad spectrum of aspects, which are relevant at the same time. Every regional Engage4Bio Hub is in a different phase of their development and every Hub has different organizational structures, frames and ways of working, depending their state establishment, their history and their cultural values. We see that the different Hubs have applied the conceptual framework and have used the most relevant aspects depending on their specific situation, their needs and the relevant next steps to improve the regional governance, in order to create important conditions for bio-economy uptake.

Within the **Dutch Hub** there is already some dynamics and initiatives on circular textiles, but very fragmented among the different domains. Also the focus of regional approach is missing. So the main issue of the innovative governance is to commonly determine the smart specialization, and to discover the comparative advantages of the region, upon other regions. And to connect the value chain partners, connect the designers with the private sector, and improve the quadruple helix interplay within the region.

Within the **Hungarian Hub**, the term innovative governance is completely new. The workshop was dedicated to discover the concept and the definition and to find out the relevant aspects for the specific situation in the country and in the region, as well to discover how to improve the governance, how to connect the different scales (local – national) and how to collaborate among partners.

The **Finland Hub** is focusing on connecting with the value chain partners, as sustainable packaging cluster is representing just a part of the chain. Next to this objective, the network partners have defined the aim to stimulate biobased and circular economy, focusing on the use and processing of natural fibers in package, by commonly development of clear criteria for circularity, effective communication, and a supportive regulatory framework.

In **Austrian Hub** the focus of the discussion was on awareness and on communication among partners in the value chain and to arrive to common understanding. Also highlighted was the need for better alignment of the knowledge partners and the researchers on bio-economy with the value chain partners and the cluster organization, in order to bring the knowledge and capacities on the on the regional potentials of sustainable, circular bioeconomy together.

In **Italian Hub**, there is a need for better connections and interactions among the different domains of public sector, private sector and knowledge (research and education). More support is needed to optimize the interplay between the domains on improvement of the sustainability of the fishing industry and the circular economy.

Activities

In all hubs the workshop seemed to be a good starting point for discussing the innovative governance challenges at the regional level. It should be seen as just a starting point, because in most of the cases the time and or the representation of partners was limited to arrive to common conclusions and to clear insights in improvements or measures. But nevertheless, all regions have succeeded in defining directions and in planning follow-up activities to improve the governance. And partners have articulated intentions to be part of those. Most of the activities which have been developed in the co-creation workshops, focus on follow-up discussions and formulation of strategies, on improving the interplay among the domains (public sector, private sector, knowledge and less represented and articulated the civil society) and within the value chain. Some regions have indicated initiatives to build platforms and organize events, to strengthen the communications about regional bio- economy opportunities, in order to arrive to common understanding and common initiatives. In Hungary, existing projects have been identified which can be used as a

driver to optimize the governance for regional bio-economy uptake. Specific attention for awareness raising and for communicating the benefits of bio-economy. Also to translate these into criteria and government regulations (FI).

Observations

- Innovative governance, the definitions, the aspects and the underlying concepts are not often discussed among partners in regions a. Partners in the regions seem to be not that familiar with these concepts. Innovative governance is a relevant but difficult subject for discussing and for co-creation.
- Regions need more time to deepen the aspects of regional governance; Not all regions have arrived to clear and concrete activities. It is mostly seen as a starting point to work on improvement of the governance of the regional bio-economy.
- It seems to be difficult to address the regional problem on governance, as there is no central organization which is responsible for the regional innovations. The success depends on interplay and the synergies between various organizations representing the different domains, on the communality of directions and of the dynamics the partners are able to create.
- Various concepts and perspectives are relevant at the same time, as collaboration, specialization, innovation, strategies and implementations, and managing the innovation ecosystem, which should be made operational.
- Bridging the domains is not easily done. Active brokers are needed to create initiatives and collaborations. Also alignment, at strategic and at operational level, will be needed to ensure the cooperation and to make the means available from different organizations, in order to create synergies.
- In every workshop new participants show up, who need to be informed about the project and the Hub activities. The community is growing. Partners will have to keep people and partners involved, by informing them and including them in the activities.



“ Multi-stakeholder engagement to strengthen regional bioeconomy value-chains ”

Consortium :



Bay Zoltán
Nonprofit Ltd.
for Applied Research



EUROPEAN ASSOCIATION FOR THE EDUCATION OF MANAGERS



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO





5.2 Annex 2 - WP2 – Co-creation and co-design Guidelines - for Hub's co-creation workshops



WP2 – Co-creation and co-design

Guidelines for Hubs co-creation workshops

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WP2 – Co-creation and co-design

Guidelines for Hubs co-creation workshops

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AUTHORS

Viola Pinzi (EAEA)
Maria Schammer (ZSI)
Katalin Kalai, Nóra Hatvani (BZN)
Orsolya Polyacskó, Rita Szerencsés (MOME)
Remco Kranendonk (WU)

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Introduction to these guidelines

The purpose of this document is to provide the Engage4BIO Hubs with hands-on and easy to follow guidelines and suggestions for the organisation of 4 series of co-creation workshops included in WP2 – Co-creation and co-design.

The document is organised in five main sections: 1) Conceptual aspects and methods 2) Stakeholders recruitment 3) Workshop organisation 4) References 5) WS concepts and Templates.

A list for further reading and references are also provided, as well as suggestions of co-creation methods.

The document is a complementary tool to Deliverable D1.1 (whose relevant sections are also embedded in this document).

The co-creation workshops

In Engage4BIO all five hubs will implement co-creation processes by engaging quadruple helix stakeholders and regional target groups. In a first step these actors collaboratively develop hub specific visions on a strengthened and successful bioeconomy in the region. To reach these visions (1) (re-)training, mentoring and skills development formats, (2) awareness raising and knowledge gain, outreach and engagement processes and (3) action plans for innovative governance models and regional development will be developed.

In the following, we present a recap of each task/workshop. In Annex 5.1, you can find more detailed concepts and suggestions for each workshop and information on the expected outcomes.

T2.2 Co-creation of local bioeconomy vision and strategy approach (Lead: BZN, other partners: TMG, CLIC, UNIPA, WR, ZSI, MET, MOME, APRE, ArteZ) (M7-M10)

The first co-creation workshop: developing future pathfinder manuals (i.e. a reference collection of useful, practical and innovative ideas and instructions for activities supporting and enhancing regional bioeconomy development), using the experiences of the POWER4BIO project. Social attitudes towards regional bioeconomy specifications will be taken up. The manuals will interlink with adult education and outreach activities and include art and cultural aspects. The pathfinder manuals will serve as input for T3.1 where co-created ideas will be turned into actions.

T2.3 Co-creation of guidelines for training and mentoring for adults including skills development (Lead: EAEA, participants: TMG, CLIC, BZN, UNIPA, WR, MET, EAEA's affiliated partners in hub regions) (M10-M16)

The good practices collected in T1.3 will be revised, adapted and co-created based on the Hubs identified needs and context specificities. Output: guidelines for training and mentoring for the specific value chains in the hubs, supporting the boosting of knowledge and skills useful in the bioeconomy, and in particular bio-based sectors. Results will be collected in D2.2 and established as Open Educational Resource (bioeconomy learning hub), for retain, re-use and

adaptation in bioeconomy.

T2.4 Co-creation workshops on knowledge gain campaigns in hubs (Lead: MOME, other partners: ArtEZ, hub leaders together with associated/affiliated local art partners) (M10-M16)

Knowledge and awareness raising campaigns, based on the human-centered aspect of design thinking, involving local stakeholders, artists, designers, researchers, decision makers, professionals from the field of biotechnologies and available market actors etc. at the local level. The identified regional communication themes and challenges (T2.1) serve as the basis. A synthesis of ideas, and a prototype will be co-created and tested among the wider target group. The formats, activities and material co-created will be collected in regional action plans (D2.2). The most suitable formats/activities will be implemented in WP3 and WP4.

