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GREEN-LOOP
Sustainable manufacture systems towards novel bio-based materials

WP7 – Business Model, Replication and Exploitation

D7.10 – Synergies & collaboration report [M36]

Document information

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GREEN LOOP Key Facts

Project title	Sustainable manufacture systems towards novel bio-based materials
Starting date	01/09/2022
Duration in months	36
Call (part) identifier	TWIN GREEN AND DIGITAL TRANSITION 2021 (HORIZON-CL4-2021-TWIN-TRANSITION-01)
Topic	HORIZON-CL4-2021-TWIN-TRANSITION-01-05 Manufacturing technologies for bio-based materials (Made in Europe Partnership) (RIA)
Consortium	17 organizations: 15 from EU Member States + 2 from UK

GREEN LOOP Consortium Partners

	Partner	Acronym	Country
1	IDENER RESEARCH & DEVELOPMENT	IDE	ES
2	NATIONAL INSTITUTE OF CHEMISTRY	NIC	SI
3	SLOVENIAN NATIONAL BUILDING AND CIVIL E. I.	ZAG	SI
4	FRAUNHOFER GESELLSCHAFT ZUR FOERDERUNG DER ANGEWANDTEN FORSCHUNG E.V	FHF	DE
5	LABRENTA SRL	LBRT	IT
6	MIXCYCLING SRL	MYX	IT
7	NERO SU BIANCO	NSB	IT
8	GERACE MARIA CRISTINA - TERRE DI ZOE'	TDZ	IT
9	IRIS TECHNOLOGY SOLUTIONS, SOCIEDAD LIMITADA	IRIS	ES
10	GLOWNY INSTYTUT GORNICTWA	GIG	PL
11	AACHEN UNIVERISTY: PROCESS CONTROL ENGINEERING / AACHEN UNIVERISTY: INSTITUTE OF SOCIOLOGY	AAU	DE
12	AUSTRIAN STANDARDS INTERNATIONAL	ASI	AT
13	INSTITUTO DE SOLDADURA E QUALIDADE	ISQ	PT
14	AXIA INNOVATION UG	AXIA	DE
15	ASOCIACIÓN DE INVESTIGACIÓN METALÚRGICA DEL NOROESTE	AIMEN	ES
16	NATIONAL COMPOSITE CENTER	NCC	UK
17	UNIVERSITY OF BRISTOL	UBRIS	UK

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GREEN LOOP is a project funded by the European Commission under the Horizon Europe - HORIZON-CL4-2021-TWIN-TRANSITION-01-05- Manufacturing technologies for bio-based materials (Made in Europe Partnership) (RIA) under Grand Agreement Number 101057765.

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Executive Summary

This deliverable counts with two main chapters, the formation and achievements of the BIO-MATTERS cluster, a collaborative initiative formed by six sisters Horizon Europe projects, where GREEN-LOOP was part of.

Section 1 outlines the creation of the cluster, including the origin of the BIO-MATTERS name, an overview of each participating project, and the distribution of roles and responsibilities for the planned activities. The following section, chapter 2, highlights the key activities carried out, starting from the signature of clustering agreement to the joint efforts in events and social media, as well as many outcomes and best practices that emerged from this collaborative framework.

Since the beginning, the cluster aimed to foster synergies, promote innovation, and amplify the collective impact of its members in the transition toward a circular and climate-resilient economy. Through this shared journey, the BIO-MATTERS cluster has proven that cooperation is a powerful catalyst for innovation, stakeholder engagement, and progress toward a more sustainable future.

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Abbreviations

EU	European Union
EC	European Commission
CE	Circular Economy
GA	Grant Agreement
SMEs	Small and Medium-sized Enterprises
VC	Value Chain
CBM	Circular Business Models
LCA	Life Cycle Assessment
CEN	European Committee for Standardization
b-bTP	bio-based Thermoplastic Processing
FIM	Foam Injection Moulding
KPI	Key Performance Indicator
KOM	Kick-Off Meeting
EUBCE	European Biomass Conference and Exhibition
DG	Directorate-General
R&I	Research and Innovation
CBE JU	Circular Bio-based Europe Joint Undertaking
EFFRA	The European Factories of the Future Research Association
NGO	Non-Governmental Organisation
R&D	Research and Development

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1. Clustering Formation

The cluster was established under the same call for the twin green and digital transition, bringing together the sister projects: AMBIANCE, BIO-UPTAKE, GREEN-LOOP, NEWWAVE, VITAL, and Waste2BioComp. United by a shared mission, these initiatives aim to make sustainable processes and products the standard across the EU. Funded through the Horizon Europe Programme, they collectively strive to offer viable alternatives to conventional materials by leveraging innovative bio-based materials and advanced manufacturing technologies.

1.1. Cluster's Kick-off Meetings

The kick-off meeting of the cluster took place on August 2023, organized by CRIT SRL, dissemination leader from the AMBIANCE project. In this meeting the six sister projects were introduced by its representatives. Each project was given 5–7 minutes to present its technology, partners, use cases, and areas where clustering could be beneficial, such as dissemination, standardization, and training. From GREEN-LOOP's side, AXIA's exploitation manager and NSB's dissemination manager presented the project. A brief description of each project is mentioned in the "Sister Project" section.

Further on, in this meeting the name of the cluster was define by a voting system with the partners that participated in this initial meeting. Prior to the session, attendees could suggest meaningful names by submitting their ideas via an MS Forms link. The names voted by the cluster are in Table 1, and with 19 votes the name **"BIO-MATTERS"** was chosen.

Table 1. Clusters Name Idea and Voting

Name of the Cluster	Preferences (votes)
MAT-BIO: Bio-based materials for Future Value Chain	1
MANUTECHBIO: Manufacturing Technologies for Bio-based materials	1
ECOMATTER: it is a word game with the different meaning of matter: topic / material / care and the words bio or eco	3
BIO-MATTERS: it is a word game with the different meaning of matter: topic / material / care and the words bio or eco	**19**

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TWITBIO: Twin Transition by bio-based technology	5
BIO4TWINS: Bio-based material enhancing Twin transition	13

The meeting also included a guided brainstorming session using the Klaxoon Board tool, where participants suggested potential collaborative actions. Once all ideas were collected, a voting process was carried out to identify and prioritize key activities. This process is summarized in Table 2, The most voted actions, which are presented in bold within the table, were selected for implementation. For each of these, a responsible project partner was assigned, and a joint roadmap was created, outlining tentative deadlines and responsibilities. This initial roadmap is illustrated in Figure 1. The session concluded with a discussion on the next steps, ensuring alignment among partners and setting a clear direction for the work ahead.

Table 2. Brainstorming Ideas for Clustering Activities and Voting

Topic	Activity	Preferences (votes)
Communication	Organise a common social media campaign	3
	Share news of events and workshop among project's contacts/mailing list	3
	Shared cluster video -- a few minutes per project to outline the breadth of solutions being developed.	0
	Reposting of each other posts of Linkedin (where there is a connection to your own activities) Subscribe to each other's newsletters and include articles about sister projects' important updates.	**16**
	Cluster webpage in each project website	**9**
	Shared stakeholder mapping activity • **Links to comms, diss, and exploitation** • **Identify common stakeholders and leverage the wider network to reach/engage them**	**8**

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Exploitation	Share Good Practices in Exploitation field.	0
	Create a thematic meeting in order to improve networking/sharing ideas among partners of different projects.	0
	Exchange information about common competitors	1
	Joint Market Analysis	0
	Co-participation at thematic fairs	3
	Training webinars/ workshops	6
	Sex & gender dimension	4
	Share identified KERs per project with the cluster to identify synergies.	2
	Circular business model workshops/ knowledge sharing	**12**
Dissemination	Final meeting in Brussels	0
	Cluster 10 point Manifesto	4
	Bio-Matter page in LinkedIn	7
	Share Good Practices in Dissemination field	2
	Q&A sessions, online discussions, or feedback mechanisms, to foster engagement and dialogue	0
	Joint webinars on common activities/challenges/topics	8
	Joint event at EUBCE 2024 (Marseille, 24-27 June)	**11**
	Shared impact analysis review • Highlight how the Custer as a whole is addressing TT issues • develop a white paper	3

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Open Science	Developing guidelines and resources for researchers to effectively manage and share their research data, ensuring long-term accessibility	2
	Joint open publication in later stages of project's development about advances in manufacturing technologies for biomaterials. joint data sets or sharing of best practice	0
	Engage with the public through clear and accessible explanations of research findings, making science more understandable and relevant to society	0
	Writing collaborative Papers	5
	Joint technical meeting. Organize workshops, webinars, and training sessions	**10**
Network	Cluster Periodic meetings of each area of expertise (e.g. training, standardisation, comm.	2
Other Input	BIO-MATTERS position paper to the to the European Commission Public Consultation on the EU Bioeconomy Strategy, title "Contributing to the better Bioeconomy"	1
Fixed activity	**Writing Cluster Agreement**	**12**

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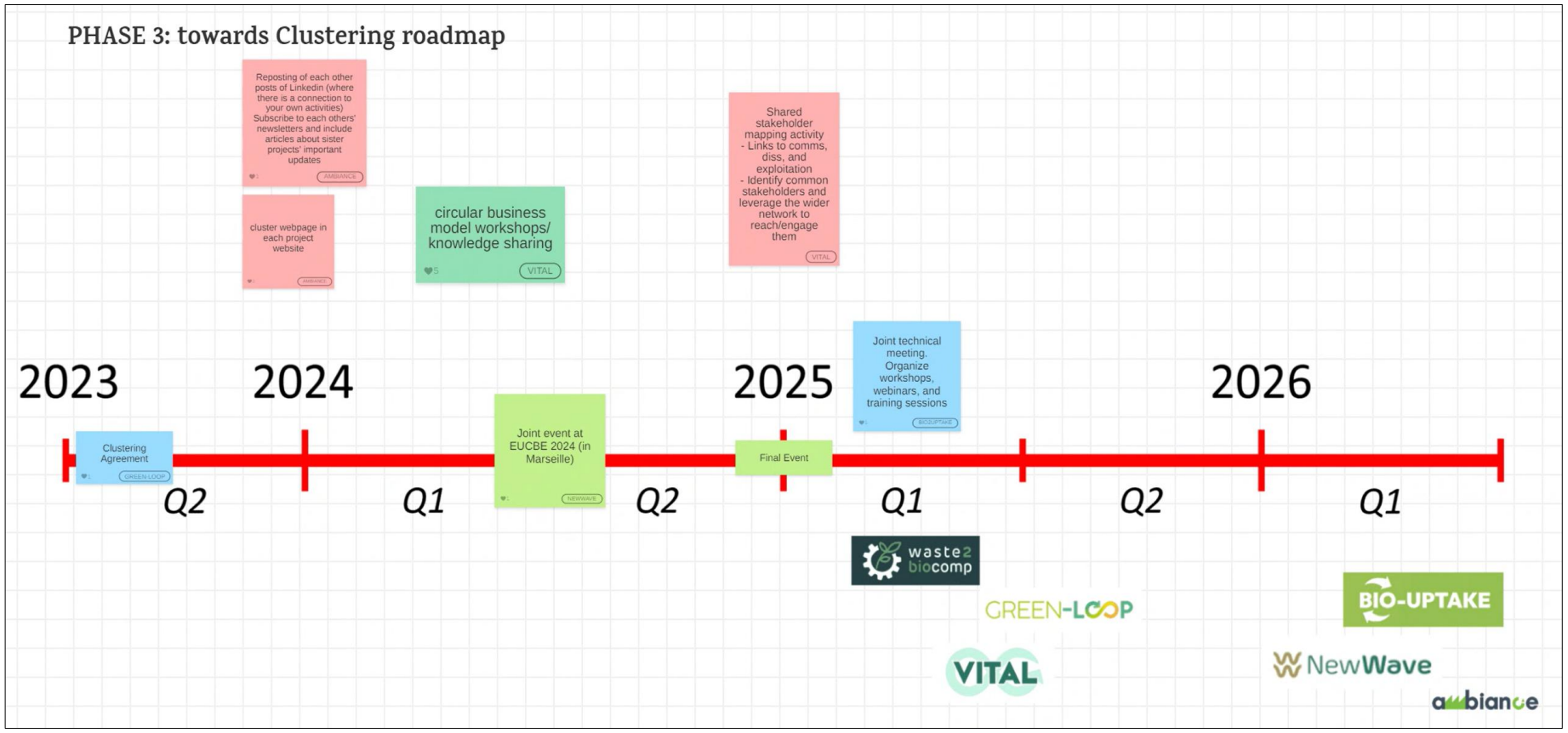

Figure 1. BIO-MATTERS Clustering Roadmap

1.2. Cluster's Periodic Meetings

The BIO-MATTERS cluster held meetings every three months to share progress on the planned activities. AXIA and NSB represented the GREEN-LOOP project and actively participated in all sessions. During each meeting, the activity list was reviewed and updated, as completed actions were marked accordingly, new initiatives were added, and any no longer relevant were adjusted or discontinued. Since both the activity list and the roadmap were considered living documents, their latest versions presenting what was accomplished by August 2025 are shown in Table 3 and Figure 2.

Table 3. BIO-MATTERS' Activities

Activity	Responsible
Writing Clustering Agreement	GREEN-LOOP
Common Communication Activities	AMBIANCE
HRBooster Common Dissemination Activities	VITAL
Stakeholder mapping activity	VITAL
LCA methodologies Knowledge Sharing	WASTE2BIOCOMP
Joint event at EUBCE 2024	NEWWAVE
Joint event at European Congress S3	BIOUPTAKE
Cluster's Final Event	WASTE2BIOCOMP
Joint technical meeting and/or workshops, training sessions	BIOUPTAKE

