



# BIOVOICES

CONNECTING BIO-BASED FORCES  
FOR A SUSTAINABLE WORLD

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# CONNECTING BIO-BASED FORCES FOR A SUSTAINABLE WORLD



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**DELIVERABLE 6.3**

# **BIOVOICES Action Plan and Stakeholder-Oriented Policy Briefs**

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# INDEX OF CONTENTS

1.	INTRODUCTION .....	6
1.1.	PURPOSE AND SCOPE OF D6.3 .....	6
1.2.	BIOVOICES MML APPROACH.....	6
2.	POLICY BRIEFS.....	6
2.1.	Methodology.....	6
2.2	Policy Brief Content .....	6
2.3	Review of MML Outputs .....	7
2.3.1	D6.1 Preliminary Report on European, National and Regional MML events .....	7
2.3.2	Reports of MML events .....	7
2.3.3	MML events post Sept 2020.....	7
2.4	Insights .....	8
2.4.1	Identification of Key Insights .....	8
2.5	Key Messages.....	8
2.5.1	Insights related to Key Messages .....	8
2.5.2	The Policy Context .....	9
2.5.3	Role of the Specific Stakeholder .....	9
2.5.4	BIOVOICES Challenges .....	9
2.5.5.	Quotes .....	9
2.6.	Internal Consultation .....	9
2.6.1	Core partners.....	9
2.6.2	BIOVOICES Consortium.....	10
2.7	Policy Brief Key Messages .....	10
2.7.1.	BIOVOICES Key Messages Relevant to the Research Sector.....	11
2.7.2	BIOVOICES Key Messages relevant for the Business Sector .....	11
2.7.3.	BIOVOICES Key Messages Relevant to the Policy Sector.....	12
2.7.4.	BIOVOICES Key Messages relevant for Civil Society .....	13
2.8.	Design and Layout.....	14
3.	EXTERNAL VALIDATION .....	14
3.1	Core Partner Contacts.....	14
3.2	BIOVOICES online External Focus Group.....	16
4.	BIOVOICES ACTION PLAN FOR CITIZEN ENGAGEMENT .....	18
4.1	Methodology.....	18
4.2	Aim of the Action Plan .....	18
4.3	Initial Structure .....	18
4.4	Commonality of messages .....	18

4.5 Draft Strategy Framework.....	19
4.6 Internal Input and Consultation .....	19
4.6.1 BIOVOICES ‘Internal’ Focus group .....	19
4.7 External Consultation.....	20
4.7.1. UK External Focus Group .....	20
4.7.2. BIOVOICES External Focus Group .....	20
4.8 confirmation of final Content .....	20
4.8.1 Practical examples to develop and drive citizen engagement .....	21
4.9 Design Brief .....	21
5. Final content.....	21
5.1. Introduction to the Action Plan.....	22
5.2. BIOVOICES Action Plan for Citizen Engagement .....	23
5.3 Practical Examples to Develop & Drive Citizen Engagement .....	24
6. DISSEMINATION,COMMUNICATION,EXPLOITATION.....	27
6.1 Introduction .....	27
6.2 Next Steps .....	27
6.3 Additional Products.....	27
6.4 Sustainability.....	28
7. CONCLUSION .....	28
ANNEX .....	29
Annex 1 - BIOVOICES online External Focus Group 14.12.20.....	29
1.1 Invitation .....	29
1.2 Agenda.....	30

## INDEX OF TABLES

Table 1: BIOVOICES Action Plan - Draft Strategy Framework.....19

Table 2: BIOVOICES Action Plan Final Content: Key Strategic Concepts and Recommended Actions for Delivery.....23

## FIGURES

Figure 1: Example from Mentimeter exercise to prioritise Key Messages for the policy sector.....17

Figure 2: Miro board illustrating input from interactive session 2.....17

# 1. INTRODUCTION

## 1.1. PURPOSE AND SCOPE OF D6.3

The purpose and scope of this deliverable is to describe the methodology by which Minerva (lead on this task and research and civil society), with the support of core partners Pedal (WP6 lead), ICLEI (policy lead), AseBIO (business lead), has utilised the actionable knowledge gathered from the BIOVOICES Mobilisation and Mutual Learning (MML) experience to deliver BIOVOICES Task 6.4 BIOVOICES Action Plan to raise citizen's awareness and foster collaboration among stakeholders and as set out in objective four of the BIOVOICES DoA, p25.

*'Through the BIOVOICES multi-stakeholder platform, design and implement an **action plan** fostering the awareness of the wider public about the benefits and potential social, economic and environmental impacts of the bioeconomy and widening diffusion of bio-based products (BBP).'*

## 1.2. BIOVOICES MML APPROACH

The BIOVOICES project aimed to contribute to the market uptake of bio-based applications, establishing a multi-stakeholder platform to encourage open dialogue, discussion and collaboration between the four stakeholder groups of the quadruple helix (research, business, policy makers, civil society). To achieve this multi-stakeholder involvement, the MML approach was used as described in Deliverable 3.4 - Guidelines for the design of the BIOVOICES MML approach and Deliverable 4.4 - BIOVOICES methodological approach for MML. Representatives from the quadruple helix came together at these events to participate in debate and discussion based on the sharing of different perspectives, ideas, knowledge and experiences. The set of 12 challenges to the uptake of BBPs identified by the BIOVOICES project, Deliverable 3.3 - Map of promising perspectives for BBPs for application sectors provided the framework to initiate and guide discussions. A standard reporting template was designed and made available to consortium partners to capture knowledge gathered at each MML event.

# 2. POLICY BRIEFS

## 2.1. METHODOLOGY

A wealth of knowledge has been generated from the 75 BIOVOICES MML events organised between 2018 and 2020. This knowledge was collected and documented using the standard MML reporting template and developed and collated by task leader Pedal Consulting, to form a preliminary report of European, national and regional MML events Deliverable 6.1 - Preliminary report on European, National and regional MML events (D6.1), submitted December 2019. The following sections in this report describe the method by which this actionable knowledge was studied and assessed by Minerva and core partners for its potential for inclusion into the four policy briefs for each of the quadruple helix stakeholder groups. The final report on the MML events is documented in the Final report on European, national and regional MML events (D6.2) (submitted January 2021).

## 2.2 POLICY BRIEF CONTENT

During December 2019 collaboration commenced on the development of the Policy Brief documents. Core partners were allocated the task of leading and managing the development of the policy brief most relevant to their experience: Research - Minerva, business - AseBIO, policy makers - ICLEI, civil society - Minerva.

It was agreed that all four policy brief documents would follow a common format and a draft template was developed in consultation with core partners to present the actionable knowledge. A key focus of the task was to agree with core partners via email and online meetings, how to most effectively present the information in a straightforward, accessible and usable format, to be ideal for driving debate and discussion at practical, professional and policy making levels.

The following structure was developed for the Policy Briefs:

- Introduction
  - Common Landscape Statement (The Policy Context)
  - Role of the specific stakeholder within the context of the bioeconomy
  - KEY MESSAGES
  - Insights related to Key Messages
  - Shared Best Practice Actions
- Annex - The 12 BIOVOICES Challenges

## 2.3 REVIEW OF MML OUTPUTS

The following sources were used to identify the information for inclusion in the Policy Brief documents.

### 2.3.1 D6.1 Preliminary Report on European, National and Regional MML events

The content of D6.1 was studied in detail, with particular reference to section 4, page 16, MML Impact: Preliminary Insights. This report presents an initial assessment of the insights gathered from discussions and debate from the majority of BIOVOICES MML events run during 2018-2019. Challenges highlighted in section 5 Discussion Points were also included in the review process to consider specific content for inclusion in the BIOVOICES Policy Briefs.

### 2.3.2 Reports of MML events

All MML reports produced by consortium partners and uploaded to the BIOVOICES G-drive during the first six months of 2020 were studied in detail again to ensure that all relevant information, actionable knowledge and quotes had been identified for possible inclusion into the four Policy Briefs.

### 2.3.3 MML events post Sept 2020

Communication was maintained with Pedal Consulting (WP6 leader) during the process of developing the Policy Briefs to ensure that any relevant insights identified from MML events organised following the publication of D6.1 were captured. Due to the four-month extension granted to the project, BIOVOICES MML events continued to be run November 2020 to January 2021 with additional information generated included in D6.2.

## 2.4 INSIGHTS

### 2.4.1 Identification of Key Insights

All available information as described in section 2.3 above was reviewed, starting with Section 4 MML impact: Preliminary Insights and Section 5 Discussion Points of D6.1. During this initial assessment, insights from D6.1 and from the reassessment of MML reports were organised according to relevance to each stakeholder group (Research, Business, Policy Makers, Civil Society) to form four separate documents, one for each stakeholder group. Those insights applicable to all stakeholder groups, as defined in D6.1, were included in all four documents. The content of each of these four documents was then considered individually, condensed and edited to focus on the direct relevance of the insight to the specific stakeholder group.

## 2.5 KEY MESSAGES

The clear focus during the selection of the key messages was to ensure they are based on the BIOVOICES experience with its MML events, and not to include information from other sources.

The key insights were allocated to the appropriate stakeholder group and refined as set out in 2.4 above, and then prioritised using the following criteria:

- widest challenges to the uptake of BBP and bio-based sectors
- insights common to all stakeholder groups
- relevance to each audience
- clarity of message
- understandability

It was clear from the information gathered from the MML events that there are a number of overarching challenges to be addressed before the more specific problems associated with the poor market uptake of individual BBP and the slow development of the bioeconomy in general can be addressed. For example, insights relating to the confusing language currently used to describe BBP and the bioeconomy in general is common to and relevant for all stakeholder groups.

The process to select the key messages therefore focused on the critical issues that require further discussion, debate and action in order to progress the development of all bio-based sectors. As the process of evaluation continued, a clearer picture built up of the range of the wider challenges relevant to all stakeholder groups. Once the initial draft key messages were selected and prioritised, they were subjected to a rigorous ongoing feedback and editing process to ensure that the messages are presented in understandable language, accessible by all stakeholders.

### 2.5.1 Insights related to Key Messages

Following the initial identification of the draft key messages for each stakeholder group, input focussed on the selection of the most relevant additional insights to support and add value to each key message. These insights were again rigorously edited to ensure that the language used was both understandable and accessible.



## 2.5.2 The Policy Context

The Policy Context section (initially entitled the Common Landscape Statement), common to each Policy Brief, was first drafted by Pedal Consulting and finalised with input from ICLEI and Minerva. The text provides an overview of the policy background and the evolving bioeconomy context within which the BIOVOICES project has been active over its three-year funded period. Responsiveness to changing priorities and evolving initiatives in each of its partners' territories to maintain relevance has been a key aspect of the BIOVOICES project.

## 2.5.3 Role of the Specific Stakeholder

The core partner responsible for the drafting of a specific policy brief provided text defining the role of that particular stakeholder within the context of the bioeconomy:

- Research - Developing and supporting the circular bio-based economy (Minerva)
- Business - To help drive bio-based innovation (AseBIO)
- Policy Makers - Contributing to a circular bio-based economy (ICLEI)
- Civil Society - Gatekeepers to Citizen Engagement (Minerva)

## 2.5.4 BIOVOICES Challenges

To maintain continuity with the framework tasks delivered early on in the project, the BIOVOICES Challenges (D3.1 Review of barriers and opportunities for the development of bio-based value chains) most relevant to each key message were identified and referenced with the Insights included for each Key Message.

## 2.5.5. Quotes

To add 'colour' and bring draft key messages 'to life', available and relevant quotes from MML attendees were selected and added to the final documents.

# 2.6. INTERNAL CONSULTATION

## 2.6.1 Core partners

The process of developing the Policy Briefs was a team effort involving the core partners as identified in T6.4. Development and consultation began early in 2020, starting with the production of a draft template for the Policy Briefs and then working through all the sections of the documents. Each Policy Brief passed through several stages of consultation via email and dedicated online calls (March - October 2020) to ensure that core partners were kept informed, active and engaged in the process of agreeing the structure and developing and delivering the content. In February 2021 a final email consultation with core partners following design input from BIOVOICES partner LOBA will be undertaken.

## 2.6.2 BIOVOICES Consortium

In **March 2020** the draft template for the policy brief documents was sent to all consortium partners for comment. All comments were assessed and incorporated as appropriate.

In **July 2020** the first drafts of the four policy briefs, as developed and agreed with core partners, were sent out to the consortium via email. Partners were asked for their direct input into:

- (i) Key Messages – are there any additional key messages that you consider should be included in one or more of the Policy Briefs that are based on BIOVOICES MML reports?
- (ii) Insights relevant to Key Messages – are there any additional key insights that should be included based on BIOVOICES MML reports, that back-up or link to one or more of the key messages?
- (iii) Case studies – input of examples and/or case studies of good practice relating to each of the key messages and related insights.

A call was set up by Minerva to provide the consortium with an opportunity to ask any questions arising from the above requests. Suggestions and comments received were all considered and incorporated where appropriate and relevant to the BIOVOICES experience.

The process of refining the content and language of the documents continued. Regular direct calls were arranged with core partners to maintain communication during the task of finalising the Policy Brief structure and content.

**October 2020.** Following agreement with core partners, Minerva emailed a set of revised Policy Briefs including the Common Landscape document (subsequently renamed The Policy Context) were emailed to the whole consortium for final comment and to confirm:

- that the key messages and insights were reflective of the BIOVOICES experience as collated from the MML reports and D6.1;
- that the suggested case studies illustrated the key messages and represent best practice;
- that the Common Landscape Statement provides a concise summary of the wider socio-economic and policy landscape within which the BIOVOICES project has been operating.

Advance notification was given of the date set for an ‘internal’ BIOVOICES workshop to develop content for the Action Plan for Citizen Engagement informed by the content of the Policy Briefs.

## 2.7 POLICY BRIEF KEY MESSAGES

### Recommendations to drive Dialogue and Debate

The final Key Messages included in each Policy Brief are reproduced here for interest. The full content of each of the four Policy Briefs is comprised of the following sections: (i) Introduction to the Policy Briefs, (ii) The policy context, (iii) The role of the particular stakeholder, (iv) Key Messages (v) Insights related to Key Messages, (vi) Shared best practice actions (vii) The 12 BIOVOICES challenges. This content will be presented as four separate attachments to this deliverable in pdf format, due to their large volume. The process to confirm the final design of the documents is ongoing see section 2.8.

## 2.7.1. BIOVOICES Key Messages Relevant to the Research Sector

Researchers must commit to **Communicating** circular bio-economy research to all stakeholders.

Contribute to the development of a **Common Language** to describe research into the bio-based circular economy that can be understood by all stakeholders and actors.

Bio-based research should focus on understanding of the **Best Use of Resources** within the constantly evolving landscape.

Prioritise and provide circular bio-based economy related **Skills Education** for students, graduates and employers and develop modules related to particular national/regional challenges.

Valorise and communicate **Best Research Practices** and **Optimising Protocols** to support the bio-based sector.

Support the creation of an **Open Access Knowledge Hub** for information on lessons learnt from bio-based product research whether positive or negative, utilised or not.

**Information Must Be Shared**, under licence as appropriate, not held back under Intellectual Property (IP) rules.

Research should develop and drive clearer **Connections to and Understanding of Market Needs** by increasing collaboration with all stakeholders.

Focus research using **Cascading Principles** to optimise resource use and reuse.

**Involve Regional and Local Stakeholders** in research agenda development and actions to boost routes to local development.

Be aware that **Regulatory Frameworks can Lag Behind** innovative research, hindering innovation & implementation.

Prioritise research topics that **Explore the Effects of a Scaled-up Circular Bioeconomy** on regional and local ecosystems.

The research community has a role to play in defining **Criteria for Monitoring Bioeconomy Impacts** and developing benchmarks to evaluate these impacts against fossil-based counterparts.

## 2.7.2 BIOVOICES Key Messages relevant for the Business Sector

### **INTERNAL FOCUS – SECTOR/ORGANISATION RESPONSIBILITIES**

Establish a common and **Honest Language** to describe bio-based products and processes to avoid ‘greenwashing’ and confusion in order to nurture consumer trust.

Industry/businesses must take responsibility for consumer clarity around **End-of-Life Outcomes** for bio-based products.

Businesses must use their own international, national, regional/local connections to increase **Cross-sectoral Cooperation** to drive the development of the circular bio-based economy.

Develop **Robust, Realistic and Flexible Business Plans** for bio-based products to include all appropriate data to attract longer term investor funding.

Ensure the **Stability, Consistency, Quality and Homogeneity of Feedstock Supplies** to meet market needs of products by promoting territorial cooperation.

Seek out appropriate organisations and links (e.g. trade organisations) to actively input into and **Support the Development of Local/Regional plans** for system improvement within the circular bio-based economy.

### **EXTERNAL FOCUS – INFLUENCING & COLLABORATION**

Industry must work with appropriate key stakeholder groups to develop **Supportive Legislation, Common Standards, Labels and Specifications** to build trust and confidence in the bio-based market.

**Challenge Policy Makers about Price Parity** of bio-based and fossil-based products to push for targets, regulation and incentives for bio-based start-ups and industries.

Industry can influence the development and implementation of a straightforward and easy to understand **Waste Management and Waste Recovery System** based on clear legislation at national, local and individual business level.

Engage with key stakeholders to develop strong **Local/Regional Networks** for the circular bio-based economy. Support and promote the idea of local circular bioeconomy managers to drive the transition towards more bio-based and circular cities and regions, leading to the development of;

An **Accessible Platform** to enable stakeholders to identify where feedstocks, bio-based products and related resources can be located in each area.

### **2.7.3. BIOVOICES Key Messages Relevant to the Policy Sector**

Government at EU level needs to address market disparity by applying **Regulatory and Demand-based Interventions** to promote the bio-based sector e.g. Carbon Taxation

Policy Makers should shape regulation to ensure an **Effective Waste Management and Waste Recovery System** to generate consistent feedstock supply at national, local/regional levels.

Government at EU and national level must work with other key stakeholder groups to develop **Common Standards, Labels and Specifications** to build trust and confidence in the bio-based market.

Policy makers must **Identify and Communicate with Appropriate Organisations/stakeholders**, to ensure multi-flow of information on current developments in the circular bio-based economy.

Governments at all levels must work **Towards Vertical Integration** (multi-level governance) to boost engagement between European, national and regional/local policies, initiatives, approaches and methodologies.

Governments at all levels must **Promote Horizontal Integration**, both administrative and organisational for efficient implementation of bioeconomy interventions at all levels to maximise knowledge exchange related to priority policy areas.

Establish **Continuity in Policy Priority** to provide ongoing backing for policies that support the circular bio-based economy, irrespective of regime change.

Policy makers can drive further **Understanding and Adoption of Bio-based Products** by establishing the 'Bioeconomy Story' within the Circular Bio-based Economy context

Engagement by governments at all levels in participatory processes with the **Education Sector** to develop training and capacity building to raise awareness of bio-based sectors.

Increase coordination between governments at all levels for the successful implementation of policies to **Support the development of National, Local/Regional Plans** for system improvement within the circular bio-based economy.

Enable and encourage the **Participation of Citizen Groups**, particularly in the development of regional and local circular bio-based economy policies.

**Develop dialogue between government actors and bio-based industries** to promote effective deployment of bioeconomic principles in the governmental domain.

**Assess the impact**, adjust direction and issue revised research calls in response to information obtained from the monitoring of current policies.

#### 2.7.4. BIOVOICES Key Messages relevant for Civil Society

Support the development of a **Common Language** with an agreed terminology accessible to all stakeholders, to drive useful dialogue about the circular bio-based economy and specific bio-based sectors.

Support development of a simple, clear and consistent **Labelling Standard** at EU level for bio-based products to help establish understanding and drive consumer trust.

Work towards the elimination of **'Greenwashing'** as this results in lower consumer confidence in bio-based products (BBPs) and their producers.

Set the 'Bioeconomy Story' into the **Circular Bio-based Economy context** to drive further understanding and adoption.

Promote implementation of an **Education Curriculum** to increase knowledge and awareness of sustainability issues and the bio-based circular economy aimed at adults and all student levels.

Citizens are in general **Receptive to the Purchase of Bio-based Products**, a positive backdrop and an opportunity for all stakeholders to engage in productive dialogue.

Continuously promote and **Communicate the Unique Selling Points (USP)** of bio-based products, their benefits and relevance to everyday life.

Establish the appetite amongst your members/group for the **Implementation of a Carbon Tax** on fossil-based products to make bio-based materials more affordable.

Enable and encourage the **Participation of Citizen Groups** particularly in the development of regional and local circular bio-based economy policies.

## 2.8. DESIGN AND LAYOUT

The purpose of the policy brief documents - in particular the key messages - is to drive debate and discussion at practical, professional and policy making levels. To achieve this each policy brief follows a common template presenting the information in a straightforward accessible and usable format, with the Key Messages forming the heart of each document.

A creative brief was provided to the designers (partner LOBA) to produce documents that are authoritative, stand-out and accessible. Once the design process is complete, the Policy Briefs will be available to view online to download and home/office print. Hard copies will be produced for direct distribution to stakeholders. Design of Infographics of the Key Messages in each Policy Brief are planned, for use in social media applications, to deliver wider public dissemination and engagement.

The design process to finalise the appearance of the final Policy Brief documents is ongoing and currently at the second edit stage. The documents in their final form will be made available on [www.biovoices.eu](http://www.biovoices.eu) within approximately ten days and will be promoted via the website and social media. The final content of the Policy briefs for the following sectors - research, business, policy makers, civil society - accompanies D6.3, as four individual pdf documents.

## 3. EXTERNAL VALIDATION

### 3.1 CORE PARTNER CONTACTS

Once the draft content of the Policy Briefs was confirmed with the consortium, the core partners involved with the delivery of T 6.4 initiated a programme of consultation with selected members of their networks to validate the BIOVOICES key messages and related insights. This process was undertaken to confirm that the content presented would be relevant and useful to drive discussion and debate to help each stakeholder group address the challenges to the uptake of BBPs and bio-based sectors.

**Business** - The Policy Brief for business was sent out to companies integrated within the AseBio Industrial and Agrifood working groups, contacts made through participation in European bioeconomy related projects and Spanish and European industrial Associations such as EuropaBio. The briefs were also sent to AseBio's corporate and associate members, bio-regions, national biotechnology associations, and contacts in the COTEC Foundation.

**Policy Makers** - In order to receive quality feedback on the Policy Brief for policy makers, ICLEI contacted key BIOVOICES German stakeholders, or those based in Germany, from the policy and science arenas with seven institutions or individuals responding with detailed feedback.

**Research** - Minerva conducted individual consultation sessions with contacts working in the UK university research sector to ascertain the relevance and usefulness of the key messages to drive debate and discussion.

Other contacts with direct experience of bio-based sectors from a business and policy perspective were contacted individually and commented on the policy briefs most relevant to their expertise, most commonly business.

**Civil Society** - Minerva conducted individual consultation sessions with contacts working in the UK to ascertain the relevance and usefulness of the key messages to civil society to drive debate and discussion. Other contacts with direct experience of bio-based sectors from a business and policy perspective were contacted individually and commented on the policy briefs most relevant to their expertise, most commonly business but also from a personal - citizen - perspective.

**UK Focus Group November 2020** - Minerva arranged a UK online Focus Group to introduce the Policy Brief key messages for all of the four stakeholder groups. All participants who attended MML events run in the UK during 2019 and who had agreed to be kept in touch with the project, were sent invitation to attend via email. The Key Messages for each stakeholder group were presented and discussion was initiated where the Key Messages chimed with the experience of the participants.

### **Validation Feedback**

**Research** - The UK stakeholders consulted found that the key messages did chime with their experience and that the documents would be useful for driving debate and discussion related to the challenges and issues identified. A university research representative stated that she would use the Policy Brief for the research sector as ..."*useful evidence for working up ideas in certain areas related to funding applications around training or specific research programmes.*"

**Business** - Some useful comments were raised during the validation of the Policy Brief for the business sector and in general those that engaged with the consultation indicated that the content was relevant and useful as a framework for debate.

**Policy Makers** - Reviewers in general emphasized the usefulness of the briefs for Policy Makers, especially in the sense of stimulating the debate by formulating and reiterating important issues.

**Civil Society** - Comments were generally positive and changes suggested were mainly related to the clarity of language used, with the style in which some messages were presented considered too 'academic'. Appropriate changes to the language were actioned to maximise future engagement.

It was concluded that the Key Messages worked well as a tool to initiate and develop discussion around particular issues.

## 3.2 BIOVOICES ONLINE EXTERNAL FOCUS GROUP

An online External Focus Group was arranged, presented and moderated by the core partners Minerva, Pedal, ICLEI, AseBIO with APRE and FVA and run on the 14th December 2020. Invitations were sent to all participants who attended the initial BIOVOICES Focus Group held in Rome 13th - 14th November 2018, Advisory Board members for BIOVOICES, Transition2BIO, and the Scientific Advisory group for the BIOVOICES book for kids. BIOVOICES consortium members were invited to attend in listening mode only as the focus of the meeting was to gain external opinion about the BIOVOICES documents.

### Objectives of the meeting:

- To introduce and validate the content of the four final draft Policy Briefs.
- To promote and engender debate and discussion between stakeholder groups and with BIOVOICES utilising the Project Briefs as starting points.
- Gain understanding from participants of the added value to stakeholder groups of the BIOVOICES Policy Briefs.
- Secure input from attendees on effective practices for the Action Plan to drive Citizen Engagement.
- Raise awareness amongst attendees and the groups they represent of BIOVOICES 'products' to be published/available 2021 and the project's forthcoming events.

