Project partners:

1. **A4F, Algafuel, SA (A4F)**
2. **Mikrobioloogicky Ustav AV CR V.V.I (IMIC)**
3. **Forfarmers Corporate Services BV (FF)**
4. **Instituto de Biologia Experimental e Tecnológica (IBET)**
5. **International Flavors and Fragrances IFF (Nederland) BV (IFF)**
6. **Laboratorio Nacional de Energia e Geologia I.P. (LNEG)**
7. **Phycom BV (PHY)**
8. **Upfield Research and Development B.V. (UPF)**

MULTI-STR3AM

A sustainable multi-strain, multi-method, multi-product microalgae biorefinery integrating industrial side streams to create high-value products for food, feed and fragrance

BBI-2019-SO1-D2 - Produce components for various materials, including for food and feed, from microalgae

Collaborative project

Start date of the project: 01/05/2020

Duration: 48 months

Deliverable 6.4

Website

WP	*6*	*Communication and dissemination*
Task	*6.3*	*Production and dissemination of a communication materials package (M1-M48)*

Dissemination level[1]	PU	Due delivery date	*31/10/2020*
Nature[2]	DEC	Actual delivery date	*11/05/2020*

Lead beneficiary	*A4F*
Contributing beneficiaries	*IMIC, FF, IBET, IFF NL, LNEG, PHY, UpF*

[1] Dissemination level: **PU** = Public, **CO** = Confidential, only for members of the consortium (including the BBI), **CI** =Classified, information as referred to in Commission Decision 2001/844/EC.

[2] Nature of the deliverable: **R:** Document, report (excluding the periodic and final reports), **DEM**: Demonstrator, pilot, prototype, plan designs, **DEC**: Websites, patents filing, press & media actions, videos, etc., **OTHER**: Software, technical diagram, etc.

WP 6:	*A4F*	Author
	A4F	Approval by WP leader
	A4F	Approval by coordinator

Document Version	Date	Partner	Comments[3]
V1	20/04/2021	*A4F*	Creation
V2	22/04/2021	*A4F*	Modification
V3	06/05/2021	*A4F*	Final version for evaluation
V4	11/05/2021	*A4F*	Final version

[3] Creation, modification, final version for evaluation, revised version following evaluation, final

Deliverable abstract

This delivery regards the project website, representing a “live” document, online, which will be constantly updated with information regarding the project and related topics provided by all partners.

The objective of the website is to display the project’s vision, implementation of activities and results throughout the project. This dedicated website provides access to the publications and other material arising from the project, as well as it will present interactive material such as promotional videos produced for dissemination purposes.

The BBI JU logo, EC and BIC emblems are visible on the homepage, indicating their funding of the project. The rest of the website is divided in six sections: project, partners, press & news, results, contact us, and events.

At the end of this document, the expected communication impact is pondered.

The maintenance of the website is the responsibility of A4F, whilst all the consortium members are required to provide information and documentation to feed on the website.

This delivery regards task 6.3 on “production and dissemination of a communication materials package (A4F, all) (M1-M48)”, dedicated to creating a full communication material for MULTI-STR3AM.

Table of content

1 Introduction

The official project website www.multi-str3am.com went "live" on May 4th, 2021. It is the tool for an active promotion of project results, business opportunities and public awareness.

Prior to this complete version, a "landing page" was on-line at the same address, with a link to the latest press releases of the project and a login button for partners to access the project files.

Figure 1: MULTI-STR3AM landing page.

MULTI-STR3AM website provides the project overview highlighting the motivation, background and objectives of the project, technical content and structure of the project, and the composition of the consortium. Adding to it, all public deliverables and press releases will be available at the website. Besides the general public, the key target groups are: policy makers, industry, and academia.

The maintenance of the website is the responsibility of A4F, whilst all the consortium members are required to provide information and documentation to feed on the website. This "live" document has been created compliant with GDPR rules on data collection and processing.

The content of the website will be updated continuously by the consortium.

2 Objectives

The website aims to serve as a primary source of information regarding the project's objectives, progress and outcomes, organising the project information as a unified source of visitor's knowledge. This means to:

- Provide relevant and current information to a wide audience, in an accessible and usable manner;
- Be a common documentation base for all partners, containing the main project documentation and public deliverables;
- Be an information database of all activities and deliverables carried out by the project and consortium partners.

3 Website structure

The structure of the website is divided in seven sections, which will be described next: Homepage, Project, Partners, Press & News, Results, Contact Us, and Events.

