BioGov.net
Governance & Upskilling for a Stronger Bioeconomy

Deliverable 5.1

Validation of the guidelines and methodologies for the training and mentoring programmes

Consortium

CIVITTA · Q-PLAN INTERNATIONAL · LOBA · PEDAL CONSULTING · FVA NEW MEDIA RESEARCH

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Table of Abbreviations and Acronyms

Abbreviation	Meaning
AR	Augmented Reality
CCIs	Cultural and Creative Industries
CoP	Community of Practice
EC	European Commission
ESPON	European Observation Network for Territorial Development and Cohesion
EU	European Union
GDP/capita	Gross Domestic Product per capita
IIRC	International Integrated Reporting Council
IRIS	Impact Reporting and Investing Standards
KEQs	key evaluation questions
LGBTIQ	People who identify themselves as lesbian, gay, bisexual, trans, non-binary, intersex and queer
LLL	Life-long learning
NEB	New European Bauhaus
NEF	New Economics Foundation
NEET	Not in Education, Employment, or Training
RBA	Results Based Accountability
OECD	Organisation of Economic Co-operation and Development
SAA	Social Accounting and Audit
SDGs	Sustainable Development Goals
SMART approach	simple, measurable, action-oriented, realistic, and timed
SROI	Social Return on Investment
STEM	Science, Technology, Engineering and Math
STEAM	Science, Technology, Engineering, Arts and Math
ToC	Theory of Change
VET	Vocational Education and Training
VR	Virtual Reality
WP	Work Package

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1. Executive Summary

BioGov.net project aims at supporting the establishment of the innovative governance model in bioeconomy training and skills development to achieve better-informed decision-making processes, social engagement of all actors and uptake of sustainable innovations in bioeconomy.

Specifically, BioGov.net will provide validated guidelines for establishing the regional bioeconomy training and mentoring frameworks drawing insights from the eight EU pilot regions (Czech Republic, Estonia, Germany, Greece, Italy, Netherlands, Portugal, Slovakia).

These guidelines for training and mentoring programmes will fully integrate opportunities created by the human-centric principles, offered by art, culture and (eco)-design, with respect to the bio-based feedstocks, including traditional and novel biological materials. Additionally, the guidelines will encompass policy recommendations on how to engage the local stakeholders and develop regionals skills and capabilities to innovate and participate in developing climate-neutral, bio-based, circular and low carbon footprint products and services.

The **validation, deployment, and assessment** of the aforementioned guidelines at regional and EU levels **are in particular subject of Work Package 5 (WP5).** This phase entails a series of diverse **national and transnational activities, designed to ensure proper representativeness of the entire value chain and the territorial specificities, as well as the dissemination and validation of the BioGov.net methodology** that integrates humanities, art, design and culture to foster the transition towards an innovative and inclusive bioeconomy.

2. Introduction

BioGov.net project operationalizes its activities across eight EU Countries, by building multistakeholder European Communities of Practice (CoPs) in the Czech Republic, Estonia, Germany, Greece, Italy, Netherlands, Portugal and Slovakia. To respond to specific regional needs and priorities, BioGov.net seeks to explore innovative governance models for the bioeconomy education and co-create guidelines for bioeconomy training and mentoring (with a special focus on vocational training and life-long learning), through a multistakeholder approach.

These educational guidelines embed arts-based teaching and learning, to develop transversal skills, encourage to pursuit innovative careers in the bioeconomy and facilitate the inclusion of marginalised groups (e.g., NEETs, LGBTIQ people, migrants, etc). From a methodological point of view, the project includes educational approaches based on STEAM (Science, Technology, Engineering, Arts and Mathematics). The latter represents a new form of teaching seeking to promote curricular integration between science, technology, engineering, mathematics and the arts. This concept enlarges the previous education approach based mainly on STEM (Science, Technology, Engineering and Mathematics) and builds on the fact that arts-based approaches and methods can help drive the change towards a more sustainable, just and inclusive transition (Albertini, Marinelli, 2023).

It is proven that these methods are effective to:

- embrace more-than-cognitive aspects of knowledge, such as emotions, values, and intuition, that are often neglected or marginalized in conventional science;
- improve communication and engagement with diverse audiences, such as policy-makers, practitioners, and the general public, by using creative forms of expression to explore alternative pathways and possibilities for sustainability;
- explore teaching and learning across different disciplines, hence facilitating interconnected, deeper, and meaningful learning processes, as well as collaborative and experiential learning.

Moreover, BioGov.net adheres to the New European Bauhaus (NEB) [1]initiatives values, which integrate a multidimensional vision, bringing a cultural and creative dimension to the Green Deal to enhance sustainable innovation, technology and economy. Building on existing frameworks like the Davos *Baukultur* Quality System (Swiss Confederation, 2018). The NEB initiative effectively facilitates creation and experimentation through multilevel engagement, participatory processes and a transdisciplinary approach (The NEB Compass, 2021).

Keeping this in mind, BioGov.net designed a sound methodology that links art to bioeconomy education along 4 different dimensions (see Figure 1):

- Art to elicit new ways of thinking and develop skills needed in bioeconomy education
- Art to address different learning styles and facilitate inclusion of marginalized groups
- Art to communicate messages, inspire people and raise their interest and awareness
- Inject the bioeconomy into Cultural and Creative Industries professionals

[1] New European Bauhaus: beautiful, sustainable, together. (europa.eu)

This methodological approach was presented and fine-tuned during various WP3 workshops with the stakeholders, reaching the actual structure:

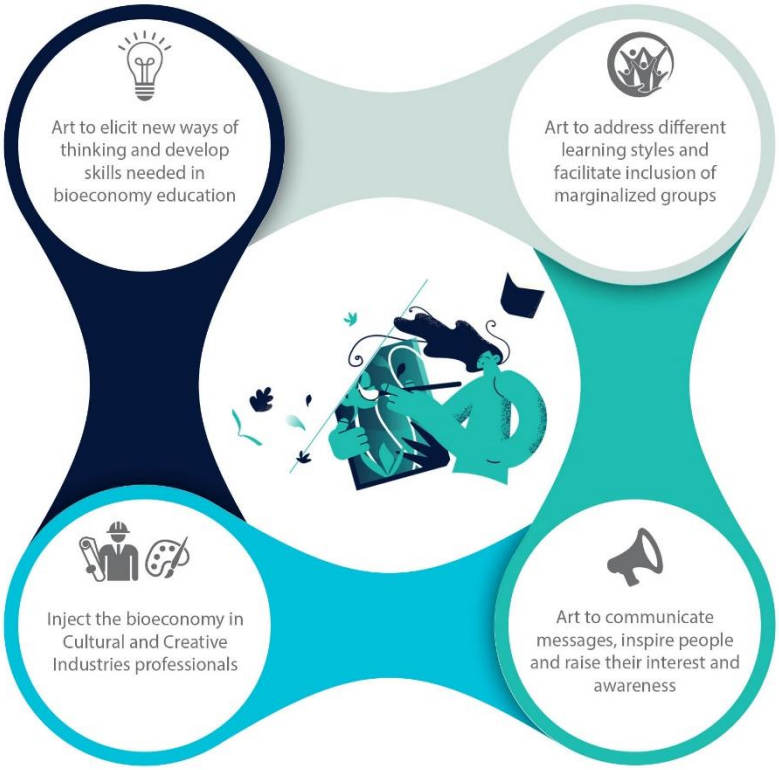

Figure 1: BioGov.net methodology to link art and bioeconomy. Credits: Albertini, Marinelli, 2023

While integrating humanities, art, design and culture to foster the transition to an innovative and inclusive bioeconomy, the project will consolidate guidelines for vocational training (VET) and life-long learning (LLL) that will cover all four dimensions of the methodology.

In this context, WP5 “Validation and EU calibration” aims at supporting the process of validation of the transnational guidelines and methodologies for training and mentoring programmes stemming from different activities in the target Countries, as well as providing specific recommendations for their implementation at regional and EU levels. Specifically, this deliverable 5.1 gives a comprehensive overview of the WP outlined in section 3, with a particular emphasis on the interrelation between WP5 and other WPs and the connection among the tasks that inform and shape the entire WP5. The validation of the guidelines and methodologies for training and mentoring programmes in VET and LLL at regional level are described in section 4. This section will report on the main outcomes of the validation process conducted within the framework of the 8 regional workshops with the CoP members. Moreover, section 4 provides : a) a report on the mobilisation and mutual learning activity among the CoP leaders, which took place as an internal meeting among BioGov.net partners on 13 November 2023, focused on the main takeaways and lessons learnt from the 8 regional workshops; b) the planning for the European validation workshop that will take place online on spring 2024 and in

which the guidelines designed and validated in each of the 8 pilot Countries, will be presented and validated at European level.

Section 5 describes the deployment of BioGov.net methodologies for training and mentoring programmes at regional and EU levels. In particular, the plans for the 2 international mutual learning co-creation workshops will be provided, as well as the reports on the first yearly policy workshop (which took place in October 2022 in the context of the EU high-level Bioeconomy Conference in Brussels) and the second yearly policy workshop which will take place on 7 December 2023, in the context of the CBE JU Stakeholder Forum in Brussels.

The impact assessment framework and action plan for the evaluation of the actions generated from each CoP is described under section 6. Lastly, in section 7 conclusions from the above analysis are drawn, and forthcoming steps anticipated within the scope of the Work Package 5 are explicated.

3. WP5 overview

3.1 WP5 overview connection with other WPs

As highlighted above, arts in their different forms and applications represent the key aspect identified by the BioGov.net project to boost future education pathways and explore new ways to govern the transition process.

The project strategically organises all the activities to ensure that all four dimensions of its methodology to link art and bioeconomy education are covered, with the aim of:

- assessing the regional needs and good practices to define targeted strategies towards fostering bioeconomy education and capacity building (WP1 and WP2)
- bringing the various stakeholders together to co-create guidelines for bioeconomy training and mentoring (WP3)
- making these outputs available and accessible for replication in form of data, knowledge, methodologies and governance recommendations (WP4 and WP5)

Additionally, the validation dimension which is part of WP5 was widely embedded during each step of the project, both in the activities carried out by the partners and when involving the stakeholders in the CoP events. For example, the regional gaps and needs mapped per each region, as well as the regional inspirational case studies and the relevant bioeconomy job profiles mapped in WP2, were presented, discussed and validated with the stakeholders of each CoP in the context of the co-creation and co-design workshops organised under WP3. These activities inform the validated educational guidelines for Vocational Education and Training-VET and Life-long Learning-LLL (which are objects of WP4) and the specific recommendations for the implementation of these guidelines (object of WP5), targeting the educational community and the policy actors at regional and EU level.

For the previously stated reasons, the entire workflow of WP5 is transversally connected to the results and outcomes stemming from the other WPs, following a cascade process (see Figure 2).

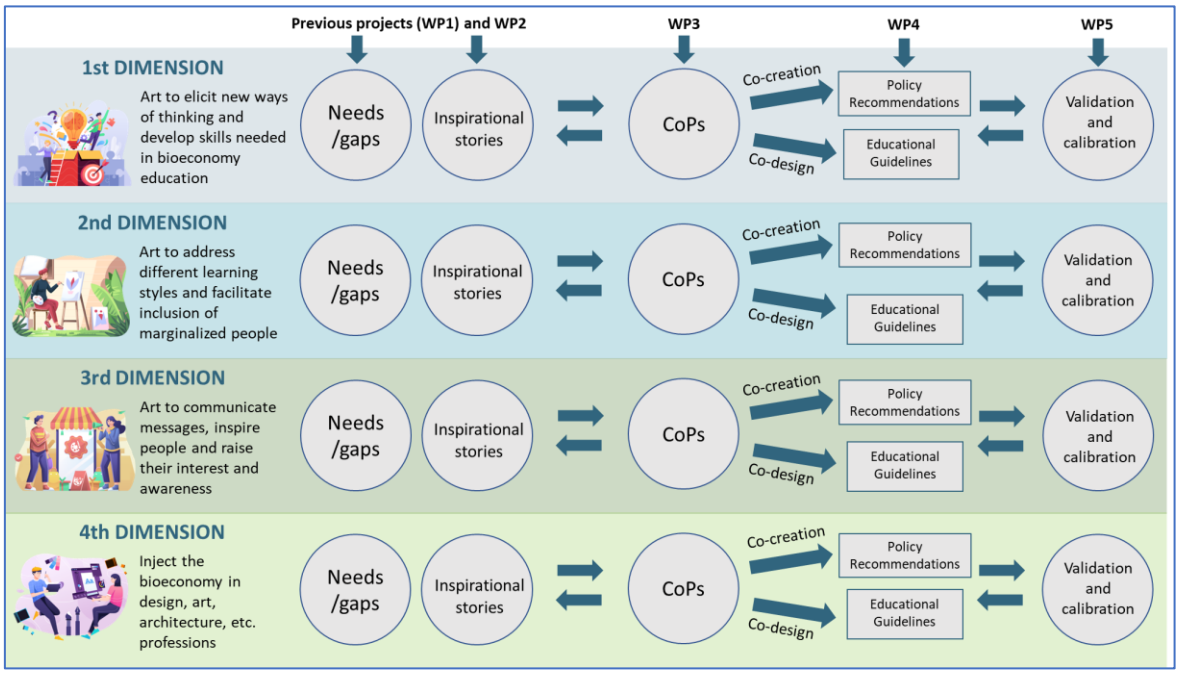

Figure 2: WP5 connection with other WPs

3.2 WP5 flow: connection among the tasks

Together with the **validation** described in the previous paragraph, WP5 also incorporates the dimensions of:

- **deployment** of the BioGov.net methodologies for training and mentoring programmes at regional and EU level
- **assessment**, to create frameworks and models aiming at measuring the impact of the actions generated in each CoP and to monitor, review and ensure the impact of the validated guidelines on bioeconomy and sustainability

Moreover, in this case, the tasks informing WP5 follow a cascade approach (see Figure 3) and WP leaders agreed on a strategy to better exploit the interconnection among the tasks and ensure that each activity implemented within the WP can feed a specific objective or deliverable.

As indicated in the figure below, WP leaders designed a workflow that follows the different implementation phases of the CoP activities, to maximise the effort and gather all the relevant inputs from the stakeholders involved in the 8 regional CoPs.

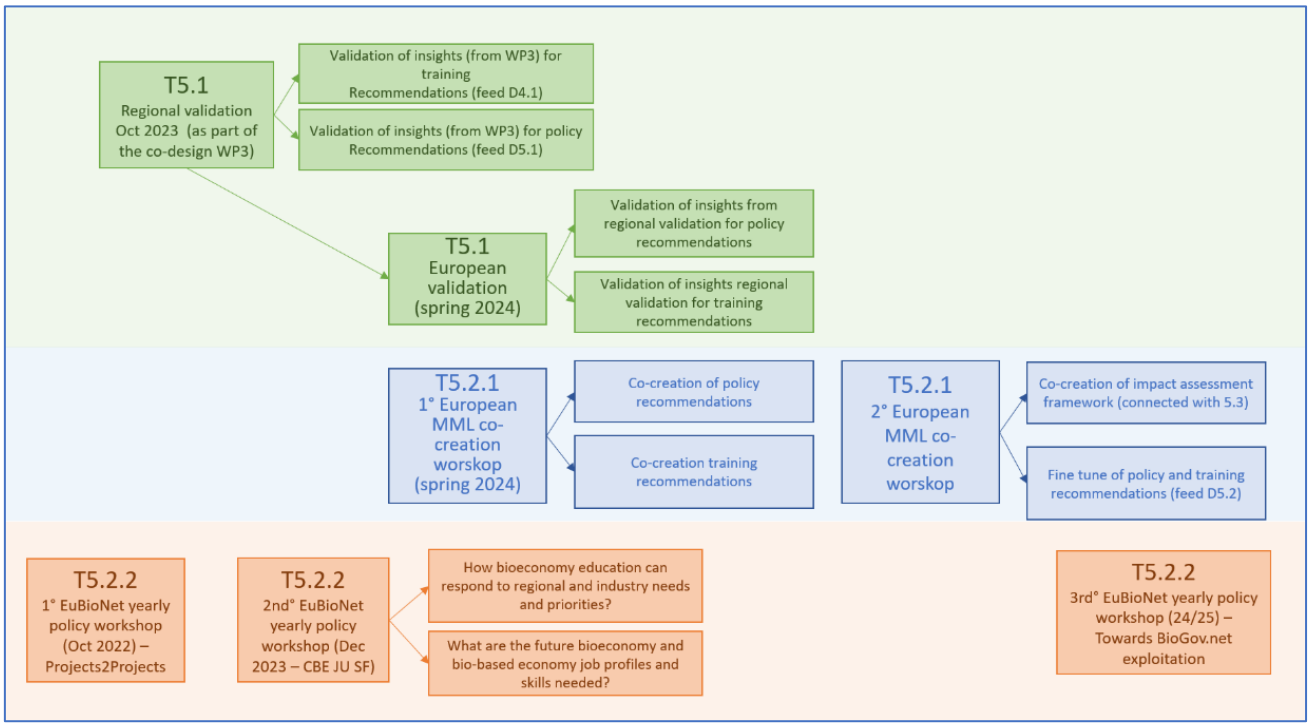

Figure 3: Connection among the tasks of the WP

Specifically, the activities under T5.1 (in green) aimed at first engaging stakeholders in a validation process which took place (October 2023) at regional level as integrated activity in the context of the workshops organised under WP3; the validated insights for training and recommendations feed D4.1 and D4.2, while the validated insights for policy recommendations feed D5.1.

This will pave the way towards the first European validation workshop as part of T5.1, which will take place in spring 2024 in conjunction with T5.2.1 (in blue in Figure 3 – first European MML co-creation workshop), with a twofold objective: a) validate at EU level the insights stemming from regional policy and training recommendations; b) co-create with stakeholders' transnational policy and training recommendations.

On the other hand, the second European MML co-creation workshop (in blue in Figure 3) under T5.1.2 will be strictly connected to T5.3, as this will be the place to present, discuss and fine-tune with the stakeholders the impact assessment framework that will inform the final policy and training recommendations that will be integrated into D5.2.

Finally, T5.2.2 (in orange in Figure 3), namely the yearly policy workshops, are considered as transversal activities pointing at different objectives according to the project's phase:

- the first one aimed more at presenting BioGov.net as one of the newly kicked-off projects;
- the second one is more oriented on presenting the project's intermediate results on how bioeconomy education can respond to regional and industry needs and priorities, as well as what are the future bioeconomy and bio-based economy jobs profiles and skills needed;
- the third one will be more oriented on the exploitation of BioGov.net results before the project's end.

4. Validation of the guidelines and methodologies for training and mentoring programmes at regional level

One of the main purposes of WP5 is the validation of the BioGov.net proposed guidelines at regional and EU level, to support the local balanced potentials and innovation (in terms of feedstock, infrastructures, and capacities) within the framework of local development and investment, as well as fostering sustainability-driven policy through the training and mentoring programmes. This validation takes place through the organisation of eight regional workshops with Quadruple helix regional stakeholders and one European online workshop (activities corresponding to Task 5.1) to derive transnational guidelines and methodologies for training, as well as to provide specific recommendations for the implementation of the regional training and mentoring programmes.

The following paragraphs describe in detail the workshops organised so far, as well as the planning for the online validation workshop at European level foreseen in 2024.

4.1 Regional validation per each CoP

Between July and November 2023, several workshops took place as part of WP3 activities to engage the stakeholders of each regional CoP in a co-creation and co-design process, after having kicked-off the CoP during the initial focus groups between April and May 2023 (see Figure below). These activities aimed to:

a) gather inputs, discuss on specific regional gaps and needs, as well as key skills, still to be addressed through dedicated educational pathways (co-creation workshop)
b) draft regional educational guidelines, to finally validate them and provide recommendations (co-design workshops[2]).

These workshops have been designed to provide outputs to feed WP3 and WP4 contents and these results will be report in the related deliverables. In addition, a session was dedicated to also address the needs of T5.1, by collecting specific information for the creation of recommendations.

[2] The 2 co-design workshops had different audience: the first one was addressed to Learners (so its outcome was to come up with educational guidelines/steps according to what the learners need) and the second one to the providers (so its outcome was to draft educational pathways for decision makers). In the context of the second one, decision makers were asked to validate educational pathways co-designed by answering two key questions.

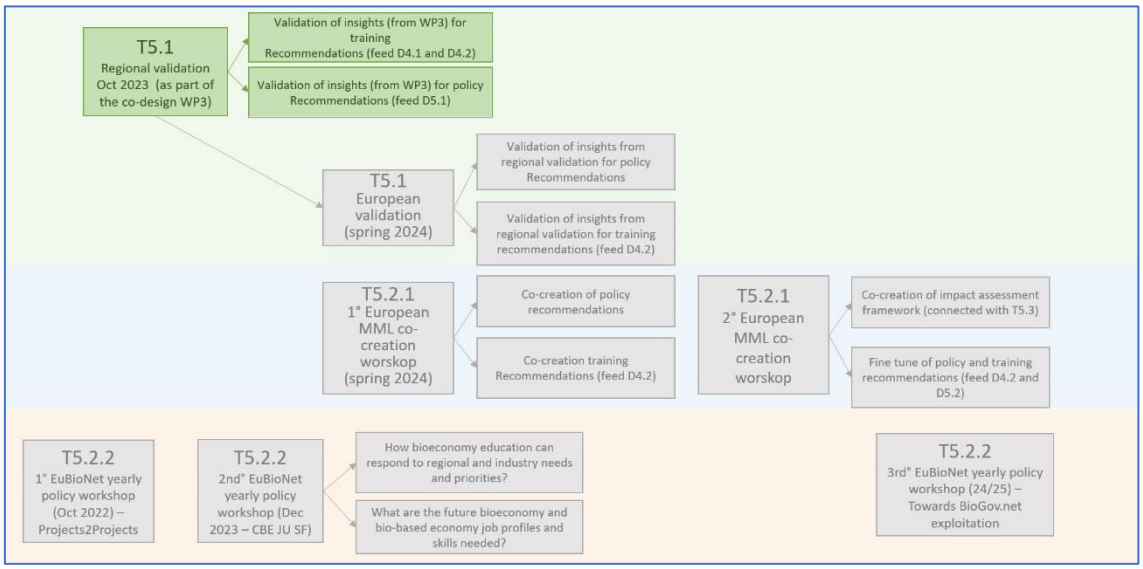

Figure 4: Overview of the timeline highlighting the connection between this activity and the other tasks

Although each CoP tailored the workshops using different methodologies, formats and tools to gather the inputs from the participants, all CoP leaders agreed on the main structure to be followed, as well as on the two key questions to be addressed in all workshops, to pave the way towards the implementation of the guidelines, namely:

- What actions should be taken by the educational community for the implementation of training courses for the bioeconomy?
- What actions and policies should be taken by policy makers, to be put in place to support this implementation?

