



D9.8 Final report on Dissemination and Communication Activities

Date of the document – November 2022 (M54)

D9.8, T9.1

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Monitoring the Bioeconomy



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 773297.

Technical References

| | |
|---------------------|--------------------------------------------------------------------|
| Project Acronym | BIOMONITOR |
| Project Title | Monitoring the Bioeconomy |
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| Project Duration | June 2018 – November 2022 (54 months) |

| | |
|----------------------------------|-----------------------------------------------------------------|
| Deliverable No. | D9.4 Final Report on Dissemination and Communication Activities |
| Dissemination level ¹ | PU |
| Work Package | WP 9 – Dissemination and communication |
| Task | T 9.1 – Dissemination & Communication Strategy and Plan |
| Lead beneficiary | 16 (ICE) |
| Contributing beneficiary(ies) | |
| Due date of deliverable | 30 November 2022 |
| Actual submission date | 30 November 2022 |

¹ PU = Public

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

| Document history | | | |
|------------------|------------|-------------|------------------|
| V | Date | Beneficiary | Author |
| 1 | 24/10/2022 | ICE | Angela Marzorati |
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0 Summary

The primary objective of the BioMonitor project has been to establish a robust and sustainable statistics and modelling framework for the bioeconomy. Its motives and actions have been communicated and disseminated across its various target audience. WP9 – Dissemination and Communication allowed BioMonitor to support its uptake among its community of professional stakeholders while raising awareness about the economic, environmental, and social impacts of the bioeconomy.

D9.8 Final report on dissemination and communication activities (Task 9.1: dissemination and communication strategy and plan) provides an overview of the results of the BioMonitor communication and dissemination activities performed, media modules, and distribution.

The report is based on the general description of the communication and dissemination strategy (Annex I of the BioMonitor Grant Agreement, Part B) and the specific Tasks description in the Work Plan Table WP9 of Annex I "Description of Action" of the Grant Agreement (GA).

Considering all the dissemination and communication activities carried out throughout the project years, this final report re-evaluates the endeavour, outlining all communication and dissemination actions that took place throughout the course of the project. The results confirm the effectiveness of the implemented strategy.



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1 Overview

The current document (D9.8) recounts the communication and dissemination activities that took place from the first interim report on dissemination and communication activities (D9.4) in July 2020, M26, to November 2022, M54, based on the strategy laid out in D9.1 "Dissemination and Communication Strategy". Some data, on the other hand (e.g. the monitoring data in the final chapters of this report), look at trends over the entire project duration, from M1 to M54.

Chapter 2, "Dissemination and Communication Strategy," will serve as a recap, at the end of the project, of the dissemination and communication plan that was elaborated in M4 and has been executed since then. Updates on the different communication and dissemination tools will be reported in Chapter 3 "Dissemination and Communication Tools". The same principle also holds for Chapter 4 "Public Communication and Dissemination". Lastly, Chapter 5, "Monitoring: outreach and engagement indicators," will report the data with regards to BioMonitor's level of outreach and engagement referring to the whole project's duration in terms of the dissemination and communication activities recounted in this deliverable.



2 Dissemination and Communication

Strategy

The dissemination and communication (D&C) strategy was first created in M4. It lays out the strategy the BioMonitor project has been using from M1 to M54 to communicate its progress, results and legacy.

It was developed in parallel with the Stakeholder Engagement Plan (D7.1) as WP9 "Dissemination and Communication" goes hand-in-hand with WP7 "Trainings and overall stakeholder engagement". In the past years, both have not only raised awareness, acceptance, and uptake of all the past and ongoing activities of the project (as provided by the other WPs), but also have allowed the project to build a pro-active community of professional stakeholders and end-users within Europe.

During the course of the project, high priority has been given to the professional community that was mainly composed of customs labs, statistical officers, industry, decision makers and policy officials. They have been the key targets in the project dissemination. Apart from raising their awareness, BioMonitor invited these stakeholders to provide the BioMonitor consortium with the input needed to develop the project's tools and models, especially the BioMonitor Model Toolbox. Moreover, facile adoption and replication have been key to the BioMonitor's uptake success. With information exchange being a two-way street, these pointed out the co-dependence between the project's communication and dissemination activities with that of BioMonitor's engagement activities when dealing with professionals.

On the other hand, the project has de ambition to relay its findings to the general public. The project communication has been informing citizens of the short-term as well as the long-term impacts of the bioeconomy brought into their lives by the project.

The project objectives have been met through a strong, inclusive and efficient communication and dissemination strategy. The "communication" has allowed the project aimed to reach out to all types of audiences – including consumers – by using the communication tools developed during the project. As for the "dissemination", the project sought to reach out to professional stakeholders via selected channels and events.

ICE has been in charge of associating the respective contents of BioMonitor with specific dissemination and communication formats and has been distributing them through dedicated channels, thus maximising its impact in terms of awareness, acceptance and uptake.

2.1 Dissemination and Communication

Objectives

The primary objective of BioMonitor was to form a statistics and modelling framework for stakeholders within Europe to monitor the bioeconomy. The project embarked on this path by using the following three-fold approach:



1. Reducing the data gap within the bioeconomy,
2. Improving present-day modelling tools on the bioeconomy, and
3. Creating a stakeholder engagement platform and training sessions that have validated the framework being built within the duration of the project.

The third approach – creating a stakeholder engagement platform – stressed the importance of identifying the key targets in the project dissemination activities. These included representatives from the **customs labs, statistics offices, the industry & SMEs and government offices**.

As already mentioned above, the **general public** was considered as a secondary target audience as the decisions and actions made by the primary target audience affect their lives.

By distinguishing the audience accordingly, the communication and dissemination strategy of the BioMonitor project met the project objectives by reaching out to all of them through communication tools and activities, and by engaging primarily with the professional stakeholders through the **dissemination approach**.

ICE has been in charge of the production of the project's content in all sorts of D&C formats and through the distribution of such materials across different channels. These had, in turn, contributed to raise target audiences' level of awareness and acceptance, and to their uptake of the BioMonitor project's results.

2.2 Dissemination and Communication Plan

The BioMonitor's D9.1 "Dissemination and Communication Plan" provided an overview of the different D&C activities and tools that the project was supposed to generate in its course and deliver to different channels. Moreover, key messages have been developed according to the specific keywords and target audiences. These have been used to formulate specific content for the following Communication and Dissemination channels and products.

Table 1 BioMonitor Communication and Dissemination Channels and Products

| Tool/Actions | Description |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Website & Splash page</p> | <p>The project website was put up online on M5. It has been used for the whole duration of the project to present all the details, news and achievements about the project, and will remain online even after the project's end. The website is divided in different sections to include the project's objectives, the expected impacts, the results, but also news and press releases, journalistic articles, events and technical insights, the presentation video and the pageflow. It acts as a primary communication platform for the consortium and BioMonitor's target audiences to interact.</p> <p>The splash page was a preliminary version of the project website, which was made available prior to M5. This was developed for the sole purpose of reaching out to stakeholders about the events to be held before M5. It</p> |



| | |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | contained an overview of the project and registration details about the events organised by BioMonitor. |
| Media multipliers | Media multipliers are external platforms that have always republished the press releases, the journalistic articles and call-to-actions (CTAs) written by BioMonitor; |
| Social networks | Twitter, LinkedIn have been used to engage actively with the online community represented by the different target audiences identified by the project.. Content featured in such channels includes news, events and updates related to the BioMonitor project; these are also used to invite online users to participate in a dialogue on the different topics/issues addressed by the project. |
| Newsletter | Newsletters have been issued every six months featuring the project's progress and achievements. They have been made available in English and German. |
| Networking and Clustering events | These came in the form of training sessions (mainly from WP7), workshops, exchanges, and webinars, thus providing an avenue for the BioMonitor partners to engage with the project's target audiences in person. They also included external events, organised outside of the BioMonitor project. |
| Leaflets | Leaflets have been produced to inform relevant target audiences about the project, its objectives, and the functionalities of BioMonitor's toolkit to support the exchange with partners when approaching stakeholders in specific events. The first version has been made available in M8 in several languages (English, Finnish, French, German, Italian, Latvian, Russian, Slovenian and Swedish). The second version of the leaflet has been published in M52 in English, in both digital and printed formats for the final BioMonitor meeting with stakeholders in Brussels, on the 5 th October 2022. |
| Press and news releases | They highlighted the different project issues and milestones and promoted project events and progress. They also focused on the specific issues of public relevance with regard to the bioeconomy. |
| Journalistic articles | Four journalistic articles have been written by professional journalists to inform and to stimulate the readers' interest in BioMonitor and its activities. These have been distributed to a wider audience via online newspapers and magazines. |



| | |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Digital storytelling | One digital storytelling in the form of a Page Flow™ has been produced in M44 to provide a richer narrative illustration about BioMonitor case studies. |
| Info packs | Info packs are fact-/info-sheets or synthesised reports that have been designed specifically for a professional target audience. These have featured contents from the project's public deliverables produced in the WPs. |
| Scientific publications | Scientific and technical publications from specific journals have been produced by the academic and technological partners of BioMonitor. These have been made available via the Open Access requirements. Most of them are available in the "Technical insights" section of the project's website. |

All the above-mentioned D&C activities and their results will be discussed more in details in the succeeding chapters (3 and 4).

The communication impact of the said activities will be examined in Chapter 5. The impact is based on the output data monitored regularly to fine-tune the communication of the content of materials and the overall D&C strategy of the BioMonitor project.



3 Dissemination and Communication

Tools

BioMonitor's achievements have been shared during the course of the project with the different target audiences using the project's communication and dissemination tools. This combination ensured to effectively reach out to the diverse set of target audience, in particular the community of professional stakeholders.

3.1 Visual Identity

The BioMonitor's visual identity has been used for the whole duration of BioMonitor to define the project's visual aesthetics based on its personality. Other than the logo, the visual identity also provided the project's main features, characteristics, and elements to convey when communicating about the project.

The BioMonitor's visual identity was developed immediately after the start of the project. A rule book on it has been created in the form of a brand book. These allowed the project to communicate more effectively its results to the target audience and guide the consortium in preparing their C&D materials to share in specific events, that is, training sessions and stakeholder workshops.