3.1 Homepage

The homepage intends to highlight the three market sectors that are the focus of MULTI-STR3AM: food, feed and fragrance. It also brings the logos of the Horizon 2020, European Commission and BBI JU, to explicit the funding source for the development of the project.

Figure 2: MULTI-STR3AM Homepage.

At the up-right corner, it is located the “login” button, where all partners can access the database with the project files. Also, at the bottom of the homepage it is possible to subscribe to the newsletter, which will be sent every three months to all subscribers during the duration of the project.

3.2 Project

The space dedicated to the project specifics is divided in four subsections: Introduction, About, Overview and Structure. First, the introduction section brings information about the challenges MULTI-STR3AM faces, and the main goals of the project. In the future, a short video with a summary of the project will be published.

Figure 3: MULTI-STR3AM Project introduction.

The "about" section provides details of the project, regarding the call, funding programme and scheme, and the project fact sheet with information on status, grant agreement number, start and end date, budget and EU contribution, besides fields of science that the project tackles.

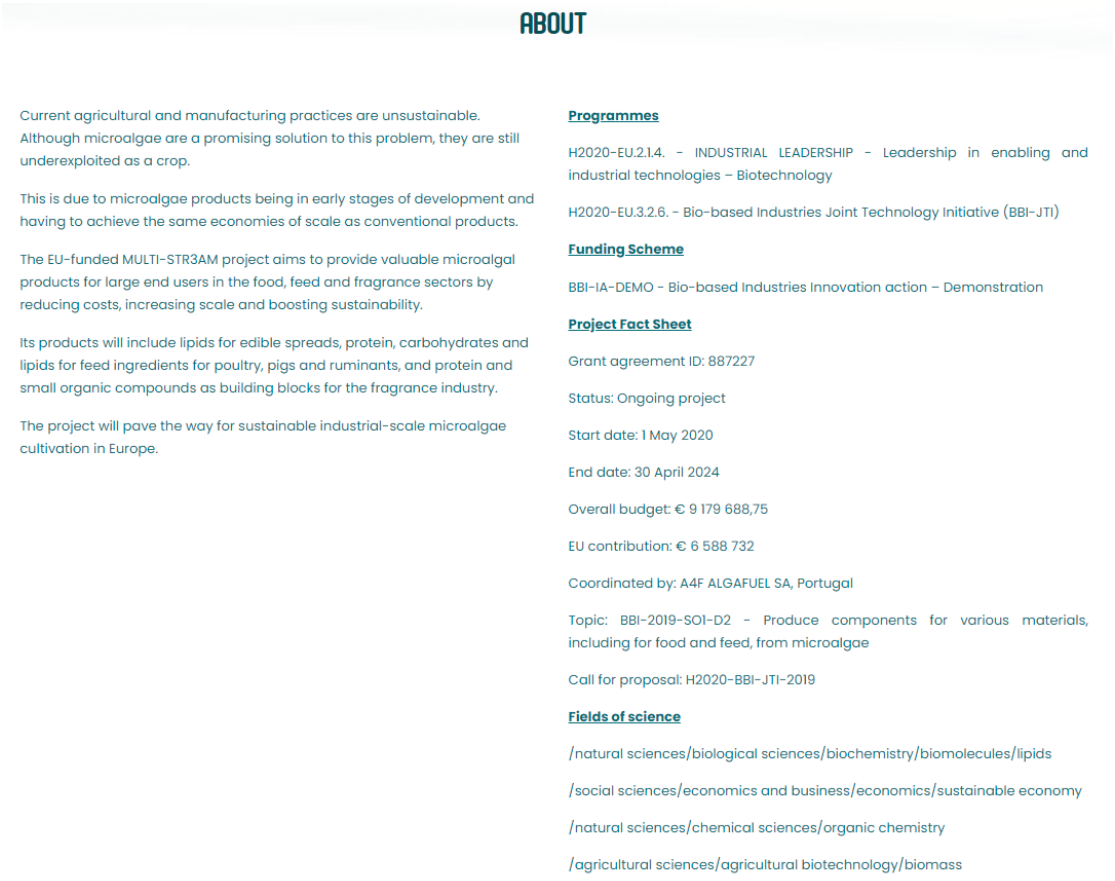


Figure 4: MULTI-STR3AM Project "About".

The “overview” section provides more information regarding the project such as drivers and the products that will be demonstrated.