T2.5 Co-creation workshops on innovative governance models (Lead: WR, other partners: ArtEZ, all partners) (M10-16)

Addressing and finding ways of how to manage regional bio-based innovation processes and how to ensure inclusiveness and engagement of all actors. Good practice guidelines for local operators and innovation developers on innovative governance models supporting particularly balanced local potentials and innovation (in terms of economy, society and ecology impact) will be developed. Feedback loops to the respective policy makers of regions and hubs will be cocreated (D2.2).

1 Innovation processes and regional co-creation

This chapter helps Engage4BIO hubs to set up their regional innovation and co-creation processes. It provides a framework for co-creation processes, including information on when they are suitable and what is needed to successfully implement them.

Co-creation roots in transformative processes in the entrepreneurial world, where co-creation aims at generating new products and services. In these processes different stakeholders and target groups are involved, especially potential users and all of them are considered as experts for one or another aspect. But the method did not only prove to be successful when it comes to developing new products, it also serves as a tool to address structural changes or to solve challenges in internal management (Senabre 2015). Co-creation processes are part of an open innovation approach, where an innovation process is opened up to different stakeholders and where engagement of users is key (Eurich, Glatz-Schmallegger, and Parpan-Blaser 2018). Usually co-creation is complemented by other concepts, such as design thinking or participative design (Senabre 2015) and follows the approach to involve different perspectives and collaboratively design innovative tools, material, processes, strategies, activity formats, etc. (Steinhaus et al. 2018). Senabre (2015) points out that in co-creation processes “rather than involving experts, participation is centred in relevant viewpoints informed by necessity or daily activity”. Such processes enable better innovative ideas, by bringing in these different perspectives and have the potential to bring insights about new

technologies and expertise for different solution options and thus is improving the innovation quality (Eurich, Glatz- Schmallegger, and Parpan-Blaser 2018). In view of that, Engage4BIO co-creation processes involve regional stakeholders and citizens affected or interested in the hub specific bioeconomy field. The process will give voice to local communities. Hub

teams will choose creative methods and materials to support the groups in co-creating their ideas.

2 Stakeholder mapping and recruitment

In this section we briefly summarize how to do the stakeholder mapping and what is important to consider in the recruitment of participants.

As above explained diverse perspectives help to create innovative ideas. But who are the people to engage? Who are the “right” ones, whose perspectives are necessary in the co-creation process? To answer these questions and to finally have a satisfying composition of participants a conscientious stakeholder mapping is necessary. The stakeholder mapping process helps to **identify all people or groups**, which are affected by the aims of the project, who can influence results or have interest in the results. In a next step **groups and individuals are prioritised** in terms of necessity for engagement. The most commonly used approach is to categorise stakeholders in relation to their relative level of interest and influence. In a last step, relationships between stake-holders are questioned and personal characteristics are identified. This can be extremely useful in the process of engagement. There are a range of methods to analyse the role of individuals. The following questions can help to know your group better and also to identify incentives for participation, which will help in the recruitment:

1. What is the stakeholder’s primary interest in the co-creation process/results?
2. To what degree is the stakeholder relevant in the field of interest?
3. To what degree is the stakeholder involved in the processes in the region?
4. Does this stakeholder oppose or support the vision we would like to reach?
5. Will the co-creation activity benefit or harm the stakeholder?
6. What alliances exist with other stakeholders?
7. What conflicts exist with other stakeholders?

A stakeholder mapping template is proposed in the Annexes. The mapping already started within the Cross-fertilization workshop can be of support as well¹.

3 Workshop organisation

In this chapter, we outline the core steps and activities to prepare, conduct and follow-up on the workshop organisation, with the brief description of the processes, roles and tools to be used.

3.1 Preparation

3.1.1 Setting up the team and agenda

In the preparation phase, the coordinator of the activities identifies the core team, the programme and format of the event (plenary/parallel sections, main methods, timing) and the core logistics (place, equipment etc.).

¹ Cross-fertilization Workshop 1 – Stakeholders mapping:
https://miro.com/app/board/uXjVPD8ynvo=?utm_source=notification&utm_medium=email&utm_campaign=daily-updates&utm_content=go-to-board

The **core team** is composed of an event coordinator, who is ideally also an expert in the subject, a facilitator (or group of facilitators), rapporteur/s (multiple ones if parallel sections are foreseen). Additionally, we recommend one person to support in receiving participants, coordinating the timing of the day and helping with materials across the activities.

A **detailed programme of the event** is needed to ensure fully transparency with participants a detailed programme of the event must be provided already at the invitation stage. This programme outlines information on the scope, purpose, structure and activities of the event and explains clearly participants' expected roles and contributions.

An **agenda template** is useful for this purpose, which includes description of roles, topics addressed, purpose and methods for each section.

As for the format, a co-creation workshop could vary from 3 hours to several full days, depending on the scope and purpose. We suggest organising the activities alternating plenary and group/parallel sessions, to embed different methods and to make a dynamic flow across the day. Pre-organising the participants in groups, in case relevant for the chosen method, can also help with the flow. The workshop structure and sessions should enable participants to get to know each other and set rules, to enter the topic, brainstorm ideas, prioritise them, start the ideation process, develop or prototype their ideas, and reflect and evaluate them.

The core logistics are set up based on the programme, format, timing and number of participants. For workshops with more than 30 participants and various spaces/rooms, we suggest providing **a location map** outlining title and timing of each section, room set up and equipment required, and names of facilitators and rapporteurs for each group. This map does not only support the organisers' team but should also be shared with participants at reception to help orienting themselves during the day.

3.1.2 Recruitment of participants

The recruitment process for each workshops is based the Stakeholder mapping conducted initially and on the specific purpose and scope of each of the 4 workshops.

In terms of balance and group composition, we suggest the following, for each co-creation workshop:

- If possible, a minimum of 2 persons per stakeholder group
- Gender balance
- 15 to 20 persons

For recruitment it is recommended to clearly outline the value of participation in the respective co-creation workshop or process. For some participants it might be sufficient to raise the awareness that their own reflections and ideas might cause and effect in the region or that their input is inspiring for other stakeholders. Other appreciate to grow their network and become part of a wider network in their region.

To inform participants about the big picture, a clear goal and the wider impact of the process is very important. Below you find a table providing some optional

arguments to be used in the invitation process, customized to Engage4BIO activities (Schrammel and Marschalek 2022).

<p>Get to know the regional community</p>	<p>The Engage4BIO co-creation process focuses on strengthening and pushing forward the regional bioeconomy sector and contributing to regional development.</p> <p>Taking part in the co-creation process means getting to know relevant actors in the field and their tasks and areas of responsibility. Personal contacts are improved and new option for future collaborations enabled.</p>
<p>Get a voice and be listened</p>	<p>Your personal views and contributions will be integrated in the co-created results. Your ideas will be discussed and possibly will be implemented within your region.</p>
<p>Contribute to change</p>	<p>As a member of the Engage4BIO co-creation process you develop and evaluate appropriate ideas for improving the bioeconomy sector in your region.</p>
<p>Spark future collaborations</p>	<p>The regional co-creation processes are a first step in a fruitful collaboration. Through this process regional actors have the opportunity to expand their connections at the national and European level.</p>

3.1.3 Invitation and registration

The invitation stage is very important for the first step of the onboarding process of participants, which needs to begin already before the event itself takes place. Participants should join the event in full understanding of their expected role and contribution and the event organisers should aim to put them in the conditions to participate fully and at the best of their will and capability.

For the **invitation**, it is useful to have the full programme ready, even if some aspects are still in a draft version, and to offer an **online registration form**, which should include the appropriate **data protection disclaimers**.