### Session 1 - Breakout Group discussions of the content of the BIOVOICES Policy Briefs for the research, business and policy sectors.

The Key Messages of the BIOVOICES Policy Briefs for research, business and policy sectors were discussed in individual breakout groups. This exercise provided an example of how the Policy Briefs could be utilised as a tool to frame discussions about the challenges related to the uptake of BBP and bio-based sectors. The Key Messages for civil society were debated in session 2 in plenary format.

The moderator for each session introduced the specific Policy Brief and asked participants to consider the following questions:

- Do the messages 'chime' with your organization?
- Do any messages need to be strengthened/focused?
- How might you or your organization utilise the document/key messages?

As an additional task, participants in each group were asked to use Mentimeter to rank the Key Messages in order of priority for their stakeholder group. The top three ranked messages were then taken forward into session 2 to guide input into the BIOVOICES Action Plan for Citizen Engagement (using MIRO), as described in more detail in section 4. of this report.

### Overview of breakout group discussions

As a result of these discussions, core partners were confident that the Key Messages of the Policy Briefs fulfilled their function to drive debate and discussion about the challenges to be addressed to further the development of the circular bio-based economy and specifically the market uptake of BBP.

*"BIOVOICES key messages for the research sector aligned with my experience and would be useful to drive debate and to engage with politicians to help continue to drive the development of the bioeconomy sector in Eastern Europe."* A representative from the BioEastUp project.

### Session 2 - Key Messages for Civil Society and BIOVOICES Action Plan

During this session in plenary, the initial focus was placed on the introduction and debate of the Key Messages for civil society and the prioritisation of the Key Messages using Mentimeter to confirm that the content would be



useful to drive debate and discussion. An introduction to the BIOVOICES Action Plan to drive Citizen Engagement was then presented followed by an interactive session using Miro boards, which is explained in more detail in section 4.



Figure 1 - Example from Mentimeter exercise to prioritise Key Messages for the Policy Sector

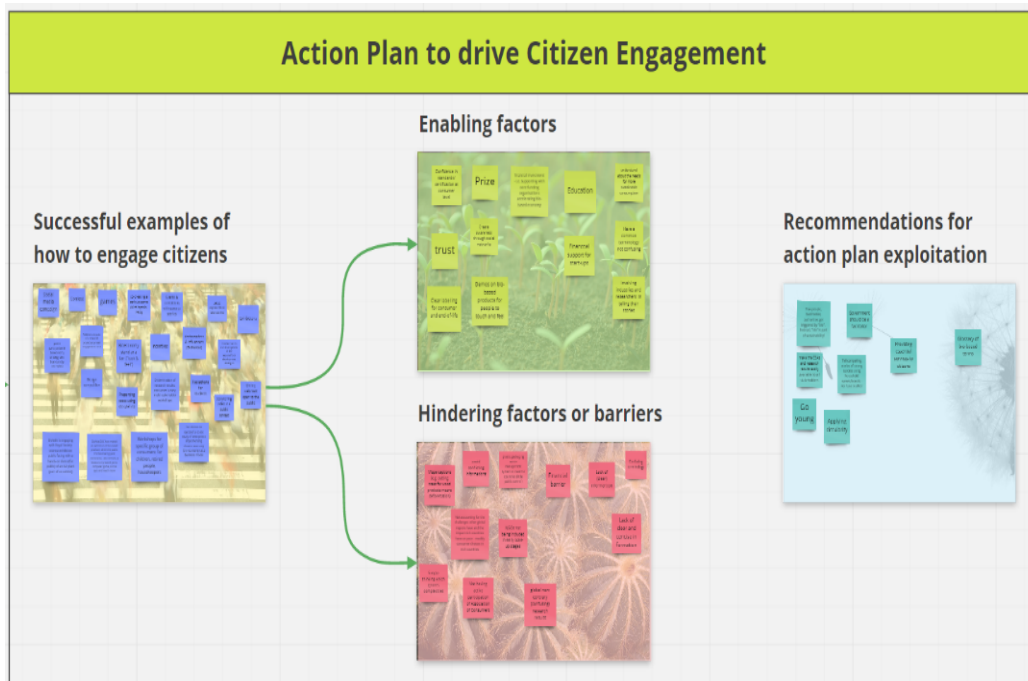


Figure 2 - Miro board illustrating input from an interactive session 2.

## 4. BIOVOICES ACTION PLAN FOR CITIZEN ENGAGEMENT

### 4.1 METHODOLOGY

*'The Policy Briefs contribute to the overall drive of the project to deliver an action plan that contains recommendations and guidelines on strategies to raise awareness and involve citizens to increase knowledge and uptake of BBP - to the benefit of key stakeholders.'* DoA Part B, BIOVOICES' strategic objective 4, page 7.

The content of the Policy Briefs for the quadruple helix stakeholders, in particular the Key Messages, was studied in detail and directly informed the development of the BIOVOICES Action Plan for Citizen Engagement. The challenges to the wider uptake of BBP and bio-based sectors as laid out in the key messages were studied for commonality and then, following a structured process lead by Minerva, were transformed into five Key Strategic Concepts to be addressed by all stakeholders in order to maximise citizen engagement. Following consultation with core partners and the BIOVOICES consortium, recommended actions for the delivery of the Key Strategic Concepts, together with successful examples of citizen engagement from the BIOVOICES experience, were included to complete the Action Plan.

### 4.2 AIM OF THE ACTION PLAN

The BIOVOICES Action Plan is designed as a framework for use by all stakeholder groups, plus all actors active across the bioeconomy, to create a robust and honest approach on which to base their effective citizen engagement. Communicating honestly and transparently with citizens about the benefits and potential social, economic and environmental impact of the bioeconomy has been adopted by BIOVOICES as the core concept that will lead to wider market uptake of BBP.

### 4.3 INITIAL STRUCTURE

The target for the Action Plan was to produce a compact framework document of ideally four pages, starting with a brief **introduction** to the creation of the plan and an indication of how the document could be used by organisations to drive their citizen engagement. The strategies and the recommended actions for delivery form the core of the Action Plan. The final section would contain examples of successful citizen engagement.

### 4.4 COMMONALITY OF MESSAGES

The Key Messages in each Policy Brief were reviewed to identify commonality of messaging across all stakeholder groups and collated to create a separate document. These were then prioritised starting with the most fundamental challenges that need to be addressed before the circular bio-based economy can move forward into the cultural mainstream to facilitate the further market uptake of BBP. These priority messages were largely focussed on the clarity and commonality of language, labelling, standards and the impacts of a scaled-up bio-based sector.

## 4.5 DRAFT STRATEGY FRAMEWORK

A Minerva team workshop session was run to identify the most common challenges and to decide how these could be used to inform the Action Plan content, focusing on the engagement of citizens. The output was a set of five strategies and a number of corresponding topics relevant to each strategy, to be illustrated by examples of successful approaches for citizen engagement. These five draft strategies encompassed the prioritised challenges and provided an initial framework which organisations could potentially use as a form of internal review on which to assess the effectiveness of their citizen engagement activities.

Strategy	Relevant Topics	Successful citizen engagement
Is your organization ready for citizen engagement and scrutiny?	e.g. Is your <b>Business/Operational Plan</b> robust? Does it consider all aspects of change/scale-up to providing biobased product/service – and how that will be communicated to the wider public?	
Is messaging about your organisation's products or services honest and robust?	e.g. Have you considered/are you using <b>commonly used and understood terms &amp; definitions</b> of circular bio-based economy applicable to your operations?	
Are you providing appropriate knowledge and information to customers and other stakeholders?	e.g. <b>Are you educating as well as informing the public</b> on circular bio-based economy through your own channels (website/social media) and on product descriptions etc.?	
Have you identified and engaged with all appropriate stakeholder groups?	e.g. <b>Have you joined and contribute to</b> clusters and networks in appropriate sectors & geographies? •	
Are you making your voice heard in the right places?	e.g. <b>Are you contributing to the wider discussions</b> on the 'big ticket' issues such as carbon tax, waste management relevant to your sector?	

Table 1 - BIOVOICES Action Plan - Draft Strategy Framework

## 4.6 INTERNAL INPUT AND CONSULTATION

It was decided that this initial strategy framework would provide a solid basis on which consultation with the BIOVOICES consortium could be initiated.

### 4.6.1 BIOVOICES 'Internal' Focus group

A **BIOVOICES 'Internal' Focus group** was arranged on **22nd October 2020** to introduce the draft strategy framework to the consortium and to present the opportunity for all partners to participate directly into the creation of the Action Plan, by active input into the refinement of the strategic concepts and topics and by providing examples of practical actions for citizen engagement.

Minerva, as task leader, presented a briefing on the purpose of the Action Plan and how the five draft strategy points had been informed by the Key Messages from the four Policy Briefs. During the following discussion session, a key point raised was how one Action Plan document could be utilised by all stakeholder groups with suggestions made as to how this could be achieved. Comments were also made about the phrasing of the draft strategies, which in some cases didn't translate well from English to other languages.

Consortium input was also required to list examples of successful citizen engagement tactics to provide practical illustration to the overall drive of the Action Plan.

All inputs from the meeting were recorded and Minerva subsequently worked to develop and refine the strategy headings, language used, related topics and examples of citizen engagement to ensure that the Action Plan would be relevant to all four stakeholder groups.

## 4.7 EXTERNAL CONSULTATION

### 4.7.1. UK External Focus Group

Minerva organised a **UK external Focus group on 30th November 2020** to discuss and validate the content of the four Policy Briefs as presented in Section 3.1 above. The opportunity was also taken to introduce the outline framework of the BIOVOICES Action Plan to the convened group of external stakeholders. A productive discussion was held about the structure, content and potential applications of the Action Plan to drive citizen engagement.

### 4.7.2. BIOVOICES External Focus Group

The second session of the **BIOVOICES External Focus Group run on the 14th December 2020** as outlined in section 3.2, was organised in plenary form to gain specific input from external stakeholders into the Action Plan. Participants were asked to input examples from their experience of citizen engagement onto the following online 'boards' using Miro software:

- Share successful examples of how to engage citizens
- Identify Enabling Factors – e.g. multipliers, stakeholders who need to be engaged and/or influence public opinion
- Identify Hindering Factors or Challenges to implementation of the Action Plan for Citizen Engagement

Comments and insights from these meetings were recorded and contributed to the ongoing work to refine the content of the Action Plan.

## 4.8 CONFIRMATION OF FINAL CONTENT

Inputs gathered from both internal and external consultations were taken into consideration by Minerva during the final confirmation of the Action Plan content. The strategies in the first column of the draft Action Plan, as presented in Table 1 above, were refocussed and reworded to arrive at eight **Key Strategic Concepts** relevant to all four stakeholder groups to consider before they can be confident that their messaging is robust and honest enough to engage with citizens on an on-going basis.

Following several rounds of re-wording and focused editing, the Minerva team were confident that the resulting Key Strategic Concepts and recommended Actions for implementation, as presented in Table 2 below, provided a robust framework for use by **all stakeholders** active in progressing the circular bio-based economy and on which to base their plans for transparent and honest communication with citizens.

#### 4.8.1 Practical examples to develop and drive citizen engagement

Both internal and external inputs to this section were considered. Examples had been provided from BIOVOICES and from other project experience. To maximise the effectiveness of the Action Plan, it became clear that the examples of successful citizen engagement should focus solely on the BIOVOICES experience. This approach was taken to ensure that all the significant social engagement examples generated by the BIOVOICES project are fully disseminated. An additional reason for selecting only BIOVOICES examples was that the team responsible for the development of the Action Plan were confident that these examples of citizen engagement had been successful in practice.

The final draft of the Action Plan was presented to core partners for comment in January 2021. All comments were reviewed and incorporated where they added to the overall impact of the plan. Once all core partners had confirmed their approval of the content of the Action Plan, the final copy was then emailed to the whole consortium for information.

### 4.9 DESIGN BRIEF

The following design points were provided to the partner delivering the design, LOBA:

- To help all stakeholders and actors to drive citizen engagement, the Action Plan will be presented in a straightforward, accessible and usable format.
- The document will have a readily usable appearance with clear text and an accessible layout of the table of Key Strategic Concepts and Recommended Actions
- The Key Strategic Concepts and Recommended Actions for delivery form the heart of the document
- Print ready copy to be available to download for easy access and printing.
- A stand-alone infographic to be designed to present Key Strategic Concepts and Recommended Actions for wider engagement via social media.

## 5. FINAL CONTENT

The final content of the BIOVOICES Action Plan for Citizen Engagement comprising, (i) introduction, (ii) Key Strategic Concepts, (iii) Recommended Actions for Delivery and BIOVOICES practical examples to develop and drive citizen engagement, as agreed with core partners is presented in the following sections 5.1 and 5.2. Once the current design phase has been completed, within approximately ten days, the document in its final format will be available to view online, download and print from [www.biovoices.eu](http://www.biovoices.eu) and will be promoted via the website and social media.

## 5.1. INTRODUCTION TO THE ACTION PLAN

The BIOVOICES Action Plan for Citizen Engagement is a framework of recommendations to support and drive citizen engagement, advocacy and ultimately action to support the purchase and use of bio-based products (BBP) and services. The recommendations are relevant to all key stakeholders and for consideration during the design of their own plans for citizen engagement.

The Action Plan is based on information gathered from the BIOVOICES Mobilisation & Mutual Learning (MML) events that involved stakeholders from across the quadruple helix (business, policy makers, research, civil society), held in ten European countries from 2018 to 2020.

Insights from these MML events have been collated and condensed into four Policy Briefs, one for each of the quadruple helix stakeholders. These Policy Briefs present Key Messages for each stakeholder group based on the

BIOVOICES experience, to address the challenges currently hindering an increased understanding of the bioeconomy, the bio-based sectors and market uptake of BBP. The Key Messages common to all stakeholder groups have informed the development of the BIOVOICES Action Plan for Citizen Engagement.

The BIOVOICES Action Plan is designed for all stakeholder groups to utilise the strategic concepts and actions laid out below, thus creating a robust and honest approach on which to base their effective citizen engagement. Communicating honestly and transparently with citizens about the benefits and potential social, economic and environmental impact of the bioeconomy will lead to wider market uptake of BBP.

The BIOVOICES Policy Briefs with their wealth of material should be considered alongside this Action Plan for additional and complementary insight.

## 5.2. BIOVOICES ACTION PLAN FOR CITIZEN ENGAGEMENT

The content laid out in Table 2, forms the heart of the Action Plan and sets out a framework of Key Strategic Concepts and Recommended Actions for delivery to support and drive citizen engagement, advocacy and ultimately action to support the purchase and use of bio-based products (BBP) and services.

### Key Strategic Concepts and Recommended Actions for Delivery

Key Strategic Concepts	Actions to deliver the Key Strategic Concepts.
<b>CLARITY</b>	Use a <b>Common Language</b> accessible by all consumers
	Secure <b>Standards</b> in your sector to build <b>TRUST</b> in BBP among consumers
	Use <b>Labelling</b> that is clear, accessible and consistent
	Deliver <b>Honest Messaging</b> about potential impacts of BBP to develop consumer <b>TRUST</b>
<b>TRANSPARENCY</b>	Base organisational plans on <b>Sound Bio-based Principles</b>
	Commit to utilising <b>Best Practice &amp; up-to-date Knowledge</b>
	Plan for <b>Flexibility</b> to be ready to respond to new opportunities
	Welcome internal and external <b>Scrutiny &amp; Challenge</b>
<b>COLLABORATE</b>	Plan to <b>Engage with Citizens</b> from the start locally and regionally
	Commit to <b>Continuous Engagement</b> with citizens
	Ensure up to date <b>multi-flow</b> of information between all stakeholders
	Access <b>Engagement Expertise</b> as required to maximise collaboration
<b>EDUCATE</b>	Educate <b>Your Workforce</b> about BBPs and sectors based on trusted scientific knowledge
	Keep up-to-date with <b>Emerging Knowledge</b> to cascade to staff & citizens - leverage multipliers
	Support campaigns to develop <b>Curricula</b> on bio-based awareness for <b>Schoolchildren</b>
	Plan regular <b>Public Education</b> initiatives on circular bio-based economy locally and regionally
<b>OPEN ACCESS</b>	Commit to making <b>Your Information Available</b> to facilitate access to knowledge for all
	<b>Contribute</b> all your information to platforms, negative as well as positive
	<b>Check for Duplication</b> of actions and information – don't reinvent the wheel
	<b>Access and Utilise</b> platforms relevant to you to keep messaging for citizens up to date
	Cascade information to both <b>Internal and External</b> actors at all levels
<b>BIG DATA</b>	Collect <b>Data Relevant for you</b> and that supports citizen engagement
	Commit to <b>Contributing Data</b> to appropriate platforms
	<b>Access, Utilise and Analyse all data</b> to enhance your understanding of citizen perspectives
<b>MAKE YOUR VOICE HEARD</b>	Use your experience to empower the citizen as a <b>Driver of Change</b>
	Raise <b>Questions and Concerns</b> across appropriate networks
	<b>Start the debate</b> about key issues by offering your perspective
	<b>Your Contribution Counts</b> – collective voices drive change
<b>COMMUNICATE</b>	To <b>Inspire</b> citizens by attracting their attention
	To <b>Inform</b> citizens to deepen understanding
	To deliver <b>Experiences</b> to citizens to embed understanding
	To <b>Engage</b> with citizens – and maintain that engagement
	To drive <b>Advocacy and Action</b> to support behaviour change

Table 2. BIOVOICES Action Plan Final Content: Key Strategic Concepts and Recommended Actions for Delivery

## 5.3 PRACTICAL EXAMPLES TO DEVELOP & DRIVE CITIZEN ENGAGEMENT

The four actions recommended to deliver the Key Strategic Concept of **Communication** (see Table 2 above) were used to select practical examples of successful approaches to citizen engagement from the BIOVOICES experience.

### BIOVOICES Practical examples to develop and drive citizen engagement

#### Inspire citizens by attracting their attention

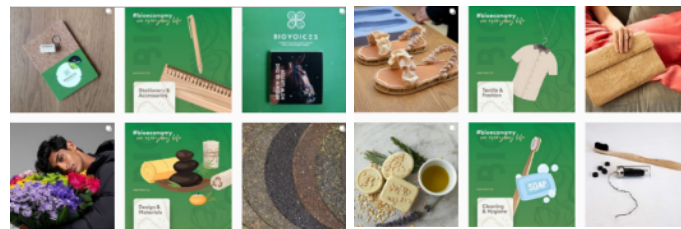
##### The BIOArt Gallery - celebrate the beauty

A set of 60 stunning images were created to visually showcase commonly known foodstuffs linked to their, often surprising BBP applications. Available in a variety of formats to inspire and engage the wider public.



##### BIOVOICES Daily Social Media Approach

BIOVOICES Instagram and Facebook bioeconomy social channels, followed by around 7000 people, were used to widely circulate daily content to raise awareness about BBP and the bioeconomy, complemented by Twitter and Instagram.



##### BIOVOICES Book for kids – What's Bioeconomy?

Targeting 5-7 years olds kids, the reader accompanies a family through 5 real-life scenarios to discover the benefits of the bioeconomy and bio-based products.



#### Inform citizens to deepen their understanding

##### BIOVOICES Educational Cards

The BIOVOICES project launched an online education activity via Instagram, Facebook, Twitter and LinkedIn, using a series of educational graphic cards to inform the wider public about the bioeconomy in layman's terms.





### Online Webinars and Videos about BBP

Videos were created by BIOVOICES to introduce the bio-based product collection to the general public.

<https://www.youtube.com/watch?v=lpokqen4hDk&t=365s>



### Educational videos

Educational videos using young students as testimonials to promote everyday application of bioeconomy



### BIOVOICES Circular Bioeconomy Stories

Short interviews with companies active within the bioeconomy are available on the BIOVOICES YouTube Channel. Developed by BIOVOICES in partnership with other EU funded projects and bio-based companies.



## Deliver Experiences to citizens to embed understanding

### The Bioeconomy Village

The Bioeconomy Village concept, as developed by BIOWAYS and used by BIOVOICES, showcases the practical everyday use of nearly 300 BBP, allowing visitors to touch and feel the bioeconomy. The exhibition is continuously enriched with new products. Visitors are stimulated to express their opinions, concerns and suggestions.



### Science is Wonderful

Hands-on demonstrations for the public at science festivals, with the involvement of researchers and industry representatives help to support citizens to develop their understanding of BBP.



### Maker Faires

The "Make your voice heard" Wall at Maker Faire collected citizen opinion, concerns and ideas about the bioeconomy. The approach enabled the collection of hundreds of answers within few hours.



**BIOVOICES Interactive Games**

Interactive games have been used by BIOVOICES to engage citizens to raise awareness about the bioeconomy. Mentimeter and MIRO on-line applications were used to facilitate and support audience interaction at MML workshops and other events, to simultaneously engage large numbers of participants.



**Engage with citizens – and maintain that engagement**

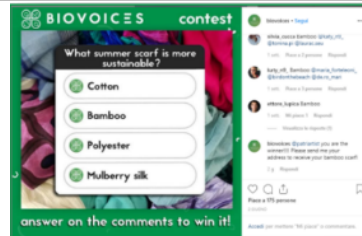
**Online videos and webinars**

Videos were created and webinars run to introduce the collection of BBP to the wider public.



**Social media App quizzes**

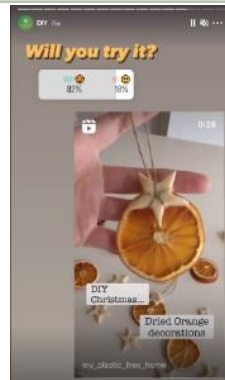
BIOVOICES engaged the public through Instagram and Facebook, by promoting quizzes, contests, activities, giveaways and questions. These offered appealing examples of BBP and other bioeconomy applications and help to develop a better understanding of user perceptions and concerns.



**Drive Advocacy and Action to support behaviour change**

**BIOVOICES DIY tutorials (Instagram)**

BIOVOICES has engaged the public by promoting DIY Tutorials, and other “calls to action”. Providing appealing examples of practical bioeconomy applications that citizens can create.



**Develop award schemes for schools**

A “Bioeconomy Prize” dedicated to ideas and projects dealing with the bioeconomy, targeted 500 schools and 20.000 high school students was launched at the Startupper School Academy



## 6. DISSEMINATION, COMMUNICATION, EXPLOITATION

### 6.1 INTRODUCTION

The BIOVOICES experience has been transformed into a range of products that are ideal for use by all stakeholders to drive debate and discussion to raise awareness and communicate with citizens to increase knowledge and uptake of BBP for the benefit of key stakeholders and society as a whole.

The **BIOVOICES Action Plan for Citizen Engagement** provides a framework for all those active in the continued development of a circular bio-based economy to reflect about the work they are doing and to move forward with confidence by creating a robust and honest approach on which to base their effective citizen engagement. Only by communicating with citizens in an honest and transparent way about the benefits and potential social, economic and environmental impact of the bioeconomy will there be a wider market uptake of BBP.

The Policy Briefs and Action Plan will be communicated widely and disseminated by all partners at EU, national and local levels as set out in WP7, as part of the project's outcomes, experiences, best practices and lessons learnt.

### 6.2 NEXT STEPS

A **Final project meeting** is being held in April 2021, to present to a wide external audience, the tools, methodologies results and recommendations arising from the BIOVOICES experience.

To continue to progress and enhance citizen engagement **BIOVOICES complementary materials** (section 6.3), for the development of citizen awareness to promote the uptake of BBP, including the Policy Briefs and Action Plan will be available to download from [www.biovoices.eu](http://www.biovoices.eu).

The execution of the BIOVOICES Dissemination and Communication Plan will ensure that the results, experiences and best practices of the project continue to be widely disseminated to citizens and all stakeholders. An Exploitation and Sustainability Plan (WP7, T 7.4) is in development to ensure the continued dissemination, utilisation and exploitation of the BIOVOICES outputs. It will include a short description of the BIOVOICES project results (WHAT?), their possible exploitation routes (WHAT FOR?) and the stakeholders that can benefit from them (WHO?). An overview of the various ways in which each asset was used during the lifetime of the BIOVOICES project will also be available to download.

### 6.3 ADDITIONAL PRODUCTS

To provide added value Minerva will lead, with the support of core partners to develop four additional products - 'Self Help Guides' - to prompt internal discussions, for all organisations to develop and elaborate on the on the Key Strategic Concepts and recommended Actions as presented in the BIOVOICES Action Plan for Citizen Engagement and the content of the four Policy Briefs. Core partners involved in the development of these products will use their particular knowledge of specific stakeholder groups to focus the guides. A set of four 'Self Help Guide' packages will be created, to support groups/agencies/organisations to facilitate internal workshops (online and eventually in person) to evaluate the basis and effectiveness of their own strategies and actions to promote effective citizen engagement in the acceptance and expansion of the circular bio-based economy. An online MML 'tool', which will provide a framework for use by stakeholders

when they are planning an MML event, is currently being finalised by partners ICLEI and CNR and will be complementary to the 'Self Help Guides'.

These products will also serve as a useful dissemination tool for the project and provide an additional opportunity to flag-up all the exploitable products BIOVOICES has produced, including the book for kids.

## 6.4 SUSTAINABILITY

The sustainability of the BIOVOICES project will be enhanced by the EU-funded Transition2BIO project, as established by partners involved in the development of the European Bioeconomy Network.