Figure 1 - BioMonitor logo

| | |
|----------------|-----|
| Accountability | ICE |
| Input | WU |
| Timing | M2 |

3.2 Website

The website is the official communication and dissemination channel that has been used in the BioMonitor project. It has also acted as a hub for stakeholders to engage with the consortium (WP7), as discussed in D7.1 "Stakeholder engagement plan". It has been designed to address the community of



professional stakeholder - policy makers, and representatives from industries and SMEs, customs, and statistical offices - and the general public.

The BioMonitor website URL is www.biomonitor.eu.

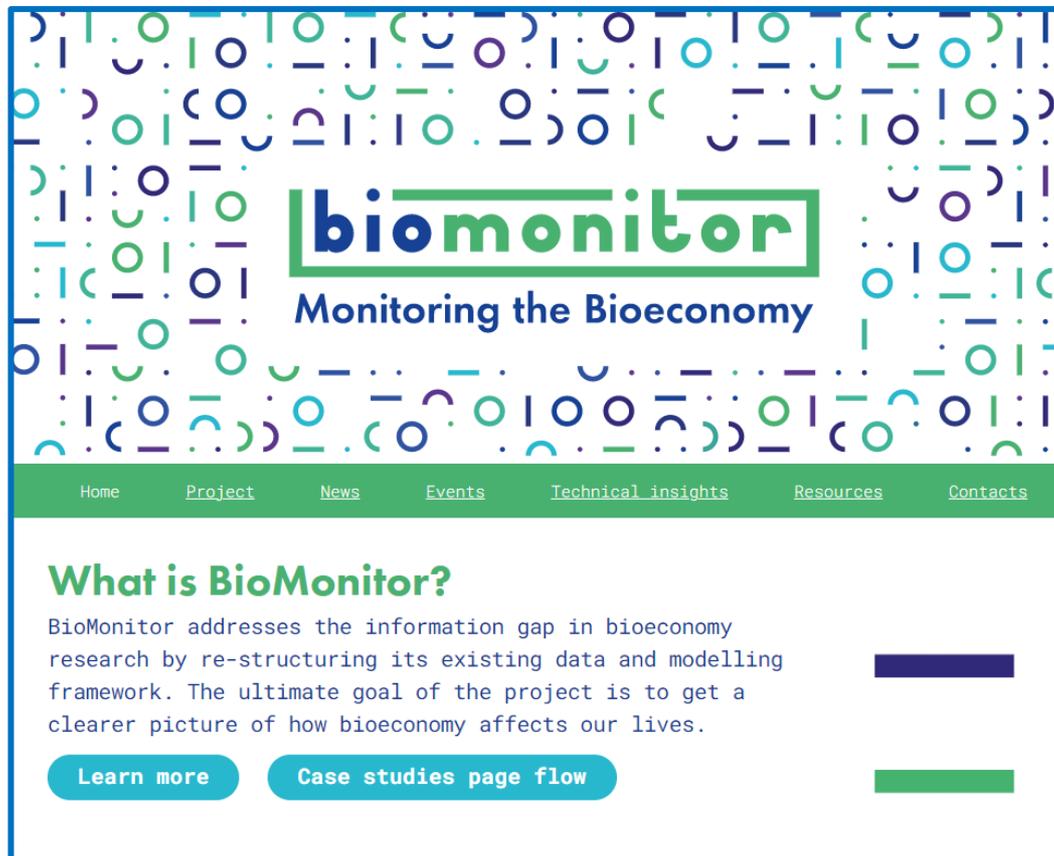


Figure 2 BioMonitor website's homepage

The project website has been used for the following purposes:

- To share materials produced by BioMonitor including the public deliverables;
- To provide access to C&D materials: presentation video, info packs, newsletters, pageflow, and other communication materials;
- To publish news and press releases about the project;
- To cross-link it with external platforms (e.g., DataM, Bioeconomy Knowledge Centre) and relevant initiatives and sister projects;
- To provide links to joint webinars and practical information about training, workshops and other stakeholder engagement activities promoted by the project;

It also has an online registration page for the project's newsletter. This has allowed subscribers over the years to receive updates regarding BioMonitor's activities for the whole duration of the project. The project has today (November 2022) 479 registered users.

It should be noted that registered users' contact details have been treated as fully confidential, in compliance with the General Data Protection Regulation – Regulation (EU) 2016/679 (GDPR).



The website's performance has been monitored via Google Analytics. Listed below (see Table 2) are the web statistics for the whole duration of the project (June 2018-November 2022).

Table 2 Google Analytics Statistics on the BioMonitor website's performance. Last recorded: 14 November 2022.

| Google Analytics Indicators | BioMonitor project website (November 2018-November 2022) |
|-----------------------------|-------------------------------------------------------------|
| Sessions | 29,530 |
| Users | 22,911 |
| Returning visitors | 2,199 |
| Total Page Views | 48,962 |
| Pages per Session | 1.66 |
| Average Session Duration | 00:01:13 |

Among the total number of pageviews listed in Table 2, most of the pages users go to are the main pages of the BioMonitor project, as shown in Table 3. These go to show that these pages are well utilized.

Table 3 Ranking of pages according to the percentage of Pageviews (source: Google Analytics)

| Pages | Unique Pageviews (% of Total) |
|------------------------------------|-------------------------------|
| Homepage | 29.32% |
| Project | 7.71% |
| Technical Insights | 4.71% |
| News | 3.38% |
| Resources | 3.60% |

Many of these users access the project website via direct and social media platforms. Other pathways that users may choose to access the BioMonitor website are through referrals and e-mails. In short, the website can be accessed by whichever URL associated to the BioMonitor project once posted in a social media channel, that is, Twitter and LinkedIn, or in other websites, or in e-mails including the BioMonitor's newsletters (see Chapter 3.4.2).

All in all, these data show that the website's purposes are well met as users have paid avid attention to the BioMonitor project website.



Accountability

To comply with General Data Protection Regulation – Regulation (EU) 2016/679 (GDPR), private data have remained confidential as ICE has acted as the data controller and be responsible for treating all the personal data provided by the registered users upon online registration.

3.3 Leaflet

The BioMonitor project has produced two versions of the leaflet. The purpose of the first version of the leaflet (D9.3, M8) was to support the project communication by letting BioMonitor partners use it as an "invitation" during events for stakeholders to engage with. It contains all the information stakeholders need to know regarding the project.

The second version of the leaflet (D9.7), "[BioMonitor: Past and Future of the bioeconomy](#)" (also referred to as: the Final Publication) has been produced in month 52, in time for the BioMonitor final event with stakeholders held in Brussels on October 5, 2022, both in electronic and print formats – 120 copies were printed. Its main goal is to support the exploitation of the project's results towards potential adopters. ICONS has been in charge of the graphic development of the leaflet, of contents collection from all the work package leaders and final editing.

The BioMonitor final publication constitutes the final dissemination material designed for online and offline distribution. It includes a focus on the BioMonitor Model Toolbox and on the other results achieved in the project.



“The bioeconomy can create new jobs and offer wider consumer choices. It is set to impact everyone’s life in a positive way.”

BioMonitor explained

Climate change and social inequality are considered threats to sustainable development, but could the bioeconomy be our silver bullet? Our work within the BioMonitor project seeks to fill the information gap about the bioeconomy contribution to sustainable development by providing key data, modelling and guidance to industry and EU policy makers.

With a three-fold approach, we aim to:

- Close the data gaps observed when measuring the bioeconomy;
- Enhance forward-looking assessment tools that guide industries and policymakers in defining long-term strategies for developing the bioeconomy;
- Create a stakeholder engagement platform and training.

The bio-based sectors covered by the project are those used in the current EU Bioeconomy Strategy and the EU member states statistics. BioMonitor captures the evolution of the bioeconomy through a set of case studies and advanced simulation models.

BioMonitor: past and future of the bioeconomy – 5

5.

Methodologies to fill model gaps and create an enhanced BioMonitor Model Toolbox

One of the challenges of BioMonitor was to better capture the link between emerging and traditional bioeconomy sectors. The BioMonitor Model Toolbox has been developed to tackle this challenge. The result is an improved toolbox that allows for more detailed ex-ante analyses of EU policy strategies like the European Green Deal and related strategies on the Bioeconomy, Circular Economy and Farm to Fork on achieving sustainability goals.

14 – BioMonitor: past and future of the bioeconomy

Understanding the BioMonitor Model Toolbox

An enhanced BioMonitor Model Toolbox helps users to better understand how the EU bioeconomy works and has a positive impact on sustainability goals. It works by reducing emissions, decarbonising energy markets, producing healthy food and creating sustainable incomes and jobs. The toolbox captures trends in bioeconomy markets resulting from demographics, consumer preferences, technology and innovation, climate and environment indicators. It also looks at how producers, consumers, and policy makers behave.

Bioeconomy data: lesson learned

Although much effort has led to improved bioeconomy data collection and generation, data is still limited, e.g. on the production and trade of bio-based products. BioMonitor has suggested a list of new bio-based products to be included in Eurostat statistics, which is considered a long-term solution for future data availability. Building good bioeconomy models requires experts from different fields to work together.

To know more about our models

- ✓ BioMonitor Infopack 1, [BioMonitor Tools for Policy Makers and Industries: Analysing and Implementing Bioeconomy Strategies](#)
- ✓ BioMonitor Study, [BioMAT and EEI-GTM enhancements to better capture bio-based product markets](#)
- ✓ BioMonitor Study, [Magnet extensions enhancements to better capture bio-based sector markets](#)

BioMonitor: past and future of the bioeconomy – 15

Figure 3 – Some screenshots from the BioMonitor second version of the leaflet



| | |
|----------------|-----------------------------|
| Accountability | ICE |
| Input | All the BioMonitor partners |
| Timing | M8 & M52 |

3.4 Distribution

Updates from the BioMonitor project have been shared in different ways. The main objective of such distribution activity, that relies on the project distribution channels is to share across a wide array of online users that could potentially become a part of the BioMonitor's stakeholders community. Now that we are at the end of the project, the purpose of the distribution is the exploitation of results mainly towards potential adopters, still reaching out to stakeholders and communicate the project outcomes to target audiences.