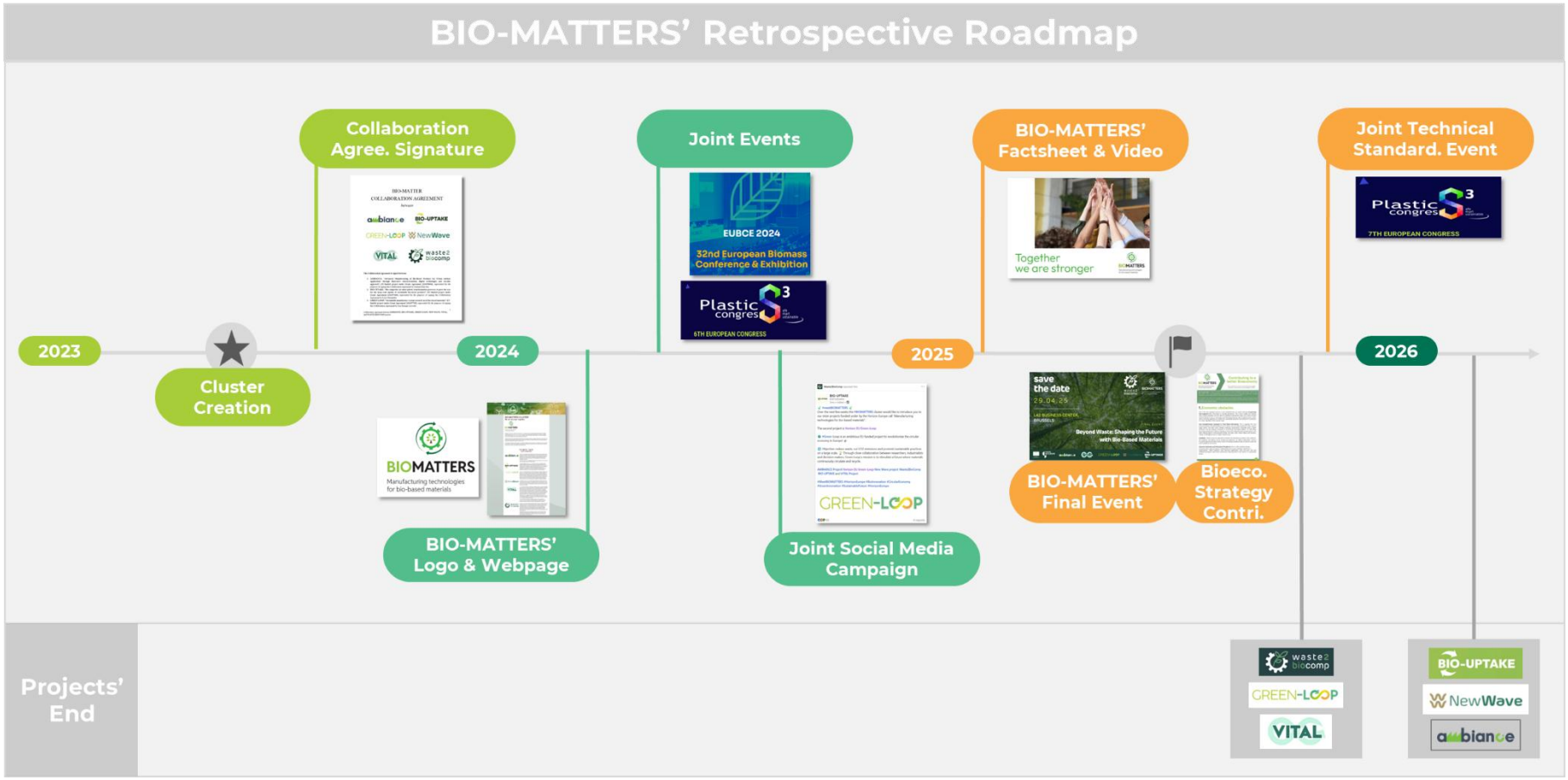

Figure 2. Retrospective BIO-MATTERS Roadmap (Accomplished Activities)

From the initial list to the final one in Table 3, the Circular Business Model Workshop was discontinued, due to lack of time, however, three activities were added, which were: HRBooster Common Dissemination Activities, LCA methodologies Knowledge Sharing and Joint event at European Congress S3. In section "BIO-MATTERS' Clustering Achievements" it will be explained in detail the final activities that were developed within these 2 years.

1.3. Projects within BIO-MATTERS

- **AMBIANCE:**
  The project started on in June of 2022 and has a duration of 48 months, which the end date is in June of 2026. This project focus on the smart optimization with advance technologies, leveraging the novel composite materials to improve the production of a new generation of fully recycled bio-based product, which helps in the transition to a circular biobased economy. The optimisation of product manufacturing of bio-based materials will involve the tuning of material composition and processes, as well as the use of digital twin technologies. The main application of this novel bio-based material is for urban outdoor application, counting with 3 manufacturing value chains; artificial grass for sport facilities, 3D printed outdoor furniture and construction bricks and decorative panels from agriculture side stream. Having as an aim to demonstrate this application in as least 2 EU cities pilots. AMBIANCE counts with 10 partners in their consortium of 6 different countries.

- **BIOUPTAKE:**
  This project has a duration of 42 months, running from December 2022 to May 2026, with 14 partners from Spain, Sweden, Belgium, Denmark, France, Ireland, and Portugal. Its main goal is to increase the use of bioplastic composites by 39%, driving a green and digital transformation in Europe's manufacturing industry. The project focuses on developing flexible manufacturing processes for biobased end-products in the construction, medical, and packaging sectors. Key innovations include biopolymer-reinforced materials made from natural or biobased synthetic fibres, adaptable to market demands. The project will produce and validate three end-products; a bathroom ceiling cabinet, feet insoles, and a garbage container lid, all made from over 75% biobased materials while meeting technical and environmental standards.

- **NEWWAVE:**
  The NEWWAVE project began in April 2022 and will run for 48 months, concluding in March 2026. Its primary objective is to transition fossil-fuel-based manufacturing lines for chemical and wood products to bio-based

alternatives. The project introduces an innovative approach by applying Thermo-Chemical Fractionation (TCF) to unlock and fractionate residual biomass, implementing it across four key areas: Engineered wood panels, Furan-based chemicals, Polyols/Polyurethanes, and Modified/Engineered wood. Bio-based products are designed to match or exceed the mechanical, physical, and chemical performance of conventional products while ensuring they are non-toxic and recyclable. The initiative is led by a consortium of 11 partners, including two industrial partners responsible for producing the final applications.

- **VITAL:**

  The VITAL project began in June 2022 and was initially set to conclude in May 2025, but a six-month extension has extended it to November 2025. The project brings together 14 partners from 7 countries, focusing on developing innovative bio-based thermoplastic processing (b-bTP) solutions for foamed thermoplastics across three value chains: 3D printing with granulated feedstocks, bead foaming, and foam injection moulding (FIM). These technologies will be applied to seven use cases, including a tray and fridge components, two types of automotive interior trim parts, automotive seating, a front dust cover, and ship interior facades. VITAL aims to establish high-efficiency, cost-effective processing solutions while advancing key knowledge to support commercially viable, "Sustainable by Design" approaches using b-bTPs.

- **WASTE2BIOCOMP:**

  The Waste2BioComp project runs for 36 months, from June 2022 to May 2025, and brings together 13 partners from France, Germany, Italy, Portugal, Spain, and Switzerland. It aims to demonstrate the large-scale production of bio-based products and materials as sustainable alternatives to traditional materials with a high environmental footprint. Focusing on Textiles, Packaging, and Footwear, the project utilizes innovative manufacturing technologies to develop key use cases, including shoe soles and insoles, bioplastic films and packaging, bio-based textiles, and printed substrates. Waste2BioComp addresses every stage of a product's life cycle—from research and innovation to smart manufacturing, incorporating advanced inkjet printing techniques, and extending to end-of-life strategies, sustainability, and toxicity assessments—ensuring full circularity of the materials. Website:

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- **GREEN-LOOP:**

  In the GREEN-LOOP project, the exploitation manager from AXIA and the dissemination manager from NSB presented an overview, highlighting its 17-partner consortium from 8 countries, key activities, and objectives. The project's main goal is to design and optimize three innovative bio-based materials—bio-rubber, bio-plastic, and wood composite—for use in the construction, food packaging, and tooling sectors, following a circular economy approach. Its three key use cases include a fire-resistant and vibrational panel, a bottle closure, and bearings. GREEN-LOOP focuses on optimizing the value chain of each product, from raw material sourcing to End of Life, ensuring sustainability. Additionally, it will provide real-time KPI evaluation, business optimization tools, training webinars, and social engagement through a virtual platform. The project began in September 2022, will run for 36 months, and is set to conclude in August 2025.

In Figure 3 there is the logo of each project and in and in Table 4 there is the communication channel of each project.

Figure 3. Sisters Project's Logos

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Table 4. Communication Channel of Sister Projects

Project	Website	Linkedin	Twitter	Facebook	YouTube
BIO-UPTAKE	https://www.bio-uptake-project.eu/	https://www.linkedin.com/company/bio-uptake/	@BioUptake	-	-
GREEN-LOOP	https://www.greenloop-project.eu/	https://www.linkedin.com/company/horizon-eu-green-loop/posts/?feedView=all	@GREENLOOProject	https://www.facebook.com/GREENLOOPPROJECT	-
VITAL	https://vital-project.eu/	https://www.linkedin.com/in/hevitalproject/	@VITALHEProject		
NEW WAVE	https://www.newwave-horizon.eu/	https://www.linkedin.com/company/new-wave-project/	-	-	-
AMBIANCE	https://www.ambiance-project.eu/	https://www.linkedin.com/in/ambiance-project-eu/	@AmbianceEu		
WASTE2BIOCOMP	https://waste2biocomp.eu/	https://www.linkedin.com/company/waste2biocomp/	@waste2biocomp	-	https://www.youtube.com/channel/UCVJI5rrE7QBnHCjzQCWNpIQ

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2. BIO-MATTERS' Clustering Achievements

2.1. Collaboration Agreement

AXIA Innovation, from the side of GREEN-LOOP project, developed the Clustering Agreement. This agreement contains each project's logo, official project details (name, grant number, coordinator's name), the list of actions the Cluster will do, and the duration of each project within the Cluster. In October 2023, the agreement was finished and signed by all the projects' coordinator. The document called "BIO-MATTERS Collaboration Agreement" is available for all projects in a share folder in Google Drive, and a visual representation of it can be seen in Figure 4.

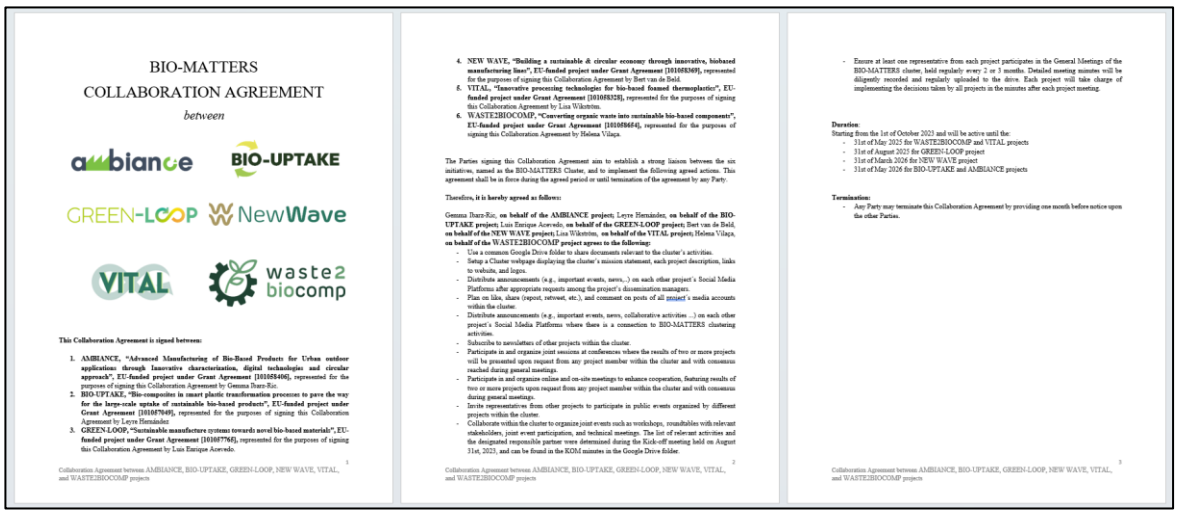
BIO-MATTERS
COLLABORATION AGREEMENT
between
ambiance BIO-UPTAKE
GREEN-LOOP NewWave
VITAL waste2biocomp
This Collaboration Agreement is signed between:
1. AMBIANCE, "Advanced Manufacturing of Bio-Based Products for Urban outdoor applications through Innovative characterization, digital technologies and circular approach", EU-funded project under Grant Agreement [101058406], represented for the purposes of signing this Collaboration Agreement by Gemma Ibarz-Ric.
2. BIO-UPTAKE, "Bio-composites in smart plastic transformation processes to pave the way for the large-scale uptake of sustainable bio-based products", EU-funded project under Grant Agreement [101007049], represented for the purposes of signing this Collaboration Agreement by Leyre Hernández
3. GREEN-LOOP, "Sustainable manufacture systems towards novel bio-based materials", EU-funded project under Grant Agreement [101057765], represented for the purposes of signing this Collaboration Agreement by Luis Enrique Acevedo.
4. NEW WAVE, "Building a sustainable & circular economy through innovative, biobased manufacturing lines", EU-funded project under Grant Agreement [101058385], represented for the purposes of signing this Collaboration Agreement by Bert van de Beld.
5. VITAL, "Innovative processing technologies for bio-based foamed thermoplastics", EU-funded project under Grant Agreement [101058328], represented for the purposes of signing this Collaboration Agreement by Lisa Wikström.
6. WASTE2BIOCOMP, "Converting organic waste into sustainable bio-based components", EU-funded project under Grant Agreement [101058664], represented for the purposes of signing this Collaboration Agreement by Helena Vilaça.
The Parties signing this Collaboration Agreement aim to establish a strong liaison between the six initiatives, named as the BIO-MATTERS Cluster, and to implement the following agreed actions. This agreement shall be in force during the agreed period or until termination of the agreement by any Party.
Therefore, it is hereby agreed as follows:
Gemma Ibarz-Ric, on behalf of the AMBIANCE project; Leyre Hernández, on behalf of the BIO-UPTAKE project; Luis Enrique Acevedo, on behalf of the GREEN-LOOP project; Bert van de Beld, on behalf of the NEW WAVE project; Lisa Wikström, on behalf of the VITAL project; Helena Vilaça, on behalf of the WASTE2BIOCOMP project agree to the following:
- Use a common Google Drive folder to share documents relevant to the cluster's activities.
- Setup a Cluster webpage displaying the cluster's mission statement, each project description, links to website, and logos.
- Distribute announcements (e.g., important events, news,..) on each other project's Social Media Platforms after appropriate requests among the project's dissemination managers.
- Plan on like, share (repost, retweet, etc.), and comment on posts of all project's media accounts within the cluster.
- Distribute announcements (e.g., important events, news, collaborative activities ...) on each other project's Social Media Platforms where there is a connection to BIO-MATTERS clustering activities.
- Subscribe to newsletters of other projects within the cluster.
- Participate in and organize joint sessions at conferences where the results of two or more projects will be presented upon request from any project member within the cluster and with consensus reached during general meetings.
- Participate in and organize online and on-site meetings to enhance cooperation, featuring results of two or more projects upon request from any project member within the cluster and with consensus during general meetings.
- Invite representatives from other projects to participate in public events organized by different projects within the cluster.
- Collaborate within the cluster to organize joint events such as workshops, roundtables with relevant stakeholders, joint event participation, and technical meetings. The list of relevant activities and the designated responsible partner were determined during the Kick-off meeting held on August 31st, 2023, and can be found in the KOM minutes in the Google Drive folder.
- Ensure at least one representative from each project participates in the General Meetings of the BIO-MATTERS cluster, held regularly every 2 or 3 months. Detailed meeting minutes will be diligently recorded and regularly uploaded to the drive. Each project will take charge of implementing the decisions taken by all projects in the minutes after each project meeting.
Duration:
Starting from the 1st of October 2023 and will be active until the:
- 31st of May 2025 for WASTE2BIOCOMP and VITAL projects
- 31st of August 2025 for GREEN-LOOP project
- 31st of March 2026 for NEW WAVE project
- 31st of May 2026 for BIO-UPTAKE and AMBIANCE projects
Termination:
- Any Party may terminate this Collaboration Agreement by providing one month before notice upon the other Parties.
Collaboration Agreement between AMBIANCE, BIO-UPTAKE, GREEN-LOOP, NEW WAVE, VITAL, and WASTE2BIOCOMP projects

Figure 4. BIO-MATTERS' Collaboration Agreement

The main points agreed within the cluster were:

- Use a common Google Drive folder to share documents relevant to the cluster's activities.
- Setup a Cluster webpage within each project's webpage, displaying the cluster's mission statement, each project description, links to website, and logos.
- Distribute announcements (e.g., important events, news…) on each other project's Social Media Platforms after appropriate requests among the project's dissemination managers.

