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3. **Forfarmers Corporate Services BV (FF)**
4. **Instituto de Biología 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 6.8

Dissemination Plan [update 1]

WP	6	Communication and dissemination
Task	6.1	Development and implementation of a dissemination plan

Dissemination level ¹	PU	Due delivery date	30/04/2022
Nature ²	R	Actual delivery date	29/04/2022

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

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

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Deliverable abstract

This deliverable is an update of the deliverable D6.1, part of task 6.1, and features the revisions made to the dissemination plan of the MULTI-STR3AM project to boost and increase the dissemination activities of the project.

The goal of the dissemination plan is to set a strategic direction to promote and disseminate the project's results and best practices developed along the value chain as well as to boost the project findings and their replicability in order to be a successful example of a biorefinery concept.

This deliverable presents the updated strategy for the dissemination of the project, giving an overview of dissemination activities planned for the next 12 months of the project. Activities that are foreseen at a later stage will not be scheduled, as further updates to the plan will add this information.

This deliverable will be updated in M36 to include a status report on the implemented activities, as well as to integrate any revisions deemed necessary by the consortium to increase the impact of the project's communication activities. At the end of the project, a final version of this deliverable will give a retrospective of the results achieved through dissemination activities.

In addition to this document, a log of dissemination activities (including information on timing, target audience, means and expected impact of the activity) is being updated along the development of activities. This will be submitted along with the project's final report.

1 Objectives of the Dissemination Plan

1.1 Specific objectives of the Dissemination Plan

The objectives of the Dissemination Plan are:

1. Define dissemination strategies and opportunities identified by project partners;
2. Define specific dissemination goals, KPIs and tools;
3. To review annually and update the Plan according to project progress and past performance.

This plan is conceived as a practical tool to be used by all partners to develop their individual and collective dissemination activities efficiently and contribute to the overall impact of the project.

A4F is task leader for the dissemination activities but will work together with the whole consortium, and especially other work package leaders (WPL's) and task leaders. Dissemination of results will be a continuous task throughout the project duration. Results that are suitable for dissemination will be identified by WPL's.

1.2 Objectives of dissemination activities

The objectives of the dissemination activities will be:

1. Promote: Endorse and educate all interested audiences
2. Inform: Make the results of the project available to different target audiences
3. Engage: Receive inputs and feedbacks from the various target groups
4. Sustain: Ensure replication of outputs/results

By the end of the project, lessons learned will be documented and implications for other projects of similar scope will be derived and made public.

1.3 Guiding principles

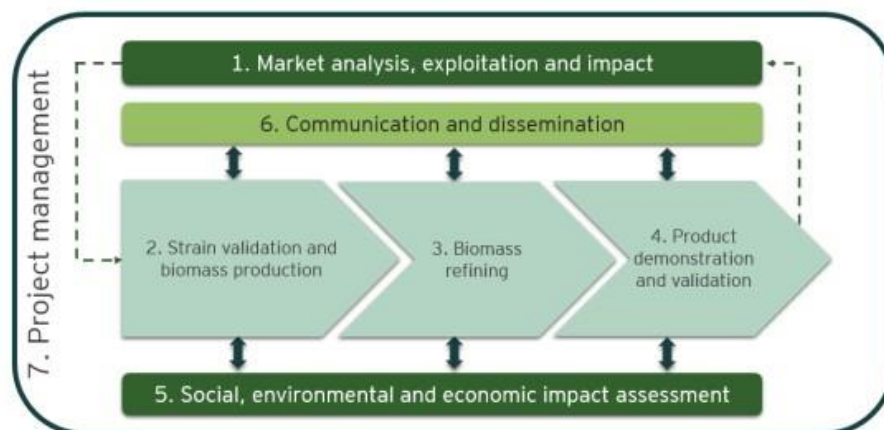
In order to provide clarity and enhance the quality of the dissemination activities, the consortium agrees that all dissemination activities should follow these principles:

- Respect the IPR of all partners
- Recognize and respect the work of all partners and ensure proper referencing of all relevant parties whose work is directly or indirectly mentioned in the proposed publication
- Promote transparency of procedures
- Duly protect confidential results
- Coordinate actions in order to avoid duplication of work and overlapping of activities
- Target appropriate audiences
- Respect the project's visual identity as well as the obligation to use to display the EU emblem and funding authority's financial support to the project
- Ensure open access to all peer-reviewed scientific publications relating to results as well as open access to research data

1.4 Links with other tasks and WPs

The dissemination plan is linked to the following tasks and deliverables in MULTI-STR3AM:

- **Task 1.3. Development and implementation of an exploitation plan (M1-M48):** The Exploitation Plan is a deliverable, which is updated throughout the project. It is defined by the Exploitation Committee and sets a framework to identify commercially and non-commercially exploitable results, which are the results which the dissemination strategy will exactly promote, inform, engage and sustain.
- **Task 6.2 Communication Plan (M1-M48):** The Communication Plan is due in M6, M24 and M48, and aims to define the target audiences, key messages, communication channels and implementation plan, based on a thorough stakeholder analysis. This goes hand in hand with the dissemination activities.
- **All work packages:** Dissemination activities will span across the whole project to disseminate on a continuous basis the results achieved in the different technical work packages. As part of WP6, dissemination activities will interact and receive input from all other work packages in the project, as illustrated in the graphical representation below:



2 Implementation approach

The dissemination plan is divided in three phases during the project:

2.1 Initial awareness phase (M1-M12)

The main objective is to achieve initial visibility, mostly through communication activities. In terms of dissemination, the project partners will benefit from the awareness raised through communication activities to identify any low hanging fruits that can later benefit dissemination efforts.

The detail of this first initial awareness phase is provided in the Action Plan Annex of the Communication Plan and covers interviews, building of social media presence, creation of the visual identity, website and dissemination plan.

2.2 Dissemination development phase (M13 – M42)

The main objective is to sustain and increase visibility and engagement, by disseminating results in conferences, articles, press releases, website and other social media avenues. This will be done by each partner and by the consortium alike.

2.3 Exploitation and sustainability phase (M43 – M48)

This phase will focus on guaranteeing the sustainability of the project 's results beyond the project duration. The focus will be on disseminating the final results and set the ground for exploitation of results after the project end.

3 Results for dissemination

Target audiences for dissemination activities consist mostly of industry actors and audiences with research and academia across RTOs, universities, research centres and R&D departments.

Project results	Target audience	Purpose of dissemination
Business case and business plan (WP1)	<ul style="list-style-type: none"> Bio-ingredient producers/traders Biorefineries Potential end users Producers of biomass from other origins suitable for processing in the multi-biorefinery model Microalgae producers and cultivation and processing technology providers 	<ul style="list-style-type: none"> Demonstrate the economic and environmental sustainability of industrial multi-biorefineries Provide attractive solutions to produce bio-based ingredients Raise awareness for the potential of microalgae as source of commodities and specialities
Water saving measures including recycling of cultivation media and valorisation of brackish and wastewater (WP2)	<ul style="list-style-type: none"> Microalgae research community Process companies with sub-streams of water to be treated Aquaculture industry Membrane producing companies 	<ul style="list-style-type: none"> Illustrate how freshwater use can be reduced Raise awareness of and uptake of sustainable water management practices
Design and operation of bioreactors with improved engineering and design for biomass cultivation (WP2)	<ul style="list-style-type: none"> Biomass producers Microalgae research community Engineering companies 	<ul style="list-style-type: none"> Demonstrate how current microalgae production technologies can be engineered to improve their performances
Development and optimisation of new microalgae strains, including protocols for cultivation and chemical and genetic data (WP2)	<ul style="list-style-type: none"> Microalgae research community Biorefineries and potential end users 	<ul style="list-style-type: none"> Sharing of scientific knowledge (after IP treatment) Generate interest from end users in new compounds with potential new applications
Development of online, real-time, monitoring techniques for microalgae cultivation, harvesting and biorefining for a more efficient automated process control with impact on production costs and product quality (WP2/WP3).	<ul style="list-style-type: none"> Engineering companies 	<ul style="list-style-type: none"> Illustrate how online, real-time monitoring impacts on process economics and product quality.
Integration of biorefinery technologies (WP3)	<ul style="list-style-type: none"> Microalgae research community Industrial designers Development and engineering companies 	<ul style="list-style-type: none"> Trigger further innovations in biorefining Unleash the biorefinery potential already present in microalgae development labs