3.4.1 Social Networks

BioMonitor has a strong online presence via social media. The project's social media channels have been used to promote the project, its objectives, its activities, and its results. The BioMonitor's presence in social media has widened its level of outreach as its communication and dissemination activities have been shared across the different social media platforms.

The BioMonitor project launched its Twitter account ([@biomonitor_eu](https://twitter.com/biomonitor_eu)) on October 2018. As of November 2022, it has 972 followers. Regular posts have been made to keep its online community interested in the ongoing developments within the project.

On January 2020, the project also launched its [LinkedIn page](#). Its objective was to invite the LinkedIn professional community to learn more about the BioMonitor project when initial results could be shared with them, and for them to join BioMonitor's stakeholder engagement community. As of November 2022, it has 355 followers. Moreover, the BioMonitor consortium, and ICE in particular, have been following existing LinkedIn groups by posting regular novelties of the project.

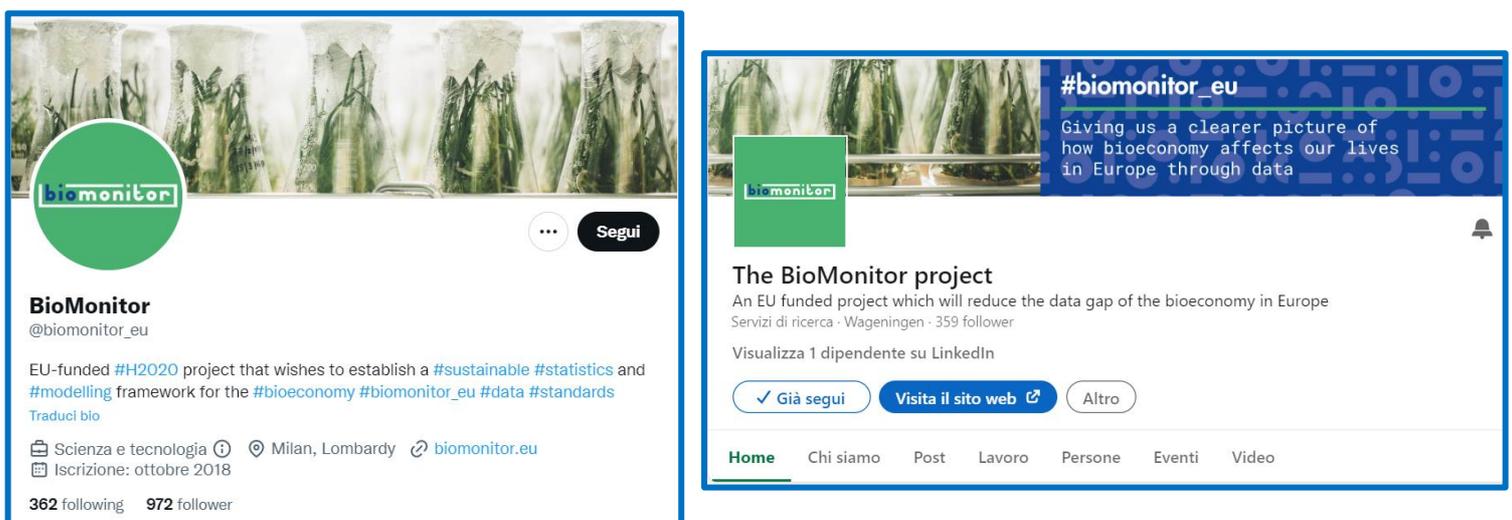


Figure 4 BioMonitor social media accounts - Twitter and LinkedIn



For both social networks, cards (see Figure 5) have been created to diversify the content being shared from the project's accounts.

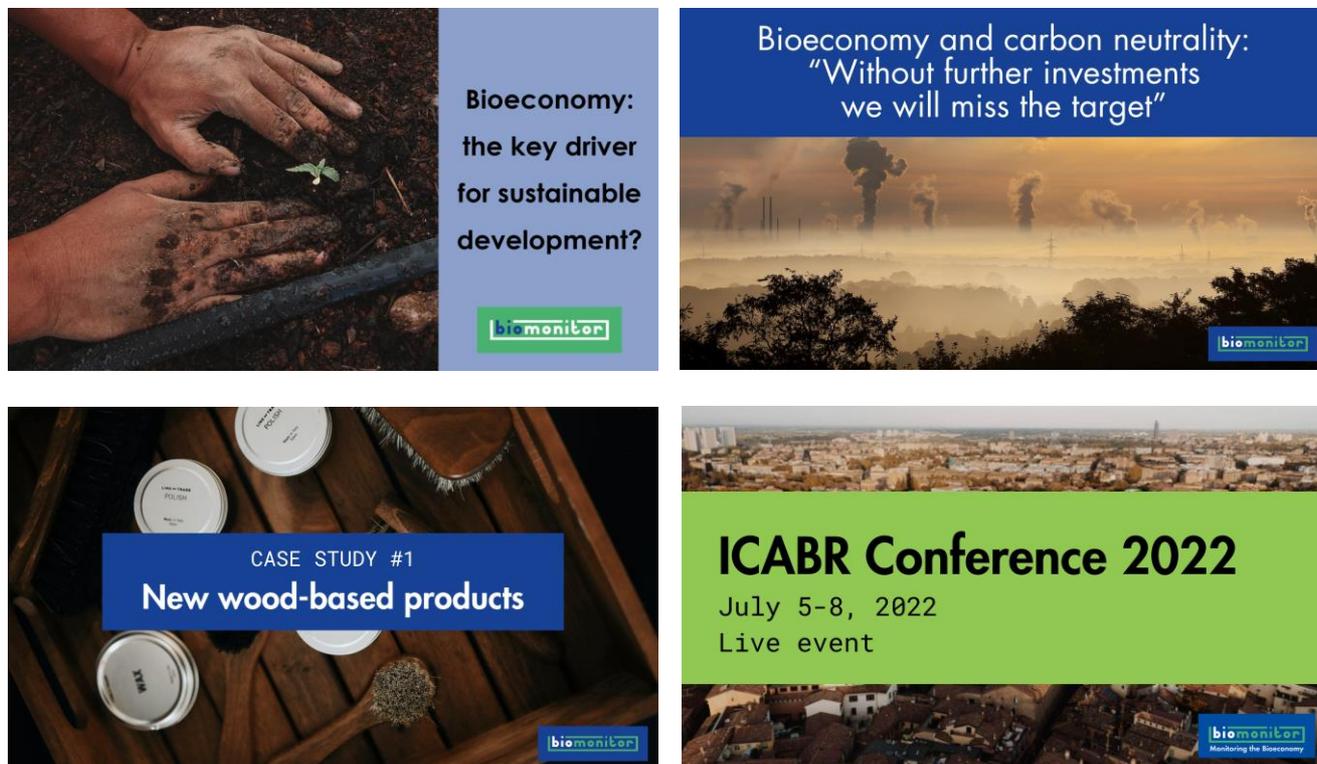


Figure 5 Four examples of the cards used to communicate updates from BioMonitor on social media

Lastly, the project has been using an official hashtag for the whole duration of the project, #biomonitor_EU. This has been used to monitor any posts about the BioMonitor project and to gather quantitative and qualitative data on its impact in terms of communication.

| | |
|----------------|-----------------------------|
| Accountability | ICE |
| Input | All the BioMonitor partners |
| Timing | M1-M54 |

3.4.2 Newsletters and mail-out campaigns

The project's newsletters have been released every six months starting from January 2019 (M8). These have been delivered online to all the people who registered via the project website, including the partners.



The newsletters reach out to the BioMonitor professional community to keep them informed of the progress made by the project. It has also been used to invite subscribers to participate in upcoming events such as training sessions and workshops. It has been written both in German and English.

By the end of the project, in November 2022, the BioMonitor project has 479 subscribers and the final newsletter has been released in English and German.

Mail-out campaigns have also been sent out to promote specific activities within the BioMonitor project. These include the stakeholder workshops, surveys, events organised by the project, or the promotion of the BioMonitor final publication and the policy briefs.

| | |
|----------------|------------------|
| Accountability | ICE |
| Input | WU, all |
| Timing | Every six months |

3.4.3 Media Multipliers

External media multipliers have been used to disseminate contents of general interest produced by the BioMonitor project.

These multipliers are external platforms that have syndication agreements with ICE. The three main multipliers used for BioMonitor are [EU Agenda](#), [AlphaGalileo](#) and [Phys.org](#). Other multipliers include [ScienceDaily](#), [ANSA](#), [Nova Institute](#), [BioBased Press](#), [Bio-based Industries Consortium](#), [Bio Market Insights](#), [BBI JU](#), [Brussels Diplomatic](#).

Journalistic articles, videos and press releases (Subtask 9.3.2), on BioMonitor were the products being distributed. Once these were approved by the mentioned news multipliers, they have been published as news in the respective multipliers.

Moreover, the rest of the BioMonitor consortium was encouraged to republish the project's press and news releases via their own networks and websites, that is, their social media accounts, both personal and corporate, and their corporate websites.

All these have been monitored thoroughly to quantify the outreach of the project's communication materials.

| | |
|----------------|-----------------------------|
| Accountability | ICE |
| Input | All the BioMonitor partners |
| Timing | M1-M54 |



4 Public Communication and Dissemination

Other than the D&C tools mentioned in Chapter 3, additional tools are materials and activities produced and organised respectively by the BioMonitor project and aimed at dissemination.

4.1 Journalistic articles, Press and News releases

BioMonitor journalistic articles, press and news releases have been written to address the different issues and aspects of the project. Press releases have been used to draw the attention of the stakeholders and the general public, and to communicate the project's key milestones which are worth reading by a selected audience. News releases, on the other hand, have an informal structure of posts and are easily read by the public. Likewise, journalistic articles are addressed to the general public.

