Deliverable 9.4
Second interim plan for the Communication, Exploitation and Dissemination of Results

Project acronym:

AquaVitae

Project title:

New species, processes and products contributing to increased production and improved sustainability in emerging low trophic, and existing low and high trophic aquaculture value chains in the Atlantic

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Role	Name	Organisation	Date	File suffix[3]
Authors	Rosa Chapela, Yolanda Irawan, Mathew Slater, Björn Suckow	CETMAR AWI	02.12.2022	RC, YI
Contributor	Åsa Strand	IVL	30.11.2022	AS
Contributor	Petter Olsen	NOFIMA	30.11.2022	PO
Contributor	Adrianna Kochanska, Thi	UiT	30.11.2022	AK, MA

	Thanh Thuy Pham, Ronan Guy,			
Contributor	Juliana Arias	Sjokovin	26.10.2020	TT
Contributor	Sofia Franco	SAMS	04.11.2020	PT
Contributor	Clifford Jones	Rhodes University	05.11.2020	CJ, AW
WP9 leader	Rosa Chapela	CETMAR	02.12.2022	RC
Administrator Facilitator	Valur N. Gunnlaugsson	MATIS	21.12.2022	VN
Project Coordinator	Philip James	NOFIMA	21.12.2022	PJ

Deliverable 9.4

Second interim plan for the Exploitation, Communication and Dissemination of Results

23/12/2022

Executive summary

AquaVitae' s Second interim Plan for the Exploitation, Communication and Dissemination of Results (PECDR) outlines the performance of the project in terms of communication, dissemination and exploitation since month 18, when the First Interim PECDR (Deliverable - D.9.3) was released. The present document assesses the activities carried out from November 2020 – November 2022 and proposes the strategies for the next 12 months.

The performance of the project in these areas was outlined in the Initial PECDR (D9.2) and reviewed in the First PECDR (D9.3), taking into account the target groups AquaVitae wishes to reach and have an impact on. With this Second PECDR the intention is to analyse the implementation of the previous plan from month 18 until now and to provide a schedule for the dissemination, communication and exploitation activities that will be developed in the last year of the project, paving the way for the last PECDR.

During the period November 2020 – November 2022, AquaVitae continued the communication and dissemination activities following the guidelines of the previous documents (D.9.2 and D9.3). The work, led by CETMAR, was coordinated with the whole Consortium, but particularly with Nofima.

The collaborative nature of the project has helped to reach a global audience, reaching over 4 million people across the globe to date, with Brazil, Norway, South Africa and Spain providing the highest engagement rates in the platforms the project is on, both online and offline.

The total estimated audience of communication activities was 4,389,941 in November 2022. It has doubled in comparison to the previous PECDR (2,201,883). The potential audience was reached by press releases published in different countries, television features broadcasting partners' work or other activities. Dissemination activities (e.g., workshops, scientific publications) reached a total of 25,346 during the same period. In total, more than 246 communication and dissemination activities were organized.

AquaVitae analyses its impact by considering exploitation activities/actions as well as the performance by the end-users of the results. The Initial PECDR (D9.2) and the First Interim PECDR (D9.3) include guidelines for exploitation pathways.

The exploitation measures consider the aspects that will endure beyond the end of the project and that justify why a project like AquaVitae is needed. In this regard, the project contributes with commercial, societal, environmental, technical, educational and scientific products/results to a wide target audience (from scientific community to consumers).

This plan reflects the same action in different sections because they are addressed with a communication, dissemination or exploitation approach depending on the target audience and objectives elected for the action at a very specific moment. Thus, we will read about the MOOC or the game, for example, throughout the whole document according to the pursued aim.

This Second PECDR will be reviewed and updated in "D9.7. Final Plan for the Communication, Exploitation and Dissemination of Results".

Table of content

Abbreviations

AANChOR	All Atlantic Ocean Research Alliance
AltaNet	Atlantic Low Trophic Aquaculture Network
B&O	Barriers and Opportunities
CS	Case Study
CSTP	Case Study Task Prototype
D	Deliverable
DoA	Description of the Action
EATiP	European Aquaculture, Technology and Innovation Platform
EDC	Exploitation and Communication Committee
EMD	European Maritime Day
ER	Exploitable Result
ESS	Exploitation Strategy Seminar
fKER	Flagship Key Exploitable Result
IFTTT	If This Then Than
IM	Innovation Manager
IMTA	Integrated Multi-trophic Aquaculture
IRG	Industry Reference Group
KER	Key Exploitable Result
KPIs	Key Performance Indicators
MOOC	Massive Open Online Courses
PAG	Policy Advisory Group
PECDR	Plan for the Exploitation, Communication and Dissemination of Results
PMG	Project Management Group
SALTS	Sustainable Aquaculture for Low Trophic Species
SNA	Social Network Analysis
WP	Work Package

1.- Introduction

The Second Interim Plan for the Exploitation, Communication and Dissemination of Results (PECDR) analyses the previous PECDR and its impact. Furthermore, it outlines the strategies for the upcoming months.

A series of indicators and methodologies are assessed to measure the impact and conclude how well the project is carrying out communication, dissemination and exploitation activities and how the project should perform during the last year of the project. The final impact of the AquaVitae project on target audiences and general society will depend on these planned communication, dissemination, and exploitation activities.

The indicators assessed include the Key Performance Indicators (KPIs) selected in "D9.2. Initial PECDR". These KPI´s measure the activity on the project website and social media (Twitter, LinkedIn, and Instagram). They consider audience reached, impressions, interaction, virality, etc.

