MAINSTREAM BIO

MAINSTREAMING SMALL-SCALE BIO-BASED SOLUTIONS ACROSS RURAL EUROPE

D5.8

MainstreamBIO web portal- final version

WHITE

31/07/2025

PROJECT INFORMATION

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PU	Public, fully open	x
SEN	Sensitive, limited under the conditions of the Grant Agreement	
Classified R-UE/EU-R	EU RESTRICTED under the Commission Decision No2015/444	
Classified C-UE/EU-C	EU CONFIDENTIAL under the Commission Decision No2015/444	
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DOCUMENT HISTORY

Version	Date	Changes	Responsible partner
v0.1	10/6/2025	Initial version	WHITE
v0.2	18/6/2025	1st Peer Review	DRAXIS, MTU
v0.3	7/7/2025	2nd version shared for consortium review	WHITE
v0.4	18/7/2025	2nd Peer Review	ALL
v1.0	31/7/2025	Final Version for submission	WHITE

DISCLAIMER

The methodology of MainstreamBIO (GA No 101059420) for the project's report "MainstreamBIO web portal - final version" builds upon an existing know-how, tools and templates that were internally developed by White Research while also taking into account EC guidelines and good practices available in literature.

Part of the adopted standard methodology has been developed and employed in previous research projects where White Research served as beneficiary, such as in the CORALIS (GA No. 958337), SUSTCERT4BIOBASED (GA No. 101059785) and RRI2SCALE (GA No.872526) projects. For the MainstreamBIO-employed methodology, ad hoc and tailored modifications were integrated in order to comply with the GA conditions, EU recommendations and project particularities. Along these lines, this deliverable presents the adjusted methodology as it was further developed and applied in the context of MainstreamBIO.

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ABBREVIATIONS

AB	Advisory Board
BG	Bulgaria
CSO	Civil Society Organisation
DCP	Dissemination & Communication Plan
DK	Denmark
ES	Spain
EuRCBC	European Rural Circular Bioeconomy Conference
IE	Ireland
MIP	Multi-actor Innovation Platforms
NGO	Non-Governmental Organisation
NL	Netherlands
PL	Poland
SE	Sweden
SMA	Social Media Accounts
SME	Small-medium Enterprise
UI	User Interface
UX	User Experience
WP	Work Package

Executive summary

This document provides a comprehensive overview of the final version of the MainstreamBIO web portal, highlighting its development, key features, and overall performance. It details the technologies and libraries used in its creation, ensuring a seamless and user-friendly experience. Additionally, the deliverable presents in-depth website metrics and analytics, offering insights into user engagement, traffic trends, and content interaction. This deliverable also assesses the effectiveness of the platform in disseminating project outcomes and facilitating stakeholder engagement, emphasizing its role as a central hub for MainstreamBIO-related news and activities.

Beyond the web portal, D5.8 describes the final version of MainstreamBIO's digital toolkit. This section explores the toolkit's functionalities, its latest updates, and the impact it has in facilitating knowledge exchange and mainstreaming bio-based solutions. Performance metrics are also included, assessing usage patterns and the effectiveness of the toolkit in addressing user needs. By capturing these insights, the report ensures a thorough evaluation of the MainstreamBIO digital resources and their contribution to the project's overall objectives through the entire MainstreamBIO lifespan.

1. Introduction

The current deliverable provides an overview of the final version of the fully operational MainstreamBIO project web-portal, presenting the general provisions that guided its development and the operational procedures that have been applied. It should be noted that MainstreamBIO's Dissemination & Communication Manager (WHITE), as the responsible partner for the website development and maintenance, had closely monitored its usage in order to update (if necessary) its structure according to the implementation of project activities and the users' feedback, thus enhancing its attractiveness and keep the content updated.

The web portal was launched on December 1st, 2022 and will be available online for two more years after the official completion of MainstreamBIO project, namely August 31st, 2027. MainstreamBIO's website (https://mainstreambio-project.eu/) was one of the main project assets aiming to act as:

- ✓ **A Dissemination and communication tool**, informing stakeholders across EU (e.g., policy-makers, research and innovation agencies, industry, civil society, academia, etc.) on:
  - The project objectives, activities, workplan, contact points (i.e. partners) and findings
  - The basic concepts that set the framework of the project implementation
  - Relevant reports, studies and events.

- ✓ An entry point to the project's **Social Media Accounts** (Facebook, LinkedIn, YouTube and X [former Twitter]).

- ✓ An access point to the **MainstreamBIO Digital Toolkit**.

MainstreamBIO's digital tookit, a project application envisioned as a comprehensive online platform, aims to provide individuals interested in the bioeconomy with a dynamic digital environment where they can educate themselves and gain access to the tools, knowledge, and resources necessary to make a tangible impact in the real world.

The digital toolkit, launched 29/2/2024, offers a user-friendly online platform that aims to facilitate the adoption of small-scale bio-based solutions across rural Europe. The toolkit consists of seven (7) main components:

- ✓ **Catalogue of small-scale bio-based technologies, business models and social innovations**, for cross-case comparison and assessment of opportunities for business endeavours.

- ✓ **Collection of best practices for improved nutrient recycling**, to successfully manage nutrients and organic matter recycling back to soils.

- ✓ **Decision Support System**, which helps users match the available biomass and waste streams with small-scale bio-based technologies, business models and social innovations.

- ✓ **Bioeconomy Repository**, whose purpose is to aggregate educational material from such bio-based projects and raise awareness on bioeconomy educational resources.

- ✓ **Tool Library**, which provides users with access to many bioeconomy tools (bioresource mapping, catalogues, side stream value tool, etc.) from other projects relative to bioeconomy.

- ✓ **BioForum**, to communicate, exchange ideas, solutions and good practices and connect with other members of the Multi-actor Innovation Platforms.

✓ **Instructions**, delivering a comprehensive introduction and clear instructions on optimal toolkit utilization through both video and textual formats.

The current document is divided into two sections, for MainstreamBIO's website and digital toolkit respectively including: operational procedures as well as the technologies and libraries used for the portal development; detailed information about the main pages of each digital tool, as well as results and analytics on the metrics of both the website and the digital toolkit.

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2. Website Characteristics

2.1 Operational procedures

The MainstreamBIO's web-portal theme and design have been provided by WHITE, while online content is being developed and administrated by WHITE with the support of all partners. MainstreamBIO's web-portal has been the main mechanism for the online MainstreamBIO presence, along with other digital tools such as the project's social media accounts and newsletter

Partners' role

- **White Research (WR)**, as the project's Dissemination and Communication Manager has been overall responsible for:

    - creating and updating regularly the portal content and its presentation;

    - 'marketing' activities to enhance the visibility of the portal by ensuring that it is highly ranked in on-line search engines;

    - quality control of the information that is published on the portal;

    - monitoring the partners' performance to ensure that the targets are met and suggest corrective actions if and when necessary.

- **Infoscope**, under the supervision and guidance of WHITE, was responsible for the technical development, support and maintenance of the web-portal. In addition carries out any technical changes that might be necessary in the course of the project to enhance its practicability and attractiveness.

- **The consortium partners** contributed to the web-portal's content and have periodically provided updates and communication material (e.g. articles, photos, news), regarding their project activities (e.g. workshops, conferences, events, etc.) as well as regarding any other type of activity that is of interest to MainstreamBIO, in order to be published on the web portal.

Content Management and rights

- The content of the MainstreamBIO web-portal is in English. Any material (e.g., report, legislation, etc.) that was in a language other than English has been properly marked.

- The portal consists of a public area where any visitor can get information regarding the project concept, results and activities.

- WHITE is able to make ad-hoc changes concerning both the structure and content of the web-portal.

- All content is visible to all visitors.

- Emphasis was given to "cross-referencing" so as information is accessible from multiple pages/sections.

- Site visits, statistics and other information on visitors' views (e.g. number of pages per visit, time on site, most viewed pages, etc.) were measured using Google Analytics, while a counter has been used to measure the number of downloads per document.

2.2 Technologies used for the creation of the website

The web portal was developed by using state-of-the-art technologies and following the global trends to satisfy a large scale of users:

- WordPress Content Management System (CMS) allows an unlimited number of pages/articles to be created/posted, while an integrated text editor enables formatting similar to Microsoft Word, adding images, videos, etc. as well as create photo galleries or document libraries.

- Apache Server – is an open-source cross-platform web server software.

- MySQL Database – is an open-source relational database management system.

- Advanced Search Engine Optimisation (SEO) techniques are engaged to enhance the site's visibility in search engines. The website is SEO optimised with well-structured and clean code.

- The website is fully responsive and mobile-ready providing an optimal viewing and interaction experience across multiple devices.

- Web Programming language (PHP, CSS, JavaScript) is used to create web pages, web applications, and other online content that can be displayed in a web browser.

All pages are dynamic pages and are controlled via the WordPress CMS. The partners decided to use WordPress as tool for managing the content because its one of the most common and widely used CMS. Indeed, as displayed by CMS Market Share analysis for 2024 (Figure 1), WordPress is the undisputed leader when it comes to Content Management Systems with an impressive 43.2 % market share.
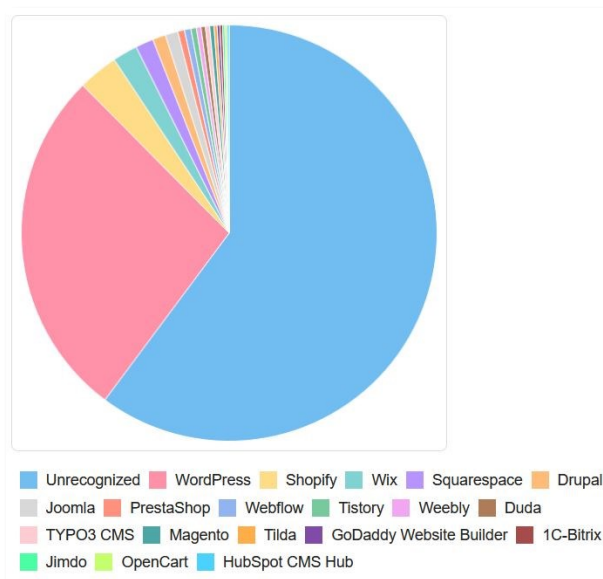

Figure 1. CMS Market Share (Joost de Valk, 2024)

More detailed information about the CMS usages is available at (https://joost.blog/cms-market-share/).

2.3 **Libraries**

As part of WordPress, the following libraries were used:

Javascript Libraries

- JQuery – is a collection of GUI widgets, animated visual effects, and themes implemented with jQuery, Cascading Style Sheets, and HTML.

- Backbone – is a powerful tool used to structure and develop web and mobile applications.

- Colorpicker – is a pure JavaScript library for creating a color picker component with support for touch events and RGB/HEX/HSV color formats.

- SWFObject – an open-source tool for embedding swf content in websites.

- TinyMCE – is an advanced WYSIWYG HTML editor designed to simplify website content creation.

PHP Libraries

- PHPMailer – a code library to send (transport) emails safely and easily via PHP code from a web server.

- PHPass – a simple, easy to use password hashing library for PHP 5.3+.

- Requests – a library for making HTTP requests, simplifying the process of sending HTTP/1.1 requests and handling responses.

- Text Diff – a library for computing the difference between two texts, often used in version control systems to highlight changes between versions.

- Atom Lib – a PHP library for working with Atom feeds, enabling the creation and manipulation of Atom syndication format data.

- SimplePie – a lightweight and easy-to-use PHP library for parsing and working with RSS and Atom feeds, simplifying the integration of feed data into web applications.

- ID3 – a PHP library for reading and writing ID3 tags in audio files, facilitating the manipulation of metadata information in MP3 files.

- Snoopy – a simple and versatile PHP library for web scraping and HTTP client functionality, allowing developers to fetch and manipulate web content easily.

- POP3 Class – a PHP library providing a class for interacting with POP3 mail servers, enabling the retrieval of email messages from a server using the POP3 protocol.

- PHPass – a PHP library for secure password hashing, designed to make it difficult for attackers to perform rainbow table and brute-force attacks on stored password hashes.

2.4 **Privacy policy**

The MainstreamBIO's web-portal is committed to being transparent and ensuring that the privacy of its visitors is always protected. A Privacy Policy according to the General Data Protection Regulation (GDPR) applies to the MainstreamBIO's website since 22/12/2022 and governs personal information and collection usage by the website only (https://mainstreambio-project.eu/privacy-policy/).

The Privacy Policy provides the following types of information:

• Type of personal information that we collect.

• Use of personal information that we collect.

• Sharing practices of information collected.

• Storage and deletion of personal information collected:

• Visitor's rights

• Security

• Cookies

• Google Analytics

• Contact point for MainstreamBIO.

3. Website Pages

Pages are shown as drop-down menus. No major structural changes have occurred compared to the first version of the website described in D5.7, except for the addition of the "Success Stories" and "Publications" sub-pages under "Resources."

3.1 Sitemap

Figure 2 provides an outline of the updated website structure, i.e. its Sitemap:
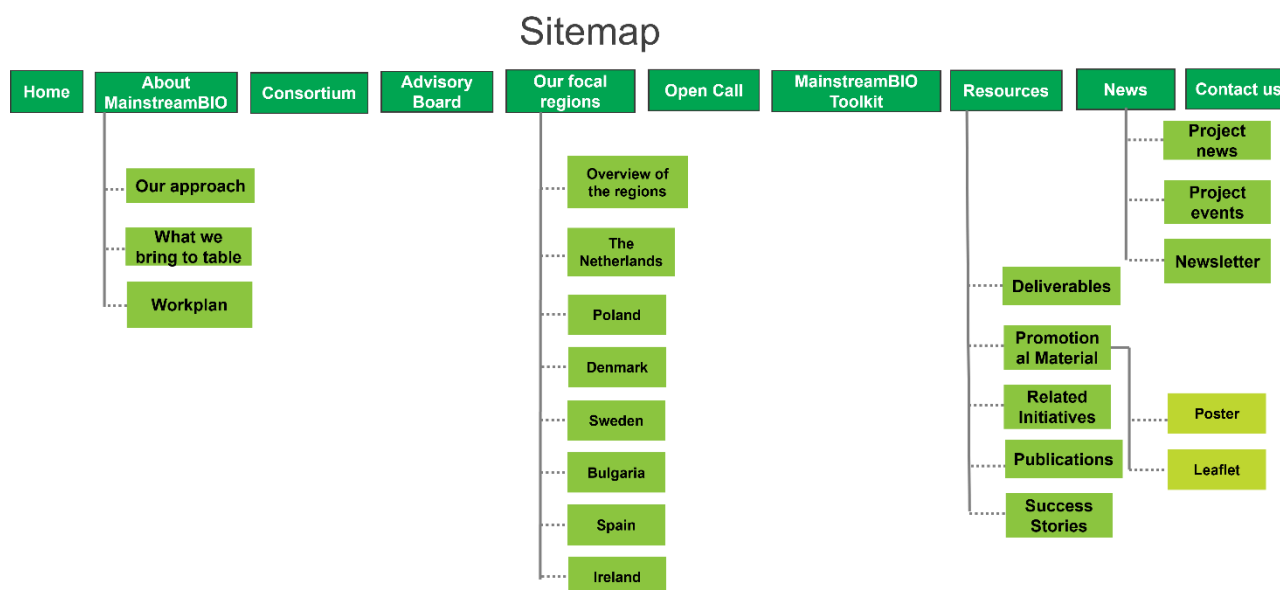
Figure 2. MainstreamBIO website - sitemap

3.2 Home page

The website Home page is static and displays the following information:

A full image related to circularity and biobased products (crops) with the MainstreamBIO logo and a title.

- A sentence displaying MainstreamBIO's main **purpose**.

- A display of MainstreamBIO's **objectives**.

- An animated **news feed** of the latest articles published on the website.

- MainstreamBIO's **promotional video**

- A highlight of MainstreamBIO's **focal regions**.