During the whole duration of the project, 4 journalistic articles have been produced and published by ICONS. Professional journalists in the ICONS network were in charge of writing journalistic articles or interviews. Journalistic articles are easy-to-understand and offer a balanced view of the considered topics by collecting the opinions of different experts to ensure independency. The project is always mentioned, but the focus of the article is a piece of news, instead of the project itself. This approach is vital in order to attract the interest of the media and thus increase the outreach of each article. Once published on the project website, journalistic articles press and news releases have been distributed across the different external multipliers, that is, euagenda.eu, alphagalileo.org and phys.org. Besides the PLASTICE website and its social media, articles and interviews are also published on youris.com, a major public communication portal on EU research and innovation directly managed by ICONS.

All in all, BioMonitor has published 4 journalistic articles, 19 press releases and 50 news posts. All the journalistic articles, press and news releases made available in the project website from July 2020 (date of the D9.4 interim report on dissemination and communication activities) until November 2022 are shown below:

Table 4 List of journalistic articles, press and news releases available in the BioMonitor project

| Publication Date | Title of Press/News Releases/Journalistic Articles | Press/News Release/Journalistic Articles |
|------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------|
| 22/09/2020 | <u>Why the EU's post-COVID recovery should go bio</u> | Journalistic Article |
| 28/09/2020 | <u>Webinar on boosting bio-based products to the market through standardization</u> | Press Release |
| 13/10/2020 | | Press Release |



| | | |
|------------|----------------------------------------------------------------------------------------------------------|---------------|
| | <u>Can we accelerate the bioeconomy in times of crisis?</u> | |
| 20/10/2020 | <u>Finding the Right Balance within the Bioeconomy</u> | News Release |
| 22/10/2020 | <u>Planning for the launch of the EU Bioeconomy Monitoring System</u> | News Release |
| 13/11/2020 | <u>Giving a glimpse of our future with the bioeconomy at the GBS 2020</u> | Press Release |
| 24/11/2020 | <u>Do you want to learn more about BioMonitor project?</u> | Press Release |
| 27/11/2020 | <u>How do we make sustainable bioeconomy work for everyone?</u> | News Release |
| 03/12/2020 | <u>Join our Survey and Help Us Build Narratives of the Future through the Bioeconomy</u> | Press Release |
| 25/01/2021 | <u>Probing the European bioeconomy's development through its drivers and indicators</u> | News Release |
| 29/01/2021 | <u>Join the Survey for the BioMonitor study on bio-based products!</u> | Press Release |
| 10/03/2021 | <u>What Tools Do We Need to Make More Sustainable Choices for the Bioeconomy?</u> | Press Release |
| 16/03/2021 | <u>What is the state of the bioeconomies in Central and Eastern European Countries?</u> | News Release |
| 24/03/2021 | <u>How will the Bioeconomy of the Future look like?</u> | Press Release |
| 12/04/2021 | <u>How Can Forests Help us meet the Carbon neutrality Goal in Europe by 2050?</u> | News Release |
| 22/04/2021 | <u>What is the bioeconomy's worth when it comes to agri-food systems?</u> | Press Release |
| 28/04/2021 | <u>Life and Biological Sciences and technologies as Engines for Bio-based Innovation</u> | News Release |
| 28/04/2021 | <u>Measuring the size of the European Bioeconomy using an Input-Output Approach</u> | Press Release |
| 29/04/2021 | <u>Is forest harvesting increasing in Europe?</u> | News Release |
| 19/05/2021 | <u>Bioeconomy: the key driver for</u> | Press Release |



| | | |
|------------|---------------------------------------------------------------------------------------------------------------------|----------------------|
| | <u>sustainable development?</u> | |
| 01/06/2021 | <u>Non wood forest products (NWFPs): hobby or sine qua non?</u> | News Release |
| 25/06/2021 | <u>Monitoring the bioeconomy: an introduction to the Biomonitor project</u> | News Release |
| 08/09/2021 | <u>BioMonitor attended the International Conference of Agricultural Economists (ICAE) in August 2021</u> | News Release |
| 21/10/2021 | <u>On November 18, save the date for the BioMonitor SMEs and Industry exchange</u> | News Release |
| 12/11/2021 | <u>Emerging technologies open up a huge range of uses for wood</u> | News Release |
| 29/11/2021 | <u>SMEs and Industry exchange: an opportunity to re-structuring data and modelling frameworks in the bioeconomy</u> | News Release |
| 01/12/2021 | <u>Measuring the bioeconomy: why closing data gaps is key to a greener Europe</u> | Journalistic Article |
| 06/12/2021 | <u>A former BioMonitor colleague to receive the CEN-CENELEC life-time achievement award</u> | News Release |
| 12/01/2022 | <u>Two new BioMonitor publications</u> | News Release |
| 18/01/2022 | <u>The new BioMonitor Page Flow on case studies</u> | News Release |
| 17/02/2022 | <u>The role of feed-grade amino acids in the bioeconomy, on Cleaner Environmental Systems</u> | News Release |
| 17/05/2022 | <u>BioMonitor at the European Biomass Conference & Exhibition 2022</u> | News Release |
| 21/06/2022 | <u>Innovative forest products in the circular bioeconomy</u> | News Release |
| 11/07/2022 | <u>The Bioeconomy in light of future development – BioMonitor at ICABR 2022</u> | Press Release |
| 21/09/2022 | <u>Bioeconomy and carbon neutrality: “Without further investments we will miss the target”</u> | Journalistic Article |
| 19/10/2022 | <u>What will the future of the bioeconomy look like? BioMonitor shares insights at its final meeting</u> | Press Release |



| | | |
|------------|----------------------------------------------------|----------------------|
| 09/11/2022 | Wearing wood for a low-carbon life | Journalistic Article |
|------------|----------------------------------------------------|----------------------|

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|----------------|-----------------------------|
| Accountability | ICE |
| Input | All the BioMonitor partners |
| Timing | M1-M54 |

4.2 Info packs and policy briefs

Info packs have been published in the form of fact- and info- sheets or synthetic reports, such as policy briefs. These have been designed to target the professional community and/or policy makers to communicate to them about what BioMonitor was offering for their field of expertise in an easy-to-read and synthetic manner.

Info packs allowed BioMonitor to re-package its technical achievements and findings into an easy-to-access document. The specific contents were taken mainly from the public deliverables and scientific publications.

Two info packs were published from July 2020 to November 2022, all in the form of [policy briefs](#). The content is wide-ranging, technical enough to be addressed to policy makers and decision makers involved in the bioeconomy.

In total, 7 info packs have been crafted as of November 2022 based on the interest of the target users – customs labs personnel, statistics officers, people in SMEs and industry and policymakers. Sample pages from the said info packs are shown in .



Figure 6 Excerpts from the last two BioMonitor Info packs in the form of Policy Briefs

All the info packs have been made available on the [Technical Insights](#) section of the Project Website (D9.2, see Chapter 3.2). These were distributed online to relevant stakeholders via one-on-one communication



with any of the BioMonitor's partners. To communicate with BioMonitor stakeholders, a stakeholder database was also created. This document indicates the 'prime contact partners' among the BioMonitor consortium, who are the ones in charge of contacting stakeholders whenever necessary, especially to communicate and disseminate some important content such as publications, articles, policy briefs or future events.

The online community has been informed of the release of the project's policy briefs through news posts, published on the project website and on social media channels.

| | |
|----------------|---------|
| Accountability | ICE |
| Input | WU, all |
| Timing | M34-M54 |

4.3 Scientific and Technical Publications

Scientific and technical publications have been published and made available in selected scientific journals that support Open Access. These have featured all the scientific findings sought out by the academic and technological partners of BioMonitor in the duration of the project.

Abstracts have been presented by some partners on the said scientific findings in various conferences (see Chapter 4.4) such as the ICABR Conference (Ravello and Bologna, Italy). Aside from these, other papers, scientific publications and reports have been published by selected BioMonitor partners as shown below:

2020

- Kuosmanen, T., Kuosmanen, N., El Meligi, A., Ronzon, T., Gurria Albusac, P., Iost, S. and M`barek, R., How big is the bioeconomy?, EUR 30167 EN, Publications Office of the European Union, Luxembourg, 2020 ([available here](#))
- Tévécia Ronzon, Stephan Piotrowski, Saulius Tamosiunas, Lara Dammer, Michael Carus and Robert M`barek. Developments of Economic Growth and Employment in Bioeconomy Sectors across the EU, Sustainability 12, 4507, 2020 ([available here](#))
- Alfredo J. Mainar-Causapé, George Philippidis & Ana I. Sanjuán- López (2020): Constructing an open access economy-wide database for bioeconomy impact assessment in the European Union member states, Economic Systems Research ([available here](#))
- Lovrić M., Da Re R., Vidale E., Prokofieva I., Wong J., Pettenella D., Verkerk P.J, Mavsar R., 2020. Non-wood forest products in Europe – A quantitative overview. Forest Policy and Economics, Volume 116, July 2020 ([available here](#))
- Gracia-de-Rentería, P.; Philippidis, G.; Ferrer-Pérez, H.; Sanjuán, A.I. Living at the Water's Edge: A World-Wide Econometric Panel Estimation of Arable Water Footprint Drivers. Water 2020, 12, 1060 ([available here](#))
- Philippidis G., Shutes L., M'Barek R., Ronzon T., Tabeau A., van Meijl H. Snakes and ladders: World development pathways' synergies and trade-offs through the lens of the Sustainable Development Goals. Journal of Cleaner Production ISSN 0959-6526 (online), 267, 2020, p. 122147, JRC120499. ([available here](#))
- Ronzon, T. and Sanjuan Lopez, A., Friends or foes A compatibility assessment of bioeconomy-related Sustainable Development Goals for European policy coherence, Journal of Cleaner Production, ISSN 0959-6526, 254, 2020, p. 119832, JRC117338. ([available here](#))



- Kutay C. and Justus W., OECD-Dutch Ministry of Agriculture, Nature and Food Quality Workshop. Circular Approach and the Sustainability of the Agri-food System – Closing Resource Loops to Improve Sustainability. Opportunities and Policy Challenges to the Circular Agri-food System, 2020 ([available here](#))
- Fritsche, U., Brunori, G., Chiaramonti, D., Galanakis, C., Hellweg, S., Matthews, R. and Panoutsou, C., Future transitions for the Bioeconomy towards Sustainable Development and a Climate-Neutral Economy - Knowledge Synthesis Final Report, Publications Office of the European Union, Luxembourg, 2020 ([available here](#))
- European Commission, Research Centre, Report on the Community of Practice Workshop: Web-based workshop series in preparation of launch of the EU Bioeconomy Monitoring System, October 2020 ([available here](#)).