There are other quantitative indicators that measure the activities carried out and the estimated audience reached during this period. An assortment of actions is suggested to improve the impact of the project during the next period. The Second PECDR includes:

(i) A methodology of the Plan
(ii) A review and update of the communication plan
(iii) A review and update of the dissemination plan
(iv) A review and update of the exploitation plan
(v) Conclusions and next steps

Knowledge production is defined as the process through which new knowledge is created, shared, and communicated to the wider community. The open science approach adopted by the project is an important element in knowledge production and dissemination. Communication, dissemination and exploitation strategies can contribute to increasing the likelihood of reaching interested stakeholders for the use of AquaVitae outcomes during and beyond the project lifetime.

AquaVitae's main goal is to contribute to the development of innovative technologies. The dissemination strategy is based on engagement with different stakeholders, industry, policymakers, NGOs, researchers and civil society in general. They have been identified since the beginning of the project in 2019 in the AquaVitae Stakeholder Platform which is still growing in numbers. Currently, over 200 stakeholders have been identified as Industry Reference Group and Policy Reference Group. AquaVitae results are likely to be used by these stakeholders during and beyond the project. Furthermore, the dissemination and communication plan aims to raise awareness on low trophic aquaculture and sustainable aquaculture in society.

2. - Methodology

This PECDR combines quantitative and qualitative methods to collect data on the performance of communication, dissemination and exploitation plan for the AquaVitae project.

The Key Performance Indicators (KPIs) under review are related to three main axes: communication, dissemination and exploitation. The quantification of these digital and non-digital indicators helps us evaluate the evolution of the programmed planning and its execution considering targets and results.

Qualitative feedback was obtained through partners' reports on the activities they have organized or participated in. Thus, other attendees' feedback was taken into consideration for this plan.

The data collected in this interim report covers the period from November 2020 to November 2022, although there are references to data previously mentioned in the first PECDR, as some data need to be compared with the preceding analysis, such as the social media performance. The data sources to populate this plan are the following:

- AquaVitae partners self-reporting on the number of estimated participants and characteristics of communication and dissemination activities (see Appendix I).
- Website and social media statistics (e.g., Google Analytics, Twitter Analytics).
- Stakeholder feedback.
- Exploitable Results (ERs) and Key Exploitable Results (KERs).

These figures are compiled, homogenised and weighted periodically in case of discrepancies.

Self-reporting data

As in the First PECDR, data collected for this document is categorized according to the European Commission's template for periodical reporting of Horizon 2020 projects[1] and the grey literature available on the matter (Table 1).

Every six months, partners are asked to report on their activities for external audiences by filling a form located the AquaVitae intranet page. This form allows partners to describe the activities they were involved in considering measurement indicators such as the estimated size of the audience reached, number of attendees, target addressed, etc. Other information on the event can also be placed in the form: date, summary, location and link if available.

This form follows the periodic reporting template for Horizon 2020 projects, suggested by the European Commission to categorize communication and dissemination activities. AquaVitae adopted these categories and analyses them in every PECDR. The following table disaggregates activities into two main groupings: communication and dissemination.

[1] Available at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwj-o6Kor4ztAhUOilwKHb9-D2EQFjAAegQIBxAC&url=https%3A%2F%2Fec.europa.eu%2Fresearch%2Fparticipants%2Fdata%2Fref%2Fh2020%2Fgm%2Freporting%2Fh2020-tmpl-periodic-rep_en.pdf&usg=AOvVaw21lp37bt9gbEJxZjECs2bl
Latest visited on: 11/9/2022

Table 1. Categories of communication and dissemination activities according to the European Commission.

Communication activities	Dissemination activities
• Press releases • Exhibitions • Flyers • Social media • Websites • Communication campaign • Participation in an event other than a conference or a workshop • Video/film • Participation in activities organised jointly with other H2020 projects	• Organisation of a conference • Organisation of a workshop • Non-scientific and non-peer reviewed publications • Training • Participation in a conference • Participation in a workshop • Brokerage event • Pitch event • Trade fair • Other

The form also follows the same template to categorize the audience. Communication and disseminations activities reach these audiences:

- Scientific community
- Industry
- Civil society
- General public
- Policy makers
- Media
- Investors
- Customers
- Others (e.g., university students, international organisations)

It is important to highlight that students and youth in general became a crucial audience. They are categorized within the box "Others" (degree, master or PhD students as well as other youth public).

Digital Analysis Methodology

The AquaVitae project is making progress to establish itself as a key, and reliable source of information on low trophic sustainable aquaculture through its website (aquavitaeproject.eu) and social media that reflect not only the activities organized by the Consortium but also its philosophy.

To assess the impact of the communication and dissemination work, the project utilizes a selection of digital KPIs that offer insights into the visitors' and followers' interest and interaction. A proper analysis of these data allows users to review actions, create new content, and communication and dissemination strategies[2].

[2]Available at https://kpi.org/KPI-Basics.

Table 2. Selected KPIs per digital channel.

KPIs per channel	
Website	Users Sessions Views Views from social media Newsletter subscription Web Publications
Twitter	Followers Impressions Engagement RTs Twitter Publications
LinkedIn	Group members Recommendations Shared Publications
Instagram	Followers Reach Likes Publications

AquaVitae aims at raising awareness of the activities and progress made by the Consortium. Creating a strong presence online helps to foster this objective. This line of action needs to be assessed to analyse whether the plan outlined is working or new strategies should be considered. AquaVitae measures social media performance with the following KPI´s.