A set of standard templates emails for main steps of the process should also be used, as following: first invite/save the date (with date, place, description of purpose and why they are invited); then, full invite and following reminders to participants with detailed programme, registration and consent forms, information on participation and logistics.

Data protection disclaimers include the relevant information about the legislation (this can be also different country by country) and cover all the relevant data collected (including dietary requirements). In case video and audio recording during the event is planned, a specific disclaimer addressing that is needed. Please, see Engage4BIO Data Management Plan²,

It is important that standard ethics for human research are applied. Participants must be aware how their co-created products will be used, and if and how their input will be further recognised or rewarded. A **detailed information sheet and**

² Engage4BIO D5.3 – Data Management Plan <https://cloud2.zsi.at/index.php/f/534959>

consent form are needed at this stage, to be shared and collected back signed from participants before the beginning of the workshop.

- The information sheet should explain in detail the activity, its purpose, the methods, the rights of the participants (such as opting out at any time and request withdrawal of his data/information) and the kind of information to be collected and how this will be used and by whom. A template for this is available in the Template section, to be updated for each activity workshop.
- The consent form should include explicit consent expression for each core point of the information sheets description. A template for the consent form is available in Engage4BIO Data Management Plan³, to be updated for each activity/workshop.

In case preparation materials is used, it is important to share it during the invitation stage with participants to make sure that they have sufficient time to prepare. In case foreseen, **invite them to register and set up profiles in the tools** that may be needed for the preparation phase or for the day of the event.

3.1.4 Location and setting - Space and beauty

Room setting and comfortable atmosphere in a working room are often underestimated or forgotten about. But, to make a group who might not even know each other successfully collaborate and create innovative results, it is important that they feel comfortable and enjoy their time at the workshop. Thus, the setting and room plays an important role. Make sure to meet as many of the following characteristics when organising the workshops:

- Choose a bright room (daylight)
- Take care of flexible furniture
- The room needs to be big enough for the methods you choose and that people can move around
- Use plants to make the room more welcoming
- Take care that participants keep their jackets outside the room
- Give space to move around or have the option to go out in fresh air

For creating a good atmosphere, you can consider turning on some music when welcoming the participants. We suggest calculating sufficient time to let participants arrive in the room. Provide some coffee, cake, or fruits and let people start first conversations to get to know each other a bit.

3.2 Conducting the workshop

For the conduction, a set of tools are also useful, for the core team and participants, and they should also be prepared in advance.

To enable a smooth running of the workshop but also make sure to properly harvest, synthesize and report results of the workshops, we suggest using the following tools:

³ Engage4BIO D5.3 – Data Management Plan <https://cloud2.zsi.at/index.php/f/534959>

- a **moderation sheet** and/or an internal version of the programme in the format of **event script**, with more detailed on the purpose of each section, breakdown of the timing, roles and flow (see Annex).
- **reporting template for organisers and note taking templates for the rapporteurs** to collect information from each section and being able to report live and after the workshop.
- **cards, canvas and other co-creation materials** to support participants in engaging in the activities and sharing information and ideas.

A few days before the workshop, in particular for large events, it is crucial to organise a **short rehearsal with the core team**, facilitators and rapporteurs in particular, based on the script. This can also take place online in case the core team is located in different places. During the rehearsal, the workshop team goes through the programme and the event script and makes sure that everybody is confident in the activities purposes and their own roles.

In some cases, and upon assessment of the event organiser, **short preparatory webinars or online focus groups with and for participants** can be useful to help participants that may not be familiar with topics/aspects the workshop aims at covering. Involving experts in different fields in this preparation activities can help to make them engage and to act as attractive teasers for the main event.

At the beginning of the event, the core team welcomes participants. Make sure they fill in and sign a **registration sheet** and check if the consent form has been shared, signed, and explaining briefly the structure of the day.

3.2.1 Team building and group dynamics

In co-creation workshops we face the challenge to support a group of strangers to become a team, go through all stages of team building and manage to perform successfully in a rather short period of time. The better a group performs together the better are the results. That is the reason why it is important to always consider the concept of team building behind the workshop plan. Here is a brief overview on the team building concept according to B. W. Tuckman. According to this model teams go through 5 phases (Baumann 2015):

- i) **Forming:** in this phase people get to know each other. Most people are very friendly and stay superficial. In this phase it is good to search for commonalities, e.g., the motivation to be at the co-creation workshop. For supporting this stage, it is important to provide a safe room, good visible goals of the workshop, warm up session, openers and provide room for the group to get to know each other. In this phase it is important to offer guidance and to remove uncertainties.
- ii) **Storming:** In this phase the group aims to get clarity about the hierarchy among them. It is recommended that moderators act as mediators in case of conflicts. It is important that the group gets beyond this phase.
- iii) **Norming:** In this phase roles are made clear, and the group is ready to cooperatively work on their goals. It is suggested to collaboratively

identify rules with the group. These can be made well visible on a flip chart.

- iv) **Performing:** In this phase the group collaboratively acts. They build up deeper relationships and solve group tasks by bringing in their different talents. This is the way the group can achieve more than an individual could

do. Together they set steps direction goal. In this phase the Us-feeling is developed.

- v) **Adjourning:** This phase starts when the group work finished. After collaboration in a workshop, it often happens that a strong sense of togetherness arises and the group would like to continue. Here it is important to praise the achieved results. For this targeted closers are recommended to pack the achieved.

Besides the team building the concept of group dynamics plays and important role in co-creation processes. Especially the moderator must be aware of that and keep his/her eyes open to help the group to successfully collaborate. To do so best it is important to understand the different roles according to the rang dynamic model of Raoul Schindler (Baumann 2015). According to this model there are different positions individuals can take over. These positions bring specific behaviour with them and influence the wellbeing of individuals and the group.

- **Alpha** – the leader, who likes to talk, to be the rapporteur or groups and does not hesitate to take accountability.
- **Beta** – Expert in a specific field. This person might know more than others. It is important to use this expertise in the workshop, give this person a valued role in the discussion to make sure that he/she does not become an opposer.
- **Gamma** – average team member, who collaborates and does the work.
- **Omega** – Opposite position to alpha. An omega can be an oppose, brings in critical perspectives, might not support all processes. It is important to see omegas and hear them and find a way that they get engaged.

For more details on team building and rang dynamic concepts see Baumann (2015).

3.2.2 Workshops sessions and facilitation

In each phase all methods need clear instructions; questions, goals and processes must be clear for all participants.

At the end the workshop will be closed by giving an outlook on what happens next and providing the option for feedback.

Welcome and introduction – the groups starting to get to know each other

A warm welcome and introduction is important to have a good start in the day. At the beginning of the workshop, or even before, participants start to interact with each other. After clearly presenting the goals and non-goals, the agenda and the etiquette of the workshop, we suggest planning sufficient time for sessions in which participants get to know each other and can find commonalities. In this phase, entering the topic can already start and people can be prepared for the further creative work process. Among other, these are suitable methods: “systemic constellations”, “joint poster”, “dreams and nightmares”, “Lego”, etc. Some of the methods are also suitable in other stages of the workshop, depending on the session goal set and questions asked.

Inputs and bringing everybody on the same level of necessary knowledge

Especially in multi-stakeholder processes, or when engaging citizens, it is necessary to plan an input session, where the needed background information is presented and discussed and the starting point for discussion is set.

Entering the topic

Time and methods need to be planned to help participants to truly dive into the main subject of the co-creation workshop. In this phase, workshop topics are collected, prioritised, and processed. Useful methods are: "Topic list", "Brain walking", "World Café", and diverse other brainstorming and prioritisation methods.