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- Plan on like, share (repost, retweet, etc.), and comment on posts of all project's media accounts within the cluster.
- Distribute announcements (e.g., important events, news, collaborative activities…) on each other project's Social Media Platforms where there is a connection to BIO-MATTERS clustering activities.
- Subscribe to newsletters of other projects within the cluster.
- Participate in and organize joint sessions at conferences where the results of two or more projects will be presented upon request from any project member within the cluster and with consensus reached during general meetings.
- Participate in and organize online and on-site meetings to enhance cooperation, featuring results of two or more projects upon request from any project member within the cluster and with consensus during general meetings.
- Invite representatives from other projects to participate in public events organized by different projects within the cluster.
- Collaborate within the cluster to organize joint events such as workshops, roundtables with relevant stakeholders, joint event participation, and technical meetings. The list of relevant activities and the designated responsible partner were determined during the Kick-off meeting held on August 31st, 2023, and can be found in the KOM minutes in the Google Drive folder.
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2.2. Joint Communication Activities

As part of the communication efforts, all projects within the cluster collaborated to gain more visibility and strengthen the impact of their results. By August 2025, the following key communication activities were done:

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2.2.1. BIO-MATTERS' Logo

VITAL project took the initiative in May of 2024, and with the support of their design team, developed several logo concepts for the cluster. These design proposals were shared with all cluster members, as shown in Figure 5. Following a voting process, the final logo was selected and is presented in Figure 6.

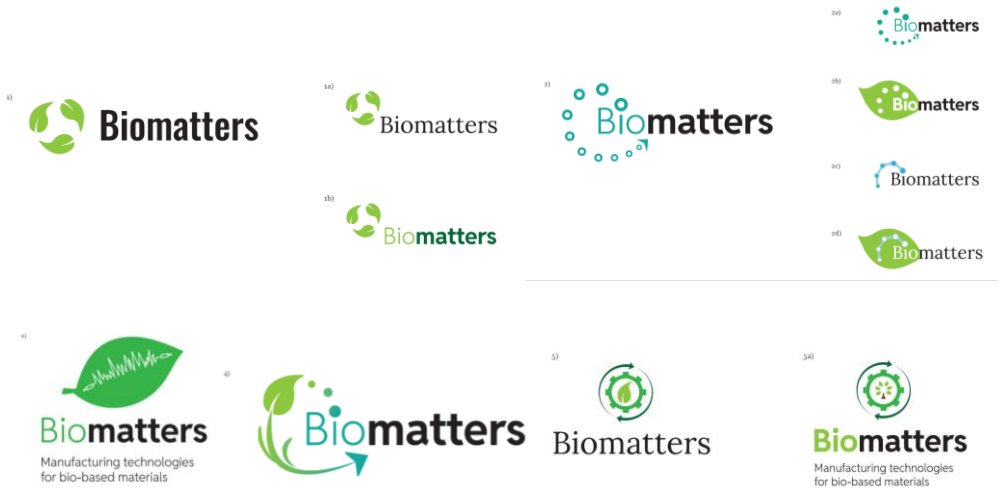

Figure 5. Ideas presented for BIO-MATTERS' Logo

BIOMATTERS

Manufacturing technologies
for bio-based materials

Figure 6. Official BIO-MATTERS' Logo

The official logo was used in the factsheets, websites, and material to disseminate within the events and congresses.

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2.2.2. Cluster Webpage within each project

The AMBIANCE project presented in September of 2023 a proposed strategy for the cluster's webpage. The idea presented was to integrate an exclusive cluster's page into each project's website. Within this page, the cluster's mission should be statemented along with a brief description of all participating projects. To support this, AMBIANCE requested to each partner the following: a short description of their project (maximum 100–115 words), project's logo and website link. This was upload to the shared drive folder.

By end of January of 2024, all the projects accounted with the dedicated page of the cluster within their project's webpage, including the information of the strategy proposed. In Figure 7 there is GREEN-LOOP's webpage showcasing the cluster webpage implementation.

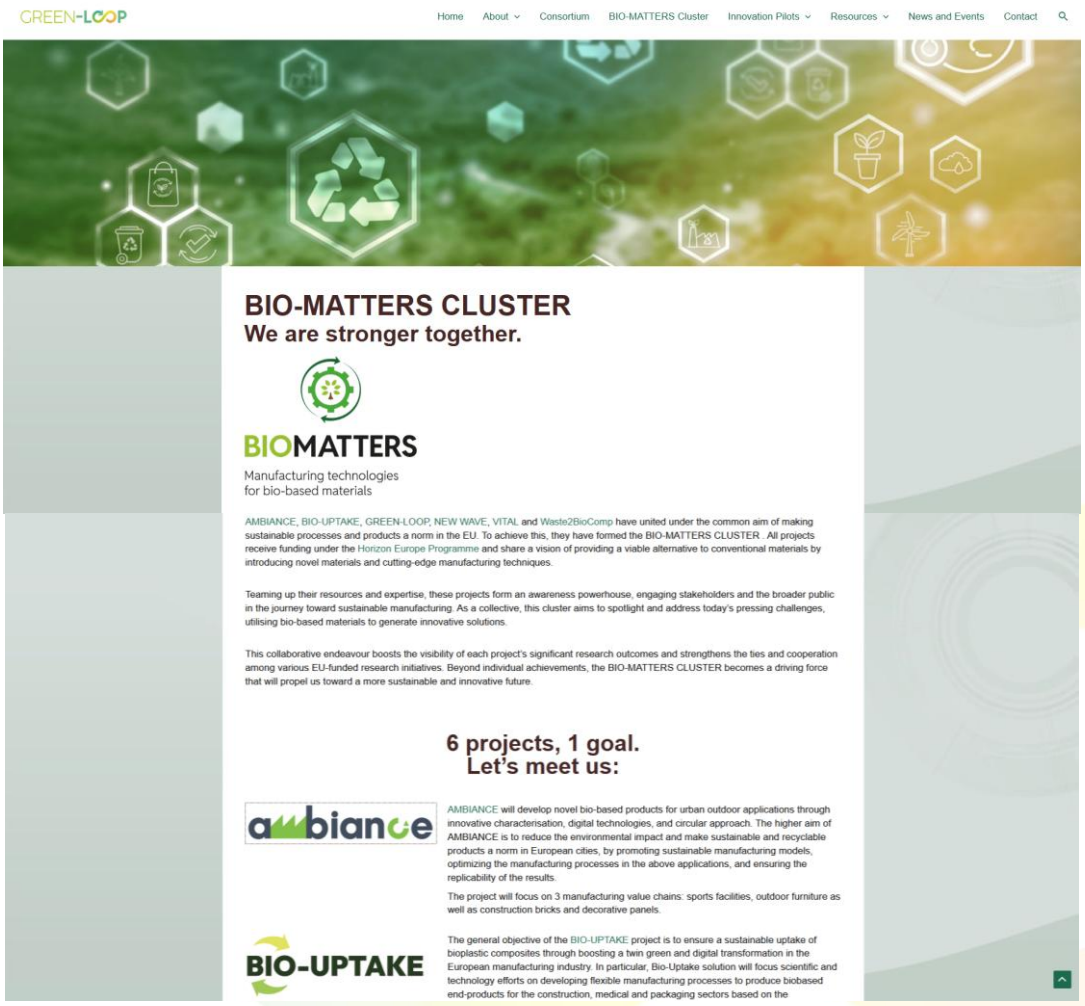

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Figure 7. GREEN-LOOP’s webpage showcasing BIO-MATTER

In the following link it can be found the webpage of BIO-MATTERS within each sister project:

BIO-MATTERS' Webpage in GREEN-LOOP project
BIO-MATTERS' Webpage in AMBIANCE project
BIO-MATTERS' Webpage in BIO-UPTAKE project
BIO-MATTERS' Webpage in NEWWAVE project
BIO-MATTERS' Webpage in VITAL project
BIO-MATTERS' Webpage in WASTE2BIOCOMP project

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2.2.3. Social Media Content Sharing

AMBIANCE project presented a social media strategy and overseed the development of this activity, which was successfully implemented and contained the following specific actions:

- All sister projects were encouraged to ***like and repost*** each other’s content to increase visibility. To support this effort and keep track of the activity, an Excel sheet was created where each project entered their BIO-MATTERS-related social media activities. This shared document is available in the shared folder, and Figure 8 displays the file with some entries.

Funded by the European Union

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BIOMATTERS Cluster - Communication Activities					
GREEN-LOOP	03/04/2024	LinkedIn	Post	Cluster Promo Post	https://www.linkedin.com/feed/update/urn:li:activity:7181258346706989056 | https://www.linkedin.com/feed/update/urn:li:activity:7170412914309218307
GREEN-LOOP	03/04/2024	X/ Former Twitter	Post	Cluster Promo Post	not available
GREEN-LOOP	03/04/2024	Other	Post	Cluster Promo Post	https://www.facebook.com/heu.greenloop/
GREEN-LOOP	03/09/2024	LinkedIn	Repost from NewWave	Repost NewWave Activities	https://www.linkedin.com/feed/update/urn:li:activity:7236640925609820164
GREEN-LOOP	03/09/2024	X/ Former Twitter	Repost from NewWave	Repost NewWave Activities	not available
GREEN-LOOP	03/09/2024	Other	Repost from NewWave	Repost NewWave Activities	https://www.facebook.com/heu.greenloop/
GREEN-LOOP	08/10/2024	LinkedIn	Post	presentation of BIO-MATTERS at S3 event	https://www.linkedin.com/feed/update/urn:li:activity:7249324135191855104
GREEN-LOOP	08/10/2024	X/ Former Twitter	Post	presentation of BIO-MATTERS at S3 event	not available
GREEN-LOOP	08/10/2024	Other	Post	presentation of BIO-MATTERS at S3 event	https://www.facebook.com/heu.greenloop/
GREEN-LOOP	09/09/2024	LinkedIn	Post	Cluster logo in the project video	https://www.linkedin.com/feed/update/urn:li:activity:7238953415769264128
GREEN-LOOP	09/09/2024	X/ Former Twitter	Post	Cluster logo in the project video	not available
GREEN-LOOP	09/09/2024	Other	Post	Cluster logo in the project video	https://fb.watch/vwZA9shqY3/
GREEN-LOOP	20/12/2023	LinkedIn	Post	Official Cluster Announcement	https://www.linkedin.com/feed/update/urn:li:activity:7143231431933165568
GREEN-LOOP	20/12/2023	X/ Former Twitter	Post	Official Cluster Announcement	not available
GREEN-LOOP	20/12/2023	Other	Post	Official Cluster Announcement	https://www.facebook.com/heu.greenloop/
GREEN-LOOP	27/06/2024	LinkedIn	Post	presentation of BIO-MATTERS at EUBCE 2024 event	https://www.linkedin.com/feed/update/urn:li:activity:7212068374212714496
GREEN-LOOP	27/06/2024	X/ Former Twitter	Post	presentation of BIO-MATTERS at EUBCE 2024 event	not available
GREEN-LOOP	27/06/2024	Other	Post	presentation of BIO-MATTERS at EUBCE 2024 event	https://fb.watch/vwZIBsYSEq/
GREEN-LOOP	13/02/2025	LinkedIn	Post	Info and Details for the Cluster Final Event	https://www.linkedin.com/feed/update/urn:li:activity:7295754534570647553
GREEN-LOOP	14/03/2025	LinkedIn	Post	Info and Details for the Cluster Final Event	https://www.linkedin.com/feed/update/urn:li:activity:7306327518825930752
GREEN-LOOP	05/05/2025	LinkedIn	Post	Snapshots from the Cluster Final Event	https://www.linkedin.com/feed/update/urn:li:activity:7325169218264412163

Figure 8. Record of BIO-MATTERS' Social Media Activities

- An ***official cluster announcement*** from each project was made. An example of this activity is shown in Figure 9 where GREEN-LOOP project posted and NEWWAVE reposted, and the link to this post is the following: [Post in LinkedIn - Official BIO-MATTERS cluster announcement]

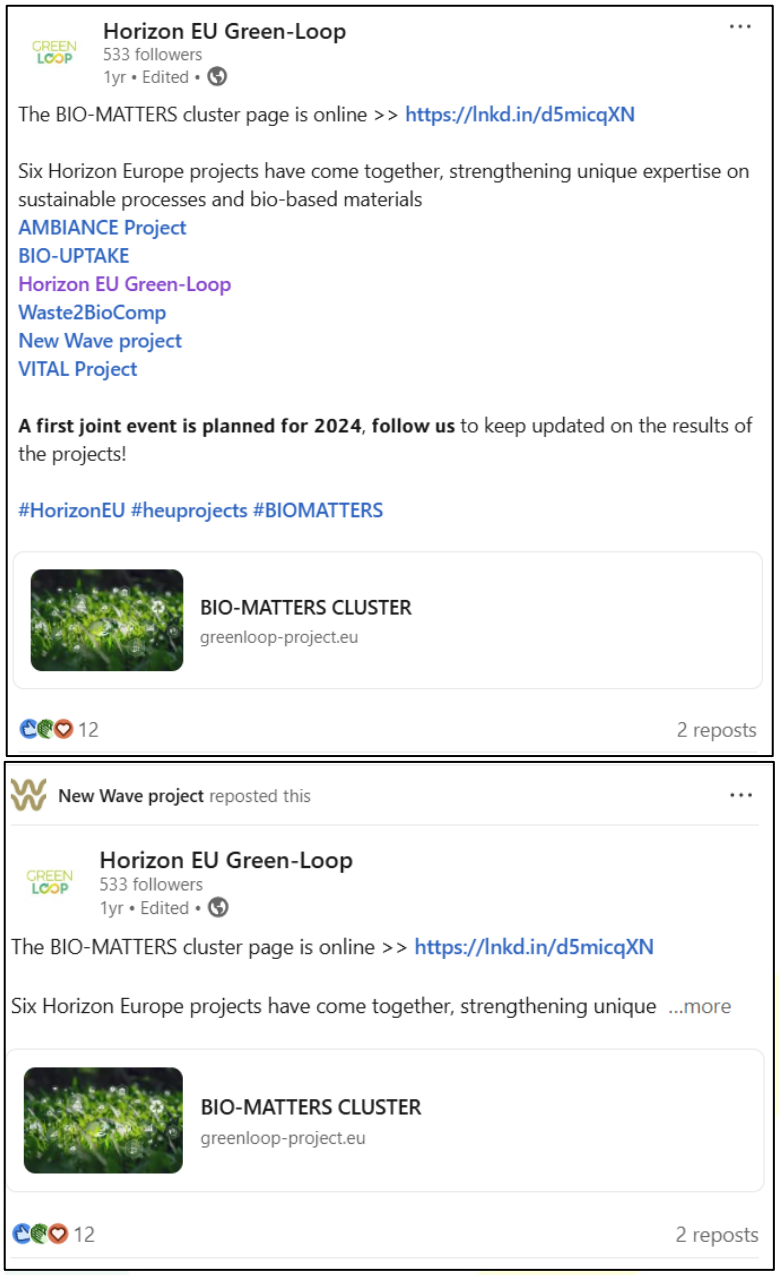


Figure 9. Example of Post and Repost of the Official Cluster Announcement

- Launched a ***joint social media campaign*** to introduce the sister projects within the cluster. This was done by each project, which introduced another project, and all other projects shared that post across their own social media channels. A schedule of posting was created, and in illustrated in Figure 10. The campaigns began after the official launch of the BIO-MATTERS cluster and the posts were shared weekly, featuring one project at a time, until all were covered. The cluster agreed on adding a special hashtag to the post, which was: #meetBIOMATTERS. In Figure 11 there is an example of BIO-UPTAKE project presenting the GREEN-LOOP project and WASTE2BIOCOMP reposting it, and the link to this post is the following: [Post of BIO-UPTAKE presenting GREEN-LOOP project]