- A newsletter window allowing visitors to register to our online **newsletter** using MailChimp server (http://mailchimp.com), which is an e-mail campaigns and newsletters distribution tool.

- An overview of consortium partner's **logos**.

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- The MainstreamBIO logo, the EU logo and the relevant disclaimer notice, which states that the contents of this website reflect the view of the MainstreamBIO project.

- A link to the web-portal's **Privacy policy**.

- The basic **Contact** info of the MainstreamBIO project (e-mail address).

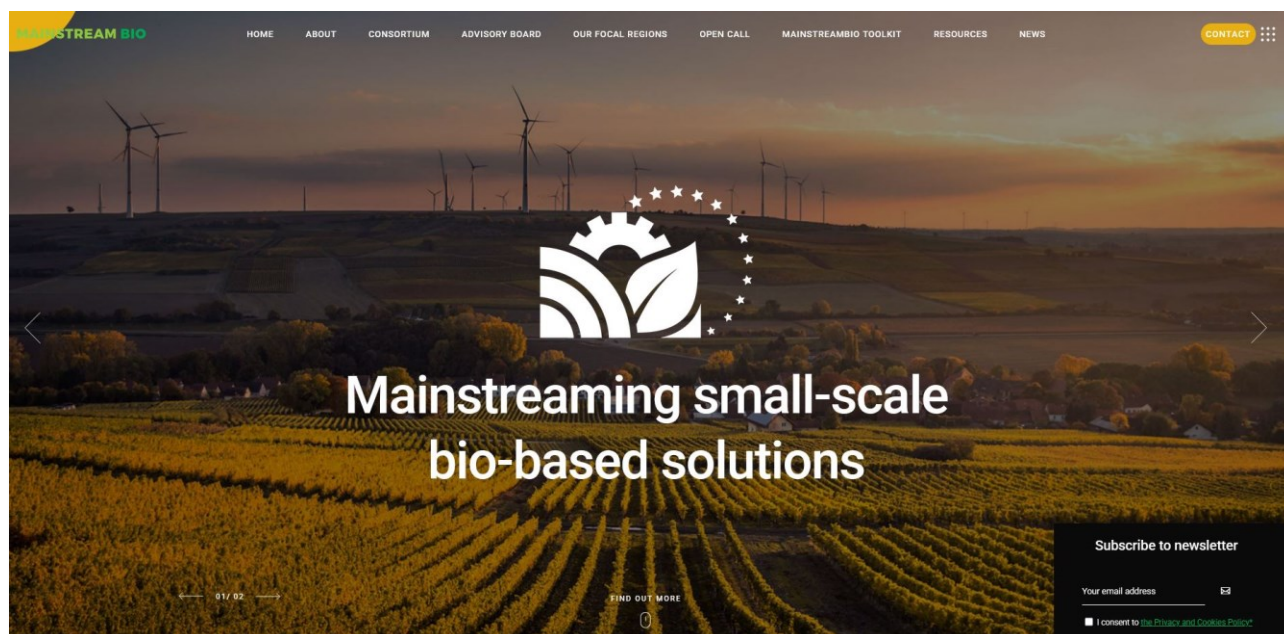- A display of MainstreamBIO **social media channels** (LinkedIn, X, Facebook, YouTube) can be found in the footer
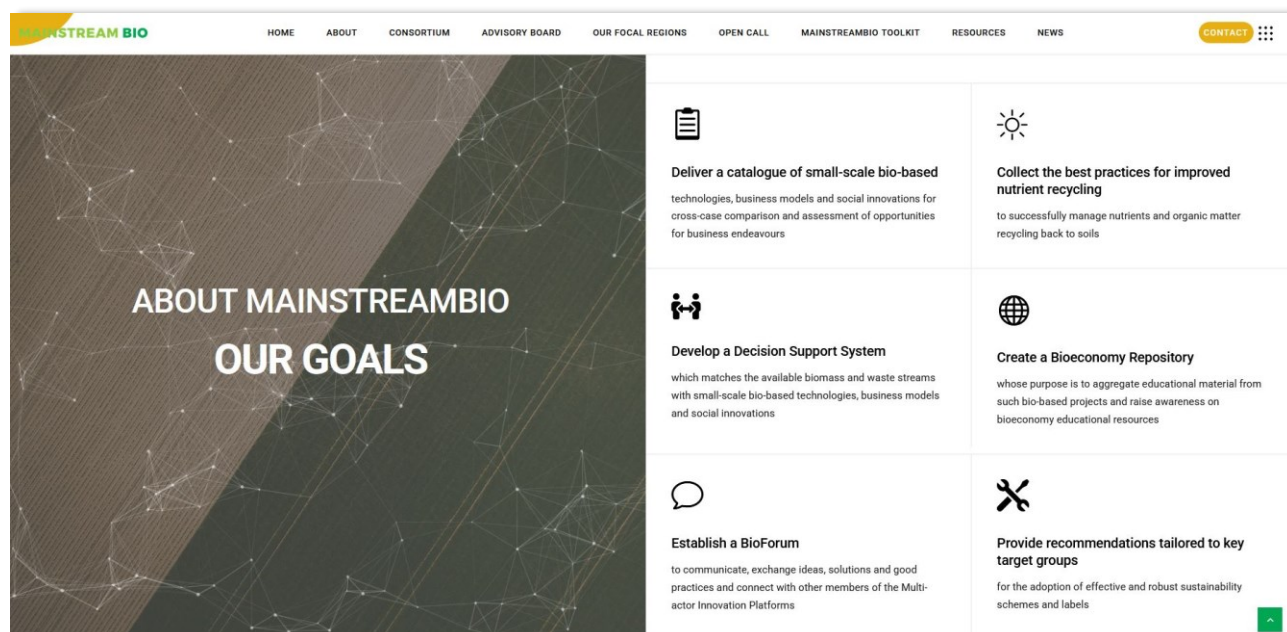

Figure 3. MainstreamBIO's website Home page

Figure 4. MainstreamBIO's goals
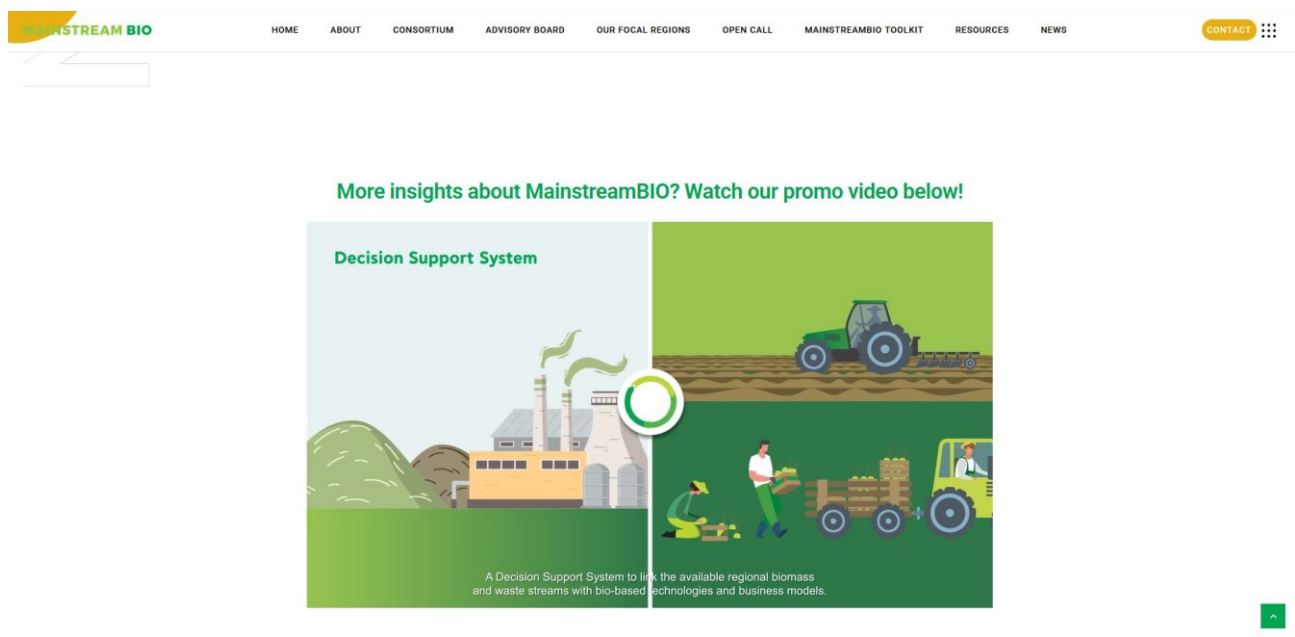
Figure 5. MainstreamBIO promotional video section
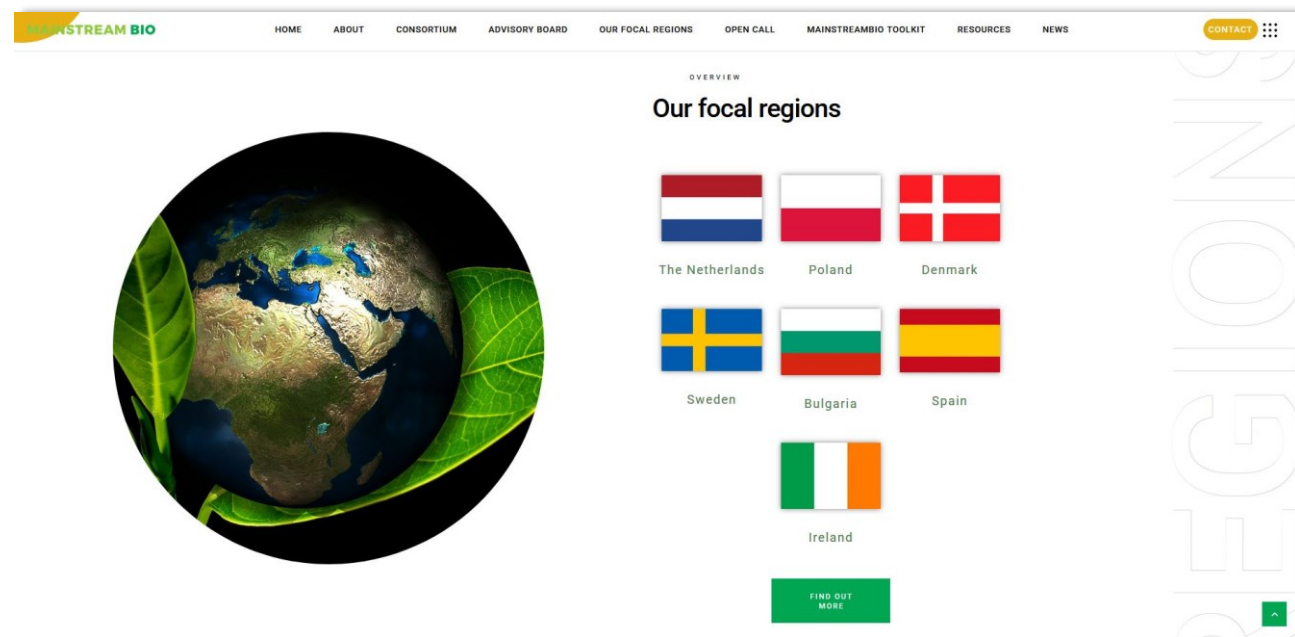
Figure 6. MainstreamBIO's focal regions section
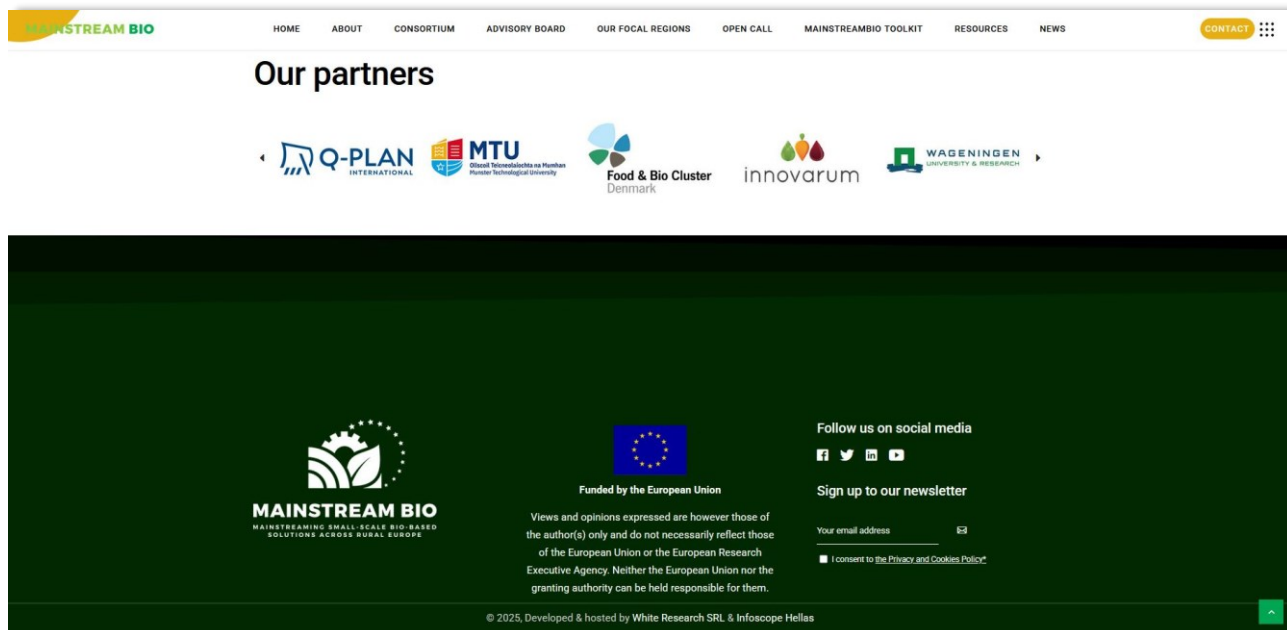
Figure 7. MainstreamBIO's partners and Home page footer

3.3 About

The website About page is static, and it includes the following subsections:

- Our Approach:

  It contains a brief description about the MainstreamBIO project. Moreover, it displays the rationale behind the project on how to accelerate the deployment of small-scale bio-based solutions.

- What we bring to the table:

  It presents in a concrete manner the innovation support services (business & technical) and the digital toolkit provided by MainstreamBIO.