Ideation

In this phase the team starts to work on the identified topics. Here again, brainstorming methods can be chosen, but also future scenarios and visioning methods, such as "Disney method" or the "problem reversal technic" are suitable. In this phase ideas are reflected in detail and participants are guided from a very open visioning process to a more critical reflection and back. The group is guided from "problem talking" to "solution talking" (Baumann 2015).

Getting concrete - designing concrete ideas

In this phase concretising ideas is central. On one side target groups can be specified, e.g., by the "avatar method", "personas", or the "target group brainstorming matrix" or on the other side concrete strategies and prototypes can be developed by applying methods, such as "prototyping", "LEGO serious play", "system board", "design sprints" etc. These methods using creative materials support the group in thinking out of the box, visualizing places, activities, stakeholder and processes which can be translated in concrete products, roadmaps or strategies, which are ready to be tested afterwards. For this phase sufficient time must be calculated, as participants need to become comfortable with using creative materials and as it takes time to move thoughts out of the box and come up with less obvious ideas and details. Moreover, designing concrete ideas require feedback loops that need to be planned, e.g., by applying the "critical friend" method.

Closing, reflection and feedback

Time for a reflection round and feedback helps to smoothly close the workshop. Here participants can share their experiences, what was specifically interesting for them, or how they wish you continue. It is not a must just let people talk one after the next. There are also methods and approaches to support this closing and feedback process: e.g., "TV news", "30 seconds of feedback", "Fishbowl", "Ball of wool", etc. At the very end with closing words the workshop ends. Here it is important to decide and talk about future steps and potential collaborations after the workshop. After a successful workshop, the team will have developed a kind of team-spirit and participants might want to continue collaborating (Steinhaus et al. 2018).

Breaks and energizers

A co-creation workshop usually asks a lot from the participants. In many cases, the participants do not know each other before the process. It is important to plan sufficient breaks for participants to personally exchange, get some coffee and some fresh air. Energizers are also a good way to help participants to keep concentration

and also support the team building. There are comprehensive collections of energizers and warmups for face2face and online workshops.

3.3 Follow-up with participants

Same as the invitation follow-up activities with participants, core team and experts (if any) are an important phase of the co-creation process.

With follow-up activities participants are kept engaged in the topic. Results of the joint work are shared. E.g. short term this happens via simple, in the **thank you emails, providing summaries, materials and pictures** from the workshops. Medium-long term we suggest to share how the results are and will be used, for example through more **structured reports, follow-up online webinars/focus groups, invitations to related events and activities** and any **other outputs** originating from the joint work. For the short term follow-up, **brief summary reports** are used. These focus on sharing relevant **good practices and experiences/testimonials** emerged during the event.

In case of series of workshops, perhaps even developing in a long period of time, it is key to maintain the engagement and commitment of participants. In this case, on top of the short summaries and experiences sharing, **offer continuation to the work through online tasks between the workshops, in an asynchronous way**. These activities should be efficient, not requiring a lot of time or complex tools, while contributing still effectively the co-creation process, for example asking participants to provide short feedback on the outcomes or part of them, once further elaborated by the workshop organiser, or polling participants on the main aspects, ideas or methods to focus on in the following workshop.

4 References and further reading

4.1 Further reading and collection of methods

In this section, we indicate some method guide books or methods collections, where moderators find inspiration and ideas for suitable methods for all phases of their workshops.

- **Blossoming Workshops and Seminars Guaranteed to Succeed**, Baumann, Birgit. 2015, Wien. Businessmind.
- **Facilitating Multicultural Groups. A Practical Guide**, Kogan Page, Hogan, Christine. 2007
- **D3.3 Guidebook on engagement and co-creation methodologies**, Steinhaus, L., Schields, M., Schrammel, M., Feichtinger J. 2018, BLOOM project, https://bloom-bioeconomy.eu/wp-content/uploads/2018/11/D3-3_Guidebook-on-engagement-and-co-creation-methods_final.pdf
- **The Open Book of Social Innovation**, Murray R., Caulier-Grice J., Mulgan G., The Young Foundation, NESTA - <https://youngfoundation.org/wp-content/uploads/2012/10/The-Open-Book-of-Social-Innovation.pdf>
- **Co-creation methods and tools, A Social Manufacturing Framework for**

Streamlined Multi-stakeholder Open Innovation Missions in Consumer Goods Sectors – iProduce project (H2020), various authors - <https://iproduce-project.eu/resources-and-results/co-creation-methods-and-tools/>

- **Open Innovation Ecosystem Playbook**, CLIC Innovation - <https://www.ecosystemplaybook.com>
- **ActionCatalogue, Engage2020 project** (FP7), <http://actioncatalogue.eu/search>
- **Collection of co-creation methods and activities, Engage4BIO project partners**, Deliverable D1.1 and Cross-fertilization Workshop n. 2 - <https://cloud2.zsi.at/index.php/f/519585>
- **Toolkits for co-creation**, Aalto University - <https://designfactory.aalto.fi/toolkits/>
- **Co-creation tools and methods for circularity and circular design**, EllenMcArthur foundation - <https://ellenmacarthurfoundation.org/explore>
- **Lean service canvases for co-creating services**, Futurice - <https://futurice.com/lean-service-creation>
- **Hyperisland**: A resource kit you can use to apply creative collaboration and unleash potential in your team or organization - <https://toolbox.hyperisland.com>
- **SITRA: circular economy business models & roadmaps** - <https://www.sitra.fi/en/tools/>
- **STRATEGYZER.com** strategy creation canvases - <https://www.strategyzer.com/resources/canvas-tools-guides>
- **EU Project GONANO** - <http://gonano-project.eu/road-of-co-creation-training-materials-researchers-engineers>
- **LEGO Serious Play**, LEGO - <https://www.lego.com/en-be/themes/serious-play/about>
- **Seeing in Multiple Horizons: Connecting Futures to Strategy**, Curry & Hudson, Journal of Future Studies 13, pp. 1-20
- **Design Thinking**, IDEO
 - o <https://designthinking.ideo.com>
 - o <https://www.ideo.com/post/design-kit>
 - o <https://www.ideo.com/post/design-thinking-for-educators>
- **Six thinking Hats**, De Bono E., 1985
- **The u-school for Transformation resources** (Presencing Institute) - <https://www.u-school.org/resources>
- **Blossoming Workshops and Seminars Guaranteed to Succeed**, Baumann, Birgit. 2015, Wien. Businessmind.
- **Guidance for drawing causal loop diagrammes**, Daniel H. Kim. 1992.
- **Scripts for group model building**, D. F. Anderson, G. P. Richardson. 1997.
- **Group model building presentation**, M. Kleemann, M. Happback. 2012.
- **Co-Creation Navigator** (WAAG, 2019 - <https://ccn.waag.org/navigator/>)

4.2 References

Baumann, Birgit. 2015. *Blühende Workshops und Trainings mit Erfolgsgarantie: Tipps aus der Praxis für die Praxis*. Wien: BusinessMind.

Benson, Tony, Susanne Pedersen, George Tsalis, Rebecca Futtrup, Moira Dean, and Jessica Aschemann-Witzel. 2021. 'Virtual Co-Creation: A Guide to Conducting Online Co-Creation Workshops'. *International Journal of Qualitative Methods* 20 (January):

160940692110530. <https://doi.org/10.1177/16094069211053097>.

Eurich, Johannes, Markus Glatz-Schmallegger, and Anne Parpan-Blaser, eds. 2018. *Gestaltung von Innovationen in Organisationen des Sozialwesens*. Wiesbaden: Springer Fachmedien Wiesbaden. <https://doi.org/10.1007/978-3-658-19289-1>.

Schrammel, Maria, and Ilse Marschalek. 2022. 'D2.1 FSOLab Manual Including Compilation of Tools'. online.