Biorefining of microalgae biomass into bulk (commodities) and high-value (specialties) products (WP3)	<ul style="list-style-type: none"> • Microalgae research community • Food and feed producers • Pharmaceutical and healthcare industries • Cosmetics • Chemical industry • Coatings producers • Technology developers • Private investors • Policy makers 	<ul style="list-style-type: none"> • Demonstrate viable and sustainable alternatives sources of protein, FAs, lipids, carbohydrates and secondary metabolites such as pigments and antioxidants • Trigger private investors • Catalyse legislation and registration changes around microalgae production and products
Energy savings through the use of waste heat recovery units such as air compressors or steam generators (WP3)	<ul style="list-style-type: none"> • Process companies • Engineering companies 	<ul style="list-style-type: none"> • Illustrate potential cost and energy savings • Contribute to the circular economy
LCA (WP5)	<ul style="list-style-type: none"> • Microalgae research community • Industrial community • Private investors • Policy makers 	<ul style="list-style-type: none"> • Guide policy makers to make “green deals” and remove legal and legislation hurdles • Stimulate investment by showcasing the environmental and economic benefits of microalgae solutions

4 Dissemination channels

To optimise the impact of dissemination activities, results will be circulated through various channels, favouring journal publications with open access, conference presentations throughout Europe and other relevant events, both online and offline. The consortium’s research network will also be mobilised to spread the results. Dissemination efforts are expected to be strengthened from M24, when most WPs will have delivered their first solid results.

In line with the H2020 reporting templates, dissemination activities are identified according to the following categories:

- Organisation of a Conference
- Organisation of a Workshop
- Press release
- Non-peer-reviewed publication
- Exhibition
- Flyer
- Training
- Social Media
- Website
- Communication Campaign (e.g. Radio, TV)
- Participation to a Conference
- Participation to a Workshop
- Participation to an Event (others)

- Video/Film
- Brokerage Event
- Trade Fair
- Participation with other H2020 projects
- Other

In MULTI-STR3AM, the channels presented below were identified as the most effective dissemination platforms to ensure the project reaches out to the right target audiences. These will therefore be in focus, but the consortium does not exclude the possibility of using other means, as listed in the H2020 reporting template, to satisfy the dissemination targets.