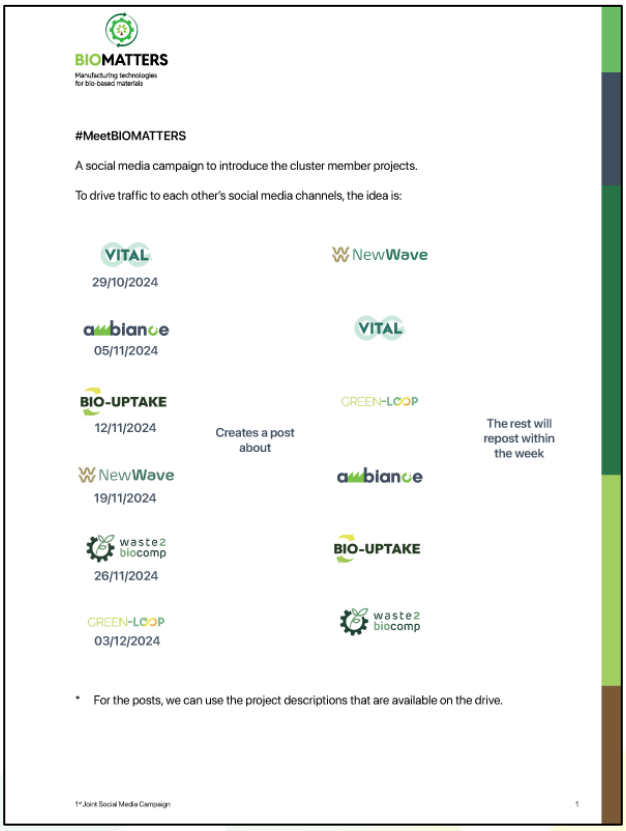


Figure 10. Schedule of Joint Social Media Campaign of BIO-MATTERS

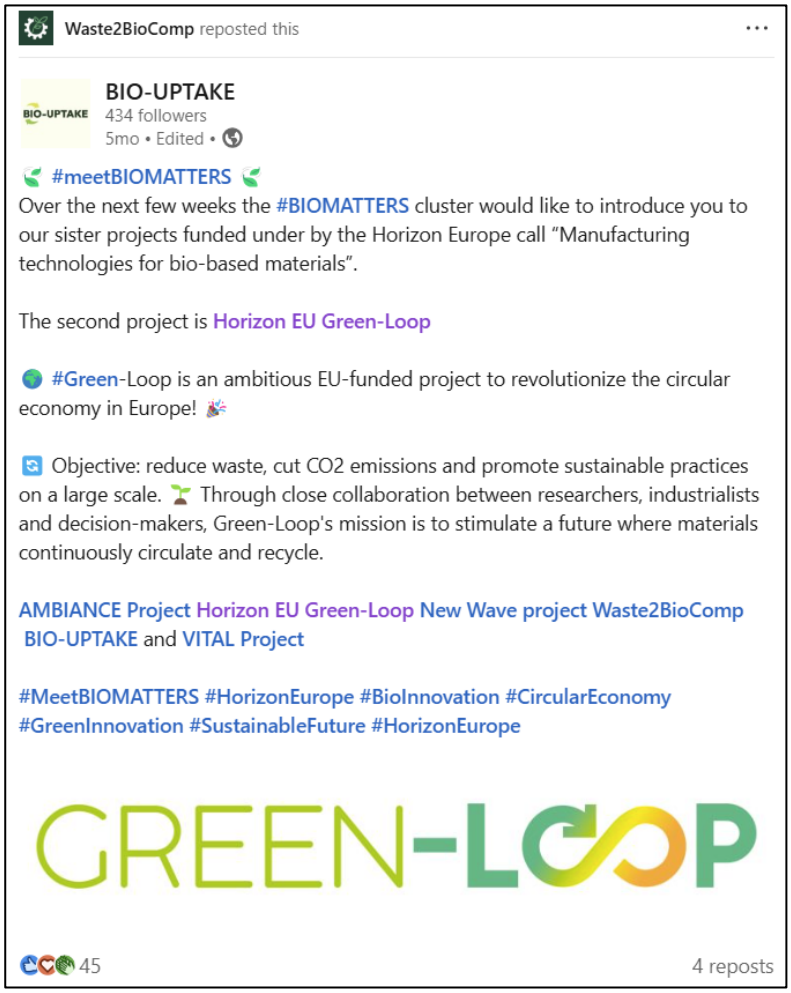


Figure 11. Example of Post and Repost of the Joint Social Media Campaign

- ***Video "pills"*** presenting the project were posted within each project and the other projects reposted it to increase visibility. An example of this is presented in Figure 12 where BIO-UPTAKE posted its video and AMBIANCE reposted it. Here the project used the #BioMatters and the official logo of the cluster. The link to this post is the following: AMBIANCE's Repost of BIO-UPTAKE's video

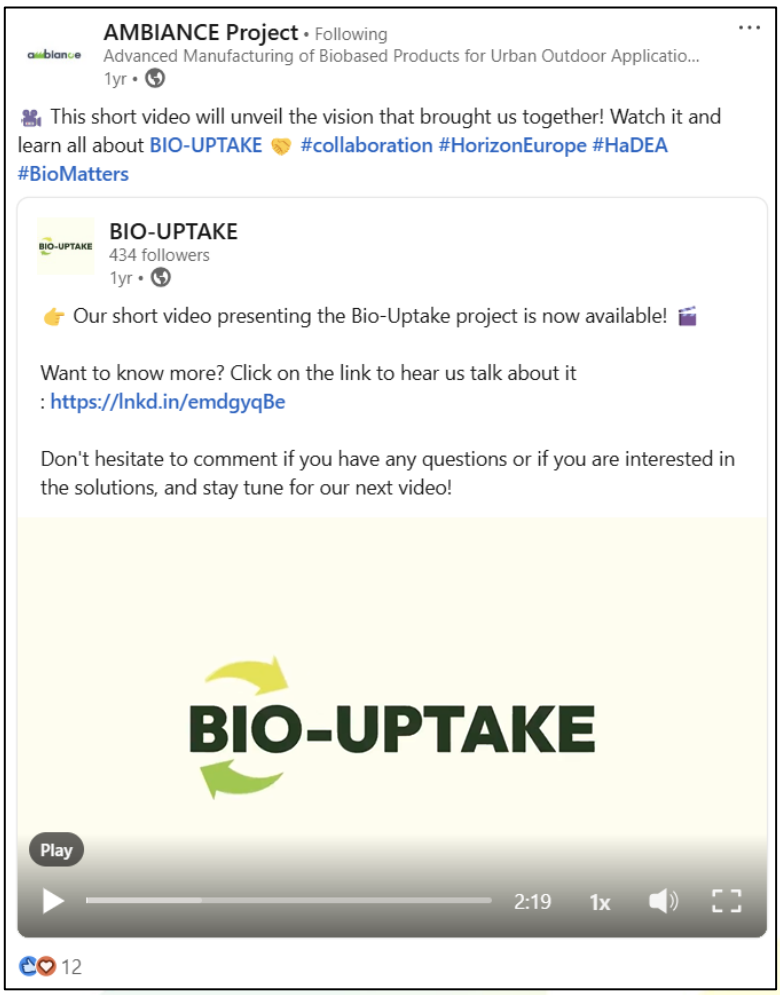


Figure 12. Example of Post and Repost of Projects' Video Presentation

2.3. HRBooster Common Dissemination Activities

VITAL led this activity, where the application to the HRBooster was done, the video scripts and the content for a factsheet was sent.

The main information for the script was define in the following Table 5. The target audience were Start Up & SMEs, Large enterprises, Policy makers, and Funding Agencies (including EU & national digital agencies).

Table 5. Script for HRBooster Video and Factsheet

Section	Script
Intro	The EU is working to advance sustainability in manufacturing by harnessing the potential of bio-based materials and processes. These efforts focus on developing advanced thermoplastic processing solutions and integrating bio-based plastics, polymers and composites into the manufacturing landscape.
Cluster objective	The BIO-MATTERS cluster is a group of projects focussed on 'Manufacturing technologies for bio-based materials (part of the Made in Europe Partnership)'. The goal of the cluster is to develop innovative, eco-friendly alternatives to conventional materials, harnessing cutting-edge smart manufacturing techniques that foster a sustainable, circular economy.
Results	The main solutions are: • Bio-based material processing solutions (bio-polymers, bio-plastics, bio-composites, bio-rubbers) • Smart and flexible manufacturing processes to produce biobased end-products • Digital tools and approaches for bio-based product manufacturing • Open access processing guidance, materials selection, digital tools and training materials • Circular, sustainable by design, business models and recycling processes • Value chains and use cases in: sports equipment & facilities; construction; furniture; textiles; packaging; medical; automotive; marine; white goods
Projects	VITAL (vital-project.eu) BIOUPTAKE (bio-uptake-project.eu)

	NEWWAVE (newwave-horizon.eu) WASTE2BIOCOMP (Waste2BioComp) GREEN-LOOP (https://www.greenloop-project.eu/) AMBIANCE (https://www.ambiance-project.eu/)
CTA	Learn more about BIO-MATTERS powerhouse of sustainable manufacturing!

HRBooster delivered, in January of 2025, a customized video and factsheet for the BIO-MATTERS cluster, based on the information sent by VITAL. These materials were presented in the 2025 joint events and added to the shared folder. In Figure 13 it can be seen the factsheet visuals. Additionally, to the services, there are online trainings available for all the cluster.

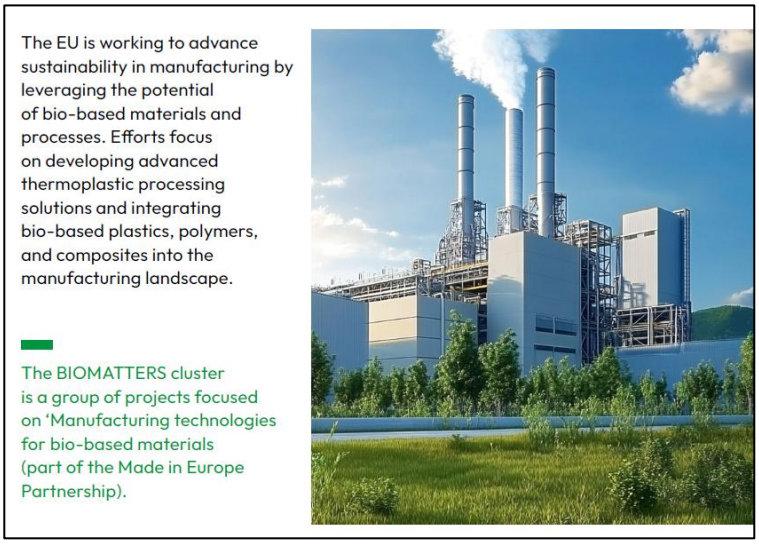
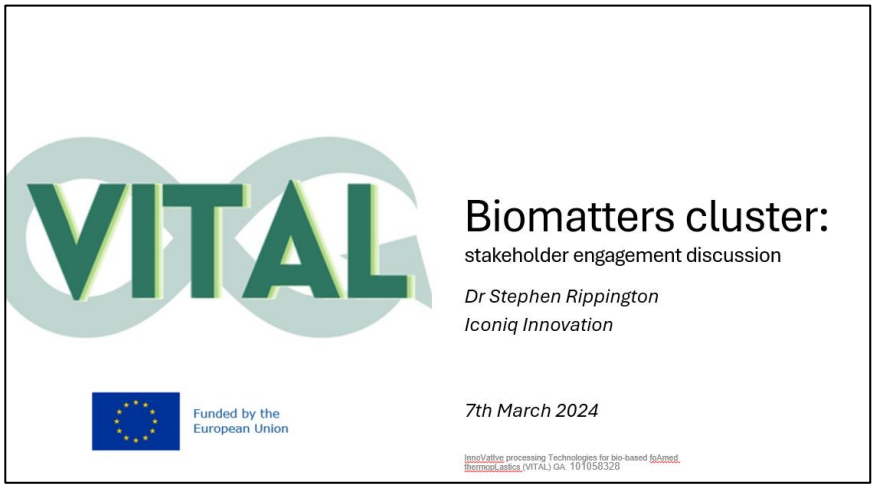


Figure 13. BIO-MATTERS' Factsheet from HRBooster

2.4. Stakeholder Mapping

The aim was to identify each project's stakeholders and see if there where similarities, with the intension of reaching and engaging a wider network. VITAL organized a meeting to map these stakeholders and presented the mapped stakeholder for their project. The other projects confirmed similar stakeholders, resulting in the main outcome of a consolidated stakeholder list for the cluster.

The meeting's agenda is shown in Figure 14 and the outcomes are shown in Figure 15.