Senabre, Enric. 2015. 'White Paper: Methodologies of Open Co-Creation around Digital Culture'. https://pro.europeana.eu/files/Europeana_Professional/Projects/Project_list/Europeana_Creative/WP1%20-%20Europeana%20Open%20Laboratory/eCreative_CoCreation_Whitepaper_Platoniq_1.0.pdf.

Steinhaus, Norbert, Michalea Schields, Maria Schrammel, and Judith Feichtinger. 2018. 'Guidebook on Engagement and Co-Creation Methods'. Guideline. https://bloom-bioeconomy.eu/wp-content/uploads/2018/11/D3-3_Guidebook-on-engagement-and-co-creation-methods_final.pdf.

5 Annexes

5.1 Workshops concepts and outputs

5.1.1 Vision and Strategy workshops

- T2.2 Co-creation of local bioeconomy vision and strategy approach
- Period: April-June 2023

5.1.1.1 Objectives

The first co-creation workshop aims at developing a pathfinder manual for each hub work across the project co-creation and implementation activities in the form of the collection of useful, practical and innovative ideas and instructions for activities supporting and enhancing regional bioeconomy development. The pathfinder manuals will identify visions and main strategies for each hub to develop activities for training, campaigns and innovative governance models. Based on this, the further three co-creation workshops (see 5.1.2, 5.1.3, 5.1.4) will be built on the vision outlined in the pathfinder manuals, as summarised in the table below.

Task	Subject of the co-creation process	Expected output of the co-creation process
T2.2	Co-creation of local bioeconomy vision and collaborative strategy approach , following the common framework in all hubs, as follows: <ul style="list-style-type: none"> • A vision for useful, practical and innovative ideas regarding learning, training and mentoring opportunities necessary and available in 	Future pathfinder manuals (one per each hub), which <ul style="list-style-type: none"> • are reference collections of useful, practical and innovative ideas and instructions for activities supporting and enhancing regional bioeconomy development; • describe the bioeconomy vision

	<p>your region.</p> <ul style="list-style-type: none">• A vision for useful, practical and innovative ideas regarding outreach activities aiming at	<p>for your region (in your hub's specific field) targeting the three elements listed in the table cell on the left);</p>
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	<p>continuous awareness raising and knowledge gain in your region.</p> <ul style="list-style-type: none"> • A vision for useful, practical and innovative ideas regarding innovative governance in your region. <p>(Note: Your co-creation process must go through all these three elements of the vision creation which are going to be synthesized in the pathfinder manual. The vision needs to be concrete and comprehensibly formulated - visualisation might support understandability.)</p>	<ul style="list-style-type: none"> • serve as guiding maps for of the co- creation process in in the further three co-creation workshops (T2.3, T2.4, T2.5).
T2.3, T2.4, T2.5	<p>Co-creation: outlining what activities are needed to reach the vision defined in T2.2, using the pathfinder manuals created in T2.2 as guiding maps</p>	<p>Collection of concrete actions in the form of</p> <ul style="list-style-type: none"> • guidelines for training and mentoring (T2.3) • regional action plans: collection of formats, activities and materials for knowledge gain and awareness raising (T2.4) • innovative governance models supporting local potentials and innovation (T2.5) <p>Pathfinder manuals are visioning documents and the activities suggested to reach the vision will be included in D2.2.</p> <p>(Note: The pathfinder manuals and the co- created ideas will serve as input for WP3, where they will be turned into actions: from the collections created in WP2, several activities will be selected, planned in detail and implemented by each hub in WP3.)</p>

Who is in charge?



This task is led by BZN and each hub is organising a workshop and delivering an output. Partners involved: TMG, CLIC, UNIPA, WR, ZSI, MET, MOME, APRE, ArteZ.

Each hub has one partner with competences and experiences in co-creation processes. These partners are asked to take the lead in designing the workshops (AT: ZSI, HU: MOME, NL: ArtEZ, IT: APRE, FN: CLIC).

5.1.1.2 Suggested methods

Here we briefly list the methods shared and proposed within the consortium for the Vision and Strategy co-creation process.

- Hub Austria – LEGO Serious Play
- Hub Finland – Purpose Creation Tool and RDI Roadmap tool
- Hub Hungary – Biotechnology regional development
- Hub Italy – MML – Mobilization and Mutual Learning workshop
- Hub The Netherlands – Value mapping (Three Horizons Map)
- Hub Education – Design Thinking (Phase Research: Discover, Explore,

Define) Presentations available here: <https://cloud2.zsi.at/index.php/f/519585>

5.1.1.3 Pathfinder manual – template

After the workshop and the analysis of its results, each hub has to deliver the first contribution to deliverable D2.2, which collects the whole co-creation activities outputs. The “*Pathfinder Manual for [country/sector] Engage4BIO Hub*” should be prepared based on the following outline.

Introduction – 1/2 pages max.

- o Key results of the map and gap analysis (half page) and how the results were used to create the vision (*Note: this short paragraph should create a clear link/bridge with the Map and gap analysis report delivered by each hub. When reading the Pathfinder, the hub journey from the Map analysis to vision should be clear and accessible.*)
- Participants and engagement approach (participants description with roles, engagement strategy, how the participants contributed to the process, to which part, at which level etc.)
- Description of co-creation activities (preparation, workshop/s, time, method applied).

Hub vision and strategic aspects

- General statements and vision for the Hub within Engage4BIO environment
- Core objectives for Engage4BIO activities to be developed within the Hub (based on the vision)
- Vision and strategy approach for training and mentoring
 - o Please, indicate at least:
 - Specific vision
 - Strategic aspects
 - Useful, practical and innovative ideas and instructions
 - Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities
 - Main stakeholders to be involved and roles, also by idea/proposal if relevant

- Vision and strategy approach for awareness raising and knowledge gain
 - o Please, indicate at least:

- Specific vision
 - Strategic aspects
 - Useful, practical and innovative ideas and instructions
 - Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities
 - Main stakeholders to be involved and roles, also by idea/proposal if relevant
- Vision and strategy approach for innovative governance
 - o Please, indicate at least:
 - Specific vision
 - Strategic aspects
 - Useful, practical and innovative ideas and instructions
 - Ideas/proposals for at least 3 potential outcomes of the following co-creation process and implementation activities
 - Main stakeholders to be involved and roles, also by idea/proposal if relevant

Annexes

- Workshop agenda
- Registration sheet
- Results of the creative work and process during the workshop, such as canvas and tools used, visuals, photos, multimedia production, testimonials from participants
- Workshop report

5.1.2 Training guidelines workshops

- T2.3 Co-creation of guidelines for training and mentoring for adults including skills development (Co-creation workshops and processes in each Hub)
- Period: July-November 2023

5.1.2.1 Objectives

The co-creation workshop on training aims at developing ideas and prototypes of concrete education activities to support the uptake of the Hub regional activities, based on the vision and strategy developed in the first co-creation phase and looking in detail to the results of the gap analysis and the learning scenario already initiated in that exercise.

Each hub is asked to co-create a set of guidelines for training in their area and the design of at least 2 training activities (while more are encouraged).

One or more of these activities will then be further developed and implemented in WP3 from early 2024 within the Hub/regional context. The activities designed and selected for implementation also needs to be feasible within the Engage4BIO timeline and resources, while the Hubs can also leverage existing initiatives and resources to integrate the E4BIO ones and/or

co-design a broader and more ambitious programme, of which some actions/parts will be implemented within E4BIO. The KPI for implementation of the training and mentoring activities is at least 250 participants and at least 12 educational organisations involved across the 5 Hubs.

First, the co-creation process will serve the purpose to define the core aspects of the training activities in the form of more general guidelines, regionally oriented (training guidelines).