These two specific questions guided the stakeholders through a foresight exercise aiming at providing recommendations for both educational pathways and policies.

Figure 5: The eight CoPs

The above-mentioned questions were mostly integrated during the second co-design workshops, to better discuss the proposed guidelines during a more mature phase of the CoP establishment. Nevertheless, since the timeframe for the implementation of the activities slightly differs per each CoP, some Countries covered these questions during the intermediate stage (namely the co-design workshop), to set the ground for the co-design of the guidelines which will take place more consistently later. Moreover, merging the two questions served as an effective summary of the events and it simplified the understanding of the evolving discussions and decisions made throughout the sessions. The following tables resume the main takeaways and lessons learnt per each CoP event, focusing on the

regional validation process. Nevertheless, they cannot be considered exhaustive in representing the regional realities and specificities and further consultations will be conducted to complement the results as part of the future WP5 and WP4 activities.

4.1.1 Czech Republic

Purpose of the event	
The co-creation/ co-design workshop in Prague was aiming to provide an information to the audience about the axes and operational paths of the BioGov.net project and how that influences the Bioeconomy education at large. Based on that the CoP audience could provide thoughts and recommendations on the educational governance, its particularities in the specific country (region), the expected impact and how this would link to the wider national priorities and perspectives. Emphasis was given on the impact to the labour market and the expected economic growth. The questions discussed were focusing on the current educational system, the current training opportunities, the required skills and competences and the needed framework on political and administrative levels.	
Date	**Type of the event**
26/10/2023	co-creation/co-design workshop

Main Outcomes: Knowledge & Insights expressed/gathered

Although the size of the audience was rather small, the discussion was vivid, and several issues were raised. The heterogeneity of the audience was also an element that enabled many opinions even diversified amongst them. The main issues raised and discussed were:

- It is needed a wider reform of the educational system, and then the specificities of the Bioeconomy Education to be accommodated into the new general frame
- Further on, such system could not be designed without having adopted a more concrete Bioeconomy National Strategy. Czech Republic has not a National Strategy yet, therefore it would be premature a discussion exclusively focusing to the Education.
- The required skills and competences should respond to the major concerns which are: Sustainability in all domains, Green Growth, Biodiversity and Climate issues
- Additionally, emerging technologies and particularly the Artificial Intelligence should be taken in the account and included in the educational frames.
- Digitalization is an indispensable tool for an effective applicability of any educational program, therefore it should be included in the Bioeconomy Education as well
- The Bioeconomy Education should be applied in all educational levels, starting from the primary school
- Life-long learning and education for non-specialists with the aid of mass media should be a priority
- Regarding the Vocational Training the opinion was that the initiative should start from the end users (Industry, Cooperatives, Unions etc.)
- There was no particular discussion (lack of interest) on the topics of Education & Art and Education perspectives on marginalized groups. Just on this topic, and since the roma community is a marginal group in CR, opinion was expressed that Bioeconomy Education could create new and alternative occupations and therefore a better integration of the community to the society.

Lessons learnt: BioGov.net partner's own perspectives & comments

The main conclusions and outcomes from the workshop are:

- The CoP would be more active, and more involved in the issues raised and the ongoing processes. Continuous information is needed.

- Education on Bioeconomy is an issue of priority, but it should be imperatively included in a wider perspective building a Bioeconomy Strategy for the country
- Skills and methodologies should be based on key issues such as sustainability, environment, etc. but they have also to be considered on a case-by-case basis, considering the specific audience and the specific sector
- New emerging technologies should be incorporated in the whole education frame
- Lateral topics such as Art relation to the Bioeconomy Education and involvement of marginal groups where not among the priorities of the audience.

4.1.2 Estonia

Purpose of the event	
The purpose of the Biogov.net co-creation and co-design events in Estonia was the definition of the key competences and skills lacking in Estonian labour market regarding the development of blue economy (main focus for the region) and how education can provide the necessary skills for the sector development. The main questions discussed were: what educational system and training model is most suitable for the development of key competencies; how can we make sure the skills developed are fit for purpose; how can education support innovation in blue economy; what is needed to reach the full potential in bioeconomy; what is needed on political level? It was also considered how could art support innovative learning and blue economy popularisation.	
Date	**Type of the event**
October 2023 13/11/2023 16/11/2023	One-on-one stakeholder interviews Co-creation/ co-design workshops
Main Outcomes: Knowledge & Insights expressed/gathered	
Considering blue- or bioeconomy education in Estonia, the size of the country must be considered – the population size sets limits to the number of different trainings offered and highly specialized skills need to be obtained either abroad or onsite. The same is true for different developments within an organisation, development or scaling up is usually purchased as a service from abroad. On a larger scale, stakeholder see a systemic fault in the system of higher education. Higher education is usually project-based, focused on publishing articles and thus the practical outlet and innovation in cooperation with entrepreneurs is lacking. The financial system hindering higher education providers to generate revenue surpassing a given amount also does not support innovation and cooperation with entrepreneurs. Core funding should be considered. A need to start popularizing blue economy and corresponding needs initiating from basic education was also stressed. Competition was seen from different perspectives. On one hand, a few exceedingly popular career paths in Estonia (i.e., computer science) are seen as a competition to other possible career paths (i.e., engineering) necessary for blue economy. On the other hand, blue economy also needs and highly benefits from computer scientists. Art serves as a valuable means for conveying scientific concepts to a broader audience. Through various materials and visuals, art helps reaching wider public. Arts is a great tool to stimulate innovative thinking, helicopter view of the topic and artists being able to view topics from different perspectives. Conversely, blue economy serves as a great tool for novel new materials, in Estonia, sustainability is seen as an essential extra value. On a political scale – more state initiative is needed in foreseeing the future needs and requesting and supporting creation of corresponding study programs. Different educational systems are needed to cover diverse needs in bioeconomy. For example, university education should support innovation whereas vocational training could be useful for more technical jobs. Art could also help develop innovative training formats.	
Lessons learnt: BioGov.net partner's own perspectives & comments	
Various formats were tried organizing stakeholder events in Estonia. Partly due to the size of the blue economy sector in Estonia, it proved to be a challenge to reach enough	

stakeholders for co-creation and co-design events. So far, in the sense of the number of participants and valuable information exchanged, the most successful formats have been one-to-one interviews, small-scale private discussions and a hybrid event with an onsite panel discussion and an interactive online audience discussion. As an additional value, good case studies and cooperation opportunities were found among co-creation and co-design participants ensuring the continuation of project objectives.

4.1.3 Germany

Purpose of the event
The diverse sectors of the bioeconomy with their innovative areas in Germany have been the topics of the events. The variety of sectors demands appropriate job profiles, further education and training paths. The idea was to focus on specific target group approaches, while taking creative methods and vulnerable groups into account. The purpose of the events therefore was to address education needs related to the bioeconomy and to identify key factors for an improved implementation of solutions for expressed needs. Input was sought from the perspectives of education, and the business sector, their experiences to be collected to create a suitable guideline on what to consider when addressing the different target audiences in the Rhenish Mining Region. Starting point for the discussion have been job profiles, focusing on profiles needed in the sector and previously identified through BioGov.net activities. Another aspect to be included in the discussion was to identify the role of the arts as a creative solution to address gaps in education. The idea was to explore options for concepts on how to integrate innovative formats of education to improve needed future skills in the bioeconomy.

Date	Type of the event
24/10/2023 31/10/2023	co-design workshops

Main Outcomes: Knowledge & Insights expressed/gathered
• Specialists in chemistry, biochemistry and biotechnology are needed. Here, however, the number of students is collapsing. Adaptation of curricula is important, and courses of study must be made more cross-professional and palatable. Linking it to sustainability and circular economy. There will be a labour market for unskilled workers. However, the bioeconomy encompasses so many sub-sectors and training areas that it is impossible to make a general statement about needs and requirements. • Design and communication knowledge will be helpful here (also to create markets). Understanding processes is important (from cradle to grave). • Certificates are important. • The willingness of SMEs to undergo further training is low (according to a study by the Central German mining area). There is uncertainty about where the economy is headed. • Basic knowledge of bioeconomy should impart a) circular economy (principles, product design, business models (re-use, lending, etc.), b) life cycle assessments and life cycle analysis, c) conflicts of use, d) ability to read material flow diagrams.
Lessons learnt: BioGov.net partner's own perspectives & comments
The theory is there, but there is a lack of implementation in the companies. Further training of employees is necessary. Medium-sized companies have to catch up. • Required soft skills depend on the company's positioning in the bioeconomy (product development vs. project development). Communication skills, the ability to work in a team, social skills and commitment are definitely part of it. • Skills' training should be integrated into vocational schools' education. There should be more cooperation between vocational training centres and important stakeholders and companies.

- Knowledge and an understanding of political processes, federal and international strategies (NRW bioeconomy strategy, regional value chains) are quite essential to not create new structural constraints.
- From a German point of view, we need to look much more at the concepts and experiences of other countries, but we have a transfer problem. It needs cultural exchange, stories and haptic experiences.

4.1.4 Greece

Purpose of the event	
The goal is to create/enhance bioeconomy education by considering viewpoints from education, government, and businesses. This involves gathering experiences and requirements to create a guideline for implementing bioeconomy education effectively for the intended audience in Greece.	
Date	**Type of the event**
18/10/2023 7/11/2023	Co-design workshops
Main Outcomes: Knowledge & Insights expressed/gathered	
The implementation of bioeconomy training courses in Greece necessitates a cohesive effort from diverse stakeholders, blending bottom-up industry-driven initiatives with centrally enforced policies. Clear goals encompassing interdisciplinary education and lifelong learning opportunities have been recognized as crucial. The strategy involves fostering an interdisciplinary approach within educational institutions, intertwining VET and lifelong learning for upskilling and reskilling. To ensure effective education, hands-on experience via practical training and real-life examples, internships, solutions-oriented education, and industry partnerships are pivotal, facilitated by guest lectures, collaborative research, and innovative teaching methods like art integration. A dedicated platform is proposed to streamline access to bioeconomy education programmes to make it easier for the learner to find the most relevant upskilling programme/seminar/master's programmes. Continuous professional development for educators and periodic feedback mechanisms for trainees are vital for curriculum updates that reflect industry advancements and local needs and gaps, emphasizing customizable, place-based, flexible education (online/offline, synchronous/asynchronous). The imperative focus of policymakers should be on rural and agricultural areas by intensifying educational activities there and aligning bioeconomy education with market needs. This involves targeted funding for scholarships, innovative teaching, and relevant curriculum development, potentially integrating paid training courses. They recommended that the mentioned financial assistance should spread also on investments and be supported with solid regulatory structures that motivate businesses and sectors to invest in bioeconomy advancements while promoting partnerships with academic institutions. Such regulations could provide tax incentives for companies that partner with schools for internship programmes and joint research projects, ensuring a synergetic relationship between education and industry within the bioeconomy sector. Awareness campaigns are necessary to highlight career opportunities in the field. Certification programmes are much needed to validate skills at the end of the training, fostering employability and continual professional development. Monitoring programmes should be foreseen to ensure alignment with evolving bioeconomy needs. That way policymakers could use the results monitoring to adjust and update policies as needed. Policymakers must engage academia and industry to elaborate adaptable, comprehensive education and training programmes that consider various factors, i.e., target audiences, curricula, tailor-made educational material according to the target audience, modern teaching tools, aims, etc. They need to make sure they understand the benefits of the bioeconomy to design appropriate policies at multiple levels, from basic educational programmes to advanced career paths. A bottom-up approach, emphasizing bioeconomy in smart specialization, is	

pivotal. Creating a registry of trainers and inclusive programmes for marginalized groups, including transportation facilitation for people with low mobility, would further enrich bioeconomy education efforts in Greece.

Lessons learnt: BioGov.net partner's own perspectives & comments

- **Bioeconomy** can be complex and **often lacks clarity**, even among those actively involved in it due to its diversity. Thus, campaigns highlighting the bioeconomy's basic knowledge, importance, and career opportunities are necessary to help the bioeconomy become a way of living.
- **Art and creativity in bioeconomy were perceived as blurry** by the regional CoP but when good practices were put in place (WP2), art and creativity showed up to be an excellent means to easily pass bioeconomy concepts over marginalized groups, acknowledging that art is a common language.
- The **physical interaction of CoP interdisciplinary members paved the way for new synergies and information** exchange. This is the real impact of the community-building, to sustain the CoP as an established network that collaborates also beyond the project's duration.
- **Vocational education (VET) organizations don't have** existing educational programmes in place, apart from general programmes on green skills. So dedicated educational programmes should be created.
- At the events, a recurring theme emphasized the **necessity for custom courses** that address learners' needs and gaps. There's a call **for locally rooted educational programmes** tailored to the area and resources available. **Experience-based learning** was highlighted, advocating for **flexible learning modes** (online/offline, synchronous/asynchronous) and a strong connection to practical examples.

4.1.5 Italy

Purpose of the event	
Two workshops aimed to co-design with the stakeholders of the Italian Community of Practice guidelines and recommendations for educational governance for the bioeconomy that integrates art and can address sustainability challenges and specific needs of industries and regions. The first workshop mainly targeted actors in education and training to generate educational guidelines and validate the BioGov.net methodology to link art and bioeconomy education; the second workshop involved all stakeholders interested in the education on sustainability, circular economy, bioeconomy, arts and inclusiveness, to discuss and validate the guidelines drafted in the first workshop and finally generate educational and policy recommendations.	
Date	**Type of the event**
24/10/2023 3/11/2023	co-design workshops

Main Outcomes: Knowledge & Insights expressed/gathered

The Italian CoP approach towards the design of the guidelines and recommendations was very much focused on the 8 key future/current job profiles in the bioeconomy that were prioritised by the CoP members as the most relevant ones to respond to regional needs and priorities. For this reason, the workshops engaged the stakeholders in different interactive exercises using online tools to collect the following information, for the most relevant professional figures a) Key competencies and related learning topics; b) Key tools/approaches; c) Key educational providers; d) Key partners to involve; e) Business models/resources needed.

Following are the **main takeaways** gathered during this exercise:

- All job profiles require technical and transversal skills. The same transversal skills were identified in all job profiles (e.g., systemic thinking, strategic thinking, abstract thinking, facilitation, mediation, communication).
- Bioeconomy and transversal skills can be two meta-educational packages to be offered in conjunction with the specific technical competencies required per each job profile.
- Participants agree on the fact that the current job market requires continuous training, especially for bioeconomy-related job profiles, therefore new tools, approaches and educational providers are needed (e.g., on-the-job training, professional associations delivering seminars to update the skills) in a Life-Long learning perspective.
- Bioeconomy requires multidimensional competencies which can be acquired through collaboration with different expertise (e.g., interdisciplinary workshops, seminars with experts, and multistakeholder research projects).
- New arts-based approaches to respond to the learning needs identified should be designed and implemented (e.g., hands-on activities, gamification, visual thinking).
- Non-traditional educational providers should be identified, to foster the engagement of marginalised groups in informal and non-formal environments (e.g., associations, clusters, museums, etc.).
- New funding sources and collaborations among different entities should be explored and implemented to support effective and inclusive governance in bioeconomy education.

More specifically, with regard to the **education and policy recommendations**, stakeholders agreed on the need to:

- Explore job profiles needed by industries through surveys, interviews and workshops to inform policies and education pathways.
- Foster collaboration among value chain actors to understand the local needs.
- Include bioeconomy education in regional priorities to support both sustainable development and inclusion.
- Empower training and educational providers (all levels), as well as policy actors with specific knowledge about the bioeconomy to ensure that this dimension is effectively included in funding opportunities.
- Create networks among universities, training providers and local stakeholders following the COVE model (Centres of Vocational Excellence) and including also policy actors.
- Implement a specific entity to coordinate bioeconomy training (e.g., BIObec[3]'s Bio-Based Education Centres).
- Improve the offer for education targeting lower levels of EQF (below 3)
- Improve the offer for education targeting higher levels (e.g., ecosystem facilitator).
- Implement transdisciplinary educational pathways, including transversal skills (higher education).
- Reinforce orienteering to inspire and attract students towards bioeconomy study and job careers.
- Foster green job profiles by introducing economic incentives (including detaxation) for industries hiring these profiles (but also providing dedicated training).
- Economic support and deployment to bioeconomy education should be promoted also by non-usual actors (e.g. clusters, professional associations, museums, and local libraries).

Lessons learnt: BioGov.net partner's own perspectives & comments

- **The CoP activities should be complemented by interviews** with stakeholders who are not keen to participate in the workshops or formally enter the CoP as official members.
- **Visibility is a key motivational driver**: it could be strategic to add the names/affiliations of the participants as contributors to the guidelines designed and the recommendations collected.
- **Online supporting tools carefully designed** (e.g., Mentimeter and Miro) are proven to be **effective in stimulating the debate and collect all relevant inputs.**
- **Arts-based approaches and methodologies were recognised by all stakeholders as relevant** to foster inclusion and boosting transversal skills and there is a great interest in the BioGov.net methodological approach to link art and bioeconomy education. Nevertheless, additional work should be done to design an educational pathway using the 4 dimensions identified in the BioGov.net methodology, through dedicated future projects.

[3] BIObec project

4.1.6 Netherlands

Purpose of the event
Objective: establish education related to the bioeconomy and how to implement it from the perspectives of education, government, and the business sector. Collecting experiences and needs to eventually develop a suitable guideline for the target audience. **The purpose of the events was the development of suitable guidelines for establishing and implementing VET educational programmes related to the bioeconomy in the South-west of the Netherlands by** 1. **Collecting regional educational experiences and needs** 2. Design and create - in a collaborative process - guidelines on how to establish and implement these VET educational programmes

Date	Type of the event
13/09/2023 10/10/2023	co-creation/co-design workshops

Main Outcomes: Knowledge & Insights expressed/gathered
Main outcomes concerned the educational experiences, needs and the bioeconomy skills that were considered relevant by the CoP participants, training requirements that training programme developers should take into account, and the process aspects that should be considered during programme set-up. **Educational experiences, needs and required skills** Given the current tight labour market in the Netherlands, in general two types of needs were established: • For companies, business-related education providers, etc. training programmes tailored for employees (upskilling) are favoured. • For organisation aimed at education for people with distance to the labour market, tailor-made training with substantial guidance is aimed. Tailored content is necessary for each subgroup within this target audience. For both, recognition and certification are crucial aspects. Skills that should be developed further through the education programmes are mostly technical. Besides that, 'soft' skills like interdisciplinary collaboration, environmental and safety awareness, communication skills and problem-solving ability need to be targeted. **Training requirements** Requirements when setting up VET training programmes are: • *Flexibility*: Training programmes should be adaptable and responsive to the various phases of human development because especially VET education is relevant for all stages in life (Lifelong Learning). • *Work-life Balance:* Especially for the younger generation, the work-life balance is important, and training programmes should pay attention to that. • *Modular Education* is in principle flexible and can be made adaptable to the diverse needs of the end users (the education receivers). • *Utilizing New Technologies:* New training programmes should – when applicable – make use of new technologies and ways of knowledge transfer, such as hybrid learning, MOOCs, VR and AR.

Process aspects

In the Netherlands, developing VET education is initiated and propagated from the bottom up, by e.g. education providers, companies, branch organisations, etc. Because of this, it is for all education programme developers necessary to engage other partners to gather the required expertise and buy-in. Based on initiatives from practitioners, the national and regional governments do step in, and provide support. New VET training programmes are best developed as stand-alone initiatives, due to the difficulties of integrating that into the regular (formal) curriculum.

VET training developers should consider at an early phase issues like effective recruitment, promotion, and sharing early successes is important when establishing a training programme.

Lessons learnt: BioGov.net partner's own perspectives & comments

The established job profiles largely do not align with the vision of necessary profiles according to the field of work in the Netherlands.

Key Lessons Learnt:

- Bioeconomy is broader, involving materials and energy transition, as well as circularity.
- Everyone is open to sharing knowledge and networking where possible.

Process: The timeframe is tight, and there aren't immediately available individuals with experience in setting up such training programmes. Existing knowledge is not familiar to many participants and partners regarding the establishment of training.
The methodical approach of the entire process/workshops did not entirely align with the project's purpose and the outcomes each work package aimed to achieve from the workshops. For the follow-up, each workshop could be linked to one of the work packages, creating a suitable structure and valuable outcomes for the project.

4.1.7 Portugal

Purpose of the event
The co-creation and co-design workshops in Portugal aimed to address and strategize key elements concerning bioeconomy education governance, job profiles and essential competencies and learning topics within the landscape of bioeconomy. These workshops brought together diverse stakeholders to discuss and shape the future of bioeconomy education. The main questions delved in the workshops revolved around education governance, exploring areas for improvement, defining the developmental priorities for regional governance, and considering the importance of the role of the arts as a creative solution to address gaps in education. The discussion was also centred on job profiles, focusing on profiles needed in the sector, how we might create more upskilled job profiles and ultimately the validation of the profiles. Other important topics revolved around key competencies and learning topics discussing tools, approaches and the actions needed from the educational providers and policymakers to effectively execute training programmes in the area of bioeconomy that align with the needs of the sector in the region.

Date	Type of the event
10-11-30/10/2023	Co-creation and co-design workshops

Main Outcomes: Knowledge & Insights expressed/gathered
The workshops emphasised on several key considerations for the advancement of the bioeconomic sector in Portugal. One key aspect is the urgent need to increase financial support for education to maintain a robust and accessible education system, vital for cultivating a skilled labour force aligned with the evolving bioeconomic industry. Business integration, particularly in projects related to small and medium-sized enterprises (SMEs), has emerged as a critical strategy for bridging the gap between educational theory and the practical demands of industry. The emphasis on strengthening collaboration between academia and industry was identified as fundamental, offering opportunities for real-life experiences and bridging the gap between educational theory and practical application. In terms of skills, participants emphasised the demand for technical and transversal skills in current professional profiles. These include critical thinking, problem-solving, communication and a broader understanding of relevant concepts. The importance of continuous training to ensure that professionals remain competent in a constantly evolving sector was emphasised. The importance of raising awareness of the "Bioeconomy" in Portugal is needed, along with the creation of an appropriate network and educational infrastructure for lifelong learning. This infrastructure was seen as essential to support continuous education and development. New curricula with integrated sustainability topics were deemed crucial, and collaborative content development with bioeconomy experts was recommended to ensure that educational materials meet the specific requirements of the industry in Portugal. Industry-supported training and internship programmes were suggested to provide practical, hands-on experience for students and professionals.

Creating professional profiles specific to climate-related work was highlighted as an urgent need, acknowledging the urgent need to address environmental challenges within the bioeconomy sector. Fostering collaboration among value chain actors was seen as a targeted approach to tailoring educational initiatives to the local bioeconomy's specific requirements.