Table 3. Selected KPIs on social media to achieve brand awareness on AquaVitae, its activities and outputs.

Social media KPIs per goal	
Audience	Followers Twitter Group members LinkedIn Followers Instagram
Impressions	Impressions Twitter Reach Instagram
Interaction	Twitter Engagement (No. of times a user interacted with a Tweet) RTs Twitter LinkedIn Recommendations LinkedIn Shared Instagram Likes
Virality	Twitter RTs LinkedIn Shared Instagram Likes
Activity	Twitter publications LinkedIn publications Instagram publications

Exploitable plan methodology

The impact is not only measured by economic or commercial aspects. It should be addressed also in societal, environmental, technical, educational and scientific terms as described in the EU publication *Making the most of your H2020 project, Boosting the impact of your project through effective communication, dissemination and exploitation* (2019)[3].

Chapter 5 of this document depicts thoroughly the selection and development of the exploitable results (ER) of the project. Some of those ER will become Key Exploitable Results (KER) of the project. Special attention will be paid to these KERs in the following period so that AquaVitae can make a true impact on the target audience.

Using the support information provided by the European Commission and the Booster service, main contributors have been engaged in the description of each KER, related policy areas in the European Commission, related Sustainable Development Goals (SDGs), possible application and its target public.

As it will be explained in Chapter 5, Work Packages (WP) 1, 2, 3, 4, and 7, are monitoring the prototypes and outputs of the project, considering foreseeable business opportunities and areas of action whereas the WP6, 8 and 9 have identified the initial ERs to be developed during the last year of the project. This will be further explained in Chapter 5.

[3] Available at: https://op.europa.eu/en/publication-detail/-/publication/3bb7278e-ebf3-11e9-9c4e-01aa75ed71a1/language-en/format-PDF/source-164620962 latest visited on 13/10/2020

3. - Review and update of the communication plan

The communication activities that the project undertakes have a specific role in the awareness and diffusion of knowledge, to create a positive image of the project, its results and its impacts.

The communication activities of the project are based and developed on information provided by a work plan that was created at the beginning of the project to meet the needs and expectations of the different target groups.

In order to maintain a flow of information from the project, both to partners and other audiences (from scientific to general readers/spectators), a communication strategy was developed, implemented and reviewed. This strategy ensured that all interested parties were kept updated on the progress of the project and its outcomes.

In this section, the project provides an overview of the communication strategy and its execution from the previous PECDR up to date.