- Needs addresses and context
- Links with (bio-based) Hub technology and regional development strategies
- Links with industry and occupations (if relevant)
- Synergies with other Hub activities (withing Engage4BIO or pre-existing)
- Education provider/s involved/to involve
- Collaboration and synergies with other stakeholders
- Learners' persona
- Learning outcomes and competences mapping
- Instructional design approach/es
- Methods (specific learning activities)
- Creative practices embedded (as per Engage4BIO approach)
- Innovative elements (as per Engage4BIO approach)

Furthermore, the results of this process will be also formalized in at least two concrete training and mentoring activity proposals. At least 1 of the co-created training and mentoring activity will then be implemented in WP3 (but more are encouraged).

The training activities will be also published as OER – Open Educational Resources in at least 1 open OER repository/catalogue, under Creative Commons License, such as, for example, OER.Commons – <https://www.oercommons.org/>. EAEA will take care of preparing the metadata for publication and release, in due time, and each Hub/resource creator will be asked to review these metadata before release.

In practice, the training and mentoring activities to be published as OER can have various formats, such as:

- training curriculum and/or syllabus of formal or non-formal education activities (full programme, single course, single module).
- teaching and learning strategy.
- lesson plans examples.
- outlines of workshops, seminars and similar flexible activities.
- concept of practical and labs-like activities (single lab activity, living lab, education lab, makers space etc.).
- internship/traineeship or similar activities programme.
- case studies for policy makers, industry and civil society organisations on how to embed bioeconomy practices and contents in the existing training practices of any level, in the regional context, with example of learning activities.
- guide for local/regional career services on how to design mentoring, vocational, orientation and career guidance activities to support adults in skilling, re-skilling and upskilling in the bioeconomy/bio-based related careers etc, with example of activities.
- a combination of various such concrete outputs, for more complex activities.

Who is in charge?

Task leader and supporting organisations: EAEA affiliated entities in FI, NL and AT.

Each hub is organising a workshop and delivering an output. Partners involved: BizUp, CLIC, BZN, UNIPA, WR, MET.

Each Hub has partners or an EAEA affiliated entity with competences and experiences in education and training. These organisations will support the co-creation process.

EAEA colleagues will remain available during the process for advice, review of methods and results, participation in meeting with Hub colleagues and stakeholders etc.

Contacts

Name	Organisation	Email	Role
Viola Pinzi	EAEA	Viola.pinzi@eaea.org	Task leader and general support service (concept, templates, methods, planning). Providing examples of training and mentoring activities ad hoc (based on Hub first ideas).
Peter Zwielerhner	Verband Österreichischer Volkshochschulen VOEV – VHS - Austria	peter.zwielerhner@vhs.or.at	Support Austrian Hub for co-creation in T23 and for implementation of the activities in WP3
Ágnes Kocsis-Simon	Nevelők Háza Egyesület (Educators' Centre Association) – NHE - Hungary	grenouille1968@gmail.com	Support Hungarian Hub for co-creation in T23 and for implementation of the activities in WP3
Margreeth Broen	Learn for Life – LfL – The Netherlands	mlbroens@xs4all.nl	Support Dutch Hub for co-creation in T23 and for implementation and for implementation of the activities in WP3

5.1.2.2 Suggested methods

Here we briefly list the methods shared and proposed within the consortium for the Training co-creation process.

- Hub Finland – Bio-based and sustainable packaging co-creation Method
- Hub Hungary – Jump into the future! Creative competition
- Hub Italy – Co-creation method on guidelines for training and mentoring for adults including skills development
- Hub Education – Design Thinking (Phase Design: Ideate,

Prototype). Presentations available here:

<https://cloud2.zsi.at/index.php/f/519585>

For examples and inspiration on training and mentoring activities, please, see also:

- D1.1 – Guidelines for Hubs - <https://cloud2.zsi.at/index.php/f/543818>
 - o Section 6 – Activity catalogue

- o Section 8 Appendix A – Innovative training examples

5.1.2.3 Guidelines for training and training activities outline (OER) – template After the workshop and the analysis of its results, each hub has to deliver a set of concrete outputs as contribution to deliverable D2.2, which collects the whole co-creation activities outputs.

The *"Guidelines for training and OER for the [country/region/sector] Engage4BIO Hub"* should be prepared based on the following outline.

Introduction

Please, prepare a short introduction about the campaign following these points.

- Key results of the map and gap analysis and with the Vision and Strategy aspects of the Pathfinder manual (first phase of co-creation process). Note: when reading this output the links and flow from the gap analysis till the training proposed should be clear and linear. – *Max 1 page*
- Participants and engagement approach (participants description with roles, engagement strategy, how the participants contributed to the process, to which part, at which level etc.) – *Max 1 page*
- Description of co-creation activities (preparation, workshop/s, time, method applied) – *Max 1 page*

Guidelines for training and mentoring activities in the [region/sector] Hub

Please, prepare the core guidelines following these points.

- Short introduction on purpose and objectives of the guidelines
- Detailed description of the training core design aspects
- Needs addresses and context
- Links with (bio-based) Hub technology and regional development strategies
- Links with industry and occupations (if relevant)
- Synergies with other Hub activities (withing Engage4BIO or pre-existing)
- Education provider/s involved/to involve
- Collaboration and synergies with other stakeholders
- Learners' persona
- Learning outcomes and competences mapping
- Instructional design approach/es
- Methods (specific learning activities)
- Creative practices to embed (as per Engage4BIO approach)
- Innovative elements (as per Engage4BIO approach)

Training activities outlines (Open Educational Resources)

Please, provide a more detailed outline of at least 2 co-created training and mentoring activities, in the format that is more appropriate for the type of activity (training curriculum, syllabus, workshop outline, case studies, guidelines for designing services etc.).

For each activity, no matter the type and format chosen, please, indicate also the specific information on the following:

- Synergies with other Hub activities (withing Engage4BIO or pre-existing)
- Education provider/s involved and other stakeholders
- Learners' persona
- Learning outcomes and competences
- Instructional design approach

- Methods (specific learning activities)

- Creative practices and innovative elements

Annexes

- Workshop agenda
- Registration sheet
- Results of the creative work and process during the workshop, such as canvas and tools used, visuals, photos, multimedia production, testimonials from participants
- Workshop report

5.1.3 Knowledge gain and awareness campaign workshops

- T2.4 Co-creation of local awareness raising, communication campaigns and art events with knowledge gain features linked to the defined bioeconomy vision and strategy, specifically
- Period: Co-creation workshops are to be organized in July-November 2023 (M10- 16)

5.1.3.1 Objectives

The specific objectives for this co-creation process are as following.

To prepare and plan the activities for Task 3.3 -Implementation of art events and communication campaigns (M12-M32), including specifically art and design aspects, aiming for broad outreach and emphasizing the integration of humanities/art/design/culture into bio-based economy sectors into training and awareness activities. Predefined formats (e.g. designers for residence, BioDemoLabs) will be used in order to mix the ideas, knowledge, and perspectives of the different quadruple helix stakeholders. Each hub will implement at least 3 co-created activities and 2 from the catalogue.

To prepare and plan the activities for Task 3.4 - Awareness raising campaign (M17-M32) which will involve one big event (i.e DesignWeek, EXPO,...) in each region, two predefined formats from D1.3 (e.g. Bio-Lab Open Doors, Expo and Art festival crossover, further actions targeting the broad public) and two co-created activities, with the aim of ensuring efficient exchange of best practice and engagement of all actors e.g. regional and local authorities, SMEs, civil society organisations including NGOs, University alliances and professionals' associations, knowledge providers, artists, designers and architects.