Dissemination Channels	
Scientific and industry conferences	<ul style="list-style-type: none"> • AlgaEurope annual conferences, 2 delegates from IMIC • AlgaeTech annual conference, 1-2 delegates from IMIC • Algae Network Austria biennial conferences, 1 delegate from IMIC • The 7th International Society of Applied Phycology Congress 2023, 1 to 2 delegates from IMIC • European Federation of Animal Science (EAAP) annual meetings, 1-2 delegates from FF • Digestive Physiology of Pigs (DPP) annual meetings, 1-2 delegates from FF • Microalgae in Food and Feed symposium in IMIC Centre Algatech in 2022 (delegates from IMIC and other partners) • Algatech Summer School – 2 students annually • BioTech Czech-Swiss Symposium with exhibition • Society of Biology Annual Meeting • ICOM International Congress on Membranes, triennial conferences, 1-3 delegates from iBET • Organisation of the conference “Imagine Membrane”, 2022, iBET • Euromembrane conferences, triennial conferences, 1-3 delegates from iBET • Food Industry conferences; Hi & Fi Europe, Vitafoods Europe, 1 delegate from PHY • Feed Industry conferences; Nordic pet food conference, VIV Europe, 1 delegate from PHY
Peer-reviewed academic journals (IF = Impact Factor)⁴	<ul style="list-style-type: none"> • <i>Algal Research</i> (IF 5.0) • <i>Bioresource Technology</i> (IF 5.8) • <i>Separation and Purification Technology</i> (IF 5.1) • <i>Microbial Cell Factories</i> (IF 4.4) • <i>Biotechnology and Bioengineering</i> (IF 4.3) • <i>PLoS One</i> (IF 2.8) • <i>Journal of Applied Phycology</i> (IF 4.6) • <i>Cells</i> (IF 4.8) • <i>Journal of Animal Science</i> (IF 1.7) • <i>Environmental Science & Technology</i> (IF 7.9) • <i>Renewable Energy</i> (IF 6.3) • <i>Applied Biochemistry and Biotechnology</i> (IF 1.6) • <i>Science of the Total Environment</i> (IF 6.6) • <i>Water Research</i> (IF 9.1) • <i>Journal of CO₂ Utilization</i> (IF 6.4) • <i>Journal of Cleaner Production</i> (IF 7.2)

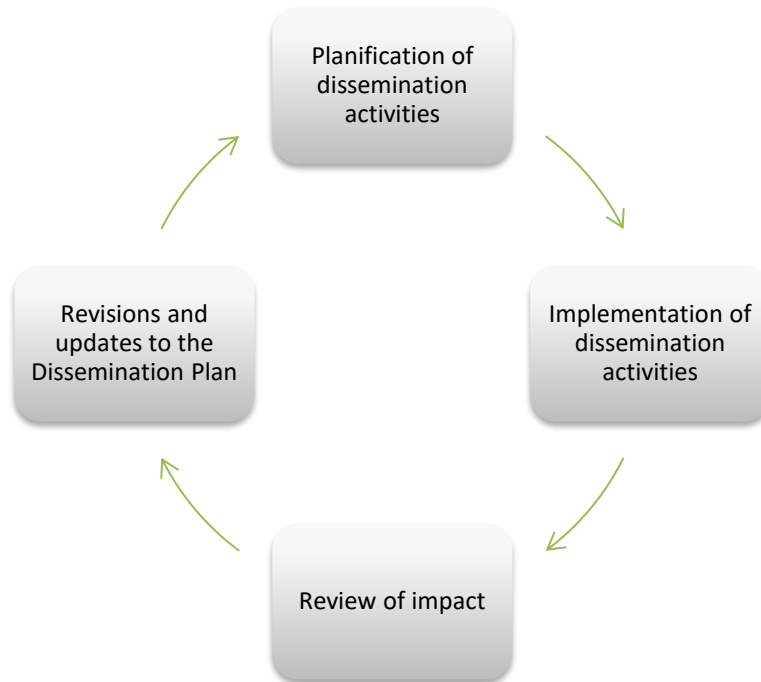
⁴ Journal Impact Factors are used to measure the importance of a journal by calculating the number of times its articles are cited; highly-cited journals have higher IFs. Of the journals assigned IFs in 2017, the top 11,4% are ranked 4 or above, according to the Journal Citation Reports database.