*"Transition2BIO proposes an integrated package of activities to address a wide range of stakeholders. It will valorise and exploit communication tools and activities to raise public awareness of the bioeconomy and contribute to the transition towards more sustainable production through engagement and education activities."* Cordis website

## 7. CONCLUSION

The aim of this deliverable is to present a report outlining the methodology by which the following outputs from Task 6.4 were delivered:

- Development of four Policy Brief documents for the quadruple helix stakeholders utilising the actionable knowledge gathered from over 70 MML events run by BIOVOICES partners and;
- How the content of the four Policy Brief documents informed the development and delivery of the BIOVOICES Action Plan for Citizen Engagement.

BIOVOICES partners involved in the delivery T 6.4 are confident that all relevant information generated through the BIOVOICES multi-stakeholder platform has been transformed into actionable knowledge presented in the form of four Policy Briefs, one for each of four stakeholder groups of the quadruple helix. The Action Plan for Citizen Engagement, as informed by the Policy Brief content, contains recommendations and guidelines on strategies to raise awareness and involve citizens that increase knowledge and uptake of BBP for the benefit of key stakeholders and society as a whole. A framework has been set out by BIOVOICES for use by all stakeholder organisations to create a robust base on which to develop honest and transparent strategies for successful citizen engagement.

# ANNEX

## ANNEX 1 - BIOVOICES ONLINE EXTERNAL FOCUS GROUP 14.12.20

### 1.1 Invitation



Dear,

The BIOVOICES project is now entering its final phase and we would like to invite you to participate in a **virtual Focus Group meeting to be held at 10:00-12:30 (CET) on Monday 14th December 2020.**

#### BIOVOICES Update

Over the past three years BIOVOICES partners have run 70 mobilisation and mutual learning events (MML) in ten European countries to promote discussion and to address the challenges associated with the uptake of biobased products. Actionable knowledge from these events has now been distilled into four **Policy Brief documents**, one for each of the quadruple helix stakeholder groups (business, policy makers, research, civil society). These documents have been developed for **active use and exploitation** by key stakeholders and all actors working across the circular bio-based economy, in their work and practice to deliver knowledge, best practice and lessons learnt. The aim is to drive debate, support pro-active discussion and collaboration to address the challenges relating to the up-scaling of bio-based products. These Policy Brief documents have informed the development of a **BIOVOICES Action Plan for Citizen Engagement**.

#### Objectives of the meeting

- To promote and engender debate and discussion between stakeholder groups and with BIOVOICES utilising the Project Briefs as starting points
- Gain understanding from participants of the added value to stakeholder groups of the BIOVOICES policy briefs and Action Plan and how they will be utilised.
- Secure input from attendees on effective practices for the Action Plan to drive Citizen Engagement
- Raise awareness amongst attendees and the groups they represent of BIOVOICES 'products' to be published/available 2021 and the project's forthcoming events.

#### Benefits of attending the meeting

- Have your voice heard and contribute to the final version of the BIOVOICES Action Plan for Citizen Engagement.
- Receive information about wider group of 'products' which BIOVOICES will be producing January 2021

We value your opinion and very much hope that you will be able to participate. Please [\[click here\]](#) to confirm if you would like to attend.

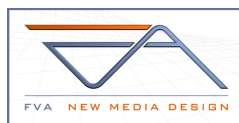
The BIOVOICES Project.

## 1.2 Agenda

<b>Agenda</b>		
<b>BIOVOICES External Focus Group meeting Monday 14<sup>th</sup> December 2020 10:00 – 12:30 (CET)</b>		
10:00 - 10:15	a) Mentimeter session – <a href="http://www.menti.com">www.menti.com</a> Code: 7248071 b) Introduction to BIOVOICES project achievements	Robert Miskuf, <i>Pedal Consulting</i> Chiara Pocaterra, <i>APRE</i>
10:15 - 10:25	Objectives and expected inputs from participants	Rhonda Smith, <i>Minerva</i>
<p><b>SESSION 1 – BIOVOICES Policy Briefs - Breakout session</b></p> <p><i>Participants to select the Policy Brief most relevant to their sector/role/experience, either Research, Business, Civil Society or Policy Makers and click on the link to the appropriate 'room'.</i></p> <p>The four Policy Briefs contain key messages drawn from the BIOVOICES experience, collated from nearly 70 Mobilisation &amp; Mutual Learning (MML) events held at European, national &amp; regional levels in 10 partner countries.</p>		
10:25 - 10:35	Policy Briefs – overview & introduction	Robert Miskuf, <i>Pedal Consulting</i>
10:35 - 11:05	<p><b>Three breakout sessions – Research, Business, Policy</b></p> <p>Presentation of the Policy Brief to each stakeholder 'room'</p> <p>Participants to consider and identify:</p> <ul style="list-style-type: none"> <li>• <b>For you/your organisation</b> <ul style="list-style-type: none"> <li>- the most relevant &amp; actionable messages</li> <li>- how you may utilise the document/messages</li> </ul> </li> <li>• Do any messages need to be strengthened/focused?</li> <li>• <b>For BIOVOICES Action Plan to drive citizen engagement</b> <ul style="list-style-type: none"> <li>- what messages/insights can be drawn from the Policy Brief to inform/drive content for the Action Plan.</li> </ul> </li> </ul>	<p><b>Moderators</b></p> <p>AseBIO-Business ICLEI-Policy Minerva-Research</p>
11:05 - 11:15	10-minute break	
11:15 - 11:30	Feedback to Plenary of Key Points from Session 1 to prep Session 2.	Moderators x4
<b>SESSION 2 - BIOVOICES Action Plan Development</b>		
11:30 - 11:40	Introduction to BIOVOICES Action Plan to drive Citizen Engagement and presentation of the Key Messages for the civil society (NGOs) and prioritisation by participants (Mentimeter session)	Rhonda Smith, <i>Minerva</i>  Susanna Albertini, <i>FVA- Civil Society</i>
11:40 - 12:20	<p>Plenary session using Miro:</p> <p>Board 1 - Prioritised Key messages identified in first session</p> <p>Board 2 - Share successful examples of how to engage citizens</p> <p>Board 3 - Enabling Factors – e.g. multipliers, stakeholders who need to be engaged, public opinion</p> <p>Board 4 - Hindering Factors or Challenges to implementation of the Action Plan for Citizen Engagement</p>	<p>Rhonda Smith, <i>Minerva</i> – lead moderator</p> <p>with Pedal, AseBIO, ICEI, FVA, Minerva</p>
12:20 – 12:30	Conclusion and next steps	Chiara Pocaterra, <i>APRE</i>



**APRE, Agency for the Promotion of European Research**  
www.apre.it  
Italy



**FVA New Media Research**  
hwww.fvaweb.eu  
Italy



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**ASEBIO, Asociación Española de Bioempresas**  
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**BIOVOICES**

CONNECTING BIO-BASED FORCES  
FOR A SUSTAINABLE WORLD

# **BIOVOICES Policy Brief for the Research Sector**

[www.biovoices.eu](http://www.biovoices.eu)



## Table of Contents

1. Introduction to the Policy Brief for the Research Sector
  2. The Policy Context
  3. The Role of the Research Sector
  4. BIOVOICES Key Messages
  5. Insights related to Key Messages
  6. Shared Best Practice Actions
- Annex - the 12 BIOVOICES challenges

## 1. Introduction

The purpose of these four Policy Briefs - one for each quadruple helix stakeholder group (research, business, policy sectors, civil society) - is to present the insights gathered from the BIOVOICES experience - over 70 Mobilisation and Mutual Learning (MML) events in a format that is both straightforward, accessible and usable.

These documents have been developed for active use and exploitation by the key stakeholders of the quadruple helix and all actors working across the circular bio-based economy, in their work and practice to deliver knowledge, best practice and lessons learnt to drive debate, support pro-active discussion and collaboration to address the associated challenges relating to the up-scaling of bio-based products (BBPs).

The key themes from the Policy Briefs common to all stakeholder groups have informed the development of the BIOVOICES Action Plan for Citizen Engagement which is a framework of recommendations for all stakeholders to consider when designing and delivering their own action plan to drive citizen engagement, advocacy and ultimately action to support the purchase and use of BBPs and services for the benefit of key stakeholders and society as a whole.

BIOVOICES materials to enhance citizen engagement are available to download at <https://biovoices.eu>

### 3. The Policy Context

*BIOVOICES has run from January 2018 to April 2021, its start coinciding with the launch of the EC's revised **Bioeconomy Strategy**<sup>1</sup>. Throughout the project, the gathering of key insights and actionable knowledge from MML events has been coloured by the constantly evolving nature of the wider socio-economic and policy landscape and in the last year the impact of Covid-19. Due to restrictions imposed by the pandemic, many MML workshops planned for 2020 have been transformed into online events, resulting for many, in an increase in the numbers of participants from a wider range of geographical locations. This responsiveness to changing priorities in each of its partners' territories to maintain relevance has been a key aspect of the BIOVOICES project.*

Global economic challenges have provided a constant backdrop to the BIOVOICES project and are reflected in the selection of the BIOVOICES challenges relating to the market acceleration of innovative bio-based products (BBP). The policy background against which the BIOVOICES project has been delivered is outlined here.

The update of the EC **Bioeconomy Strategy** published in October 2018 reconfirmed the urgent need for development of the bio-based sector. *"Global challenges like climate change, land and ecosystem degradation, coupled with a growing population force us to seek new ways of producing and consuming that respect the ecological boundaries of our planet."*

The **European Green Deal**<sup>2</sup> launched by the new EU Commission (EC) in December 2019 aims to drive the transition to a *fair and prosperous society, with a modern, resource-efficient and competitive economy in Europe*, promoting a new economic action plan to help modernise the EU's economy and draw benefit from the opportunities of the circular economy domestically and globally. The Green Deal is an

integral part of the Commission's strategy to implement the **United Nation's 2030 Agenda**<sup>3</sup> and the associated sustainable development goals (SDGs), the COP 21 Paris Climate Agreement<sup>4</sup> and the other green priorities announced in **President von der Leyen's political guidelines**<sup>5</sup>. Additionally, the **"Decade of Action"**<sup>6</sup>, promoted by UN Secretary-General, calls for accelerating sustainable solutions to all the world's biggest challenges, applying the 'do no harm' principle, which will require honest communication and 360° vigilance against 'unexpected adverse consequences'.

Since 2010, as described in the **Europe 2020 Strategy**<sup>7</sup>, the bioeconomy has been identified as a key element for driving smart and green growth in Europe, aimed at alleviating pressures on the natural environment, whilst creating new business opportunities, employment and growth. At the European level, whilst a dedicated bioeconomy strategy has been in effect since 2012, it is presented as a 'Communiqué' not as legislative proposal. This strategy was updated in 2018 together with a progress report on implementation ("EC Bioeconomy Strategy," 2018). The strategy provides a framework for shifting the economic resource base in Europe from a linear model drawing on finite raw materials, to a circular model that focuses on innovative renewable materials from biomass from land and sea as well as wastes.

The bioeconomy already accounts for 8% of the EU's workforce<sup>8</sup> but modelling has indicated that bio-based industries could create up to 1 million new 'green' jobs by 2030, especially in rural and coastal areas<sup>9</sup>. Nonetheless, the share of the bioeconomy (including energy, food & feed and material applications) in EU GDP is still low, with most employment in low-tech bioeconomy sectors.

<sup>1</sup> [https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018\\_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy](https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy)

<sup>2</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)

<sup>3</sup> <https://www.un.org/sustainabledevelopment/>

<sup>4</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>5</sup> [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf)

<sup>6</sup> <https://www.un.org/sustainabledevelopment/decade-of-action/>

<sup>7</sup> <https://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

<sup>8</sup> [https://ec.europa.eu/research/bioeconomy/pdf/ec\\_bioeconomy\\_actions\\_2018.pdf](https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_actions_2018.pdf)

<sup>9</sup> <https://biconsortium.eu/about/our-vision-strategy/benefits-europe>

# BIOVOICES Policy Brief for the Research Sector

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The reasons for this are manifold and range from low acceptance of BBPs among customers, to technical challenges with material property requirements, to political frameworks as well as labelling and standardisation, hindering dynamic developments in the bioeconomy. The contextualisation and basis of bioeconomy policy is overall still weak in Europe (Devaney et al., 2017)<sup>10</sup> Directives that impact on the depth and pace of bioeconomy development in Europe have yet to be adapted and aligned with the objectives of the strategy, whilst current legislation sometimes even hinders the further up-take of BBP (e.g. EU Waste Framework<sup>11</sup>).

The BIOVOICES project identifies that *“Bioeconomy is a complex and multi-factoral domain and its wide diffusion depends on the active collaboration of a broad range of stakeholders including industry, researchers, civil society and public authorities.”*

A set of new transformative policies have been recently launched by the European Commission<sup>12</sup> and are planned to support the Green Deal. These include the new EU Circular Economy Action Plan (CEAP)(2020)<sup>13</sup>, which promises to deliver key fixes to legislation in the area of waste generation- and management as well as eco design and obligatory use of secondary materials requirements by 2021/22. The CEAP links with the EC’s Bioeconomy Action Plan in two key areas:

- in sustainable production, supporting the bio-based sector in its circularity potential
- and in the area of food, nutrients and water, where it supports increased shares of extraction of sustainable biomass materials in the EU, building a sustainable circular bioeconomy.

Circular bioeconomy can indeed significantly contribute towards a broad range of EU targets and the UN Sustainable Development Goals (STGs), including climate change mitigation, the circular economy and resource efficiency, environmental protection, creating jobs, growth

and revenue. In particular a circular bioeconomy can create and maintain sustainable economic growth, prosperity and high-value employment in rural, coastal and industrial areas where these are greatly needed, reduce fossil carbon dependence and improve the economic and environmental sustainability of primary production and processing industries.

Examples of other transformative legislation are the **Single-use Plastics Directive**<sup>14</sup>, the **‘Farm to Fork’ Strategy**<sup>15</sup>, the **Food 2030 policy**<sup>16</sup>, the new **EU Forest strategy**<sup>17</sup>, the new **Common Agricultural Policy**<sup>18</sup> to name a few. This wide-ranging political vision will have significant impacts relating to the wider deployment of the bioeconomy and the increased development of BBPs, contributing to the modernisation of the EU’s economy and providing societal, economic and environmental benefits.

Additionally, the EC Council of Regulation has adopted a regulation, strengthening the intellectual property rights office. The first legislative delivery from the Commissions IPR Strategy of May 2011<sup>19</sup>. Here, the EC sets out its new Intellectual Property Rights strategy intended to foster innovation, as well as the growth and competitiveness of the EU economy to include the development of the bio-based sector.

The EC has to date placed emphasis on the development and implementation of bioeconomy strategies at a national level. More recently, the implementation of regionally focused bio-based economies with a local dimension has been encouraged by the EC to support overall sustainability and circularity, including trade- offs, synergies, business models, social innovation and participatory approaches. Insights and actionable knowledge obtained from the BIOVOICES MML events has highlighted the opportunities for regional and mutual co-operation, for example expert clusters which bring all relevant actors together.

<sup>10</sup> Devaney, L., Henchion, M., Regan, A., 2017. Good Governance in the Bioeconomy. EuroChoices 16, 41–46. <https://doi.org/10.1111/1746-692X.12141>

<sup>11</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>

<sup>13</sup> [https://ec.europa.eu/environment/circular-economy/pdf/new\\_circular\\_economy\\_action\\_plan.pdf](https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf)

<sup>14</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN>

<sup>15</sup> [https://ec.europa.eu/food/sites/food/files/safety/docs/2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/2f_action-plan_2020_strategy-info_en.pdf)

<sup>16</sup> <https://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=food2030>

<sup>17</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC_1&format=PDF)

<sup>18</sup> [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap\\_en](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en)

<sup>19</sup> <https://ec.europa.eu/transparency/regdoc/rep/1/2011/EN/1-2011-287-EN-F1-1-Pdf>

All stakeholders have to urgently address global challenges such as climate change, land and ecosystem degradation and a growing population forcing 'demand side', 'supply side', 'multipliers' and the 'supportive environment' to seek new ways of producing and consuming that respect the ecological boundaries of our planet. Engagement of these stakeholders to participate in systemic change towards a more sustainable global model, promoting growth and development, thus preserving the ecosystem is essential. Opportunities abound for the circular bioeconomy to help meet climate change targets, in a move away from a fossil fuel-based economy.

However, governance of the bioeconomy in Europe currently appears to be fragmented with some of the major policy agendas (e.g. Regional Development, Circular Economy, Climate Neutrality) being insufficiently aligned with the bioeconomy (or vice versa), to support the rapid transition to a biomass-based economy. Stronger alignment and exploitation of complementarities of the bioeconomy with the circular economy would be beneficial to both agendas.

As demonstrated by BIOVOICES MML workshops as well as by a number of studies, awareness, knowledge, and education relating to sustainable production and consumption, are important factors determining behavioural changes that lead to more sustainable lifestyles. Despite the important investments, strategies and action plans implemented at Regional, National and European level, the 2018 *revision* of the European Bioeconomy Strategy states that *"increasing public awareness and knowledge about all areas of the bioeconomy remains a major challenge, which the European Commission aims to address by supporting communication initiatives to raise awareness of the environmental and socio-economic impacts of the bioeconomy and bio-based products, and its benefits, such as more green jobs"*. Insights from the BIOVOICES project have identified and confirmed that together with awareness and communication, the need for specific education for the bioeconomy is

widely recognized as the sector is growing and will require more new employees to keep growing and innovating.

The current and future situation regarding COVID-19 will require special attention by policy makers in terms of the implications of the crisis for sustainable local and regional development, in the context of climate mitigation, resilience and the circular bioeconomy as a means for stimulating a more sustainable resource base in light of the recovery of the European economy. The recovery from the economic effects of the COVID-19 pandemic could provide an opportunity to promote actionable knowledge gathered by projects such as BIOVOICES to contribute to the creation of a more sustainable way of living, to rethink and redesign a more responsible and fair future together. BIOVOICES MML events scheduled post pandemic will reflect this change.

It will be very important to ensure that key recommendations from the BIOVOICES project are made widely available to ensure that the economic, environmental and societal benefits of the circular bioeconomy are pushed to the forefront, in what is likely to be the rush to get the world economy back on track. As there is a risk that 'non-essential initiatives' will be forgotten or delayed including major international events such as COP-26<sup>20</sup>.

As a positive, the COVID-19 experience has focused attention towards the importance of local and regional economies as this is where the circular bioeconomy seems to operate best, as identified during BIOVOICES MML events.

To maximise these opportunities, BIOVOICES advocates that communication and education should be highlighted to raise awareness of **all bioeconomy sectors**, as well as the environmental and socio-economic benefits. The whole range of target audiences – multi-actors need to be engaged and addressed through tailored activities implemented at local, regional and national level. The BIOVOICES funded experience has resulted in the generation of important insights about effective communication and engagement with multi-actors, ready for

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<sup>20</sup> <https://ukcop26.org/>

## **BIOVOICES Policy Brief for the Research Sector**

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implementation to further embed the circular bioeconomy into EU life and livelihoods.

BIOVOICES insights are laid out in four Policy Briefs, one for each of the four key stakeholder groups (Research, Business, Policy Makers, Civil Society), containing Key Messages, the insights on which the messages are built and case studies captured during the project's MMLs and wider events. The aim of each Brief is to drive debate and discussion within and between all stakeholder groups to progress and scale up the implementation of the circular bio-based bioeconomy.

## 4. The Role of the Research Sector

### Developing and supporting the circular bio-based economy

The research ecosystem made up of the entire tertiary academic field plus dedicated research organisations and individual researchers are critical to the successful on-going development of the bioeconomy in Europe.

The main functions of the research ecosystem to support the bioeconomy overall and the emergence and validation of bio-based products and processes are to;

#### Primarily:

1. Develop new knowledge to support the validity of bio-based sectors through research actions at programme and project level;
2. Collate and present new and/or amended knowledge on bio-based resources and their utilisation for innovative bio-based products and services to targeted audiences that can either invest in or utilise this knowledge to bring new products and services to the market for the benefit of society and the planet;
3. Provide advice and evidence to European, national and regional funders on the 'direction of travel' for the bioeconomy and bio-based products in order to support decision-making on sectors and topics for calls that will reap progressive results;
4. To drive the development and delivery of research programmes and projects that adhere to the best principles of Responsible Research & Innovation (RRI) by involving all appropriate stakeholders and actors to deliver a 360-degree assessment of potential impact on all stakeholders and the planet.

#### Second:

1. To respond to funding calls at European, national, regional/local levels to ensure the long-term and continued research investment into the most productive and relevant investigations into bio-based resources, products, production techniques and services;
2. To provide education resources and opportunities for under and post graduate study into the bioeconomy, bio-based and circular economy sectors, taking particular care to secure a multi-disciplinary approach to that study, supporting the emergence of technical and practical expertise that supports the delivery of a fully inclusive 'bio-society', supported also by the lay community.

## 2. BIOVOICES Key Messages

### *Recommendations to drive dialogue and debate*

Researchers must commit to **Communicating** circular bio-economy research to all stakeholders.

Contribute to the development of a **Common Language** to describe research into the bio-based circular economy that can be understood by all stakeholders and actors.

Bio-based research should focus on understanding of the **Best Use of Resources** within the constantly evolving landscape.

Prioritise and provide circular bio-based economy related **Skills Education** for students, graduates and employers and develop modules related to particular national/regional challenges.

Valorise and communicate **Best Research Practices** and **Optimising Protocols** to support the bio-based sector.

Support the creation of an **Open Access Knowledge Hub** for information on lessons learnt from bio-based product research whether positive or negative, utilised or not.

**Information Must Be Shared**, under licence as appropriate, not held back under Intellectual Property (IP) rules

Research should develop and drive clearer **Connections to and Understanding of Market Needs** by increasing collaboration with all stakeholders.

Focus research using **Cascading Principles** to optimise resource use and reuse.

**Involve Regional and Local Stakeholders** in research agenda development and actions to boost routes to local development.

Be aware that **Regulatory Frameworks can Lag Behind** innovative research, hindering innovation & implementation.

Prioritise research topics that **Explore the Effects of a Scaled-up Circular Bioeconomy** on regional and local ecosystems.

The research community has a role to play in defining **Criteria for Monitoring Bioeconomy Impacts** and developing benchmarks to evaluate these impacts against fossil-based counterparts.

## 5. Insights relating to Key Messages

Based on evidence collated from BIOVOICES MML Events at European, National and Regional levels.

*At the start of the project BIOVOICES partners agreed on the twelve challenges that need to be addressed to drive development and market uptake of bio-based products. The challenges can be accessed in the Annex. The challenge or challenges most relevant to each key message and insight are referenced below.*

### Researchers must commit to **Communicating Circular Bio-based Economy** research to all stakeholders

*“Drive positive collaboration and provide opportunities for all stakeholders to present and share experiences.”  
Bioeconomy Specialist - Policy*

- Develop a dialogue between researchers and consumers.
- Create appropriate research awareness campaigns using qualified information presented through attractive communication addressed to all generations, using a terminology that everyone can understand.
- It is crucial to involve researchers in the dissemination of a simple and clear message and to involve citizens in the testing out of bio-based innovations – citizen science.
- Continuously promote the benefits and unique selling points of bio-based products from early stages of research to product development via various channels including all forms of social media.
- Communicate research findings and developments within a circular bio-based economy approach to maximise the impact of research within the sector on **all** sections of society.
- Actively participate in events such as “Researcher’s Night” and communicate circular bio-based research to a civil society audience.

**Challenges** –Find First Customers, Specify Unique Selling Points

### Develop a **Common Language** to describe research into the circular bio-based economy that can be understood by all stakeholders and actors.

- Research participation is required to increase awareness and active knowledge of circular bio-based terminology, to develop a common language and a universal terminology to increase the dialogue between all stakeholders.
- Develop appropriate research awareness campaigns using qualified information presented through attractive communication addressed to all generations, using a terminology that everyone can understand.
- Define clear objectives involving all stakeholders involved in designing, delivering and utilising research agendas focused around the circular bio-based economy to drive and support collaboration in order to achieve common goals.
- “Get the story right and be the advocates”

**Challenges** - Changes in Purchase Habits, Increase the Adoption, Realise Standardisation

### Bio-based research should focus on understanding of the **Best Use of Resources** within the evolving circular landscape.

*“There is an opportunity for the bio-based industry to ‘leapfrog’ over current materials by providing quality and reliable product data that can be used by industry.” Capability Lead-Industry/Research*

- Bio-based product research must ‘choose its niches’ – particularly at the ‘early development’ stage in order to maintain its relevance to society.



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- Encourage students/researchers to understand how their research fits within the wider environmental perspective.
- Identify specific national/regional challenges for the focus of research.
- Researchers must identify opportunities that make the best use of available resources as sometimes fossil is more appropriate for certain applications.

**Challenges** - Specify Unique Selling Points

**Prioritise and provide bio-based circular economy related Skills Education for students, graduates and employers.**

- Researchers have an opportunity to reach and inspire younger generations by working with schools to create campaigns and projects that act as amplifiers.
- Researchers are well placed to identify opportunities to increase the promotion of bio-based product research using new technologies to communicate research innovations.
- Research institutions must work with industry to support the delivery of circular bio-based economy skills training that is essential for the development, maintenance and repurposing of workforces maximise emerging opportunities.
- Work in partnership with key stakeholders to develop school level awareness of circular bio-based economy via national curriculum.

**Challenges** - Introduce EU & National Incentives, Boost local employment

**Valorise and Communicate Best Research Practices and Optimising Protocols to support the bio-based sector.**

- Research institutions have a responsibility to communicate to highlight excellence and stimulate discussion in order to valorise research best practice related to the development of bio-based products through the exploitation of already financed instruments, such as platforms.
- Opportunities for public outreach should be pursued. Research case studies and best practices from research to product marketing can have strong motivational power.
- Research findings and developments should be communicated within a circular approach to maximise the impact of bioeconomy research on all sections of society.