2021

- Kardung, M.; Cingiz, K.; Costenoble, O.; Delahaye, R.; Heijman, W.; Lovrić, M.; van Leeuwen, M.; M'Barek, R.; van Meijl, H.; Piotrowski, S.; et al. Development of the Circular Bioeconomy: Drivers and Indicators. Sustainability 2021, 13 ([available here](#))
- Cingiz, K.; Gonzalez- Hermoso, H.; Heijman, W.; Wesseler, J.H.H. A Cross-Country Measurement of the EU Bioeconomy: An Input–Output Approach. Sustainability 2021, 13 ([available here](#))
- Lovrić M., Da Re R., Vidale E., Prokofieva I., Wong J., Pettenella D., Verkerk P.J., & Mavsar R. (2021). Collection and consumption of non-wood forest products in Europe, Zenodo ([available here](#))
- Daystar, J., Handfeld, R.B., Pascual-Gonzalez, J., McConnell, E. and J.S. Golden, An Economic Impact Analysis of the U.S. Biobased Products Industry: 2019 Update. Volume IV. A Joint Publication of the Supply Chain Resource Cooperative at North Carolina State University and the College of Engineering and Technology at East Carolina University, August 2021 ([available here](#))
- Tassinari G., Drabik D., Boccaletti S., Soregaroli C. (2021): Case studies research in the bioeconomy: A systematic literature review. Agric. Econ. – Czech, 67: 286–303 ([available here](#))
- Baldoni E., Philippidis G., Spekreijse J., Gurría P., Lammens T., Parisi C., Ronzon T., Vis M., M'Barek R., Getting your hands dirty: A data digging exercise to unearth the EU's bio-based chemical sector, Renewable and Sustainable Energy Reviews, Volume 143, 2021, 110895 ([available here](#))
- OECD/EC-JRC (2021), Understanding the Spillovers and Transboundary Impacts of Public Policies: Implementing the 2030 Agenda for More Resilient Societies, OECD Publishing, Paris ([available here](#))
- Panoutsou C., Van Leeuwen M., Philippidis G., Verkerk H., Sturm V., Policy brief, Relevance of current modelling tools for offering policy insights for the creation of a vibrant European Bioeconomy by 2030 and 2050 ([available here](#)).

2022

- Shen, X. and Lovrić, M. Structural determinants of global trade in graphic paper and pulp products, Forest Policy and Economics 134, 102629, 2021 ([available here](#))
- Ema Lazorcakova, Liesbeth Dries, Jack Peerlings, Jan Pokrivcak. Potential of the bioeconomy in Visegrad countries: An input-output approach, Biomass and Bioenergy 158, 106366, 2022 ([available here](#))
- Viktoriya Sturm, MartinBanse, Petra Salamon, The role of feed-grade amino acids in the bioeconomy: Contribution from production activities and use in animal feed, Cleaner Environmental Systems, Volume 4, March 2022 ([available here](#))
- Van Leeuwen, M., Gonzalez-Martinez, A.R. and Sturm, V. Developing BioMAT: A new conceptual framework to model the market of bio-based materials in the EU, Studies in Agricultural Economics 124 (2022), 82-87, ([available here](#))
- Hasegawa, M., Karlberg, A., Hertzberg, M., Verkerk, P., 2022. Innovative forest products in the circular bioeconomy. Open Research Europe 2 ([available here](#)).



| | |
|----------------|---------|
| Accountability | ICE, WU |
| Input | WU, all |
| Timing | M1-M54 |

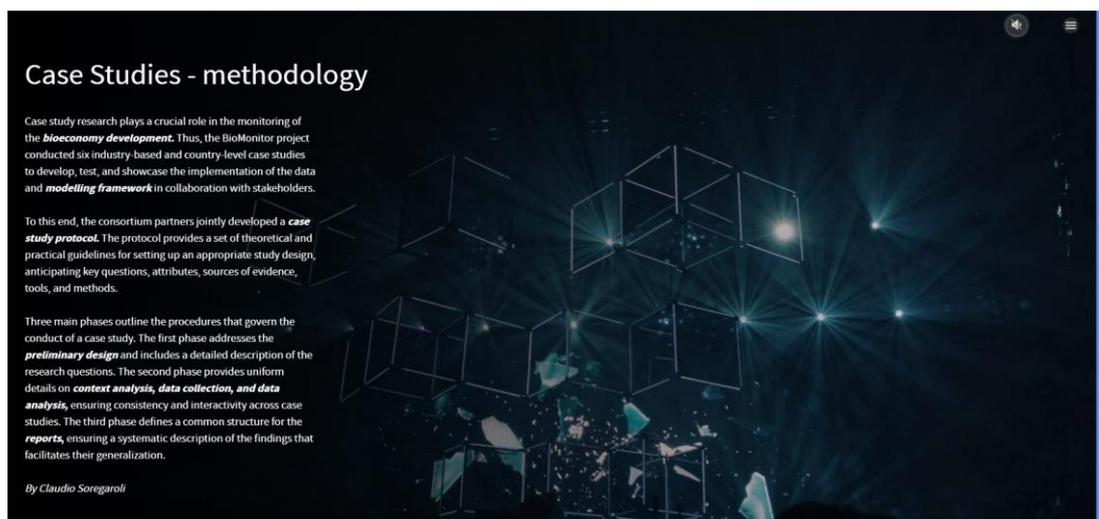
4.4 Storytelling page flow

The BioMonitor storytelling page flow tool gives snapshots of the bio-based markets covered by the project's case studies, with a view to their employment opportunities.

Topics covered related to new wood-based products, the socio-economic impacts of wastewater sludge valorization, the market dynamics for feed grade amino acids and insects biomass, bio-based packaging, and chemical industry.

The text of the storytelling resource was drafted by ICONS and then signed off by Università Cattolica del Sacro Cuore (UCSC). Content from the case studies and their methodology provided by UCSC in the [Deliverable 8.1 "Protocol development and verification of case studies"](#).

The BioMonitor storytelling resource was framed and published on the BioMonitor project portal at the link <http://biomonitor.eu/case-studies/> on 14 January 2022, together with a dedicated news which has supported its dissemination is available at the link <http://biomonitor.eu/news/the-new-biomonitor-page-flow-on-case-studies/>.



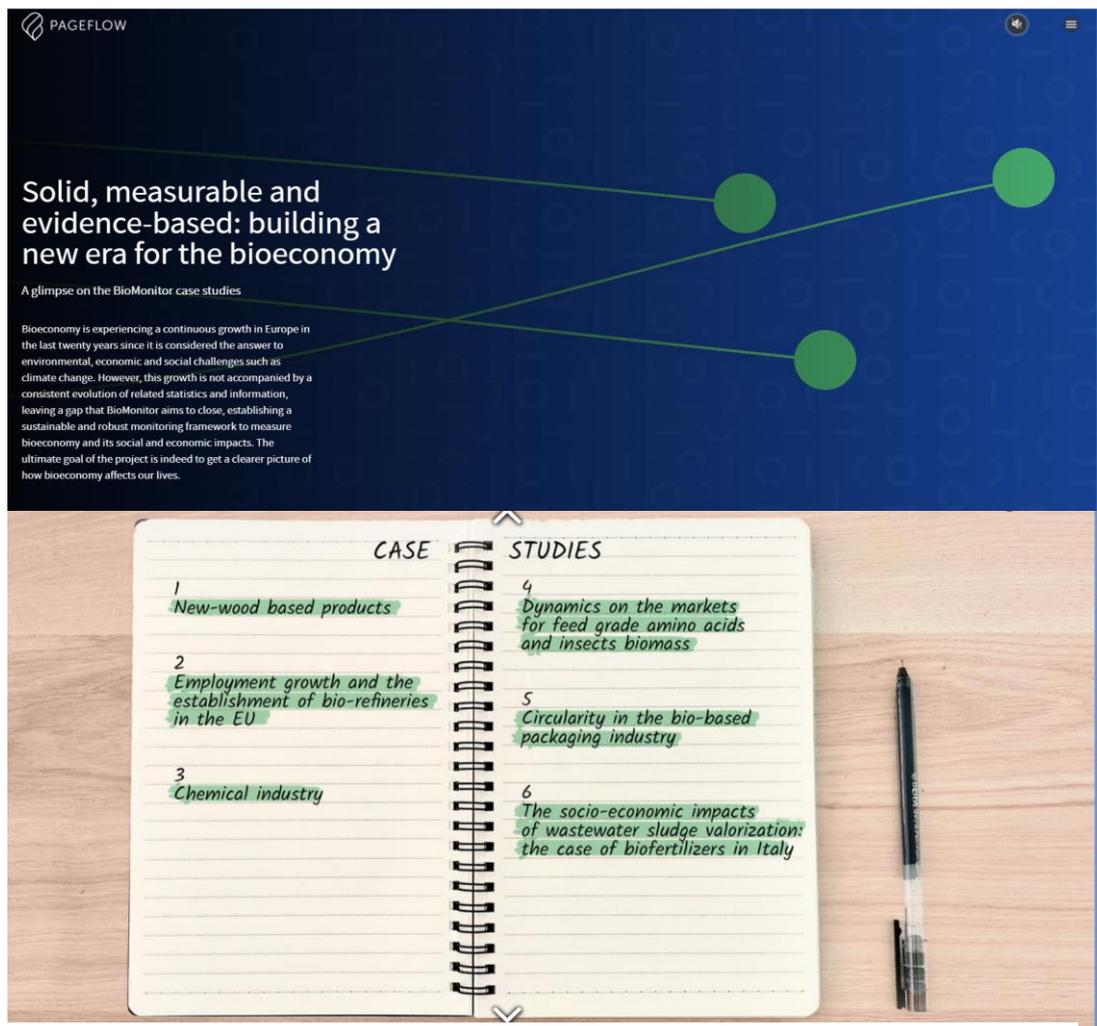


Figure 7 Screenshots of the BioMonitor storytelling page flow

To increase the visibility of BioMonitor, the resource has been publicised through the project's social media LinkedIn and Twitter, starting from January 2022. The launch of the page flow has been disseminated through the project's social media (Twitter and LinkedIn) to increase visibility outside the BioMonitor network and has also been distributed through external multipliers. The BioMonitor storytelling resource and the news have been mentioned in the project newsletter to reach the whole community of registered users.