Elevating bioeconomy education to a state priority was seen as a way to align educational efforts with broader regional goals. Professional training programmes were recommended to equip individuals with the specific skills demanded by the bioeconomy sector, ensuring direct alignment between education and industry needs. Incorporating bioeconomy education into business schools and entrepreneurship programmes emerged as a strategy to prepare individuals not only with technical skills but also with the entrepreneurial mindset crucial for success in the bioeconomic landscape. Cultivating a lifelong learning culture was encouraged to ensure the workforce remains adaptable and up-to-date throughout their careers.

Lastly, promoting a sustainable mindset was underscored as essential, aiming to instil environmental responsibility and ethical considerations in professionals. This approach contributes to developing a socially conscious bioeconomy workforce capable of navigating technological advancements and industry changes.

Lessons learnt: BioGov.net partner's own perspectives & comments

- Even though bioeconomy is a known concept it still needs more exposure to a wider audience as some adults do not understand this concept. Sometimes it's mistaken for sustainability or circular economy.
- The amount of offers in adult education related to this topic is scarce and needs improvement in numbers and content (curricula).
- Developing skills is important and a necessity. Especially critical thinking and problem-solving.
- The collection of input cannot be exclusively implemented by in-person or online workshops, employing forms sent via email has been effective.

4.1.8 Slovakia

Purpose of the event
The co-creation and co-design workshops were organized as a series of events building up on each other results. The main objective was to initiate a discussion on the need for new competencies and skills in the bioeconomy professions and design educational programmes to meet these needs, identifying innovative formats in bioeconomy education, particularly for lifelong learning and training, with a focus on inclusivity. Art applications for systems thinking, attracting individuals to bioeconomy professions, and fostering inclusion were specific topics included in the discussions. The "Design thinking" method was used to explore how to better connect formal or informal education with future skills for job profiles in the bioeconomy, better understand the needs of education providers and develop solutions to help them adapt education to meet the changing needs of the labour market. The discussions focused on conceptualizing innovative formats of education for future skills in the bioeconomy and governance models needed for the development and implementation of such formats.

Date	Type of the event
13/10-3/11/2023	co-creation, co-design workshops, online survey

Main Outcomes: Knowledge & Insights expressed/gathered
It is key to foster strong national interest in bioeconomy education by prioritizing and aligning educational policies with future trends and needs. Prioritizing addressing educational issues should become a genuine priority of the state. Collaboration with the Ministry of Education, Science, Research and Sport of the Slovak Republic is necessary to update existing/develop new programmes. This can be achieved by shifting the orientation of education and quality management systems from maintaining the existing programmes to creating and securing a vision and trends for the future. Bioeconomy is very complex and there is a wide range of opportunities and professions for people with different educational backgrounds (ranging from very advanced levels to very low levels). It is necessary to consider this in the development of educational programmes and activities. In general, there is a need to develop both: • Technical skills (Sector-specific, Sustainability, Circular Economy, Environmental… (content, process, operatives, organization), Digital skills, Data analysis, etc.). • Transversal competencies and skills (Critical thinking, System thinking, Self-realization, Innovative thinking, Communication and teamwork, foreign languages, Problem-solving, Gaining information. Promotion of interdisciplinary education by linking subjects with similar focuses, and fostering a holistic understanding, e.g., connecting natural sciences like biology, physics, and chemistry within the curriculum, can help develop a wide range of skills and competencies. Instead of strict specialization, developing universally transferable knowledge and combining different fields can be a way to prepare students for a wide range of careers.

Increasing the focus on practical skill acquisition through collaborations with bioeconomy sectors (dual education, internships, apprenticeships, training companies, project-based learning, etc.) can ensure effective skills and competencies development. Compared to today's programmes, creating the link with practice and ensuring direct and regular contact with the sector, working with and being informed by the sector through direct contact, should be facilitated.

In addition to that, integrating innovative teaching methods, linking with CCI/ART was seen through supporting creativity. Co-creation methodologies, such as Design Thinking, SCRUM, and presenting content via CCI/artworks (relevant videos, theatre.) were seen as useful. Due to the need for developing digital skills, use of ICT tools, software development, etc. is seen as an opportunity.

Professional Development for Educators is crucial. Fostering peer-to-peer education, encouraging dialogues with researchers and entrepreneurs, and promoting continuous learning to keep educators updated on bioeconomy advancements should be promoted and fostered.

One of the major challenges is low participation of adults in lifelong learning (LLL). Educational programmes need to be practice-oriented, accessible, affordable and flexible. Collaboration with Labour offices can be a good opportunity to facilitate participation in LLL. However, assistance to citizens in securing completion (e.g., requalification) must be clear, effectively communicated, easily accessible, and with minimal paperwork. Developing policies that promote the concept of lifelong learning is also needed. Emphasize that education is not confined to formal institutions and encourage individuals of all ages to explore opportunities for continuous learning, particularly in the context of the bioeconomy.

In formal education, align the national education programme with school-specific programmes related to the chosen focus. In non-formal education and life-long learning, active individuals must follow trends and current needs, reflecting them in educational courses.

Bioeconomy is often associated with regional development. Supporting initiatives such as interest groups, excursions, and projects tailored can be designed to engage learners, but also to address the real needs of the region. At the regional/local level, initiatives and projects are led by different actors, including regions, NGOs, charities, etc., oftentimes working with different vulnerable, disadvantaged, marginalized groups. Fostering collaboration among municipalities, educational entities, and social services is an opportunity to exchange experience and good practices.

When developing programmes for disadvantaged groups, an individual approach can be critical, as oftentimes there is a need to work on mindset and develop basic skills, work habits (e.g. unemployed for a long term, NEETs, etc.). Collaboration with other experts (social workers) and institutions (labour offices, social enterprises, etc.) is important in addressing the complex issues faced by these individuals. Supporting the creation of practical areas, such as community gardens, to enhance hands-on experiences is important.

Implement policies that mandate continuous monitoring and evaluation of the impact of bioeconomy education initiatives. Use data-driven insights to assess programme effectiveness and make informed adjustments to policy frameworks as needed.

Lessons learnt: BioGov.net partner's own perspectives & comments

- **Proactive adaptation to emerging trends:** One of the main lessons learnt is the need to recognize the importance of proactively adapting education systems to emerging trends, such as the bioeconomy, ensuring that curricula remain relevant to the evolving needs of the job market. Educational institutions and policymakers should stay informed about bioeconomy, facilitating timely adjustments to educational offerings.
- **Interdisciplinary approach in vocational education for holistic understanding:** Understanding the value of an interdisciplinary approach in education and fostering an environment that supports cross-disciplinary learning should be ensured and facilitated at different levels. This approach is not systematically applied.
- **Promotion of practical knowledge and competencies:** Prioritize practical knowledge, skills, and competencies in bioeconomy education to enhance the employability of learners from all backgrounds. Therefore, educational programmes should incorporate hands-on experiences, practical exercises, and real-world projects to bridge the gap between theoretical knowledge and practical application. Good practices exist but are not systematically deployed.
- **Public-private partnerships for practical exposure in vocational education:** Acknowledging the value of public-private partnerships and encouraging collaborations between educational institutions and private enterprises, can bridge the gap between theory and real-world application. However, support and motivation from both sides is needed, but not easy to ensure.
- **Certification and accreditation importance:** Recognition of the importance of rigorous certification and accreditation processes is important for maintaining educational quality and relevance. Educational institutions and policymakers should prioritize accreditation standards, regularly review criteria, and ensure that programmes meet industry requirements. This is a long-term and demanding process.
- **Tailored approaches for different target groups are required, especially when working with disadvantaged or vulnerable groups:** Different target groups, such as older individuals and young inactive people, may require tailored educational approaches to address specific barriers and challenges. There are several good practice examples, working with different target groups in Slovakia. However, these oftentimes exist as standalone initiatives, centred around an individual or an organization. they exist as independent initiatives. There is insufficient state support for their further development or transfer to another region.
- **Promotion of Lifelong Learning:** Promotion of lifelong learning as a key component of bioeconomy education, supporting individuals in acquiring new skills throughout their lives should be encouraged. Policymakers should implement policies that promote continuous learning opportunities, facilitating the adaptation of skills to evolving bioeconomy demands.

4.2 Mobilisation and mutual learning among the CoP leaders

On 13 November 2023, a mobilisation and mutual learning workshop was organised as an internal activity among CoP leaders. During this meeting, BioGov.net partners were able to wrap up the main takeaways from the recent activities with the stakeholders engaged in the regional workshops (see 4.1 and following sub-sections). This meeting was crucial to exchange knowledge and understand similarities and differences of the targeted regions, specifically with regards to education and policy priorities, needs, main job profiles discussed/perceived as relevant for the region and finally understand how stakeholders in the different CoPs consider the role of art as important to convey bioeconomy-related messages and foster the inclusion of marginalised groups.

In all regions, it emerged the **necessity to strongly support education and awareness of the bioeconomy**: also in more mature Countries, this topic is still perceived as complex and there is need to involve more professionals as well as policy makers in dedicated capacity building activities that could better empower them to a) understand how to improve their job skills, responding to the new skills connected to the bioeconomy; b) support the transition with more effective laws, public fundings opportunities and in general incentives both for education providers and industries.

All CoPs' stakeholders highlighted the importance to **foster collaborations among the different actors** that can be involved **in the creation of dedicated educational pathways for the bioeconomy in VET and LLL** (e.g. educational providers, businesses, policy actors through multistakeholder partnerships), together with activities aiming at **sharing and valorising existing good practices in the region and cross-fertilise the different experiences** to better explore the potential of innovative formats stemming from these case studies. It was also noted the need to provide certification and accreditation, to ensure educational quality and relevance.

With regards to the **role of arts** in designing more inclusive educational pathways, all CoPs highlighted the importance of BioGov.net methodology to help the stakeholders understand a) why the inclusion of arts in bioeconomy education enriches the learning experience, fostering a dynamic and inclusive educational environment; b) how this is already implemented successfully, providing concrete examples that were mapped by the project. Most stakeholders in the CoPs generally tended to **agree on the relevance of introducing arts and creative methods and approaches in bioeconomy education.** Nevertheless, in some Countries (e.g., Italy) this was clearly recognised as pivotal to respond to the learning needs identified to also foster the engagement of marginalised groups in informal and non-formal environments (e.g., through hands-on activities, gamification, visual thinking), while in other Countries (e.g. Czech Republic) arts are not yet perceived as central in this process.

Additionally, the meeting focused on the main lessons learnt gathered by the CoP leaders: partners provided their own perspective and comments, to stimulate an initial reflection on how to **better fine tune the approaches to actively engage stakeholders in the future activities** which will be organised at EU level, as well as to maximise the exploitation of the work conducted so far and further valorise the inputs gathered.

4.3 European validation workshop

Together with the validation of the BioGov.net proposed guidelines at regional level through the above-mentioned eight regional workshops, WP5 leaders will also organise one European online workshop to derive transnational guidelines and methodologies for training at EU level.

The aim of this workshop will be to also provide specific recommendations for the implementation of the regional training and mentoring programmes, to support the local balanced potentials and innovation (in terms of feedstock, infrastructures, capacities) within the framework of local development and investment, as well as fostering sustainability-driven policy through the training and mentoring programmes.

Since the organisation of the European validation workshop under T5.1 is strictly connected to T5.2.1, namely the organisation of European co-creation workshops to facilitate and foster cross-regional capacities, knowledge exchange, mutual learning opportunities and dialogue among the actors involved in all CoPs and beyond, WP5 leaders agreed on having a single event gathering all the relevant stakeholders. This integrated event will make sure that the activities will be designed and tailored to reach the specific objectives and expected outcomes foreseen per each task.

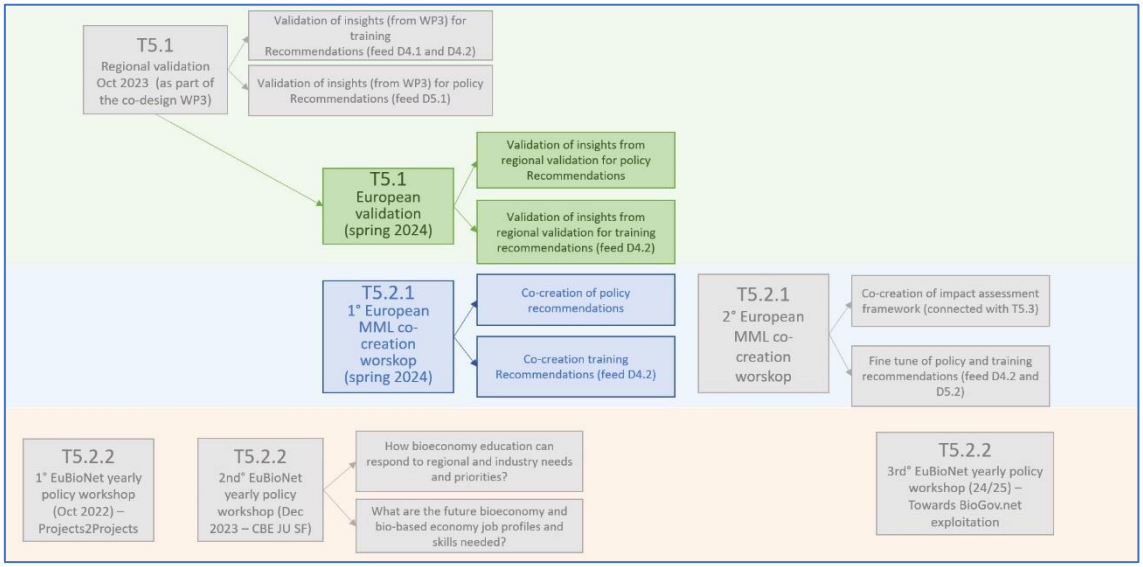

Figure 6: Overview of the timeline highlighting the connection between this activity and the other tasks

Objectives: The workshop is organized as a combination of Task 5.1 European validation and Task 5.2.1 European Mobilization and Mutual Learning Workshop and has a set of clear objectives with regard to T5.1:

- **Validation of Regional Insights:** Validate the insights derived from the regional validation of policy recommendations, ensuring their relevance and applicability at the European level.
- **Validation of Regional Training Insights:** Validate the insights obtained from the regional validation of training recommendations, ensuring that they align with the broader European context.

Expected Outcomes: The European validation workshop is expected to yield the following outcomes:

- **Validated Insights:** The workshop will validate regional insights related to both policy and training recommendations, ensuring that they are robust and relevant for implementation at the European level.

Context and timing: This workshop is scheduled for Spring 2024 and serves as a pivotal moment in the BioGov.net project. It combines elements of validation (T5.1) and co-creation (T5.2.1) to ensure that the insights and recommendations derived from regional efforts are applicable and meaningful at the European level.

In the context of Task 5.1, it validates regional insights from policy and training recommendations, guaranteeing that they align with broader European policy and training needs. A more extensive description of the objectives and expected outcomes with regards to the integrated activity in the context of Task 5.2.1 is provided in the following section.

5. Deployment of BioGov.net methodologies for training and mentoring programmes at regional and EU level

This chapter describes the actions undertaken or scheduled for the implementation of the BioGov.net methodologies within the framework of training and mentoring programmes at regional and EU level, specifically focusing on Task 5.2.

Stemming from the activities from Work Packages 2, 3 and 4 this task will facilitate and foster cross-regional capacities, knowledge exchange, mutual learning opportunities and dialogue among the actors involved in the uptake of sustainable bioeconomy governance models, from regions/countries of BioGov.net consortium and beyond.

On the other hand, to create feedback loops from the society to the policy makers, the responsible partner FVA will organize at least 1 yearly conference (in total 3) in collaboration with the EuBioNet working group in bioeconomy education", other relevant EuBioNet projects and initiatives (also involved in T1.4), policy makers and other stakeholders, including civil society, at European level.

The reports and planning of the above-mentioned activities are described in the following paragraphs.

5.1 European mutual learning co-creation workshops

Task 5.2.1 specifically aims to facilitate cross-regional collaboration and knowledge sharing by organizing co-creation workshops.

A total of 2 mutual learning/co-creation workshops will be organised by the consortium partners. The workshops will build up on the results of other activities, especially the results of CoP activities at the regional level, the Yearly policy workshops (Task 5.2.2, see section 5.2).
The topics of the workshops will revolve around the design, implementation, monitoring, evaluation and bioeconomy dimension of policies, actions and measures aimed at establishing innovative governance models in the sustainable bioeconomy ecosystem.

The workshops will bring together experts and stakeholders from the consortium's target countries and regions, along with participants from other countries (e.g., members of bioeconomy clusters, policy makers, etc.), to create a collaborative platform for the advancement of sustainable bioeconomy governance. Its significance lies not only in generating valuable strategies but also in nurturing a spirit of teamwork and inclusivity. By uniting diverse voices and perspectives, this platform will inspire a collective drive towards innovative solutions, reinforcing the foundation for a sustainable and inclusive bioeconomy across the continent.

5.1.1 First European mutual learning co-creation workshop

Objectives: The workshop is organized as a combination of Task 5.1 European validation and Task 5.2.1 European Mobilization and Mutual Learning Workshop and has a set of clear objectives with regards to T5.2.1:

- **Co-Creation of Policy Recommendations:** Bring together stakeholders from various regions to collaboratively create policy recommendations for sustainable bioeconomy governance models at the European level. This involves sharing and discussing best practices, innovative policies, and regulatory measures.
- **Co-Creation of Training Recommendations:** Collaboratively develop training recommendations for the European context, with a focus on knowledge sharing, capacity-building, and skill development related to the bioeconomy.

Expected Outcomes: The First European Mobilization and Mutual Learning Workshop is expected to yield the following outcomes:

- **Policy Recommendations:** Co-creation of policy recommendations for sustainable bioeconomy governance models at the European level, leveraging the collective expertise and experiences of stakeholders.
- **Training Recommendations:** Collaborative development of training recommendations tailored to the European context, encompassing knowledge transfer, skills development, and capacity-building.
- **Stakeholder Engagement:** Strengthened engagement and collaboration among participants, fostering ongoing dialogue and information sharing within the sustainable bioeconomy community.
- **Documentation:** Insights, recommendations, and outcomes from the workshop will be documented and reported to support the ongoing work in the BioGov.net project.

Context and timing: This workshop is scheduled for Spring 2024 and serves as a pivotal moment in the BioGov.net project. It combines elements of validation (T5.1) and co-creation (T5.2.1) to ensure that the insights and recommendations derived from regional efforts are applicable and meaningful at the European level.

Task 5.2.1 fosters mutual learning and co-creation among stakeholders. Participants will work collaboratively to develop policy and training recommendations that are well-informed by regional experiences and best practices.

This workshop is essential for promoting cross-regional collaboration and generating valuable insights and recommendations for the advancement of sustainable bioeconomy governance models at the European level.

5.1.2 Second European mutual learning co-creation workshop

This workshop bridges Task 5.2.1 with Task 5.3. It allows stakeholders to co-create an impact assessment framework, which will be essential for assessing the outcomes of various initiatives within CoPs. The impact assessment framework developed in this workshop will be used to monitor and review the impact of actions on the bioeconomy and sustainability, with a focus on job creation and quality, corporate responsibility, educational and training initiatives, and inclusiveness.

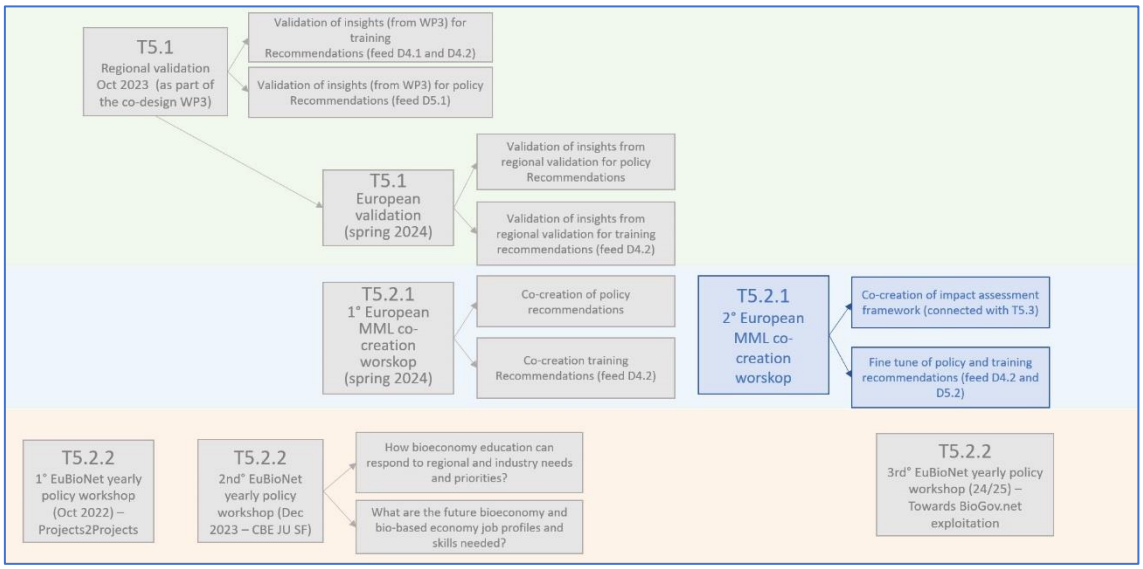

Figure 7:Overview of the timeline highlighting the connection between this activity and the other tasks

Furthermore, the workshop will ensure that policy and training recommendations are fine-tuned and aligned with the impact assessment framework, making them more robust and informed.

Objectives: The Second European Co-Creation Workshop, organized as part of Task 5.2.1, serves multiple objectives, which are closely tied to the broader context of Task 5.3 and the BioGov.net project:

- **Co-Creation of Impact Assessment Framework:** Collaboratively develop an impact assessment framework that will be used to evaluate the actions generated in each Community of Practice (CoP) within the project. This framework will enable the monitoring and assessment of the impact of various initiatives on the bioeconomy and sustainability.
- **Fine-Tune Policy and Training Recommendations:** Refine and fine-tune the policy and training recommendations generated in Task 5.2.1, ensuring that they align with the impact assessment framework and are well-informed by the insights and experiences of stakeholders.

Expected Outcomes: The Second European Co-Creation Workshop is expected to produce the following outcomes:

1. **Impact Assessment Framework:** The development of a comprehensive impact assessment framework that can be applied to actions within each CoP. This framework will facilitate the evaluation of economic, social, environmental, and cultural impacts, fostering a holistic understanding of the consequences of various initiatives in the context of the bioeconomy.
2. **Fine-Tuned Recommendations:** Policy and training recommendations that have been refined and improved to ensure they are aligned with the impact assessment framework and well-informed by workshop participants. These recommendations will aim to better support the transition towards socially and environmentally responsible systems within the bioeconomy field.
3. **Methodological Insights:** In-depth discussions and insights into the methodologies and approaches suitable for assessing the impact of initiatives in

bioeconomy, covering a broad spectrum of dimensions. This will enable project stakeholders to select and apply the most appropriate methods for their assessment needs.

Context: The date and format of the second European Mobilization and Mutual Workshop will be defined in 2024.