OVERVIEW

MULTI-STR3AM is driven by a critical need to shift to a sustainable means of producing food, feed and raw materials.

Microalgae, have a vast biosynthetic potential and are a rich source of lipids, protein and high-value compounds such as pigments.

Despite these advantages, due to barriers of scale, microalgae products struggle to achieve the same economies as conventional products, such as palm oil or soybean.

MULTI-STR3AM addresses these challenges by scaling up and lowering costs, providing valuable products for large end users in the food, feed and fragrance sectors.

The project reduces costs, increases scale and boosts sustainability, through:

- Improvement of strains through non-GM methods, to increase their productivity and meet end user needs.
- Reduction of CAPEX and OPEX of biomass production through design and engineering technological development on cultivation and harvesting.
- Exploitation of side streams during cultivation in a circular economy design.
- Integration of different technologies in a multi-strain, multi-method, multi-product biorefinery (‘MULTI-biorefinery’).
- Valorisation of all fractions of the microalgal biomass in a zero-waste approach.

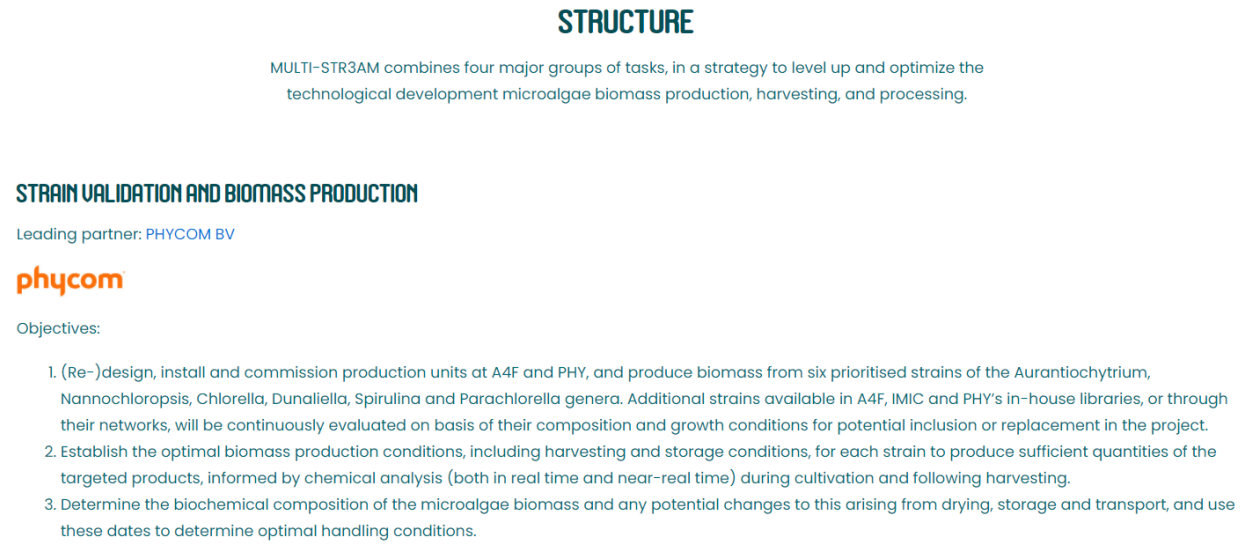
MULTI-STR3AM will demonstrate 7 consumer products, 6 of which are new, including:

- lipids for edible spreads;
- protein, carbohydrates and lipids for feed ingredients for poultry, pigs and ruminants;
- and protein and small organic compounds as building blocks for the fragrance industry.

By engaging global actors from the industrial, academic and non-profit sectors, MULTI-STR3AM creates a roadmap for economically viable industrial-scale microalgae cultivation, towards a sustainable future for European bio-based industries.

Figure 5: MULTI-STR3AM Project overview.

For last, the “structure” section shows the four main blocks of work, with its objectives and leading partner: Strain validation; Biomass refining; Product demonstration and validation; and Social, environmental and economic impact assessment. In the near future, a smart art is being designed in order to better explain in a visual form the structure of the project.



STRUCTURE

MULTI-STR3AM combines four major groups of tasks, in a strategy to level up and optimize the technological development microalgae biomass production, harvesting, and processing.