**Challenges** - Up-Scaling, Improve Resources to Enhance Business Cases

**Support the creation of an Open Access Knowledge Hub for information on bio-based product research whether positive, negative, utilised or not.**

*“Secure the attention of policy-makers to a national online Information point, by providing a coalition/consensus group across all stakeholders to press the case via awareness, engagement and ultimately action. An independent /professional organisation should take the lead here to counter any accusations of bias.” **Lead Scientist-Research***

- Create an open-source collective knowledge hub that maps information on all university, EU funded and associated BBP research whether taken to commercialisation or not.

**Challenges** - Introduce EU & National Incentives

**Information Must Be Shared**, under licence as appropriate, **not held back under Intellectual Property (IP) rules.**

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*“Barriers include regulation, competition and protection of research and innovation between parties in stakeholder groups.”*

*Principal Research Officer- Policy*

- Enhance potential commercial uptake of BBP by addressing the locking of Intellectual Property (IP) within universities and research institutions.
- Research progress and outcomes must be shared in timely and effective ways for the benefit of society not just the holders of the information - utilising accepted good practices that stimulate engagement and discussion.

*“For the ‘greater good’ industry/research will need to relinquish secrecy.” Capability Lead-Industry/Research*

**Challenges** - Introduce EU & National Incentives

## Research should develop and drive clearer Connections to and Understanding of Market Needs by increasing collaboration with all stakeholders.

*“We need more information about bio-based products and their qualities.” Capability Lead-Industry/Research*

- Connect the actors in order to promote dialogue and build bridges to bring academics closer to other stakeholders preventing sectors from working in silos.
- Researchers must co-operate with relevant stakeholders to ensure that the full value of bio-based research is made widely accessible to feed into market development.
- Research ecosystem is well placed to connect all actors, to build bridges that bring academia closer to business, policy makers and consumers to deliver actionable knowledge and engagement within the circular bio-based economy.
- Research findings, if communicated appropriately can aid institutionalised knowledge exchange between purchasing and expert departments relating to technical specifications and sustainability criteria such as Life Cycle Assessment.

**Challenges** - Improve Resources to Enhance Business Cases, Realise Standardisation, Enhance Local Bioeconomy Action Plans

## Focus research using Cascading Principles to optimise resource use and reuse

*“Co-operation between stakeholders essential to prevent sectors from working in silos which has caused problems and the full value of waste products cannot be seen or achieved.” Manager - Industry*

- Research should suggest optimised pathways for biomass utilisation, through cascading use of resources, to ensure sustainability and maximize the exploitation.
- Analyse cooperation within the value chain with a focus on better end-of-life solutions. CO<sub>2</sub> impacts are related to the cascading principles that give priority to higher value uses that allow the reuse and recycling of products instead of burning or composting them.
- End of life options for bio-based products critical for up-scaling potential.
- Focus research on CO<sub>2</sub> impacts instead of bio-based inputs as priority is given to a reduction of CO<sub>2</sub>-impacts within the circular economy.

**Challenges** - Specify Unique Selling Points, Realise Standardisation

## Involve Regional and Local Stakeholders in research agenda development and actions to boost routes to local development

- Bring regional and local stakeholders into contact with the research ecosystem via the creation of multi-actor networks to secure multi-level cooperation.
- Actively participate in providing technical input to forward the development of regional bioeconomy clusters as a strategic component of industrial policy to support synergies and innovation within the circular economy.
- Investment in research and in the relative dissemination and exploitation of results by all local stakeholders will assist in regional and local development, of the circular bioeconomy.

# BIOVOICES Policy Brief for the Research Sector

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**Challenges** - Increase the Adoption; Introduce EU & National Incentives; B2B Users as Frontrunners; Enhance Local Bioeconomy Action Plans

## Be aware that Regulatory Frameworks can Lag Behind innovative research, hindering innovation & implementation

*“Behaviour change by all stakeholders essential to increase uptake of BBPs - paradigm shift. In conjunction with disruptive legislation from government. Involve social scientists in change process.” Lecturer- Research/industry*

- Understanding of and communication with policy and regulation landscape & agencies is essential at all stages of research to planning effective research initiatives.

*“Legislative & regulatory constraints severely reduce transfer of knowledge from R&D to commercialisation e.g. End-of-waste regulations constraining delivery of bio-fertiliser to agriculture. Policy must support innovation rather than constrain it.” Manager AD plant-Industry*

**Challenges** - Introduce EU & National Incentives

## Prioritise research topics that Explore the Effects of a Scaled-up Circular Bioeconomy on regional and local ecosystems

- The research community must investigate possible negative effects such as rebound effect and suggest roadmaps for sustainability to ensure that a possible bioeconomy scale-up will not impact negatively on society or the environment.
- Successful implementation of research-based innovation is dependent on a 360° assessment of impact on bio-related agriculture, water & land use, and biodiversity

**Challenges** - Increase Sustainable Feedstock for BBP, Enhance Local Bioeconomy Action Plans

## The research community has a role to play in defining Criteria for Monitoring Bioeconomy Impacts and developing national/regional benchmarks to evaluate these impacts against fossil-based counterparts.

- Enhance research which clarifies the CO<sub>2</sub>-impacts of bio-based products compared to their fossil-based counterparts. LCA-analysis and Total Cost of Ownership (TCO) are important tools for this.
- Develop benchmarks for life cycle assessment (LCA) and define thresholds for sustainability assessment.
- Focus research on finding tools to assess the impact of composite bio-based materials.
- Work with all stakeholders to define key performance indicators (KPI) to support bio-based industries, defined in the short, medium and long-term.
- Offer research input into methods for calculating the impact of a bio-based product compared to a fossil-based one, including externalities, that can be used by civil society to understand environmental, social and economic impacts of bio-based products.
- Simplify the benchmarking process so it is applicable for use by SMEs and start-ups.

**Challenges** – Introduce EU & National Incentives, Increase Sustainable 2G Feedstock

## 6. Shared Best Practice Actions

### Provide opportunities for researchers to communicate their work at public events

#### Bioeconomy Village at Maker Faire

Public events such as Maker Faires provide core opportunities for researchers to present their work to a mixed, largely lay audience. The Bioeconomy Village concept was initiated by the BIOWAYS project to bring together researchers, innovators and businesses including Small and Medium Enterprises (SME) and start-ups, to promote awareness of the bioeconomy among citizens. Invited researchers, such as ENEA and CNR setup an exhibition booth where the most relevant research in bioeconomy was showcased. Visitors were actively encouraged to participate in an interactive, 'hands-on' bioeconomy through the exhibition of products, curiosities, thematic workshops and practical demonstrations. Visitors were shown that the bioeconomy is increasingly part of our everyday lives.

The initial Bioeconomy Village event took place at the 2017 Maker Faire in Rome. Since then the format has been replicated by both the BIOVOICES and Biobridges projects at a variety of large-scale events, reaching in total over 150,000 visitors and involving more than 400 researchers, companies and projects.

<http://www.bioways.eu/multimedia/articles/the-bioeconomy-village-bioways-at-the-maker-faire-rome/>



#### European Researchers' Night attracts 1.6 million visitors

Researchers' Nights are annual events supported by the European Commission. The primary focus is to bring researchers closer to the general public and to showcase the diversity of current research. Visitors to the events can discover research taking place into the development of the bio-based sector and

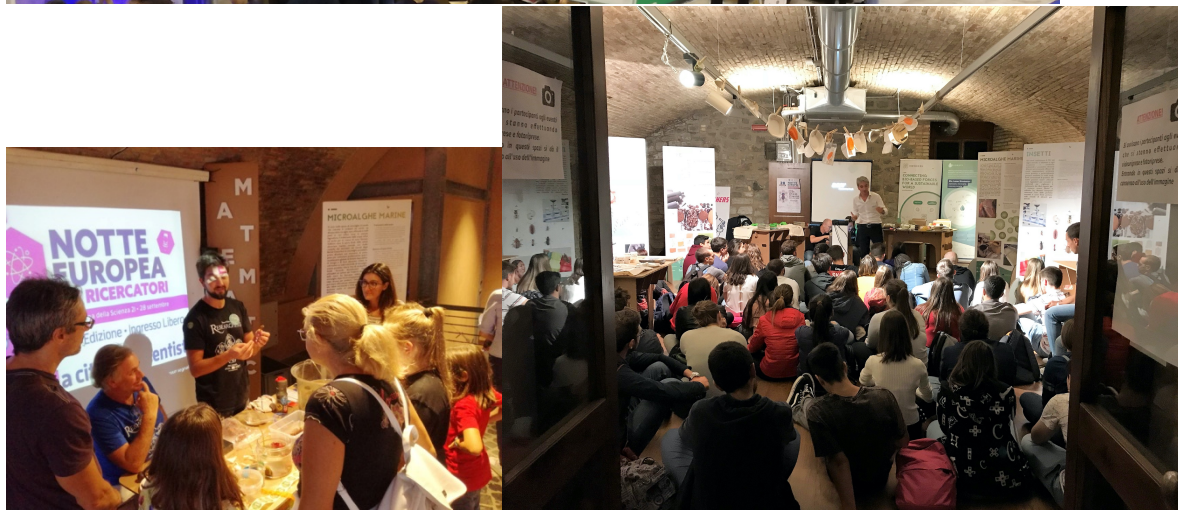
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researchers themselves have the opportunity to highlight the positive impact their work has on our daily lives and for the future. An additional aim is to engage and motivate young people to embark on careers in research. To ensure a broad socio-economic demographic of people participating a variety of venues can be used as well as online platforms.

During 2019, Researchers' Night 2019 attracted 1.6 million visitors across 400 cities in Europe and beyond.

### *Inviting researchers to take part in Researchers' night*



**Promote collaboration between academia, industry and the regions to develop an enhanced workforce able to respond to the market needs of bio-based sectors**

### **The European Bioeconomy University**

Researchers involved with the bioeconomy sector can take advantage of this collaboration between six European universities (Agro Paris Tech, Bologna University, University of Eastern Finland, University of Hohenheim, University of Natural Resources & Life Sciences, Vienna, Wageningen University & Research). This group has a mission to promote empowerment of the European knowledge-based bioeconomy by educating a new generation of truly European experts. Education and training will exploit the full potential of the future bioeconomy by attracting the best talents and training them as the best suited experts to meet the sector's needs, fostering rigorous, relevant and responsible research and transferring this knowledge into society and the economy. Sharing of skilled lecturers and experts in the field is a clear benefit of the collaboration.

<https://european-bioeconomy-university.eu>

**Masters Programme developed in response to industry demand**

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Programmes such as BIOCIRCE – Master in Bioeconomy in the Circular Economy - in Italy, have been created as a direct response to Industry demands to ensure enough skilled workers are available to respond to bioeconomy-related challenges into the future. The BIOCIRCE programme has been developed by collaboration between four Italian universities, University of Turin, University of Milan Bicocca, University of Bologna and University of Naples Federico II, industry representatives and the Community of Practice in Bioeconomy Education (CoP Bio-Edu).

The BIC education working group and the European Bioeconomy University are all focusing on the development of a responsive educational pathway for the bioeconomy.

<http://masterbiocirce.com>

### **Highly innovative collaboration between the UK universities of York, Hull and Teesside through the THYME project is an exemplar of good practice in knowledge exchange to drive regional development.**

This innovative collaboration between the universities of York, Hull and Teesside has become is an exemplar for good practice in Knowledge Exchange between Higher Education Institutions (HEI) and industry, attracting trade and inward investment into sustainable bio-based industries and HEIs. Other partners include BioVale, York and the Biorenewables Development Centre. The fast-growing bioeconomy represents a major economic opportunity for the UK and particularly for the North of England. The THYME project (funded by UKRI) aims to build on regional assets to drive increased productivity of companies operating in the bioeconomy across Yorkshire, Humberside and the Tees Valley. The project is supported by the Connecting Capability Fund of Research England.

"The North of England has huge potential to lead the UK's shift to a bio-based economy and the THYME project has played a fantastic role in driving this forward. Through THYME, the universities of York, Teesside and Hull have found new and innovative ways to work together and to reach out to bio-based businesses and other regional stakeholders."

<https://re.ukri.org/knowledge-exchange/the-connecting-capability-fund-ccf/thyme-project-teesside-hull-and-york-mobilising-bioeconomy-knowledge-exchange/>



## Annex

The 12 Challenges identified by BIOVOICES to contribute to the market uptake of BBP



**BIOVOICES**

CONNECTING BIO-BASED FORCES  
FOR A SUSTAINABLE WORLD

# **BIOVOICES Policy Brief for the Business Sector**

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## Table of Contents

1. Introduction to the Policy Briefs
  2. The Policy Context
  3. The Role of the Business Sector
  4. BIOVOICES Key Messages
  5. Insights relating to Key Messages
  6. Shared Best Practice Actions
- Annex - The 12 BIOVOICES Challenges

## 1. Introduction to the Policy Briefs

Four Policy Briefs have been created, one for each quadruple helix stakeholder group (civil society, research, business, policy sectors) - to present the insights gathered from the BIOVOICES experience - over 70 Mobilisation and Mutual Learning (MML) events - in a format that is both straightforward, accessible and usable.

These documents have been developed for active use and exploitation by the key stakeholders of the quadruple helix and all actors working across the circular bio-based economy, in their work and practice to deliver knowledge, best practice and lessons learnt to drive debate, support pro-active discussion and collaboration to address the associated challenges relating to the up-scaling of bio-based products (BBPs).

The key themes from the Policy Briefs common to all stakeholder groups have informed the development of the BIOVOICES Action Plan for Citizen Engagement which is a framework of recommendations for all stakeholders to consider when designing and delivering their own action plan to drive citizen engagement, advocacy and ultimately action to support the purchase and use of BBPs and services for the benefit of key stakeholders and society as a whole.

Additional BIOVOICES materials to drive debate and discussion regarding the promotion of BBPs are available to download at <https://biovoices.eu>



## 2. The Policy Context

*BIOVOICES has run from January 2018 to April 2021, its start coinciding with the launch of the EC's revised **Bioeconomy Strategy**<sup>1</sup>. Throughout the project, the gathering of key insights and actionable knowledge from MML events has been coloured by the constantly evolving nature of the wider socio-economic and policy landscape and in the last year the impact of Covid-19. Due to restrictions imposed by the pandemic, many MML workshops planned for 2020 have been transformed into online events, resulting for many, in an increase in the numbers of participants from a wider range of geographical locations. This responsiveness to changing priorities in each of its partners' territories to maintain relevance has been a key aspect of the BIOVOICES project.*

Global economic challenges have provided a constant backdrop to the BIOVOICES project and are reflected in the selection of the BIOVOICES challenges relating to the market acceleration of innovative bio-based products (BBP). The policy background against which the BIOVOICES project has been delivered is outlined here.

The update of the EC **Bioeconomy Strategy** published in October 2018 reconfirmed the urgent need for development of the bio-based sector. *"Global challenges like climate change, land and ecosystem degradation, coupled with a growing population force us to seek new ways of producing and consuming that respect the ecological boundaries of our planet."*

The **European Green Deal**<sup>2</sup> launched by the new EU Commission (EC) in December 2019 aims to drive the transition to a *fair and prosperous society, with a modern, resource-efficient and competitive economy in Europe*, promoting a new economic action plan to help

modernise the EU's economy and draw benefit from the opportunities of the circular economy domestically and globally. The Green Deal is an integral part of the Commission's strategy to implement the **United Nation's 2030 Agenda**<sup>3</sup> and the associated sustainable development goals (SDGs), the COP 21 Paris Climate Agreement<sup>4</sup> and the other green priorities announced in **President von der Leyen's political guidelines**<sup>5</sup>. Additionally, the **"Decade of Action"**<sup>6</sup>, promoted by UN Secretary-General, calls for accelerating sustainable solutions to all the world's biggest challenges, applying the 'do no harm' principle, which will require honest communication and 360° vigilance against 'unexpected adverse consequences'.

Since 2010, as described in the **Europe 2020 Strategy**<sup>7</sup>, the bioeconomy has been identified as a key element for driving smart and green growth in Europe, aimed at alleviating pressures on the natural environment, whilst creating new business opportunities, employment and growth. At the European level, whilst a dedicated bioeconomy strategy has been in effect since 2012, it is presented as a 'Communiqué' not as legislative proposal. This strategy was updated in 2018 together with a progress report on implementation ("EC Bioeconomy Strategy," 2018). The strategy provides a framework for shifting the economic resource base in Europe from a linear model drawing on finite raw materials, to a circular model that focuses on innovative renewable materials from biomass from land and sea as well as wastes.

The bioeconomy already accounts for 8% of the EU's workforce<sup>8</sup> but modelling has indicated that bio-based industries could create up to 1 million new 'green' jobs by 2030,

<sup>1</sup> [https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018\\_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy](https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy)

<sup>2</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)

<sup>3</sup> <https://www.un.org/sustainabledevelopment/>

<sup>4</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>5</sup> [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf)

<sup>6</sup> <https://www.un.org/sustainabledevelopment/decade-of-action/>

<sup>7</sup> <https://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

<sup>8</sup> [https://ec.europa.eu/research/bioeconomy/pdf/ec\\_bioeconomy\\_actions\\_2018.pdf](https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_actions_2018.pdf)

especially in rural and coastal areas<sup>9</sup>. Nonetheless, the share of the bioeconomy (including energy, food & feed and material applications) in EU GDP is still low, with most employment in low-tech bioeconomy sectors. The reasons for this are manifold and range from low acceptance of BBPs among customers, to technical challenges with material property requirements, to political frameworks as well as labelling and standardisation, hindering dynamic developments in the bioeconomy. The contextualisation and basis of bioeconomy policy is overall still weak in Europe (Devaney et al., 2017)<sup>10</sup> Directives that impact on the depth and pace of bioeconomy development in Europe have yet to be adapted and aligned with the objectives of the strategy, whilst current legislation sometimes even hinders the further up-take of BBP (e.g. EU Waste Framework<sup>11</sup>).

The BIOVOICES project identifies that *“Bioeconomy is a complex and multi-factoral domain and its wide diffusion depends on the active collaboration of a broad range of stakeholders including industry, researchers, civil society and public authorities.”*

A set of new transformative policies have been recently launched by the European Commission<sup>12</sup> and are planned to support the Green Deal. These include the new EU Circular Economy Action Plan (CEAP)(2020)<sup>13</sup>, which promises to deliver key fixes to legislation in the area of waste generation- and management as well as eco design and obligatory use of secondary materials requirements by 2021/22. The CEAP links with the EC’s Bioeconomy Action Plan in two key areas:

- in sustainable production, supporting the bio-based sector in its circularity potential
- and in the area of food, nutrients and water, where it supports increased shares

of extraction of sustainable biomass materials in the EU, building a sustainable circular bioeconomy.

Circular bioeconomy can indeed significantly contribute towards a broad range of EU targets and the UN Sustainable Development Goals (STGs), including climate change mitigation, the circular economy and resource efficiency, environmental protection, creating jobs, growth and revenue. In particular a circular bioeconomy can create and maintain sustainable economic growth, prosperity and high-value employment in rural, coastal and industrial areas where these are greatly needed, reduce fossil carbon dependence and improve the economic and environmental sustainability of primary production and processing industries.

Examples of other transformative legislation are the **Single-use Plastics Directive**<sup>14</sup>, the **‘Farm to Fork’ Strategy**<sup>15</sup>, the **Food 2030 policy**<sup>16</sup>, the new **EU Forest strategy**<sup>17</sup>, the new **Common Agricultural Policy**<sup>18</sup> to name a few. This wide-ranging political vision will have significant impacts relating to the wider deployment of the bioeconomy and the increased development of BBPs, contributing to the modernisation of the EU’s economy and providing societal, economic and environmental benefits.

Additionally, the EC Council of Regulation has adopted a regulation, strengthening the intellectual property rights office. The first legislative delivery from the Commissions IPR Strategy of May 2011<sup>19</sup>. Here, the EC sets out its new Intellectual Property Rights strategy intended to foster innovation, as well as the growth and competitiveness of the EU economy to include the development of the bio-based sector.

<sup>9</sup> <https://biconsortium.eu/about/our-vision-strategy/benefits-europe>

<sup>10</sup> Devaney, L., Henchion, M., Regan, A., 2017. Good Governance in the Bioeconomy. *EuroChoices* 16, 41–46. <https://doi.org/10.1111/1746-692X.12141>

<sup>11</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>

<sup>12</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap_en.pdf)

<sup>13</sup> [https://ec.europa.eu/environment/circular-economy/pdf/new\\_circular\\_economy\\_action\\_plan.pdf](https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf)

<sup>14</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN>

<sup>15</sup> [https://ec.europa.eu/food/sites/food/files/safety/docs/2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/2f_action-plan_2020_strategy-info_en.pdf)

<sup>16</sup> <https://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=food2030>

<sup>17</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC_1&format=PDF)

<sup>18</sup> [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap\\_en](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en)

<sup>19</sup> <https://ec.europa.eu/transparency/regdoc/rep/1/2011/EN/1-2011-287-EN-F1-1.Pdf>

# BIOVOICES Policy Brief for the BUSINESS SECTOR

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The EC has to date placed emphasis on the development and implementation of bioeconomy strategies at a national level. More recently, the implementation of regionally focused bio-based economies with a local dimension has been encouraged by the EC to support overall sustainability and circularity, including trade-offs, synergies, business models, social innovation and participatory approaches. Insights and actionable knowledge obtained from the BIOVOICES MML events has highlighted the opportunities for regional and mutual co-operation, for example expert clusters which bring all relevant actors together.

All stakeholders have to urgently address global challenges such as climate change, land and ecosystem degradation and a growing population forcing 'demand side', 'supply side', 'multipliers' and the 'supportive environment' to seek new ways of producing and consuming that respect the ecological boundaries of our planet. Engagement of these stakeholders to participate in systemic change towards a more sustainable global model, promoting growth and development, thus preserving the ecosystem is essential. Opportunities abound for the circular bioeconomy to help meet climate change targets, in a move away from a fossil fuel-based economy.

However, governance of the bioeconomy in Europe currently appears to be fragmented with some of the major policy agendas (e.g. Regional Development, Circular Economy, Climate Neutrality) being insufficiently aligned with the bioeconomy (or vice versa), to support the rapid transition to a biomass-based economy. Stronger alignment and exploitation of complementarities of the bioeconomy with the circular economy would be beneficial to both agendas.

As demonstrated by BIOVOICES MML workshops as well as by a number of studies, awareness, knowledge, and education relating to sustainable production and consumption, are important factors determining behavioural changes that lead to more sustainable lifestyles.

Despite the important investments, strategies and action plans implemented at Regional, National and European level, the 2018 *revision* of the European Bioeconomy Strategy states that *"increasing public awareness and knowledge about all areas of the bioeconomy remains a major challenge, which the European Commission aims to address by supporting communication initiatives to raise awareness of the environmental and socio-economic impacts of the bioeconomy and bio-based products, and its benefits, such as more green jobs"*. Insights from the BIOVOICES project have identified and confirmed that together with awareness and communication, the need for specific education for the bioeconomy is widely recognized as the sector is growing and will require more new employees to keep growing and innovating.

The current and future situation regarding COVID-19 will require special attention by policy makers in terms of the implications of the crisis for sustainable local and regional development, in the context of climate mitigation, resilience and the circular bioeconomy as a means for stimulating a more sustainable resource base in light of the recovery of the European economy. The recovery from the economic effects of the COVID-19 pandemic could provide an opportunity to promote actionable knowledge gathered by projects such as BIOVOICES to contribute to the creation of a more sustainable way of living, to rethink and redesign a more responsible and fair future together. BIOVOICES MML events scheduled post pandemic will reflect this change.

It will be very important to ensure that key recommendations from the BIOVOICES project are made widely available to ensure that the economic, environmental and societal benefits of the circular bioeconomy are pushed to the forefront, in what is likely to be the rush to get the world economy back on track. As there is a risk that 'non-essential initiatives' will be forgotten or delayed including major international events such as COP-26<sup>20</sup>.

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<sup>20</sup> <https://ukcop26.org/>

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As a positive, the COVID-19 experience has focused attention towards the importance of local and regional economies as this is where the circular bioeconomy seems to operate best, as identified during BIOVOICES MML events.

To maximise these opportunities, BIOVOICES advocates that communication and education should be highlighted to raise awareness of **all bioeconomy sectors**, as well as the environmental and socio-economic benefits. The whole range of target audiences – multi-actors need to be engaged and addressed through tailored activities implemented at local, regional and national level. The BIOVOICES funded experience has resulted in the generation of important insights about effective communication and engagement with multi-actors, ready for implementation to further embed the circular bioeconomy into EU life and livelihoods.

BIOVOICES insights are laid out in four Policy Briefs, one for each of the four key stakeholder groups (Policy Makers, Research, Business, Civil Society), containing Key Messages, the insights on which the messages are built and case studies captured during the project's MMLs and wider events. The aim of each Brief is to drive debate and discussion within and between all stakeholder groups to progress and scale up the implementation of the circular bio-based bioeconomy

## 3. The Role of the Business Sector

### To help drive bio-based innovation

The drive towards establishing a successful circular bio-based economy requires the significant transformation of business models by all companies needing to innovate. A new definition of the value proposition, creation, delivery, and capture, of value is required to embrace bio-based technologies from early innovation to full-scale commercialisation.

Business must fulfil a function and take an active role as a driver of innovation in the continued development of the European circular bio-based economy, investing in healthier, safe, and sustainable products and services. Circular business models for the bioeconomy that ensure a focus on entire lifecycles and efficient use of resources is required. Such business models must generate financial returns. Unfortunately, many companies are still struggling to develop effective business models to generate enough profit to grow.