The workshop's objectives and outcomes align with the broader project's aim of assessing the impact of actions generated within CoPs on bioeconomy and sustainability, informing and refining recommendations, and contributing to a more sustainable, inclusive, and resilient future.

5.2 Yearly policy workshops

To create feedback loops from the society to the policy makers, three yearly policy workshops are foreseen, as the basis for policy recommendations and best practice guidelines development and implementation of sustainable bio-based value chains. These yearly conferences (corresponding to T.5.2.2) have the objective of generating policy recommendations and best practice guidelines in form of Actionable Knowledge for the stakeholders and will facilitate the exploitation of the knowledge produced by other projects and initiatives contributing to the innovation ecosystem for the bioeconomy. This Actionable Knowledge will provide different insights depending on the BioGov.net project's phase, namely provide suggestions for implementation as the outcome of the first workshop, recommendations for fine tuning the methodological approach in the second and policy recommendations, together with exploitation, replicability and transferability pathway as outcome of the last workshop.

5.2.1 The first yearly policy workshop

The first BioGov.net yearly policy workshop was organised in Brussels at the European Commission premises in conjunction with the annual MML "**Projects2Projects**" which took place on 5 October 2022, as a satellite event of the high-level EU Bioeconomy Conference "Bioeconomy - Enabling the European Green Deal in Challenging Times Conference[4]". See Annex for the detailed agenda.

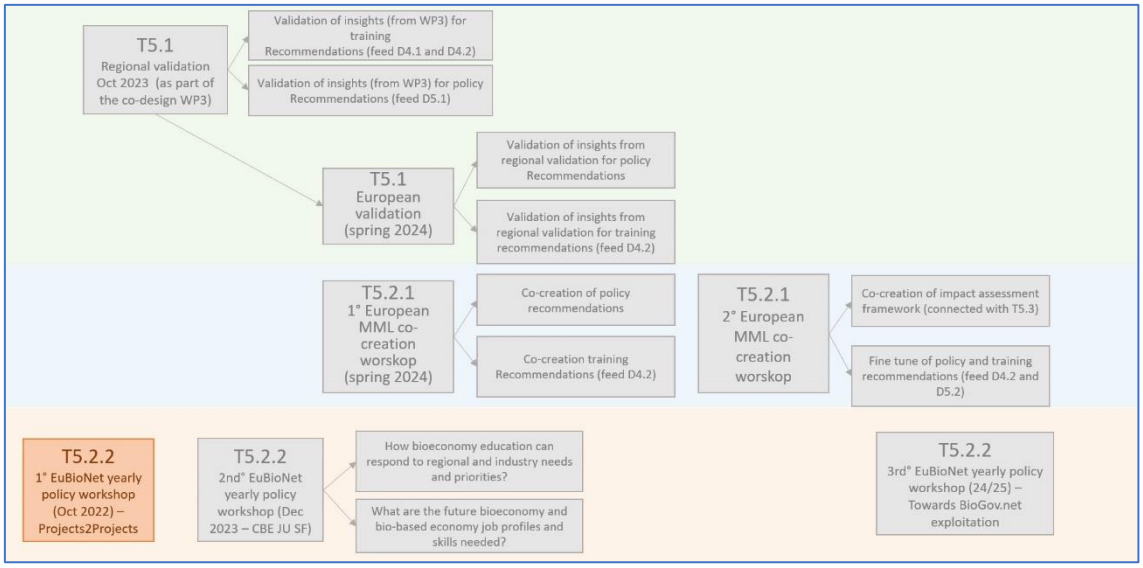

Figure 8: Overview of the timeline highlighting the connection between this activity and the other tasks

"Projects2Projects" is an innovative format developed by the European Bioeconomy Network (EubioNet)[5] to facilitate the thematic discussion, mutual learning and knowledge exchange among EU-funded projects having similar interests and the idea and concept of the workshop were co-created by BioGov.net partner FVA, which is also the main contact of the European Bioeconomy Network (EuBioNet). The latter was the main organiser of the MML, together with the European Commission, Transition2BIO

[4] The bioeconomy - Enabling the European Green Deal in challenging times | European Circular Economy Stakeholder Platform (europa.eu)
[5] https://eubionet.eu/

and.BioGov.net. was the project actively contributed to the event, designing the agenda and moderating some of the 4 different thematic macroareas in which the workshop was structured, namely:

- Enabling the bioeconomy ecosystem at the European, National and Regional level (governance perspective)
  Enabling the bioeconomy ecosystem at European, National and Regional level (from circular bioeconomy and bioeconomy sectors perspective)
- Standardisation, certification, labelling and monitoring
- Bioeconomy communication and education/future skills for the bioeconomy.

The workshop was designed to maximise the exploitation of lessons learnt and the heritage of H2020 bioeconomy projects in communication, education, and stakeholder engagement, to effectively kick off the newly funded Horizon Europe ones, including BioGov.net that was kicked-off in June 2022.

The event allowed the H2020 projects to present their main exploitable assets to a large number of projects and initiatives, while the Horizon Europe projects (about to kick off or recently started) took the advantage to build their activities on the extensive knowledge generated by H2020 projects in the last years.

Macroarea 1 - enabling the bioeconomy ecosystem at European, National and Regional level (governance perspective)	
H2020	**Horizon Europe**
BIOEASTsUP	ShapingBio
BE-Rural	CEE2ACT
BioCircularCities	BIOMODEL4REGIONS
LIFT	ROBIN
	BIOLOC
	BBC
	BlueRev
	RefreSCAR

Macroarea 2 - enabling the bioeconomy ecosystem at European, National and Regional level (boost circular economy and bioeconomy sectors perspective)	
H2020	**Horizon Europe**
BIOSWITCH	BioRural
Biobridges	MainstreamBIO
Tech4Biowaste	RuralBioUp
MPowerBio	SCALE-UP
BioeconomyVentures	BIOTRANSFORM
Enabling	

Macroarea 3 - standardisation, certification, labelling and monitoring	
H2020	**Horizon Europe**
STAR-ProBio	HARMONITOR
STAR4BBI	STAR4BBS
	SUSTCERT4BIOBASED
	3-CO
	SUSTRACK

Macroarea 4 - bioeconomy communication and education/future skills for the bioeconomy	
H2020	**Horizon Europe**
Transition2Bio	GenB
BIObec	BioBeo
Allthings.bioPRO	BioGov.Net
BIOVOICES	Engage4BIO
BIOSKILLS	
EBU Label	

Figure 9: Overview of the projects clustered per each macroarea

Specifically, the “Projects2Projects” workshop aimed at:

- Facilitating the awareness and exchange of inspirational good practices
- Presenting the objectives of the newly funded Horizon Europe projects in bioeconomy
- Defining common action plans
- Improving the quality and impact of projects’ activities for the next months, facilitating collaboration among ongoing, concluded and recently funded projects.

All the participating projects were grouped according to the 4 thematic working groups and each macroarea was introduced by the European Commission’s policy officer who provided the audience with the EC expectations to trigger the following discussion.

The workshop was divided into two parts. The first one was specifically dedicated to brief presentations of success stories from H2020 projects, with a special focus on assets that could be exploited by the newly funded Horizon Europe projects. The second part was dedicated to thematic group discussions to define a common 2022/2023 action plan per each thematic working group, responding to the updated 2018 bioeconomy strategy.

During the discussion, the following outcomes have been achieved:

- facilitate the identification and connection with similar activities
- enable the overview of who is doing what in the next months
- avoid duplication of efforts (e.g. organisation of a workshop on the same topic in the same period)
- maximise the impact and participants to events by joining efforts (e.g. co-organizing an event addressing similar topics from different perspectives)
- facilitate the match between needs and offer (e.g. I'm organizing a conference, I'm looking for speakers, good practices)

Figure 10: One of the working groups working on the joint action plan during the workshop

All the material stemming from the workshop, including the presentations (in ppt), projects' fiches and joint action plans per each macro area are available on this EuBioNet dedicated page and the outcomes were also showcased in the EuBioNet corner organised in the EC premises during the Bioeconomy Conference held in Brussels.

Figure 11: The EuBioNet corner during the EC Bioeconomy Conference

Impact: The "Projects2Projects" reached **76 registered participants** and was finally able to reach around **60 attendees and involve 40 projects on stage** and additional 9 projects participating. All the participants exploited the opportunity of having for the first time in the same room most of the relevant projects that will support the bioeconomy innovation ecosystem for the next years.

The outcomes of the first yearly policy workshop were key to address some BioGov.Net activities, like the collaboration with other projects and activities in T1.4, the Set-up and operation of the CoPs in WP3 and the WP5 validation activities.

5.2.2 The second yearly policy workshop

The second BioGov.net yearly policy workshop will take place on 7 December in the context of the CBE JU Stakeholder Forum organised in Brussels. The workshop titled "**Developing skills in the bio-based industries: future bioeconomy education pathways**" will involve BioGov.net as a co-organiser together with the BIObec project and GenB projects. See Annex for the detailed agenda.

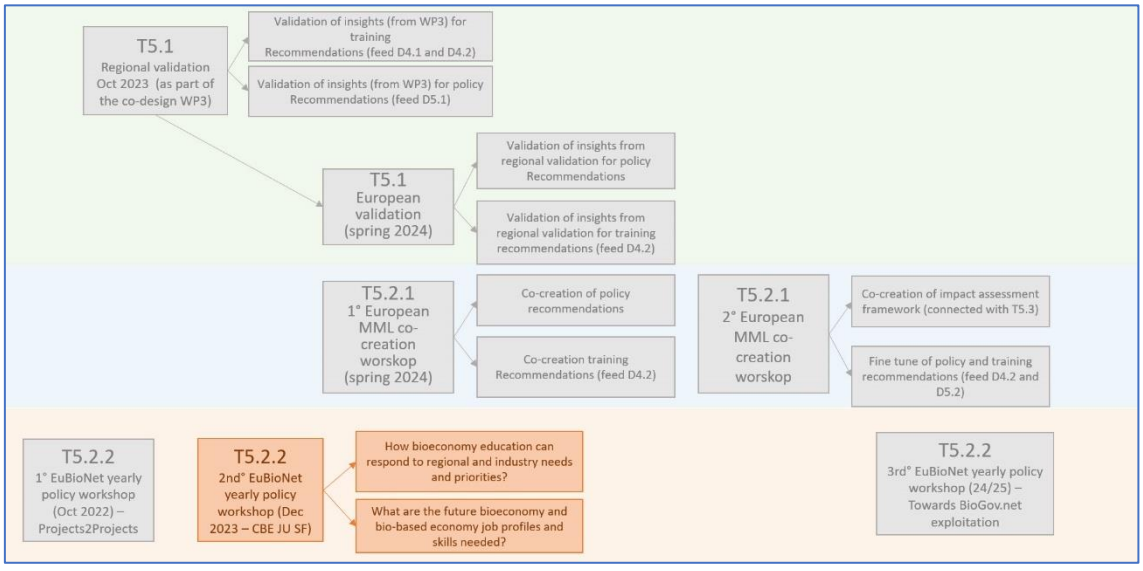

Figure 12: Overview of the timeline highlighting the connection between this activity and the other tasks

With 2023 having been designated as the European Year of Skills, the workshop will bring together the most relevant projects in bioeconomy education to outline the necessary and missing skills and future job profiles, as well as discuss the skills-related regional dimension and priorities and share strategies to attract students and professionals towards careers related to the bioeconomy.

Figure 13: Banner of the workshop at the CBE JU Stakeholder Forum

Participants of the workshop will present and discuss success stories and formats for designing educational pathways (e.g., competence centres, business models and educational frameworks) that address the skills needed in the bio-based sector.

Through Inspirational pitches from the 3 EU funded projects and initiatives co-organising the workshop and the following interactive discussion with participants, including the most relevant EU-funded projects and initiatives in bioeconomy education, the workshop will:

- Ensure knowledge exchange, transferability, replicability and exploitation of EU-funded projects and initiatives' outcomes.
- Improve the quality and impact of ongoing projects and initiatives in bioeconomy education, facilitating collaboration and mutual learning.
- Provide actionable recommendations and guidelines for future bioeconomy education pathways.

Specifically, participants will share their contributions to respond to the following questions to provide policy recommendations:

- How can bioeconomy education respond to regional and industry needs and priorities?
- What are the future bioeconomy and bio-based economy job profiles and skills needed?
- How to inspire, inform and attract students and professionals towards careers related to the bioeconomy?
- How future projects and initiatives can bridge the gaps between skills needed and educational pathways?

The outcomes of this workshop will provide insightful ideas for the next period of the project.

5.2.3 The third yearly policy workshop

Building upon the previous successful experiences achieved during the first and second yearly policy workshops, BioGov.net will organise its third and final policy workshop by the end of 2024-beginning of 2025. This workshop will follow the structure of a mobilisation and mutual learning activity among the most relevant projects and initiatives in bioeconomy education and will potentially involve also all the stakeholders that participated in the regional CoPs.

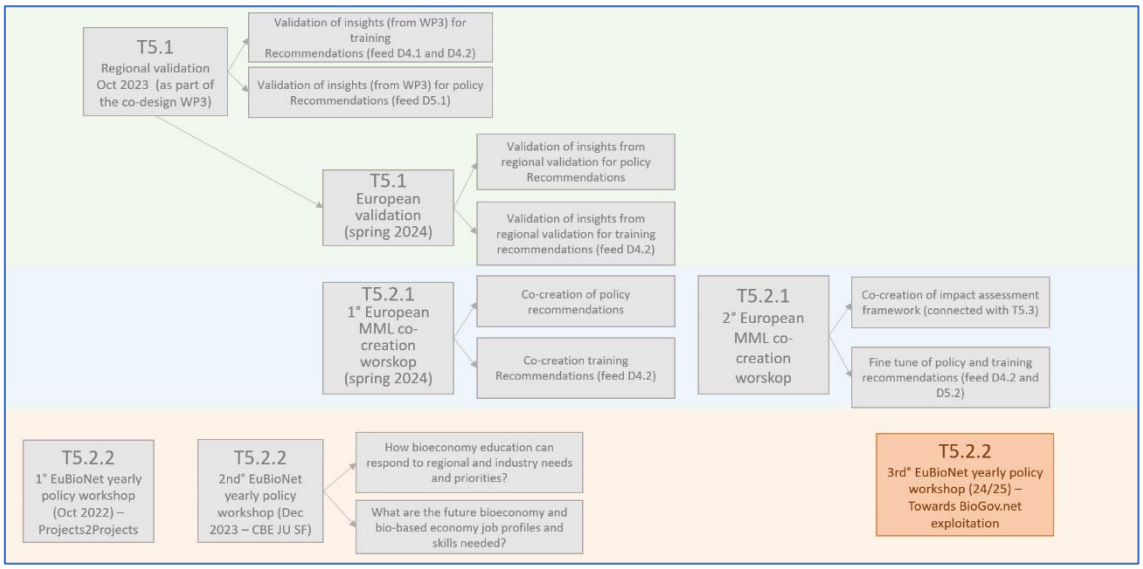

Figure 14: Overview of the timeline highlighting the connection between this activity and the other tasks

In the next months, FVA as task leader will evaluate different options and locations, to ensure that the workshop will be eventually part of the programme of an EU high-level event, to better maximise the impact of the activity and involve also key policy makers among the participants. This collaborative effort not only enhances the depth and breadth of participation but also presents an unparalleled opportunity for the project to showcase its year-long progress to a wider audience. This unveiling serves as a precursor, setting the stage for the ultimate event anticipated by mid-2025. The outcomes and insights gleaned from the workshop will form the bedrock upon which the final event will build.

6. Impact assessment framework and action plan

6.1 Background

In an era defined by evolving social, economic, and environmental paradigms, the importance of conducting impact assessments is of paramount importance. Organizations across the spectrum, from private businesses to governmental bodies are increasingly recognizing the need to assess the consequences of their projects, actions and/or interventions on the society and the planet. This compelling need arises from a growing consciousness of corporate social responsibility, growing awareness of populations and societies in demanding transparency and just processes, and the recognition that a project or activity's impact transcends its immediate outcomes. Failure to do so can result in reputational damage, regulatory challenges, and ultimately, a loss of stakeholder trust on the side of enterprises (Aras & Crowther, 2009). Moreover, these assessments help organizations refine their strategies, identify areas for improvement, and enhance their overall effectiveness (Porter & Kramer, 2011).

Moreover, funders have become increasingly discerning, requiring tangible evidence of the positive changes that projects will ensure in the society (or limit those of negative ones). Fundamental to the need for impact assessment is the changing landscape of funders' expectations as well. Whether in the realm of public or private investment, funders increasingly demand that their contributions yield positive social and economic returns (Burns et al., 2016). The shift toward impact investing and social entrepreneurship signifies a paradigm change, as funders align their financial objectives with societal and environmental goals (Austin, Stevenson, & Wei-Skillern, 2006). Hence, organizations that can demonstrate their projects' capacity to create value for society are more likely to secure funding and investments. Furthermore, the transparency offered by rigorous impact assessments aids in building trust between organizations and funders, fostering long-term partnerships (Owen, 2017).

The field of impact assessment is, hence, rapidly gaining importance worldwide, reflecting the collective understanding that it is integral to enabling a sustainable and equitable future. As the world is faced with pressing issues like the climate crisis and income inequality, governments, businesses, non-profit organizations as well as research and educational bodies worldwide are realizing that achieving various objectives set for the transition of the systems towards sustainability solutions (e.g. SDGs, the Green Deal), we need to go beyond vague concepts or policies, but deliberate and quantifiable, evidence and research-based approaches to assess the impact that is created by our actions. Consequently, this field has gained importance as it serves as a critical tool in fostering sustainability, inclusivity, and resilience on a global scale.

In the scope of bioeconomy, the significance of conducting impact assessments when designing an education and training system is critical. Such assessments are pivotal for several reasons. Firstly, they serve as a means to identify and communicate the societal implications of cultivating a well-educated and skilled workforce in the bioeconomy sector. With an increased level of skills, specialised knowledge (and awareness), the professionals and practitioners in the sector can be better equipped to understand, develop, and implement sustainable practices, thereby contributing to the attainment of bioeconomy objectives (European Commission, 2018). Moreover, an enhanced

education and training system, coupled with provisions for lifelong learning, fosters adaptability and responsiveness to evolving challenges and technological advancements, making the sustainability transition in bioeconomy more feasible (UNESCO, 2020). The dynamism of the bioeconomy field calls for continuous learning and adaptability, making robust education and training systems a must for its long-term success. Hence, assessing the impact of efforts, activities, interventions, projects or strategies in the area of education and training in bioeconomy, - on local, national and regional levels -, would lead to better-informed decision and strategy-making, and the possibility to update these, when the intended results are not achieved; last but not least, to be able to communicate the importance of these efforts to wider audiences and stakeholders (including the funders).

6.1.1 Aim of the study

In this direction, the overall aim of Task 5.3 (Impact assessment and recommendations) is to design and perform an impact assessment and robust evaluation of actions generated in each CoP (established within the scope of the BioGov.net Project), to monitor, review and ensure their expected impact to bioeconomy and sustainability.

In this regard, recommendations will be prepared based on social and economic barriers and potentialities (e.g. job creation capacity and its quality) to enable the transition towards socially and environmentally responsible systems (e.g. creation of novel governance models in training and re-skilling, corporate responsibility initiatives, support to educational and training initiatives), by ensuring inclusiveness of all actors (bio-based systems, NGOs, civil society, as well as marginalised groups).

In this first version of the Impact assessment and recommendations (M18), the aim is to identify and propose a methodological framework and approach, and clear steps, to be used in assessing the impact of BioGov.net CoP activities. While this document will act as a framework to conduct the assessment, in the second and final version of the study (M36), the impact assessment approach will be better defined, detailed, conducted and reported.

6.1.2 Methodology of the study

The methodology of this study relied on an extensive desk research. First, the review of the relevant impact assessment approaches, methodologies and theoretical background has been conducted, in order to gather information that may be beneficial for the impact assessment that will be conducted within the scope of the BioGov.net project. Then, based on the literature review, in addition to the expertise of the Project team, an impact assessment framework that would fit into the scope of the BioGov.net Project has been proposed and detailed. Last but not least, a preliminary template to evaluate the impact of the BioGov.net activities, is presented.

6.2 The review of the relevant impact assessment approaches, methodologies and the theoretical background

6.2.1 What is Impact and why do we want to measure it?

Impact (or societal) refers to the effect or influence that a particular action, project, policy, programme, or initiative has on individuals, communities, or society as a whole. It measures how an activity, organization, or intervention contributes to improving the well-being, quality of life, and overall conditions of people and the broader society. Impact assessment is a critical aspect of evaluating the outcomes and effectiveness of various social and environmental programmes and initiatives.

Many organizations are increasingly concerned with how to measure the impact they are having on their communities. These organizations are said to have a triple bottom line as they "blend" three different values: economic, social, and environmental outcomes generated by their activities (Bhatt and Hebb, 2013). They can be a not-for-profit social enterprise, a private business, a voluntary sector organization, or a government initiative. There are numerous resources that explore why measuring impact and outcomes matters for different sectors, issues and portfolios. Some of these reasons can be grouped under the following categories (Rawhouser et al., 2017):

- *Knowing whether you are making a difference.* This is one of the most important reasons to measure impact so that it is clear to the society, public, supporters, advocates, funders, leadership and employees of organisations and agencies that their initiatives and programmes meet the values, missions and goals they aspire to and espouse. Even when the objectives of a project, activity or intervention intend to create a positive impact on the society, without actually measuring the outcomes and the impact, there is no way to be certain.
- *Building better organisations with a social purpose*. There are numerous potential organisational benefits to measuring impact, these include: creating a culture of learning and innovation, professional development, better and more meaningful communication, an increased reputation for transparency, trust and efficacy (and the brand value that follows), and sustainability. Measuring impact can also assist organisations and enterprises in appealing to funders and donors (Hestbaek, 2014), increase organisational legitimacy and communicate and celebrate achievements (Barraket and Yousefpour, 2013). For any sector, having an impact to communicate will assist with a narrative for politics and policy, advocates and supporters, and a trusted profile – which leads to positive exposure.
- It is also becoming increasingly recognised that measuring impact is a critical factor in *organisational sustainability*. By measuring impact, organizations can access themselves better in terms of the sustainability of their organization and their actions. So, it can also be regarded as a self-assessment tool for sustainability (Bhatt and Hebb, 2013).
- *Accountability and increased efficiency*. Accountability and compliance among the primary drivers for why different groups measure impact. Not-for-profit organisations, social enterprises and businesses are each accountable to a range of stakeholders – funders, stakeholders and donors (Hestbaek, 2014). Complementary with accountability is increased efficiency. Governments have

limited resources and the burden on other sectors is increasing. Individuals and organisations want to know whether investments are providing returns and if funding is best being invested (Epstein and Yuthas, 2014).