The current co-creation workshop aims at developing the first draft of a blueprint for awareness raising and communication campaigns targeting a wide audience (series of locally implemented activities including outreach activity) in order to enhance bi- directional knowledge gain tackling local bioeconomy as the core challenge. Based on the visions including communication themes and challenges each hub outlined in the pathfinder manual, these co-creation workshops provide the opportunity for designing outreach activities to spread the word about the phenomenon and significance of bioeconomy in an understandable, appealing manner using out-of- the box solutions integrating art and design approaches. As an output of the given co-creation workshop each hub creates a blueprint of the

envisioned two activities using the template described at 5.1.3.3. These drafted blueprints will serve as the

foundation of the implementation activities taking place in WP3 and will be inserted in the regional action plan D2.2.

TASK	Subject of the co-creation activity	Expected output of the co-creation activity
T2.4	<p>Co-creation of a local awareness raising campaign targeting a wide audience in order to enhance bi-directional knowledge gain based on the vision and collaborative strategy approach outlined in the pathfinder manual following the common framework in all hubs, as follows:</p> <ul style="list-style-type: none"> • A draft ideation about the local campaign (series of implemented activities aka 3 activities / hub) each hub is supposed to undertake and finetune during WP3 • A draft idea of 2 outreach activities to target a wider audience aiming to spread the word about bioeconomy • A usage of art and design-based solutions as part of the outreach activities to be more understandable and citizen-friendly • Creating the foundation of the implementation activities taking place in WP3 <p><i>(Note: Your co-creation activity must aim to tackle all these elements which are going to be essential during the WP3 and WP4.)</i></p>	<p>Draft blueprint using the template described at 5.1.3.3 (one per each hub), which</p> <ul style="list-style-type: none"> • is based on and reacts upon the relevant elements of the local vision building (T2.2) • is the first co-created ideation of an awareness campaign with knowledge gain features • is the first draft of future outreach activities targeting wider audience • is the first attempt to apply art and design solutions to inviting creatives to the co-creation process among the stakeholders • serves as the foundation of the WP3 activities (T3.3 and 3.4) and regional action plan.

Who is in charge?

This task is led by MOME and each hub is organising a workshop and delivering an output. Partners involved: TMG, CLIC, UNIPA, WR, ZSI, MET, BZN, APRE, ArtEZ. Each hub has one partner with competences and experiences in co-creation processes. These partners are asked to take the lead in designing the workshops (AT: ZSI, HU: MOME, NL: ArtEZ, IT: APRE, FN: CLIC).

To reach the creative potential of the given co-creation workshops the invitation of artists and designers are highly recommended to each hub.

5.1.3.2 Suggested methods

Here we briefly list the methods, inspirations shared and proposed within and beyond the consortium.

Formats and frameworks for creative co-creation

- Hub Hungary - World café (see Presentations)
- [The social design canvas](#)
- [Framework for Innovation: Design Council's evolved Double Diamond](#)
- [Lucy Kimbell: The social design methods menu](#)
- Hub Education - Design thinking (see Presentations)

Inspiration for art and design-based solution

- Art Laboratory Berlin
- Eva Bubla art
- Hub Austria and Hungary - Prototype Creation
- From Activity catalogue
 - Water Eden – Interactive outreach activity
 - Citizen Science action
 - Maker Sprint
 - Lifelong Learning festival
 - Epale learning podcast
 - Embassy of Sustainable design exhibition at Dutch Design Week

Presentations available here: <https://cloud2.zsi.at/index.php/f/519585>

Activity Catalogue available here:

<https://cloud2.zsi.at/index.php/f/566687>

Further inspirations available in the document *T2.4 - Inspirations for art and design-based activities*, available in the Templates folder.

Preparation for the co-creation workshop and using the template

- Refresh the memories about stakeholders, outreach activities, art and design features based on the M&G analyses.
- Check out and select the relevant communication themes identified at the vision building workshop and in the pathfinder manual.
- Based on the M&G and the Vision building, list the potential target groups of previous and future outreach activities.
- Invite designers, artists, art institutions to the current co-creation workshop.
- Get inspired by the suggested activities of the consortium and the external art and design-based references and creative formats.
- It is highly recommended to use the blueprint template (see following paragraph) during the workshop process, so the planning and ideation can happen based on the categories of the template and jointly with the invited stakeholders.

Tips for the co-creation workshop

- 1) Intro: Outline the context of the co-creation workshops, what are the goals, how this workshop is related to other planned activities, and workshop series
- 2) Where we are in the process
- 3) What is the output?
- 4) What are the next steps?
- 5) How can the stakeholders contribute?

5.1.3.3 Knowledge gain, awareness raising and communication campaign – template

After the workshop and the synthesis of its results, each hub has to deliver the second contribution to deliverable D2.2, which collects the outputs of the whole co-creation activities. The synthesised blueprints will be the part of the D.2.2. and will contribute to the regional action plan. The blueprint drafts will be used as bases to create Art and Design-based solutions and

implementation in WP3. Also, the blueprints will help to design and elaborate further the campaigns each hub is supposed to realize by implementing 5 activities.

Introduction – 1/2 pages max.

Please, prepare a short introduction about the campaign following these points.

- Key relevant elements from the Pathfinder manual and how these elements were used to create the blueprint (*Note: this short paragraph should create a clear link/bridge with Pathfinder manual delivered by each hub*).
- Participants and engagement approach (participant description with roles, engagement strategy, how the participants contributed to the process, to which part, at which level etc.).
- Description of co-creation activities (relevant information integrated from the workshop report).

Campaign blueprint

The “Blueprint for awareness campaign of the [country/sector] Engage4BIO Hub” should be prepared using the template in digital or in printed format, which describes the overall campaign and the various linked activities (awareness raising and art events and communication). The template is available in the folder Template: *e4b_WP2_WSGuidelines_T24_Campaign_blueprint*.

- List the gaps from the M&G linked to outreach activities, target groups, awareness raising etc.
- List the identified communication themes collected during the vision building.
- Insert the most relevant items to the template based on the co-creation process.
- Based on the already existing information envision jointly with the stakeholders a future campaign and identify the goal, target of the campaign then design the action items (4 activity which has to be implemented as part of the campaign during WP3).
- Start designing two Art&Design based awareness activity and use the template as a guidance.
- Specify the Art&Design elements of the activities, just like the core message and the creative communication aspects.

Note – You can use the template during the co-creation workshop by printing it out in A/2 size and have the stakeholders to fill out and ideate by following the guiding categories of the template. You can also decide not to use the template during the workshop but part of a syntheses you will fill out in the word format is part of the blueprint template.

Annexes

- Blueprint template in Word format
- Blueprint template in pdf (for print)
- Workshop agenda
- Registration sheet
- Results of the creative work and process during the workshop, such as additional canvas and tools used, visuals, photos, multimedia production, testimonials from participants
- Workshop report

5.1.4 Innovative Governance models workshops

- T2.5 Co-creation workshops on innovative governance models, supporting regional innovation, linked to the defined bioeconomy vision and strategy.
- Period: July-November 2023 (M10-16)

5.1.4.1 Objectives

The main objective of this step in the co-creation process is to address and find ways on how to improve the management and coordination of the regional bio-based innovation processes and how to ensure inclusiveness and engagement of all domains and relevant partners.

The topic is broad and can be applied differently in the E4B hubs, varying from the design of a new structure or an improved innovation ecosystem, towards the definition of small measures or projects to improve some of the aspects, as enhancement of the capabilities and the engagement of partners, or the collaboration among partners.

What is Innovative Governance?

Governance capacities are understood as the collection of **structures, processes, and capabilities**.

Innovative governance is needed to ensure a new frame of mission driven innovations and the transformation process towards regional bio-economies and for these processes to be seen as a collective responsibility and collaborative effort. In fact, all domains are needed in the quadruple helix interplay: public and private sector, knowledge domain, society.