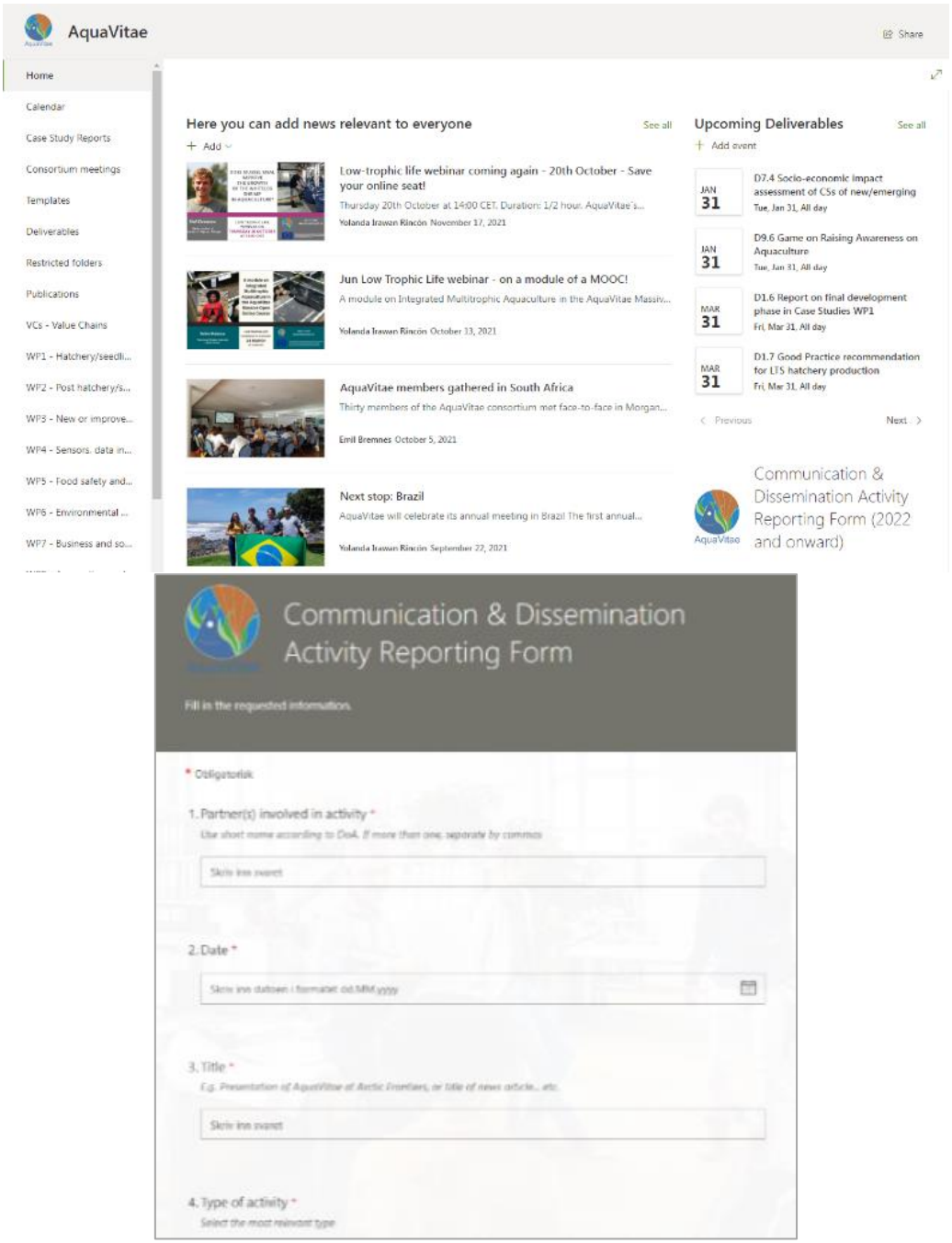
Internal communication

The main tool for internal communication is the AquaVitae SharePoint, called “Aquanet”. This content management system serves to communicate information within the Consortium and to share documents among partners that should work together on a file and to follow up on the project. It has become a very useful tool because it helps people work simultaneously in a document or working file. It also stores large files providing the opportunity to circulate content without using email or transfer files via cloud-based services.

Aquanet is often used by the whole Consortium. A total of 132 people, 35 project partners and the External Advisory Group (EAG), are members of SharePoint, with access to the platform. In November 2020 SharePoint welcomed 92 people (see First PECDR) and now almost all the Consortium has access to SharePoint.

Aquanet is a user friendly and intuitive platform. Currently it is considered the main internal communication channel for the project. It is organized in three blocks so partners can see important information at a glance*:* on the left, we can find folders for each WP, deliverables and meetings; in the middle, news on events and consortium meetings are posted regularly; on the right, a calendar for the upcoming deliverables and the communication form are available.

Figure 1. Screenshot of the AquaVitae SharePoint homepage top; the communication and dissemination form on the bottom.



AquaVitae partners use SharePoint to distribute templates or surveys. It also helps to organize PowerPoint presentations during Consortium meetings avoiding emails or misplaced documents. Furthermore, it is a platform where old documents can be stored and found whenever needed by any given member.

News on events, workshops or meetings are posted regularly on the main page. Thus, partners are informed easily about the upcoming events they can participate in.

Besides the information depicted above, the following documents are available on Aquanet:

- Core project documents (DoA, ethics requirements, and consortium mailing list).
- An updated Excel sheet that lists all the publications in which AquaVitae is mentioned (e.g., newspapers, academic papers, videos…).
- A folder called Outreach Material that includes promotional materials (photos, fact sheets, videos, a project one-pager, press releases, leaflet and banner).
- A literature folder where interesting documents in connection with AquaVitae are shared.

External communication

The communication on projects includes the planning, development, and execution of strategies for promoting the research and its results. It is aimed at different audiences that include the media, the scientific community, aquaculture industry and the general public. Communication activities should be supported by sufficient resources, such as human and financial, in order to achieve their goals.

After setting and executing those resources and goals it is important to analyze the results periodically to reset, reschedule or reorganize the Communication Plan.

A complete overview of the communication actions performed by AquaVitae from November 2020 up to November 2022 is available in table 4. This section aims at measuring KPIs related to traditional media activity (press releases, news, etc.), social media interaction, tailored communication material and other tools or elements used to show the project around the globe.

Table 4. Main KPIs for communication activities.

Tool	KPIs at M16	KPIs at M42	Target at M54
AquaVitae official website Aquavitaeproject.eu	5,567 sessions	23,393 sessions	50,000 sessions
Social Media @aquavitaeEU	1,025 followers	2,090 followers	2,000 followers on Twitter, Instagram and ResearchGate
Press releases	5 press releases distributed at international and local media among a database of around 100 media	7 press releases distributed at international and local media	20 press releases distributed through a database of at least 50 media
Digital Newsletters	2 newsletters	6 newsletters	8 newsletters
Tailored communication material	0 tailored products	28 tailored products (22 one-page abstracts, 2 roll ups, 2 leaflets and various infographics)	14 tailored products [11 products (1 per CS) + 3 per cross-cutting topics]
Case Study & Work Package 'practise abstracts'	0 practise abstracts	13 (1 per CS including cross-cutting CS) and 9 (1 per WP)	20 practise abstracts
Videos	8 videos	125 videos	5 videos

AquaVitae is at a crucial stage with one year left until project finish. KPI´s show that the project is doing well and has surpassed most of its targets. However, AquaVitae has underperformed in terms of website sessions, being only at 50% of the target. Thus, a plan to raise traffic on the website includes:

- Using social media posts linking directly to web articles, events or other information.
- Adding more audiovisual material. The final project movie will be uploaded on the homepage.
- Podcasts are also being considered for the last year of the project to ensure the site is kept up to date with the latest research and to increase traffic.

Audience of communication activities

AquaVitae has been involved in almost 100 communication campaigns during the last reporting period. Other activities were carried out in this regard and the project numbers at this stage are better than expected. Thanks to these actions, AquaVitae has reached not only the scientific community, but also the general public.

It is important to highlight the number of recipients of the biannual newsletter. In October 2022 AquaVitae counted on more than 425 subscribers whereas it counted on less than a hundred in October 2020. New subscribers know about the project thanks to the AquaVitae Low Trophic webinars where they are also asked if they want to receive the next newsletter.