Developing new business models in an established market field needs an enabling policy and appropriate legislative frameworks (regulatory protection). It is still necessary, with the support of other stakeholders, to push policy makers to implementing regulatory and practical change to ensure that the circular bio-based economy can compete effectively in the wider market. Businesses must support calls to European, national, local/regional governments to provide appropriate environments for bio-based businesses to flourish. Examples of initiatives for consideration are innovation funds, “eco-taxation”, bio-based criteria in public procurement, obligatory design, sustainability standards and labelling requirements in order to support market advantage.

## 4. BIOVOICES Key Messages

### *Recommendations to drive dialogue and debate*

#### INTERNAL FOCUS – SECTOR/ORGANISATION RESPONSIBILITIES

Establish a common and **Honest Language** to describe bio-based products and processes to avoid 'greenwashing' and confusion in order to nurture consumer trust.

Industry/businesses must take responsibility for consumer clarity around **End-of-Life Outcomes** for bio-based products.

Businesses must use their own international, national, regional/local connections to increase **Cross-sectoral Cooperation** to drive the development of the circular bio-based economy.

Develop **Robust, Realistic and Flexible Business Plans** for bio-based products to include all appropriate data to attract longer term investor funding.

Ensure the **Stability, Consistency, Quality and Homogeneity of Feedstock Supplies** to meet market needs of products by promoting territorial cooperation.

Seek out appropriate organisations and links (e.g. trade organisations) to actively input into and **Support the Development of Local/Regional plans** for system improvement within the circular bio-based economy.

#### EXTERNAL FOCUS – INFLUENCING & COLLABORATION

Industry must work with appropriate key stakeholder groups to develop **Supportive Legislation, Common Standards, Labels and Specifications** to build trust and confidence in the bio-based market.

**Challenge Policy Makers about Price Parity** of bio-based and fossil-based products to push for targets, regulation and incentives for bio-based start-ups and industries.

Industry can influence the development and implementation of a straightforward and easy to understand **Waste Management and Waste Recovery System** based on clear legislation at national, local and individual business level.

Engage with key stakeholders to develop strong **Local/Regional Networks** for the circular bio-based economy. Support and promote the idea of local circular bioeconomy managers to drive the transition towards more bio-based and circular cities and regions, leading to the development of;

An **Accessible Platform** to enable stakeholders to identify where feedstocks, bio-based products and related resources can be located in each area.

## 5. Insights relating to Key Messages

Based on evidence collated from BIOVOICES Mobilisation and Mutual Learning (MML) Events at European, National and Regional levels.

*At the start of the project BIOVOICES partners agreed on the twelve challenges that need to be addressed to drive development and market uptake of bio-based products. The challenges can be accessed in the Annex. The challenge or challenges most relevant to each key message and insight are referenced below.*

### INTERNAL FOCUS – SECTOR/ORGANISATION RESPONSIBILITIES

Establish a common and **Honest Language** to describe bio-based products and processes to avoid 'greenwashing' and confusion in order to nurture consumer trust.

*"There is a lack of transparency in communication around the use of bio-based materials in packaging – Corporate responsibility must kick in and be real." General Manger- Industry*

- Cooperate with all relevant stakeholders to develop awareness and active knowledge of standard bioeconomy terminology to increase dialogue to communicate the positive impact BBP can have on the environment in terms of functionality compared to traditional products.
  - Avoid confusing definitions of the bioeconomy and related terms such as sustainability
  - Be transparent in marketing benefits of BBP by taking into account possible negative issues, for example rebound effect.
- Do not promote products where the waste infrastructure is not in place to deal with them (e.g. industrial composting)

*"Greenwashing' by suppliers of some bio-based products has resulted in loss of public trust e.g. compostable coffee cups, when the UK recycling infrastructure is not set up to deal with these innovations." Citizen MML attendee-Civil Society*

**Challenges:** Changes in purchase habits, Increase the adoption of bioeconomy including bio-based products, Realise standardization

Industry/businesses must take responsibility for clarity around **End-of-Life outcomes** for bio-based products

*"Knowledge about the real nature of biodegradability and the fact that many products need to be subject to an industrial process to achieve breakdown is not understood at all/most levels." Collaboration Lead-Industry*

- Address citizen concerns about the misleading use of terms by industry, such as biodegradable and compostable.
- Make clear the difference between home compostable and industrial compostable products
- Understand that citizens are more interested in end-of-life solutions for plastics than in bio-based inputs.
- Comply with Extended Producer Responsibility legislation with regards to packaging.

*"Use bio-based to replace fossil fuels in manufacture where it won't change or effect the end-of-life solution." General Manager- Industry*

**Challenges:** Specify Unique Selling Points, Increase the Adoption, Realise Standardisation

Businesses must use their own international, national, regional/local connections to increase **Cross-Sectoral Cooperation** to drive the development of the circular bio-based economy.

*"There is a need to work in collaboration with other organisations. Working together and sharing information about what is available to businesses in terms of support." Education, Project Development Officer*

- Facilitate the collaboration between sectors and different value chains that supports multi-level cooperation and creation of multi-stakeholder networks.

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- Start-ups must cooperate with brand owners to promote unique selling points (USP) of BBP to ease scale-up process.
- Building companies and retail/brand owners must promote opportunities for using BBP in construction.
- Boost industry engagement with the education sector to ensure there is an appropriately skilled workforce to drive the bio-based sector.

*“Access to funding for small horticulture businesses is a challenge, we all need to work together to share information about what information is available to businesses.” Project Development Officer-Education*

**Challenges:** Up-scaling, Improve resources to enhance business cases, B2B users as frontrunners, Boost local development

## Develop Robust, Realistic and Flexible Business Plans for bio-based products to include all appropriate data to attract longer term investor funding.

*“Move away from “Get Rich Quick” mindset of innovators/investors/manufacturers to a more sustainable, long-term approach.” Managing Director-Industry*

- Promote culture change to move away from ‘get rich quick’ mentality.
- Focus on circularity aspects when creating a business plan and value proposition.
- Develop holistic thinking about the feasibility of the product relating to the three pillars of people, planet, and profit.
- Provide benchmarks to assess technical and cost performance of bio-based products early on in the planning process.
- Collaborate with the research community to ensure that the full value of bio-based research is fed into market development.
- Business plans must be scalable and ready to be transferred and adapted to different contexts, evolution scenarios and local resources.
- Collaborate and innovate to create, capture, and deliver value to improve resource efficiency by extending the lifespan of products to achieve environmental, social, and economic benefits.
- Funders including banks and venture capitalists must become less risk averse when assessing applications from bio-based businesses at scale-up phase.

*“A particular challenge has been the identification of funders with a similar ethical and sustainable focus. Many are driven by profit first and foremost.” Entrepreneur-Research/industry*

**Challenges:** Improve resources to enhance business case, Increase the adoption

## Ensure the Stability, Consistency, Quality and Homogeneity of Feedstock Supplies to meet market needs of your products by promoting territorial cooperation.

*“The lack of volume of raw material available for retailers wishing to shift to sustainable packaging is one of the biggest challenges, plus the consistency of that supply.” Lead Scientist-Research*

- Collaborate with other stakeholders to develop efficient platforms for specific biomass availability where quality and homogeneity can be standardized for effective market use.
- In many bio-based applications the quality and consistency of the feedstock must be guaranteed in order to be competitive with fossil-based equivalents.
- Integrate feedstock providers into the value chain for BBP.



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- Implement training and practical guidance by industry for feedstock providers (primary producers) to improve awareness and to better exploit bioeconomy-related opportunities.
- Define linking strategies for regions producing similar raw materials.
- Intervene with incentives and forward planning to overcome issues related to seasonality of feedstock production.
- Integrate processes for full biomass conversion into diverse BBP.

*“Cost and availability are the two biggest challenges in manufacture using bio-based materials, plus homogeneity of the supply.” Collaboration Lead-Industry*

**Challenges:** Increase sustainable bio-based feedstock for BBP.

**Seek out appropriate organisations and links (e.g. trade organisations) to actively input into and Support the Development of Local/Regional plans for system improvement within the circular bio-based economy.**

*“Co-operation between stakeholders essential to prevent sectors from working in silos which has caused problems and the full value of waste products cannot be seen or achieved.” Manager AD plant-Industry*

- Business has an opportunity to input into local/regional action plans where needs and are identified and resources mapped.
- Adapt and link new value chains and business models to regional development strategies.
- Collaborate to adapt global ideas and processes to complex localities, unique cultures and societies.
- Producers require financial and legal support but often the creation of regional clusters and alliances can have more lasting benefits.
- Support primary producers, SMEs, entrepreneurs and employees to develop new skills to better take advantage of bioeconomy-related opportunities.

**Challenges:** Enhance local bioeconomy strategies and action plans.

## EXTERNAL FOCUS – INFLUENCING & COLLABORATION

**Industry must work with other key stakeholder groups to develop common standards, labels and specifications to build trust and confidence in the bio-based market.**

- Collaborate to define and implement common standards, labels and specifications.
- Simplification of the large number of labels and certifications is urgently required.
- Work with policy makers to ensure standardisation by better regulation throughout the demand chain (consumers, B2B, procurers) including end-of-life management.
- Address difficulties of access to labelling and certification schemes by SME and start-ups.

**Challenges:** Realise standardisation, Increase the adoption

**Challenge Policy Makers about Price Parity of bio-based and fossil-based products to push for targets, regulation and incentives for bio-based start-ups.**

*“The internal challenge in my business is gaining acceptance of the costs involved – there is a willingness to ‘do the right thing’ but not at any cost.” Capability Lead Industry/research*

- Set clear targets to incentivise the introduction of bio-based products by providing a framework, to provide direction.

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- The CO<sub>2</sub> footprint of a new BBP and/or of the inputs for the bio-based product should form part of the criteria to be eligible for financing.
- Highlight externalities such as social impact (health), environmental impact to create bio-based supportive legislation (public procurement).
- Create connections between procurement and development strategies to provide a clear framework/of how bio-based procurement is linked to processes such as Agenda 2030 and Sustainable Development Goals.
- Pursue change in regulations to facilitate the re-use of waste products
- Seek flexible regulations for innovative BBP.
- Push for subsidies for bio-based start-ups and scale-ups to lower the purchase cost to citizens of bio-based products.
- Simplify and accelerate licensing procedures to support bio-based start-ups where a large investment in technology and personnel is required.

**Challenges:** Introduce EU & National incentives, Improve resources to enhance business cases

**Industry can influence the development and implementation of a straightforward and easy to understand Waste Management and Waste Recovery System at national, local and individual business level.**

- There is currently a lack of good waste management systems at all levels. A simplified system is necessary for increased and effective communication to all stakeholders.
- There are still not enough solutions for recycling and waste recovery in the majority of countries.
- Investment in the recycling industry is now essential to allow the industry to move forward to deal with novel bio-based materials at end-of-life.
- Promote and improve cascading use of feedstocks within waste system to maximize the use of resources and reduce waste.
- It is the responsibility of producer to create more homogeneous streams for waste handlers
- Simplify the system and provide clear information regarding the bio-plastics sector: find and collect mono streams of bio-poly(lactic acid) (bio-PLA) packaging at specific points or events.

**Challenges:** Up-Scaling, Boosting local deployment.

**Engage with key stakeholders to implement strong local/regional networks for the circular bioeconomy.**

- Support and promote the idea of local circular bioeconomy managers to drive the transition towards more bio-based and circular cities and regions.
- Promote information sharing and raise awareness about the business opportunities within the local bioeconomy to help adapt local society mindset, in particular primary producers.
- Identify gaps in knowledge and missing skills within agricultural communities related to business opportunities within the circular bio-based economy.
- Map regional employment opportunities in bio-based sectors and make information accessible.
- Networks of providers can assist with local development, valorisation of local resources and improve the lobby to central and regional government.

**Challenges:** Enhance local bioeconomy strategies and action plans, Boosting local deployment.

Leading to the development of;

An **Accessible Platform** to enable stakeholders to identify where bio-based products and materials can be located in each local area.

*“In the UK there is a lack of a central database or organization that can supply information to businesses about sustainable products, for example films to cover food. The issue of a lack of globally recognized standards for sustainable products is a key issue preventing the formation of such a database.” **Research/Industry, Entrepreneur***

- Create specific places for the purchase of BBP by developing a catalogue of all bio-producers and bio-products from the local/regional area.
- Create a marketplace for feedstocks enabling easy access to bio-based materials.
- Facilitate the cascading use of feedstocks by connecting the value chains and facilitating cross connections.

**Challenges:** E1: Enhance local bioeconomy strategies and action plans, E2: Boosting local deployment.

## 6. Shared Best Practice Actions

### Platform links local food producers and city residents



malltaranesc

Farmers Mall (Mall Taranesc in Romanian) is a platform developed to link small local producers directly with residents of Romanian cities.

“Currently over 1,300 small agricultural producers use Farmers Mall to sell their products”, say the creators of the platform.

The aim is to develop an ecosystem by which small rural entrepreneurs can find customers for their products. The platform also provides scope for producers to display certificates relating to animal welfare, eco and bio - certificates.

<https://malltaranesc.ro/>

### Bridge2brands - an innovative format to connect large brands and smaller providers of bio-based solutions

To Improve collaboration between bio-based Industries and Brands, the **Biobridges** project launched the **bridge2brands** initiative to connect large companies willing to embrace a more sustainable approach in their business and bio-based industries and research players providing innovative solutions to the specific challenges identified by the BrandsMore.

The increased focus on sustainability by consumers and retail partners makes it clear that disposable, hard to recycle everyday items are becoming less acceptable and businesses have to respond accordingly.

In collaboration with **Procter & Gamble (P&G)**, the first **bridge2brands** call was launched to find innovative and more sustainable solutions for Braun & Oral-B products. The P&G objective is to use the scale of their leadership brands as leverage for a force for good, promoting and enabling more responsible consumption amongst consumers, while also reducing overall waste and the use of virgin materials in their products.

The “call for innovation” was closed on the 5<sup>th</sup> June 2020. Out of the 52 high quality ideas from 22 countries, 24 were invited to the online international workshop on 23-24 June 2020. They had the unique opportunity to pitch their ideas to P&G and discuss the advantages, pros and cons of their solutions to address the specific challenges identified, towards potential market dialogue and business partnership with the brand. Collaboration among the participants has been encouraged during the event.

<https://www.biobridges-project.eu/news-events/news/p-g-and-biobridges-call-for-innovative-solutions/urlen>

### Smart Solutions in Short Food Supply Chains

# BIOVOICES Policy Brief for the BUSINESS SECTOR

[www.biovoices.eu](http://www.biovoices.eu)

SMARTCHAIN supports the development of collaborative short food supply chains and promotes a more favourable framework for sustainable, local, healthier and ethically produced food in Europe. The project will engage key stakeholders involved in short food supply chains, re-connect farmers and consumers and stimulate co-creation through citizen involvement. Nine Innovation and Collaboration Hubs will be established in France (HUB Manager: ACTIA), Germany (UHOH), Greece (UOC), Hungary (KIS), Italy (UNIBO), Netherlands (AMP), Serbia (UOB), Spain (AZTI) and Switzerland (WBF).

*“The establishment of the national innovation hubs will lead to a permanent association of stakeholders at national level, working on the improvement of short food supply efficiency for the economic growth of the sector for the benefits of European farmers and citizens.”*

<https://www.smartchain-h2020.eu>

## Agri-Food Clusters in Romania support sector development

Agri-food sector clusters in Romania have joined forces within a national network to support and promote sector development at local and regional level. This is being achieved by collaboration between organisations, cross-sector clusters both in Romania and abroad, local authorities, regional and national institutions. This has led to an increase in the development of the national market and improved international economic relations.

The development of the national agri-food sector is dependent on the efficient use of existing resources and opportunities. Consequently, it is desirable to develop integrative structures, in various fields, in the form of clusters that offer members the opportunity to perceive the resulting socio-economic benefits and to understand the impact that the promotion of entrepreneurship has on society in general. The degree to which entrepreneurship will be able to develop is dependent on a number of factors that cluster members will be able to use to their advantage, by sharing knowledge, resources and facilities at their disposal.

<https://agrocluster.ro/en/2020/05/28/clusterele-din-sectorul-agroalimentar-din-romania-si-au-reunit-capacitatile-in-cadrul-unei-retele-nationale-de-clustere/>



Map of The National Network of Clusters in the Agri-food sector, Romania

## DanuBioValNet, Danube,

The drivers for this project are the creation of a transnational series of clusters that foster bio-economy and eco-innovations to strengthen regional economies. The aim is to develop new methods, strategies and tools to connect Danube actors, for example SMEs, farmers, universities, research institutes, to enhance bio-based industry. The project is focused on three bio-based value chains with high potential, Phytopharma, Eco-

# BIOVOICES Policy Brief for the BUSINESS SECTOR

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construction and bio-based packaging (Bioplastic). A long-term, industry driven roadmap will be produced to enhance collaboration and create new bio-based value chains in the Danube Region.

The partners involved in this project have pursued a strong strategic orientation that goes beyond the immediate and medium-term economic objective of strengthening the regional economy. The strategic goal is to establish cross border partnerships, particularly in developing regions, with the help of powerful cluster organisations. Project benefits will be sustained with the enabling and facilitation of strategic investments, especially in the bio industries. This will be achieved mainly by supporting newly emerging or transforming existing value-added chains, which are increasingly being transnationally established and further developed as a result of the increasing internationalisation of value-added processes.

<http://www.interreg-danube.eu/approved-projects/danubiovalnet/section/phytopharma-value-chain>  
<http://www.interreg-danube.eu/approved-projects/danubiovalnet/section/eco-construction-value-chain>  
<http://www.interreg-danube.eu/approved-projects/danubiovalnet/section/bio-based-packaging-value-chain>

## **Clusters and other business-oriented initiatives working together**

BIOVOICES extensively promoted collaboration with regional clusters and other business-oriented initiatives, for example with chambers of commerce and industry associations, to facilitate the involvement of the business community.

This approach led to the organisation of events designed to address specific challenges that are relevant and motivating for industry. An event in the Apulia region of Italy was run by BIOVOICES in collaboration with Cluster SPRING and in the Piedmont region in collaboration with the local Chamber of Commerce.

## **Collaboration between academia, industry and the regions to train a skilled workforce more responsive to market needs**

To respond to demand from industry for a skilled workforce to respond to bioeconomy-related challenges, several projects and experiments are taking place in Europe. Masters programmes such as BIOCIRCE in Italy, a collaboration between several universities and businesses as well as the Community of Practice in Bioeconomy Education (CoP Bio-Edu), the BIC education working group, the European Bioeconomy University are all focusing on providing a responsive educational pathway for the development of the bioeconomy.

<http://masterbiocirce.com>

## **Business backs development of bio-based innovation in Castilla La Mancha, Spain**

A group of businesses from the community of Castilla La Mancha collaborated to implement a comprehensive plan for the development of bioeconomy by public procurement strategy, this initiative resulted in the setting up of the CLAMBER biorefinery and includes the development of scientific projects in various areas utilising agri-food residues.

The aim is to demonstrate techno-economic and environmental viability of an integrated and innovative biorefinery for the transformation of the organic fraction of municipal solid waste (MSW) into new marketable bioproducts, chemical building blocks, biopolymers and additives.

<https://www.urbiofin.eu/partners/iriaf-clamber-biorefinery/>  
<https://clamber.castillalamancha.es/>

## **Central Finland Cluster**

# BIOVOICES Policy Brief for the BUSINESS SECTOR

[www.biovoices.eu](http://www.biovoices.eu)

The cluster began operating in 1992 and is expanding with the setup of new bio-based industries that complement the traditional bioenergy, pulp and paper sector and attract both private and public funding. Innovative products include biopolymers, biochemicals and enzymes.

These actors combined in a cluster are a key asset. The following specific groups play a key role:

- Entrepreneurs - the presence of entrepreneurial culture plays a pivotal role in driving clusters towards successful development. Clusters usually leverage on the presence and active participation of various individuals with an entrepreneurial spirit who are risk-takers and willing to try new ideas. The level of entrepreneurial culture can be seen as a critical success factor whereas low levels of entrepreneurship would be a cause for concern.
- Policymakers - political leaders who are willing to support the development of the bioeconomy, providing governance, institutional structures and financial support.
- Knowledge institutes - organisations that provide technical know-how and innovation for the development of bio-based products.

Points to highlight are:

- the successful transition from forest and energy products to innovative and competitive bio-based products
- market integration involves the engagement of local companies of all sizes and the formation of regional targets
- appropriate funding advice is provided. A central coordinated structure for investigating funding opportunities from mixed sources has been developed to inform and update entrepreneurs and R&D actors and provides support during the funding application procedure.

[https://berst.databank.nl/report/gp%20central%20finland%20\(primary%20biomass,%20paper%20and%20pulp,%20bioenergy\).pdf](https://berst.databank.nl/report/gp%20central%20finland%20(primary%20biomass,%20paper%20and%20pulp,%20bioenergy).pdf)

## Tractor manufacturer in Romania launches three new tractor models for family farms.

"The new IRUM tractors are intended especially for family farms. The initiative to develop these models contributes to supporting the sustainable development of Romanian agriculture. The priority of the Food and Agriculture Organization within the UN, but also the one assumed by the Ministry of Agriculture is the development of family farms, and our contribution to support this initiative is represented by the production of Romanian tractors, at fair prices, equipped with great care for the environment. ", Says Mircea Oltean, CEO of IRUM Reghin.



The new IRUM tractors will be equipped with pollution stage 5 engines. They will also have the power shift option available, which makes the machine much easier to handle. The tractors will have useful accessories for Romanian farmers. They can be used with maximum efficiency, including in the field of vegetables, solariums, viticulture, fruit growing or in the field. The machines can also be used for works such as mowing or raking.

<https://www.irum.ro/home>

## **Annex**

The 12 Challenges identified by BIOVOICES to contribute to the market uptake of BBP



**BIOVOICES**

CONNECTING BIO-BASED FORCES  
FOR A SUSTAINABLE WORLD

# **BIOVOICES Policy Brief for Policy Makers**

[www.biovoices.eu](http://www.biovoices.eu)



## Table of Contents

1. Introduction to the Policy Briefs
  2. The Policy Context
  3. The Role of the Policy Maker
  4. BIOVOICES Key Messages
  5. Insights relating to Key Messages
  6. Shared Best Practice Actions
- Annex - The 12 BIOVOICES challenges

## 1. Introduction to the Policy Briefs

The purpose of these four Policy Briefs - one for each quadruple helix stakeholder group (civil society, research, business, policy sectors) - is to present the insights gathered from the BIOVOICES experience - over 70 Mobilisation and Mutual Learning (MML) events - in a format that is both straightforward, accessible and usable.

These documents have been developed for active use and exploitation by the key stakeholders of the quadruple helix and all actors working across the circular bio-based economy, in their work and practice to deliver knowledge, best practice and lessons learnt to drive debate, support pro-active discussion and collaboration to address the associated challenges relating to the up-scaling of bio-based products (BBPs).

The key themes from the Policy Briefs common to all stakeholder groups have informed the development of the BIOVOICES Action Plan for Citizen Engagement which is a framework of recommendations for all stakeholders to consider when designing and delivering their own action plan to drive citizen engagement, advocacy and ultimately action to support the purchase and use of bio-based products BBPs and services for the benefit of key stakeholders and society as a whole.

BIOVOICES materials to enhance citizen engagement are available to download at

## 2. The Policy Context

BIOVOICES has run from January 2018 to April 2021, its start coinciding with the launch of the EC's revised **Bioeconomy Strategy**<sup>1</sup>. Throughout the project, the gathering of key insights and actionable knowledge from MML events has been coloured by the constantly evolving nature of the wider socio-economic and policy landscape and in the last year the impact of Covid-19. Due to restrictions imposed by the pandemic, many MML workshops planned for 2020 have been transformed into online events, resulting for many, in an increase in the numbers of participants from a wider range of geographical locations. This responsiveness to changing priorities in each of its partners' territories to maintain relevance has been a key aspect of the BIOVOICES project.

Global economic challenges have provided a constant backdrop to the BIOVOICES project and are reflected in the selection of the BIOVOICES challenges relating to the market acceleration of innovative bio-based products (BBP). The policy background against which the BIOVOICES project has been delivered is outlined here.

The update of the EC **Bioeconomy Strategy** published in October 2018 reconfirmed the urgent need for development of the bio-based sector.

"Global challenges like climate change, land and ecosystem degradation, coupled with a growing population force us to seek new ways of producing and consuming that respect the ecological boundaries of our planet."

The **European Green Deal**<sup>2</sup> launched by the new EU Commission (EC) in December 2019 aims to drive the transition to a fair and prosperous society, with a modern, resource-efficient and competitive economy in Europe, promoting a new economic action plan to help modernise the EU's economy and draw benefit from the opportunities of the circular economy domestically and globally. The Green Deal is an integral part of the Commission's strategy to

implement the **United Nation's 2030 Agenda**<sup>3</sup> and the associated sustainable development goals (SDGs), the COP 21 Paris Climate Agreement<sup>4</sup> and the other green priorities announced in **President von der Leyen's political guidelines**<sup>5</sup>. Additionally, the "**Decade of Action**"<sup>6</sup>, promoted by UN Secretary-General, calls for accelerating sustainable solutions to all the world's biggest challenges, applying the 'do no harm' principle, which will require honest communication and 360° vigilance against 'unexpected adverse consequences'.