- Workplan: It introduces the MainstreamBIO's seven work packages with a brief description for each.
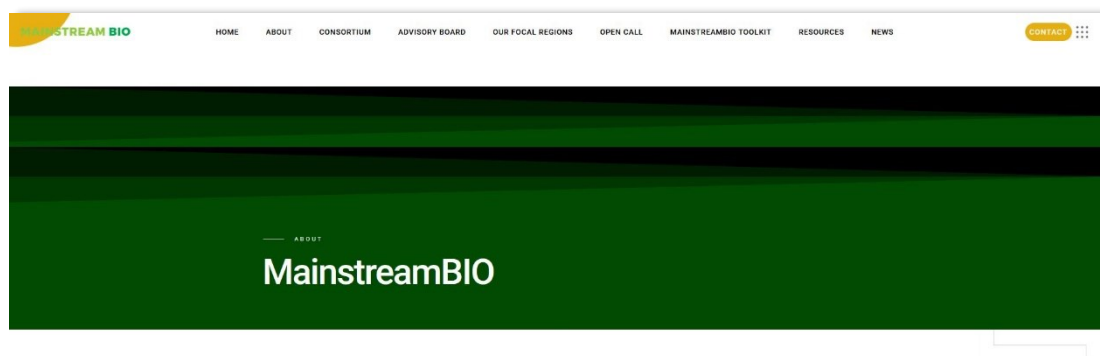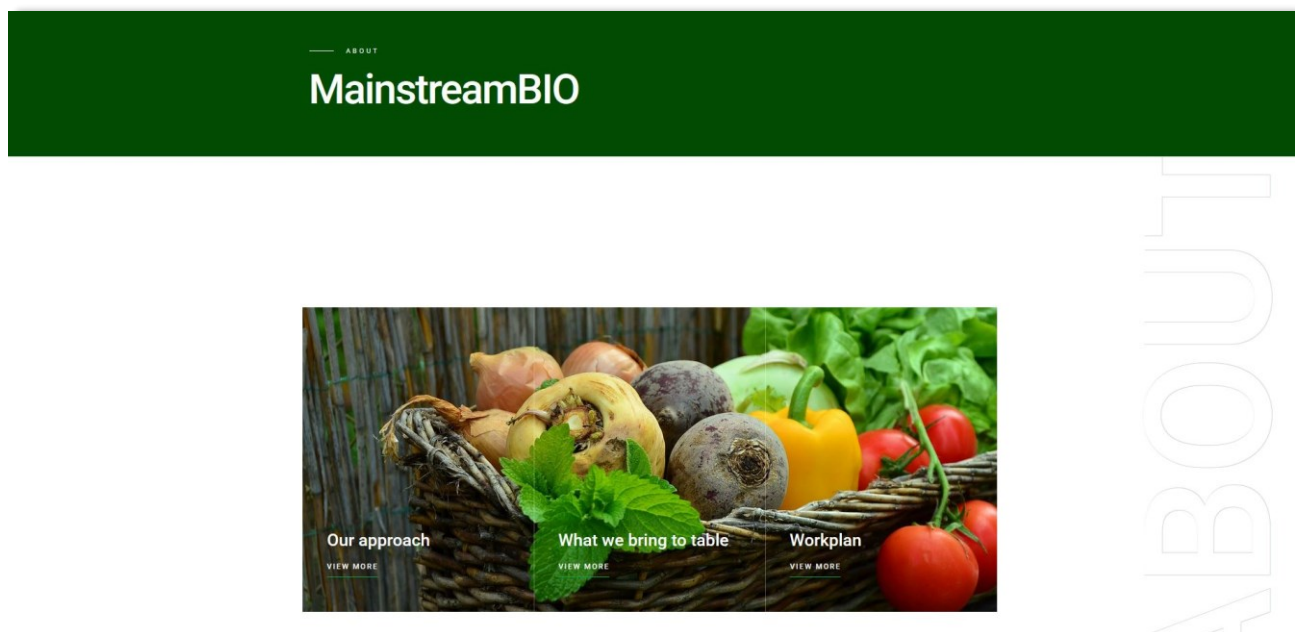
Figure 8. MainstreamBIO's website About page.
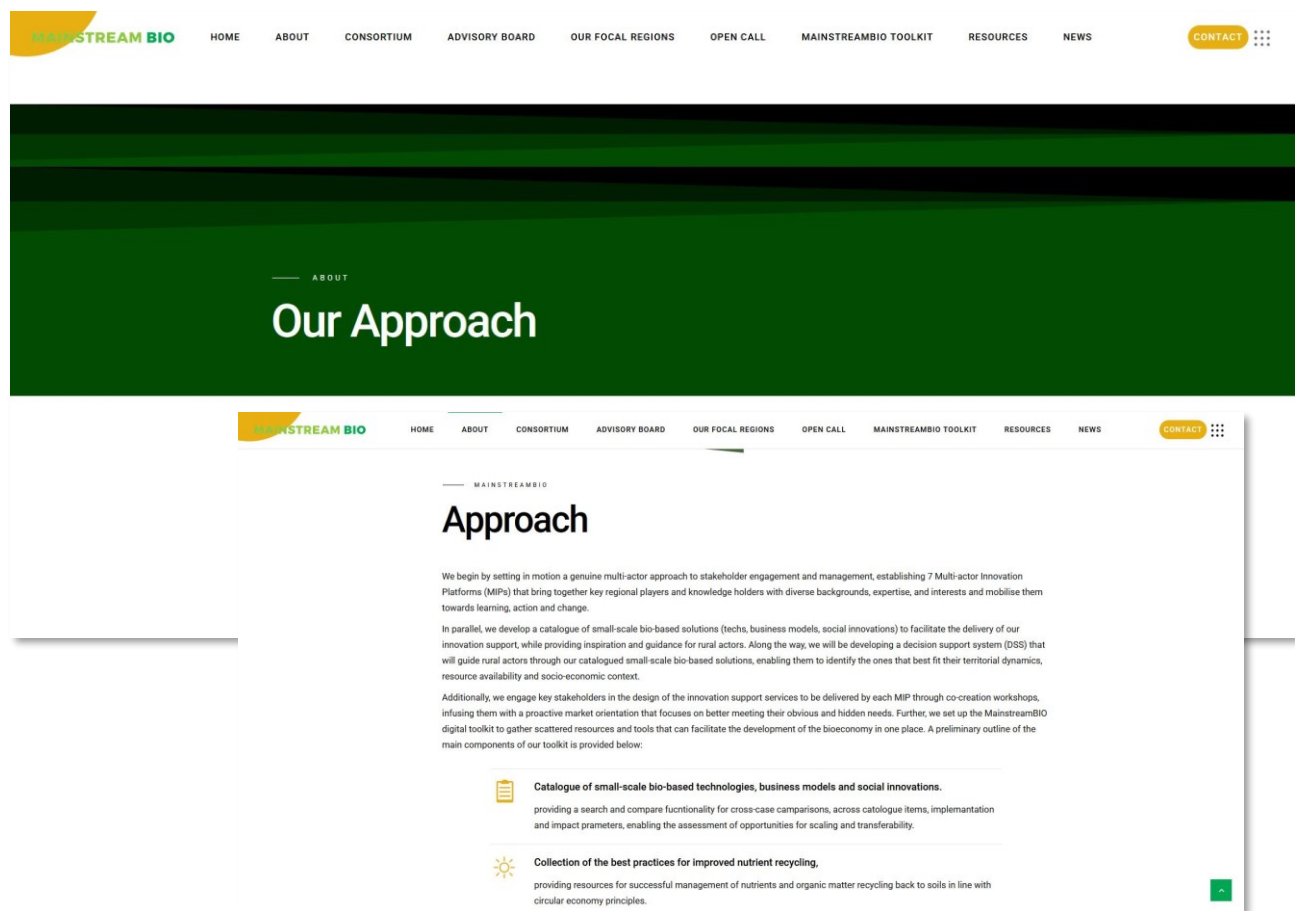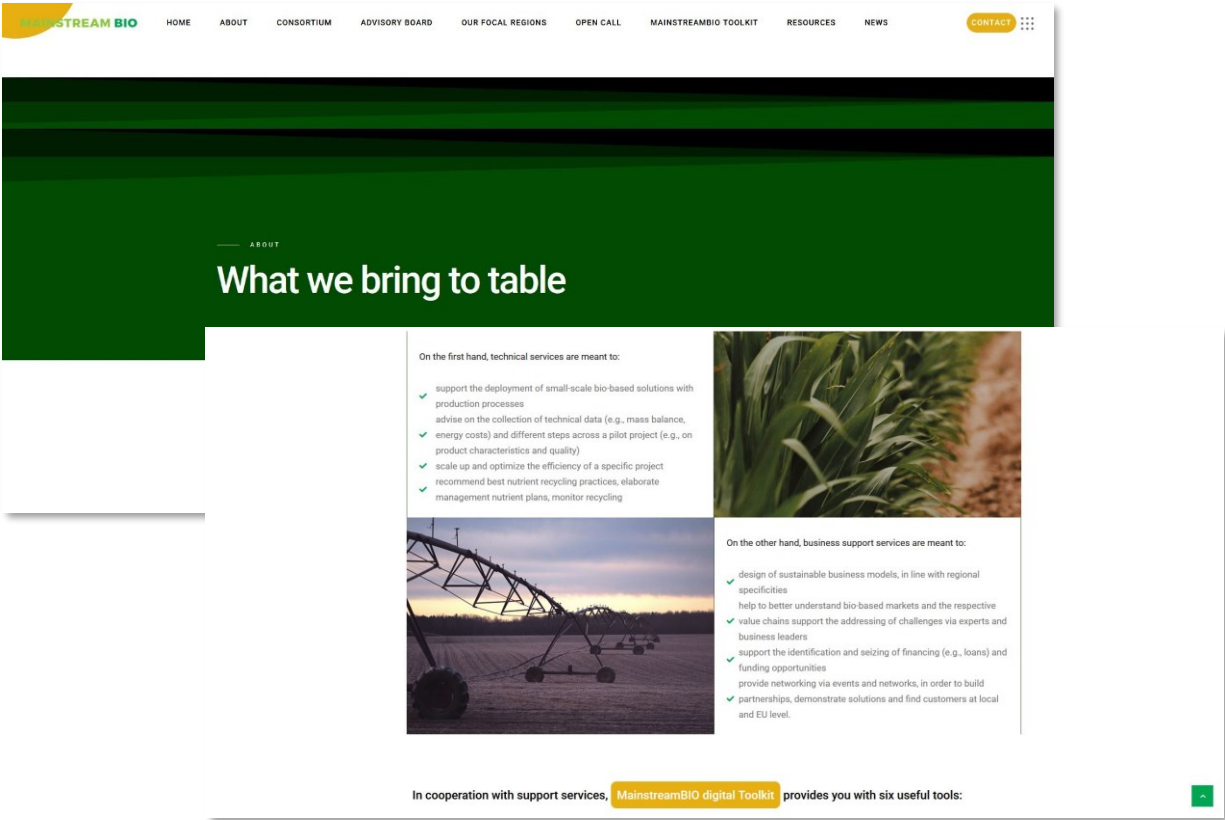

Figure 9. MainstreamBIO's approach section.

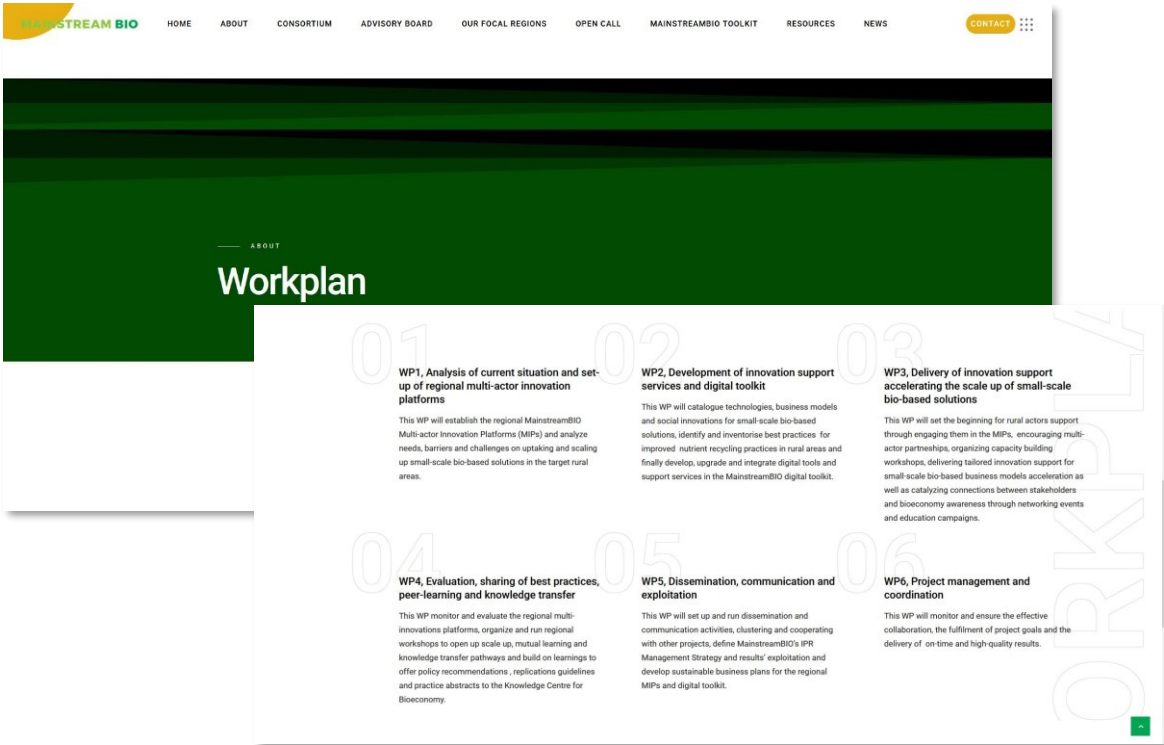*Figure 10. What we bring on table section*

Figure 11. MainstreamBIO's workplan section

3.4 **Consortium**

In this page detailed information is given regarding the consortium partners. The partner's logo and a link to their website is available when clicking on the respective box.
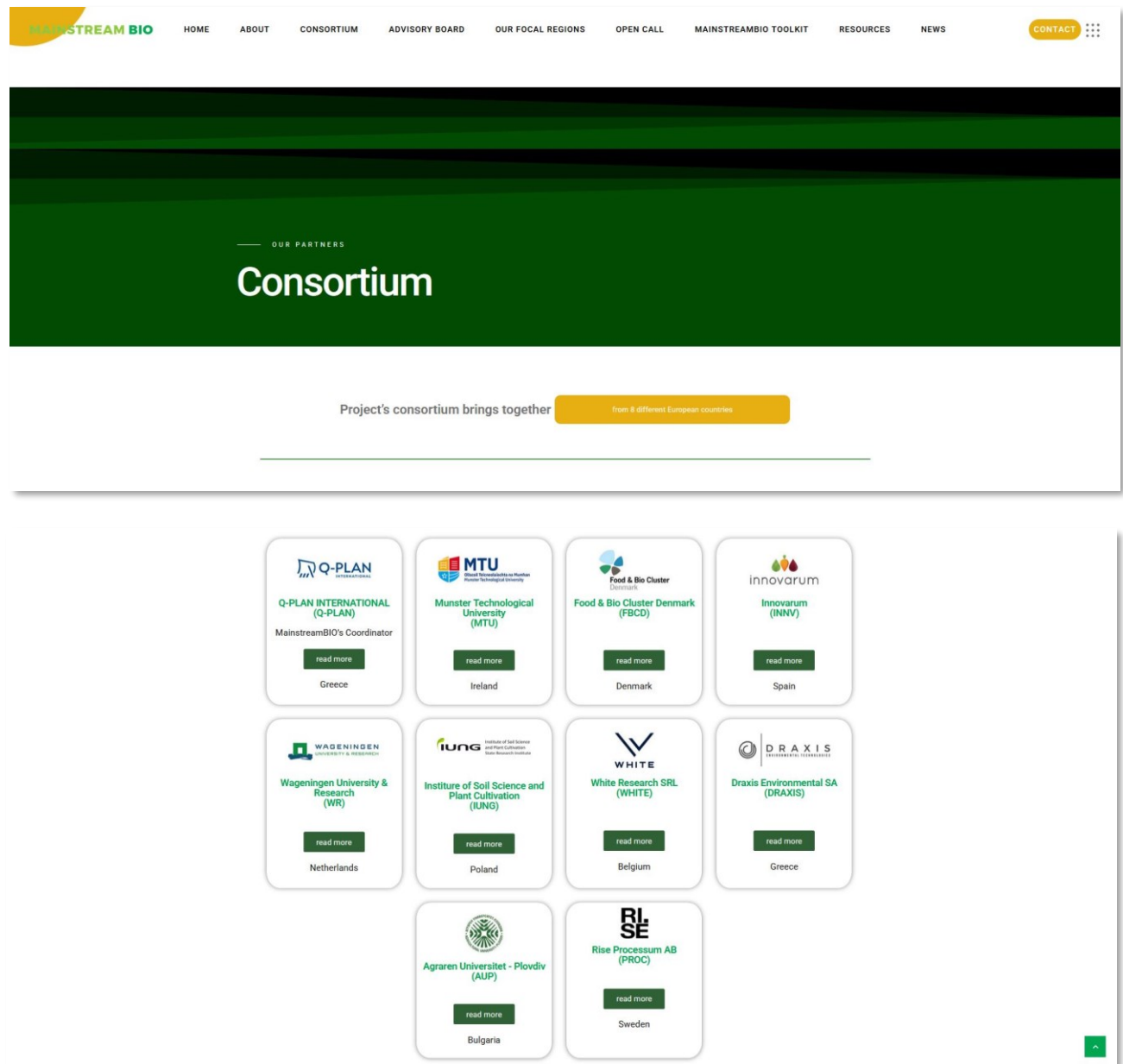