4.5 Events

BioMonitor partners participated in a number of networking and clustering events not only to transfer knowledge about the BioMonitor project but also to raise its visibility within the stakeholder community. In fact, partners involved in WP7 "Training and overall stakeholder engagement" have provided training sessions, workshops, exchanges, and webinars for the project's professional community of stakeholders.





Figure 8 One of the last trainings organised by WP7 in November 2021

The objectives of networking and clustering events were to broaden the project's stakeholder community, which could eventually replicate or exploit BioMonitor's solutions, and to engage more effectively with the said professionals.

From July 2020 until November 2022, the BioMonitor project has organised the following events:

Table 5 Events organized by the BioMonitor project

| Date | Title of the event | Online/Physical |
|------------|------------------------------------------------------------------------------------------------------|------------------------------|
| 10/07/2020 | <u>Webinar: Covid-19 and the bioeconomy</u> | Online |
| 06/05/2021 | <u>Webinar: Bioeconomy as an approach towards sustainable development</u> | Online |
| 10/06/2021 | <u>Webinar: Monitoring the bioeconomy: an introduction to the Biomonitor project</u> | Online |
| 18/11/2021 | <u>Training on BioMonitor SMEs and Industry Exchange</u> | Online |
| 05/10/2022 | <u>Final BioMonitor meeting with stakeholders</u> | Physical - Brussels, Belgium |

Training sessions were provided to customs officers (T7.2) and to people working in bio-based industries (T7.3.2) while data exchange (T7.3.1) took place with statistical officers. Other trainings and webinars also took place targeting policy makers, like the "Online webinar on Demystifying Models" and Online webinar with Slovakian stakeholders: "Biomonitor project: objectives and development of analysis tools", organized



by WEcR to improve their understanding of the project's models and outcomes of the bioeconomy to society.

Provided that these tasks have been developed in WP7, NOVA and NEN are also tasked to coordinate and assist ICE in the process of dissemination, communication and stakeholder engagement. These have been elaborated in D7.1 "Stakeholder engagement plan".

Also, some partners participated in other events, that is, workshops, conferences, and talked about the BioMonitor project. They have been categorised according to the year: since July 2020 until November 2022 these events were held:

Table 6 Other events attended by partners

| Date | Title of the event | Online/Physical | Partner |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------|
| 9-10 September 2020 | <u>8th International Conference on Sustainable Development</u> | Rome, Italy | All BioMonitor partners |
| 2 October 2020 | <u>Webinar: boosting bio-based products to the market through standardization</u> | Online | TNO |
| 16-20 November 2020 | <u>Global Bioeconomy Summit</u> | Berlin, Germany | WU |
| 4 December 2020 | <u>Training: SUPREMA GLOBIOM-MAGNET</u> | Online | WEcR |
| 29 October 2020 | <u>Workshop: Emerging bio-based industries and products for integration in statistics. A base for developing the material flow monitor (MFM)</u> | Wageningen University and Research, The Netherlands | WU & WEcR |
| 18 February 2021 | <u>BioMonitor expert workshop with Dutch policymakers: Biomonitor project: background, objectives and development of toolbox</u> | Online | WEcR, EFI |
| 14 October 2021 | <u>Webinar on Demystifying Models</u> | Online | WEcR, NEN |
| 9-11-26 November 2021 | <u>BioMonitor project: session with industry on bio-based product coding</u> | Online | NEN, all |
| 3-5 March 2021 | <u>Bioeconomy Innovation Week for boosting the regional bioeconomy in CEEs</u> | Online | WU |
| 8 April 2021 | <u>Biomass-based Carbon Sinks. Carbon Neutrality 2050</u> | Online | EFI |
| 11 May 2021 | <u>Forest Management and its contribution to climate change. Project Life Forest CO2</u> | Online | EFI |
| 13-14 May 2021 | <u>EAAE 175 - The Wind of Change of Sustainability Standards</u> | Online | UCSC, WU |
| 18 May 2021 | <u>CAAEEES Annual Seminar</u> | Online | WU |
| 25 May 2021 | <u>BioMonitor expert workshop with Irish stakeholders: Emerging bio-based industries and</u> | Online | EFI |



| | | | |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------|
| | <u>products for integration in statistics. A base for developing the MFM and analysis tools</u> | | |
| 7-9 June 2021 | <u>IAMO 2021 Institute of Agricultural Development in Transition Economies</u> | Online | WU |
| 10 June 2021 | <u>BioMonitor Partner Event Green Week 2021</u> | Online | All BioMonitor partners |
| 15 June 2021 | <u>Webinar with Slovakian stakeholders: "Biomonitor project: objectives and development of analysis tools"</u> | Online | WEcR |
| 23-25 June 2021 | <u>European Association of Environmental and Resource Economists (EAERE)</u> | Hybrid (Berlin, Germany and online) | All BioMonitor partners |
| 29 June – 2 July 2021 | <u>ICABR 2021 - International Consortium on Applied Bioeconomy Research Conference</u> | Ravello, Italy | All BioMonitor partners |
| 20-23 July 2021 | <u>European Association of Agricultural Economists (EAAE) - Raising the Impact of Agricultural Economics: Multidisciplinarity, Stakeholder Engagement and Novel Approaches</u> | Prague, Czech Republic | Thuenen, WEcR |
| 20-25 August 2021 | <u>ICAE 2021: International Conference of Agricultural Economists</u> | New Delhi, India | Thuenen |
| 11 November 2021 | <u>Workshop: Future projections for a bioeconomy: Using models at European and national level</u> | Online | EFI, Thuenen |
| 22-26 November 2021 | <u>EU Conference on modelling for policy support</u> | Online | WEcR, Thuenen |
| 16 December 2021 | <u>Applied Young Economists Webinar</u> | Online | WU |
| 16 December 2021 | <u>Global Biotech Crop Adoption and Europe's Experience</u> | Online | WU |
| 2 February 2022 | <u>Conference "Facing data issues in measuring bioeconomy in EU"</u> | Online | Latvia University of Life Sciences and Technologies |
| 2 February 2022 | <u>Challenges of Economics, Education and Society Development in the Nordic – Baltic Countries and beyond</u> | Online | Latvia University of Life Sciences and Technologies |
| 9 March 2022 | <u>Webinar on bioplastics producers</u> | Online | EFI |
| 11-13 April 2022 | <u>Conference Circular@WUR: Living within planetary boundaries</u> | Wageningen, Netherlands | WU, JRC, WEcR, EFI, UCSC, CBS |
| 9-12 May 2022 | <u>European Biomass Conference & Exhibition - 2022</u> | Online | Thuenen |
| 22-24 June 2022 | <u>9th EAAE PhD WORKSHOP</u> | Parma, Italy | WU |
| 5-7 July 2022 | <u>BioMonitor session at ICABR 2022</u> | Bologna, Italy | All BioMonitor partners |
| 30 July-2 August | <u>BioMonitor workshop at the Agricultural and</u> | Anaheim, USA | WU, UCSC |



| | | | |
|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------|
| 2022 | <u>Applied Economics Association (AAEA)</u> | | |
| 22-26 August 2022 | <u>61st ERSAs Congress Disparities in a Digitalising (Post-Covid) world – Networks, Entrepreneurship and Regional Development</u> | Pecs, Hungary | WU |
| 14 September 2022 | <u>Agrarian Perspectives XXXI</u> | Prague, Czech Republic | WU |
| 6-7 October 2022 | <u>EU Bioeconomy Conference 2022</u> | Brussels, Belgium | All BioMonitor partners |

Cooperations with sister projects and other initiatives within the BioMonitor project's research domain have helped it generate a stronger impact among the community of professional stakeholders. The strongest partnership that has been established is with the DataM – the [Data Portal of agro-economic modelling by the EU Joint Research Centre \(JRC\)](#). It is hosting the datasets being developed by the BioMonitor project.

BioMonitor is also part of the [European Bioeconomy Network \(EuBioNet\)](#), an alliance of EU-funded bioeconomy projects which aims to increase knowledge sharing and support of coordination of joint activities and events regarding the bioeconomy. Through this partnership, some of the BioMonitor's events were featured in the EuBioNet news feed.

As can be seen from BioMonitor's participation in all annual conferences, the project has been in contact with [ICABR](#) over the years. Indeed, the BioMonitor project has been joining the ICABR conferences in Italy (Ravello and Bologna) during the past years.

| | |
|----------------|----------------|
| Accountability | ICE |
| Input | NOVA, NEN, all |
| Timing | M1-M54 |



5 Monitoring: outreach and engagement indicators

The impact of any communication and engagement action made by the BioMonitor project has been measured all throughout the project duration. This has been done by monitoring and studying the level of engagement and outreach of specified D&C products with respect to their target audiences.

5.1 Outreach and engagement indicators

The BioMonitor project has been measuring the effectiveness of its communication and engagement strategy by regularly monitoring its communication activities. This has allowed the project to fine-tune its strategy to further improve its performance if needed.

ICE has guaranteed a solid measurement of impacts based on a consolidated monitoring methodology, which was focused on the distribution of contents, across all channels. Different indicators have been identified, to be then aggregated or singled-out in a flexible way to analyse each component and its determinants. These represented the performance metrics of the BioMonitor project and have the following characteristics:

- **Measurable:** these can be represented numerically and analysed over time to identify trends, best practices, and pitfalls.
- **Easy to understand and to be used by project's partners:** to ensure exploitation of the resulting analysis.
- **Repeatable:** they can be used and collected in a consistent way along project's execution.
- **Available:** sources are always accessible and available.
- **Timely:** they are made available every time a new communication or engagement effort is undertaken.
- **Reliable:** they are drawn from trusted sources in the online analytics world.
- **Insightful:** they provide knowledge around the effectiveness of the communication and engagement effort

5.1.1 Outreach indicators

Outreach indicators have been used to measure the visibility of the BioMonitor project in all forms. Apart from the channels it is a part of, that is, social media, website, a look at the outreach level of its publications and other activities such as webinars and workshops can also be given.