6.2.2 Impact Assessment studies in the Bioeconomy fields?

In the field of bioeconomy, while studies on impact assessment exist, we can say that they tend to be quite scarce, and most often consider impact only from a certain point of view, such as environmental impact, and fail to provide a holistic view of the environmental, economic, social or cultural impacts as a whole.

This being said it is possible to find numerous studies in the literature that discuss or use the Life Cycle Perspective, to either assess the progress in the bioeconomy (Rebolledo-Leiva et al., 2023; Kymäläinen et al., 2022) or in the case of Zeug et al. (2021) to propose a framework for implementing integrated LCA of regional bioeconomy. There are also a few studies that focus on the environmental impact of certain practices in bioeconomy sectors (Ladakis et al., 2022; Kymäläinen et al., 2022; Pattnaik et al. 2021).

In terms of studies that adopt a more holistic approach and focus on environmental, social, economic, or cultural impacts of bioeconomy sectors, or those that focus on societal factors and the wider effects on society as a whole are much rarer. Below, we provide an overview of these studies in the literature.

Karvonen et al. (2017) estimate the indirect impacts resulting from a partial replacement of non-bio-based inputs with bio-based substitutes in the transport equipment, construction, textile, and chemical sectors. They use input-output analysis to present the socio-economic impacts of the pellet fuel plant development in terms of employment, labour income, value-added, and industry output. Mattila et al. (2018) also use a multi-region input-output model to estimate the social life cycle impacts of Finnish wood products. Their results reveal that the main social issues were found in health and safety and gender inequality, with a large part of the impacts occurring outside the forest sector and outside Finnish boundaries. In contrast, local stakeholders' views on social sustainability-focused mostly on local conditions, employment and cooperation between companies. Mainar-Causapé et al. (2021), on the other hand, propose the construction of an open access and economy-wide database of social accounting metrics for bioeconomy impact assessment in the EU, arguing that progress in developing ex-ante tools of economy-wide analysis to assess its performance, is hindered by a paucity of consistent and comprehensive data. This topic, in fact, is very important, as without the existence of robust indicator and social accounting metrics in the bioeconomy context, the impact assessment efforts fail to be consistent or accurate, and would, in general, have to rely on the data of other sectors and contexts.

Meanwhile, few studies use a Sustainability Impact Assessment approach. Schweier et al. (2019) conducted a review study to detail the use of the Sustainability Impact Assessment approach to quantify the impact of forest operations. They argued that there are only a few studies including all pillars of sustainability and most of the studies consider different aspects of either environmental or economic impacts. It is important to determine the system boundaries and select the appropriate indicators to have a comprehensive Sustainability Impact Assessment. Karvonen et al. (2017) study the indicators and tools for assessing the sustainability impacts of the forest bioeconomy

(and particularly forest biomass). They present several sustainability indicators for ecological, economic and social dimensions and discuss the issues in applying them in sustainability impact assessments. Zemaitis et al. (2021) also conducted a sustainability impact assessment, studying the production chains of glue-laminated timber and concrete-based building materials in Lithuania. They find that timber value chains have more positive sustainability impacts; hence, argue that the socio-economic advantage of wood could increase the competitiveness of the regions and contribute to their sustainable development.

Last but not least, Delzeit et al. 2021, in their study, employed a participatory co-design approach where economists and natural scientists work together with stakeholders from politics, industry, research, and civil society to develop exploratory and policy scenarios on the development of the bioeconomy. Their study underlines the importance of participatory approaches and co-design processes for designing scenarios for impact assessment of global bioeconomy strategies.

6.2.3 How capturing social, economic, environmental, cultural (or other) dimensions more holistically would be possible? What is societal impact assessment, and if it can address this need?

Societal impact is a broad term that is used to explain the impact of any policy or action (including economic, social, environmental and other kinds of impact) on a community, set of communities or on the society as a whole (Bührer et al., 2022). In this regard, it is important to note that when we use the term “social impact” in this study, we do not only refer to those impacts (and related indicators) that are commonly named as social indicators (that cover only social dimensions); but we refer to all political, cultural, social and economic (as well as environmental) indicators and their effect on the society as a whole.

Social impact has been conceptualized in the literature using terms such as social value (Moss et al., 2011; Santos, 2012), social performance (Husted and Salazar, 2006), social returns (Emerson, 2003), social return on investment (SROI) (Hall et al., 2015), and social accounting (Nicholls, 2009), which, although similar, represent distinct constructs. Moreover, social impact has been studied in domains such as education, health care, environmental sustainability, and poverty, which can be difficult to compare (Izzo, 2013). One definition that can be suggested is that of Stephan et al. (2016), who define social impact as beneficial outcomes resulting from a behaviour that are enjoyed by the intended targets of that behaviour and/or by the broader community of individuals, organizations, and/or environments (Rawhouser et al., 2017).

Key aspects of social impact include a positive change, measurable outcomes, equity and fairness, a focus on long-term effects, strong stakeholder engagement and involvement and an adaptive and learning-oriented approach (Rawhouser et al., 2017).

Corvo et al. (2021) define social impact measurement’s aim as to assess the social, economic and environmental value produced by the activities or operations of any organization (for-profit, non-profit, or public).

6.2.4 How to define societal (social) impact and/or value?

There is no single definition of "impact" or "value"; nevertheless, several leading organisations in this field do provide similar explanations of it (Wood and Leighton, 2010). Accordingly, social value refers to wider non-financial impacts of programmes, organisations and interventions, including the well-being of individuals and communities, social capital and the environment (Wood and Leighton, 2010). These outcomes, being "non-financial" are difficult to quantify and measure. Outcomes that cannot be quantified cannot also be counted, evaluated, or compared. For this reason, the measurement of social value by ascribing quantifiable values to these outcomes, has been a topic of interest for stakeholders and policy-makers in this field.

The lack of consensus on the definition of social impact confuses and hampers the ability to study the phenomenon (Maas and Liket, 2011). Variations are found between the various academic fields such as business and society studies, management accounting, and strategic management. Main differences are found in the usage of words such as "impact", "output", "effect" and "outcome". Moreover, the term social impact is often replaced by terms such as "social value creation" (Emerson et al. 2000) and "social return" (Clark et al. 2004). An overview of several definitions can be found in Table 1 (e.g., Latané 1981, Burdge and Vanclay, 1996). Below is a table that provides an overview of some of the different definitions found in the literature.

Table 1: Definitions of social impact and related terms (Resource: Maas and Liket, 2011)

Term	**Definition**
Social impact (Burdge and Vanclay, 1996)	By social impacts we mean the consequences to human populations of any public or private actions that alter how people live, work, play, relate to one another, organise to meet their needs and generally act as a member of society.
Social impact (Latané, 1981)	By social impact, we mean any of the great variety of changes in physiological states and subjective feelings, motives and emotions, cognitions and beliefs, values and behaviour, that occur in an individual, human or animal, as a result of the real, implied, or imagined presence or actions of other individuals.
Impact (Clark et al., 2004)	By impact we mean the portion of the total outcome that happened as a result of the activity of the venture, above and beyond what would have happened anyway.
Social Value (Emerson et al., 2000)	Social value is created when resources, inputs, processes or policies are combined to generate improvements in the lives of individuals or society as a whole.
Social Impact (Freudenburg, 1986)	Social impact refers to impacts (or effects, or consequences) that are likely to be experienced by an equally broad range of social groups as a result of some course of action.
Social Impact (Gentile, 2000)	Social impacts are the wider societal concerns that reflects and respects the complex interdependency between business practice and society.

Social Impact (IAIA[i] by Wikipedia 2009)	Social impacts are intended and unintended social consequences, both positive and negative, of planned interventions (policies, programmes, plans, projects) and any social change processes invoked by those interventions.

6.2.5 What kind of different approaches/methods and metrics are used?

In the literature, there is a large number of diverse standards and frameworks that have been developed to measure social value. Numerous studies have mapped or gathered these different methods or approaches together (Clark et al., 2004; Olsen and Galimidi, 200; Maas and Liket, 2011; Grieco et al., 2015; Corvo et al., 2021). The tables below bring together those approaches and methods that are found in the literature and used in diverse ways and purposes. These included:

- The work of New Economics Foundation (NEF), which conducted a study that mapped some of the most commonly used tools, comparing their advantages and disadvantages, resource intensiveness and complexity (NEF, 2005);
- The catalogue compiled by Olsen and Galimidi (2008), who mapped 25 approaches in their study, grouping them according to whether they fall under the categories of “rating systems”, “assessment systems” or “management systems”;
- The study conducted by Dufour (2015), who mapped the available tools and methods for the measurement of social impact of social enterprises;
- And the work by Maas and Liket (2011), who classified different methods for social impact measurement;
- Work by Corvo et al. (2021), who conducted a literature review for mapping social impact assessment models;
- The literature review of the current approaches and future directions for social entrepreneurship research by Rawhouser et al. (2017).

In this direction, the table below brings together those methods and approaches that are proposed and used to value the impact created on the society as a result of activities, projects, interventions and so on.

Table 2: Overview of social impact measurement methods

Impact measurement methods
1. Acumen Scorecard 2. Atkinsson Compass Assessment for Investors (ACAFI) 3. B Ratings System 4. Balanced Scorecard (BSc) 5. Best Available Charitable Option (BACO) 6. BoP Impact Assessment Framework 7. Center for High Impact Philanthropy Cost per Impact 8. Charity Assessment Method of Performance (CHAMP) 9. Comparative Constituency Feedback 10. Compass Assessment for Investors 11. Cost per Impact 12. Cost-Benefit Analysis 13. Dalberg Approach 14. DOTS (development outcome tracking system)

15. Foundation Investment Bubble Chart
16. Hewlett Foundation Expected Return
17. Local Economic Multiplier (LEM)
18. Measuring Impact Framework (MIF)
19. Millennium Development Goal scan (MDG-scan)
20. Measuring Impacts Toolkit
21. Ongoing Assessment of Social Impacts (OASIS)
22. Outcomes Star
23. Participatory Impact Assessment
24. Poverty Social Impact Assessment (PSIA)
25. Public Value Scorecard (PVSc)
26. Robin Hood Foundation Benefit-Cost Ratio
27. Social Compatibility Analysis (SCA)
28. Social Costs-Benefit Analysis (SCBA)
29. Social Cost-Effectiveness Analysis (SCEA)
30. Social e-valuator
31. Social Footprint
32. Social Impact Assessment
33. Social return Assessment (SRA)
34. Social return on Investment (SROI)
35. Socio-Economic Assessment Toolbox (SEAT)
36. Stakeholder Value Added (SVA)
37. Toolbox for Analysing Sustainable Ventures in Developing Countries
38. Wellventure Monitor

While these are some of the impact assessment methods used across the literature and across different domains, the below table brings together some of the key approaches used in the impact assessment literature (Muir and Bennett, 2014). The Social Value UK, which is regarded as one of the key professional bodies for social value and impact management in the United Kingdom, grouped the approaches used in broader categories (https://socialvalueuk.org/). They define “approach” as methodologies or guides relating to impact measurement. Rather than a specific scale or measurement tool or method, an approach frames the analysis or actions being taken in practice. This categorization is useful to understand the different approaches dominant in different ways of measuring impact and to develop an understanding towards impact measurement and filter out those approaches that may be useful for our specific purposes in this study.

Table 3: Key approaches used in the impact assessment literature (source: Muir and Bennett, 2014)

Name of approach	Description	Website
Social Value Principles	"The Principles of Social Value provide the basic building blocks for anyone who wants to make decisions that take this wider definition of value into account, in order to increase equality, improve wellbeing and increase environmental sustainability. They are generally accepted social accounting principles and are important for accountability and maximising social value."	http://www.socialvalueuk.org/resource/principles-of-social-value/

Name of approach	Description	Website
Theory of Change	"A theory of change shows how you expect outcomes to occur over the short, medium and longer term as a result of your work. It can be represented in a visual diagram, as a narrative, or both. A theory of change can be developed at the beginning of a piece of work (to help with planning), or to describe an existing piece of work (so you can evaluate it). It is particularly helpful if you are planning or evaluating a complex initiative, but can also be used for more straightforward projects. It is beneficial to involve a variety of stakeholders when you develop a theory of change – you could include staff, trustees, beneficiaries, partners and funders. The development process, and the thinking involved, is often as important as the diagram or narrative you produce."	https://knowhownonprofit.org/how-to/how-to-build-a-theory-of-change
Social Accounting and Audit	"Social accounting and audit is about assessing the social value generated by an organisation. Social Accounting and Audit (SAA) helps you prove, improve and account for the difference you are making. Starting with that in mind, it helps you to plan and manage your organisation as well as demonstrate what you have achieved. Social accounting and audit is a logical and flexible framework which enables your organisation to build on existing documentation and reporting systems and develop a process so that you can: Prove - account fully for and report on your organisation's social, environmental and economic performance and impact; Improve - provide the information essential for planning future actions and improving performance; Account - be accountable to all those you work with and work for."	http://www.socialauditnetwork.org.uk/
Results Based Accountability (RBA):	A key feature of the RBA methodology is the continual tracking of performance at the macro level (population accountability) and micro (organisational/"performance" accountability) levels. This involves developing and integrating outcomes throughout a programme, rather than ad-hoc surveys for evaluations, and focus on developing a method to collect data overtime from clients and stakeholders (Friedman, 2005).	-
Integrated Reporting:	Developed by The International Integrated Reporting Council (IIRC), Integrated Reporting provides a conceptual framework for the preparation of a concise, user-oriented "Integrated Report". This demonstrates the linkages between an organization's strategy, governance and financial performance and the social, environmental and economic context within which organisations operate. While originally developed for large corporations this provides a useful framework for social value organisations because of its emphasis on outcomes	http://www.theiirc.org/
Costs compared to outcomes approaches	Economic analyses and rate of return approaches provide comparative perspectives on the relative performance or efficiency of a programme, policy or organisation. These approaches provide different gauges of how to assess the cost and benefits of a programme over different time periods to different stakeholder groups (Rossi et al., 2007). Economic analyses, such as Cost-benefit and Cost-effectiveness analysis, involve the systematic assessment of the costs and benefits associated with a particular programme to evaluate the programme's overall performance. Economic analyses can incorporate monetary, qualitative and quantitative elements and can be conducted throughout a programme's life cycle as part of a formative of summative assessment.	-
Social Return on Investment	"Every day our actions and activities create and destroy value; they change the world around us. Although the value we create goes far beyond what can be captured in financial terms, this is, for the most part, the only type of value that is measured and accounted for. As a result, things that can be bought and sold take on a greater significance and many important things get left out. Decisions made like this may not be as good as they could be as they are based on incomplete information about full impacts. Social Return on Investment (SROI) is a framework for measuring and accounting for this much broader concept of value; it seeks to reduce inequality and environmental degradation and improve wellbeing by incorporating social, environmental and economic costs and benefits."	http://www.socialvalueuk.org/resources/sroi-guide/

Meanwhile, IRIS (Impact Reporting and Investing Standards) metrics are metrics that are often used to define, track and report the social, environmental and financial performance of the capital used for impact investing. It was launched in 2008 by Acumen

Fund, B Lab, and the Rockefeller Foundation, and is now managed by the Global Impact Investing Network (GIIN). (Bhatt and Hebb, 2013)

IRIS provides a library of social, environmental and financial performance metrics with standard definitions that help organizations to refine their current performance tracking. It standardizes the way mission-driven enterprises use data to communicate their social and environmental impact to stakeholders, including impact investors who deliberately invest in organizations that produce social or environmental returns in addition to financial returns.

6.2.6 How to know which one/s to use?

Using both qualitative and quantitative approaches are acceptable in impact measurement, as well as a combination of these (Bhatt and Hebb, 2013). In some cases, it would be necessary to monetize your results, in other cases it would be more necessary to use your results to create a narrative or story about your organization and project. These are dependent on the audience of the impact assessment and what is the purpose.

There are some studies in the literature, which map some of the available approaches and tools and suggest ways to go forward. One of them is Bhatt and Hebb (2013), who discuss about the mapping study of Angier Griffin, a social economy consultancy in the UK. In this study, a variety of tools used across UK as part of the programme “Even More for Your Money” has been mapped (Figure below). The horizontal axis represents the level of complexity and resources required to use the tool, and the vertical axis represents how the reported results are interpreted – either in economic or social terms. It was argued that in the UK, two approaches to measuring social value have been most prominent – social audit and accounting, and SROI. As can be seen from the figure, SROI (in the bottom right corner) translates social value into “hard” economic indicators, and is also one of the most complex and resource intensive in the selection represented here. These two factors are important, because despite its complexity, SROI has become the favoured tool of government and a range of policy makers, thanks to not only being able to quantify social value, but also to ascribe monetary value to these outcomes (Bhatt and Hebb, 2013).

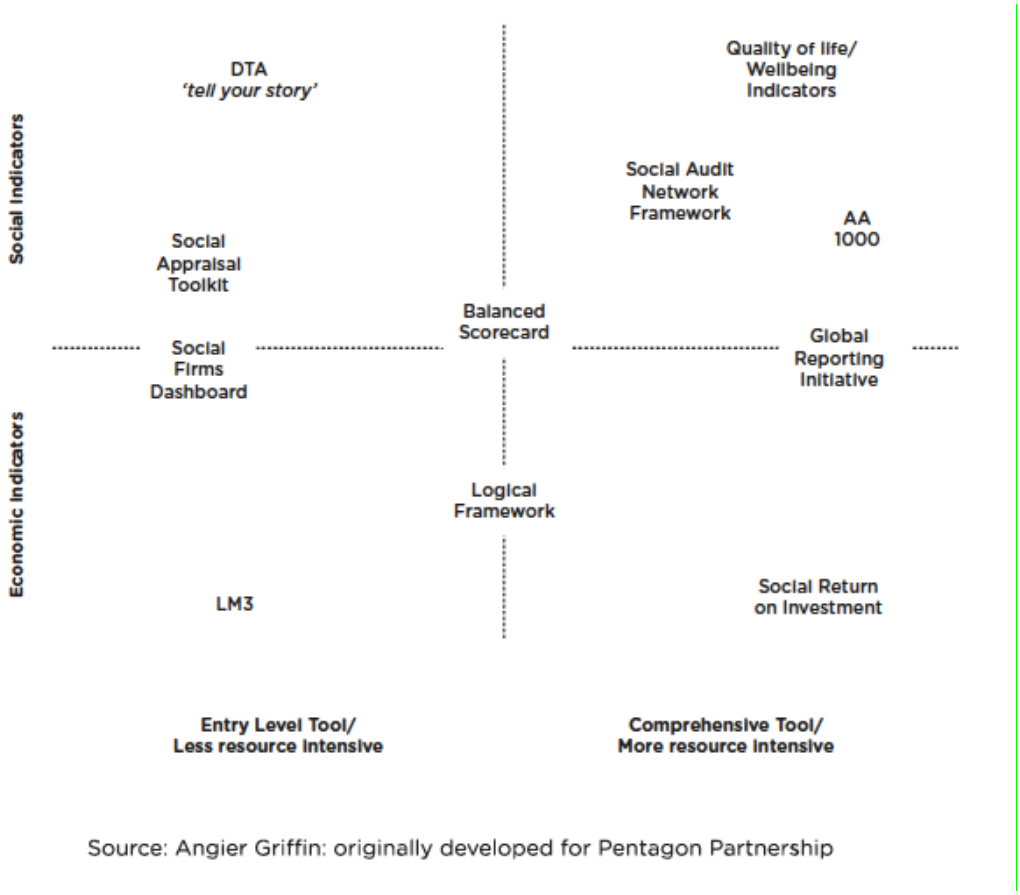

Figure 15: Mapping of Quality and Impact Tools

Meanwhile, Corvo et al. (2021), in their literature review, identify six main attempts at Social Impact Assessment model mapping from both academics and practitioners. Those doing the mapping have had different approaches to grouping the Social Impact Assessment models, and they have used a variety of sources. The table below shows the results that came out of this study, as a way of showing how these six studies grouped the Social Impact Assessment approaches according to the different ways of assessing social impact, which can be used to compare and contrast their scopes, advantages or use for different kinds of impact assessment.

Table 4: Different studies of Social Impact Assessment grouped by Corvo et al. (2021)

	SIA Mapping					
	Clark et al. [5]	Olsen and Galimidi [47]	Zappalà and Lyons [39]	Rinaldo [48]	Maas and Liket [13]	Grieco et al. [6]
Groups/clusters	(1) Process models/methods	(1) Rating systems	(1) Social Accounting and Audit (SAA)	(1) Monitoring and evaluation tools	(1) Process methods	(1) Simple Social Quantitative
	(2) Impact models/methods	(2) Assessment systems	(2) Logic Models	(2) Quality tools	(2) Impact methods	(2) Holistic Complex
	(3) Monetisation models/methods	(3) Management systems	(3) Social Return on Investment (SROI)	(3) Outcome tools	(3) Monetisation	(3) Qualitative Screening
	-	-	-	-	-	(4) Management

Corvo et al. (2021) argues that the most commonly used model is social return on investment (SROI) and other monetisation models that have been developing around it.

Another two very common models come from management systems and quality systems such as EMAS (Eco-Management and Audit Scheme) and EFQM (European Foundation for Quality Management Excellence Model). Until now, the research in this field has almost never led to shared solutions, and this finds direct evidence in the plurality of models adopted for social impact measurement and evaluation, representative of highly differentiated approaches and tools (Corvo et al., 2021). This condition is generated by the fragmentation among Social Impact Assessment models and the variety is high, apart from the very few models that present a clear methodology and features, e.g., the SROI (Then et al., 2017), most models are not standardized (at least in the process) (Corvo and Pastore, 2020).

Besides, the report of the European Committee of the Regions (2017) on territorial impact assessment on the bioeconomy (Caldeira et al., 2019) shows the regional differentiation of the impact of EU policies, by using the ESPON TIA Tool, which is an interactive web application combines a workshop setting for identifying systemic relations between a policy and its territorial consequences with a set of indicators describing the sensitivity of European regions.