Figure 12. MainstreamBIO's consortium section

3.5 **Advisory Board**

This page presents the Advisory Board of the MainstreamBIO project, including information about each AB member and contact details. AB acted through project's lifespan as a consultation body providing the project with feedback, strategic recommendations, contributing to the project dissemination through their wide stakeholder engagement channels.
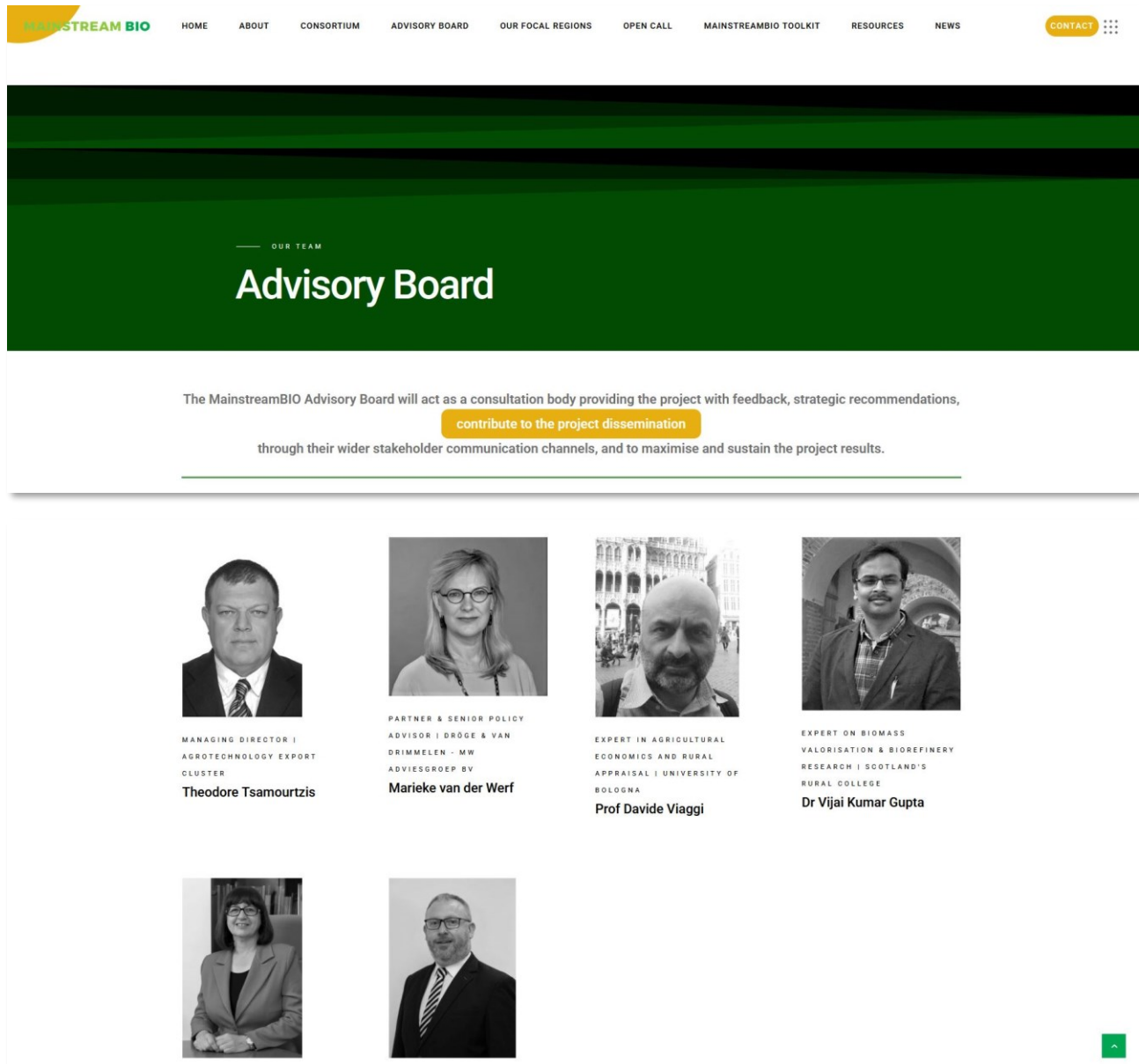

Figure 13. MainstreamBIO's Advisory Board section

3.6 **Our Focal Regions**

This webpage contains detailed information on all 7 Multi-actor Innovation Platforms (MIPs). For each established MIP (IE, NL, ES, DK, SE, PL, BG) a subpage was created providing information on their needs and challenges including specificities of the region and services provided by MainstreamBIO.
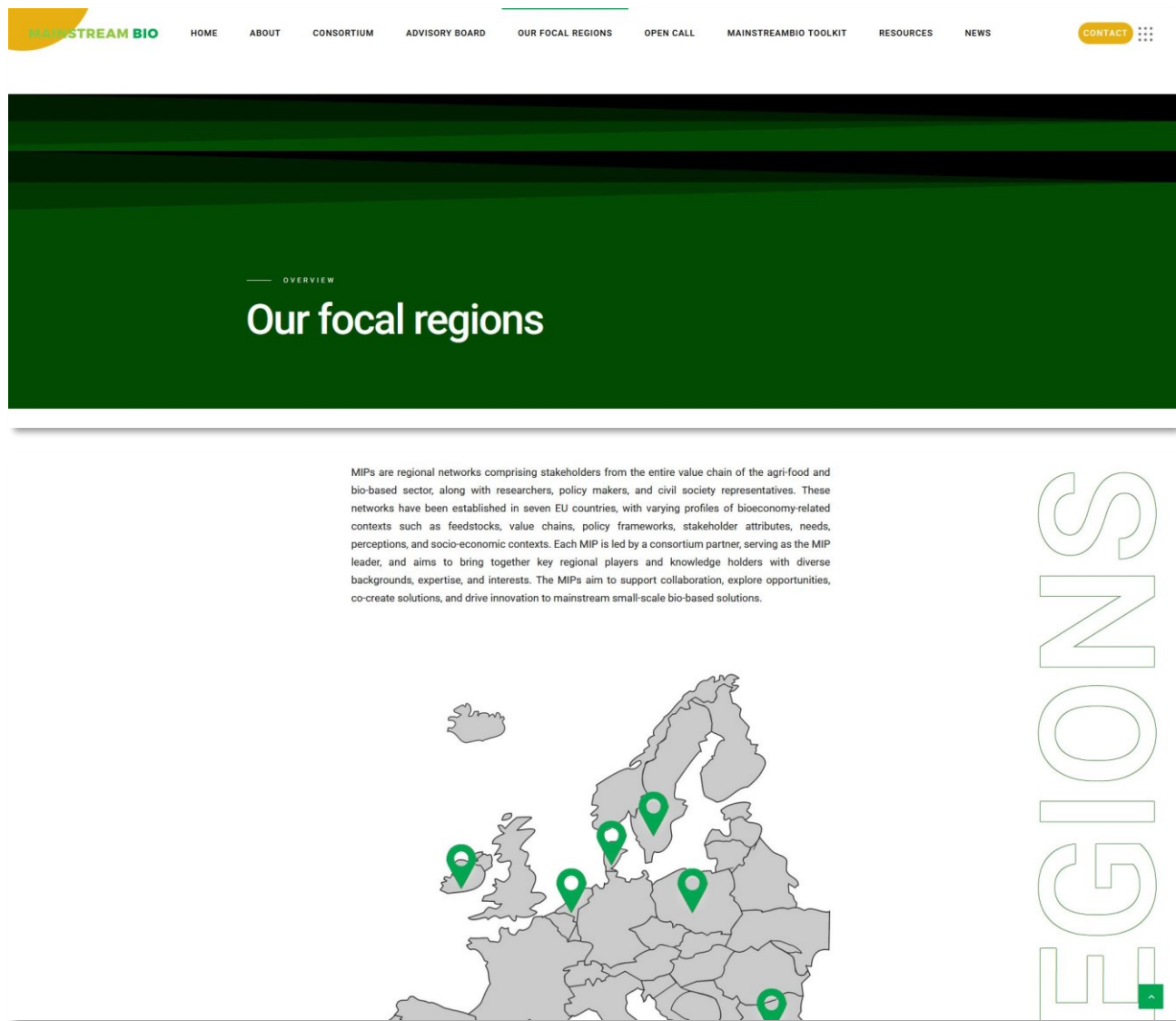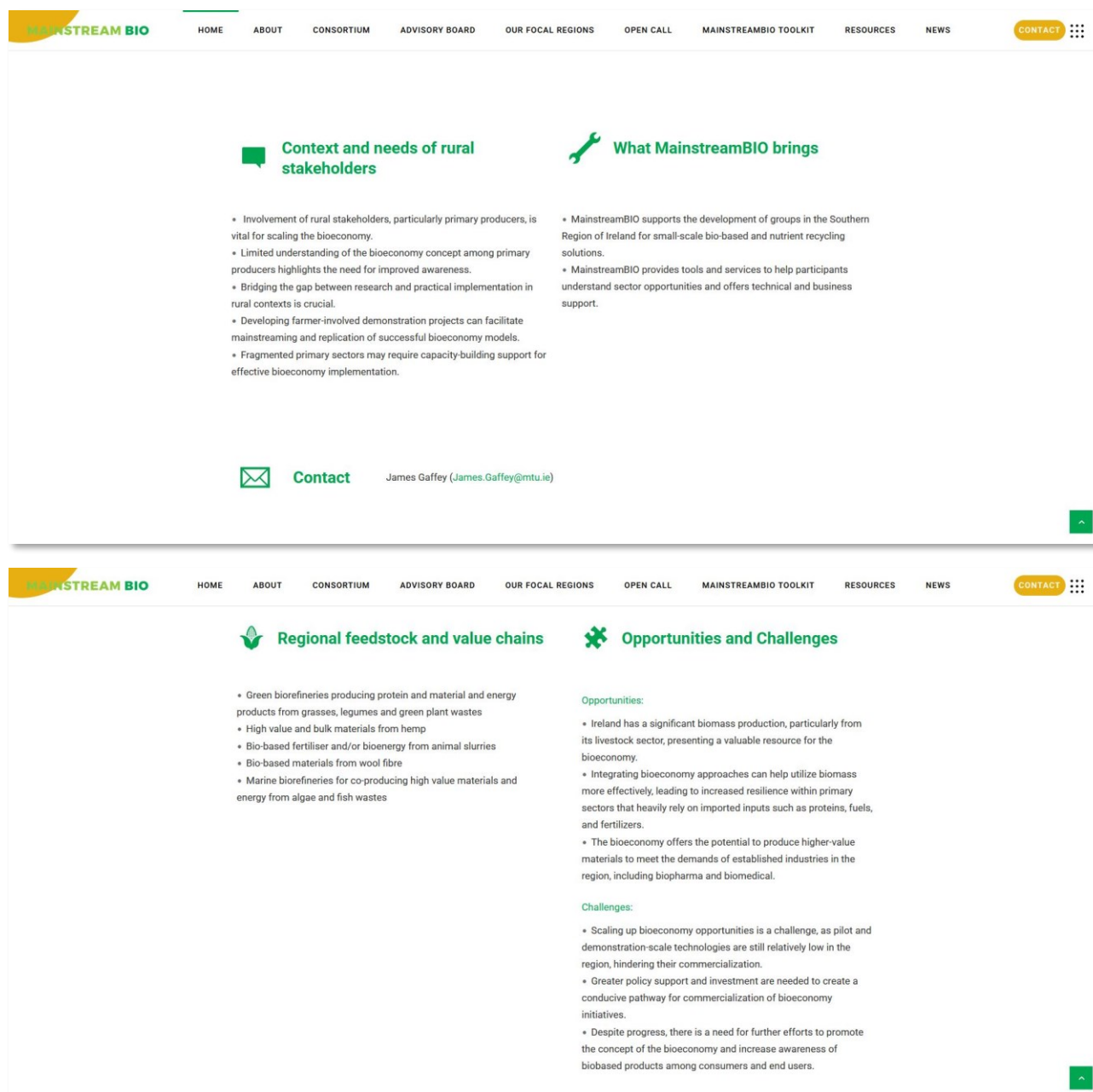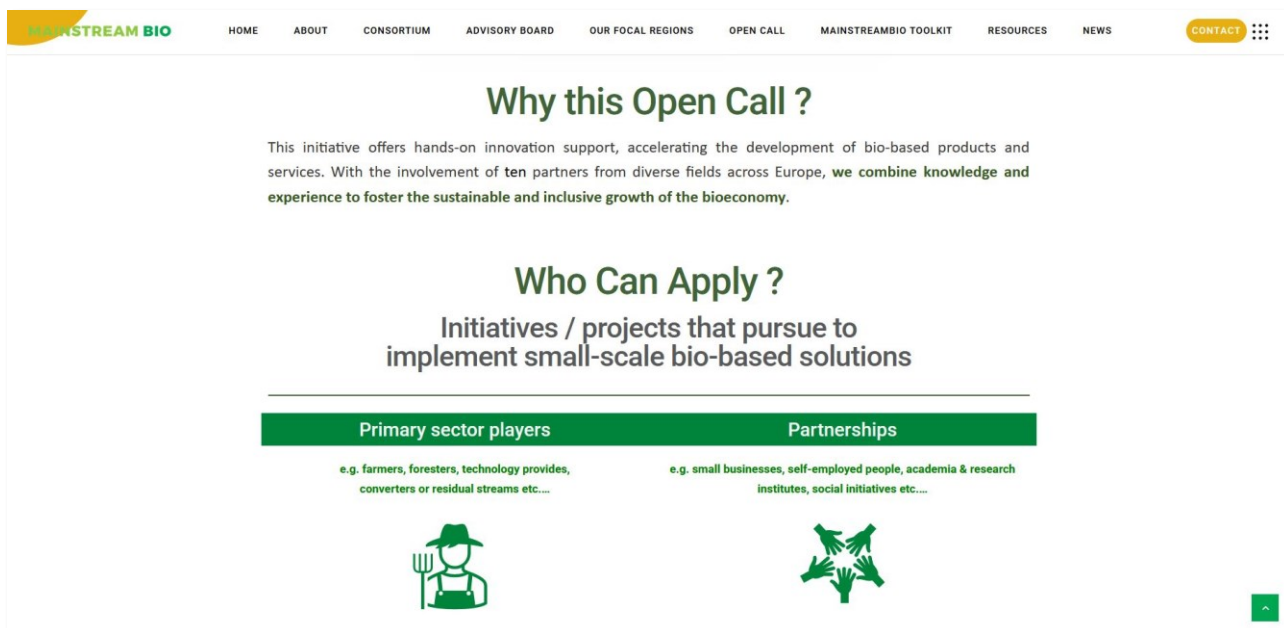
MIPs are regional networks comprising stakeholders from the entire value chain of the agri-food and bio-based sector, along with researchers, policy makers, and civil society representatives. These networks have been established in seven EU countries, with varying profiles of bioeconomy-related contexts such as feedstocks, value chains, policy frameworks, stakeholder attributes, needs, perceptions, and socio-economic contexts. Each MIP is led by a consortium partner, serving as the MIP leader, and aims to bring together key regional players and knowledge holders with diverse backgrounds, expertise, and interests. The MIPs aim to support collaboration, explore opportunities, co-create solutions, and drive innovation to mainstream small-scale bio-based solutions.