The following tables show AquaVitae´s communication activities and its audience from November 2020 to November 2022.

Table 5. Number of communication activities.

Communication activities	Number
Communication campaign (e.g. radio, TV)	98
Flyers	14
Participation in activities organised jointly with other H2020 project(s)	5
Participation in an event other than a conference or workshop	2
Press release	8
Social media	5
Video/film	11
Website	3
TOTAL	**146**

Table 6. Average and total audience in AquaVitae communication activities.

All communication activities	Average	Size of audience
Communication campaign (e.g. radio, TV)	25,564	1,224,983
Flyers	150	1,300
Participation in activities organised jointly with other H2020 project(s)	425	707
Participation in an event other than a conference or workshop	354	220
Press release	100	20,530
Social media	9,156	2,160
Video/film	305	130,169
Website	245	11,032
TOTAL	**36,299**	**1,391,101**

Digital channels audience

AquaVitae's website is the main communication tool providing information about the project and its advances. Every month an analysis of the traffic and the pattern on the website is carried out using Google Analytics which allows measurement of the behaviour of the visitors on the site. AquaVitae's website has received over 19,000 visits during this period.

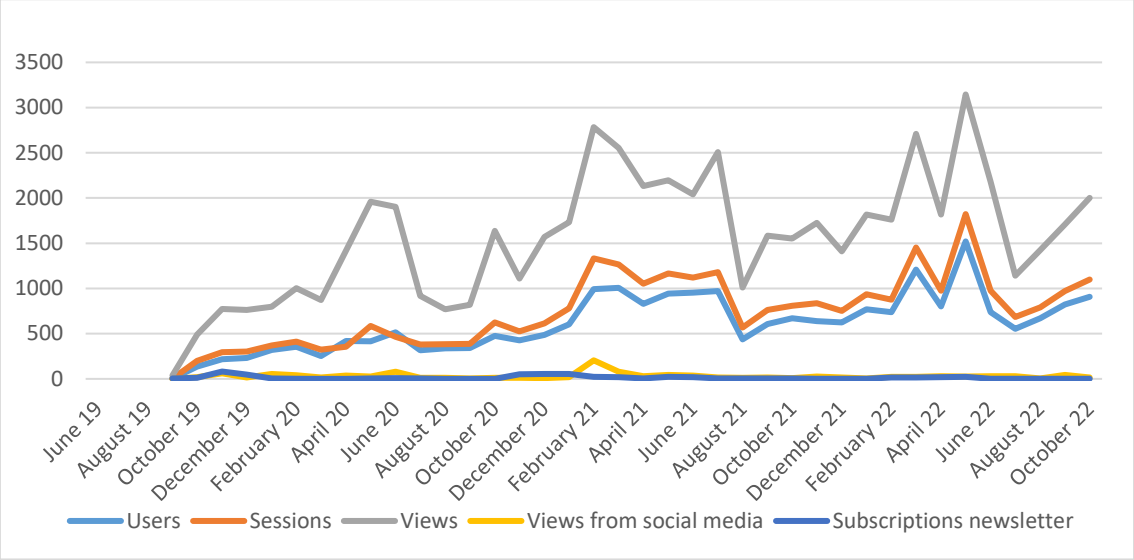
The majority of visitors comes from the US, South Africa, Brazil, Norway and Spain. Other countries like France or the United Kingdom appear frequently on top of the statistics. Assessment shows that the traffic is directly related to events held and as a result, website visitors may come more from a particular country in any given period.

It is important to highlight that after any significant external event (Europe Aquaculture, European Maritime Day, etc.) or internal event (annual meeting, stakeholder session, etc.) the traffic on the website and other digital channels increases. The data also reveals that summer or winter breaks negatively affect visits, although the AquaVitae communication team keeps social media alive and active at all times.

The main channel of traffic is organic search, although there are other forms of landing at the webpage, for instance via social media. Content is updated on the website and then posted on Twitter and Instagram as a way to reach AquaVitae´s followers and other potential audience.