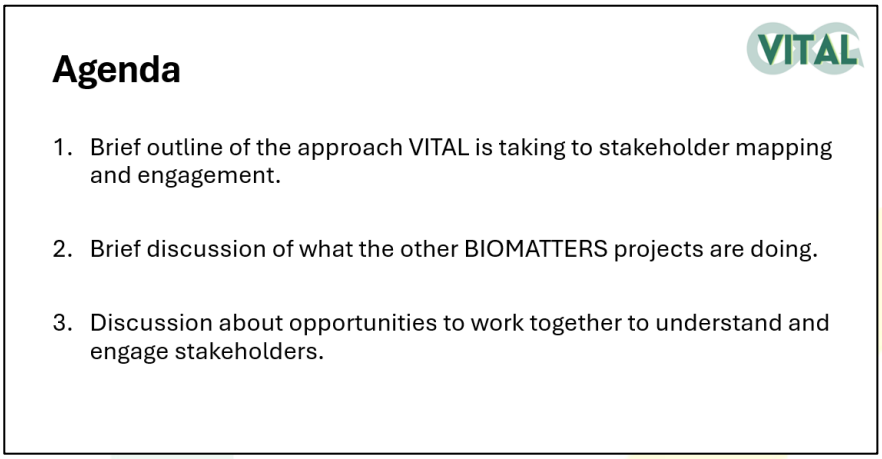
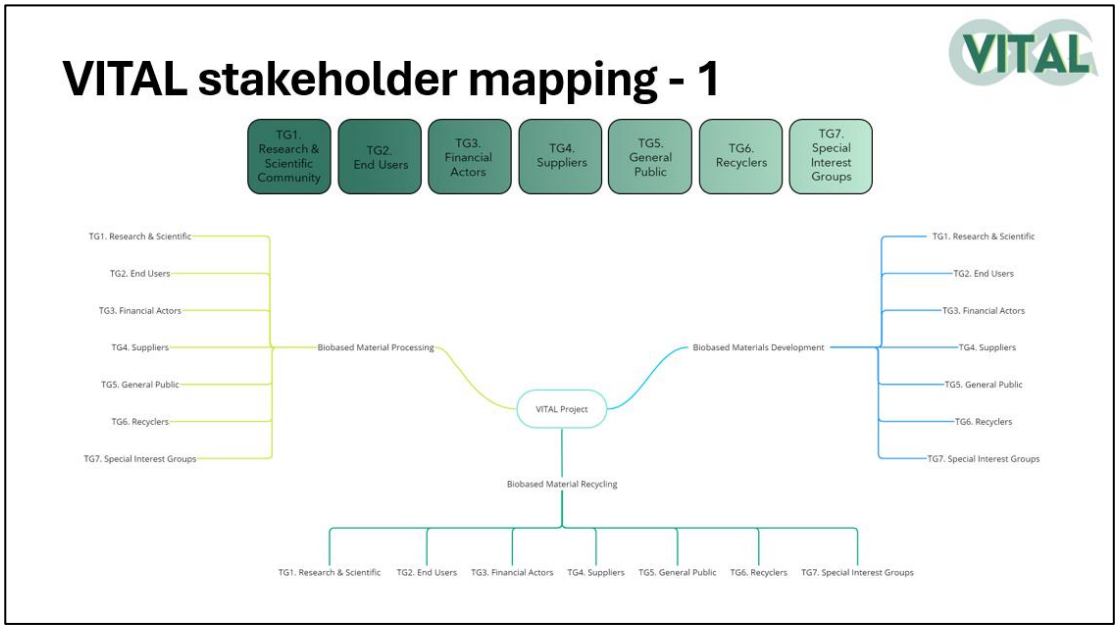
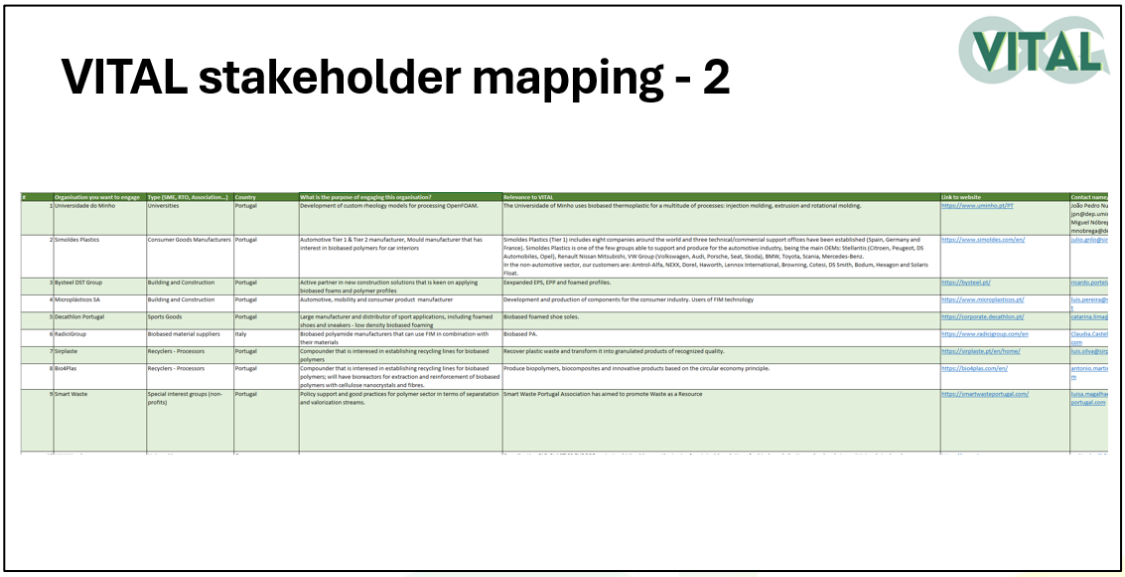


Figure 14. Agenda of Stakeholder Mapping Meeting





#	Organisation you want to engage	Type (SME, RTO, Association...)	Country	What is the purpose of engaging this organisation?	Relevance to VITAL	Link to website	Contact name
1	Universidade do Minho	Universities	Portugal	Development of custom rheology models for processing OpenFOAM.	The Universidade of Minho uses biobased thermoplastic for a multitude of processes: injection molding, extrusion and rotational molding.	https://www.uminho.pt/PT	João Pedro Nu jpn@dep.umi Miguel Nóbreg mnobrega@ds
2	Simoldes Plastics	Consumer Goods Manufacturers	Portugal	Automotive Tier 1 & Tier 2 manufacturer, Mould manufacturer that has interest in biobased polymers for car interiors	Simoldes Plastics (Tier 1) includes eight companies around the world and three technical/commercial support offices have been established (Spain, Germany and France). Simoldes Plastics is one of the few groups able to support and produce for the automotive industry, being the main OEMs: Stellantis (Citroen, Peugeot, DS Automobiles, Opel), Renault Nissan Mitsubishi, VW Group (Volkswagen, Audi, Porsche, Seat, Skoda), BMW, Toyota, Scania, Mercedes-Benz. In the non-automotive sector, our customers are: Amtrol-Alfa, NEXX, Dorel, Haworth, Lennox International, Browning, Coteci, DS Smith, Bodum, Hexagon and Solaris Float.	https://www.simoldes.com/en/	
3	Bysteel DST Group	Building and Construction	Portugal	Active partner in new construction solutions that is keen on applying biobased foams and polymer profiles	Exepanded EPS, EPP and foamed profiles.	https://bysteel.pt/	ricardo.portel
4	Microplasticos SA	Building and Construction	Portugal	Automotive, mobility and consumer product manufacturer	Development and production of components for the consumer industry. Users of FIM technology	https://www.microplasticos.pt/	luis.pereira@ s
5	Decathlon Portugal	Sports Goods	Portugal	Large manufacturer and distributor of sport applications, including foamed shoes and sneakers - low density biobased foaming	Biobased foamed shoe soles.	https://corporate.decathlon.pt/	catarina.limag
6	RadiciGroup	Biobased material suppliers	Italy	Biobased polyamide manufacturers that can use FIM in combination with their materials	Biobased PA.	https://www.radicigroup.com/en	Claudia.Castel com
7	Greplastic	Recyclers - Processors	Portugal	Compounder that is interesed in establishing recycling lines for biobased polymers	Recover plastic waste and transform it into granulated products of recognized quality.	https://greplastic.pt/en/home/	luis.silva@gre
8	Bio4Plas	Recyclers - Processors	Portugal	Compounder that is interesed in establishing recycling lines for biobased polymers; will have bioreactors for extraction and reinforcement of biobased polymers with cellulose nanocrystals and fibres.	Produce biopolymers, biocomposites and innovative products based on the circular economy principle.	https://bio4plas.com/en/	antonio.marti m
9	Smart Waste	Special interest groups (non-profits)	Portugal	Policy support and good practices for polymer sector in terms of separatation and valorization streams.	Smart Waste Portugal Association has aimed to promote Waste as a Resource	https://smartwasteportugal.com/	luisa.magalhe portugal.com

Figure 15. Cluster’s Stakeholder Mapping

2.5. LCA Methodology Knowledge Sharing

The goal was to align the assessments and establish a standardized LCA methodology, ensuring consistency and comparability across projects. WASTE2BIOCOMP held a meeting with the LCA leaders from each project to gain insight into their LCA processes and determine whether they follow similar methodologies. All projects were represented in this meeting, except for BIO-UPTAKE. During the session, each project provided a brief overview of their work.

The key outcomes were outlined, highlighting the main software and tools used, databases, and common practices. For LCA calculations, the most used database was Ecoinvent, although some projects also relied on Agri-footprint. The software and tools employed for these calculations were mainly Python-based, including examples such as DWSIM—though this specific detail may require confirmation from the respective project teams.

The common challenges were identified in the following list:

- **Data Collection Difficulties**:
    - In many cases, data is hard to gather because the processes are still at lab scale, or companies are reluctant to share proprietary information.
    - To encourage data sharing, it can be emphasized that companies have difficulties to make environmental or "green" claims without supporting evidence, and LCA studies can provide that proof.

- **Benchmarking Issues**:
    - Lab-scale data often cannot be directly compared with industrial benchmarks, which makes it hard to show favorable LCA results.
    - Additionally, both the materials and the processes used in the projects often differ significantly from those used in conventional benchmarks.

- **Lack of Existing Databases for Bio-Based Materials**:
  - The lack of representation in existing LCA databases of bio-based materials being developed pose a limitation. **Defining System Boundaries**:
    - Projects face challenges in deciding how far their LCA should go, such as cradle-to-gate, gate-to-gate, or cradle-to-cradle.
      - Most projects are opting for cradle-to-gate, as they lack information on the use phase and end-of-life of their materials.
      - Exceptions include:
        - WASTE2BIOCOMP, which is performing a cradle-to-cradle analysis (covering polymer production, material manufacturing, biodegradability, and recycling).
        - AMBIANCE, which is using Ecoinvent to simulate end-of-life scenarios and explore the best disposal or recycling options.

Additionally, some tips and recommendations were shared between the LCA experts, with the aim to improve the accuracy of LCA studies. These were:

- The VITAL project highlighted a valuable publication that offers a framework for scaling up lab-scale data to industrial levels, helping bridge the gap between experimental and real-world conditions.

  (DOI: 10.1016/j.jclepro.2016.06.164)

- For energy calculations, it is recommended to include heat losses at each process step, typically assuming around 1% loss per equipment, to better reflect industrial realities.
- Attention should be given to the energy source used in each process, as the environmental impact can vary significantly depending on whether it comes from biomass or other sources.

LCA experts agreed to stay in touch, share relevant information, and support each other in overcoming difficulties.

2.6. Joint Events

To further strengthen collaboration among the sister projects and raise visibility and awareness within the community, joint events were organized to present the BIO-MATTERS cluster. These events aimed to highlight the role of bio-based materials and their applications in building a more sustainable and digitalized future. Three key events were either attended or organized jointly for this purpose: EUBCE, the European Congress, and the final event marking the conclusion of the BIO-MATTERS activities. This section provides an overview of each event, including their objectives and agenda, the audience reached, the topics discussed, and the main outcomes achieved.

2.6.1. EUBCE Event

The participation of the BIO-MATTERS cluster at the 32nd European Biomass Conference and Exhibition (EUBCE) event was held in Marseille, France, on June 26, 2024. As part of the conference, a parallel workshop titled "Circular Value Chains for Bio-based Products: the BIO-MATTERS cluster" was organized. This event, which was suggested since the beginning of the cluster and activities formation, was coordinated by NEWWAVE project with the aim of having the cluster's participation.

The invite to the event can be seen in Figure 16 and the agenda of the dedicated session of the cluster is presented in Figure 17.

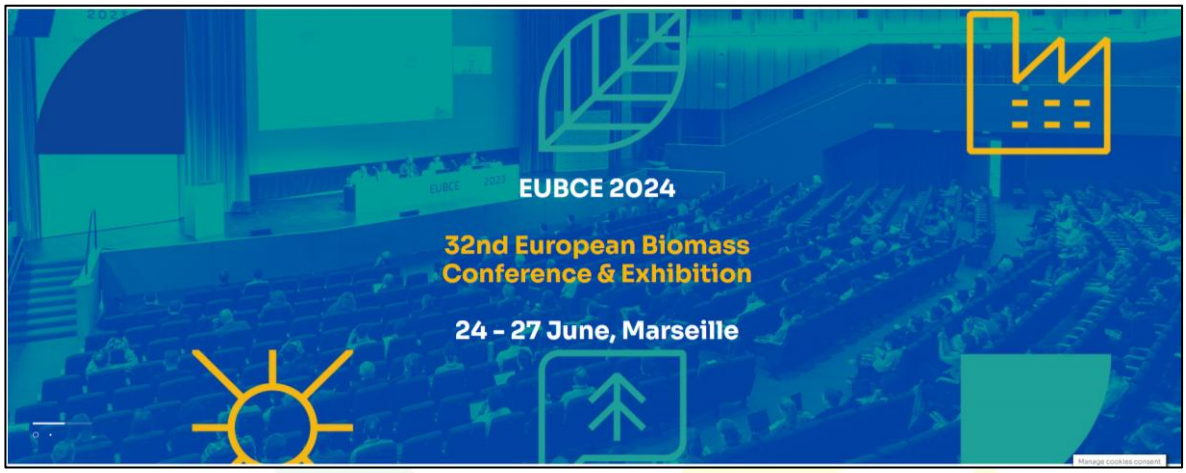


Figure 16. Invitation to the EUBCE 2024 Event

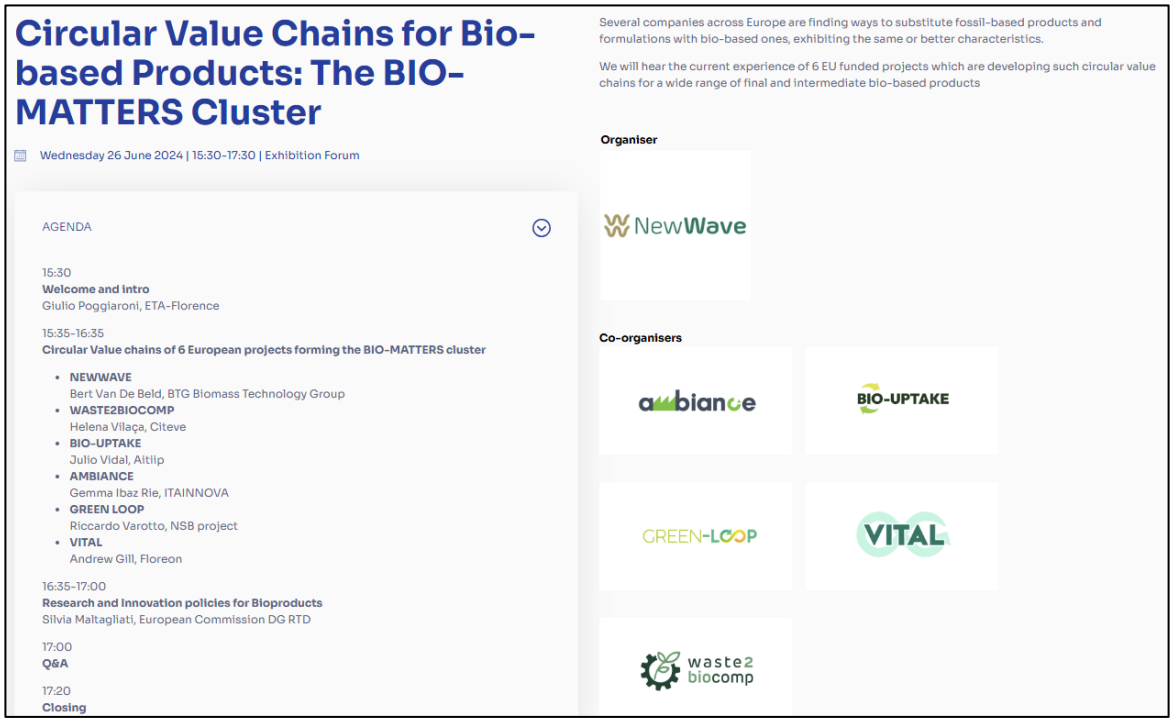


Figure 17. Agenda of BIO-MATTERS' dedicated session in EUBCE 2024 Event

The goal was to present the six projects within the BIO-MATTERS cluster, focusing on their respective bio-based solutions, the challenges faced within the value chain, and next steps within the project. The D&C manager from NSB represented GREEN-LOOP project and in Figure 18 there is a photo of the presentation.

Figure 18. GREEN-LOOP presentation at the EUBCE 2024 Event

The workshop lasted approximately 1 hour and 15 minutes, including a Q&A session, and received highly positive feedback. The audience, consisting of around 30 participants from diverse backgrounds, was highly engaged and interactive. Among the attendees was Silvia Maltagliati, EC Policy Officer from DG R&I Circular Economy and Biobased Systems, who acknowledged the strong alignment between the cluster’s objectives and the European Commission’s policies on bio-based products. She underscored the value of such initiatives in advancing the transition toward a circular and sustainable economy. The event was also supported by the Circular Bio-based Europe Joint Undertaking (CBE JU), a key stakeholder in the EU’s circular and bio-based economy landscape, which plays a vital role in supporting bio-based projects across Europe. In the following Figure 19 there is a photo of the BIO-MATTERS’ partners together with the EC Policy Officer in the EUBCE 2024 event.