STRAIN VALIDATION AND BIOMASS PRODUCTION

Leading partner: PHYCOM BV

phycom

Objectives:

1. (Re-)design, install and commission production units at A4F and PHY, and produce biomass from six prioritised strains of the Aurantiochytrium, Nannochloropsis, Chlorella, Dunaliella, Spirulina and Parachlorella genera. Additional strains available in A4F, IMIC and PHY’s in-house libraries, or through their networks, will be continuously evaluated on basis of their composition and growth conditions for potential inclusion or replacement in the project.
2. Establish the optimal biomass production conditions, including harvesting and storage conditions, for each strain to produce sufficient quantities of the targeted products, informed by chemical analysis (both in real time and near-real time) during cultivation and following harvesting.
3. Determine the biochemical composition of the microalgae biomass and any potential changes to this arising from drying, storage and transport, and use these dates to determine optimal handling conditions.

Figure 6: MULTI-STR3AM “Strain validation and biomass production”.

BIOMASS REFINING

Leading partner: A4F

Objectives:

1. To implement and commission a multi-species, multi-process and multi-product biorefinery (MULTI-biorefinery) capable of processing microalgae biomass, based on the integration of individual technologies and unitary processing operations.
2. To optimise the operation of the MULTI-biorefinery to maximise production of fractions and building blocks according to end user specifications.
3. To, over the course of the project, process biomass into fractions that are all valorised in a zero-waste approach.

Figure 7: MULTI-STR3AM "Biomass refining".

PRODUCT DEMONSTRATION AND VALIDATION

Leading partner: IBET

To ensure the success of MULTI-STR3AM's 'market to resources' approach, end users from the food (Upfield), feed (ForFarmers) and fragrance (International Flavours & Fragrances) sectors are participating in the project as key partners.

These partners will provide input as to their needs in terms of type of compounds, purity, volume and price, as provide ongoing feedback on microalgae ingredients supplied by biorefining operations.

Objectives:

1. Evaluate the safety, quality and purity of microalgae products.
2. Determine the financial feasibility of taking up microalgae ingredients across the food, feed and fragrance industries.
3. Evaluate the performance of microalgae ingredients across food, feed and fragrance applications.

Figure 8: MULTI-STR3AM "Product demonstration and validation".

SOCIAL, ENVIRONMENTAL AND ECONOMIC IMPACT ASSESSMENT

Leading partner: LNEG

Objectives:

Fully assess the techno-economic viability, environmental sustainability and social acceptability of the MULTI-biorefinery with technologies integrated and co-located in order to valorise all fractions of microalgae biomass.

1. Perform the biorefinery process design, integration and optimization to determine the best possible solution in terms of CAPEX, OPEX and socio-economic and environmental impacts.
2. Perform a comprehensive Life-Cycle Assessment (social, economic and environmental) of the multi-product biorefinery production process. Find bottlenecks and overcome it by increasing sustainability.
3. Perform the assessment of the whole value chain of the production process and benchmark process sustainability with traditional production methods of the different products.
4. Perform a sensitivity analysis in order to find and implement opportunities to increase sustainability.

Figure 9: MULTI-STR3AM "Social, environmental and economic impact assessment".

3.3 Partners

The partners' section lists all eight partners in the consortium, brings a brief description about each player, and the links to their websites and social networks.

Figure 10: MULTI-STR3AM Partners.

The three consortium partners that are “end users”, and key players responsible for the evaluation and final formulation of the seven products derived from MULTI-STR3AM, are detached. It is important to show that these partners will provide input as to their needs in terms of type of compounds, purity, volume and price, as provide ongoing feedback on microalgae ingredients supplied by biorefining operations.