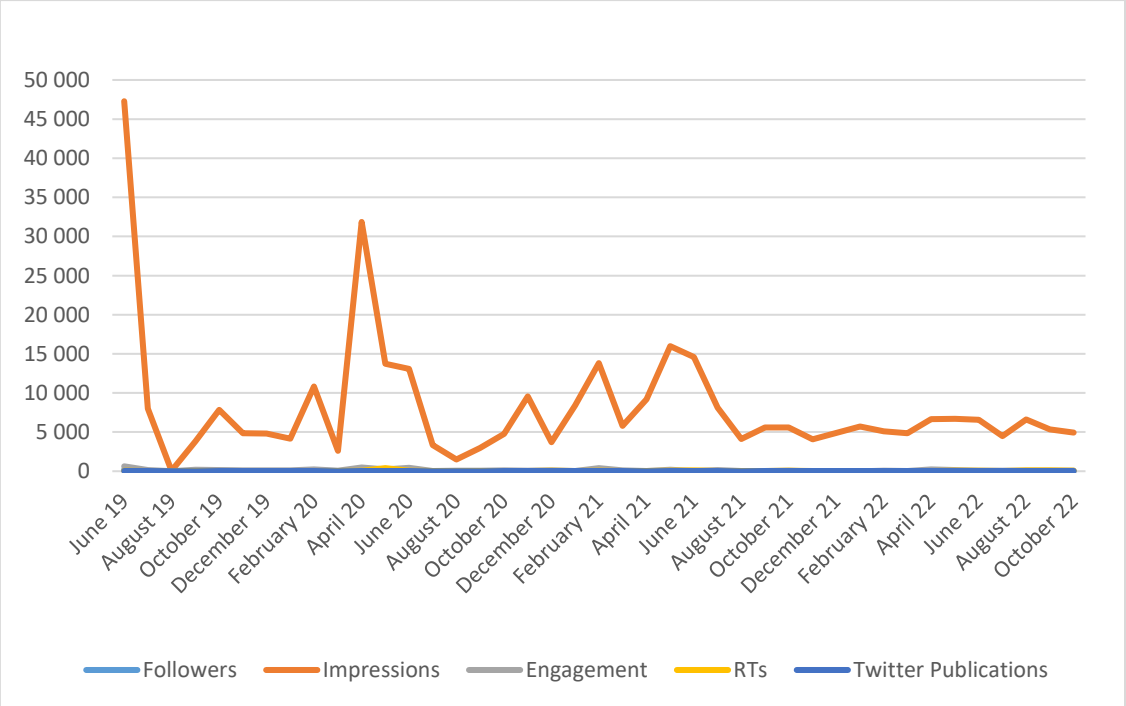
AquaVitae's website is supported by other digital channels. Since the beginning of the project Twitter and Instagram accounts communicate and disseminate information uploaded on the website, such as news, events or documents related to the project along with other content useful and interesting for the followers of the project, basically, events on sustainable aquaculture, articles in other sites, calls for action, etc.

Figure 2. Main indicators of the AquaVitae website.



Considering that AquaVitae is a project that deals with a very specific subject (low trophic sustainable aquaculture) it has reached remarkable figures on social mediaIn October 2021 AquaVitae reached 1.000 followers on Twitter (over 1240 followers in November 2022); AquaVitae on Instagram enjoys 790 users to date.

Figure 3. Traffic and behaviour on Twitter

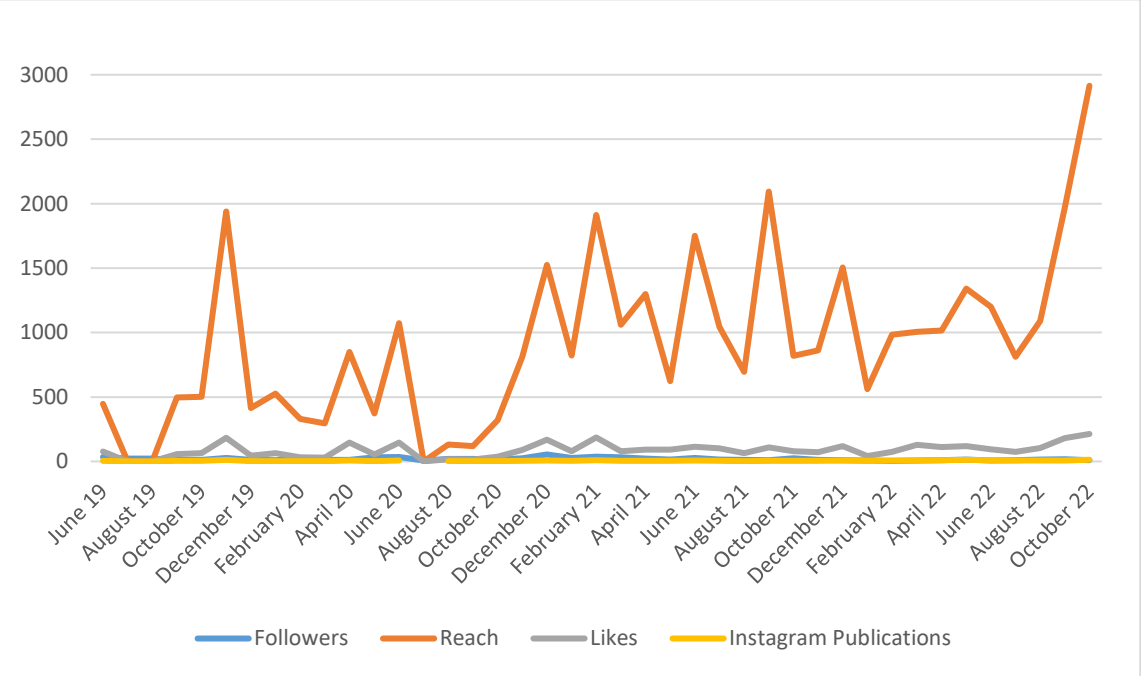


Interaction rates on the most popular social media reflect that Twitter is more used in Europe whilst Brazil prefers Instagram. In fact, Brazilian partners are very active and post content almost every day about their research or the events they have participated in.

WP9 has realised how important hashtags (#) are both on Twitter and on Instagram. They offer the opportunity of filtering information by topic and this is something to bear in mind to spread the word among people not directly related to aquaculture and gain new followers, new people that advocate sustainable aquaculture, or those learning more about low trophic species.

When applicable, some hashtags have been included on posts to attract public interested in other topics related to the project but not to the aquaculture sector: #sustainability, #ocean, #Atlantic. Posts including hashtags dealing with gastronomy are also very popular, reaching a wide audience and making the project more and more visible.