	<ul style="list-style-type: none"> • <i>HELIYON</i> (IF 1.7) • <i>Bioenergy Research</i> (IF 2.5) • <i>Journal of Biotechnology</i> (IF 3.2) • <i>Process Biochemistry</i> (IF 3.0) • <i>Biotechnology Reports</i> (IF 4.5)
Participation in algae associations	<ul style="list-style-type: none"> • <i>European Algae Biomass Association</i> • <i>Algae Biomass Organization</i> • <i>European Biomass Industry Association</i> • <i>Microalgen platform (NL)</i>
Linked projects/ Research networks/ Other networks	<p>A4F:</p> <ul style="list-style-type: none"> • <i>FP7 D-Factory (iBET also partner)</i> • <i>FP7 PUFACHain</i> • <i>FP7 DEMA</i> • <i>FP7 BIOFAT</i> <p>IMIC:</p> <ul style="list-style-type: none"> • <i>H2020 SABANA - Sustainable Algae Biorefinery for Agriculture and Aquaculture</i> • <i>H2020 ERC Synergy PhotoRedesign - Redesigning the Photosynthetic Light Reactions</i> <p>PHY:</p> <ul style="list-style-type: none"> • <i>Aqua Valley consortium</i> • <i>Biostream project</i> • <i>Public Private Partnership PHY: Microalgae to improve the health of young animals</i> • <i>Feed Design Lab – membership</i> • <i>FoodDrinkEurope</i> • <i>European Plant-based Foods Association</i> • <i>EFFCA (European Food & Feed Cultures Association)</i> • <i>EU Specialty Food Ingredients</i> • <i>The European Feed Manufacturers' Federation</i> • <i>EU Association of Specialty Feed Ingredients and their Mixtures</i> <p>LNEG:</p> <ul style="list-style-type: none"> • <i>EERA (European Energy Research Alliance)- Bioenergy</i> • <i>ESEIA (European Sustainable Energy Innovation Alliance)</i> <p>FF:</p> <ul style="list-style-type: none"> • <i>FEFAC (European Federation Feed Manufacturers)</i> • <i>CIELivestock (UK Agritech Centre)</i> • <i>H2020 Run4Life</i> • <i>SUSINCHAIN</i> <p>iBET:</p> <ul style="list-style-type: none"> • <i>H2020 SaltGae</i> • <i>FP7 D-Factory</i> • <i>FP7 o-WAR</i>
Training	<ul style="list-style-type: none"> • <i>IMIC: Algatech Summer Schools – Training for students every summer</i> • <i>iBET: European Membrane Society, EMS Summer Schools (may include research on microalgae harvesting and biorefining)</i>
Promotion programme	<ul style="list-style-type: none"> • <i>IMIC: Member of Czech Academy of Sciences prestigious programme “Strategy AV21”, Project “Food for future” (www.potravinAV21.cz)</i>

5 Monitoring of dissemination activities and impact assessment

5.1 Assessment framework

The goal with monitoring is to ensure a high-quality dissemination strategy implementation. This will be performed on a continuous basis to ensure an effective impact assessment and the consortium's ability to react on time to maximise impact.



All partners must register the activities in the Dissemination log (see Annex of D6.9 Communication Plan) and save evidence of the activities conducted. This will enable the consortium to assess which activities have the biggest impact both in quantitative and qualitative terms.

Dissemination assessment and related corrective measures will guarantee the sound implementation of activities in the framework of T6.1. The assessment of dissemination activities will verify if:

- Dissemination activities are completed on time
- Dissemination activities are in line with the ambitions set out by the consortium
- Dissemination activities reach the expected level of impact as defined in the proposal and in this document.

In case of delays in implementation of low levels of quality compared to the KPIs defined below, the consortium will need to take corrective measures, including:

- Feedback to concerned consortium members with regards to the activity level or quality level of dissemination actions
- Follow up actions, and where necessary identification of supplementary dissemination channels to meet the quality and impact levels set out by the consortium.

5.2 Evaluation of the impact of the first phases of the Dissemination Plan

Until now, dissemination activities have been developed within the MULTI-STR3AM project corresponding to initial awareness phase and to the beginning of the dissemination development phase. In order to evaluate the effectiveness of the dissemination activities, it is essential to calculate and assess the performance indicators until now. This will also guide the definition of new dissemination metrics in the next section.

The initial awareness phase has been successful in the establishment of the visibility and identity of the MULTI-STR3AM project, having resulted mainly in the participation in different events to disseminate the project concept and objectives, as the table below shows. Interviews, social media presence, website and the definition of the dissemination and communication plans have been achieved at this phase (M1-M12), which receives a very good evaluation by the consortium.