Since 2010, as described in the **Europe 2020 Strategy**<sup>7</sup>, the bioeconomy has been identified as a key element for driving smart and green growth in Europe, aimed at alleviating pressures on the natural environment, whilst creating new business opportunities, employment and growth. At the European level, whilst a dedicated bioeconomy strategy has been in effect since 2012, it is presented as a 'Communiqué' not as legislative proposal. This strategy was updated in 2018 together with a progress report on implementation ("EC Bioeconomy Strategy," 2018). The strategy provides a framework for shifting the economic resource base in Europe from a linear model drawing on finite raw materials, to a circular model that focuses on innovative renewable materials from biomass from land and sea as well as wastes.

The bioeconomy already accounts for 8% of the EU's workforce<sup>8</sup> but modelling has indicated that bio-based industries could create up to 1 million new 'green' jobs by 2030, especially in rural and coastal areas<sup>9</sup>. Nonetheless, the share of the bioeconomy (including energy, food & feed and material applications) in EU GDP is still low, with most employment in low-tech bioeconomy sectors. The reasons for this are manifold and range from low acceptance of BBPs among customers, to technical challenges with material property requirements, to political frameworks as well as

<sup>1</sup> [https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018\\_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy](https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy)

<sup>2</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)

<sup>3</sup> <https://www.un.org/sustainabledevelopment/>

<sup>4</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>5</sup> [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf)

<sup>6</sup> <https://www.un.org/sustainabledevelopment/decade-of-action/>

<sup>7</sup> <https://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

<sup>8</sup> [https://ec.europa.eu/research/bioeconomy/pdf/ec\\_bioeconomy\\_actions\\_2018.pdf](https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_actions_2018.pdf)

<sup>9</sup> <https://biconsortium.eu/about/our-vision-strategy/benefits-europe>

labelling and standardisation, hindering dynamic developments in the bioeconomy. The contextualisation and basis of bioeconomy policy is overall still weak in Europe (Devaney et al., 2017)<sup>10</sup> Directives that impact on the depth and pace of bioeconomy development in Europe have yet to be adapted and aligned with the objectives of the strategy, whilst current legislation sometimes even hinders the further up-take of BBP (e.g. EU Waste Framework<sup>11</sup>).

The BIOVOICES project identifies that “Bioeconomy is a complex and multi-factoral domain and its wide diffusion depends on the active collaboration of a broad range of stakeholders including industry, researchers, civil society and public authorities.”

A set of new transformative policies have been recently launched by the European Commission<sup>12</sup> and are planned to support the Green Deal. These include the new EU Circular Economy Action Plan (CEAP)(2020)<sup>13</sup>, which promises to deliver key fixes to legislation in the area of waste generation- and management as well as eco design and obligatory use of secondary materials requirements by 2021/22. The CEAP links with the EC’s Bioeconomy Action Plan in two key areas:

in sustainable production, supporting the bio-based sector in its circularity potential and in the area of food, nutrients and water, where it supports increased shares of extraction of sustainable biomass materials in the EU, building a sustainable circular bioeconomy.

Circular bioeconomy can indeed significantly contribute towards a broad range of EU targets and the UN Sustainable Development Goals (STGs), including climate change mitigation, the circular economy and resource efficiency, environmental protection, creating jobs, growth and revenue. In particular a circular bioeconomy can create and maintain sustainable economic growth, prosperity and high-value employment in

rural, coastal and industrial areas where these are greatly needed, reduce fossil carbon dependence and improve the economic and environmental sustainability of primary production and processing industries.

Examples of other transformative legislation are the **Single-use Plastics Directive**<sup>14</sup>, the **‘Farm to Fork’ Strategy**<sup>15</sup>, the **Food 2030 policy**<sup>16</sup>, the new **EU Forest strategy**<sup>17</sup>, the new **Common Agricultural Policy**<sup>18</sup> to name a few. This wide-ranging political vision will have significant impacts relating to the wider deployment of the bioeconomy and the increased development of BBPs, contributing to the modernisation of the EU’s economy and providing societal, economic and environmental benefits.

Additionally, the EC Council of Regulation has adopted a regulation, strengthening the intellectual property rights office. The first legislative delivery from the Commissions IPR Strategy of May 2011<sup>19</sup>. Here, the EC sets out its new Intellectual Property Rights strategy intended to foster innovation, as well as the growth and competitiveness of the EU economy to include the development of the bio-based sector.

The EC has to date placed emphasis on the development and implementation of bioeconomy strategies at a national level. More recently, the implementation of regionally focused bio-based economies with a local dimension has been encouraged by the EC to support overall sustainability and circularity, including trade- offs, synergies, business models, social innovation and participatory approaches. Insights and actionable knowledge obtained from the BIOVOICES MML events has highlighted the opportunities for regional and mutual co-operation, for example expert clusters which bring all relevant actors together.

All stakeholders have to urgently address global challenges such as climate change, land

<sup>10</sup> Devaney, L., Henchion, M., Regan, Á., 2017. Good Governance in the Bioeconomy. *EuroChoices* 16, 41–46. <https://doi.org/10.1111/1746-692X.12141>

<sup>11</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>

<sup>12</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap_en.pdf)

<sup>13</sup> [https://ec.europa.eu/environment/circular-economy/pdf/new\\_circular\\_economy\\_action\\_plan.pdf](https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf)

<sup>14</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN>

<sup>15</sup> [https://ec.europa.eu/food/sites/food/files/safety/docs/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf)

<sup>16</sup> <https://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&iib=food2030>

<sup>17</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC_1&format=PDF)

<sup>18</sup> [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap\\_en](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en)

<sup>19</sup> <https://ec.europa.eu/transparency/regdoc/rep/1/2011/EN/1-2011-287-EN-F1-1.Pdf>

and ecosystem degradation and a growing population forcing ‘demand side’, ‘supply side’, ‘multipliers’ and the ‘supportive environment’ to seek new ways of producing and consuming that respect the ecological boundaries of our planet. Engagement of these stakeholders to participate in systemic change towards a more sustainable global model, promoting growth and development, thus preserving the ecosystem is essential. Opportunities abound for the circular bioeconomy to help meet climate change targets, in a move away from a fossil fuel-based economy.

However, governance of the bioeconomy in Europe currently appears to be fragmented with some of the major policy agendas (e.g. Regional Development, Circular Economy, Climate Neutrality) being insufficiently aligned with the bioeconomy (or vice versa), to support the rapid transition to a biomass-based economy. Stronger alignment and exploitation of complementarities of the bioeconomy with the circular economy would be beneficial to both agendas.

As demonstrated by BIOVOICES MML workshops as well as by a number of studies, awareness, knowledge, and education relating to sustainable production and consumption, are important factors determining behavioural changes that lead to more sustainable lifestyles. Despite the important investments, strategies and action plans implemented at Regional, National and European level, the 2018 revision of the European Bioeconomy Strategy states that “increasing public awareness and knowledge about all areas of the bioeconomy remains a major challenge, which the European Commission aims to address by supporting communication initiatives to raise awareness of the environmental and socio-economic impacts of the bioeconomy and bio-based products, and its benefits, such as more green jobs”. Insights from the BIOVOICES project have identified and confirmed that together with awareness and communication, the need for specific education for the bioeconomy is widely recognized as the sector is growing and will require more new employees to keep growing and innovating.

The current and future situation regarding COVID-19 will require special attention by policy makers in terms of the implications of the crisis for sustainable local and regional development, in the context of climate mitigation, resilience and the circular bioeconomy as a means for stimulating a more sustainable resource base in light of the recovery of the European economy. The recovery from the economic effects of the COVID-19 pandemic could provide an opportunity to promote actionable knowledge gathered by projects such as BIOVOICES to contribute to the creation of a more sustainable way of living, to rethink and redesign a more responsible and fair future together. BIOVOICES MML events scheduled post pandemic will reflect this change.

It will be very important to ensure that key recommendations from the BIOVOICES project are made widely available to ensure that the economic, environmental and societal benefits of the circular bioeconomy are pushed to the forefront, in what is likely to be the rush to get the world economy back on track. As there is a risk that ‘non-essential initiatives’ will be forgotten or delayed including major international events such as COP-26<sup>20</sup>.

As a positive, the COVID-19 experience has focused attention towards the importance of local and regional economies as this is where the circular bioeconomy seems to operate best, as identified during BIOVOICES MML events.

To maximise these opportunities, BIOVOICES advocates that communication and education should be highlighted to raise awareness of **all bioeconomy sectors**, as well as the environmental and socio-economic benefits. The whole range of target audiences – multi-actors need to be engaged and addressed through tailored activities implemented at local, regional and national level. The BIOVOICES funded experience has resulted in the generation of important insights about effective communication and engagement with multi-actors, ready for implementation to further embed the circular bioeconomy into EU life and livelihoods.

<sup>20</sup> <https://ukcop26.org/>

BIOVOICES insights are laid out in four Policy Briefs, one for each of the four key stakeholder groups (Policy Makers, Research, Business, Civil Society), containing Key Messages, the insights on which the messages are built and case studies captured during the project's MMLs and wider events. The aim of each Brief is to drive debate and discussion within and between all stakeholder groups to progress and scale up the implementation of the circular bio-based bioeconomy.

## 3. Role of the Policy Sector

### In contributing to a circular bio-based economy

The way industrialized societies organize production and consumption, i.e. the linear take-make-discard model, brings us to the verge of overstepping planetary boundaries, putting pressure on the regenerative capacity of the earth's ecosystem and diminishing the natural resource base.

All quadruple helix actors (policy, research, industry and civil society) are needed to drive the transition to a circular bioeconomy, fulfilling different roles. In this, national as well as regional and local authorities may assume a manifold role as enabler, promoter and as facilitator of the transition (OECD, 2019) following a vision for a circular bio-based economy that fosters circular product design, promotes uptake of bio-based products and lifestyles among its citizens and aims at reducing, reusing and recycling waste:

(1) As enabler, authorities directly intervene through developing strategies and guidelines (e.g. public procurement) and through setting regulations (e.g. legislation) and incentives (e.g. taxation) in support of the circular bioeconomy in its territory.

(2) As promoter, authorities implement circular bio-based principles across all government functions (e.g. public procurement, land-use and public asset management etc.), promoting horizontal integration of the topic across departments as well as advocacy for multi-level collaboration both within national multi-level governance frameworks and beyond, at European level.

(3) As facilitator, authorities embark on a dialogue with other quadruple helix actors (businesses, researchers and civil society) in the territory (national, regional or local), taking on the role of a moderator that brings these actors together to boost the bioeconomy, providing a platform, building capacity and raising awareness

The facilitation function of (local) governments involves the provision of a platform for dialogue as well as the setting and adoption of own- and external agendas and interests. It includes the creation of networks and working with businesses, associations, interest groups, and researchers etc. to stimulate the bioeconomy by facilitating a multi-stakeholder dialogue within the administrative territory (i.e. country, region or municipality/city) that follows a strategic direction.

Relevant areas where (local governments) can facilitate a participatory, multi-stakeholder process include the co-creation of (local) strategies, setting research agendas, establishing networks and working groups, setting-up exchange formats such as between government and industry, creating awareness campaigns and citizen fora, engaging schools and universities, co-creating labels for BBPs and in general, communicating on bioeconomy topics.

## 4. BIOVOICES Key Messages

### *Recommendations to drive dialogue and debate*

Government at EU level needs to address market disparity by applying **Regulatory and Demand-based Interventions** to promote the bio-based sector e.g. Carbon Taxation

Policy Makers should shape regulation to ensure an **Effective Waste Management and Waste Recovery System** to generate consistent feedstock supply at national, local/regional levels.

Government at EU and national level must work with other key stakeholder groups to develop **Common Standards, Labels and Specifications** to build trust and confidence in the bio-based market.

Policy makers must **Identify and Communicate with Appropriate Organisations/stakeholders**, to ensure multi-flow of information on current developments in the circular bio-based economy.

Governments at all levels must work **Towards Vertical Integration** (multi-level governance) to boost engagement between European, national and regional/local policies, initiatives, approaches and methodologies.

Governments at all levels must **Promote Horizontal Integration**, both administrative and organisational for efficient implementation of bioeconomy interventions at all levels to maximise knowledge exchange related to priority policy areas.

Establish **Continuity in Policy Priority** to provide ongoing backing for policies that support the circular bio-based economy, irrespective of regime change.

Policy makers can drive further **Understanding and Adoption of Bio-based Products** by establishing the 'Bioeconomy Story' within the Circular Bio-based Economy context

Engagement by governments at all levels in participatory processes with the **Education Sector** to develop training and capacity building to raise awareness of bio-based sectors.

Increase coordination between governments at all levels for the successful implementation of policies to **Support the development of National, Local/Regional Plans** for system improvement within the circular bio-based economy.

Enable and encourage the **Participation of Citizen Groups**, particularly in the development of regional and local circular bio-based economy policies.

**Develop dialogue between government actors and bio-based industries** to promote effective deployment of bioeconomic principles in the governmental domain.

**Assess the impact**, adjust direction and issue revised research calls in response to information obtained from the monitoring of current policies.

## 5. Insights relating to Key Messages

**Based on evidence collated from BIOVOICES Mobilisation and Mutual Learning (MML) Events at European, National and Regional levels.**

*At the start of the project BIOVOICES partners agreed on the twelve challenges that need to be addressed to drive development and market uptake of bio-based products. The challenges can be accessed in the Annex. The challenge or challenges most relevant to each key message and insight are referenced below.*

**Government at EU level needs to address market disparity by applying Regulatory and Demand-based Interventions to promote the bio-based sector e.g. Carbon Taxation**

*“Behaviour change by all stakeholders essential to increase uptake of BBPs -paradigm shift. In conjunction with disruptive legislation from government. Involve social scientists in change process.” MML event attendee - Research*

- Framework conditions should be put in place allowing for greater leeway for public institutions pioneering new and innovative approaches to public procurement regulations and processes to facilitate the sales and production of sustainable and bio-based products.
- Increase innovative public purchase/procurement efforts as an effective way to promote the use of bio-based products due to scale-up potential.
- Identify aspects of existing regulatory and policy framework that can be further developed to support public engagement and public acceptance of the Regional Circular Bioeconomy Strategy (specific financing available for implementation).
- Governments should take an active role in stimulating the use of bio-based building and construction materials by making non bio-based materials less attractive through a CO<sub>2</sub> tax and/or subsidies for citizens. Lowering the cost of bio-based materials, supporting start-ups and scale-ups.
- At the local level, a local bioeconomy manager (BEM) should be installed within the city administration driving the transition towards a more bio-based and circular city.

*“Policy change is essential to move things forward...”*

*“....Policy must support innovation rather than constrain it.” **Input from MML event attendees***

**Challenges** - EU & National Incentives, Increase the Adoption, Realise Standardisation

**Policy Makers can apply regulation to ensure an Effective Waste Management and Waste Recovery System to generate consistent feedstock supply at national, local/regional levels.**

*“The lack of volume of ‘raw’ material available for retailers wishing to shift to sustainable packaging is one of the biggest challenges – plus the consistency of that supply.” Lead Scientist – Research*

- Development of cluster policy as a strategic component of industrial (including waste) policy to support synergies and innovation within the circular economy.
- When it comes to EU waste regulations, restricting the use of waste as a feedstock for other products, or restricting the import/export/trade of waste across borders, can be a barrier to bioeconomy development.
- Changes in the waste hierarchy (e.g. favouring material recycling for material instead of energy recovery) can lead to conflicts between different stakeholders.
- Conflicts between different categories of stakeholders can also arise when diverting biogenic waste streams from use in power- and-heat generation and composting to bio-based operations for material use.
- The waste hierarchy does not explicitly address biodegradation or composting,

**Challenges** - EU & National, Incentives; Increase Sustainable 2G Feedstock



## **Government at EU and national level must work with other key stakeholder groups to develop Common Standards, Labels and Specifications to build trust and confidence in the bio-based market.**

*“Standards are needed so that consumers (and all stakeholders) can understand what is meant by bio-based. This will develop trust.” MML event attendee – Civil Society*

- Generate a unique and common European label, which identifies the percentage bio-based component of the product, if it is of sustainable origin and end-of-life treatment.
- For many sections of the public the real problem continues to be the information found on labelling. A confusing label (with no standardised information) means that bio-based products cannot be easily differentiated from non-BBPs. In addition, these products are confused with ecological products by much of civil society, due to insufficient labelling.
- Encourage labelling of regional products to give consumers a quality guarantee that goes hand in hand with the good reputation of the brand and the region.
- Develop a coherent and updated terminology to be used both for labelling and communication activities.
- Creating regulatory innovation sandboxes in order to create more meaningful, effective and close-to-reality standards and labelling.

*“In the UK the bio-based sector is underdeveloped due to limited action at government level and confusion at public level. UK Government Policy/Regulation must be supportive and forward thinking to ensure the success of the bioeconomy.” MML event attendee - Industry*

**Challenge** - Realize Standardization

## **Policy makers must Identify and Communicate with Appropriate Organisations/stakeholders, to ensure multi-flow of information on current developments in the circular bio-based economy.**

- A connected and coherent “narrative” on the bioeconomy is currently missing,
- To get more acceptance by governments, a lobby network to tell one main story is needed. Currently there are too many fragmented small stories/networks.
- Establish institutionalised exchanges of knowledge between purchasing and expert departments on technical specifications, sustainability criteria etc. via frequent round table meetings.

**Challenges** - Changes in Purchase Habits; Increase the Adoption

## **Governments at all levels must work Towards Vertical Integration (multi-level governance) to boost engagement between European, national and regional/local policies, initiatives, approaches and methodologies.**

- There is a lack of inter-governmental coordination and collaboration on the bioeconomy, leading to a disconnect between European, national and regional/local policies, initiatives, approaches and methodologies.
- Increasing trust through clear labelling and standards could be achieved with the involvement of policy makers to support bio-based sectors at regional and municipal level (multi-level governance)
- In order to boost local/regional development it is important to increase the involvement of local authorities in the separate collection of municipal waste.

**Challenges** - EU & National Incentives; Increase the Adoption

**Governments at all levels must Promote Horizontal Integration, both administrative and organisational for efficient implementation of bioeconomy interventions at all levels to maximise knowledge exchange related to priority policy areas.**

*"Policies are in place – the challenge is implementation." Policy, Principal Research Officer*

- There is a disconnect between departmental strategies and operations (e.g. procurement and sustainable development strategies), which deepens the fragmentation of silos in the administration and leads to less effective and efficient implementation of bioeconomy interventions at all levels.
- Increase participation of the administration in promoting the bioeconomy through education and being a point of reference for the use of bio-products.
- Provide a clear framework on how procurement is linked to processes such as Agenda 2030 and Sustainable Development Goals (SDGs) and how it should support them at local/regional and national level.
- *"There is currently a gap in communication leading to duplication of work." Project Development Officer - Research/Education*

**Challenges** - EU & National Incentives; Boost Local Deployment

**Establish Continuity in Policy Priority to provide ongoing backing for policies that support the circular bio-based economy, irrespective of regime change.**

*"Government policy requires flexibility but not to be constantly changing." Policy/Regulation must be supportive and forward thinking to ensure the success of the bioeconomy." MML event attendee - Industry*

- It is necessary to promote the standardisation of policies on bio-based products among administrations and ensure that changes of government do not hinder the progression of the bioeconomy.
- Government Policy requires flexibility but not to be constantly changing.
- Policy/Regulation must be supportive and forward thinking to ensure the success of the bioeconomy. Support should include the formation of a defined Circular Bio-based Economy Department involving members from all existing relevant government departments and the appointment of a minister as a 'champion' for the bioeconomy/circular economy.

**Challenges** - EU & National Incentives; Boost Local Deployment

**Policy makers can drive further Understanding and Adoption of Bio-based Products by establishing the 'Bioeconomy Story' within the Circular Bio-based Economy context.**

*"A focus on the circular economy is the right context – with bio-based fitting into that. Let's manufacture out the waste and deal effectively with the after-life of products – not simple but must be attempted to deal with this challenge." Project Manager - Industry*

- The bioeconomy needs to be communicated as part of the circular economy more consistently across all government levels, otherwise its impact will remain limited.
- Improve the dissemination of information regarding the opportunities and challenges of the circular bioeconomy among stakeholders at national, regional and local level.
- There is a need for a catalogue of all bio-producers, widely and publicly available.

**Challenge** - Changes in Purchase Habits

## **Engagement by governments at all levels in participatory processes with the Education Sector to develop training and capacity building to raise awareness of bio-based sectors.**

*“Behaviour change by all stakeholders essential to increase uptake of BBPs - paradigm shift. In conjunction with disruptive legislation from government. Involve social scientists in change process.” MML event attendee - Industry/Research*

- Public kindergartens, schools and universities offer great potential for awareness raising about the circular bio-based economy that is currently only partially tapped into.
- There can be gaps between governmental strategy and staff capacity and competence on delivery of the topics (in particular at local level).
- Develop school level awareness of circular bio-based economy via National Curricula.
- There is an opportunity to engage with young people who are keen to develop new skills relating to climate and lifestyle change.
- Train quadruple helix stakeholders on how to create a network for local development and valorisation of local resources.

**Challenges** – Boost local Deployment; Changes in Purchase Habits

## **Increase coordination between governments at all levels for the successful implementation of policies to Support the Development of National, Local/Regional plans for system improvement within the circular bio-based economy.**

*“Local powerhouses are important - link with other powerhouses for a bigger voice.”  
“Stress the regional importance of Local Economic Partnerships to drive economic change.” MML event attendee - Industry*

- There is currently a lack of coordination, integration and synergy exploitation among administration (regional/local/national) in the design and implementation of policies (rural, industrial, tourism, and culture) and action plans for regional development.
- There is a disconnect between departmental strategies and operations (e.g. procurement and sustainable development strategies), which deepens the fragmentation of silos in the administration and leads to less effective and efficient implementation of bioeconomy interventions at all levels.

**Challenges** - Introduce EU & National Incentives; Improve the Ecosystem to Enhance Business Cases

## **Enable and encourage the Participation of Citizen Groups particularly in the development of regional and local circular bio-based economy policies.**

*“We need to drive ‘positive collaboration’ and provide opportunities for all stakeholders to present and share experiences.” Bioeconomy Specialist – Policy/Civil Society*

- Promote the creation of a new (participative) governance. Start a dialogue with citizens, policy makers and public administrations.
- There is a need to engage multiple stakeholder groups, bringing the political decision-maker closer to the needs of the citizen, businesses and in general to the needs of the respective local territory.
- Encouraging citizen contribution to the development of effective territorial policies with a bottom-up approach to make concrete legislative proposals.

**Challenge** – Enhance Local Bioeconomy Strategies & Action Plans

## **Develop effective dialogue between government actors and bio-based industries to promote deployment of bioeconomic principles in the governmental domain.**

- There is currently insufficient dialogue between government actors and the bio-based industry.
- Extended Producer Responsibility (EPR) (e.g. in the UK) might address some issues with 'hard to recycle' materials by making these more expensive compared to 'easier to recycle' materials.
- Stakeholders should work with government to transform the regulatory environment.
- Develop a branch network of different providers to improve the information exchange with national governments.

**Challenges** - Specify Unique Selling Points (USP); Increase the Adoption

## **Assess the impact, adjust direction and issue revised research calls in response to information obtained from the monitoring of current policies.**

*"One major challenge for the development of bio-based solutions is government subsidies, which have created a boom in certain sectors (anaerobic digestion) which isn't realistically sustainable." Manager AD plant - Industry*

- Promote evidence-based policymaking by accessing actionable knowledge in the form of data, key performance indicators (KPI) and assessment tools to support the design of effective policies to assess the impact on the environment society, and the economy.
- Assess the effect of government subsidies for bio-based sectors and address any unintended environmental/other consequences.
- Measure and evaluate the ongoing practical impact of policies supporting bio-based sectors.
- Ensure regional and local authorities have access to appropriate actionable knowledge to support the implementation of policies and initiatives.

**Challenge** - Introduce EU & National Incentives

## 6. Shared Best Practice Actions

### **A unique government initiative requires all policy players working in Welsh Government and the Welsh Economy to take the sustainability agenda into account**

The Well-being of Future Generations Act is focussed on seven well-being goals and requires all public bodies in Wales to link into the sustainability agenda, ***consider the long-term impact of their decisions***, to work better with people, communities and each other to prevent persistent problems such as poverty, health inequalities and climate change. The Act offers a huge opportunity to make a long-lasting, positive change to current and future generations to:

*“Promote the sustainable development principle, in particular to act as a guardian of the ability of future generations to meet their needs and encourage public bodies to take greater account of the long-term impact of the things they do.”*

This is a document and initiative with legal enforcement that is unique to Wales. The policy is headed by the Future Generations Commissioner for Wales, whose role is to be the guardian of future generations by assisting public bodies and those who make policy in Wales to assess the long-term impact their decisions have by:

- Highlighting the big issues, challenges and opportunities facing future generations
- Supporting and challenging public bodies to think about the long-term impact of the things they do
- Working with others to drive the changes needed
- Walking the talk – be the change we want to see in others

Wales is a small nation and during the UK MML held in Aberystwyth it was made clear that Welsh people have better opportunity than most, to engage directly with their politicians and policy makers. Wales is a good example of a region of the UK with a unique identity. Bioeconomy is here promoted among government departments and within the regional context.

<https://www.futuregenerations.wales/about-us/future-generations-act/>

### **Continuity in policy priority, increased coordination and dialogue between all government levels and bio-based industry**

The Ministry of Rural Areas and Consumer Protection and the Ministry of the Environment of the German region of Baden-Wuerttemberg, have jointly developed the state strategy “Sustainable Bioeconomy for Baden-Württemberg”, which was adopted by the state government in mid-2019. Using innovative biological concepts, the province wants to develop production of renewable or recyclable raw materials, reduce greenhouse gas emissions and strengthen biodiversity. Baden-Württemberg region should become a best practice example for a sustainable and circular economy.