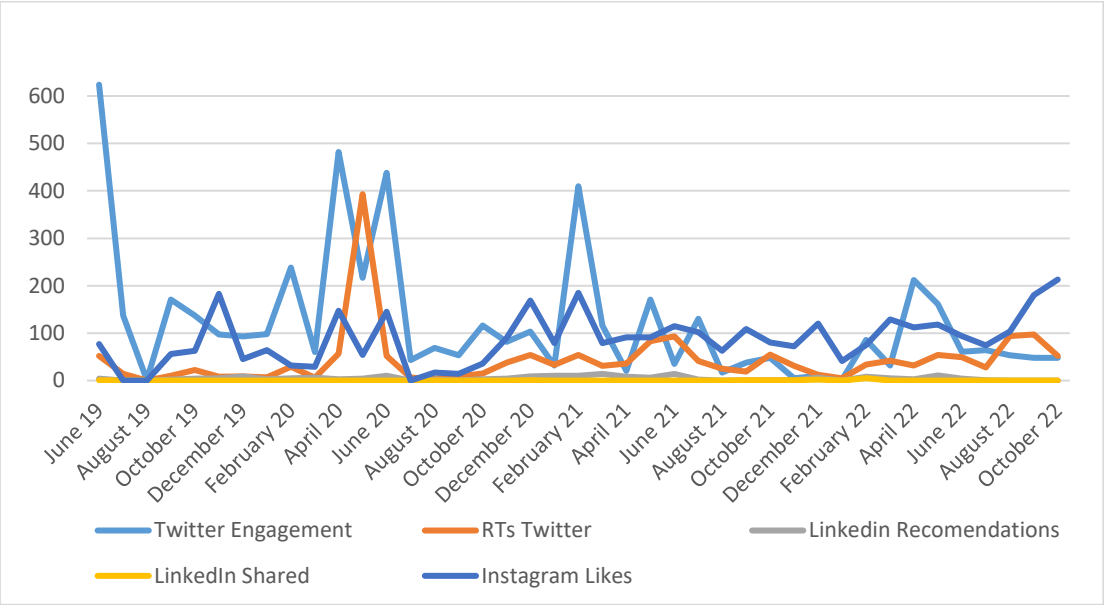
Figure 5. Traffic and behaviour on Instagram



LinkedIn is another way to be informed about the project. It has doubled its members in the last period. The group on this social media consists of 127 people. Posts are not regular on LinkedIn, nor are interactions.

It is important to point out that numerous videos are uploaded on YouTube: from low-trophic life webinars to interviews with AquaVitae partners. AquaVitae´s channel on YouTube has 121 subscribers to date and the project movie has received more than 700 views on this platform, although more viewers are counted from the Twitter profile where the stop-motion-movie is pinned as a post, meaning that it is always available on the top of the page. The AquaVitae project movie has been viewed the almost 2.000 times.

Figure 6. Behaviour comparison on AquaVitae´s social media channels.



Networking activities: trans-Atlantic collaboration

The Belém Statement on Atlantic Research and Innovation Cooperation (2017) aims at building bridges across the Atlantic:

> *"… common understanding and deepening scientific knowledge of marine ecosystems and the interrelations between oceans and climate change, oceans and food, and oceans and energy systems, as well as the dynamics of the Atlantic Ocean and its interconnected Circulation System from Antarctica to the Arctic."*

Thus, collaboration with the Atlantic Research Community, led by the H2020 projects All Atlantic Ocean Research Alliance (AANCHOR), has been constant since the origins of AquaVitae in 2019. Under the topics of Coordination, Capacity building, Knowledge Transfer and Communication, Data sharing and standards, Ocean literacy and awareness and alignment of R&I infrastructures AquaVitae has participated in different initiatives with iAtlantic, Triatlas, AtlantECO and ASTRAL.

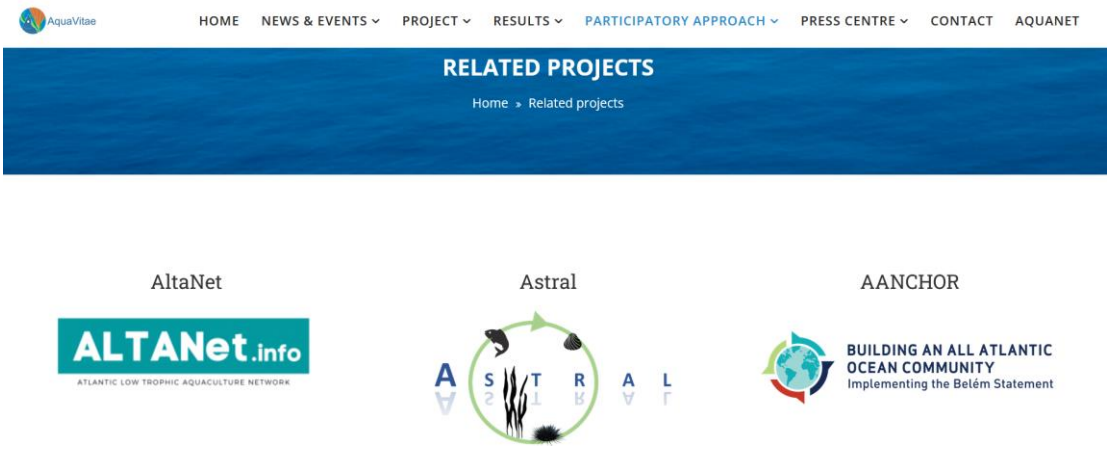
AquaVitae has worked particularly closely with its sister project, ASTRAL, All Atlantic Ocean Sustainable, Profitable and Resilient Aquaculture. Both H2020 projects agreed upon setting up a common strategy for communication and dissemination in those activities and events where they share the same stakeholders or target audiences. For instance, AquaVitae and ASTRAL have identified similar policymakers as stakeholders to work on governance analysis on low trophic aquaculture. In order to avoid stakeholder fatigue, AquaVitae and ASTRAL agreed on holding joint meetings when policymakers and governance topics are involved.