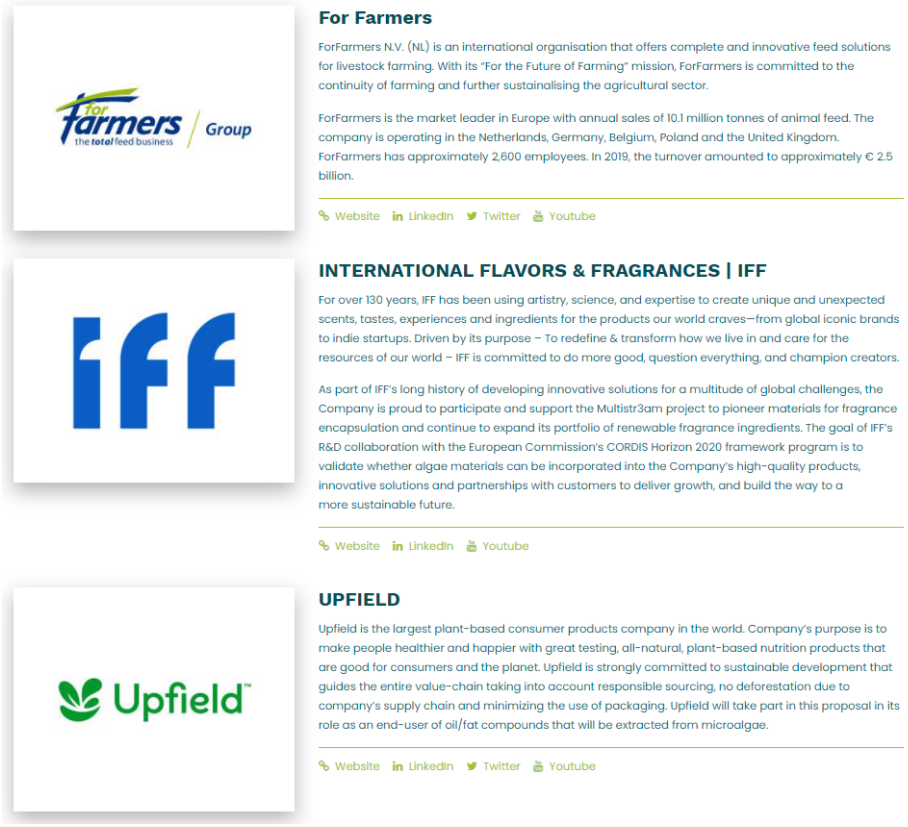


Figure 11: MULTI-STR3AM End-users partners.

3.4 Press & News

In this section, all news regarding the project, press releases delivered to the public, and other news that deal with scientific topics related to the project such as microalgae, biorefinery, and bioeconomy, will be published.

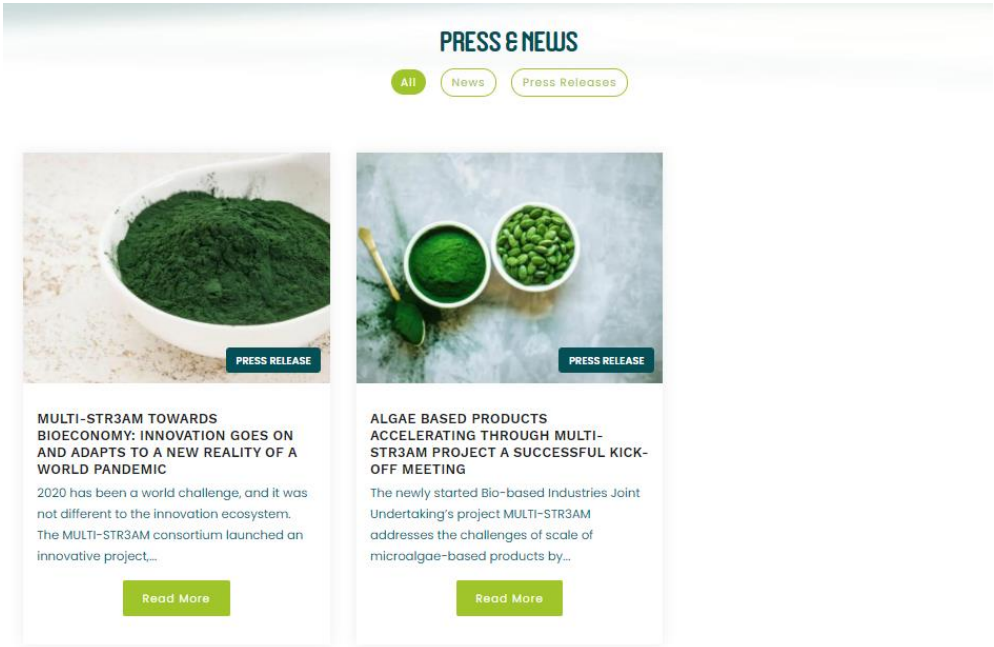


Figure 12: MULTI-STR3AM "Press & News" page.

Also, a press kit is available at this section for media purpose.