Figure 14. MainstreamBIO's focal regions section

Ireland

🌱 About the focal region

In the Southern Region of Ireland, various bioeconomy initiatives are already in progress. Research and demonstration activities such as Biorefinery Glas, Farm Zero C, and BioWill, along with commercial-level biorefineries and anaerobic digestion plants, contribute to the region's bioeconomy landscape. Leading research institutions and centers like CircBio, MTU, MarEI, BiOrbic, Shannon ABC, and the University of Limerick drive research and education in this field. Established clusters such as the Irish Bioeconomy Foundation and the Circular Bioeconomy Cluster South-West (MTU) play a crucial role in mobilizing private actors in the region. With a significant agri-food sector and a predominance of grassland and coastal areas, the Southern Region of Ireland holds immense potential for bioeconomy activities, including blue bioeconomy and forestry.

Since the publication of the National Bioeconomy Policy Statement in 2018, the bioeconomy in Ireland has experienced growth and development. The Irish government has invested €57 million in research and development and support activities within the bioeconomy. The awareness of the bioeconomy has increased at a national level, thanks in part to the annual Bioeconomy Ireland Week Activity, which promotes the bioeconomy
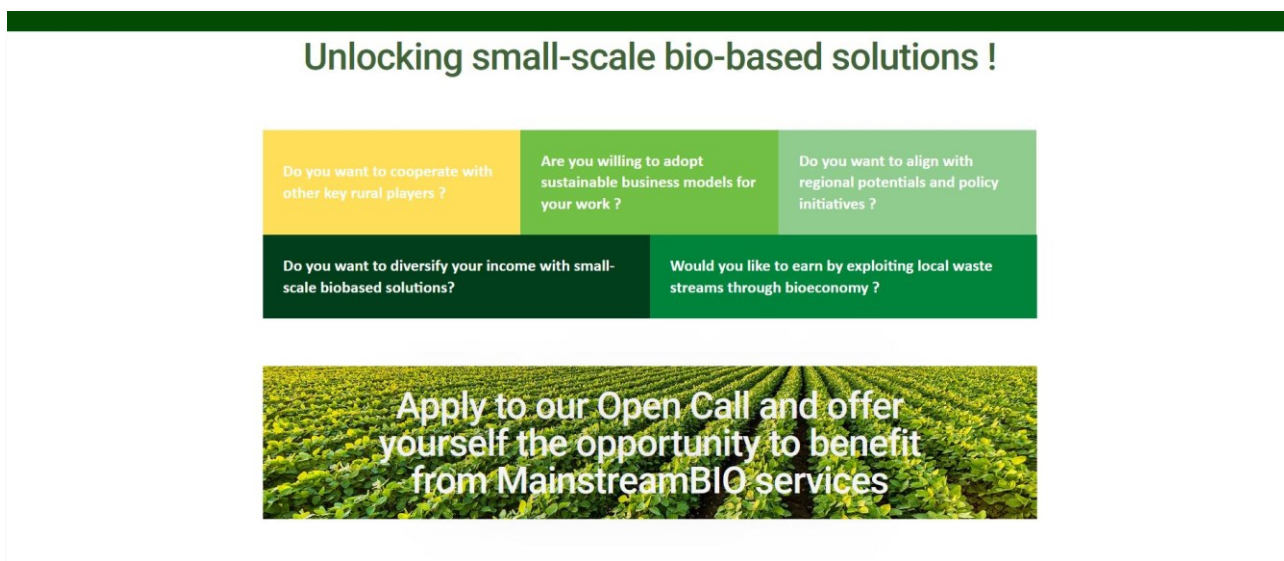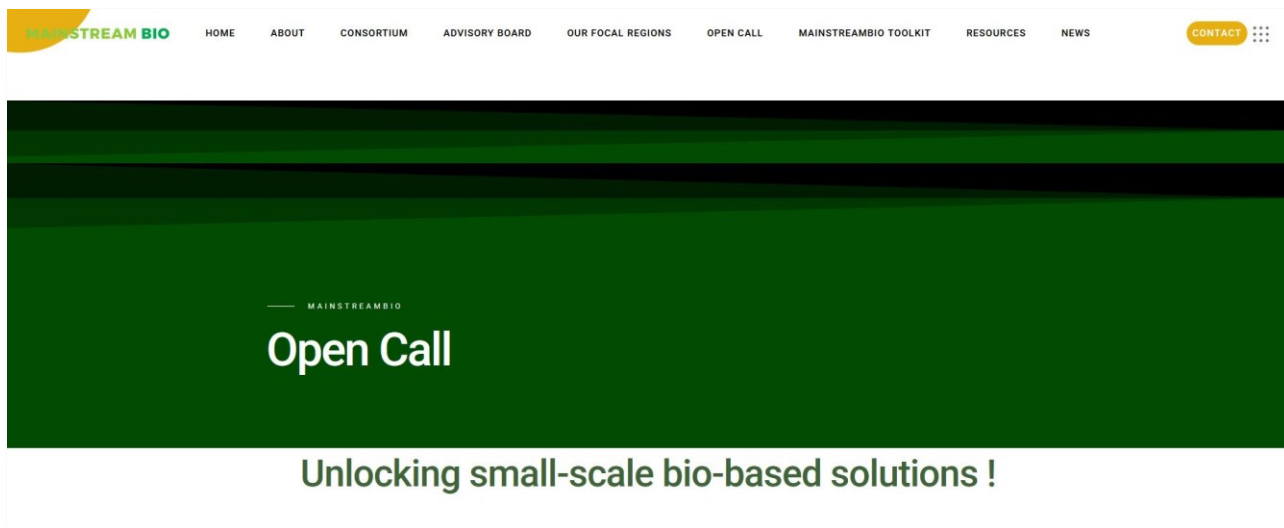
Figure 15. MainstreamBIO's focal regions - MIP example (Ireland)

3.7 Open Call

The Open Call page displays the completed rounds of MainstreamBIO's Open Call in seven focal regions for projects/initiatives implementing small-scale bio-based solutions. The webpage provides relevant information about the Open Call features, selection criteria, different services provided (technical and business), and the contact details of MainstreamBIO's experts for each focal region.
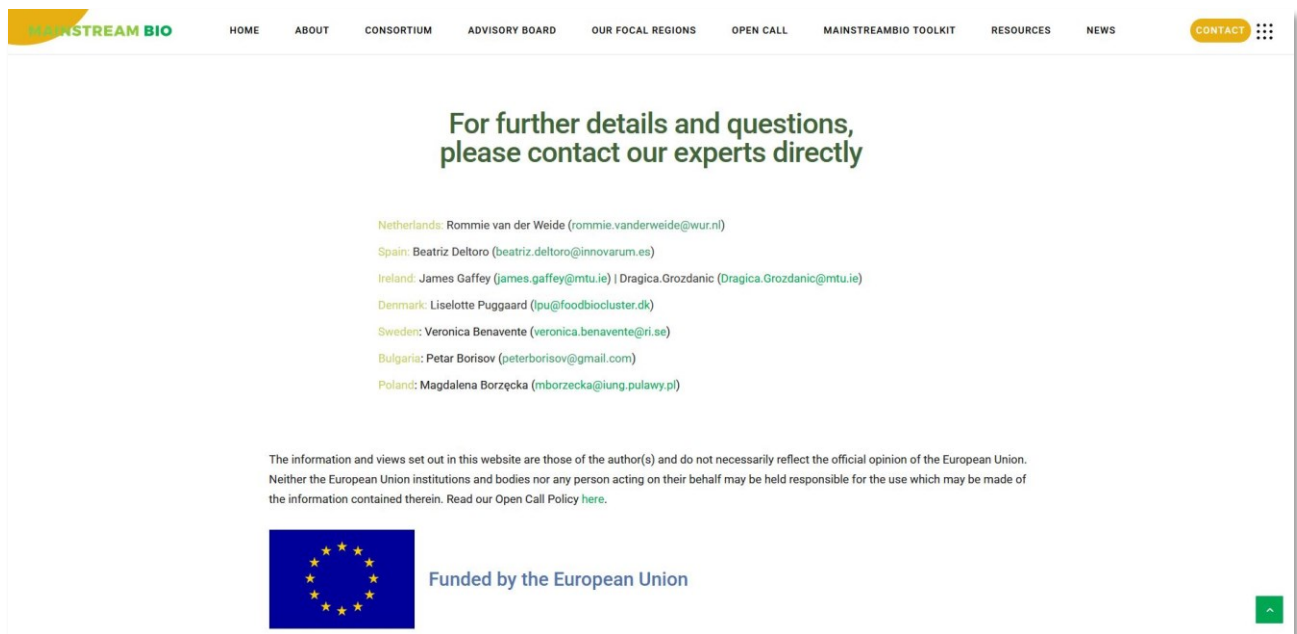
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Open Call

Unlocking small-scale bio-based solutions !

Unlocking small-scale bio-based solutions !

Do you want to cooperate with other key rural players ?	Are you willing to adopt sustainable business models for your work ?	Do you want to align with regional potentials and policy initiatives ?
Do you want to diversify your income with small-scale biobased solutions?		Would you like to earn by exploiting local waste streams through bioeconomy ?

Apply to our Open Call and offer yourself the opportunity to benefit from MainstreamBIO services

Why this Open Call ?

This initiative offers hands-on innovation support, accelerating the development of bio-based products and services. With the involvement of **ten** partners from diverse fields across Europe, **we combine knowledge and experience to foster the sustainable and inclusive growth of the bioeconomy.**

Who Can Apply ?

Initiatives / projects that pursue to implement small-scale bio-based solutions

Primary sector players	Partnerships
e.g. farmers, foresters, technology provides, converters or residual streams etc....	e.g. small businesses, self-employed people, academia & research institutes, social initiatives etc....

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Figure 16. MainstreamBIO's Open Call section

3.8 **MainstreamBIO Toolkit**

This webpage provides insights on MainstreamBIO's digital toolkit and displays the following information:

- a catalogue of small-scale bio-based technologies, business models and social innovations;
- a collection of best practices for improved nutrient recycling;
- a decision Support System;
- a Bioeconomy Repository;
- a Tool Library;
- a BioForum.
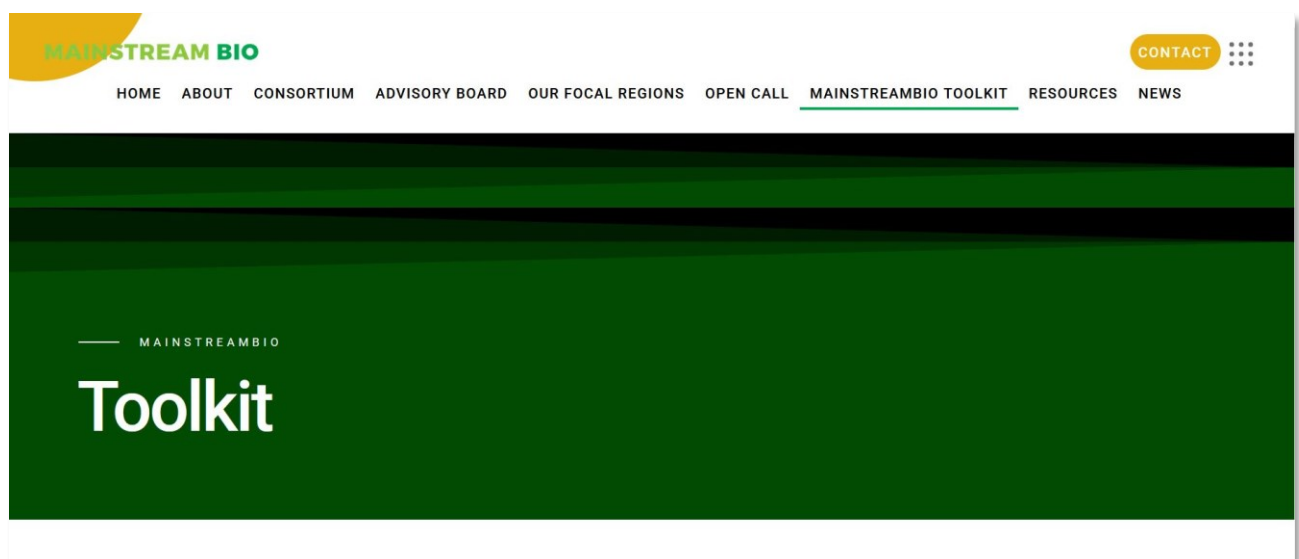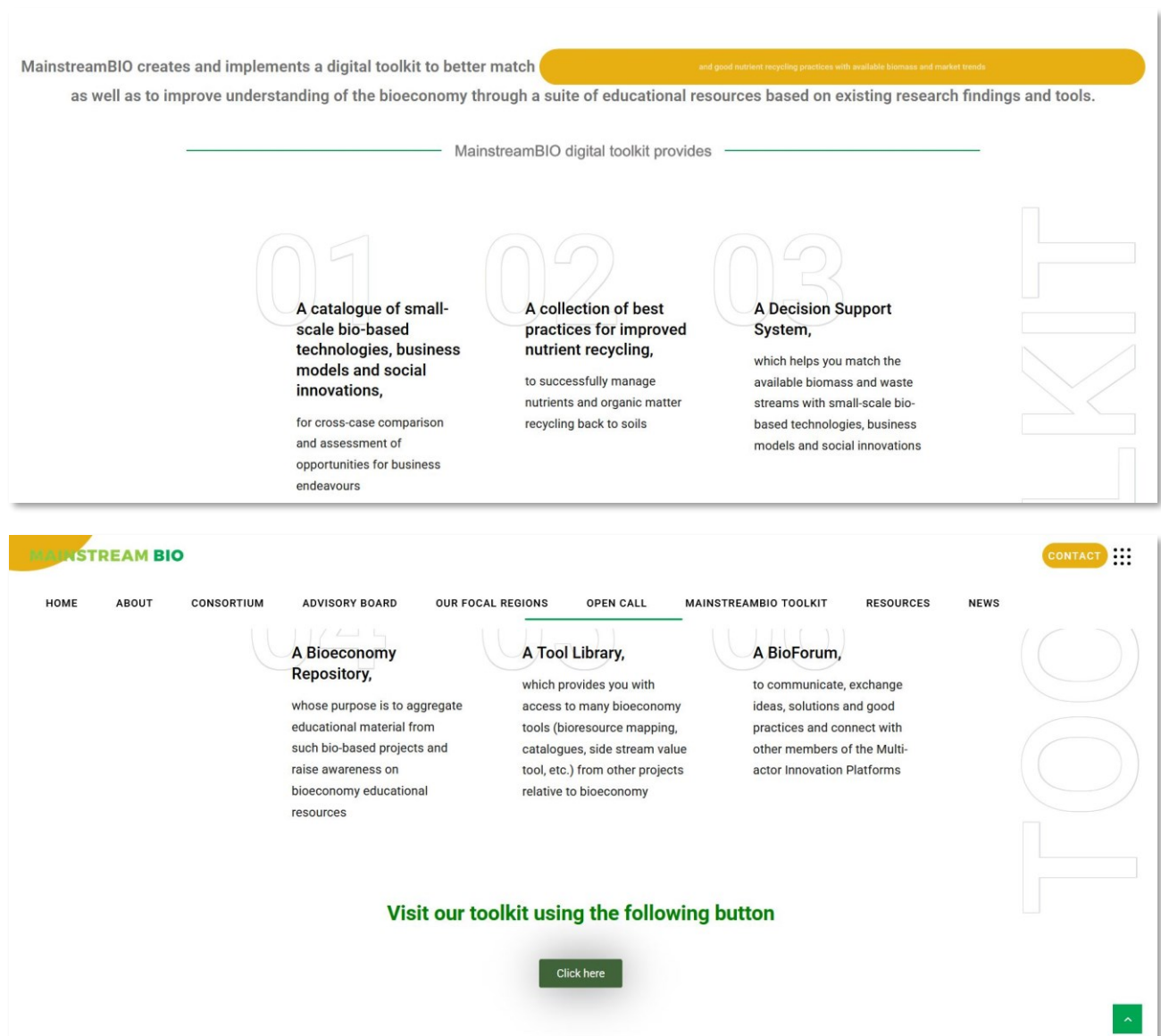
Figure 17. MainstreamBIO's Digital Tookit seciton

A summary of MainstreamBIO's Digital Toolkit can be found in chapter 5 of this deliverable.