Publications' outreach indicators assessed the audience size of the BioMonitor project's content published online. These include the press and news releases, as well as the journalistic articles that have been posted in the project website and in other multipliers.

Table 7 provides a list of BioMonitor Publications' outreach indicators and the tools used to collect the data.



Table 7 BioMonitor Publications' Outreach Indicators

| Channels | Outreach indicators of BioMonitor publications | Tools |
|---------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Website | <i>Total visits on BioMonitor website</i> | <i>Google Analytics</i> |
| | <i>Unique visitors on BioMonitor website</i> | |
| Social media | <i>Twitter impressions on @biomonitor_eu</i> | <i>Twitter Analytics</i> |
| | <i>Visualisations on LinkedIn</i> | <i>LinkedIn Statistics</i> |
| Multipliers | <i>Impressions on multipliers (AlphaGalileo, Phys.org, EUagenda)</i> | <i>Provided directly by the multipliers or, in a minor number of cases, estimates based on a solid number of parameters leveraging time series and historical data</i> |

In Table 7, the following definitions apply:

- **Visits, impressions, visualisations:** number of times content has been seen online (different platforms use different terms to describe the same action).
- **Visitors, viewers:** number of people who got in contact with the content online.

Considering all the information stated above, the total outreach of publications is represented by the overall number of visits, impressions and visualisations recorded for each publication via the respective channels: project's website, social media channels, and information multipliers. This has been used to measure the Publications Engagement Index (see Chapter 5.2.1).

Data recorded from the project website's and social media accounts' analytics tools can go beyond the publications. This has been used to evaluate the channels' effectiveness (see Chapters 5.2.2 and 5.2.3).

Last but not the least, outreach on events like the webinars can be measured based on the number of visualisations of the press release and announcement of the event in the following channels: project website, multipliers, and in the eventual special newsletter or mail-out dedicated to it. Provided that for the webinars has been used one of the dedicated tools, that is, GoTo Webinar, the outreach level may be accounted for using the number of attempted registrations made in the webinar's registration page.



5.1.2 Engagement indicators

Engagement indicators allow to measure the active engagement between the BioMonitor project's overall communication products and activities.

Publications engagement metrics inform about the level of engagement stakeholders have with the BioMonitor communication materials made available on the project website, social media, and media multipliers.

Table 8 shows the BioMonitor publications engagement indicators and the tools used to collect the data.

Table 8 BioMonitor Publications Engagement Indicators

| Channels | Engagement indicators of BioMonitor publications | Tools |
|---------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Website | <i>Facebook Likes and Social Shares, Website engagement</i> | <i>BioMonitor.eu</i> |
| Social media | <i>Twitter engagements (including Clicks, Retweets, Replies, Follows and Likes)</i> | <i>Twitter Analytics</i> |
| | <i>LinkedIn Likes, Clicks, Comments, and Shares</i> | <i>LinkedIn Statistics</i> |
| | <i>Total Mentions</i> | <i>NUVI®</i> |
| Multipliers | <i>Multipliers' engagement metrics (ScienceX social shares and comments, AlphaGalileo Asset Hits, etc.)</i> | <i>Provided directly by the multipliers</i> |
| Other | <i>Other/local uptakes</i> | <i>Communicated by project partners to ICE</i> |

Total mentions reported in Nuvi®, a real-time social monitoring platform used by ICE, represent the number of times any of the keywords related to the news item or article (corresponding to title, subtitle, first sentence, URL or tweet) has been fished out on the web pages and the social media it monitors (Twitter, WordPress, Google+, Blogs, News, RSS, Tumblr, Automattic, Reddit, VK, Facebook, Youtube).

Considering all the said indicators, the total engagement of publications is represented by the overall number of interactions in relation to the content of each publication for the following channels: youris.com (number of Facebook likes and social shares, website engagement), social media (number of likes, shares, tweet, re-tweets, replies, follows, and comments on BioMonitor social media), NUVI (total mentions), multipliers (number of ScienceX social shares and comments and number of Alphagalileo asset hits), and other/local uptakes.



Overall engagement levels of the different channels, that is, websites, social media, as well as activities organised by the BioMonitor project, that is, webinars can be measured by the number of interactions made by the users with the respective platforms. These can be done using the different analytics tool of the respective channels.

5.2 Measuring the Effectiveness of Engagement

The level of outreach and engagement was insufficient for the project to assess the evolution of acceptance towards the innovation of a project's content. These needed to be put in a broader context to make all the data comparable based on a unique measurement metric. This could be tackled by including engagement indicators into the picture that could give a more powerful gauge in describing the interest and overall impacts on a community.

Nonetheless, they should be read in conjunction with outreach to draw relevant conclusions on engagement.

ICE studied a series of indexes able to quantify the interest of a community in specific content. With specific reference to contents distribution, the following indexes have been accounted for:

- PEI: Publication Engagement Index
- WEI: Website Engagement Index
- SEI: Social Engagement Index
- EEI: Webinar Engagement Index

5.2.1 The Publication Engagement Index (PEI)

The Publication Engagement Index (PEI) allows to gauge, in a quantitative way, the actual engagement of people with the publications provided by the BioMonitor project via the following channels: websites, social media, and media multipliers.

The index is expressed as a percentage, similarly to how penetration rates are usually reported in market analysis reports, and can be calculated at different levels:

- By publication
- By publication type (article, news release, press release, video, etc.)

The Communication Effectiveness Quadrant based on bubble charts allow to investigate the overall performance of the publications. Figure 9 provides a graphical representation of how the BioMonitor original publications performed until November 14, 2022. For easy reference, the bubbles' labels are indicated in Table 9.

The x- and y-axes of the chart represent the outreach and engagement level of a publication. The bubble sizes are the PEI. The bubble size is larger if the level of engagement of a specific publication outweighs its level of outreach. The four quadrants indicate the following efficiency level:

- a) **Engaging:** Located on the top-left part of the quadrant, publications in this category have an outreach below the average level and engagement above the average level. This goes to show that



the publications reached a limited audience compared to the average yet engaged with them very effectively.

- b) **Effective:** Located on the top-right part of the quadrant, publications in this category have outreach and engagement levels above the average. This indicates that publications can reach a larger audience (compared to the baseline) and engage with them.
- c) **Neutral:** Located on the bottom-left part of the quadrant, publications in this category are either at par or below the average level of outreach and engagement. This signifies that publications are insufficiently effective in reaching out to the public and engaging with them (in comparison to the average).
- d) **Reaching:** Located on the bottom-right part of the quadrant, publications in this category have an outreach level above the average yet have an engagement level that failed to surpass the average. This shows that publications were able to reach a large audience yet are not particularly engaging.

A baseline was set to form these four quadrants: this is the reason why there will always be some publications listed below the average and in the “neutral” quadrant. This was indicated based on average outreach (4,598) and engagement (117). These are, of course, not obviously shown in the future as it is illustrated using the logarithmic scale to decompress the number of bubbles observed. BioMonitor editorial products that were published in recent months still have insufficient data. It is thus too early to have monitoring data on them.

This figure is a tool that helps to identify the most effective publications in terms of content, style, the channels used, and the format types, that is, articles, press and news releases. In addition, this data gave an idea on the type of editorial content that stakeholders or users, in general, have been attracted to; this have helped ICE identify the key actions to work on to improve the effectiveness of the BioMonitor project’s publications, thus, letting them shift towards the “effective” quadrant for the publications that came afterwards.

Figure 9 The Communication Effectiveness Quadrant indicating BioMonitor publications that were Engaging (Top-Left), Effective (Top-Right), Neutral (Bottom-Left) and Reaching (Bottom-Right)

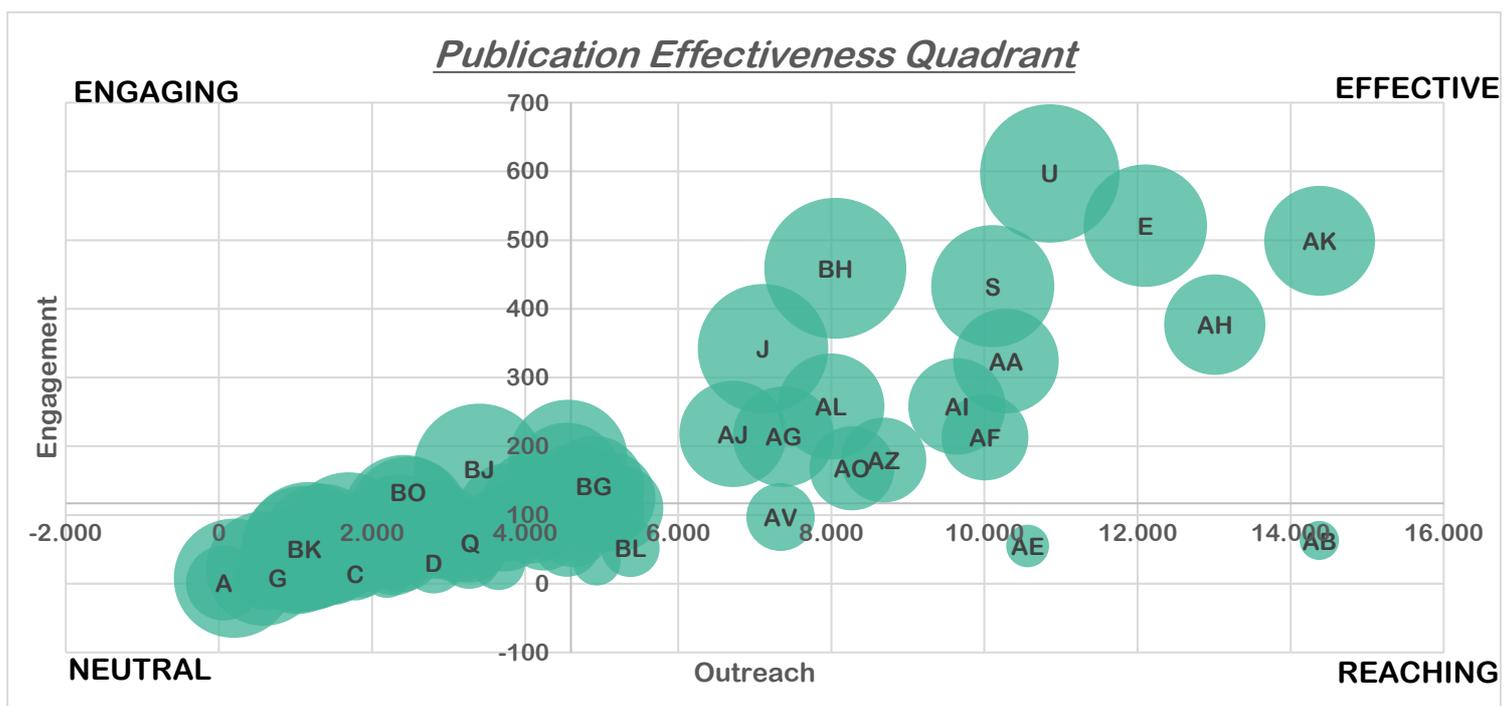


Table 9 Some of the BioMonitor Publications indicated in the Communication Effectiveness Quadrant (Figure 9)