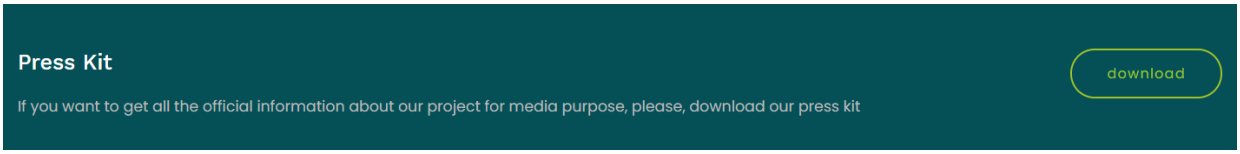


Figure 13: MULTI-STR3AM Press kit link at “press & news” page.

3.5 Results

In section “results”, all public deliveries, public publications and presentations that have been disclosed in different journals or events that all partners may participate, will be available for download.

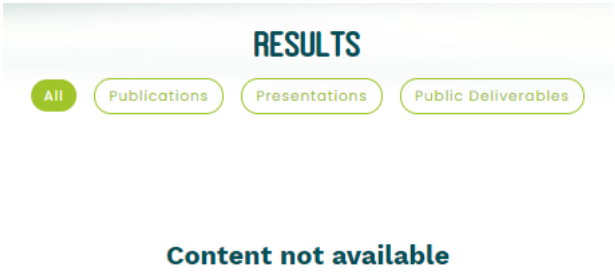


Figure 14: MULTI-STR3AM “Results” page.

3.6 Contact us

Besides the links to each partners’ website and social media, a “contact us” form is also available for those who wish to contact directly the coordination of the project. Theses messages will be received by the project coordinator (PMO) who will answer or send the message to the consortium partner who might be more appropriated to respond to the message.

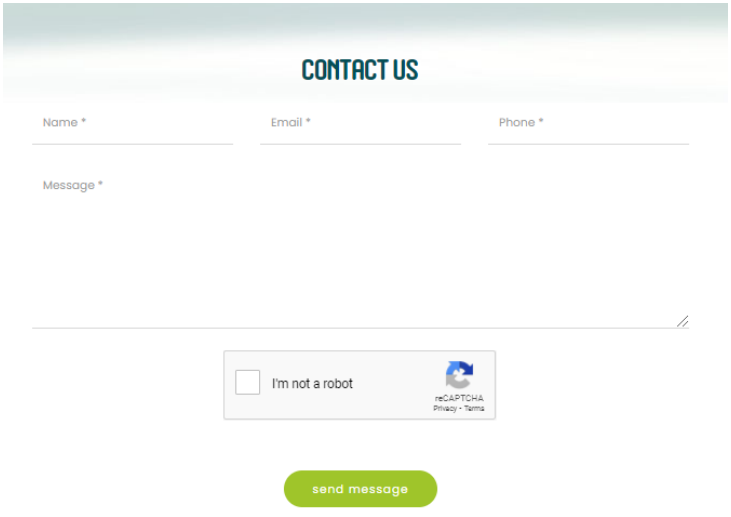


Figure 15: MULTI-STR3AM “Contact us” page.

3.7 Events

For last, a section with a list of future events of interest related to the project is displayed to the visitors. It is the intention of the consortium to increase the discussion on topics related to MULTI-STR3AM, so all congresses, seminars, webinars, and fairs of interest will be publicized at the website.

Figure 16: MULTI-STR3AM "Events" page.

It is important to increase awareness on the project topics and facilitate the exchange of information that might support the market success of future MULTI-STR3AM products. Thus, all scientific and technological debates regarding the use of microalgae biomass as raw material for food, feed and fragrance will be incentivized by MULTI-STR3AM consortium.

4 Expected impact

The impact of the communication activities will be measured through indicators, and the website will be continuously evaluated by the number of visitors throughout the months. It will be important to keep a routine of supplying monthly the website with new information. Also, all communication activities in social networks intends to have links to the news in the website, keeping the flow of visitors.

For the first year of project, the intention was to have 100 visitors by May 1st. This was not possible given the difficulties faced by the coordination and the delay to have the website on air. The following metrics was defined for month 24, April 2022.

Table 1: Indicator for website flow evaluation at month 24.

Indicator	May 2022 (following M24)	Source and methodology
Number of visits on project website	600	Website count. Google analytics report on May 1st

Independent on this specific indicator, the intention of the consortium is to increase with the evolution of the project all communication and dissemination activities, and the website intends to be the centre of all the information flow.

This project has received funding from the Bio-based Industries Joint Undertaking (JU) under the European Union's Horizon 2020 research and innovation programme under grant agreement No 887227. The JU receives support from the European Union's Horizon 2020 research and innovation programme and the Bio-based Industries Consortium.