Figure 19. BIOMATTERS' partners at EUBCE 2024

The EUBCE 2024 event was disseminated throughout all the sister projects, including the communication material in each website's news page and in the different social media channels. An example of this is shown in Figure 20 where GREEN-LOOP disseminated the outcomes of the event through LinkedIn, and the link to the post is the following one: [Post in LinkedIn - BIO-MATTERS EUBCE 2024 Event]

Figure 20. Post example of EUBCE 2024 Event attended by BIO-MATTERS' partners

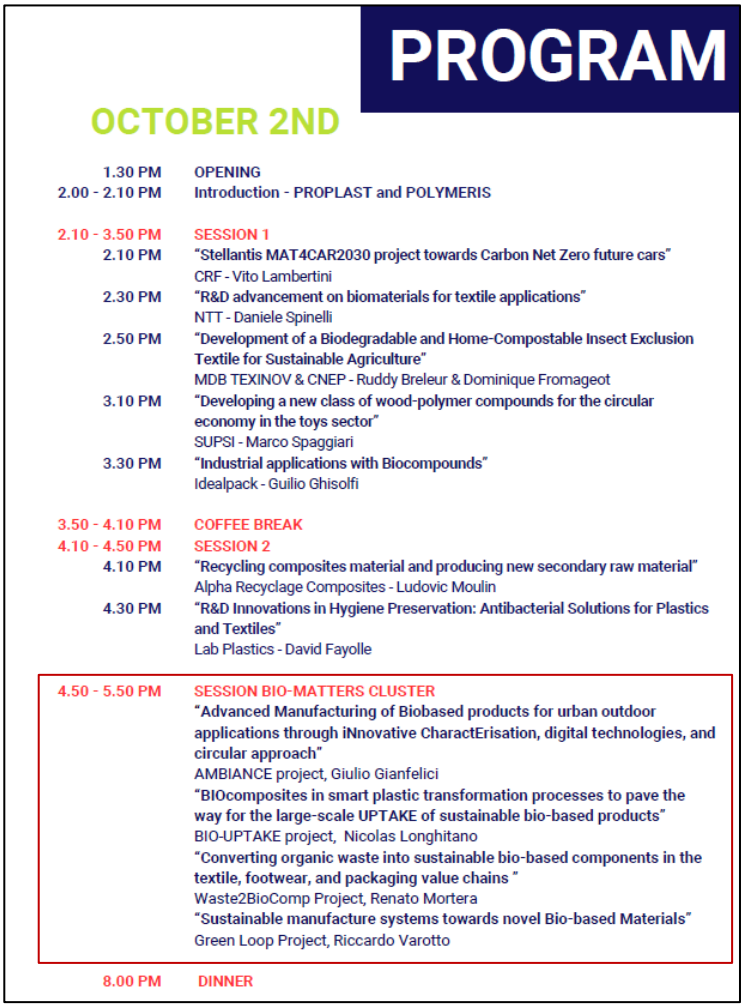
The main takeaways from this event emphasized the importance of collective efforts in advancing the bio-based sector. Collaboration was highlighted as a key factor in driving progress toward sustainability goals, with each project presenting innovative approaches to building sustainable, bio-based value chains. The strong policy backing from the European Commission was also recognized as a vital enabler for the growth of bioeconomy initiatives. Furthermore, the active participation and interest shown by the audience underscored the increasing support for these solutions. Overall, the event not only highlighted the achievements of the projects but also reinforced a collective commitment to a greener future, paving the way for ongoing innovation and collaboration in the bio-based field.

2.6.2. European Congress Plastic S3

BIOUPTAKE proposed and organized the participation of the cluster in the 6th European Congress Plastic S3 at the beginning of October (2nd and 3rd Oct) in Italy (Alessandria).

The agenda of the congress included an exclusive session for the BIO-MATTERS cluster presentation, which was the first day of the congress and the slot given was of 1 hour and 20 minutes. Four projects, including GREEN-LOOP, AMBIANCE, BIO-UPTAKE, and Waste2BioComp, participated in this event. In Figure 21 there is an image of the invitation to the congress, and in Figure 22 it can be seen the agenda of the first day includes the timeframe for the BIO-MATTERS' presentation.

Figure 21. Invitation to the European Congress Plastic S3 Event



PROGRAM

OCTOBER 2ND

1.30 PM	OPENING
2.00 - 2.10 PM	Introduction - PROPLAST and POLYMERIS
2.10 - 3.50 PM	SESSION 1
2.10 PM	"Stellantis MAT4CAR2030 project towards Carbon Net Zero future cars" CRF - Vito Lambertini
2.30 PM	"R&D advancement on biomaterials for textile applications" NTT - Daniele Spinelli
2.50 PM	"Development of a Biodegradable and Home-Compostable Insect Exclusion Textile for Sustainable Agriculture" MDB TEXINOV & CNEP - Ruddy Breleur & Dominique Fromageot
3.10 PM	"Developing a new class of wood-polymer compounds for the circular economy in the toys sector" SUPSI - Marco Spaggiari
3.30 PM	"Industrial applications with Biocompounds" Idealpack - Guilio Ghisolfi
3.50 - 4.10 PM	COFFEE BREAK
4.10 - 4.50 PM	SESSION 2
4.10 PM	"Recycling composites material and producing new secondary raw material" Alpha Recyclage Composites - Ludovic Moulin
4.30 PM	"R&D Innovations in Hygiene Preservation: Antibacterial Solutions for Plastics and Textiles" Lab Plastics - David Fayolle
4.50 - 5.50 PM	SESSION BIO-MATTERS CLUSTER "Advanced Manufacturing of Biobased products for urban outdoor applications through iNnovative CharactErisation, digital technologies, and circular approach" AMBIANCE project, Giulio Gianfelici "BIOcomposites in smart plastic transformation processes to pave the way for the large-scale UPTAKE of sustainable bio-based products" BIO-UPTAKE project, Nicolas Longhitano "Converting organic waste into sustainable bio-based components in the textile, footwear, and packaging value chains " Waste2BioComp Project, Renato Mortera "Sustainable manufacture systems towards novel Bio-based Materials" Green Loop Project, Riccardo Varotto
8.00 PM	DINNER

Figure 22. Agenda of the European Congress Plastic S3

The event aimed to maximize its impact while also setting the stage for the cluster's upcoming joint technical activity on the standardization of bio-based products. With 35 in-person and 15 online participants, the congress fostered positive engagement and opened the possibility of organizing a dedicated roundtable on standardization in 2025, to accomplish the activity mentioned in section 2.7.

Figure 23 shows partners of 4 projects representing BIO-MATTERS at the congress.

Figure 23. BIOMATTERS' partners at European Congress Plastic S3

Within the dissemination material, this event was also disseminated and an example of this is shown in Figure 24, where GREEN-LOOP shows the outcomes of the event through LinkedIn, and the link to the post is the following one: Post of BIO-MATTERS at European Congress Plastic S3

The main outcomes of the participation in this congress were the dissemination of the BIO-MATTERS' project results and the premiere of the project video to relevant stakeholders.

Figure 24. Post example of European Congress S3 attended by BIO-MATTERS' partners

2.6.3. BIO-MATTERS' Final Event

The final event of the BIO-MATTERS was planned since the creation of the cluster and was organized by WASTE2BIOCOMP project alongside its own closing event in Brussels on April 29, 2025. The main objective was to present the innovative outcomes of each project within the cluster, raising awareness of the potential of bio-based materials to replace fossil-based alternatives, while emphasizing their environmental and economic value. The event also aimed to engage key stakeholders, foster reflection on project achievements, explore future collaboration opportunities, and define the next steps toward continued innovation in the bio-based sector.

The morning session focused on WASTE2BIOCOMP, while the afternoon session featured the cluster activities, including each project's presentations (1.20 hours) and a roundtable with industry representatives and bio-material experts (1.20 hours). The final agenda of the event is shown in Figure 25.

Figure 25. Agenda of the BIO-MATTERS' Final Event

To support the preparation and promotion of the event, a "Save the Date" announcement along with the registration link was shared on social media starting in February, followed by a reminder in March. Additionally, a "Meet the Speakers" post was published to generate interest, encourage registrations, and familiarize the audience with the speakers, enhancing their motivation to attend. Project partners were encouraged to like and share the posts to boost visibility and reach a wider audience. Figure 26, Figure 27, and Figure 28 display the promotional posts shared through the GREEN-LOOP project's social media channels. Additionally, a post (Figure 29) was done on EFFRA's webpage to further reach a bigger audience.

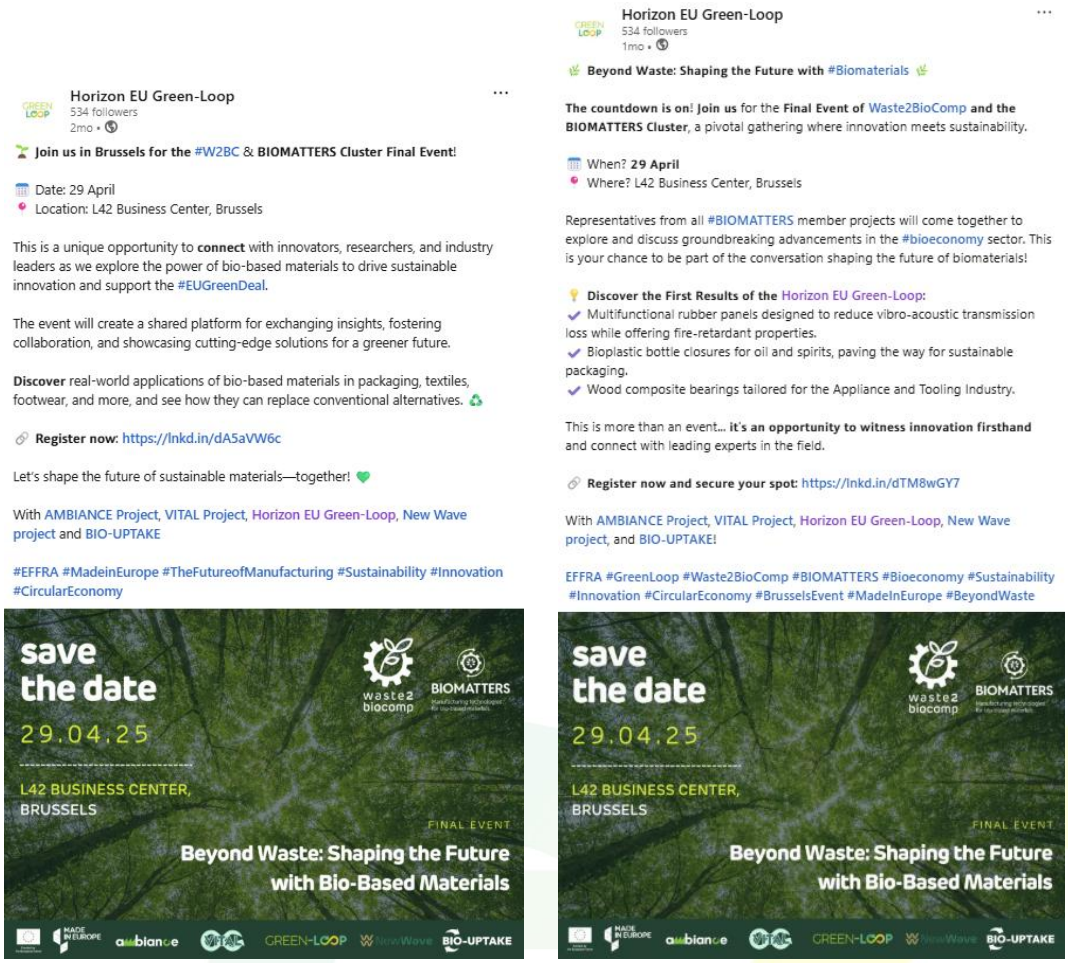
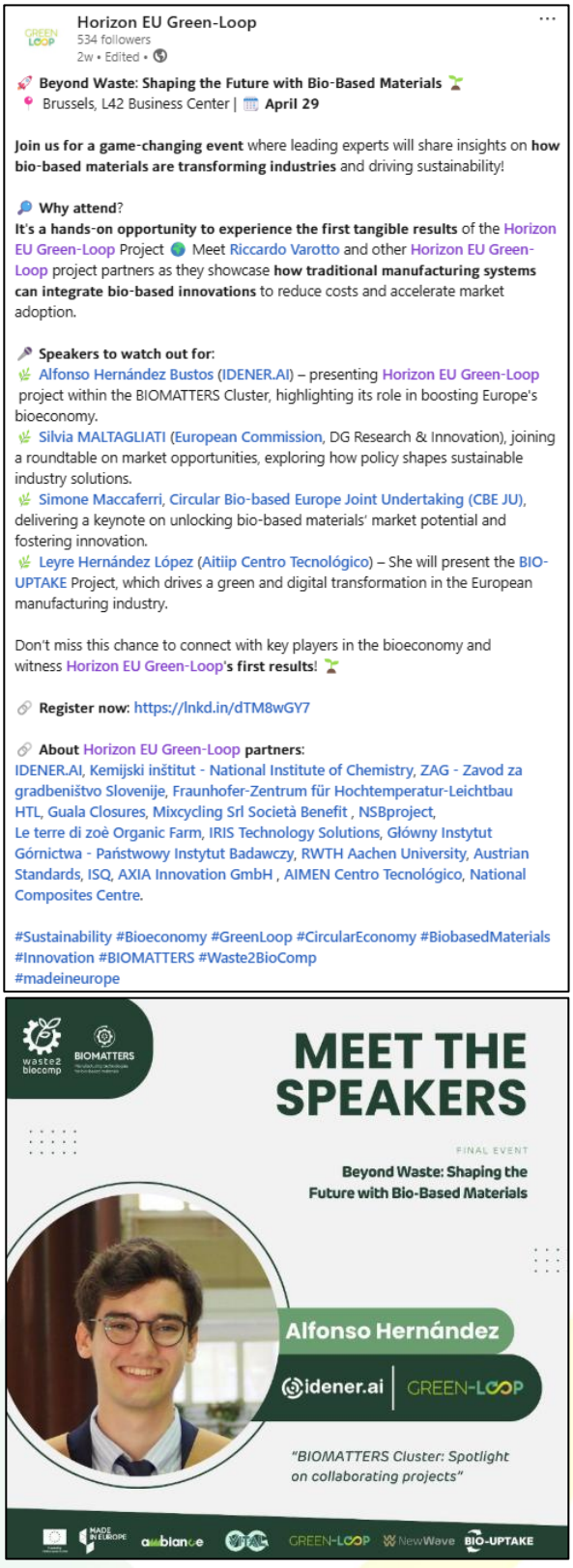


Figure 26. Save the Date of BIO-MATTERS' Final Event Post from GREEN-LOOP's LinkedIn channel



Horizon EU Green-Loop
534 followers
2w • Edited •

Beyond Waste: Shaping the Future with Bio-Based Materials
Brussels, L42 Business Center | **April 29**

Join us for a game-changing event where leading experts will share insights on **how bio-based materials are transforming industries** and driving sustainability!

Why attend?
It's a hands-on opportunity to experience the first tangible results of the Horizon EU Green-Loop Project Meet Riccardo Varotto and other Horizon EU Green-Loop project partners as they showcase **how traditional manufacturing systems can integrate bio-based innovations** to reduce costs and accelerate market adoption.