For the beginning of the dissemination development phase, two evaluations by M18 and M23 have been performed.

Actions	Metric	Performance by M48				M12	M18	M23
		Excellent	Good	Moderate	Poor			
Journal articles (peer-reviewed)	Number of publications	>11	Between 8 and 10	Between 3 and 7	<3	0	0	1*
Conference attendance	Number of conferences	>15	Between 10 and 15	Between 7 and 10	<7	4	4	9
Conference presentations	Number of presentations	>11	Between 8 and 10	Between 4 and 7	<4	3	3	9
Webinar or events organised	Number of webinars and event organised	>6	Between 4 and 6	3	<3	0	0	0
	Number of webinar or events participation	>11	Between 8 and 10	Between 4 and 7	<4	10	11	15
Project clustering activities (coordination with other R&D project activities to establish common dialogue)	Number of synergies established between R&D projects	>6	Between 3 and 5	2	<2	1	2	2
Policy briefs (in result of D1.5 and D1.7)	Number of policy proposals for the definition of microalgae-based products	>10	Between 7 and 9	6	<6	0	0	0

*one more submitted and other under preparation.

Overall, these first months of the dissemination development phase have achieved an acceptable level of dissemination, when compared to what is expected to be reached by M48. In detail, some results exceed the expectations, such as the participation in webinar or events, which already surpasses the expected result for the end of the project. Although being a great result that demonstrates the commitment of the entire consortium in the dissemination of the MULTI-STR3AM project, it is also an indication that the goal for this metric has been underestimated previously.

For other metrics, such as the number of events organised by the consortium, or the number of policy briefs, the evaluation shows no achievements. Nevertheless, these are dissemination activities expected to be implemented at a later stage of the project, when more technical results have been produced and are ready to be adequately disseminated to the interested stakeholders.

Metrics per conference attendance and participation, and project clustering activities are within reasonable values for the beginning of the development phase, considering the expectations for M48. Regarding the number of articles in peer-reviewed journals, we consider that better results could have been achieved if not for the delays regarding the production of technical results (in delay mainly due to the constraints forced by covid-19 pandemic).

Overall, the general evaluation of the dissemination activities is good but there's room for further improvements to boost the impact of MULTI-STR3AM dissemination.

5.3 Dissemination goals for M36

Given the difficulty in monitoring the progress of the dissemination activities performed so far, based only on the goals set for M48, the consortium has decided to set new goals for the metrics for the next assessment period (M36). This new performance assessment method allows to better focus on the contributions of near-future actions to achieve the expected success by the end of the project. The table below shows the performance evaluation of the dissemination activities expected to be achieved by M36. These KPIs are expected to guide the forthcoming activities regarding dissemination, which should focus particularly on more peer-reviewed journal articles, conferences attendance and presentations, organisation of webinar or events, and policy briefs.

The updated KPIs goals will be used to monitor the performance of the following dissemination activities and ensure that the consortium remains accountable for the impact reached during the project. As a minimum, the consortium aims to reach a good performance on all indicators but thrive to get excellent performance.

Actions	Metric	Performance by M36			
		Excellent	Good	Moderate	Poor
Journal articles (peer-reviewed)	Number of publications	>5	Between 3 and 5	2	<2
Conference attendance	Number of conferences	>15	Between 7 and 11	6	<5
Conference presentations	Number of presentations	>15	Between 7 and 11	6	<5
Webinar or events organised	Number of webinars and event organised	>4	Between 2 and 4	1	0
	Number of webinar or events participation	>20	Between 15 and 19	Between 12 to 15	<12
Project clustering activities (coordination with other R&D project activities to establish common dialogue)	Number of synergies established between R&D projects	>4	3	2	<2
Policy briefs (in result of D1.5 and D1.7)	Number of policy proposals for the definition of microalgae-based products	>3	2	1	0



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