The study reveals that in order to assess the potential effects depicted in the conceptual model, suitable indicators need to be selected related to the parameters that the experts discussed in the fields of economy, environment, society and governance. From the available indicators that the ESPON TIA Quick Check web tool offers, the experts chose the following indicators to describe the identified effects. Below, we provide the list of all related indicators that may be used in assessing potential territorial impacts:

Economy-related indicators

- Economic performance (GDP/capita)
- Entrepreneurship (share of private enterprise)
- Employment in agriculture, forestry and fishing
- Employment in sectors affected by the low-carbon economy

Assessing potential territorial impacts considering societal indicators

- Life expectancy at birth
- Disposable income
- Unemployment rate
- Net migration

Assessing potential territorial impacts considering environmental indicators

- Emissions of CO2 per capita (tonnes)
- Ratio between emissions of CO2 and GVA
- Land cover: Share of agricultural areas
- Water consumption
- Land use: Share of irrigated land
- Urban wastewater
- Soil fertility
- Municipal waste generated

Furthermore, the experts agreed that the following indicators, which are not included in the ESPON TIA Quick Check web tool, would be relevant to describe the identified effects:

- Quality of the sea
- Biodiversity
- GVA/agricultural output (FADN)
- Forest coverage
- Waste processing data
- Coupled products (production success)
- VA/tonne of biomass
- Eco-innovation (Regional innovation scoreboard)

6.2.7 The Theory of Change; and on which level are we going to conduct the analysis?

Theory of Change (ToC) is a theory-based approach to planning, implementing, and evaluating change at an individual, organisational or community level (Laing and Todd, 2015). By using a ToC approach, one can articulate how desired outcomes can be achieved. This is done by exploring the real-world setting in which the project is being implemented, the starting situation, and risks or opportunities that may influence achieving change, the actions to be taken and the steps of change expected to take place (Laing and Todd, 2015). The ToC is focused, in particular, on mapping out or "filling in" what has been described as the "missing middle" between what a programme or change initiative does (its activities or interventions) and how these lead to desired goals being achieved (French et al., 2020). It does this by first identifying the desired long-term goals and then works back from these to identify all the conditions (outcomes) that must be in place (and how these related to one another causally) for the goals to occur. French et al. (2020) and Reinholz and Andrews (2020) are among those studies that use ToC approach to address gaps in the higher education system.

Muir, K. & Bennett, S. (2014) argue that the theory of change you are working to will determine whether change is occurring at a micro, meso and/or macro level (refer to the image below). During the measurement scoping phase, it should be decided what level of analysis is going to be included. What will be measured at an individual, programme or intervention level (micro); organisational or community level (meso); and/or at a societal, sector or industry level (macro)?

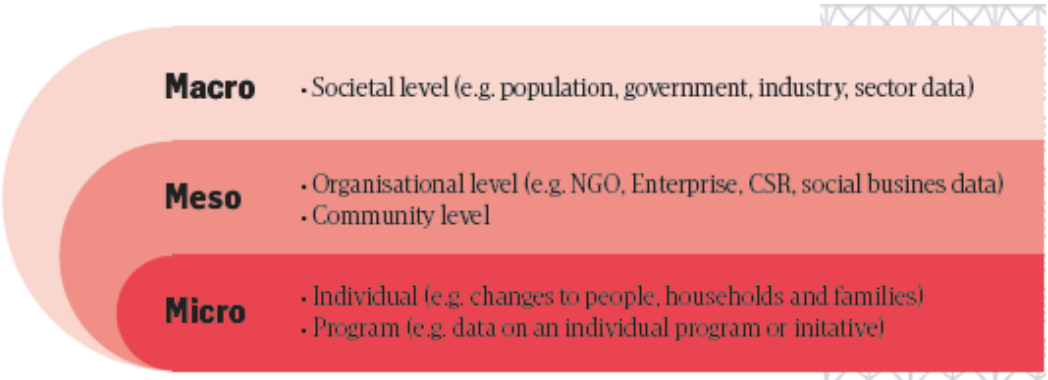

Figure 16: The micro, meso and macro levels of change and measurement

Understanding the level of measurement can help inform which benchmarks and indicators to use and what data can and cannot be meaningfully compared. It will also assist to meet different stakeholder needs and set clear expectations.

There is no single “silver bullet” impact measurement framework or methodology that can be applied to all socially motivated organizations. The key is to measure what best reflects the interests of your enterprise or organization and the interests of your stakeholders. Therefore, social metrics (whether qualitative or quantitative) should be embedded in the project/organization’s theory of change. The below section will aim to provide some suggestions on how to assess the impact of the CoP activities in the scope of the BioGov.net project.

6.3 The proposed methodology and approach to impact assessment in BioGov.net

This section of the report will discuss some of the topics with regard to impact assessment methodologies that are laid out in the previous section to propose a framework for the impact assessment in the scope of the BioGov.net Project. First, the importance of conducting an impact assessment in the scope of BioGov.net will be discussed, followed by the explanation of a Theory of Change approach, that is proposed for the Project. Last but not least, the approach of Social Return on Investment (SROI) approach will be explained, which is proposed as a following (optional) step, if the impact identified within the scope of the impact assessment would also require the quantification of the impact.

6.3.1 Why an Impact assessment

Social projects, policies or interventions play a pivotal role in addressing societal challenges, fostering development, and enhancing the well-being of communities. These projects are often driven by a social vision, aiming to create positive change in various aspects of our lives, whether it be in education, healthcare, employment, environmental sustainability, or countless other areas. However, how can we ensure that they are making a real and tangible difference in the lives of individuals and communities they intend to serve? The answer lies in the practice of impact assessment.

Impact assessment is a vital process, and it is verbalized increasingly in strategic reports and documents the importance to measure the impact (especially relating to the SDGs and particularly the interventions being undertaken in the context of the Green Deal). In the case of Bioeconomy education and training, by evaluating (or retrospectively assessing) impact, we can answer questions such as, "Did our efforts/will our efforts lead to improved education and training in bioeconomy as we aimed?" and "To what extent can our project or activities contribute to positive change?" Besides, impact assessment is equally essential for accountability and transparency. It holds project leaders accountable for the resources allocated and ensures that the goals set are met. Furthermore, it provides transparency to project funders, stakeholders, and the wider community, instilling trust and confidence in the project's efficacy. When the outcomes are clear and measurable, stakeholders can confidently evaluate the project's performance.

Furthermore, impact assessment goes beyond an internal evaluation mechanism. It serves as a powerful communication tool, enabling project leaders to introduce their ideas and initiatives to stakeholders and potential funders. It is through the presentation of tangible, data-backed outcomes that a project can garner support, securing the resources necessary for its success.

In this section of the report, we will provide a robust impact assessment framework specifically tailored to the context of bioeconomy education and training. As we embark on a project to establish communities of practice across eight European countries, with a focus on enhancing bioeconomy education, it is imperative that we have a structured methodology to measure and communicate the impact of our efforts. In the pages that follow, we will detail the components of our impact assessment framework (basing our decisions on the literature review presented in the previous section), laying the groundwork for effective assessment. By doing so, we can ensure that our activities

towards improving bioeconomy education is marked by transparency, accountability, and a commitment to making a meaningful difference. In the ever-evolving landscape of social projects, it is not merely the effort that counts, but the impact created, measured, and communicated.

6.3.2 Introducing the concept of impact assessment of Communities of Practice (CoPs)

Conducting an impact assessment of actions and activities undertaken by communities of practice involves evaluating and analysing the consequences and effects of the collective efforts and interactions within these communities.

A CoP is a group of individuals who share a common interest or profession and come together to learn from one another, develop their expertise, and collaborate to advance their field. Impact assessment in this context aims to measure and understand the tangible and intangible outcomes of the community's activities, such as knowledge sharing, skill development, and contributions to the broader domain.

While impact assessments are more commonly associated with projects or programmes, they can also be applied to communities of practice, particularly to measure the influence, effectiveness, and changes brought about by these groups in their respective domains.

6.3.3 The proposed approaches: A theory of change to assess change and the Social Return on Investment to quantify change

The below sections with lay out how the scope and stakeholders/beneficiaries of the impact assessment are identified; how the impact map is designed (inputs, outputs, outcomes), how outcome indicators are identified and used to measure impact; and how data collection will take place. Finally, a following (optional) approach of Social Return on Investment will be explained, in case the impact is decided to be quantified within the impact assessment study.

6.3.3.1. Introducing the concept of Theory of Change

The term “Theory of Change” first emerged in the 1990s (INTRAC, 2015). Its purpose at that time was to address some of the problems evaluators faced when trying to assess the impact of complex social development programmes. These included poorly articulated assumptions, a lack of clarity about how change processes unfolded and insufficient attention being given to the sequence of changes necessary for long-term goals to be reached (O’Flynn, 2012). Theory of Change thinking has progressed rapidly since then, and is becoming increasingly popular.

A Theory of Change approach to planning and evaluation is increasingly being considered an essential practice for many organisations, programmes and projects (INTRAC, 2015). ToC includes an articulation of how change happens in a particular context, clarification of an organisation and its partners’ roles in contributing to change, and the definition and testing of critical assumptions. Theory of Change can be seen as an “on-going process of discussion-based analysis and learning that produces powerful

insights to support programme design, strategy, implementation, evaluation and impact assessment, communicated through diagrams and narratives which are updated at regular intervals" (Vogel, 2012, p5). It is, hence, often depicted as a visual roadmap, outlining the sequence of events, including inputs, activities, outputs, outcomes, and long-term impacts, to provide a holistic understanding of the change process. (Weiss, 1995).

Why it can be preferred over other approaches:

- **Clarity and Transparency:** It helps stakeholders define their intended outcomes and understand the connections between their efforts and the ultimate impact, fostering clarity and transparency in project goals (Weiss, 1995).
- **Adaptability:** The Theory of Change framework allows for ongoing adaptation, enabling projects to modify strategies as necessary based on real-time data and evaluation results.
- **Complexity Management:** It acknowledges and manages the complexity inherent in social change initiatives by breaking down the change process into manageable components (Cousins et al., 2008).

6.3.3.2. Summarizing the steps of designing a Theory of Change

The practical steps to take in using the theory of change as an impact assessment tool are as follows:

- Initiating the identification of the Theory of Change
- Designing of the impact map
- Identifying key indicators to measure change
- Data collection to understand change (the difference between before and after the intervention/Project activities)
- Measuring/identifying impact

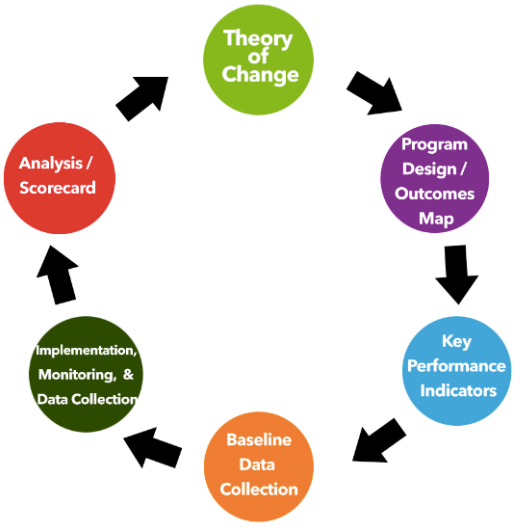

Figure 17: Steps of designing a Theory of Change

6.3.3.3. Designing an Impact Map

i. What is an impact map?

Theory of Change is a comprehensive description and illustration of how and why a desired change is expected to happen in a particular context (theoryofchange.org). It is focused, in particular, on mapping out or "filling in" what has been described as the "missing middle" between what a programme or change initiative does (its activities or interventions) and how these lead to desired goals being achieved. It does this by first identifying the desired long-term goals and then works back from these to identify all the conditions (outcomes) that must be in place (and how these related to one another causally) for the goals to occur. These are all mapped out in an Outcomes Framework (or an impact map). The impact map then provides the basis for identifying what type of activity or intervention will lead to the outcomes identified as preconditions for achieving the long-term goal. Through this approach, the precise link between activities and the achievement of the long-term goals are more fully understood. This leads to better planning, in that activities are linked to a detailed understanding of how change actually happens. It also leads to better evaluation, as it is possible to measure progress towards the achievement of longer-term goals that goes beyond the identification of programme outputs.

ii. Before designing the impact map

Before starting impact mapping, three key prior steps are proposed, which are necessary for the effectiveness of the impact assessment. These are: identifying the scope of the impact assessment, identifying the beneficiaries and the stakeholders and deciding how to involve them in the process.

Step 1: Establishing scope of the impact assessment

The scope of an impact assessment is a statement about the boundary of why we are conducting the analysis, what resources are available, and define the priorities for measurement (Muir and Bennett, 2014). This stage will ensure that what is being proposed is feasible. Some of the issues to consider are:

1. The purpose – Why do we want to conduct the assessment; are there specific motivations driving the work, such as strategic planning or funding requirements?
2. Audience – Who are we conducting the analysis for? How will we communicate with our audiences?
3. Resources – What resources such as staff, time or money will be required? Are these available?
4. Who will carry out the work?
5. The range of activities on which to focus
6. The period of time over which the intervention will be delivered
7. Will the analysis be a forecast or an evaluation? A forecast impact assessment will forecast what the impact would be, when the project (or the intervention) will be undertaken; while, an evaluation constitutes of actually evaluating the impact already created.

Step 2: Identifying the beneficiaries and stakeholders

In this step, it is necessary to identify who is affected by our activity, in other words, who are our beneficiaries. The beneficiaries can be individuals, patients, marginalised groups and community members who are affected by our activity.

Meanwhile, the second question to consider is who has an effect on our programme or Project? Stakeholders can be local governments, educational managers, policy-makers, funders, and volunteers to conduct the activity, or members of Community of Practice (CoPs) in the case of the BioGov.net Project.

In order to assess change, it is necessary to include in the study, all beneficiaries that are expected to experience material changes as a result of our activities (i.e., relevant and significant outcomes) (Nicholls et al., 2012).

In the literature, and across different sources of impact assessment, there are readily available beneficiary groups identified, which can facilitate identifying our own beneficiaries. Below table shows an example of some individuals that can fall under the category of marginalised groups.

Table 5: An example of Beneficiary Groups

An example of Beneficiary Groups
People experiencing long term unemployment
Homeless people
People living in poverty and/or financial exclusion
People with addiction issues
People with long-term health conditions/life threatening or terminal illness
People with learning disabilities
People with mental health needs
People with physical disabilities or sensory impairments
Voluntary carers
Vulnerable parents
Vulnerable children (including looked after children)
Vulnerable young people and NEETs
Older People (including people with dementia)
Ex/Offenders
People who have experienced crime or abuse
Individuals
Young people
Parents

Source: Big Society Capital Outcomes Matrix (https://www.goodfinance.org.uk/impact-matrix)

Deciding how to involve the beneficiaries and the stakeholders.

Involving the stakeholders and beneficiaries in our assessment is crucial. This is because, involving them can help understand more about the strengths and weaknesses of the activities you are offering (and hence, analysing). Collecting information from beneficiaries can be through workshops, face-to-face interviews, and facilitates focus groups, while in some cases online questionnaires or communication via an email could be sufficient.

Collecting information directly from our beneficiaries is the preferred method; However, lack of time or resources may mean that some information need to come from existing research, or there may be simply beneficiaries we cannot involve, such as future generations. In this case, it may be necessary to identify stakeholders, who can speak on their behalf (e.g., educators, policy-makers).

iii. Designing the impact map

Once these three steps are undertaken, then the impact map can be designed. In filling out this impact map, New Economics Foundation (NEF) (https://www.nefconsulting.com/) proposes a participatory approach to follow. They propose the execution of a Stakeholder Impact workshop where the impact map can be filled in collaboration with the participation of key beneficiaries and stakeholders (in this way we will make sure to include all key aspects in our impact map).

The main steps to designing an impact map are the following: inputs, outputs, outcomes and impacts. This relationship between input, output and outcomes is also known as a logic model. Understanding how your interventions through inputs, outputs and outcomes make a difference in the world/society and how these advance your mission (or, how they create impact) is your theory of change.

The below table shows what an impact map template can look like:

Theory of Change Model Template

The business and/or social problem we are solving is…

Inputs	Processes	Outputs	Outcomes	Impact

Narrative

Numbers

Project/Initiative work

Project/Initiative intended results

Planet B

The below table meanwhile, shows how the impact map can be filled.

Table 6: How can the impact map be filled-in

Stakeholders	Input	Activity	Output	Outcome	Impact
People who affect what you do or are affected by what you do. Among others, this would include staff, volunteers, beneficiaries, funders and customers.	The resources you need to manage the project. This might include time, money, staff, and other assets such as buildings.	The things you do to effect change in people, the community, or the environment. What does your day-to-day work involve, and what service do you provide?	The immediate results of what you do or how you do it. Usually outputs show that people receive something (e.g. x hours of training), learn something, or take part in something as a direct result of your activities.	Longer-term changes that are wholly or partly attributable to your outputs. Outcomes are less easy to count, but are more to do with the reason why you do what you do. Improvements in someone's confidence or employability are good examples.	One definition of impact is "the outcome less what would have happened anyway". If you helped to get ten people a job, for example, how many do you think would have got a job anyway without the intervention? The difference is your impact.

Source: New Economics Foundation, Investing for Social Change Report (https://www.nefconsulting.com/wp-content/uploads/2017/09/sroi-valuing-what-matters.pdf)

Step 1: Defining Inputs

Inputs are resources needed to deliver outputs (or to perform the activities) which result in outcomes for beneficiaries. These inputs could be monetary (in terms of cash/money) or non-monetary (volunteer time). It is necessary to include both while calculating the total cost of delivering the services. In other words, inputs are all the resources needed, to complete the task/project/intervention or the activity (e.g., people, places, funding etc.).

The value of the financial inputs, especially for a single grant or a contract, is usually easy to establish, although it is important to include the full cost of delivering the activities (financial and non-financial assets).

Step 2: Defining Outputs

Outputs are the direct and tangible products from the activity undertaken or project implemented. They are usually countable (e.g. people trained, trees planted, products sold, workshops conducted). To give an example, if an organization provides food and shelter to homeless people, the output of their activity would be the number of people they have provided with food and shelter.

Step 3: Defining Outcomes

Outcomes are the observed effects of the outputs. In other words, outcome is the change that occurs as a result of an activity (e.g. improved knowledge of training participants) (Wood and Leighton, 2010). Sometimes it takes years for outcomes to take place, but there may be observable changes along the way (Nicholls et al., 2012). Therefore, it is important to clarify the timeframe of the outcomes of the programme/activities. Outcomes can be divided as short term (6 months- 1 year), medium term (1 - 3years) and long term (3-5 years). Long term outcomes are often described as "impacts" (Nicholls et al., 2012).

It is important to carefully distinguish the difference between outputs and outcomes, as these may be confusing. To give an example of their difference: if a project aims to increase the accessibility of mental day care services, the output would be the number of people having access to mental day care service; and the outcome would be improvement in the health and well-being of individuals using these services.

When identifying the outcomes, it is critical to follow the SMART approach, meaning that the outcomes identified should be simple, measurable, action-oriented, realistic and timed (Bhatt and Hebb, 2013).

Outcomes can be social, economic or environmental outcomes (Wood and Leighton, 2010). Examples of social outcomes are well-being, increased health, increased education or learning; environmental outcomes can include waste, biodiversity loss or related water use; and economic outcomes can include increased employment (new jobs, sustaining jobs), increased businesses, increased economic output and so on).

At this stage, the most important point is to include in the assessment only what is material for the activity/project (Wood and Leighton, 2010). Materiality can be checked by asking these questions: 1) Is it relevant? Are the changes that the beneficiaries experience relevant to the ability to create value? 2) Are they significant? What's the relative magnitude of the change that the beneficiaries experience? 3) Are they valuable? Are the outcomes valuable to the beneficiaries? Using only what is material in the assessment leads to being realistic about the impact created and prevents us from overestimating the impact.

Below table provides an example of some of the outcome groups. These (in addition to other examples) will be evaluated carefully when executing the impact assessment for the BioGov.net project.

Table 7: Examples of outcomes which would fall within outcome groups

Outcome Groups	Example of change at the individual level	Example of change at the Community, Sector & Society level
Employment, training and education	The person is in suitable employment, education, training or caring work.	Jobs, education and training opportunities are available for everyone.
Housing and local facilities	The person has a suitable and secure place to live, affordable utilities and access to local facilities and transport.	Investment and availability of different forms of tenure ensure that all housing needs can be met now and in the future.
Income and financial inclusion	The person has sufficient income to meet their essential needs and access to suitable financial products and services.	Everyone reaches an optimum level of income for health and well-being, and income differentials support social cohesion.
Physical health	The person looks after their health as well as possible. The person recovers as quickly as possible, or if recovery is not possible, their health and quality of life are maximised.	Good general physical health across the population.
Mental health and well-being	The person has a sense of well-being. Those who experience mental illness recover where possible and lead a positive and	Good mental well-being and life satisfaction across the population.

Outcome Groups	Example of change at the individual level	Example of change at the Community, Sector & Society level
	fulfilling life even if symptoms remain.	
Family, friends and relationships	The person has a positive social network that provides love, belonging and emotional practical support.	A society that supports and encourages families and/or good personal relationships.
Citizenship and community	The person lives in confidence and safety, and free from crime and disorder. The person acts as a responsible and active citizen and feels part of a community.	Stronger, active, more engaged communities.
Arts, heritage, sports and faith	The person finds meaning, enjoyment, self-expression and affiliation through informed participation in the arts, sport and/or faith.	A thriving cultural landscape with high levels of participation and engagement.
Conservation of the natural environment	The person has an appreciation of the natural environment and plays their part in protecting it, including reducing their carbon footprint.	The natural environment is protected for the benefit of people, plants and animals and habitats, today and in the future.

Source: Big Society Capital Outcomes Matrix (https://www.goodfinance.org.uk/impact-matrix)

Step 4: Identifying Outcome Indicators

Outcome indicators are important because they provide us ways of knowing if the outcome identified (in the previous heading) has happened and by how much.

For example, the outcome statement for an organization is to reduce long term social isolation amongst youth with autism. To show the change this organization is making, it will need to develop some indicators that capture reduced isolation. These outcome indicators could be: Whether participants are taking part in new activities (e.g. taking up new sports or hobbies, visiting new places); Whether participants report having more friends; Level of social skills reported by participants; Whether participants are accessing relevant public services that they had not used in the past, like public transport.

In this context, the impact assessment will involve both objective and subjective indicators; and it is of utmost importance to balance these or to triangulate that in a way to make sure that the results are reliable. Subjective ones are measurements that relate to an individual's perspective, feelings, beliefs and desires, while objective ones are measurements that is unbiased by and individual's perspective. For example, an individual reporting "feeling better" or "improved health" (through an interview or survey) could be regarded as a subjective indicator; while an objective indicator would be the "blood pressure (or any related test result)", or the number of visits to the General Practitioner (GP) concerning health (Bhatt and Hebb, 2013). Below are some of the different ways of collecting information about indicators:

Table 8: Different ways of collecting information about indicators

Current data sources	Primary data capture	Secondary data capture
- Partnership agreements - Membership data - Partners' data (e.g. registrations for services) - Data reported to funders	- Event registration forms - Surveys - Focus groups - Interviews - Objective observed data from events (such as number of attendees) - Subjective event data (e.g. observations, games)	- Consensus data - Regional reports and previous surveys - Well-being scores - Media analysis

In this regard, there can be some options to select from. It is possible to use already existing scales (such as the well-being scale, e.g. Short Warwick-Edinburg Well-being Scale, ONS Well-being questions, Social Trust question). Or another option is to adapt existing indicators (e.g. well-being indicators). Or another option can be to design own indicators.