Speakers to watch out for:
Alfonso Hernández Bustos (IDENER.AI) – presenting Horizon EU Green-Loop project within the BIOMATTERS Cluster, highlighting its role in boosting Europe's bioeconomy.
Silvia MALTAGLIATI (European Commission, DG Research & Innovation), joining a roundtable on market opportunities, exploring how policy shapes sustainable industry solutions.
Simone Maccaferri, Circular Bio-based Europe Joint Undertaking (CBE JU), delivering a keynote on unlocking bio-based materials' market potential and fostering innovation.
Leyre Hernández López (Aitiip Centro Tecnológico) – She will present the BIO-UPTAKE Project, which drives a green and digital transformation in the European manufacturing industry.

Don't miss this chance to connect with key players in the bioeconomy and witness Horizon EU Green-Loop**'s first results**!

Register now: https://lnkd.in/dTM8wGY7

About Horizon EU Green-Loop **partners:**
IDENER.AI, Kemijski inštitut - National Institute of Chemistry, ZAG - Zavod za gradbeništvo Slovenije, Fraunhofer-Zentrum für Hochtemperatur-Leichtbau HTL, Guala Closures, Mixcycling Srl Società Benefit , NSBproject, Le terre di zoè Organic Farm, IRIS Technology Solutions, Główny Instytut Górnictwa - Państwowy Instytut Badawczy, RWTH Aachen University, Austrian Standards, ISQ, AXIA Innovation GmbH , AIMEN Centro Tecnológico, National Composites Centre.

#Sustainability #Bioeconomy #GreenLoop #CircularEconomy #BiobasedMaterials #Innovation #BIOMATTERS #Waste2BioComp #madeineurope

Figure 27. Meet the Speakers of BIO-MATTERS' Final Event Post from GREEN-LOOP's LinkedIn channel

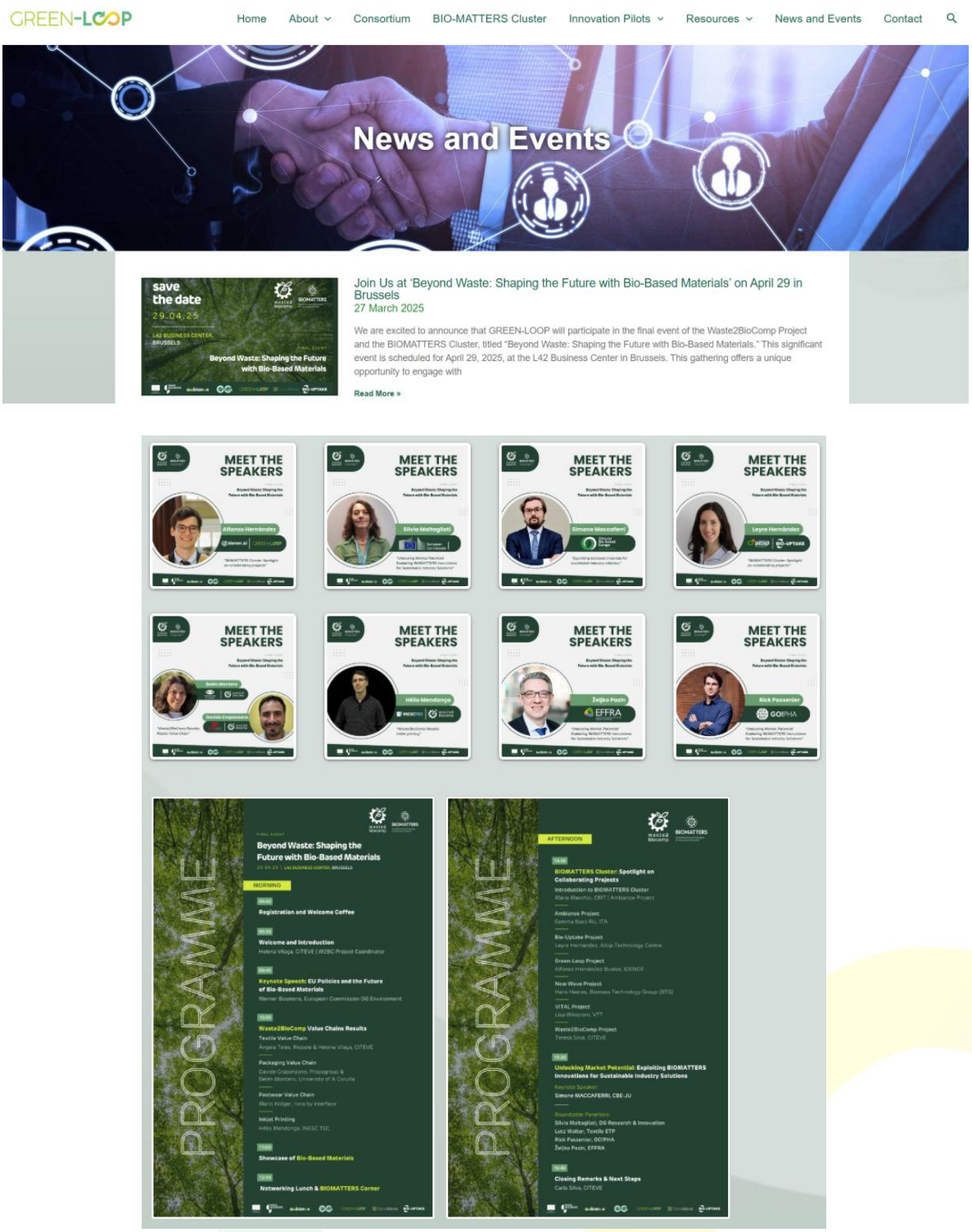


Figure 28. BIO-MATTERS’ Final Event Post from GREEN-LOOP’s webpage

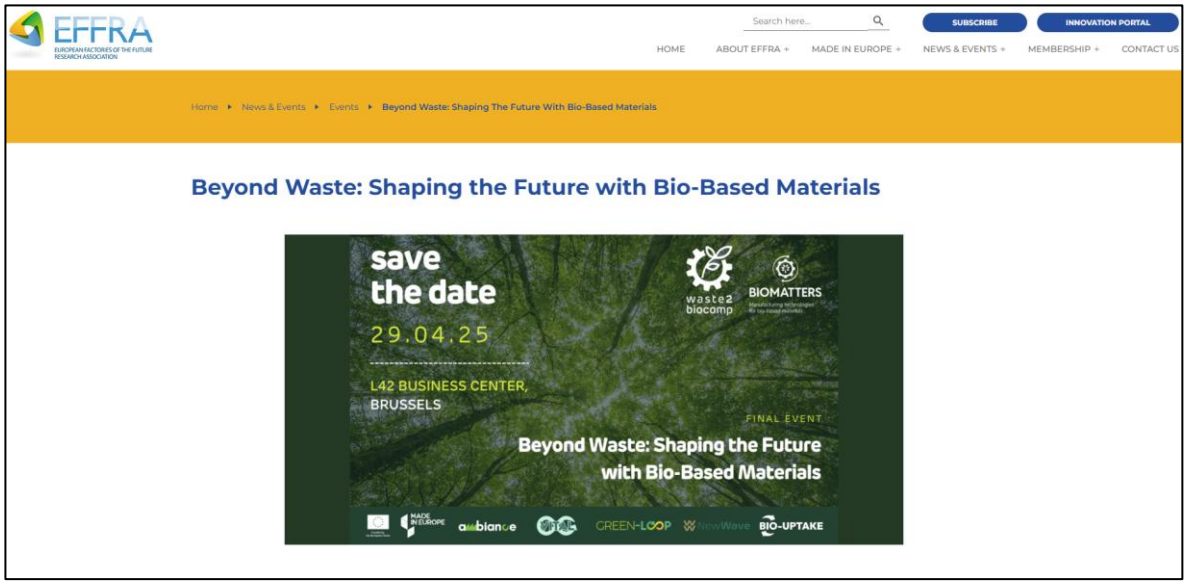


Figure 29. BIO-MATTERS' Final Event Post from EFFRA's webpage

The link to these communication posts are the following:

- Post in LinkedIn - Save the Date for BIO-MATTERS' final event
- Reminder Post in LinkedIn - Save the Date for BIO-MATTERS' final event
- Post in LinkedIn - Meet the Speakers for BIO-MATTERS' final event
- Post in webpage - Save the date of BIO-MATTERS' final event
- Post on EFFRA's webpage - BIO-MATTERS' final event

The event targeted a broad and diverse audience, encompassing key stakeholders from various sectors. Industry representatives, EU institutions, and national and regional authorities were among the primary groups invited, recognizing their influence in policymaking and implementation. The event also aimed to engage investors and specific end-user communities who play a crucial role in scaling up bio-based solutions. Furthermore, international organizations, global NGOs, and civil society organizations were considered essential participants to ensure a holistic dialogue that includes social, environmental, and global perspectives in driving a sustainable and bio-based future.

A total of 80 participants registered for the event, with around 60 people that attended. The audience included representatives from the European Commission, GO!PHA, EFFRA, Textile ETP, and CBE-JU, the latter serving as

a keynote speaker. The event ran for eight hours, from 9:00 am to 5:00 pm, and received very positive feedback from attendees.

The event was a successful and collaborative occasion that provided an excellent platform for sharing the results of the BIO-MATTERS cluster projects. It offered each sister project, including GREEN-LOOP, the opportunity to present their research outcomes, highlighting the three value chains developed within GREEN-LOOP, to a broad range of relevant stakeholders. Keynote speakers delivered valuable EU policy updates, and the final panel discussion brought forward insightful perspectives to guide the next steps of the projects.

The feedback received from stakeholders and European Commission representatives was especially enriching and will help shape future actions. One important outcome is the initiative to contribute to the EU public consultation on the forthcoming Bioeconomy Strategy. GREEN-LOOP aims to participate by submitting both individual feedback from the consortium and a coordinated response from the cluster, with the intention of developing a unified position paper.

Figure 30 captures key moments from the event, including photos of the BIO-MATTERS partners alongside EU and stakeholder representatives, a presentation of the GREEN-LOOP project by our NCC partner, and the showcasing of project results, as well as the roundtable discussion.

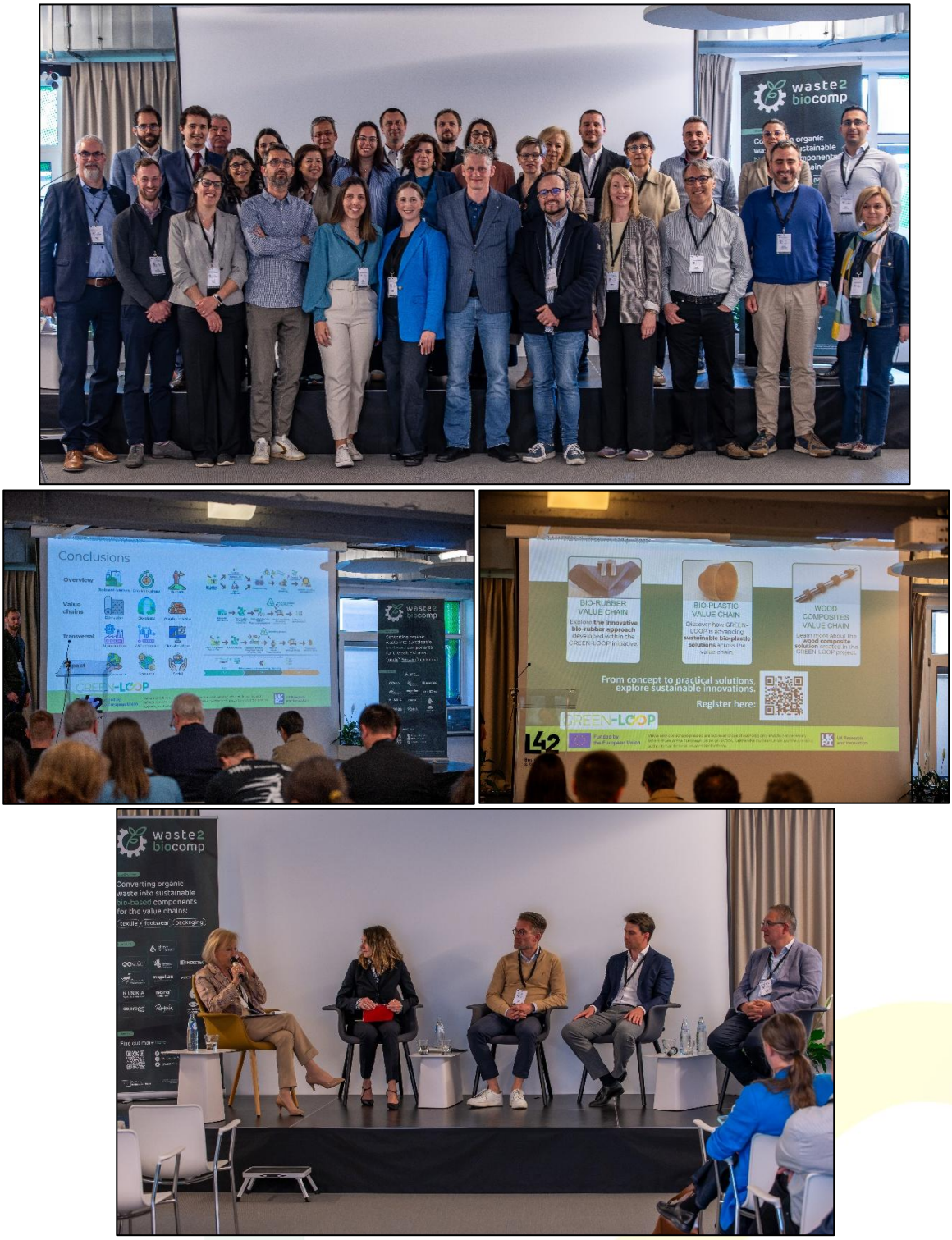


Figure 30. BIOMATTERS' key moments at Final Event

The event outcomes were shared across the social media channels of all sister projects. An example is shown in Figure 31, where GREEN-LOOP

disseminated event highlights through LinkedIn. The post can be accessed via the following link: [Post of BIO-MATTERS' Final Event](#).

Figure 31. Post of Final Event attended by BIO-MATTERS' partners in GREEN-LOOP's LinkedIn

2.7. Joint Technical Sessions

This is the only remaining planned activity, scheduled to take place in France during the 7th edition of the European Congress Plastic S3 in November 2025. The objective is to host a technical session focused on the topic of standardization for biobased products, which was selected following internal discussions.

The BIOUPTAKE project will lead the organization of this joint event. The session is expected to last approximately 2 hours and will have an introduction to the European Committee for Standardization (CEN), a dedicated talk on regulations and standardization of biopolymers in R&D projects, and a case study presented by BIOUPTAKE. Other cluster projects have been invited to participate and share their experiences and best practices.

In Figure 32 is presented the draft agenda of the standardization workshop.

Standardization workshop

Draft agenda

S3 congress (Lyon, 5th-6th November 2025)

- **Welcome to the workshop** (10 min)
  BioUptake representative

- **Introduction on CEN and on the Workshop concept** (20 min)
  Sebastian Vogel **(**CEN-CENELEC)

- **Standardization in R&D projects** (15 min)
  Elena Gayo (UNE)

- **Practical cases** (~ 1 hr)
  1. **RISERS project presentation**
     Sebastian Vogel **(**CEN-CENELEC)
  2. **BioUptake project**
     Elena Gayo (UNE) and Ruben Geerinck (CENTEXBEL)
  3. **upPE-T Project**
     Henar Araguzo (UNE)

Figure 32. Draft Agenda of the Standardization Workshop in the European Congress Plastic S3 of 2025

2.8. Contributing to a better Bioeconomy position paper

As a collective initiative, the BIOMATTERS cluster has decided to highlight and address the pressing challenges facing today's bioeconomy by using bio-based materials to generate innovative solutions. Based on their project evidence, on 20 June 2025, some BIOMATTERS representatives edited and submitted a six-page position paper titled “Contributing to a Better Bioeconomy” as their contribution to the new bioeconomy strategy for 2030.