There is great potential for the use of by-products and residues from agriculture and the food industry as well as wood from sustainable and domestic forest management to generate energy. Policy focus is also on future-oriented development of existing biogas plants as they offer inexpensive interfaces for comprehensive and decentralized biomass conversion to a wide range of products such as fibres, platform chemicals, nutrients and energy products. The bioeconomy will also play an increasingly important role in industry and in urban areas of the region. Waste and

wastewater, for example, contain usable raw materials that can be recovered. Other major topics are the development of technologies for the biological extraction of inorganic raw materials such as metals, phosphorus and chemicals as well as biotechnological CO<sub>2</sub> recycling to generate raw materials for energy and material cycles - a research focus of the bioeconomy with a view to climate protection.

[https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/documents/Bioeconomy\\_strategy.pdf](https://um.baden-wuerttemberg.de/fileadmin/redaktion/m-um/intern/Dateien/documents/Bioeconomy_strategy.pdf)

## Supporting Regions in the design of innovative bioeconomy educational paths

The European Bioeconomy Network is supporting the Friuli Venezia Giulia Region (Italy) in the creation of a regional HUB for Bioeconomy Education. Educational needs (formal education, education of value chain actors, capacity building within the bioeconomy) were identified at a Mobilisation and Mutual Learning workshop (MML) attended by stakeholders from the quadruple helix.

This MML activity established the basis for the implementation of a regional bioeconomy education hub through the identification of:

- 1) Educational needs based on regional resources
- 2) Level and type of education required to nurture a generation aware of the environment (secondary schools to attract students to bioeconomy related careers, vocational schools, university and masters to provide suitably trained workers required by the industry, life-long-learning and on-the-job training to exploit bioeconomy-related opportunities for entrepreneurs, primary producers and companies)
- 3) Sources of funding sources for leverage
- 4) Type of expertise to be provided (at different levels)
- 5) The facilities and logistics to be planned
- 6) Development of an action plan for implementation
- 7) Risks/barriers and mitigation measures required

Inspirational case studies were presented to the participants and the points listed above were used to facilitate discussion.

The European Bioeconomy Network facilitated knowledge sharing by involving bioeconomy education experts from the following EU funded projects, BIOVOICES, LIFT, UrBioFuture, Biobridges, STAR-ProBio and the European Bioeconomy University (EBU).



## Government legislates to promote the use of bio-based building materials

National government in The Netherlands has set out legislation that permits building plans with a CO<sub>2</sub>-emission below a certain threshold. Such legislation enhances the use of plant-based building materials which have negative CO<sub>2</sub> emissions. During a BIOVOICES MML webinar, the Province of Zeeland clarified their experimental role as a launching customer in public procurement to enhance the use of bio-based products in the renovation of social buildings and infrastructure projects, such as the N253 provincial road made with lignin, bio-based road signs.

The renovation of social buildings will be elaborated on in the CBCI (Circular Biobased Construction Industry) Interreg project (<https://www.interreg2seas.eu/nl/CBCI>). CBCI concerns the whole life cycle of construction and aims to develop an integral approach to circular bio-based buildings (market orientation, tendering, contract formation & management).

### Circular Bio-based Construction Industry

*A practical approach of bio-based circular building*



Bron: Rothulzen Architecten & Bouwmeester Pro 2018; ARUP & BAM 2017; Zanelli 2017  
Bron: archceramicworkshop.com



BioVoices Webinar 16 april 2020



## Identification and communication for vertical integration

The AlpBioEco project will develop recommendations for action by which the implementation of innovative business concepts in the bioeconomy can be promoted to create new jobs in the Alpine region.

The project is an inspiring initiative focusing on local value chains of Alpine biomass resources and vertical integration. In cooperation with 12 other partners from five countries in the Alpine region, the AlpBioEco project examines value chains of walnuts, apples and alpine herbs with regard to their economic potential. Based on market studies, laboratory analysis and the exchange of knowledge between the various players, innovative business ideas have been developed. To pursue these innovative ideas key players have been identified in the project regions, partners are activated and innovation gaps are identified. This has resulted in the development of at least two specific business concepts for each of the three value chains, which are being implemented and tested transnationally in pilot studies in the Alpine regions.

The results and findings from the previous project phases will be communicated to representatives of all political levels as well as to other Alpine regions.

<https://www.alpine-space.eu/projects/alpbioeco/en/home>

## **Participatory processes to drive the understanding and adoption of the bio-based sector in cities**

The municipality of Växjö in Sweden set itself the challenge from the 1960s to become a fossil fuel free city. This objective was the result of a long-term process, which began when a few measures were taken, leaving a deep impression on the elected representatives, resulting in the development of an energy and then an environmental transition pathway in Växjö. The process was successful due to close cooperation between political, economic, institutional and community stakeholders.

Events, such as the eutrophication of the lakes in the 1960s and the oil crises in the 1970s aroused the interest of the elected representatives and set the whole process in motion. For local stakeholders, restoring water quality was essential to improve the quality of life in the city and once again make the lakes an attractive place for people. The municipal energy company suggested biomass, a locally abundant source of energy stimulating forestry, as an alternative to oil to avoid exposure to the financial fluctuations of the oil market. As a result of this decision, elected representatives noticed beneficial impacts on the local environment.

By 2012, the city had reduced its CO<sub>2</sub> emissions by 41% compared to 1993. Biomass covers 88% of the district heating supply and the share of oil in the energy mix has dropped from 100 to 6% in 25 years. 58% of the energy supply in Växjö is from renewable sources, i.e. 10 points above national average. Between 1993 and 2010, the economic growth rate rose 73%. The city is an acknowledged pioneer of ecological transition and its “green” profile has attracted between 150 and 200 delegations from all over the world. However, the Växjö bioeconomy model is not only based on the utilisation of biomass for energy production but is also aimed at producing a number of additional bio-based products from forestry derived biomass, such as fuels and chemicals, cosmetics, packaging and antioxidants.

[https://vaxjo.se/download/18.313cf36515d1bde9ee3205fa/1499862622018/Miljoprogrammet\\_en\\_g\\_webb.pdf](https://vaxjo.se/download/18.313cf36515d1bde9ee3205fa/1499862622018/Miljoprogrammet_en_g_webb.pdf)

## **Effective waste management systems & horizontal integration**

The City of Amsterdam developed a Circular Economy Strategy 2020-2050 which links, in a unique kind of way with the city’s dedicated food strategy to reduce food waste and the utilisation of organic waste streams to achieve a more circular urban bioeconomy. In the food & organic waste streams chain the strategy focuses on short food chains, healthy and sustainable food consumption and high-quality processing of organic waste streams. The focus is mainly on reducing material streams, preserving value and minimising the negative ecological impact of the food supply chain.



A large proportion of Amsterdam's household waste consists of vegetable, fruit, food and garden waste (organic waste). Amsterdam's first priority in the reduction of organic waste is prevention. This waste must be collected separately wherever possible, taking into account the needs of each neighbourhood, based on a socially responsible plan and in cooperation with the residents. Local initiatives such as worm hotels, leaf baskets, local composting and bread baking will be facilitated as much as possible. This waste could also be upcycled into high-grade products.

<https://www.amsterdam.nl/en/policy/sustainability/circular-economy/>

## **Government responds to demands for Green Public Procurement in Bratislava, Slovakia**

Green public procurement can influence demand in Slovakia, but government policy has to reflect the demands of voters, who may or may not motivate them to use green public procurement. For instance, in the Bratislava region, the issue of bio-economy and circular economy is a very fashionable among the wider population, especially the younger generation. This creates 'bottom-up' demand for the use of more environment-friendly products. As a consequence, several municipalities in Bratislava including Modra, took action and applied measures to abandon plastic bottles and cups during their official meetings and replaced them with bio-based alternatives. This action is being promoted as a fulfilment of the will of the electorate. The City Council has provided an example of best practice for all Slovak cities to follow since they approved the new measures. **The use of disposable plastic tableware, such as cups, cutlery was banned from April 1, 2019, visitors to any cultural, social and sporting event can only take refreshments in compostable materials.** The aim of this policy intervention is to prevent the city from continuing to create unnecessary plastic waste.

<https://mypezinok.sme.sk/c/22115473/slovenske-mesto-definitivne-konci-s-pouzivanim-jednorazovych-plastov-na-verejnych-podujatiach.html>

In other Slovak regions where these issues are not seen by the population as a priority, the situation is drastically different. As a consequence, policy makers do not treat the implementation of circular bio-based policies as a high priority. Increasing awareness among the general public could generate pressure on government to shift policy priorities.

## **Use of Bio-based construction materials results in planning bonus**

Bratislava will prepare a program of motivation of building owners in the city to carry out the renovation of buildings to a standard exceeding the applicable legal requirements. In practice, this means that the aid will be granted only on the condition that the building is better energy efficient than required by law and regulation. Motivation will be realized through the provision of a tax bonus - a discount on real estate tax. The criterion for granting support will be the result of energy certification according to Act no. 555/2005 Coll. on the energy performance of buildings. Renovated building with the right to

support should reach the level of primary energy demand maximum at the upper limit of energy class A1 according to the Decree of the Ministry of Regional Development of the Slovak Republic no.

364/2012 Coll. The amount of the tax bonus will be determined on the basis of a survey and evaluation of the motivations of building owners in making investments in the renovation of buildings. This incentive scheme will be complemented by educational and awareness-raising activities, the concept and method of implementation of which will be created within the EU-GUGLE project (Measure 1.4.A). The expected result of the implementation of the incentive scheme is the achievement of additional energy savings of 4% from KES for heating and DHW in tertiary buildings and residential buildings compared to the implementation of basic measures in these sectors (Measure 1.2.B, Measure 1.3.A). This result assumes the implementation of more energy efficient measures in approximately 10% of renovated buildings, 1.5% of the total number of buildings in the city. The cost of the measure will then depend on the amount of the tax bonus. In the case of a 30% discount on real estate tax, it will be a cost (reduction of tax revenues) in the amount of 1.5% of real estate tax, about 397 ths. EUR in 2020.

In the “Sustainable Energy Action Plan” of Bratislava (Source: (page 34):

[https://bratislava.blob.core.windows.net/media/Default/Dokumenty/Str%C3%A1nky/Akcny\\_plan\\_oficial%20material.pdf](https://bratislava.blob.core.windows.net/media/Default/Dokumenty/Str%C3%A1nky/Akcny_plan_oficial%20material.pdf)

In the minutes from the City Council Assembly Meeting held in June 2020, (<https://zastupitelstvo.bratislava.sk/data/att/47489.pdf>), it is noted that "The implementation of the measure depends on the financial capabilities of the city, but currently it is not being implemented due to budgetary constraints.

## **Andalusian Bioeconomy Strategy - an example of regional policy best practice**

The Andalusian Bioeconomy Strategy, a regional strategy that will direct actions in the set of activities that make up the three basic segments that make up the value chains of bioproducts within a framework of sustainable use of the resources. Sectors included are agriculture, forestry, fishing, food production, paper and pulp sectors, as well as parts of the chemical, biotechnology and energy industries.

The following three points highlight why the Andalusian Bioeconomy Strategy provides a best practice example:

- 1) It has been developed as a downstream process taking into account the European Bioeconomy Strategy and the Spanish National Bioeconomy Strategy.
- 2) All the actors of the value chain (researchers, companies, farmers, policy makers, etc) have been involved in the development of the Andalusian Bioeconomy through the creation of operation working groups.
- 3) An action plan and a budget has been linked directly to the activities of the Strategy.

<http://www.bioeconomiaandalucia.es/en/la-eab2030>

## **Annex**

The 12 Challenges identified by BIOVOICES to contribute to the market uptake of BBP



**BIOVOICES**

CONNECTING BIO-BASED FORCES  
FOR A SUSTAINABLE WORLD

# **BIOVOICES Policy Brief for Civil Society**

[www.biovoices.eu](http://www.biovoices.eu)

## Table of Contents

1. Introduction to the Policy Brief for Civil Society
  2. The Policy Context
  3. The Role of Civil Society
  4. BIOVOICES Key Messages
  5. Insights relating to Key Messages
  6. Shared Best Practice Actions
- Annex - The 12 BIOVOICES challenges

## 1. Introduction to the Policy Brief for Civil Society

The purpose of these four Policy Briefs - one for each quadruple helix stakeholder group (research, business, policy sectors, civil society, ,) - is to present the insights gathered from the BIOVOICES experience - over 70 Mobilisation and Mutual Learning events (MML) - in a format that is both straightforward, accessible and usable.

These documents have been developed for active use and exploitation by the key stakeholders of the quadruple helix and all actors working across the circular bio-based economy, in their work and practice to deliver knowledge, best practice and lessons learnt to drive debate, support pro-active discussion and collaboration to address the associated challenges relating to the up-scaling of bio-based products (BBPs).

The key themes from the Policy Briefs common to all stakeholder groups have informed the development of the BIOVOICES Action Plan for Citizen Engagement which is a framework of recommendations for all stakeholders to consider when designing and delivering their own action plan to drive citizen engagement, advocacy and ultimately action to support the purchase and use of BBPs and services for the benefit of key stakeholders and society as a whole.

BIOVOICES materials to enhance citizen engagement are available to download at <https://biovoices.eu>

## 2. The Policy Context

*BIOVOICES has run from January 2018 to April 2021, its start coinciding with the launch of the EC's revised **Bioeconomy Strategy**<sup>1</sup>. Throughout the project, the gathering of key insights and actionable knowledge from MML events has been coloured by the constantly evolving nature of the wider socio-economic and policy landscape and in the last year the impact of Covid-19. Due to restrictions imposed by the pandemic, many MML workshops planned for 2020 have been transformed into online events, resulting for many, in an increase in the numbers of participants from a wider range of geographical locations. This responsiveness to changing priorities in each of its partners' territories to maintain relevance has been a key aspect of the BIOVOICES project.*

Global economic challenges have provided a constant backdrop to the BIOVOICES project and are reflected in the selection of the BIOVOICES challenges relating to the market acceleration of innovative bio-based products (BBP). The policy background against which the BIOVOICES project has been delivered is outlined here.

The update of the EC **Bioeconomy Strategy** published in October 2018 reconfirmed the urgent need for development of the bio-based sector. *"Global challenges like climate change, land and ecosystem degradation, coupled with a growing population force us to seek new ways of producing and consuming that respect the ecological boundaries of our planet."*

The **European Green Deal**<sup>2</sup> launched by the new EU Commission (EC) in December 2019 aims to drive the transition to a *fair and prosperous society, with a modern, resource-efficient and competitive economy in Europe*, promoting a new economic action plan to help modernise the EU's economy and draw benefit from the opportunities of the circular economy

domestically and globally. The Green Deal is an integral part of the Commission's strategy to implement the **United Nation's 2030 Agenda**<sup>3</sup> and the associated sustainable development goals (SDGs), the COP 21 Paris Climate Agreement<sup>4</sup> and the other green priorities announced in **President von der Leyen's political guidelines**<sup>5</sup>. Additionally, the **"Decade of Action"**<sup>6</sup>, promoted by UN Secretary-General, calls for accelerating sustainable solutions to all the world's biggest challenges, applying the 'do no harm' principle, which will require honest communication and 360° vigilance against 'unexpected adverse consequences'.

Since 2010, as described in the **Europe 2020 Strategy**<sup>7</sup>, the bioeconomy has been identified as a key element for driving smart and green growth in Europe, aimed at alleviating pressures on the natural environment, whilst creating new business opportunities, employment and growth. At the European level, whilst a dedicated bioeconomy strategy has been in effect since 2012, it is presented as a 'Communiqué' not as legislative proposal. This strategy was updated in 2018 together with a progress report on implementation ("**EC Bioeconomy Strategy**," 2018). The strategy provides a framework for shifting the economic resource base in Europe from a linear model drawing on finite raw materials, to a circular model that focuses on innovative renewable materials from biomass from land and sea as well as wastes.

The bioeconomy already accounts for 8% of the EU's workforce<sup>8</sup> but modelling has indicated that bio-based industries could create up to 1 million new 'green' jobs by 2030, especially in rural and coastal areas<sup>9</sup>. Nonetheless, the share of the bioeconomy (including energy, food & feed and material applications) in EU GDP is still low, with most employment in low-tech bioeconomy sectors. The reasons for this are manifold and range from low acceptance of BBPs among customers, to

<sup>1</sup> [https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018\\_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy](https://knowledge4policy.ec.europa.eu/publication/updated-bioeconomy-strategy-2018_en#:~:text=The%20update%20proposes%20an%20action,ecological%20boundaries%20of%20the%20bioeconomy)

<sup>2</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication_en.pdf)

<sup>3</sup> <https://www.un.org/sustainabledevelopment/>

<sup>4</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>5</sup> [https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission\\_en.pdf](https://ec.europa.eu/commission/sites/beta-political/files/political-guidelines-next-commission_en.pdf)

<sup>6</sup> <https://www.un.org/sustainabledevelopment/decade-of-action/>

<sup>7</sup> <https://ec.europa.eu/eu2020/pdf/COMPLETE%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>

<sup>8</sup> [https://ec.europa.eu/research/bioeconomy/pdf/ec\\_bioeconomy\\_actions\\_2018.pdf](https://ec.europa.eu/research/bioeconomy/pdf/ec_bioeconomy_actions_2018.pdf)

<sup>9</sup> <https://biconsortium.eu/about/our-vision-strategy/benefits-europe>

technical challenges with material property requirements, to political frameworks as well as labelling and standardisation, hindering dynamic developments in the bioeconomy. The contextualisation and basis of bioeconomy policy is overall still weak in Europe (Devaney et al., 2017)<sup>10</sup> Directives that impact on the depth and pace of bioeconomy development in Europe have yet to be adapted and aligned with the objectives of the strategy, whilst current legislation sometimes even hinders the further up-take of BBP (e.g. EU Waste Framework<sup>11</sup>).

The BIOVOICES project identifies that *“Bioeconomy is a complex and multi-factoral domain and its wide diffusion depends on the active collaboration of a broad range of stakeholders including industry, researchers, civil society and public authorities.”*

A set of new transformative policies have been recently launched by the European Commission<sup>12</sup> and are planned to support the Green Deal. These include the new EU Circular Economy Action Plan (CEAP)(2020)<sup>13</sup>, which promises to deliver key fixes to legislation in the area of waste generation- and management as well as eco design and obligatory use of secondary materials requirements by 2021/22. The CEAP links with the EC’s Bioeconomy Action Plan in two key areas:

- in sustainable production, supporting the bio-based sector in its circularity potential
- and in the area of food, nutrients and water, where it supports increased shares of extraction of sustainable biomass materials in the EU, building a sustainable circular bioeconomy.

Circular bioeconomy can indeed significantly contribute towards a broad range of EU targets and the UN Sustainable Development Goals (STGs), including climate change mitigation, the circular economy and resource efficiency, environmental protection, creating jobs, growth and revenue. In particular a circular bioeconomy

can create and maintain sustainable economic growth, prosperity and high-value employment in rural, coastal and industrial areas where these are greatly needed, reduce fossil carbon dependence and improve the economic and environmental sustainability of primary production and processing industries.

Examples of other transformative legislation are the **Single-use Plastics Directive**<sup>14</sup>, the **‘Farm to Fork’ Strategy**<sup>15</sup>, the **Food 2030 policy**<sup>16</sup>, the new **EU Forest strategy**<sup>17</sup>, the **new Common Agricultural Policy**<sup>18</sup> to name a few. This wide-ranging political vision will have significant impacts relating to the wider deployment of the bioeconomy and the increased development of BBPs, contributing to the modernisation of the EU’s economy and providing societal, economic and environmental benefits.

Additionally, the EC Council of Regulation has adopted a regulation, strengthening the intellectual property rights office. The first legislative delivery from the Commissions IPR Strategy of May 2011<sup>19</sup>. Here, the EC sets out its new Intellectual Property Rights strategy intended to foster innovation, as well as the growth and competitiveness of the EU economy to include the development of the bio-based sector.

The EC has to date placed emphasis on the development and implementation of bioeconomy strategies at a national level. More recently, the implementation of regionally focused bio-based economies with a local dimension has been encouraged by the EC to support overall sustainability and circularity, including trade- offs, synergies, business models, social innovation and participatory approaches. Insights and actionable knowledge obtained from the BIOVOICES MML events has highlighted the opportunities for regional and mutual co-operation, for example expert clusters which bring all relevant actors together.

<sup>10</sup> Devaney, L., Henchion, M., Regan, Á., 2017. Good Governance in the Bioeconomy. *EuroChoices* 16, 41–46. <https://doi.org/10.1111/1746-692X.12141>

<sup>11</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32008L0098>

<sup>12</sup> [https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap\\_en.pdf](https://ec.europa.eu/info/sites/info/files/european-green-deal-communication-annex-roadmap_en.pdf)

<sup>13</sup> [https://ec.europa.eu/environment/circular-economy/pdf/new\\_circular\\_economy\\_action\\_plan.pdf](https://ec.europa.eu/environment/circular-economy/pdf/new_circular_economy_action_plan.pdf)

<sup>14</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0904&from=EN>

<sup>15</sup> [https://ec.europa.eu/food/sites/food/files/safety/docs/f2f\\_action-plan\\_2020\\_strategy-info\\_en.pdf](https://ec.europa.eu/food/sites/food/files/safety/docs/f2f_action-plan_2020_strategy-info_en.pdf)

<sup>16</sup> <https://ec.europa.eu/research/bioeconomy/index.cfm?pg=policy&lib=food2030>

<sup>17</sup> [http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC\\_1&format=PDF](http://eur-lex.europa.eu/resource.html?uri=cellar:21b27c38-21fb-11e3-8d1c-01aa75ed71a1.0022.01/DOC_1&format=PDF)

<sup>18</sup> [https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap\\_en](https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/future-cap_en)

<sup>19</sup> <https://ec.europa.eu/transparency/regdoc/rep/1/2011/EN/1-2011-287-EN-F1-1.Pdf>

All stakeholders have to urgently address global challenges such as climate change, land and ecosystem degradation and a growing population forcing ‘demand side’, ‘supply side’, ‘multipliers’ and the ‘supportive environment’ to seek new ways of producing and consuming that respect the ecological boundaries of our planet. Engagement of these stakeholders to participate in systemic change towards a more sustainable global model, promoting growth and development, thus preserving the ecosystem is essential. Opportunities abound for the circular bioeconomy to help meet climate change targets, in a move away from a fossil fuel-based economy.

However, governance of the bioeconomy in Europe currently appears to be fragmented with some of the major policy agendas (e.g. Regional Development, Circular Economy, Climate Neutrality) being insufficiently aligned with the bioeconomy (or vice versa), to support the rapid transition to a biomass-based economy. Stronger alignment and exploitation of complementarities of the bioeconomy with the circular economy would be beneficial to both agendas.

As demonstrated by BIOVOICES MML workshops as well as by a number of studies, awareness, knowledge, and education relating to sustainable production and consumption, are important factors determining behavioural changes that lead to more sustainable lifestyles. Despite the important investments, strategies and action plans implemented at Regional, National and European level, the 2018 *revision* of the European Bioeconomy Strategy states that *“increasing public awareness and knowledge about all areas of the bioeconomy remains a major challenge, which the European Commission aims to address by supporting communication initiatives to raise awareness of the environmental and socio-economic impacts of the bioeconomy and bio-based products, and its benefits, such as more green jobs”*. Insights from the BIOVOICES project have identified and confirmed that together with awareness and communication, the need for specific education for the bioeconomy is widely recognized as the sector is growing and will

require more new employees to keep growing and innovating.

The current and future situation regarding COVID-19 will require special attention by policy makers in terms of the implications of the crisis for sustainable local and regional development, in the context of climate mitigation, resilience and the circular bioeconomy as a means for stimulating a more sustainable resource base in light of the recovery of the European economy. The recovery from the economic effects of the COVID-19 pandemic could provide an opportunity to promote actionable knowledge gathered by projects such as BIOVOICES to contribute to the creation of a more sustainable way of living, to rethink and redesign a more responsible and fair future together. BIOVOICES MML events scheduled post pandemic will reflect this change.

It will be very important to ensure that key recommendations from the BIOVOICES project are made widely available to ensure that the economic, environmental and societal benefits of the circular bioeconomy are pushed to the forefront, in what is likely to be the rush to get the world economy back on track. As there is a risk that ‘non-essential initiatives’ will be forgotten or delayed including major international events such as COP-26<sup>20</sup>.

As a positive, the COVID-19 experience has focused attention towards the importance of local and regional economies as this is where the circular bioeconomy seems to operate best, as identified during BIOVOICES MML events.

To maximise these opportunities, BIOVOICES advocates that communication and education should be highlighted to raise awareness of **all bioeconomy sectors**, as well as the environmental and socio-economic benefits. The whole range of target audiences – multi-actors need to be engaged and addressed through tailored activities implemented at local, regional and national level. The BIOVOICES funded experience has resulted in the generation of important insights about effective communication and engagement with multi-actors, ready for implementation to further embed the circular bioeconomy into EU life and livelihoods.