3.9 Resources

The webpage is static, and it includes the following information:

- *Deliverables*: This section contains all public deliverables of the MainstreamBIO project which are uploaded as drafts on the website until the official approval from EC.
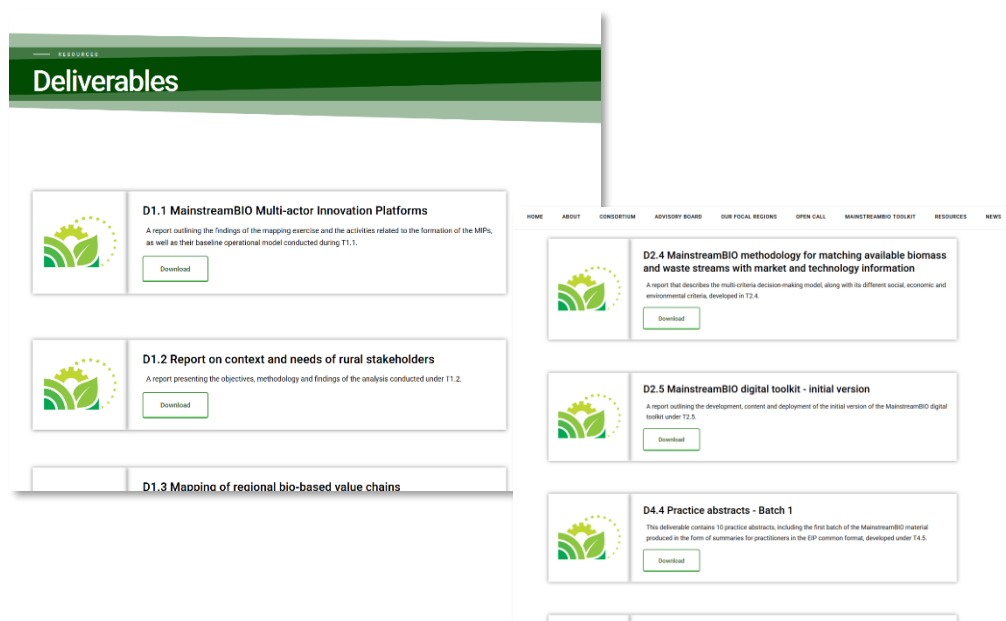
Figure 18. MainstreamBIO's website deliverables section

- *Promotional Material*: MainstreamBIO leaflet and poster can be found <u>here</u> and are available for all to download.
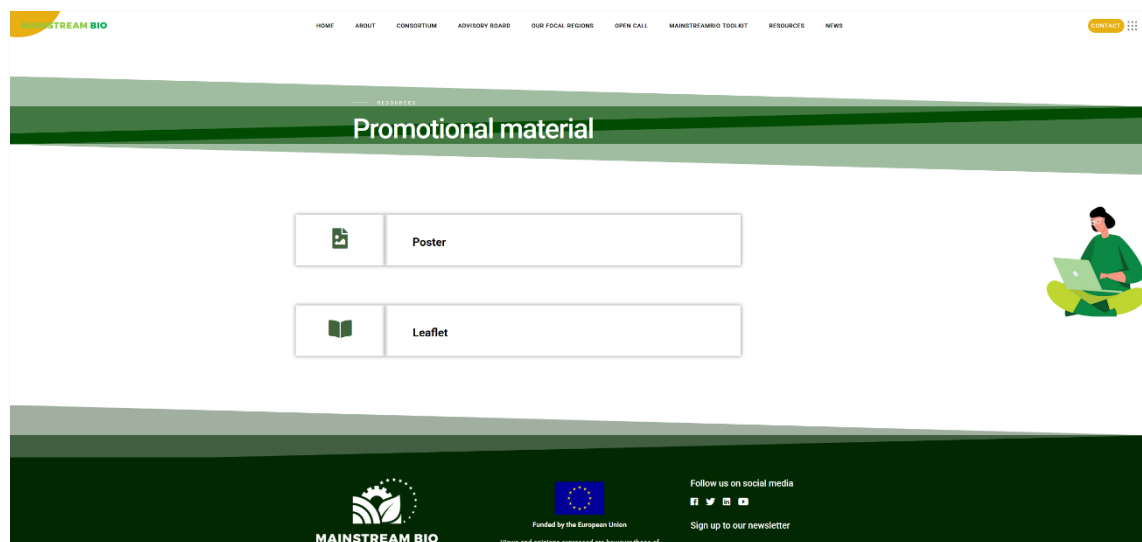
Figure 19. MainstreamBIO's website promotional material page

- *Related Initiatives*: The <u>Related Initiatives page</u> lists all synergies (15) established by the MainstreamBIO project by its end.
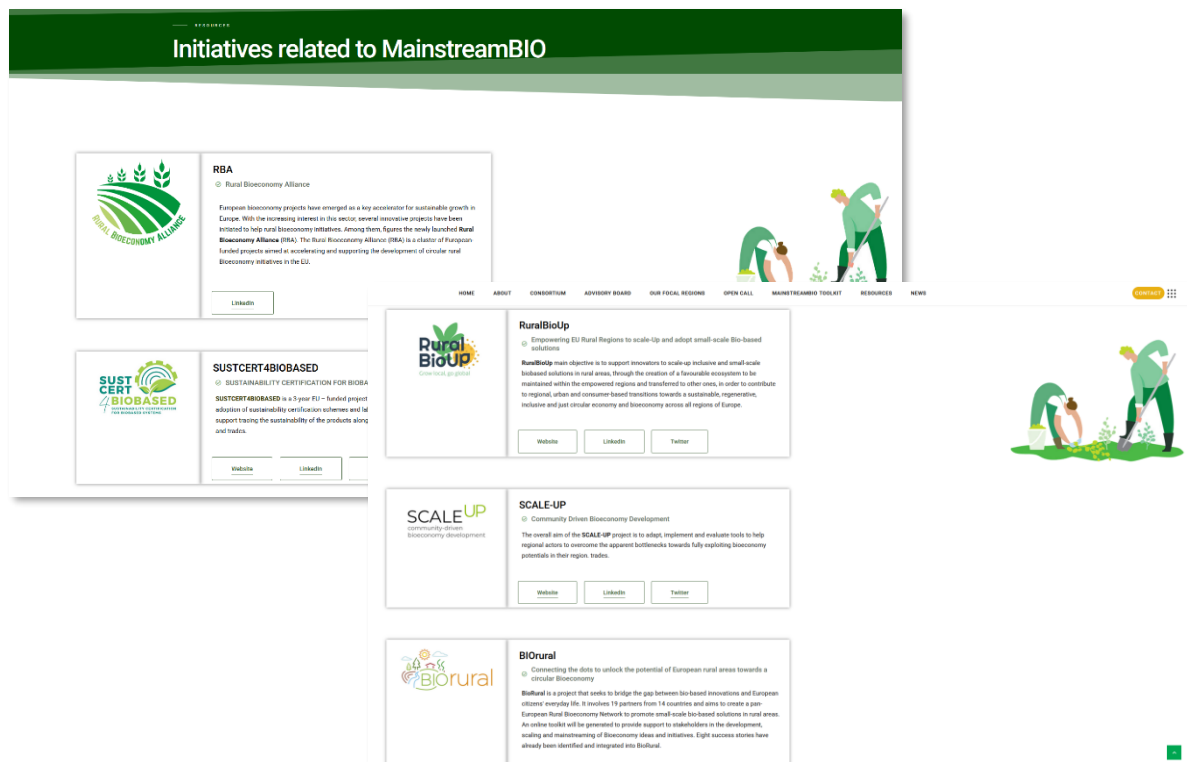
Figure 20. MainstreamBIO's website synergies page

- *Publications*: A dedicated section showcasing all [MainstreamBIO publications](#) by M36, providing direct links for easy access.
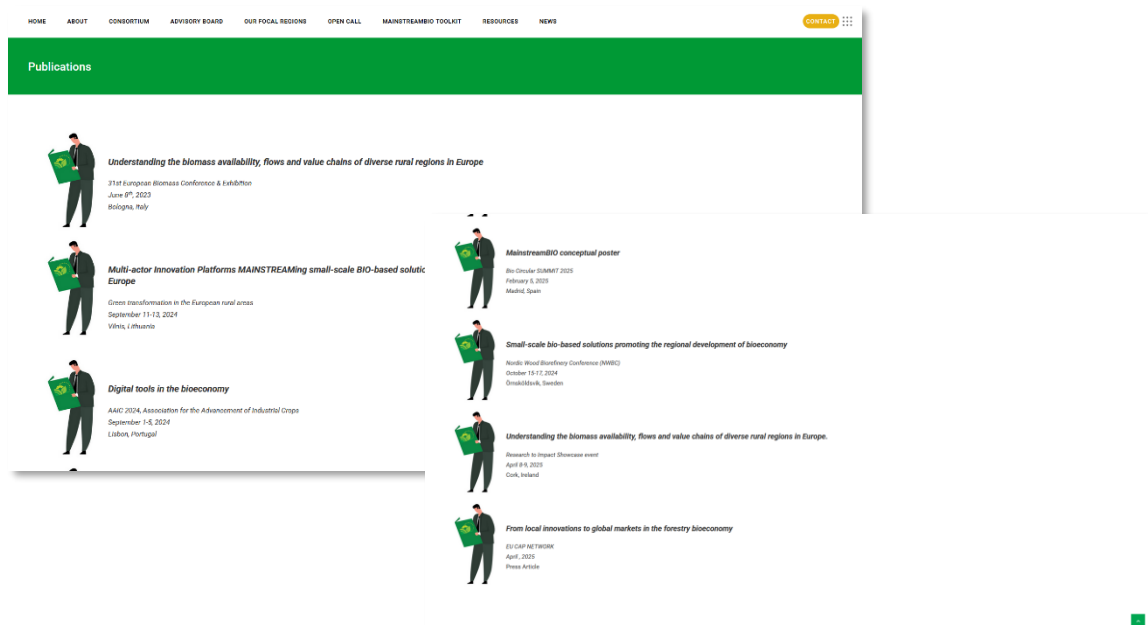
Figure 21. MainstreamBIO's website publications page

- *Audio-visual material*: An interactive section featuring videos of MainstreamBIO's MIPs and Service Recipients, highlighting their journeys and achievements.
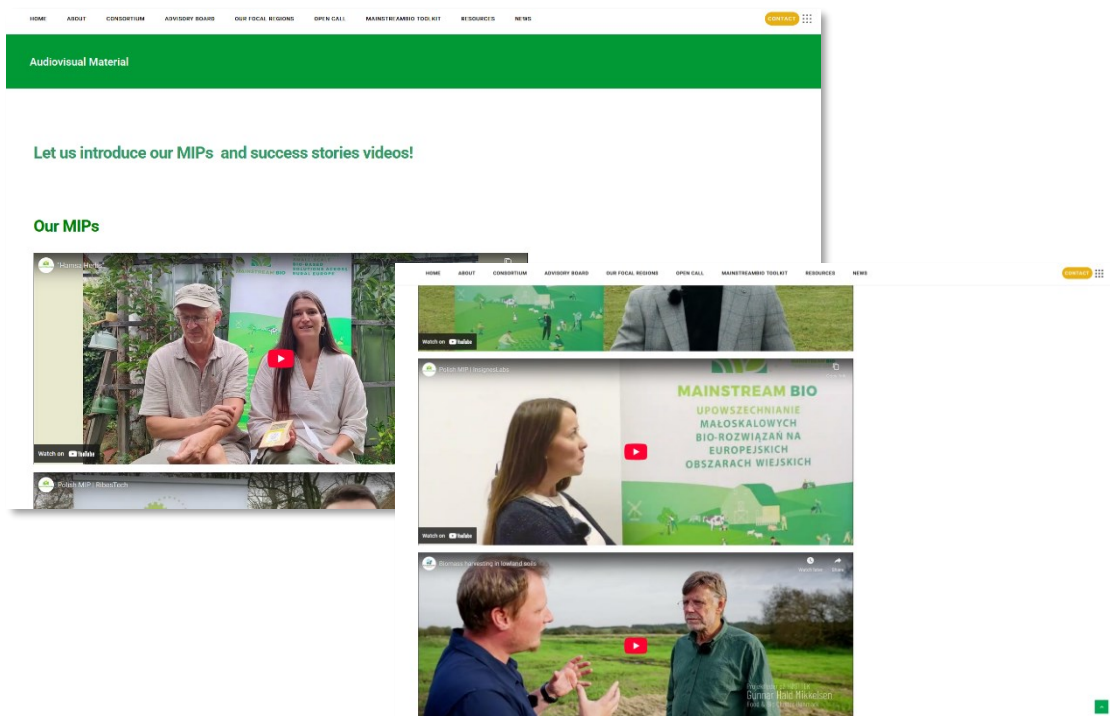
Figure 22. MainstreamBIO's website audiovisual page

3.10 **News**

The webpage is updated weekly by WHITE with the support of partners. This section is divided into 4 main sections:

- *Project News*: This page displays MainstreamBIO's latest news and developments (project events, milestones, partnerships).
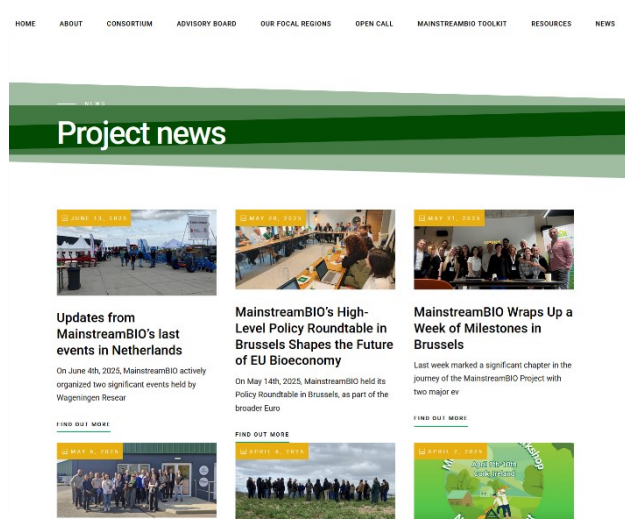
Figure 23. MainstreamBIO's website news section

- *Events*: The Events webpage acts as a calendar highlighting all relevant events to MainstreamBIO.

Figure 24. MainstreamBIO's website events calendar

- *Newsletter*: The Newsletter page contains MainstreamBIO Newsletters available for all to upload.

- *Other News*: The page shows interesting topics and news from the sector relevant to MainstreamBIO.
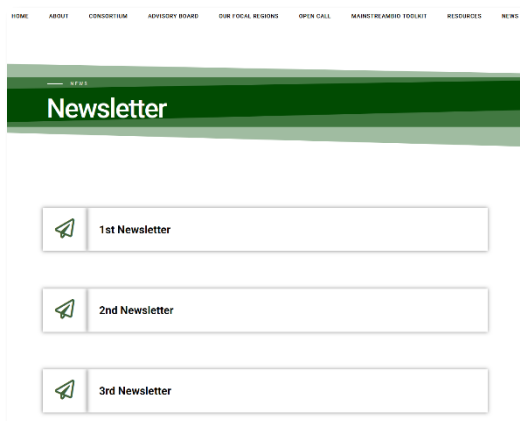
Figure 26. MainstreamBIO's website other news section
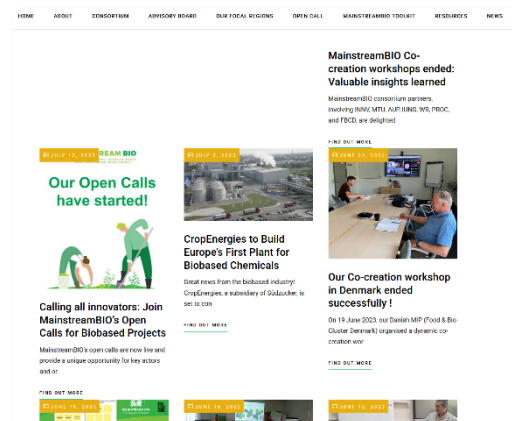
Figure 26. MainstreamBIO's website newsletter section

3.11 **Contact**

The webpage is static and contains the following information:

- MainstreamBIO email address: info@mainstreambio-project.eu;

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- Contact form to submit requests/questions.