One major hurdle is the economic competitiveness of bio-based materials, which are often more expensive than fossil-based alternatives due to higher raw material costs, limited availability, and additional pre-treatment steps. End-users are price-sensitive, making it difficult to pass on these higher costs. Lack of knowledge in large-scale manufacturing and high certification costs further complicate the economic transition. To counter this, promoting bio-based products in legislation, reviewing public procurement frameworks to prioritize bio-based solutions, and developing clear circularity standards with tailored incentives are recommended.

Another significant issue is finance and scalability. European companies struggle to commercialize innovations beyond the initial growth phase (TRL 4-6) due to a mismatch between the long-term, capital-intensive nature of bio-based industrial scaling and risk-averse, short-term European financial markets. There's a scarcity of large-scale venture capital for the bioeconomy, and SMEs face obstacles in securing adequate financial investments, especially in scaling phases. Proposed solutions include increasing funding for pilot and demonstrator projects, creating flexible funding mechanisms, and establishing a substantial guarantee fund to de-risk investments. Regulatory obstacles also impede progress, with a lack of harmonized regulations for bio-based materials, dedicated standards, and certification frameworks. The absence of clear guidance on end-of-life management and standardized methodologies for LCA creates confusion and inconsistency. The fragmented EU policy framework for the bioeconomy and the tension between the precautionary principle and the need for rapid market entry further complicate matters. Recommendations include developing clear, harmonized regulatory frameworks for certification and end-of-life management, streamlining existing EU legislation, and promoting "regulatory sandboxes" for controlled experimentation with new bio-solutions.

Conclusions

BIO-MATTERS cluster, which was formed by six sister projects, AMBIANCE, BIO-UPTAKE, GREEN-LOOP, NEWWAVE, VITAL, and Waste2BioComp, represented a significant step forward towards a more sustainable future. With the aim to disseminate the innovative results in the bio-based sector by joining forces this support the increase in visibility, foster innovation, and engage stakeholders across Europe's bioeconomy,

Throughout two years of collaboration, since the first kick-off meeting, where the cluster name was created and the activities defined, until August 2025 where almost all activities were implemented. Staring with the signature of the cluster's collaboration agreement to define the ground rules, then the creation of the cluster's logo, and dedicated webpages within each project's website. Communication efforts were streamlined through coordinated social media actions, where projects actively liked, shared, and commented on each other's content to broaden reach. A shared Google Drive served as a central hub for organizing documents and materials.

Additionally, participation in the Horizon Booster programme further enriched the cluster with valuable communication tools, including training and media support. Stakeholder mapping was also carried out to enhance outreach and engagement across relevant sectors. Moreover, the joint events and joint newsletters were done. The participation of the EUBCE and European Congress Plastic S3 2024, were good opportunities for the cluster to expand their visibility, understand new policy fields, and reach stakeholder.

Finally, the BIO-MATTERS' final event, marked an especial milestone and closing chapter for the cluster, showcasing their results, sharing best practices, exploring future collaboration opportunities, and defining next steps toward continued innovation in the bio-based sector.

Annex

Contributing to a better Bioeconomy position paper

BIOMATTERS

Manufacturing technologies for bio-based materials

Contributing to a better Bioeconomy

The contribution of six Horizon Europe projects towards a new bioeconomy strategy for 2030

About BIOMATTERS: *in 2023, six projects funded by Horizon Europe (AMBIANCE, BIO-UPTAKE, GREEN-LOOP, NEW WAVE, VITAL and Waste2BioComp) have teamed up to form an awareness powerhouse, engaging stakeholders and the broader public in the journey toward sustainable manufacturing.*

As a collective, this cluster aims to spotlight and address today's pressing challenges, utilising bio-based materials to generate innovative solutions. With the present document, the projects are submitting their contribution to the New Bioeconomy strategy for 2030.

1.Economic obstacles

One of the most significant barriers is cost competitiveness: bio-based materials **are generally more expensive** than fossil-based or recycled alternatives. This is due to higher raw material costs, limited availability, and the need for additional pretreatment steps, all of which increase overall production costs. In many cases, manufacturing expenses make it feasible only for smallscale or exclusive applications. Furthermore, specialized equipment and software for production are costly, regardless of the material origin.

Cost Competitiveness Compared to Fossil-Based Alternatives: This is arguably the most pervasive obstacle. Bio-based plastics, due to factors such as smaller production scales, nascent supply chains, and often more complex processing requirements, frequently have a higher production cost per kilogram compared to conventional fossil-based plastics. For Mixcycling, this directly impacts their ability to compete on price with established petrochemical giants, even when offering

superior environmental profiles. End-users often remain highly price-sensitive, making it challenging to pass on higher material costs.

Availability: While Europe has agricultural residues and industrial by-products, their collection, pre-treatment, and logistics can be complex and expensive. For Italian compounders, reliance on specific agricultural waste streams means fluctuating availability based on harvest cycles and local competition for biomass.

Consumer Awareness and Performance Perceptions: there is often confusion among consumers about what bio-based or biodegradable truly means, leading to skepticism or misperceptions. While bioplastics have advanced significantly, some end-users still hold outdated perceptions about their performance, believing them to be inferior to conventional plastics.

Another major issue is the lack of knowledge and experience with large-scale bio-based manufacturing, which demands further investment in research and development. Partners have also pointed out the high costs for certification, type testing, and the limited supply of bio-based resins, making the economic transition challenging. Customer expectations to reduce environmental impact are often not matched by a willingness to pay more, adding to the difficulty of scaling up sustainable solutions.

1.1 What could be done

It's necessary to actively promote the adoption of bio-based products by formally acknowledging their potential to substitute fossil-based products within relevant legislation. This recognition is crucial for creating a more level playing field for bio-based industries. Simply producing biobased products isn't enough for their widespread adoption; a robust market pull mechanism is essential for their commercial viability.

The current lack of a level playing field and explicit market demand incentives creates a significant disincentive for industry investment and innovation in the bioeconomy. A thorough review of the public procurement framework should be conducted to prioritize bio-based solutions over fossil fuel-intensive alternatives across all EU Member States. The emphasis on "made in Europe" in public procurement, coupled with the broader goal of strategic autonomy, suggests that promoting bio-based products is not just an environmental policy but a crucial industrial strategy aimed at strengthening domestic value chains and reducing external dependencies. Be aware that this provision implies preference, if the bio-based option is present, not a strict exclusion policy.

It's recommended to develop clearer circularity standards and tailored incentives specifically for bio-based products, emphasizing their unique benefits such as renewability, biodegradability, and reduced carbon footprint. It's important to integrate cascading priorities for biomass use into market strategies to foster a truly regenerative economy. Finally, it's essential to establish a dedicated and comprehensive policy framework for bio-based chemicals and derived materials. This framework is vital to ensure fair competition with other sectors like food, feed, and bioenergy, which currently benefit from specific policy support.

Specific action points proposed

- Revise the EU waste framework directives and national waste management plans to explicitly recognize and facilitate the separate collection, sorting, and valorization of bio-based plastics.

- Incentivize the development of adequate industrial and home composting infrastructure across all Member States.
- Promote design-for-circularity principles specifically for bio-based materials, ensuring their end-of-life pathways are considered from the outset.

Impact: This will close the loop for bio-based materials, prevent them from contaminating recycling streams of conventional plastics (where not compatible), and ensure their valuable resources are returned to the bioeconomy.

2.Finance and scalability

European companies often struggle when promising innovations fail to reach commercialization or can't progress beyond the initial growth phase. This critical phase frequently refers to the derisking stage between Technology Readiness Level (TRL) 4 (laboratory validation) and TRL 6 (pilot scale).

This problem is also a direct consequence of a fundamental mismatch between the long-term, capital-intensive nature of bio-based industrial scaling and the predominantly risk-averse, often short-term investment horizons characteristic of European financial markets. This structural impediment actively prevents the translation of robust European scientific research into commercial leadership.

The EU suffers from a notable scarcity of large-scale venture capital (VC), specifically for the bioeconomy sector. European VC funds tend to be smaller and exhibit greater risk aversion compared to their counterparts in the United States.

Despite the existence of initiatives like Horizon Europe and the Circular Bio-based Europe Joint Undertaking (CBE JU), SMEs encounter significant obstacles in

securing adequate financial investments. The largest funding gaps are observed in the crucial scaling phases, from transitioning pilot projects to demonstrative ones, and subsequently to "first-of-a-kind" (FOAK) and full-scale industrial plants.

There is an urgent need for targeted financial instruments and clear policy signals that specifically de-risk investments in the bioeconomy and highlight its long-term strategic value, moving beyond immediate financial returns to include strategic autonomy and climate mitigation.

2.1 What could be done

It's imperative to significantly increase the allocation of funding for pilot projects, demonstrator projects, and FOAK production facilities. This should include flexible, small-scale, and shortterm funding mechanisms to rapidly explore and advance new ideas.

The persistent funding gap for scaling up, demands a multifactorial financial strategy that goes beyond traditional venture capital models. Strategic public funding and guarantees are crucial to de-risk early-stage industrial scaling, thereby attracting and mobilizing greater private capital, demonstrating commercial viability, and reducing perceived investment risks.

The inclusion of specific challenges related to biotechnology and biomanufacturing within the European Innovation Council (EIC) Accelerator work programme should be actively promoted. To mitigate investment risks, exploring the establishment of a substantial guarantee fund (e.g., €1 billion) for "limited partners" should be considered.

This would soften required rates of return and minimize potential losses through effective risk sharing. It's also crucial to enhance awareness and utilization of existing financial instruments like the European Fund for Strategic Investments (EFSI).

Specific actions

- Create dedicated EU funds or guarantee schemes specifically for scaling up bio-based production facilities, bridging the gap between R&D projects and commercialization.

- Offer tax incentives (e.g., reduced VAT or corporate tax) for companies investing in sustainable bio-based manufacturing and for the procurement of certified bio-based products by public and private entities.

- Prioritize blended finance instruments that combine public and private capital to de-risk investments in bio-based value chains.

Impact: this will attract the necessary capital, reduce the financial burden on pioneers like Mixcycling, and accelerate the transition to larger production volumes, which in turn can drive down costs.

3.Regulatory obstacles

A key issue is the lack of harmonized regulations for replacing fossil-based materials with biobased alternatives. Discrepancies between EU-level and national regulations create uncertainty and inefficiencies, making it difficult to establish consistent strategies across member states. Additionally, there is a lack of dedicated standards and certification frameworks for bio-based materials, which limits their acceptance in regulated sectors such as construction, manufacturing, and sports.

The absence of clear regulatory guidance on the **recycling**, reuse, and end-of-life management of bio-based products further complicates their integration into existing value chains. In many cases, sector-specific standards (e.g. from sport federations) do not yet recognize or include bio-based options, delaying adoption and market penetration.

Another major barrier is the complexity of **sustainability assessments**. There is currently a lack of standardized methodologies and datasets for conducting reliable Life Cycle Assessments (LCA) of bio-based products, particularly in relation to raw materials and the end-of-life phase. The absence of defined key performance indicators (KPIs) also undermines consistent evaluation and comparison of bio-based versus conventional alternatives. Moreover, the overall EU policy framework for the bioeconomy is fragmented across numerous policy areas (agriculture, forestry, fisheries, climate, circular economy, research), leading to persistent inconsistencies. There's a tangible risk of overlaps or even contradictory rules arising from existing and developing EU legislation, further complicating compliance.

The inherent tension between the EU's precautionary principle and the urgent need for rapid market entry of bio-innovations creates a fundamental policy paradox. While prioritizing safety is non-negotiable, the current application of this principle appears to disproportionately hinder new bio-based solutions, which often offer superior environmental profiles compared to fossil fuel-based alternatives. This inadvertently slows down the green transition that the EU aims to achieve.

A significant gap is found in the policy frameworks for **bio-based chemicals** and derived materials, unlike the established frameworks for food, feed, and bioenergy. This absence places the bio-based chemicals sector at a distinct disadvantage, negatively impacting investment flows in Europe. Finally, broader chemical regulations, such as updates to REACH, the Chemicals Strategy for Sustainability (CSS), and bans on substances like PFAS and microplastics, while crucial for safety, simultaneously increase the regulatory burden and compliance costs for chemical innovators. This necessitates a fundamental re-evaluation of materials at a molecular level. When it comes to **Bioplastic compounders**, there are several regulatory barriers in the EU

Lack of Clear, harmonized standards and definitions for Bio-based Products: This is a critical issue. For example, while there are standards for compostability (e.g., EN 13432), the definitions and testing methodologies for bio-based content or biodegradability in different environments; (e.g., soil, marine) are still evolving or inconsistently applied across Member States.

This creates market fragmentation and confusion for producers like Mixcycling, who need to clearly label and certify their products. It also allows for greenwashing by less scrupulous actors, undermining trust in genuine bio-based solutions. A second example is: The distinction between bio-based (derived from biomass) and biodegradable (able to decompose) is often blurred in consumer and even some regulatory discussions, leading to inappropriate disposal.

Waste Legislation Hindering Circularity of Bio-based Residues: Existing waste management frameworks are often designed primarily for conventional plastics and inorganic waste, sometimes overlooking the unique properties of bio-based materials.

For example, if a bioplastic is technically compostable but the local waste infrastructure in Italy (or another EU country) lacks industrial composting facilities or forbids the co-collection of bioplastics with organic waste, then the circularity potential is lost. This can lead to valuable biobased materials ending up in incineration or landfill.

Regulations on end-of-life options for certain industrial bio-based residues might be overly restrictive, even if they could be safely valorized into new products (e.g., certain by-products from biorefineries).

3.1 What could be done

First and foremost, there is a strong need for clear and harmonized regulatory frameworks specifically addressing bio-based materials, including their certification, use, and end-of-life management. Establishing dedicated standards, such as those currently being developed within the AMBIANCE project for outdoor applications can provide much-needed structure and legitimacy for bio-based solutions across sectors.

It's necessary to systematically evaluate and streamline existing EU legislation and its implementation to reduce fragmentation and accelerate time-to-market for bio-innovations. This includes eliminating unnecessary or duplicate data requirements and addressing any nontransparent political influence in authorization processes. Calls for "simpler legislation" and "streamlining regulatory processes" don't advocate for deregulation, but rather for smarter, more targeted regulation for new bio-based products. This means moving away from a one-sizefits-all approach (e.g., applying chemical pesticide regulations to biocontrol) in favor of a differentiated and risk-proportionate framework that accelerates market access for sustainable innovations while maintaining high safety standards.

It's recommended to actively promote the use of "regulatory sandboxes" to allow controlled experimentation with new bio-solutions. A regulatory sandbox is a controlled environment where supervised entities are be able to test, for a limited period of time, technologically innovative products. The tests will take place in close liaison with the supervisory authorities and can eventually benefit from a simplified transitional regime. This solution is currently under testing in some member states and in sectors like Fintech, Europe should make a huge leap forward in this direction, augmenting the applications of the Regulatory Sandbox principle.

BIOMATTERS
Manufacturing technologies for bio-based materials

the BIOMATTERS team

20/06/2025

Funded by the European Union