| Publication | Bubble | Effectiveness |
|--------------------------------------------------------------------------------------------------------------|--------|---------------|
| Imagining A Post-COVID-19 Future with the Bioeconomy | AK | Effective |
| Examining the bioeconomy's value in Europe | AB | Reaching |
| On November 18, save the date for the BioMonitor SMEs and Industry exchange | BJ | Engaging |
| Planning for the launch of the EU Bioeconomy Monitoring System | AQ | Engaging |
| How can Forests Help us meet the carbon neutrality goal in Europe by 2050? | BA | Neutral |
| The new BioMonitor Page Flow on case studies | BP | Neutral |
| Monitoring the bioeconomy: an introduction to the Biomonitor project | BH | Effective |
| Probing the European bioeconomy's development through its drivers and indicators | AV | Reaching |
| How will the Bioeconomy of the Future look like? | AZ | Effective |
| Non wood forest products (NWFPs): hobby or sine qua non? | BG | Effective |
| SMEs and Industry exchange: an opportunity to re-structuring data and modelling frameworks in the bioeconomy | BL | Neutral |
| Why the EU's post-COVID recovery should go bio | AL | Effective |

Most of these editorial materials were written in long-prose with catchy titles; these also gave a comprehensive synopsis of the activities in which BioMonitor partners have done by far in direct relation to the project, as well as the issues the project wishes to address. Activities reported consist of events, publications, and specific actions being done to build the BioMonitor data and modelling framework.

These were again materials written in the same style as those found in the “effective” quadrant, and covered BioMonitor activities worth highlighting. The outreach level is much lower since the target audience for these news items are the stakeholders BioMonitor wishes to be in touch with. These results stress the importance of high-quality editorial content to boost the communication effectiveness of BioMonitor's publications.

5.2.2 The Website Engagement Index (WEI)

The Website Engagement Index (WEI) quantifies the engagement of BioMonitor website visitors with the contents published in its pages. Outreach is measured based on the total number of page views, while its engagement is gauged as the amount of time spent on these pages.



The index is expressed in percentage with a natural range between 0 to 1. Its value tends to be higher in comparison to PEI. Contrast to the engagement according to the publications, the engagement recorded on the website is based on the visitors' attention span, rather than the specific actions performed, that is, downloads, shares.

The percentages of the users that interact with the BioMonitor website are shown in

Figure 10. These were taken from Google Analytics alongside the data mentioned in Chapter 3.2. The WEI, in this case, is 37.4%. This means that more than 35% of the users lasted more than one minute in the BioMonitor website (as the average pageview recorded was 1 minute and 13 seconds).

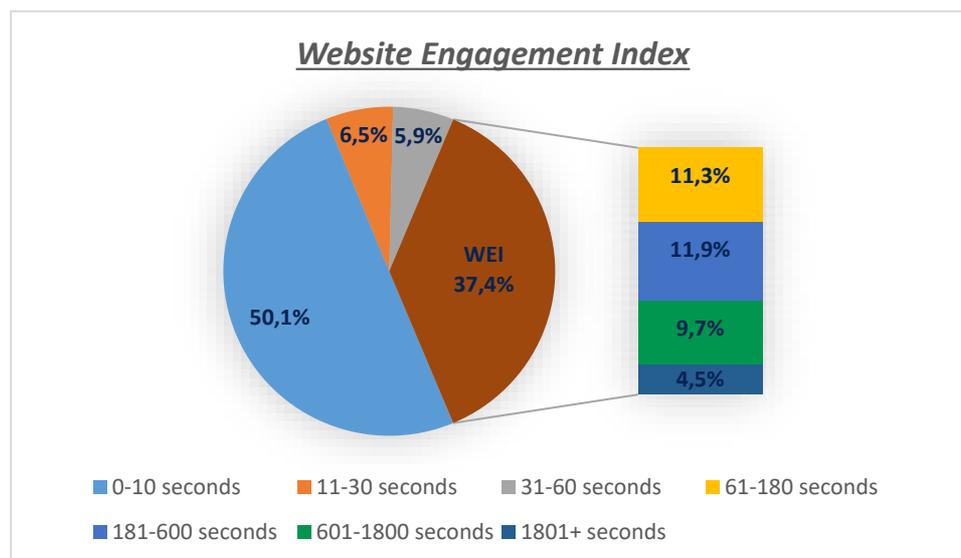


Figure 10 Percentage of users spending specific time durations in the BioMonitor website

The online portal was designed with an information architecture that allows users, or potential stakeholders, to seek immediate contact details and the essential information they wish to gather from the BioMonitor project. Moreover, pages with rich content are the homepage, the project page, and the news page, while the other pages re-direct users to downloadable documents or external links. These explain the data shown above, together with those mentioned in Chapter 3.2.

5.2.3 The Social Engagement Index (SEI)

The Social Engagement Index (SEI) measures the level of interest generated by all the social media posts made by the BioMonitor project; it also represents the amount of engagement made between the social



media users with the content present in these posts. This is calculated by finding the ratio between the outreach and engagement levels for each social media channel.

The total outreach, total engagement and SEIs for each social media platform, and their overall SEI are shown in Table 10. The SEI percentages vary depending on how these channels work. Twitter, for example, has a wider online community in comparison to LinkedIn. This explains the substantial level of outreach with respect to LinkedIn. It, however, falls behind with the level of engagement as a public Twitter account opens its doors to anyone, while a LinkedIn page provides more familiarity with its followers as they are committed to following the content shared by the page.

The overall SEI for the BioMonitor social media channels during the whole project's duration is 1.39%. This is based on the ratio between the sum of the total engagement and outreach for all the channels.

Table 10 SEI of the respective BioMonitor social media channels: Twitter and LinkedIn

| | Twitter | LinkedIn | Total |
|------------|-------------|-------------|--------------|
| SEI | 1.1% | 7.7% | 1.39% |

This is a satisfactory SEI given that Rival IQ estimates the average Twitter engagement rate across all industries to be 0.05%, while social media experts agree in considering:

- An engagement rate between 0.09% and 0.33% as high
- An engagement rate between 0.33% and 1% as very high

Table 11 and Table 12 show the key engagement data recorded from the respective BioMonitor social media platforms. These activities have been plotted into pie charts (in the form of a percentage), with a better sense of the dominant engagement actions that took place for both Twitter and LinkedIn accounts. The majority of the activities on Twitter come from "Likes" followed by "Re-Tweets". As for LinkedIn, its dominant actions stem from "Clicks" followed by "Suggestions" and "Shares".

Table 11 Engagement on BioMonitor Twitter account: indicators composing the overall engagement

| TWITTER | Followers | Tweets | Impressions | Mentions | Link Clicks | Retweets | Likes | Replies | SEI |
|---------------|-----------|--------|-------------|----------|-------------|----------|-------|---------|-------------|
| Totals | 972 | 515 | 712.854 | 192 | 2.005 | 1.239 | 3.423 | 37 | 1,1% |

Table 12 Engagement on BioMonitor LinkedIn page: indicators composing the overall engagement

| LINKEDIN | Followers | Posts | Impressions | Clicks | Suggestions | Comments | Shares | SEI |
|---------------|-----------|-------|-------------|--------|-------------|----------|--------|-------------|
| Totals | 355 | 169 | 32.129 | 1.177 | 786 | 5 | 149 | 7.7% |

As mentioned earlier in Chapter 3.4.1, the BioMonitor project launched an official hashtag, #biomonitor_EU. This has been used to assess the engagement level of the social media conversations taking place in the different social media platforms. Its number of mentions are being recorded through NUVI®. The hashtag has been mentioned 631 times during the whole project's duration.



6 Conclusions

Several communication and dissemination activities have been carried out for the whole project duration, ever since the establishment of the dissemination and communication plan. Particularly, the ones between July 2020 and November 2022 have been reported in this deliverable. Their communication effectiveness has been measured based on the outreach and engagement indicators, as well as the indices developed by ICE on the web, social media, and webinar.

By combining all the data provided in this deliverable, the BioMonitor project's communication effectiveness performance has a total outreach of 909.737, a total engagement of 33.276, and a Communication Effectiveness Index (CEI) of 3,7%.

Now that BioMonitor is at the end of its course, its communication efforts disclose a positive outlook in terms of awareness and engagement of its users based on its final results. By taking a look at its editorial production, for example, it is noticeable that news and press releases that have covered the different aspects of the BioMonitor project, and were written in an engaging manner, were deemed to be the most "effective" based on the communication effectiveness tool developed by ICE. These are, of course, influenced by the content, style, and channels used.

All in all, these go to show that while BioMonitor is a niche project within the bioeconomy sector, its activities and results are highly relevant to many, and is, therefore, to provide a higher impact in the long run, after its end.