Figure 27. MainstreamBIO's contact information section

3.12 Privacy policy

The webpage is static and provides a detailed description of the privacy policy of MainstreamBIO's web-portal. In particular, it explains what type of personal data the web-portal collects, how it uses them and stores them, and issues that relate to the rights of users, their security, as well as descriptions about Google analytics and Cookies.

Figure 28. MainstreamBIO website privacy policy page

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4. Website - Progress and Discussion

As one of MainstreamBIO's central digital tools, the website has played an important role in promoting the project's outcomes and activities. Given its importance, a thorough evaluation of its effectiveness and the strategic approach implemented to reach the associated KPIs is critical. This assessment underscores the consortium's dedicated efforts in continuously improving and maintaining the website, as well as the structured actions adopted to maximize user engagement and visibility.

Throughout the duration of the project, WHITE, as the DC manager, collaborated closely with all consortium partners to ensure the website remained current, interactive, and aligned with MainstreamBIO's evolving progress. Regular updates and structural enhancements were systematically applied to optimize the visibility and accessibility of the project's key actions and deliverables. Notably, this included introducing targeted sections like the MainstreamBIO Open Calls and dedicated subsections under "Resources" for Success Stories and Publications. These tailored updates were designed explicitly to increase outreach, facilitate user engagement, and maintain ongoing stakeholder interest, particularly focusing on the project's target regions.

To enhance the website's interactive potential further, WHITE maintained a consistently updated events calendar featuring both internal project activities and relevant external bioeconomy-related events. These continuous updates transformed the website into a dynamic, engaging platform, effectively positioning it as a reliable information hub and significantly strengthening MainstreamBIO's digital footprint. Consequently, the website consistently attracted substantial visitor traffic, establishing itself as a valuable reference point for stakeholders seeking insights into bio-based innovations and services provided by MainstreamBIO. Taking into account the impact and ongoing usefulness of the site throughout the project's implementation, the MainstreamBIO website will remain live and receive regular updates for two years beyond the official project completion.

Regarding the key performance indicators (KPIs), by the submission time of this deliverable, the website achieved 8,029 unique visits. Although below the initial goal of 15,000+ unique visits outlined in the Grant Agreement, this achievement remains substantial given the highly competitive digital environment and the extensive online content vying for users' attention. This objectively indicates considerable engagement, reflecting the proactive and persistent strategies employed by the consortium. To that end, in addition to unique visit counts several deeper engagement metrics were monitored through Google Analytics, highlighting how the MainstreamBIO website truly delivered value and impact over the past three years (Figure 29):

- 25,364 total page views, demonstrating that visitors stayed engaged to the website visiting it more than once.

- Top pages: landing page (8,950 views); digital toolkit (1,506 views); open call (1,460 views), confirming that our most vital resources attracted sustained attention to those activities

- Global reach: over 1,400 active users from the United States (and significant audiences in a many European countries) show that MainstreamBIO content resonated well beyond Europe.

- High engagement with project's resources: More than 1,000 download material (e.g., project reports and dissemination materials) underline the site's value as a free, go-to repository for project's network.

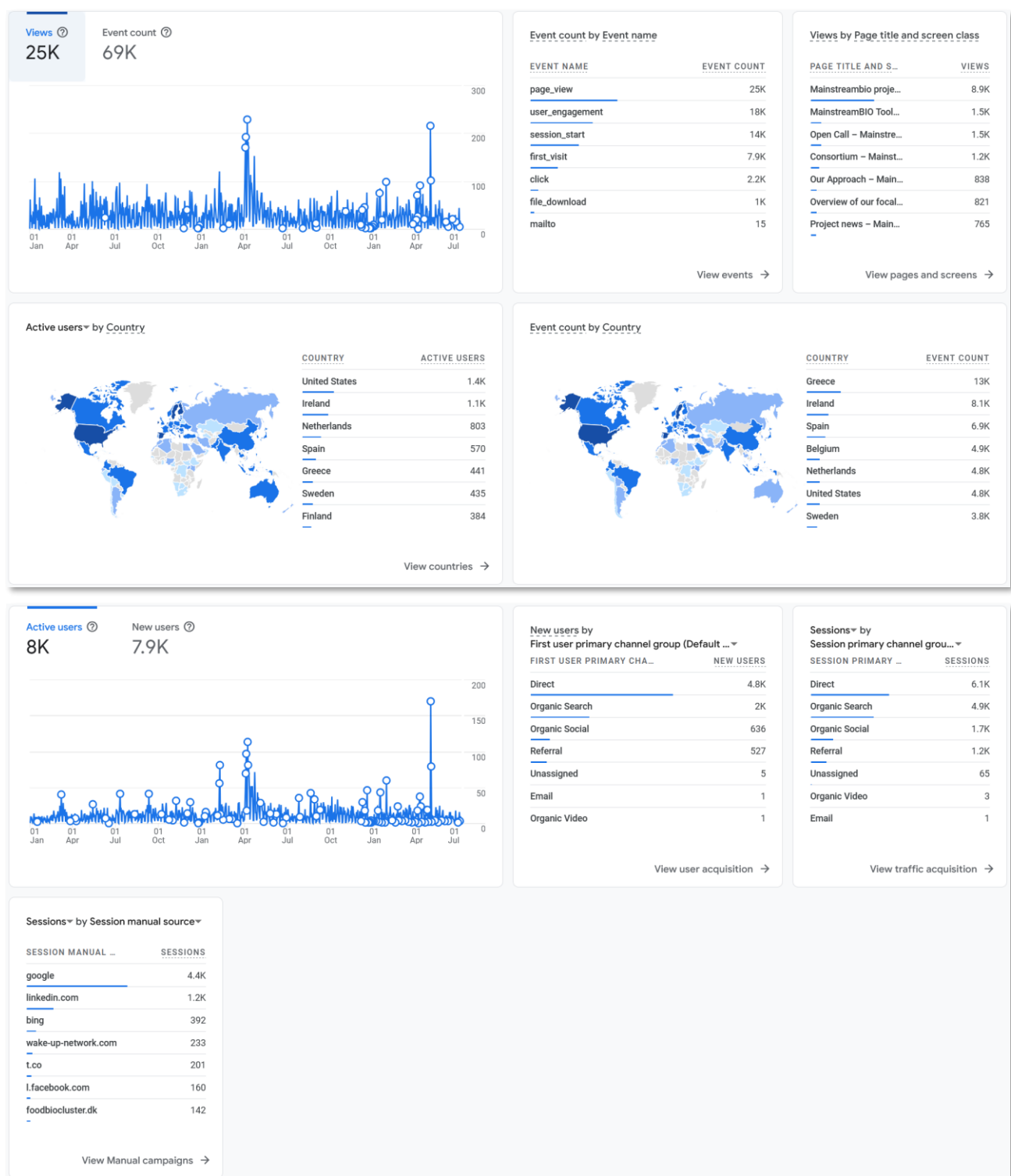**Funded by the European Union**

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Figure 29. MainstreamBIO's website Google Analytics

To maximize website engagement and overall outreach, a range of targeted actions were implemented, including:

- **Newsletter Integration:** All articles within MainstreamBIO's newsletters were strategically linked directly to website content.

- **Synergies and Cross-Promotion:** Continuous promotion of the MainstreamBIO website via collaboration with synergy projects, which were prominently featured on the site to attract shared audiences.

- **Rural Bioeconomy Alliance Updates:** Frequent website updates featuring RBA news to capture wider interest and engagement.

- **Consortium Engagement:** WR encouraged/reminded partners to promote the project's website on several occasions (e.g. participating in external events, project's events, social media posts, etc)

- **Promotional Materials:** Consistent inclusion of the MainstreamBIO website link in promotional materials, ensuring widespread visibility.

- **Social Media Integration:** Effective linkage of website content with social media accounts , reinforcing traffic through continuous posts and updates.

- **Quality and Quantity of Content:** Regular uploading of high-quality, informative articles that effectively captured the interest of targeted stakeholders.

- **Engagement through Digital Toolkit:** Integration of the digital toolkit directly into the project website to enhance accessibility, drive traffic, and encourage hands-on user interaction with the project's resources.

- **Integration in Engagement Activities:** Systematic inclusion of the website link in other engagement activities, subscription forms, redirecting diverse stakeholders to the site.

Notably, the significant spikes in website traffic observed in April 2024 and May 2025 (Figure 30). These can be directly attributed to targeted dissemination events, strategic online campaigns tailored to milestone project activities, such as the first round of MainstreamBIO webinars, the launch of the project's digital toolkit and the cornerstone of project's dissemination activities the final event organized under EuRCBC. These trends clearly illustrate the website's effectiveness in attracting interest from a broad and diverse global stakeholder base.
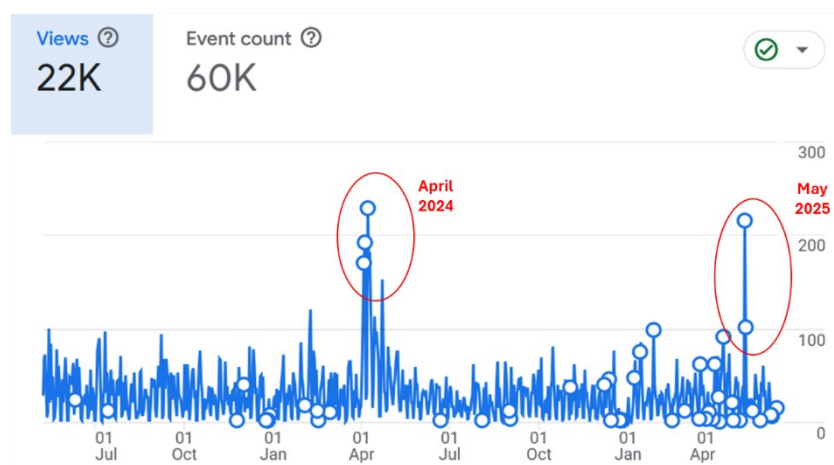

Figure 30. MainstreamBIO's website traffic peaks

Overall, this strategic and meticulous approach ensured that the MainstreamBIO website successfully fulfilled its objectives, substantially contributing to stakeholder awareness, knowledge dissemination, and the reinforced impact of MainstreamBIO across rural Europe.

5. Digital Toolkit Description

The MainstreamBIO Digital Toolkit, developed and hosted by DRAXIS Environmental SA, is a comprehensive online application designed to support the advancement of the bioeconomy across rural regions in Europe. Its primary function is to provide a dynamic digital environment that facilitates access to knowledge, tools, and resources essential for both newcomers and experienced stakeholders in the bioeconomy sector.

The toolkit is tailored to serve as both an educational platform and a professional resource hub. It supports individuals seeking to understand and engage with bio-based opportunities, as well as practitioners and researchers aiming to deepen their expertise and implement bio-based solutions in real-world contexts.

Designed with user accessibility and practical applicability in mind, the toolkit encourages the adoption of small-scale bio-based technologies, business models, and social innovations across diverse European regions. It comprises nine (9) core components:

- **Catalogue of small-scale bio-based technologies, business models and social innovations,** for cross-case comparison and assessment of opportunities for business endeavours.

- **Collection of best practices for improved nutrient recycling**, to successfully manage nutrients and organic matter recycling back to soils.

- **Other MainstreamBIO Resources**, with educational audio/visual material and the option to inspect the bioeconomy profile of 7 EU regions

- **Decision Support System,** which helps users match the available biomass and waste streams with small-scale bio-based technologies, business models and social innovations.

- **BioForum**, to communicate, exchange ideas, solutions and good practices and connect with other members of the Multi-actor Innovation Platforms.

- **Bioeconomy Repository**, whose purpose is to aggregate educational material from such bio-based projects and raise awareness on bioeconomy educational resources.

- **Tool Library**, which provides users with access to many bioeconomy tools (bioresource mapping, catalogues, side stream value tool, etc.) from other projects relative to bioeconomy.

- **Instructions**, delivering a comprehensive introduction and clear instructions on optimal toolkit utilization through both video and textual formats.

- **Webinars**, with educational audio/visual material and the option to inspect the bioeconomy profile of 7 EU regions

5.1 Development Process

The development of the MainstreamBIO Digital Toolkit followed a structured, three-phase methodology designed to ensure both user-centered design and technical feasibility. The process began with an analysis phase, initiated after the collection and assessment of user requirements

through a comprehensive 50-question survey. This input served as the foundation for subsequent design and development decisions.

In the **first phase**, initial interface mockups were created using Whimsical, a collaborative wireframing tool. These early-stage drafts were evaluated through an internal review process that incorporated feedback derived from user stories and supporting documentation, including content catalogues and design references.

The **second phase** transitioned the conceptual wireframes into high-fidelity designs using Figma, a design platform. These designs enabled the visualization of the toolkit's structure, visual identity, content flow, and user navigation paths across all planned functionalities.

In the **third and final phase**, the high-fidelity designs were imported into Bubble.io, a no-code development environment used to implement the toolkit. Bubble.io was selected for its ability to support rapid application development with high scalability, flexibility, and responsiveness. This platform allowed for efficient integration of the designed features while maintaining both usability and aesthetic consistency. Its visual development interface also supports future maintenance and iteration based on user feedback.

5.2 Design and linkage with project's website

The design of the MainstreamBIO Digital Toolkit, as the second online portal developed under the project, was deliberately aligned with the official MainstreamBIO web portal to ensure visual and functional consistency. Significant efforts were made to standardize the User Interface (UI) and User Experience (UX) across both platforms, thereby fostering a sense of continuity and familiarity for users navigating between the two.

This standardization aimed to prevent user disorientation and reinforce the cohesion of the project's digital presence. To further reinforce visual and functional coherence, key design elements from the official portal, such as buttons, color schemes, fonts, font sizes, and overall formatting have been consistently replicated across various pages of the MainstreamBIO Digital Toolkit. Additionally, direct access to the MainstreamBIO official website is consistently provided via a permanent link in the application's footer.