Meanwhile, using existing, already validated indicators from quality sources can be helpful to obtain reliable indicators and population or other benchmark data. There is a number of existing indicator frameworks or banks that can be drawn on for this (if and when the indicator sets are relevant for the activity we are undertaking in the scope of our activities/project).

IRIS (Impact Reporting and Investing Standards) can be regarded as one of those well-known and reliable indicator data. IRIS metrics are used to define, track and report the social, environmental and financial performance of the capital used for impact investing. It was launched in 2008 by Acumen Fund, B Lab, and the Rockefeller Foundation, and is now managed by the Global Impact Investing Network (GIIN). IRIS provides a library of social, environmental and financial performance metrics with standard definitions that help organizations to refine their current performance tracking. It standardizes the way mission-driven enterprises use data to communicate their impact.

Other examples of data banks and frameworks include: OECD Environmental Data (http://www.oecd.org/env/indicators-modelling-outlooks/data-and-indicators.htm) and Indicators or OECD Better Life Initiative (http://www.oecd.org/general/compendiumofoecdwell-beingindicators.htm).

Another important point is to understand whether there are existing benchmarks (e.g. population data) or do you need to establish the benchmark? In the case that there are not existing benchmarks (to compare before and after, in other words, the change), it will be necessary to establish a benchmark (e.g. intervention groups, pre-during and post project/activity; and other standards).

However, it is often the case that our own beneficiaries are often the best people that can help us identify indicators (through asking them how they know that change has happened for them). In the aforementioned example, the organization relies on participants' feedback to know if their social activities have increased. Government websites can also provide information on changes in the use of public services.

Step 4: Data collection to understand change

Once the impact map is designed, data collection takes place, for those organizations, who actually want to measure their impact. There are many different methods for collecting data for understanding change/impact. Table below provides examples of possible (existing and new) data sources (Peersman, 2014).

Table 9: Examples of possible data sources for the impact assessment

Option	What might it include?	Examples
Retrieving existing documents and data	· Formal policy documents, implementation plans and reports · Official statistics · Programme monitoring data · Programme records	· Review of programme planning documents, minutes from meetings, progress reports · The political, socio-economic and/or health profile of the country or the specific locale in which the programme was implemented
Collecting data from individuals or groups	· Interviews – key informant, individual, group, focus group discussion, projective techniques · Questionnaires or surveys – email, web, face-to-face, online · Specialised methods (e.g., dotmocracy, hierarchical car sorting, seasonal calendars, projective techniques, stories	· Key informant interview with representatives from relevant government departments, non-governmental organizations and/or the wider development community · Interviews with programme managers, programme implementors, and those responsible for routine programme monitoring · Interviews, group discussions (such as focus groups) and/or questionnaires with programme participants
Observation	· Structured or non-structured · Participant or non-participant · Participatory or non-participatory · Recorded through notes, photos or video	· Observations of programme activities and interactions with participants
Physical measurement	· Biophysical measurements · Geographical information	· Infant weight · Locations with high prevalence of HIV infections as examples

Depending on the kind of project or programme, a mix of different data collection methods can be used. Overall, using a mixed methods evaluation, using both qualitative and quantitative methodologies would be preferred. Yet, the particular analytical framework and the choice of specific data analysis methods will depend on the purpose of the impact evaluation and the type of key evaluation questions (KEQs) (Peersman, 2014). Such that, a) Descriptive questions require data analysis methods that involve both quantitative data and qualitative data; b) Causal questions require a research design to address attribution (i.e., whether or not observed changes are due to the intervention or external factors) and contribution (to what extent the intervention caused

the observed changes); and c) Evaluative questions require strategies for synthesis that apply the evaluative criteria to the data to answer the KEQs (Peersman, 2014).

At this stage, once change is understood/identified through a variety of ways (as described above), there can be two different ways to proceed: One is to use a narrative or a story-telling approach to explain to the targeted audience, this change/impact that has been identified; and second, quantifying the change/impact. Both approaches are valid; hence, the decision may depend on the type of project, why the impact assessment is prepared, who is the target audience of the impact assessment and so on. In case, a quantification method is chosen, we present under the next heading, the approach we propose for the purposes of our study, the Social Return on Investment (SROI) methodology.

6.3.4 The (optional) additional step after the Theory of Change – Quantifying the Impact: Social Return on Investment (SROI)

i. What is SROI?

Social Return on Investment (SROI) is a principles-based method for measuring the economic, environmental and social value of your mission relative to the resources invested in it (social metrics primer). It moves from assessing outcomes to measuring the impact of your activities. It is possible to use SROI to evaluate impact on stakeholders, identify ways to improve performance, and enhance the performance of current investments. SROI places high importance on stakeholders' views and puts financial “proxy” values on all the impacts identified by stakeholders that do not typically have market values. When measuring impact, it is important not to claim responsibility for things that might have happened anyway (without our specific project, activities or interventions). Using SROI techniques helps address this problem.

ii. Why would we want to use SROI?

Among a wide array of available Impact Assessment Approaches, the Social Return on Investment (SROI) stands out as particularly well-suited for measuring the impact created by a Community of Practice (CoP) in the field of bioeconomy. This choice is underpinned by several reasons that render SROI a comprehensive methodology for assessing the multifaceted impacts of the BioGov.net project through the activities of CoPs:

1. A Holistic Approach to Impact Assessment: SROI offers a holistic perspective on impact assessment by integrating the principles of the theory of change. It facilitates the development of a systematic and comprehensive framework to understand how inputs, activities, and outcomes within a CoP contribute to achieving desired social and economic objectives (Nicholls et al., 2012). This alignment with the theory of change allows for a nuanced analysis of the mechanisms through which a CoP influences the bioeconomy, uncovering both direct and indirect pathways of impact.

2. Quantification of Change: SROI is distinctive in its ability to quantify social and economic changes brought about by a CoP's activities (Nicholls et al., 2012). In the context of bioeconomy education and training, this quantification is significant. It permits the assignment of monetary values to both intended and unintended outcomes, thereby providing a more tangible and actionable understanding of the impact. This feature of

SROI enables stakeholders to make informed decisions, allocate resources efficiently, and prioritize initiatives that yield the greatest value to society (Bryson et al., 2014).

3. Stakeholder Engagement and Participation: SROI inherently encourages stakeholder engagement and participation throughout the assessment process (Fitz-Gibbon, 2016). Given that CoPs rely on the collective wisdom and involvement of their members, SROI's participatory approach aligns with the values and principles of CoPs. It allows for the inclusion of diverse perspectives, ensuring that the assessment captures the multifaceted impact of the CoP in the bioeconomy field.

iii. How to conduct the SROI?

Once the indicators are identified and data is collected to identify/understand change/impact, then the following steps can be taken if the impact is preferred to be quantified (by the project team).

Step 1: Establishing how long the outcomes (identified) last

The effect of some outcomes will last longer than others. Some outcomes depend on the activity continuing and some do not. When it is believed that the outcome will last after the activity has stopped, then it will also continue to generate value (Wood and Leighton, 2010). The timescale used is generally the number of years you expect the benefit to endure after your intervention. This is referred to as the duration of the outcome or the benefit period.

There are however some aspects to consider, in deciding on this time period. It may be necessary to have longitudinal data to support the duration of the outcome. In the case that this data is not available, it may be necessary to make a case based or other research. The longer the duration of the impact, the more likely it is that the outcome will be affected by other factors (that are external to our project and activity), and the less credible your claim that the outcome is down to you (this issue can be tackled by drop-offs, which is detailed below).

Step 2: Valuing the impact

The process of valuation is often referred to as monetisation because a monetary value is assigned to things that do not have a market price. In order to do this, “proxies” are used to assign a value to outcome indicators. However, it is important to note that all value is, in the end, subjective. Markets have developed, in large part, to mediate between people’s different subjective perceptions of what things are worth. In some cases, this is more obvious than in others (Muir and Bennett, 2014).

There are several techniques available in order to quantify impact (Nicholls et al., 2012), and below, some of these are detailed, namely the stated preference and the travel cost/time value method (Muir and Bennett, 2014):

In Stated preference and Contingent valuation, we ask people directly how they value things either relative to other things or in terms of how much they would pay to have or avoid something. This approach assesses people’s willingness to pay, or accept compensation, for a hypothetical thing. Another form of revealed preference – hedonic pricing – builds up a value from the market values of constituent parts of the service or good being considered. This method could be used to value environmental amenities that affect the price of residential properties. For example, it can help us value clean air

(and the cost of pollution) by estimating the premium placed on house prices in areas with clean air (or the discount on otherwise identical houses in polluted areas). Another example might be to look at wage differentials that people require to take on certain risks, to calculate how they value different aspects of their lives.

Another approach recognises that people are generally willing to travel some distance, or give up some time to access goods and services on which they place a value. This inconvenience can be translated into money to derive the estimate of the benefits of those goods and services. This is called the travel cost/time value method.

The below table demonstrates some examples of how proxies have been used in past studies (Nicholls et al., 2012). All in all, this part is a challenging part, as it is a subjective process. Hence, being transparent and explaining in detail the justification of each proxy would prove to be necessary. Involving stakeholders/beneficiaries in the process would also make the work more credible.

Table 10: Example of proxies (Source: Nicholls et al., 2012)

Stakeholder	Outcome	Indicator	Possible Proxies
Person with a mental health problem	Improvement in mental health	- Amount of time socialising - Extent to which participants engage in new activities - Level of use of mental health services	- Cost of membership of a social club/network - Percentage of income normally spent on leisure - Cost of counselling sessions
Local community	Improved access to local services	- Take-up of those services, and by whom	- Savings in time and travel costs of being able to access services locally
Local community	Improved perception of the local area	- Residents report improvements in the local area	- Change in property prices - Amount spent on home improvements
Person with a physical health problem	Improved physical health	- Number of visits to doctor - Extent of improvements in health (self-reported) - How of they exercise	- Cost of visiting a doctor - Cost of health insurance - Cost of gym membership
The environment	Less waste	- Amount of waste going to landfill - Level of carbon emissions	- Cost of landfill charges - Cost of CO^2 emissions
Care leaver	Reduced homelessness	- Access to housing upon leaving care - Satisfaction with appropriateness of housing	- Rent - Cost of hostel accommodation

Step 3: Establishing impact

Establishing impact is important as it reduces the risk of overclaiming and means that your story will be more credible. Establishing impact will require taking into account certain aspects (and making a few calculations).

1 – Deadweight and displacement
For example, in the case that a programme created some increase in the local economic activity, the researchers would need to investigate how much of the local economic growth was due to the activity and how much due to wider economic changes. To calculate deadweight, reference can be made to comparison groups, or benchmarks, or

the same group of people that are affected by the activity/project. Since a perfect comparison is not possible, measuring deadweight will always be an estimate.

2 – Attribution
Attribution is an assessment of how much of the outcome was caused by the contribution of other organisations or people. Attribution is calculated as a percentage (i.e. the proportion of the outcome that is attributable to your activity/project). It shows the part of deadweight for which you have better information and where you can attribute outcome to other people or organisations. Numerous initiatives may take off at the same time for the same cause, and it is important to distinguish between the effect of these diverse activities.

3 - Drop-off
When the impact of the project/activity is expected to last for some years, it is necessary to take into account that the impact will decrease over the years. Drop-off is used to account for this and is only calculated for outcomes that last more than one year. Drop-off is usually calculated by deducting a fixed percentage from the remaining level of outcome at the end of each year. For example, an outcome of 100 that lasts for three years but drops off by 10% per annum would be 100 in the first year, 90 in the second (100 less 10%) and 81 in the third (90 less 10%).

4 – Calculating the impact
The impact attained (or expected to be attained) from each outcome can be calculated as follows:

- Financial proxy multiplied by the quantity of the outcome gives you a total value. From this total you deduct any percentages for deadweight or attribution.
- Repeat this for each outcome (to arrive at the impact for each)
- Add up the total (to arrive at the overall impact of the outcomes you have included)

4 – Calculating the SROI
In case an SROI value is needed, then this is calculated by dividing the Net Present Value of the impact calculated (value of outcomes), divided by the value of the investment made into the project (value of inputs).

6.4 A Preliminary Template for the BioGov.net Project – Impact Assessment of activities of CoPs

6.4.1. Starting with the Theory of Change for the BioGov.net CoP activities

6.4.1.1. The Scope of the Project

Scope of BioGov.net CoP Activities

A community of practice is a group of people who have an interest, passion or concern in common and come together to learn more about it. As the name suggests, communities of practice collaborate and communicate, sharing knowledge between one another as a community. They have a shared identity that's built around their common interest. **In BioGov.net** Communities of Practice are understood as regional co-creation labs bringing together the different stakeholder groups in a multi-stakeholder approach. The group size should be around 15 people.

As part of the project, the scope of the work foreseen by the CoPs are as follows:

- setting up multi-stakeholder teams in each partners country;
- analysing knowledge gaps, barriers and facilitators, identify actors and offers in the bio-based educational ecosystem;
- identifying good practises and highlight success stories (case studies);
- establishing consultation mechanisms for the preparation of guidelines;
- providing recommendations to national bioeconomy policy;
- closely working together with the Innovation Groups to co-create input on the Terms of Reference for training methodology design and give feedback.

Next steps and the way forward:

While, this scope is currently agreed upon the Project partners, the scope and the actions of the CoPs need to be detailed, specified more and refined, in order to be able to conduct a more robust and precise Impact Assessment. As, in the case of Impact Assessment approach, this exercise would also help enhance the management plan of the Project and allow Project implementors to assess and evaluate the quality and effectiveness of the Project plan, in each step of the way (and make adjustments if needed in an iterative way). This work is proposed to be conducted in a collaborative way by the Project partners.

The timing of the Assessment: The impact assessment final report is planned to be finalised and submitted in m36 of the project. The UNIBO team proposes to refine the CoP activities and their intended results by the project partners between the months 18-20 of the project, so that the next steps of the Impact Assessment can be planned and executed.

Another decision to be made by the Consortium is to decide if a Predictive or Actualised Impact Assessment is wanted. In order measure already incurred impact, the activities of the CoPs will need to be finalised. For Predictive, it will make a “theory” or “estimate” of what could potentially happen if and when all activities of the Project are to be actualised (at a future date). While this approach is more theoretical and is only an estimate of the impact that “can be created” in the future, the Predictive approach may be more appropriate for the case of the BioGov.net CoP activities. This is because the CoP activities are foreseen to take place until the month 36 of the Project (in an ongoing way), while the impact of the actions are foreseen to be incurred beyond the life of the Project. This decision, however, will be made once the scope and the aim of the Impact assessment is clarified and refined by the Consortium Partners.

6.4.1.2. Involving Stakeholders/beneficiaries

In the time of writing of this Report, in month 16-17, although the current stage in each of the partner countries are somewhat different, until now, each partner has completed (or is about to complete) a Focus Group workshop, a Co-creation workshop and the first Co-Design workshop. While some countries have established a clearer member/membership structure for their CoPs, the others are still working to establish them. Hence, the process of involving stakeholders is still ongoing at this stage of the project. While CoP members constitute the most important stakeholders of the BioGov.net project, it will also be important to involve beneficiaries of the project as well (when and if possible).

However, firstly, it would be necessary to define in a clearer way, who are the beneficiaries of the BioGov.net Project, by the Consortium Partners. While the BioGov.net project, eventually targets adult and lifelong learners or professionals of the Bioeconomy sectors, as well as marginalised groups (also to be defined better in the case of each partner country), it is also the case that the Guidelines that are to be prepared in the scope of the project also targets Policy and decision-makers in the Bioeconomy sectors. Hence, a clarification in this context is proposed for the purposes of an Impact Assessment.

Below we can see the preliminary template filled (to provide an example) for the first column, that is, stakeholders. Please note that the template has been filled in a preliminary way and only to provide a sense and an idea of what it may look like when the exercise is completed. In this version of the report, the aim has been to only provide a general overview of the framework to be used; so, the exercise seen below should only be considered as a draft.

6.4.1.3. Starting with the (preliminary Impact Mapping)

i. Stakeholders/beneficiaries

Stage 1		Stage 2		
Who and how many?		**At what cost?**	**Outputs**	**What changes?**
Stakeholders		**Inputs**		**Outcomes**
				Outcome description
Who do we have an effect on? / Who has an effect on us?	How many in group?	What will/did they invest and how much (money, time)?	Summary of activity in numbers.	What is the change experienced by stakeholders?
CoP members mobilised Beneficiaries (adult learners and lifelong learners in bioeconomy in 8 countries reached) Policies affected (to be identified/assessed) Who else is involved in the impact created?	15-30 per each country Numbers will be determined Will be studied further To be identified/ determined by the Consortium partners			

ii. Inputs

Inputs are what is invested in the project to realise the foreseen activities. It can be in kind or in cash (or both). In the case of BioGov.net Project, the activities of the CoPs are enabled through the project budget. Which amount of the budget is allocated to implementation of all activities of the CoPs and all activities targeted to create an impact on the target audiences need to be determined in order to calculate the inputs.

Below the column allocated for the inputs is filled (to provide an example).

Stage 1		Stage 2		
Who and how many?		At what cost?	Outputs	What changes?
Stakeholders		Inputs		Outcomes
				Outcome description
Who do we have an effect on? / Who has an effect on us?	How many in group?	What will/did they invest and how much (money, time)?	Summary of activity in numbers.	What is the change experienced by stakeholders?
CoP members mobilised Beneficiaries (adult learners and lifelong learners in bioeconomy in 8 countries reached) Policies affected (to be identified/assessed) Who else is involved in the impact created?	15-30 per each country Numbers will be determined Will be studied further To be identified/ determined by the Consortium partners.	To be determined during the execution of the impact assessment: The amount/ proportion of the total Project budget that is used up in order to implement the necessary activities shall be calculated.		

iii. Outputs

The outputs are the summary of activities. These are the activities through which the project creates impact. Below it is possible to see the column for outputs filled (to constitute an example). These are some of the foreseen outputs of the BioGov.net project that involves the CoPs. Please note that this table is in preliminary state. During the execution of the impact assessment, the output list will be refined.

Stage 1		Stage 2		
Who and how many?		At what cost?	Outputs	What changes?
Stakeholders		Inputs		Outcomes
				Outcome description
Who do we have an effect on? / Who has an effect on us?	How many in group?	What will/did they invest and how much (money, time)?	Summary of activity in numbers.	What is the change experienced by stakeholders?
CoP members mobilised Beneficiaries (adult learners and	15-30 per each country	To be determined during the execution of the	• Identification of stakeholders in bioeconomy in each of the 8 regions	

Stage 1		Stage 2		
Who and how many?		**At what cost?**	**Outputs**	**What changes?**
Stakeholders		**Inputs**		**Outcomes**
				Outcome description
Who do we have an effect on? Who has an effect on us?	How many in group?	What will/did they invest and how much (money, time)?	Summary of activity in numbers.	What is the change experienced by stakeholders?
lifelong learners in bioeconomy in 8 countries reached) Policies affected (to be identified/assessed) Who else is involved in the impact created?	Numbers will be determined Will be studied further To be identified/ determined by the Consortium partners.	impact assessment: The amount/ proportion of the total Project budget that is used up in order to implement the necessary activities shall be calculated.	• 8 co-creation labs (CoPs) established in 8 countries, including a dedicated strategy for inclusion of marginalized groups in training concepts development • Methodology for creation of feedback loops (from the society to policy makers) established • Innovative governance models in sustainable bioeconomy ecosystems proposed • Bioeconomy needs in form of job profiles identified • Guidelines for governance framework prepared • Guidelines for training and mentoring prepared • Validation of guidelines executed in 8 countries • 8 focus groups conducted • 8 co-creation workshops conducted • 16 co-design workshops conducted • 8 regional policy workshops conducted • Communication of activities, dissemination of results • Number of marginalized individuals reached through the project • Number of people that took part in the workshops • Number of policy-makers reached that are more informed about bioeconomy education and training as a results of the CoP activities	

Please also note that currently, some outputs put in the table allow the double-counting of certain aspects, which should not be the case in the final impact mapping. During the execution of the impact assessment, all these important considerations will be considered.

iv. Outcomes

Outcomes are the observed effects of the outputs. In other words, outcome is the change that occurs as a result of an activity. In the scope of the Impact Assessment study, the

outcomes will be identified because of comprehensive work. An additional consortium workshop, where project partners may discuss some of these issues in detail, may be useful. In addition, a beneficiary workshop, in which the perspective of target audiences can be gathered, may be necessary in the identification of outcomes. These decisions will be made along the impact assessment process.

However, for the purposes of this report, below a list of potential outcomes are listed (to provide an example). Please note that these are preliminary, and the table will be filled-in during the execution of the impact assessment.

Stage 1		**Stage 2**		
Who and how many?		**At what cost?**		**What changes?**
Stakeholders		**Inputs**	**Outputs**	**Outcomes**
				Outcome description
Who do we have an effect on? Who has an effect on us?	How many in group?	What will/did they invest and how much (money, time)?	Summary of activity in numbers.	What is the change experienced by stakeholders?
CoP members mobilised Beneficiaries (adult learners lifelong learners in bioeconomy in 8 countries reached) Policies affected (to be identified/assessed) Who else is involved in the impact created?	15-30 per each country Numbers will be determined Will be studied further To be identified/ determined by the Consortium partners.	To be determined during the execution of the impact assessment: The amount/ proportion of the total Project budget that is used up in order to implemente the necessary activities shall be calculated.	• Identification of stakeholders in bioeconomy in each of the 8 regions • 8 co-creation labs (CoPs) established in 8 countries, including a dedicated strategy for inclusion of marginalized groups in training concepts development • Methodology for creation of feedback loops (from the society to policy makers) established • Innovative governance models in sustainable bioeconomy ecosystems proposed • Bioeconomy needs in form of job profiles identified • Guidelines for governance framework prepared • Guidelines for training and mentoring prepared • Validation of guidelines executed in 8 countries • 8 focus groups conducted • 8 co-creation workshops conducted • 16 co-design workshops conducted • 8 regional policy workshops conducted • Communication of activities, dissemination of results • Number of marginalized individuals reached out by the project	• Improved knowledge and awareness on bioeconomy • Knowledge exchange, transfer, mutual learning opportunities and dialogue among regional bioeconomy actors improved. • Improvement in skills and competencies of community members • Improved/advanced bioeconomy initiatives as a result of collaborations and joint projects initiated within the community • Change established in mentoring policy or practice (e.g. policy changes, industry practices, or curricular developments that can be attributed to the community's

			• Number of people that took part in the workshops • Number of policy-makers reached that are more informed about bioeconomy education and training as a results of the CoP activities	advocacy or recommendations) • (More broad outcomes – that would require more time: Improved education and training systems in bioeconomy; or, increased employability of marginalised groups in bioeconomy sectors)

Please also note that currently, some outcomes put in the table allow the double-counting of certain aspects, which should not be the case in the final impact mapping. During the execution of the impact assessment, all these important considerations will be taken into account.