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<sup>20</sup> <https://ukcop26.org/>



## **BIOVOICES Policy Brief for Civil Society**

**[www.biovoices.eu](http://www.biovoices.eu)**

BIOVOICES insights are laid out in four Policy Briefs, one for each of the four key stakeholder groups (Policy Makers, Research, Business, Civil Society), containing Key Messages, the insights on which the messages are built and case studies captured during the project's MMLs and wider events. The aim of each Brief is to drive debate and discussion within and between all stakeholder groups to progress and scale up the implementation of the circular bio-based bioeconomy

## 3. Role of Civil Society

### Gatekeepers to Citizen Engagement

Civil Society is represented by organisations such as non-governmental organisations (NGOs) and Civil Society organisations (CSOs) with interested members of society who both lead and respond to initiatives and information channelled through their organisations. NGOs and CSOs play an important role in providing information and responding to requests/initiatives from wider society, governments and policy-players at all levels, and increasingly to industry and research groups, on matters that impact on daily lives and on their specific interests

The functions of Civil Society as defined above with relation to the bioeconomy are:

#### **Primarily:**

1. **To engage with their membership groups** to canvass opinion about the bioeconomy, bio-based sectors and products in order to cascade this information, and their response to it, to other stakeholder groups and wider society as appropriate. As 'gatekeeper' organisations, they use their influence and data, powered by their memberships, to present to and lobby policy-players at all levels, industry and trade organisations to support, or 'put the brake on' bio-based sectors, innovative practices and products over which questions still remain, where clarity and/or safeguards are required.
2. **To provide education to their memberships** on the bioeconomy and bio-based sectors appropriate to their interests providing innovative, updated and validated information, thus raising awareness of the realities of the bioeconomy and its relevance to everyday life, aiding their memberships, and by cascade, wider society to make informed decisions on lifestyle and purchasing choices.

#### **Second:**

1. **Liaise with appropriate organisations and groups** across the quadruple helix at European, national, regional/local levels – research, industry, policy and civil society – to contribute the views of their membership based on evidence and data to drive informed debate across the spectrum, endeavouring to ensure 'nothing about us without us'.
2. **Respond to requests from authoritative entities**, for example, governments, specialist scientific/research organisations, business sectors to provide evidence, viewpoints and information on bioeconomy and bio-based topics relevant to their expertise and membership interests. Knowledge exchange can be provided in 'public' environments such as conferences via workshops or panel discussions, or in closed meetings to provide advice on, for example, priority research topics to comply with Responsible Research & Innovation (RRI) principles. Civil Society may also decide to disclose data based on membership views to either support or challenge initiatives presented to them by authoritative entities.

See also BIOVOICES D3.1 Synthesis of market perspectives, to develop bio-based value chains section 4.3: Greet Overbeek & Anne-Charlotte Hoes (2018)

<https://www.biovoices.eu/download.php?f=5&l=en&key=d4d623ecfaf04313fb52c36f48bcccf2>

## **4. BIOVOICES Key Messages**

### ***Recommendations to drive dialogue & debate***

Support the development of a **Common Language** with an agreed terminology accessible to all stakeholders, to drive useful dialogue about the circular bio-based economy and specific bio-based sectors.

Support development of a simple, clear and consistent **Labelling Standard** at EU level for bio-based products to help establish understanding and drive consumer trust.

Work towards the elimination of **'Greenwashing'** as this results in lower consumer confidence in bio-based products (BBPs) and their producers.

Set the 'Bioeconomy Story' into the **Circular Bio-based Economy context** to drive further understanding and adoption.

Promote implementation of an **Education Curriculum** to increase knowledge and awareness of sustainability issues and the bio-based circular economy aimed at adults and all student levels.

Citizens are in general **Receptive to the Purchase of Bio-based Products**, a positive backdrop and an opportunity for all stakeholders to engage in productive dialogue.

Continuously promote and **Communicate the Unique Selling Points (USP)** of bio-based products, their benefits and relevance to everyday life.

Establish the appetite amongst your members/group for the **Implementation of a Carbon Tax** on fossil-based products to make bio-based materials more affordable.

Enable and encourage the **Participation of Citizen Groups** particularly in the development of regional and local circular bio-based economy policies

## 5. Insights relating to Key Messages

**Based on evidence collated from BIOVOICES Mobilisation and Mutual Learning (MML) Events at European, National and Regional levels.**

*At the start of the project BIOVOICES partners agreed on the twelve challenges that need to be addressed to drive development and market uptake of bio-based products. The challenges can be accessed in the Annex. The challenge or challenges most relevant to each key message and insight are referenced below.*

**Support the development of a Common Language with an agreed terminology accessible to all stakeholders, to drive useful dialogue about the circular bio-based economy and specific bio-based sectors.**

*“I was not aware of the meaning of the terms bioeconomy and bioscience and even after the MML I do not have an understanding of the terms.” MML event attendee-Civil Society*

- Define a common goal, all actors involved must be clear about what it is they want to achieve so that they can work together for long-term change.
- Collaborate to develop a Common Language that can be easily understood by all - the language used to describe the bioeconomy is currently too complex and inconsistent - stakeholders using a standard terminology.
- Drive understanding of exactly what the bioeconomy is and what the benefits to society are, or it will continue to be a challenge to develop and market bio-based products.
- Promote awareness and active knowledge of standard bioeconomy terminology to increase dialogue between all stakeholders to communicate the positive impact bio-based products can have on the environment.
- Engage with start-ups to develop a coherent story about innovative bio-based products that can be explained to citizens.

*“Plain language and common terms would be helpful.” Interviewee – Civil society*

**Challenges:** Changes in Purchase Habits; Increase the Adoption, Realise Standardisation

**Support development of a simple, clear and consistent Labelling Standard at EU level for bio-based products to help establish understanding and drive consumer trust.**

*“Standards are needed so that consumers (and all stakeholders) can understand what is meant by bio-based. This will develop trust.” MML event attendee – Civil Society*

- Involve citizens in the development of a simple, functional labelling standard.
- Obtain citizen trust through involving them in the development of clear, consistent labelling and standards achieved with the involvement of policy makers supporting bio-based products at national, regional and municipal level.
- Respond to initiatives from other stakeholders relating to the development of labelling standards.
- Engage with the debate on transparent and traceable life cycle assessment (LCA) data that can be transferred to a labelling system. Complete value chain information required for bio-based products.
- Understand that citizens are more interested in end-of-life solutions for plastics than in bio-based inputs.
- Work with regional producers of bio-based products to give consumers a quality guarantee that goes hand in hand with the good reputation of the brand and the region.

**Challenges -** Specify USP, Up-Scaling, Promote Changes in Purchase Habits, Increase the Adoption, Realise Standardisation

## Work towards the elimination of 'Greenwashing' as this results in lower consumer confidence in bio-based products and their producers.

*"There is a lack of transparency in communication around the use of bio-based materials in packaging – Corporate responsibility must kick in and be real." General Manager-Industry*

- Cooperate with all relevant stakeholders to develop awareness and active knowledge of standard circular bio-based economy terminology to increase dialogue to communicate the positive impact BBP can have on the environment in terms of functionality compared to traditional products
- Drive informed debate using honest and transparent information which is increasingly required as consumers become more knowledgeable and enquiring.
- Respond to requests from policy makers and industry to provide accurate and actionable knowledge and insights relevant to members' interests in furthering the uptake of bio-based products.
- Challenge industry to provide the information that citizens require to build trust in bio-based products and to address preconceptions relating to product efficiency, durability and end-of-life issues.

*"I think we need to stop proposing compostable as an alternative for single-use items, especially 'on the go', they are complicating the infrastructure requirements and creating confusion." General Manager-Industry*

**Challenges** - Promote Changes in Purchase Habits, Increase the Adoption, Realise Standardisation, Boost Local Deployment

## Set the 'Bioeconomy Story' into the Circular Bio-based Economy context to drive further understanding and adoption.

*"Biobased products such as plant-based coffee cups are still a niche market and the purchase of one is not going to save the planet." MML event attendee-Civil Society*

- Adopt the "circular concept" to facilitate promotion of the bio-based sector to the general public.
- Highlight the social, economic and environmental benefits of the circular bio-based economy.
- Collaborate with stakeholders to ensure that the 'Bioeconomy Story' being shared is consistent and set into the relevant global, national, or regional context.
- Address that fact that the bioeconomy is still a 'niche' sector and will continue to have limited impact unless joined up with and communicated within circular economy approaches.
- Develop a specialist network to tell **one main story** to achieve wider acceptance of the bioeconomy, bio-based sectors and bio-based products by governments and society in general.

*"It seems to me that a focus on the circular economy is the right context – with bio-based fitting into that."*

*Collaboration Lead - Industry*

**Challenges** - Specify Unique Selling Points; Promote Changes in Purchase Habits; Increase the Adoption; Realise Standardisation

## Promote implementation of an Education Curriculum to increase knowledge and awareness of sustainability issues and the bio-based circular economy, aimed at adults and all student levels.

- Provide innovative and up to date information to secure participative and proactive citizen involvement to promote trust, conscious consumption and environmental sustainability.
- Contribute to development of National Curricula at school level to raise awareness of the benefits of a circular bio-based economy and the link to global sustainability.
- Collaborate with the education community and the regions to provide educational paths for vocational training and life-long learning as citizen awareness and understanding are the essential elements to focus on to drive the change.
- Ensure the younger generation are involved in the debate as young people are currently very receptive to the development of new lifestyle skills relating to reducing the effects of climate change.
- Promote the opportunity for careers and academic study related to the circular bio-based economy.

**Challenges** - Find First Customers, Up-scaling, Promote Changes in Purchase Habits, Increase the Adoption

## Citizens are in general Receptive to the Purchase of Bio-based Products, a positive backdrop and an opportunity for stakeholders to work with.

*“Behaviour change by all stakeholders essential to increase uptake of BBPs, in conjunction with disruptive legislation from government. Involve social scientists in change process.” MML event attendee-Industry/Research*

- Embrace the opportunity that most people, regardless of age, are favourable towards the purchase of bio-based products and believe that it is necessary that more of these reach the market.
- Promote conscious consumption, environmental sustainability and ensure the participative and proactive involvement of citizens.
- Focus communication about bio-based products taking into account age, education level to target message delivery.
- Pursue public funding at European and national level to encourage public engagement.
- Utilise social media, television and radio as highlighted by citizens as the most appropriate methods to convey the benefits of bio-based products to the general public.
- Maximise involvement with citizen-science projects and living labs which are an opportunity to involve citizens in design and research questions and the physical testing of bio-based innovations.
- Highlight and promote to citizens public entities implementing Green Public Procurement as single “champions” (a business or public entity using green procurement on a wide scale).

*“Use ‘New World Order’ to drive change. The economic potential of the biobased circular economy is substantial.”*

*Capability Lead-Industry/Research*

**Challenges** - Promote Changes in Purchase Habits, Increase the Adoption, Introduce EU & National Incentives

## Continuously promote and Communicate the Unique Selling Points of bio-based products, their benefits and relevance to everyday life.

*“The whole sector is immature and currently ‘very niche’.” Collaboration Lead - Industry*

- Enhance citizen awareness of the positive impact that bio-based products can have at a social, environmental and economic level, to encourage consumers to change their purchase habits.
- Drive behavioural change by continually promoting USP, which are not always self-evident, appropriately and in understandable formats to individual generations of citizens.
- Develop attractive visual campaigns using innovative technology to raise awareness, in particular to younger generations, of how bio-based products can be incorporated into daily lives.

- Harness the strong motivational power of physical examples and case studies of bio-based products by promoting and exhibiting in public spaces.

**Challenges** - Specify USP, Up-Scaling, Promote Changes in Purchase Habits

### Establish the appetite for the Implementation of a Carbon Tax on fossil-based products to make bio-based materials more affordable

- Ask Consumers to identify initiatives, for example tax benefits, that would increase their confidence in and ability to purchase bio-based products.
- Develop dialogue with citizens to debate the issue of price parity of bio-based products with their fossil equivalent – ‘Why are the fossil-based products so cheap?’
- Challenge policy makers about price parity to introduce initiatives that result in economic benefits for citizens.
- Provide continuity of the message during policy regime change to avoid hinderance of the development of bio-based sectors.

**Challenges** - Specify USP; Introduce EU & National Incentives; Boost Local Deployment; Increase the Adoption

### Enable and encourage the Participation of Citizen Groups particularly in the development of regional and local circular bio-based economy policies

*“Behaviour change by all stakeholders essential to increase uptake of BBPs -paradigm shift. In conjunction with disruptive legislation from government. Involve social scientists in change process.” MML attendee- Industry/research*

- Address societal and citizen concerns through the influencing of policy and industrial agendas.
- Create a new participative governance by involving citizens in public consultations about the circular bio-based economy to develop a set of ideas and measures which can be included in public policies.
- Civil Society organisations must work with all stakeholders to identify the needs of the citizen, businesses and the territory in order to facilitate multi-stakeholder networks.
- Promote the bioeconomy in a regional context to encourage citizen involvement in the revitalisation of the local economy by enhancement of social enterprises and social innovation action plans.
- Communicate to society that the sectors working within the circular bio-based economy can create opportunities to boost national and regional employment.
- Develop online platforms where citizens can access local bio-based products.

**Challenges** - Promote Changes in Purchase Habits, Increase the Adoption, Introduce EU & National Incentives, Enhance Local Bioeconomy Action Plans, Boost Local Deployment

## 6. Shared Best Practice Actions

### Support Regions in the design of innovative bioeconomy educational pathways

The Friuli Venezia Giulia Region (Italy) created a regional HUB for Bioeconomy Education with support from the BIOVOICES project and the European Bioeconomy Network (EUBioNet) which is a proactive alliance of 47 EU funded projects dealing with Bioeconomy promotion, communication and support. The HUB was developed through the organisation of a Mobilisation and Mutual Learning (MML) workshop attended by stakeholders from the quadruple helix to identify the educational needs of the region, including formal education, education of value chain actors, and others involved with capacity building within the bioeconomy. Representatives from a number of other EU Funded projects and initiatives including STAR-ProBio, NextFood, UrBIOFuture, ASKFood, and the European Bioeconomy University, were invited to present inspirational good practices to workshop participants. Support for the region will continue for several months with additional activities planned to embed and facilitate progress



*Co-creation and presentation to regional stakeholders during the MML organised with BIOVOICES (24 January 2019)*

### Launch Regional Bioeconomy Prizes to celebrate school bioeconomy projects

The “Bioeconomy Prize” was created by Lazio Innova (Lazio Region Innovation Hub) in collaboration with the BIOVOICES project, Novamont and the European Bioeconomy Network as a response to the lack of public awareness regarding the opportunities available within the bioeconomy sector. A workshop was delivered for Startupper School Academy to highlight these opportunities, to info-educate teachers and tutors as multipliers of this knowledge and to encourage students to participate in the “Bioeconomy Prize” by designing a bio-based product. The prize aims to raise student awareness of a more sustainable economic model using renewable resources as an alternative to fossil-based resources.

In order to be considered for the prize, applicants had to demonstrate particular attention to the entire lifecycle of the product from the use of raw materials of biological origin (including waste products) through sustainable production to reuse and disposal with a focus on the circular bio-based economy model.

The winners were invited to showcase their ideas to the public at events during 2019, including Researcher’s Night in Frascati, Maker Faire in Rome, and the Science is Wonderful exhibition and event in Brussels.



*Startupper School Academy award in Rome (May 2020)*



### **Involve volunteers in Practical Citizen Science projects such as investigating viability of biodegradable and compostable packaging.**

The Big Compost Experiment is being run by University College London (UCL) Plastic Waste Innovation Hub. A nationwide citizen science research experiment to help UCL investigate the viability of biodegradable and compostable packaging. Information is being provided by members of the public to help understand how biodegradable plastics work in home composting environments to determine if their disposal at home is a viable alternative to other waste processes such as recycling or landfill.

The practical part of the experiment asks citizens to place a few biodegradable plastic items in a compost bin under controlled conditions, and then report back about whether they compost or not. An easy-to-use app has been designed to download onto a mobile phone. Participants explain what type of composting facility they use then photograph the items they have selected before placing them in the compost bin. UCL get in touch when the items have been in the compost for the required time. They are then dug up, photographed and their condition reported via the app.

An artist in residence has been appointed by the Waste Innovation Hub to communicate the ongoing scientific research to new audiences in an appealing and visual way. This example of a practical Citizen Science project is jointly funded by UK Research and Innovation ([UKRI](#)) and the Engineering and Physical Sciences Research Council ([EPSRC](#)).

<https://www.bigcompostexperiment.org.uk>

### **Provide hands on opportunities that can be easily transported, displayed and accessed to demonstrate the relevance of bio-based products to adults and children, their everyday life and the products' availability**

#### **(1) BIOVOICES BIOECONOMY VILLAGE**

A stunning collection of more than 300 samples of bio-based products has been meticulously selected by the BIOVOICES project for their uniqueness and surprising feedstock provenance. From paper notepads created from elephant dung to cosmetics made of insects, from apple-peel leather to toys made from corn starch. The collection has created a travelling exhibition where participants are able to handle the objects to discover that it is feasible to replace fossil-based products with their bio-based counterparts.

The collection has been exhibited at several events throughout Europe including the 2018 launch of the revised EC Bioeconomy Strategy in Brussels, Science is Wonderful exhibition 2019 and the European Bioeconomy Scene 2019.



*Bio-based products on display at Science Is Wonderful! 2019*

## (2) BIOVOICES 'Bioart Gallery'

A set of 60 stunning images was created to showcase commonly known foodstuffs linked to their, often surprising bio-based product applications. This is an innovative approach to citizen engagement, raising awareness of bio-based products. The images were commissioned as part of the BIOVOICES project to visually showcase the multiple but as yet unknown applications from everyday biological sources such as tomatoes, oranges, apples and coffee.



The initial 60 images formed the basis for the creation of a wider range of visual materials created for use in public outreach situations. A virtual version of the Bioart Gallery available on the BIOVOICES website in the form of an interactive slideshow presents the most promising feedstocks and examples of bio-based products and applications currently available on the market. These include cosmetics, nutraceuticals, tissues, toys, sport items, disposable tableware, cleaning products, gadgets, and much more. Other visual aids created based on the Bioart Gallery include A4 booklets and display banners.

*Bioart panels exhibited at FestivalFuturo by Altroconsumo, Milan (2018)*

The BioArt Gallery in its various formats of has been used successfully at many events to engage the wider public and other specialist audiences (for example at the Scottish Waste & Resources Conference, Perth, Scotland 2019) in the discussion about bio-based products. It was discovered that the “surprise factor” is helpful when explaining what a bio-based product is and what feedstock has been used to develop it. - “Did you know that this textile is formed from apple peelings?”

<https://www.biovoices.eu/gallery/>

## (3) Videos and interactive games attract the attention of younger citizens by providing visual and engaging opportunities

Several videos and games have been created and developed by the BIOVOICES and other EU funded projects to promote bio-based products in the context of the circular bio-based economy in an eye catching and relevant way. The gaming approach is particularly focused on the younger generation who are receptive to the development of new lifestyle skills to respond to the climate emergency.

Visual media translated into different languages can be used to engage with areas of society that are hard to reach due to language barriers. This approach is illustrated by a short multilingual video produced by the Biobridges project. The title of the video is “A bio-based day” featuring an individual experiencing 24 hours using only bio-based products.

[https://www.youtube.com/channel/UCGLJFaqVw7lx\\_7XzqoJhzzg/videos](https://www.youtube.com/channel/UCGLJFaqVw7lx_7XzqoJhzzg/videos)



An interactive game produced by the BIOVOICES and BIOWAYS projects

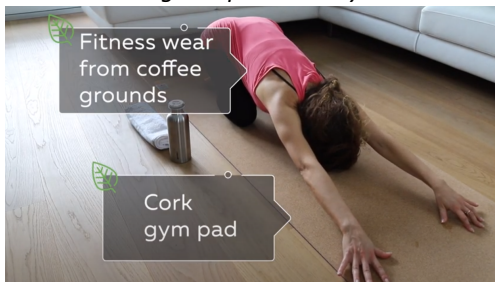
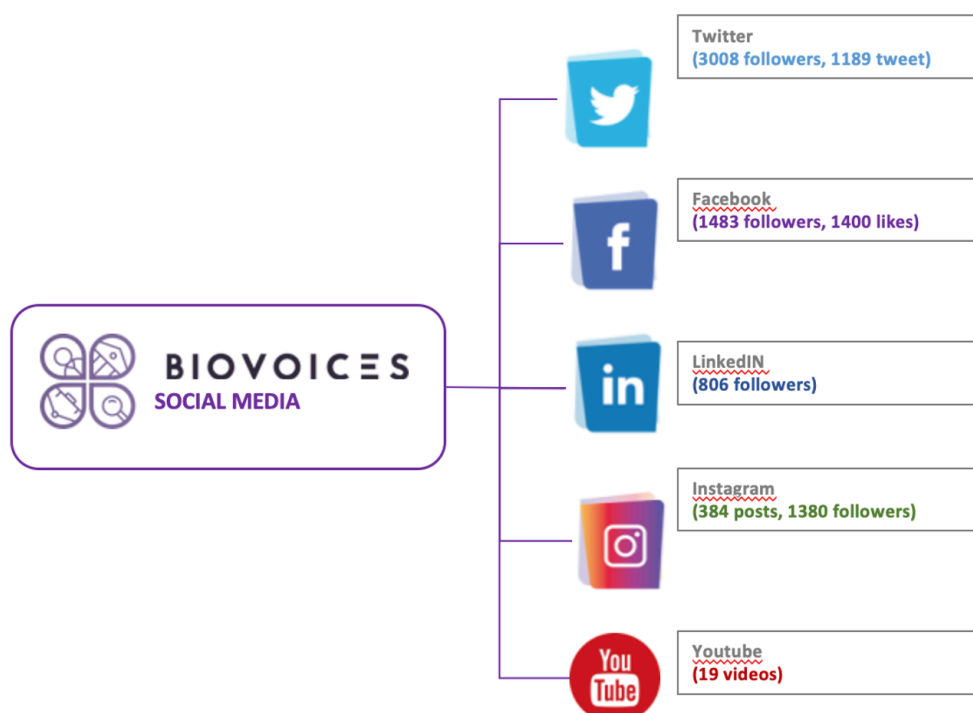


Image taken from the Biobridges video

## (4) Social Media

For BIOVOICES Social media has been a powerful tool to inform and reach consumers to inform, raise awareness and educate about bio-based products and the circular bio-based economy. The strength of BIOVOICES is the proactive collaboration with similar projects and initiatives, but also with SMEs, researchers and influencers, enhanced by the use of social media. The most successful channels that are being used are, Twitter, Facebook, Instagram and LinkedIn.



Social media channels - overview data 2020

Early on in the COVID-19 pandemic we adapted our social media strategy to make it more responsive. Every day of the week new thematic proposals were uploaded to the various channels.

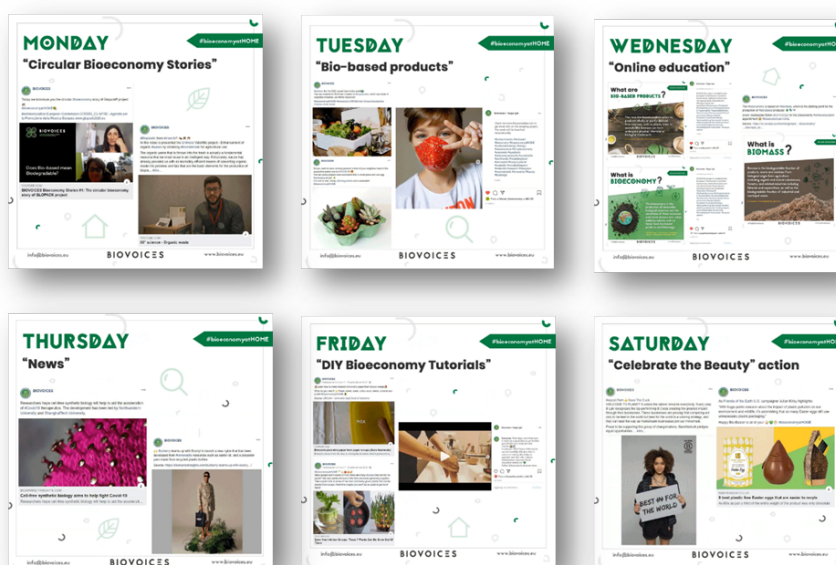
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[www.biovoices.eu](http://www.biovoices.eu)

New formats, ways of communication and content were constantly experimented with. An example was the launch of the #bioeconomyatHOME (March-May 2020) initiative with a more intensive social media campaign, to promote active engagement, open dialogue, interaction and collaboration. The campaign offered the regular BIOVOICES content but also novel presentations including educational graphic cards, circular bioeconomy stories and DIY tutorials, to bring the bioeconomy into the citizens' home and reducing isolation.

The various activities were focused on particular social media channels and adapted according to the target audience of the project. For example, the news and the circular bioeconomy stories were not published on Instagram, in the same way the DIY tutorials and the "beauty action" were not published on Twitter and LinkedIn.

These choices were made taking into account; (a) the user profile that each social media has, for example on Twitter and LinkedIn we have not found many people interested in tutorials as the content is generally more serious; (b) the format of the channel. On Instagram for example, it is not possible to share news from other sites or videos from Youtube; (c) days of the week programming is scheduled. BIOVOICES programming took place over all 7 days. LinkedIn is less used at weekends as it is a platform more dedicated to workers, so content on LinkedIn was focused on weekdays to maximise exposure.



*#bioeconomyatHOME initiative programme (March-May 2020)*

A key success of the BIOVOICES social media campaign is the carefully branded, high-quality, visual content that has been developed. These eye-catching visuals encourage people to 'follow', 'like', and comment. An example of this strategy is the BIOVOICES Instagram channel where category cards to classify the various types of bio-based products are continually posted.

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*BIOVOICES Category cards uploaded to Instagram*

## **6. Annex**

The 12 Challenges identified by BIOVOICES to contribute to the market uptake of BBP