Figure 31. Digital Toolkit linkage with MainstreamBIO's website
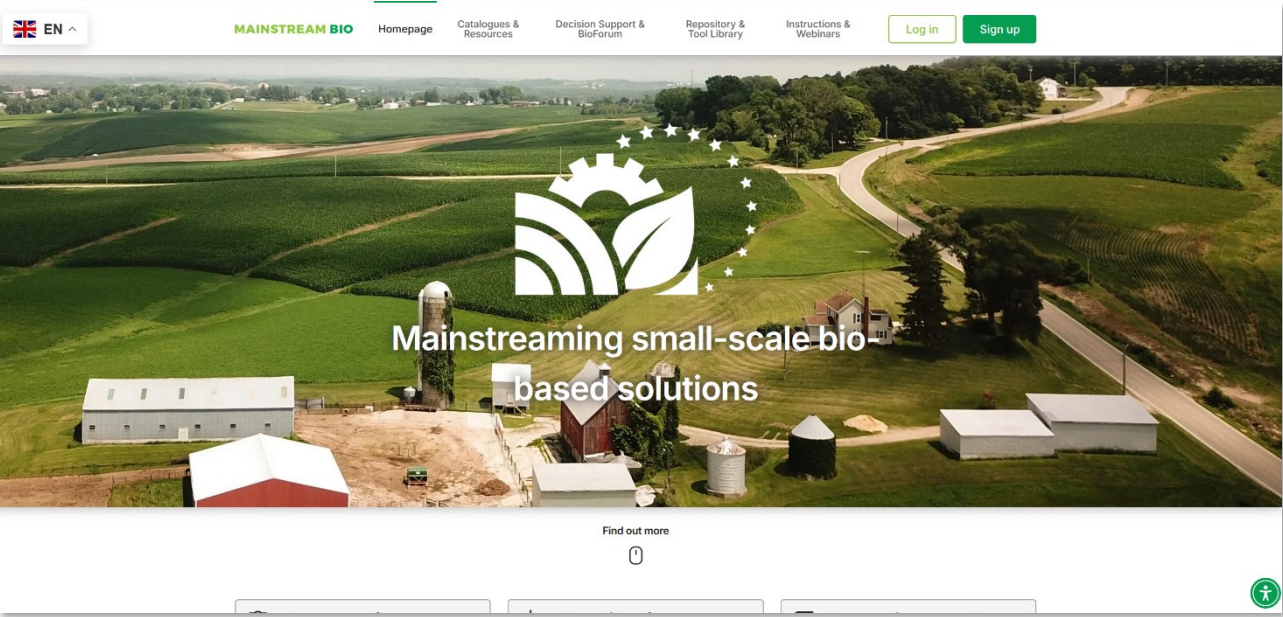
5.3 Digital Toolkit Screenshots
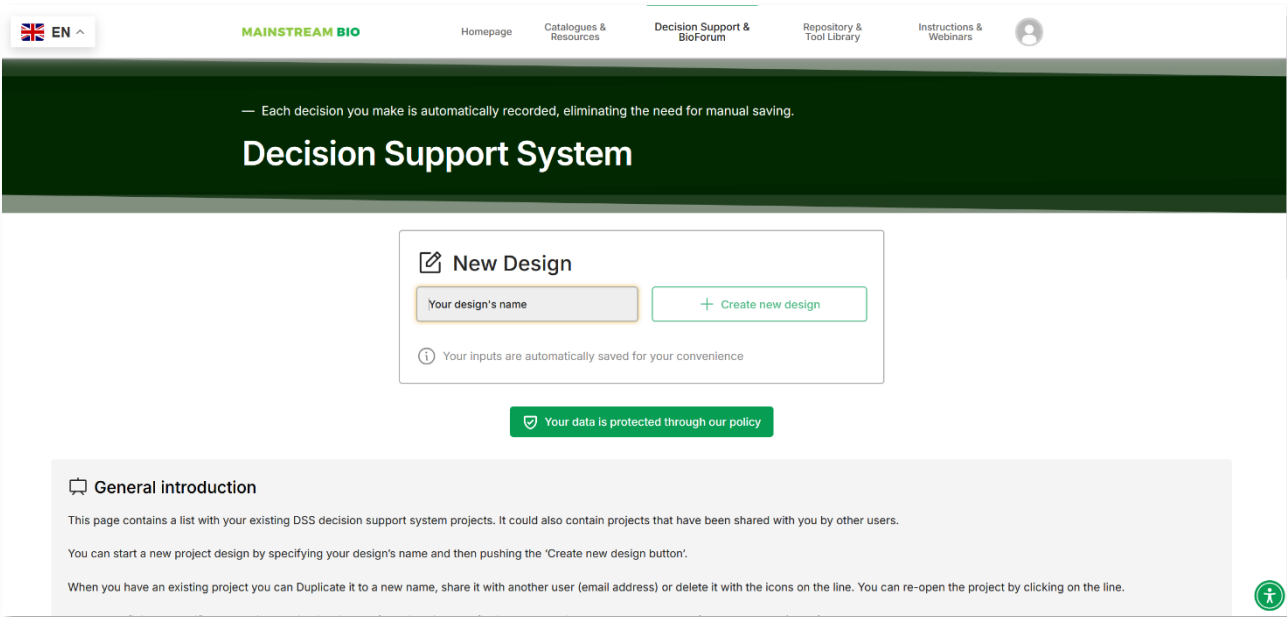

Figure 32. Home Page

Figure 33. Sign up Page
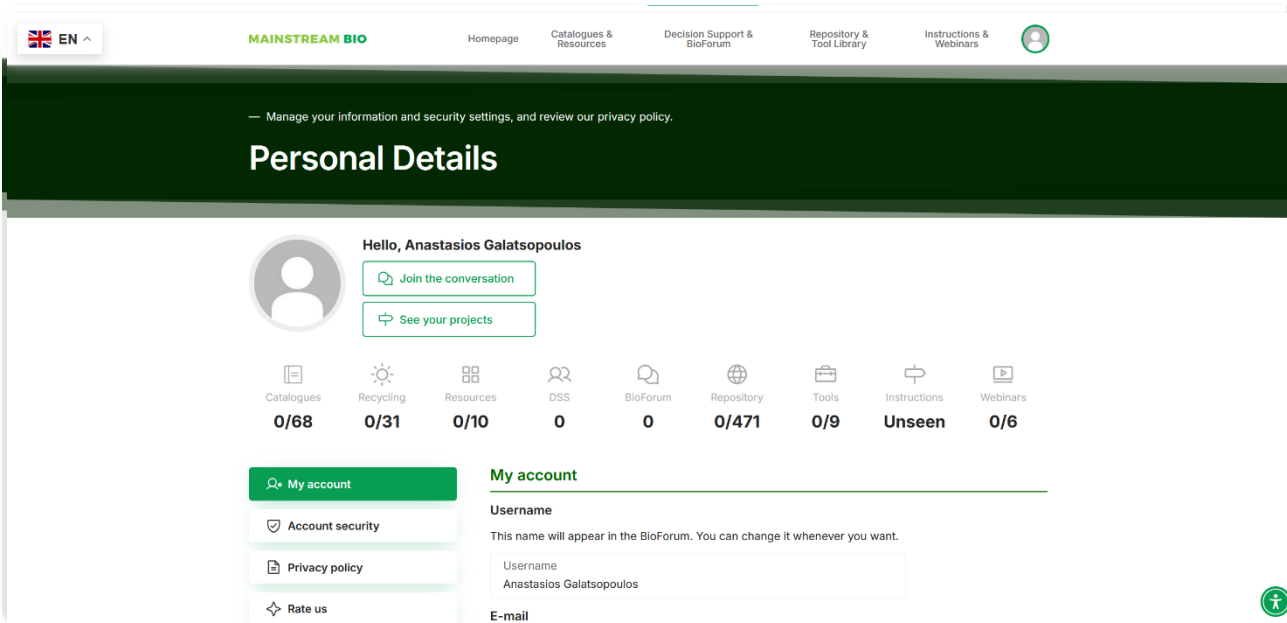
Figure 34. Decision Support System Page

Figure 35. Personal Details Page

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6. Digital Toolkit – Progress and Discussion

The MainstreamBIO Digital Toolkit has demonstrated strong performance and growing user engagement since its initial release in March 2024, as evidenced by comprehensive usage analytics.

A total of 1,200 new users have accessed the toolkit, generating over 21,000 user events. Key actions such as page views (13.000), user engagement (8.100), and scroll activity (3.700) indicate high levels of interaction with the content and features of the platform. These metrics suggest that users are not only discovering the toolkit but are actively engaging with its functionalities in meaningful ways.

The platform's average engagement time per active user stands at 4 minutes and 23 seconds, a notable indicator of user interest and content relevance. This figure reflects sustained attention and exploration, especially in a professional or research-driven context.

Among the most visited sections are:

- Home page (2.1K views)

- Decision Support System (1.8K views)

- Bioeconomy Catalogues (1.5K views)

These high-traffic areas suggest that users are particularly interested in accessing strategic guidance and curated bioeconomy resources.

In terms of geographic reach, the toolkit has succeeded in attracting a diverse audience. Notably, users have accessed the platform from the Netherlands (192), the United States (163), Ireland (109), Greece (94), and Spain (90), among other countries. This reflects successful dissemination across both EU and international contexts, reinforcing the toolkit's potential for wide-scale adoption.

Device usage trends reveal that 79.8% of users accessed the toolkit via desktop, underlining its use in formal, work-related environments. Mobile (20.1%) and tablet (0.1%) usage remain secondary, consistent with the nature of the platform as a productivity and decision-support tool.

Browser and operating system data further show that the majority of users engaged through Chrome and Edge, primarily from Windows-based systems, ensuring compatibility with common digital work environments.

Finally, retention metrics highlight a steady, albeit modest, recurring user base. While most users are new, the 6-week cohort analysis indicates a gradual increase in return visits — a promising signal for long-term adoption, particularly as awareness and trust in the toolkit grow.

In conclusion, the MainstreamBIO Digital Toolkit has successfully established itself as a valuable digital resource for stakeholders in the bioeconomy domain. The analytics confirm strong initial uptake, international relevance, and promising patterns of engagement, setting a solid foundation for further development and sustained impact within and beyond the project's lifetime.
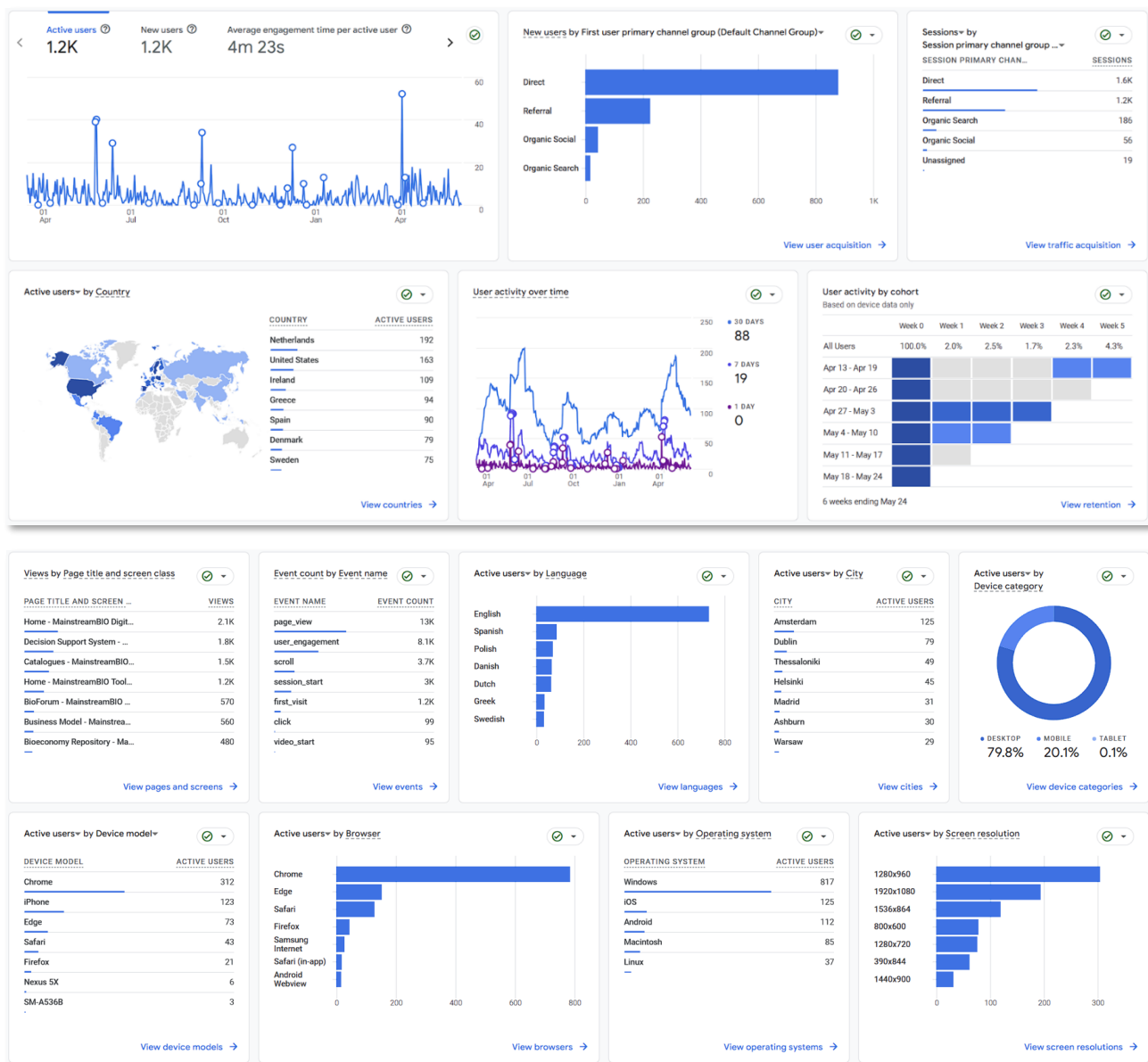
Figure 36. Digital Toolkit analytics

7. Conclusions

Over the course of MainstreamBIO, the project website and Digital Toolkit have served as complementary pillars in both project dissemination and the overall implantation as well. The website functioned as a dynamic information hub, publishing up-to-date news; events and resources, that established a cohesive online community of rural actors, policymakers, researchers, and industry stakeholders. Its continuously refreshed content and integrated events calendar helped position MainstreamBIO as a go-to reference for rural bioeconomy developments.

Meanwhile, the Digital Toolkit provided a structured, user-friendly repository of methodologies; case studies; stakeholder maps and training modules. By bringing together best practices and interactive resources, it empowered regional actors to co-create business model pathways and implement scalable bio-based solutions. The Toolkit's modular design and practical focus ensured that project outputs were not only accessible but readily adaptable to diverse local contexts.

Together, these two digital assets significantly enhanced MainstreamBIO's ability to build and sustain a broad, multi-actor network. They supported real-time collaboration across regions, underpinned mutual learning workshops and reinforced the project's bottom-up approach to policy and practice. Recognizing its ongoing value, the MainstreamBIO website will remain live and updated for two years beyond the project's official end, ensuring continued access to the project's dynamic resources and community connections.

The project

MainstreamBIO is an Horizon Europe EU funded project, which sets out to get small-scale bio-based solutions into mainstream practice across rural Europe, providing a broader range of rural actors with the opportunity to engage in and speed up the development of the bioeconomy. Recognizing the paramount importance of bioeconomy for addressing key global environmental and societal challenges, MainstreamBIO develops regional Multi-actor Innovation Platforms in 7 EU countries (PL, DK, SE, BG, ES, IE & NL). The project aims to enhance cooperation among key rural players towards co-creating sustainable business model pathways in line with regional potentials and policy initiatives. MainstreamBIO supports 35 multiactor partnerships to overcome barriers and get bio-based innovations to market with hands-on innovation support, accelerating the development of over 70 marketable bio-based products and services. Furthermore, the project develops and employs a digital toolkit to better match bio-based technologies, social innovations and good nutrient recycling practices with available biomass and market trends as well as to enhance understanding of the bioeconomy with a suite of educational resources building on existing research results and tools. To achieve these targets, MainstreamBIO involves 10 partners across Europe, coming from various fields. Thus, all partners combine their knowledge and experience to promote the growth of bioeconomy in a sustainable and inclusive manner.

Coordinator: Q-**PLAN INTERNATIONAL ADVISORS PC (Q-PLAN**)

Partner		Short Name
	Q-PLAN INTERNATIONAL ADVISORS PC	Q-PLAN
	MUNSTER TECHNOLOGICAL UNIVERSITY	MTU
	STICHTING WAGENINGEN RESEARCH	WR
	INSTYTUT UPRAWY NAWOZENIA I GLEBOZNAWSTWA, PANSTWOWY INSTYTUT BADAWCZY	IUNG
	RISE PROCESSUM AB	PROC
	AGRAREN UNIVERSITET - PLOVDIV	AUP
	FBCD AS	FBCD
	EURIZON SL	INNV
	DRAXIS ENVIRONMENTAL SA	DRAXIS
	WHITE RESEARCH SPRL	WHITE

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