Once the outcomes are defined during the impact assessment study, a careful exercise should also be conducted in order to understand how long the effects of each outcome would last. Some outcomes would have longer effects than others and identifying these is crucial for the impact assessment process.

6.4.1.4. Following the impact mapping

Following the impact mapping, as detailed in the previous section of this Report, certain important steps will need to be taken, including:

- Identifying indicators to measure the outcomes
- Data collection to understand change
- Valuation of impact
- (Optional) quantification of impact

While it does not make much sense to provide hypothetical examples at this preliminary stage, before the initiation of the impact assessment, below we can see a few templates that will need to be filled during this exercise (to provide an insight/example of the upcoming tasks in the scope of the assessment.

How much?			**How long?**	
Indicator and source	Quantity (scale)	Amount of change per stakeholder (depth)	Duration of outcomes	Outcomes start
Describe how you will measure the described outcome (including any sources used)	Number of people experiencing described outcome.	Describe the average amount of change experienced (or to be experienced) per stakeholder.	How long (in years) does the outcome last for?	Does the outcome start in Period of activity or in the Period after?

How valuable?	
Express the relative importance (value) of the outcome	
Valuation approach (non-monetary)	Weighting
Describe the approach used to establish the relative importance (value) of each change to outcomes, e.g. using a scale of 1 to 10, or by asking how much more important changes are in relation to the lowest rated/ranked change. The approach can use equal or unequal weighting. (N.B. If your analysis uses monetary valuation of outcomes, please use the SROI Value Map tab of this spreadsheet).	How important is this outcome to stakeholders? (e.g. on a scale of 1-10) (N.B. To make comparison between outcomes possible, your analysis should be consistent in the type of weighting used).

How much caused by the activity?				Still material?
Deadweight %	**Displacement %**	**Attribution %**	**Drop off %**	**Impact calculation**
What will happen/what would have happened without the activity?	What activity would/did you displace?	Who else contributed to the change?	Does the outcome drop off in future years?	Number of people (quantity) times value, less deadweight, displacement and attribution
0%	0%	0%	0%	0.00
0%	0%	0%	0%	0.00
0%	0%	0%	0%	0.00
0%	0%	0%	0%	0.00
0%	0%	0%	0%	0.00
0%	0%	0%	0%	0.00

6.5. Next steps and the way forward

This report provided an overview of the Impact Assessment approach and presented a literature review in order to familiarize the reader with the concept; but also, to provide a background for the approach/framework that is proposed to be followed in the BioGov.net Project's impact assessment studies. Then, a framework/approach is detailed for the impact assessment, and finally, a preliminary/draft template is presented in the last section, to provide an example of what the impact assessment exercise would look like in the scope of the BioGov.net project.

At this stage, it is important to note that the impact assessment framework/action plan that is proposed in this report will require the participation and collaboration of Consortium partners and especially of CoP leaders in each of the 8 partner countries (not only to co-create the components of the impact map, but also to collect data from stakeholders (or targeted beneficiaries) during the data collection phase).

Hence, the framework presented in this report (which represents a rather ambitious and comprehensive approach) shows a possible pathway that can be followed by the project partners. However, the scope, sensitivity, and ambitiousness of the approach, as well as what is expected and required from the impact assessment study, and whether a more detailed and accurate, or a more broad and approximate assessment is preferred, needs to be decided in a participatory and collaborative way by the project partners. In this direction, while, the detailed management plan is to be prepared in the upcoming period, below, we present the essential outlines of the strategy to be followed as a way forward between the months 18 and 28 (Nov 2023 to Sept 2025) of the Project:

- To have a discussion with the partners on what is expected from the impact assessment study and to decide on the scope of the work to be conducted,
- Have a consultation of CoP leaders and the discussion of feasible approaches in each of the 8 countries,
- To co-create the impact map together with the partners,
- Set up of the final methods with a clear allocation of responsibility,
- To prepare a detailed action plan according to the decisions made under each of the previous listed items.

Last but not least, once these decisions are made in the collaboration of project partners, a pilot study will be conducted in Italy (to showcase the necessary steps of the selected methodology to other partner countries).

7. Conclusions and next steps

This deliverable carefully described how the entire workflow of WP5 is transversally connected to the results and outcomes stemming from the other WPs, following a cascade process, and how the validation process took place through different national activities to derive regional guidelines for training and mentoring programmes in the eight EU pilot regions in which the CoPs were established (Czech Republic, Estonia, Germany, Greece, Italy, Netherlands, Portugal, Slovakia). The regional validation was in fact widely embedded during each step of the project, both in the activities carried out by the partners and when involving the stakeholders in the CoP events.

At this stage of the project, WP5 will implement activities aiming at evaluating and validating the proposed guidelines and methodologies at EU level, to derive specific recommendations for their implementation at all scales. Moreover, WP leaders will further exploit the interconnection among the tasks and ensure that each activity implemented within the WP will maximise the effort to gather all the relevant inputs from the stakeholders involved in the 8 regional CoPs. For this reason, the activities foreseen in the next months in this WP are a combination of integrated activities aiming at merging different tasks while ensuring that the specific objectives will be achieved. This is the case of the first European validation workshop (under T5.1), which will take place in spring 2024 in conjunction with the first European MML co-creation workshop (under T5.2.1), with a twofold objective: a) validate at EU level the insights stemming from regional policy and training recommendations; b) co-create with stakeholders transnational policy and training recommendations.

Following the same integrated approach, the second European MML co-creation workshop under T5.1.2 will be strictly connected to T5.3, as this will be the place to present, discuss and fine-tune with the stakeholders the impact assessment framework that will inform the final policy and training recommendations that will be integrated in D5.2.

An impact assessment approach/framework has in fact been proposed in the scope of this Deliverable. The approach/framework is expected to be decided and finalised in the collaboration and participation of Project partners. The scope, detail, and sensitivity, of the approach, as well as what is expected and required from the impact assessment study will depend on the collective decision of the partners. In this direction, while, the detailed management plan is to be prepared in the upcoming period, the next steps will include:

- a discussion with the partners on what is expected from the impact assessment study and to decide on the scope of the work to be conducted,
- a consultation of CoP leaders and the discussion of feasible approaches in each of the 8 countries,
- the co-creation of the impact map together with the partners,
- Set up of the final methods with a clear allocation of responsibility,
- a detailed action plan according to the decisions made under each of the previous listed items.
- a pilot study in Italy to showcase the necessary steps of the selected methodology to the other project partners.

Finally, WP5 leaders will organize the third yearly policy workshop (under T5.2.2) by the end of 2024-beginning of 2025 and in collaboration with the EuBioNet working group in bioeconomy education", other relevant EuBioNet projects and initiatives (also involved in T1.4), policy makers and other stakeholders, including civil society and potential members of the 8 CoPs, at European level. This third and last yearly policy workshop will have the objective to generate policy recommendations and best practice guidelines in form of Actionable Knowledge for the stakeholders and will facilitate the exploitation of the knowledge produced by BioGov.net, towards the conclusion of the project.

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9. Annex

9.4. Annex 1: First yearly policy workshop agenda

www.eubionet.eu

THE EUROPEAN BIOECONOMY NETWORK

Projects2projects

Maximise the exploitation of lessons learnt and heritage of H2020 bioeconomy projects in communication, education and stakeholder engagement to effectively kick-off the newly funded Horizon Europe ones.

Brussels | 5 October h 9:00 - 12:30 CET

Location: EC Building CDMA

Address: Rue du Champ de Mars 21, 1050 Ixelles / Elsene, Belgium

Context	The European Bioeconomy Network annual Mobilisation and Mutual learning workshop, is organized in presence as satellite event of the High Level Bioeconomy Conference, taking place in Brussels on the 6 and 7 October 2022.	

Objectives	• **Maximise the exploitation of lessons learnt and heritage of H2020 bioeconomy projects to effectively kick-off the newly funded Horizon Europe ones.**
	  ◦ Facilitate the awareness and exchange of inspirational good practices stemming from H2020 projects
	  ◦ Present the objectives of the newly funded Horizon Europe projects in bioeconomy
	  ◦ Define common action plans	

Expected outcome	• Improve the quality and impact of projects' activities for the next months, facilitating collaboration among ongoing, concluded and recently funded projects	
Format	Mobilisation and Mutual Learning workshop: • brief presentations of success stories from different projects, with a special focus on exploitable assets • walking brainstorm thematic sessions	
Organisation	EuBioNet	www.eubionet.eu
	The European Bioeconomy Network (EuBioNet) is a proactive alliance of 113 projects and initiatives dealing with Bioeconomy promotion, communication and support. The main goal of the European Bioeconomy Network is to maximise the efforts, increasing the knowledge sharing, networking, mutual learning, coordination of joint activities and events.	
In collaboration with:	Transition2Bio	https://www.transition2bio.eu/
	BIOEASTsUP	https://bioeast.eu/bioeastsup/
	BIObec	https://biobec.eu/

www.eubionet.eu

THE EUROPEAN BIOECONOMY NETWORK

	BioGov.Net	https://www.biogov.net/
Target participants	• Partners of the European Bioeconomy Network • Other EU funded projects • CBE JU/EC	
Supporting tools	The projects participating will fill beforehand a poster to provide an overview of the main objectives, tasks and timeline and attach these templates to the walls, asking to all the participants to attach a post-it with their contacts under these posters, to promote collaborations.	
Registration	The workshop is free of charge – Registration is mandatory. https://docs.google.com/forms/d/e/1FAIpQLSeizILKiZTf1mwr0QfXS-XBnLs2K4Br1AR0q5UrrE45bVpWpQ/viewform	

Agenda

9:00 - 9:30 Opening	Scope of the day, agenda, EuBioNet updates, introduction of the interactive tools and the networking wall + projects active in 2022. Welcome and introduction to the macroareas from the European Commission Policy Officers: • Laura Varpina - Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (governance perspective)" • Tomasz Calikowski - Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (boost circular bioeconomy and bioeconomy sectors perspective)" • Veera Tahvanainen - Macroarea "standardisation, certification, labelling and monitoring" • Giuseppe Pellegrino - Macroarea "bioeconomy communication and education/future skills for the bioeconomy"

9:30- 10:30 Awareness and exchange of inspirational good practices	Some H2020 projects (EuBioNet members) will share their success stories with a special focus on exploitable assets, research results and data, links that can be used by the recently funded projects. (3 minutes presentation each)
	• **Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (governance perspective)"**
	  • BIOEASTsUP
	  • BE-Rural
	  • BioCircularCities
	  • LIFT
	• **Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (boost circular bioeconomy and bioeconomy sectors perspective)"**
	  • BIOSWITCH
	  • Biobridges
	  • Tech4Biowaste
	  • MPowerBio

	• BioeconomyVentures • Enabling • **Macroarea "standardisation, certification, labelling and monitoring"** • STAR-ProBio • STAR4BBI • **Macroarea "bioeconomy communication and education/future skills for the bioeconomy"** • Transition2Bio • BIObec • Allthings.bioPRO • BIOVOICES • BIOSKILLS • EBU Label
10:30- 11:00 Awareness and exchange of inspirational good practices - Networking session	Representatives of both Horizon2020 and Horizon Europe projects will stand in front of their posters to facilitate the networking. Project recently funded under Horizon Europe: • **Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (governance perspective)"** • ShapingBio • CEE2ACT • BIOMODEL4REGIONS • ROBIN • BIOLOC (Starting in October) • BBC • BlueRev • RefreSCAR • **Macroarea "enabling the bioeconomy ecosystem at European, National and Regional level (boost circular bioeconomy and bioeconomy sectors)"** • BioRural • MainstreamBIO • RuralBioUp (Starting in October) • SCALE-UP • BIOTRANSFORM • **Macroarea "standardisation, certification, labelling and monitoring"** • HARMONITOR • STAR4BBS • SUSTCERT4BIOBASED • 3-CO (under GA preparation) • SUSTRACK (starting in November) • **Macroarea "bioeconomy communication and education/future skills for the bioeconomy"** • GenB (starting in November) • BioBeo (starting in November) • BioGov.Net • Engage4BIO (Starting in October)
11.00 - 11.10	Coffee break

11:10 - 12:15 Thematic networking to define common action plans

This activity will support the networking and collaboration among the projects through a walking brainstorm to identify opportunities among projects and initiatives and define a common 2022/2023 **action plan** (responding to the updated 2018 bioeconomy strategy)

The session will be organized in **four thematic working groups** around specific topics:

- **enabling the bioeconomy ecosystem at European, National and Regional level (governance perspective)**

Facilitators: Marie Kubankova, Jana Bielikova, Giulia Treossi	
BIOEASTsUP	ShapingBio
BE-Rural	CEE2ACT
BioCircularCities	BIOMODEL4REGIONS
LIFT	ROBIN
	BIOLOC
	BBC
	BlueRev
	RefreSCAR

- **enabling the bioeconomy ecosystem at European, National and Regional level (boost circular economy and bioeconomy sectors perspective)**

Facilitators: John Vos, Pietro Rigonat, Iakovos Delioglanis	
BIOSWITCH	BioRural
Biobridges	MainstreamBIO
Tech4Biowaste	RuralBioUp
MPowerBio	SCALE-UP
BioeconomyVentures	BIOTRANSFORM
Enabling	

- **standardisation, certification, labelling and monitoring**

Facilitators: Luana Ladu, Patrick Reumerman, Selenia Marinelli	
STAR-ProBio	HARMONITOR
STAR4BBI	STAR4BBS
	SUSTCERT4BIOBASED
	3-CO
	SUSTRACK

- **bioeconomy communication and education/future skills for the bioeconomy**

Facilitators: Susanna Albertini, Chiara Pocaterra, George Sakellaris	
Transition2Bio	GenB
BIObec	BioBeo
Allthings.bioPRO	BioGov.Net
BIOVOICES	Engage4BIO
BIOSKILLS	
EBU Label	

12:15 - 12:30 Conclusions

Conclusions and next steps

11:10 - 12:15 Thematic networking to define common action plans

This activity will support the networking and collaboration among the projects through a walking brainstorm to identify opportunities among projects and initiatives and define a common 2022/2023 **action plan** (responding to the updated 2018 bioeconomy strategy)

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Facilitators: Marie Kubankova, Jana Bielikova, Giulia Treossi	
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LIFT	ROBIN
	BIOLOC
	BBC
	BlueRev
	RefreSCAR

- **enabling the bioeconomy ecosystem at European, National and Regional level (boost circular economy and bioeconomy sectors perspective)**

Facilitators: John Vos, Pietro Rigonat, Iakovos Delioglanis	
BIOSWITCH	BioRural
Biobridges	MainstreamBIO
Tech4Biowaste	RuralBioUp
MPowerBio	SCALE-UP
BioeconomyVentures	BIOTRANSFORM
Enabling	

- **standardisation, certification, labelling and monitoring**

Facilitators: Luana Ladu, Patrick Reumerman, Selenia Marinelli	
STAR-ProBio	HARMONITOR
STAR4BBI	STAR4BBS
	SUSTCERT4BIOBASED
	3-CO
	SUSTRACK

- **bioeconomy communication and education/future skills for the bioeconomy**

Facilitators: Susanna Albertini, Chiara Pocaterra, George Sakellaris	
Transition2Bio	GenB
BIObec	BioBeo
Allthings.bioPRO	BioGov.Net
BIOVOICES	Engage4BIO
BIOSKILLS	
EBU Label	

12:15 - 12:30 Conclusions

Conclusions and next steps

9.5. Annex 2: Second yearly policy workshop agenda

CBE JU Stakeholder Forum 2023
6-7 December Brussels

BIOBEC BioGov.net GEN YOUNG BIOVOICES FOR A SUSTAINABLE FUTURE THE EUROPEAN BIOECONOMY NETWORK

Developing skills in the bio-based industries: future bioeconomy education pathways

7 December 2023, from 9.00 to 10.45, Brussels (onsite event)
In the context of CBE JU Stakeholder Forum

Context	With 2023 having been designated as the European Year of Skills, the CBE JU-funded BIObec project, with the support of GenB, BioGov.net projects and the EuBioNet, organises a workshop that brings together the most relevant projects in bioeconomy education. The objective of this workshop is to outline the necessary and missing skills and future job profiles, as well as discuss the skills-related regional dimension and priorities and share strategies to attract students and professionals towards careers related to the bioeconomy. Participants of the workshop will present and discuss success stories and formats for designing educational pathways (e.g., competence centres, business models and educational frameworks) that address the skills needed in the bio-based sector.	
Expected Outcomes	• Ensure knowledge exchange, transferability, replicability and exploitation of EU funded projects and initiatives' outcomes • Improve the quality and impact of ongoing projects and initiatives in bioeconomy education, facilitating collaboration and mutual learning • Provide actionable recommendations and guidelines for future bioeconomy education pathways	
Format	• Inspirational pitches from the 3 EU funded projects and initiatives co-organising the workshop • Interactive discussion with participants, including the most relevant EU-funded projects and initiatives in bioeconomy education	
Main organiser	**BIObec**	https://biobec.eu/
	The BIObec project aims to build bridges between the bio-based industry and the education system by interlinking universities, innovation labs, and R&D centres with industrial actors and regions.	

Circular Bio-based Europe Joint Undertaking

European Commission

CBE JU Stakeholder Forum 2023 6-7 December Brussels

	To this aim, the project proposes a holistic framework that merges the traditional idea of an education centre, with that of a knowledge hub. BIObec established multi-level Bio-Based Education Centres (BBECs) to act as knowledge hubs bridging the gaps between academic institutions, students, innovation entities and policy makers. Likewise, the BBECs will be flexible enough to answer the actual and future needs of the industry and surrounding ecosystem at local, regional and national levels.	
In collaboration with:	**CBE JU**	https://www.cbe.europa.eu/
	The Circular Bio-based Europe Joint Undertaking (CBE JU) is a partnership between the European Union and the Bio-based Industries Consortium (BIC) that funds projects advancing competitive circular bio-based industries in Europe.	
	GenB	https://www.genb-project.eu/
	Informing and educating young people on more sustainable behaviours and choices to build a future Generation informed and interested in Bioeconomy.	
	BioGov.net	https://www.biogov.net/
	Establishing innovative governance models in the bioeconomy by providing an inclusive training and mentoring framework in specific European regions and building a bridge between knowledge and skills in the bioeconomy, secured by effective governance.	
	EuBioNet	www.eubionet.eu
	An alliance of more than 150 EU-funded projects and initiatives dealing with Bioeconomy promotion, communication and support.	
Target participants	• CBE JU and European Commission representatives • BIC education working group • Other EU funded projects and initiatives in bioeconomy education • Other stakeholders interested in bioeconomy education (industries, education providers, policy makers)	
Registrations	There is no fee – registration is mandatory. Please register in the workshop here. https://cbesf23.eu/registration-form/	

Circular Bio-based Europe Joint Undertaking

European Commission

CBE JU Stakeholder Forum 2023
6-7 December Brussels

Agenda

9.00-9.10	Opening remarks	CBE JU representative (TBC)
	Presentation of the agenda and objectives of the workshop	Davide Viaggi (BIObec coordinator)
9.10-9.40	Short inspirational pitches from selected case studies (10 mins each): • BIObec • BioGov.net • GenB (including Transition2BIO exploitable assets) Each pitch will focus on projects' contribution on the questions that will be discussed during the interactive session, to inspire and stimulate the debate.	
9.40-10.35	Interactive discussion with participants, responding to the following questions with the aim of providing policy recommendations: • How bioeconomy education can respond to regional and industry needs and priorities? • What are the future bioeconomy and bio-based economy job profiles and skills needed? • How to inspire, inform and attract students and professionals towards careers related to the bioeconomy? • How future projects and initiatives can bridge the gaps between skills needed and educational pathways?	
10.35-10.45	Wrap-up and conclusions	BIC education working group (TBC)

Circular Bio-based Europe Joint Undertaking

European Commission

9.6. Annex 3: Assessment framework glossary of terms

Table: Glossary of terms (source, https://socialvalueuk.org/)

Term	Definition
Attribution	An assessment of how much of the outcome was caused by the contribution of other organisations or people. It is unlikely that our activities are the only thing in a person's life that helps them to change.
Cost allocation	The allocation of costs or expenditure to activities related to a given program, product or business.
Deadweight	A measure of the amount of outcome that would have happened even if the activity had not taken place. For example, there is often the chance the people could have experienced the same changes by working with another organisation, or even without the support from anyone.
Discounting	The process by which future financial costs and benefits are recalculated to present-day values.
Discount rate	The interest rate used to discount future costs and benefits to a present value.
Displacement	An assessment of how much of the outcome has displaced other outcomes. For example, if our activities prevent people experiencing the same changes somewhere else we should take account of this.
Drop-off	The deterioration of an outcome over time.
Duration	How long (usually in years) an outcome lasts after the intervention, such as length of time a participant remains in a new job.
Financial proxy	A financial proxy is a monetary representation of the value of an outcome
Impact	The difference between the outcome for participants, taking into account what would have happened anyway, the contribution of others and the length of time the outcomes last.
Indicator	Indicators are measures that provide information on how much of an outcome is expected to happen or has happened. They can be based on information provided by those experiencing the outcome or from other sources.
Inputs	The contributions made by each stakeholder that are necessary for the activity to happen.
Materiality	Information is material if its omission has the potential to affect the readers' or stakeholders' decisions.
Net present value	The value in today's currency of money that is expected in the future minus the investment required to generate the activity
Net social return ratio	Net present value of the impact divided by total investment.

Outcome	The changes resulting from an activity. The main types of change from the perspective of stakeholders are unintended (unexpected) and intended (expected), positive and negative changes. For example, this could be an increase in someone's mental wellbeing, or a reduction in loneliness.
Outputs	The summary of activities in numbers. These are the easiest things to count. For example, the number of training classes attended, or the quantity of a product grown.
Ranking	Putting outcomes in order of importance from lowest to highest, from the perspective of the stakeholders experiencing the changes. Ranking can be considered a form of equal weighting.
Scope	The activities, timescale, boundaries and type of SROI analysis.
Sensitivity analysis	Process by which the sensitivity of an SROI model to changes in different variables is assessed.
Social return ratio	Total present value of the impact divided by total investment.
Social value	Social value is the quantification of the relative importance that people place on the changes they experience in their lives. Some, but not all this value is captured in market prices. It is important to consider and measure this social value from the perspective of those affected by an organisation's work.
Stakeholders	People, organisations or entities that experience change, whether positive or negative, as a result of the activity that is being analysed.
Valuation	Outcomes can be more or less important to the stakeholders that experience them. Valuation is a process that assesses relative importance. Financial measures are used as a proxy for value and allow for comparisons to be made between different changes. Sometimes these proxies will relate to actual amounts of money but this is not necessary.
Weighting	Giving outcomes a weighting (e.g. on a scale of 1 to 10) to allow comparisons to be made about relative importance. For example, an outcome with a weighting of 6 out of 10 would be considered three times as important as an outcome with a weighting of 2 out of 10.

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