Structures

- Organization of the regional innovation ecosystem.
- Quadruple helix interplay – connect the domains.
- Connect the Value Chain.
- Set up support services, intermediate organizations, and create

facilities. Processes

- From vision to implementation.
- From ideas to innovations and new applications.
- From biomass or waste to sustainable carbon neutral resources for different sectors to manufacture consumer products, to transform from fossil based to biobased and to circular economies.

Capabilities

- Understand the needs for transition, put the mission central in the strategy of the region and in the strategy of committed organizations.
- Make the strategy operational, at the level of committed partner organizations and at the level of the region.
- Collect and attract resources for the transition from all domains.
- Capacities, Human capital.

- Finance, funding, investment.
- Knowledge, research, learning, education.

- Create dynamics.

Workshop set-up: discuss and design innovative governance capacities

As for the workshop's participants, the suggested stakeholders are as follows.

- Regional partners from quadruple helix network, all domains should be represented.
- Persons responsible for strategic management of working on transition towards a regional circular bioeconomy (regional public partner, local administration, knowledge partner responsible for strategy on valorization and programs on research and innovation, private sector representatives, cluster organizations and/or regional development agencies)
- Persons who are active with the operational aspects to implement regional smart specialization strategies, circular bio-economy strategies, and who are actively supporting the innovation processes in the region.

The sessions of the workshops should tackle the following core aspects.

- Discuss current regional organization and management the transition to a bio- economy - starting point Map and Gap analysis regional development. Co- creation methods: discussion techniques, create an overview of gaps and group around structures, processes, and capabilities, starting point for design phase.
- Development of vision on or design of the process of organization and management of the transition
 - o Create conditions for innovation, smart specialization, mobilization of partners and for initiative and dynamics, from the perspectives of public sector, private sector, knowledge domain, civil society, and intermediate organizations.
 - o Completing and upscaling of the innovation ecosystem; what are missing elements, organizations, and partners?
 - o Collection and mobilization of resources for the transition: knowledge, financial means, capacities, and capabilities.
 - o Accelerating the development and implementation of the circular bioeconomy.
 - o Responsibilities and tasks; co-ordination and collaboration.
- Definition and selection of measures, initiatives, or arrangements to improve or complete the regional governance.
 - o Enhance engagement.
 - o Enhance alignment.
 - o Tasks and responsibilities.
 - o Improve collaboration.
 - o Enlarge the resources available.
 - o Create collaborative working space (Community of Practice, Living Lab ...) to experience innovative governance.

Who is in charge?

This task is led by WR. ArtEZ and all partners contribute, and each hub is organising a workshop and delivering an output.

Contacts of task leader for general support:

Engage4BIO – WP2 – Guidelines for Hubs co-creation workshops

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- Remco Kranendonk - remco.kranendonk@wur.nl
- Alwin Gerritsen - alwin.gerritsen@wur.nl

5.1.4.2 *Suggested methods*

Here we briefly list the methods shared and proposed within the consortium for the Innovative Governance co-creation workshops.

- Hub IT – Innovative governance models
- Hub FI – Innovative governance models principle – Open innovation
- Hub HU – Innovation game and future thinking
- Hub Education (EAEA) – Role-playing with predefined scenario

Presentations available here:

<https://cloud2.zsi.at/index.php/f/519585>

5.1.4.3 *Innovative governance models - template*

After the workshop and the analysis of its results, each hub has to deliver the last contribution to deliverable D2.2, to present their proposed innovative governance model/s.

Examples of potential outcomes are development of a road map for improving the regional management; definition of directions of completing the regional innovation ecosystem; development of new ways of collaborative working; new collaborative initiatives and/or agreement on principles of good governance and guidelines for regional operators and innovation developers on innovative governance models supporting particularly balanced regional potentials and innovation. An important aspect is also the co-creation of feedback loops to the respective representatives in the regions and hubs (D2.2).

The “Innovative Governance models for the [country/sector] Engage4BIO Hub’ should be prepared based on the following outline.

Introduction

Please, prepare a short introduction about the proposed/co-created innovative governance models and approaches based on the following points - Max 2 pages.

- Key results of the map and gap analysis and with the Vision and Strategy aspects of the Pathfinder manual related to innovative governance.
- Participants and engagement approach (participants description with roles, engagement strategy, how the participants contributed to the process, to which part, at which level etc.).
- Description of co-creation activities (preparation, workshop/s, time, method applied).

Innovative governance models for the region

Please, describe the identified/co-created approaches following these points.

- Structures: description of organizational and co-ordination aspects of regional governance.
- Processes: description how the regional network is supporting the

processes of innovation, valorization, and implementation processes

- Capabilities: description how the region will enhance capabilities for transformation towards circular regional bio-economies.

Annexes

- Workshop agenda
- Registration sheet
- Results of the creative work and process during the workshop, such as canvas and tools used, visuals, photos, multimedia production, testimonials from participants.
- Workshop report

5.2 Templates

In this section, we provide a list of templates to be used for the organisation of each workshop.

5.2.1 Stakeholder mapping

This is an internal template to support the stakeholder mapping and recruitment process, as well as to keep track of the involved organisations, till the end of the activities.

Please, see enclosed Excel file – Annex 5.2.1

5.2.2 Agenda

Please, see enclosed Word file – Annex 5.2.2

5.2.3 Invitation

Please, see enclosed Word file – Annex 5.2.3

5.2.4 Information sheet

This sheet needs to be delivered to participants at invitation time (before the workshop) together with the Consent form to be signed. Please, integrate the Information sheet in all the parts marked in yellow, with the information of your activity, specific purposes, contacts etc. If relevant and when participants are expected to be the same, you can also prepare 1 information sheet for the whole co- creation process, with activities, dates and locations of all the workshops at once.

Please, see enclosed Word file – Annex 5.2.4

5.2.5 Registration form and Registration sheet

The form is indicative of the relevant information for an organiser. Please, adapt it to your specific needs, if relevant, and include the Data Protection Disclaimer (see D5.3 – Data Management Plan).

The sheet is to be used to register participants attendance on the day of the workshop, with signature. Please, use this template to deliver also the Participants list as Annex to the Workshop report in Word format (no need to send the scanned signed sheet to the Task leader and Coordinator, unless requested).

Please, see enclosed Word file – Annex 5.2.5

5.2.6 Moderation sheet and event script

This is an internal template to support the preparation and conduction of the live activities (workshops).

Please, see enclosed Excel file – Annex 5.2.6

5.2.7 Rapporteur template

This is an internal template that serves for briefly reporting live during the event and for collecting notes and important points to prepare the final report and the main output of each workshop (vision, training, campaign, governance model). Each rapporteur should compile the template for each session in 1 or 2 pages.

Please, see enclosed Word file – Annex 5.2.7

5.2.8 Workshop report

This template serves for briefly reporting on the workshops and any other activity with stakeholders for the definition and co-creation of the Hub actions for Engage4BIO. Please, keep the report within 4 to 6 pages, excluded Annexes.

The report should be delivered to the Task Leader (WS1 – BZN, WS2 – EAEA, WS3 – MOME, WS4 - WU and WP2 Coordinator - EAEA) by 1 month after the workshop, together with the relevant output for each activity (please, see section 5.1 – Workshops concepts and outputs).

Please, see enclosed Word file – Annex 5.2.8

5.2.9 Article for communication channels

This template serves for briefly presenting the core take aways of each workshop and related results (vision, training, campaigns, governance).

Each hub should prepare 1 article of about 0.5 page for each step of the co-creation process: each workshop/output pair.

The article template is included in the Workshop report template and it has to be delivered together with it.

Please, see enclosed Word file – Annex 5.2.8



“ Multi-stakeholder engagement to strengthen regional bioeconomy value-chains ”

Consortium :



ArtEZ



 www.engage4bio.eu

 info@engage4bio.eu

@Engage4BIO