Strictly on communication and dissemination terms, AquaVitae and ASTRAL have participated together sharing the communications tools with a joint booth in the last editions of Europe Aquaculture, promoting each other´s work, collaborating in each other´s workshops and suggesting more synergies for the future. Thus, in April 2023 a workshop will gather both projects in Brazil taking advantage of the AquaVitae´s annual meeting and the event Aquaciência held by the Brazilian partners.

Figure 7. Promotional banner of AquaVitae and Astral participation in Aquaculture Europe 2022 and pictures of the shared booth.

Additionally, ASTRAL can be found on AquaVitae's webpage with a special link created within the section "Related projects" where, precisely, AANCHOR or AltaNet (repository of low trophic aquaculture events) are present too.

Figure 8. Snapshot of AquaVitae's website presenting related projects.



AquaVitae participated in the All-Atlantic High-Level Event held in 2021 and 2022. During these events, AquaVitae was invited to submit a pledge in the pledge campaign launched by the All Atlantic Research Alliance.

The AquaVitae pledge was "to establish an All-Atlantic trans-national low trophic and integrated multitrophic aquaculture (IMTA) aquaculture hub" and it was launched on the Networking Friday on the All-Atlantic Pledging Campaign, in an online event, on 9th July 2021**.** The pledge is a product linked with a WP9 exploitable results focus on the low trophic aquaculture Platform in the Atlantic that will be developed with more detail in the Exploitation Chapter (see page 39).

Figure 9. AquaVitae's pledge

In the All-Atlantic Ocean Research Forum 2022, Professor Wagner C. Valenti from the Universidade Estadual Paulista Julio de Mesquita Filho (Brazil) talked about the need for innovative systems based on new paradigms during Session I: Aquaculture and Fisheries Priorities. The scientific event took place on 31stMay-2nd June whilst the Ministerial Event was held on 12-14th July in Brasilia, Brazil. These sessions were the prelude to the High-Level Event held in Washington in mid-July which was attended by an AquaVitae delegate (Isabel Sousa Pinto, CIIMAR in Portugal).

AquaVitae has attended (both as a speaker and/or audience) different forums organized by the EATiP (European Aquaculture, Technology and Innovation Platform) like the Seaweed Forum held on 22nd January 2021 or the Forum on offshore aquaculture held on 24th November 2021, both held online.

The trans-Atlantic research collaboration is one of the pillars of AquaVitae. Its sisterhood with the ASTRAL project and network with EATiP led them to organize a webinar on how to develop a more sustainable aquaculture industry.

The webinar took place on 3rd June 2021, as a side event to the All-Atlantic 2021 Conference. The aim of the webinar was to spark dialogue and boost cooperation between aquaculture stakeholders working in and around the Atlantic Ocean. It welcomed 34 participants.

Figure 10. Screenshot with Elisa Ravagnan – ASTRAL, Philip James – AquaVitae and David Bassett – EATiP.

Besides presenting the European-funded projects, the participants were introduced to the new All-Atlantic Aquaculture Technology and Innovation Platform (AA-ATiP), which aims to become an "EATiP mirror platform" in Brazil, as the first step towards an All-Atlantic Aquaculture Platform. The AA-ATiP, that can serve as an industry-driven Atlantic multi-stakeholder aquaculture platform, is currently in its implementation phase, under the AANChOR Project.

Further collaboration pathways between the European, Brazilian and South African aquaculture sectors were also explored in a side event in South Africa in late 2022.

The AquaVitae scientific committee gathered in Morgan Bay, South Africa, in November 2022. After this encounter a stakeholder event was organized by EATiP to explore the possibilities of creating a mirror platform in South Africa, replicating the initiative that occurred in Brazil, where EATiP used synergies with AquaVitae to set up bridges among the AquaVitae industry, scientific partners and Brazilians during the second annual meeting.

In Morgan Bay, the synergies were explored and expanded between South African partners and the industry. It was an opportunity to learn more about the broader aquaculture industry in South Africa and offer a perspective on the value of such platforms to the European aquaculture industry. The workshop covered the topics listed below:

- What an aquaculture platform is.
- What function can the participants have.
- Aquaculture activities in South Africa (abalone, algae, etc.).
- What a South African mirror platform could look like.

There was not a particular presentation on AquaVitae, but the project was presented during a general discussion and represented by 5 attendees belonging to the AquaVitae Consortium.

In this trans-Atlantic collaboration, AquaVitae has been covered in other projects media outlets such as newsletters.

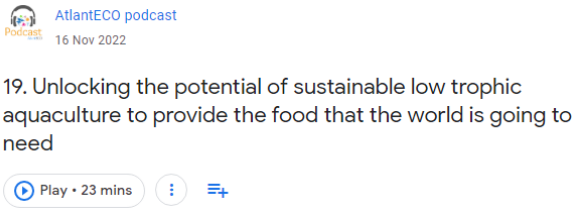
It is important to highlight that a communication working group led by AANCHOR was born as a result of these joint actions. Consequently, the very first issue of a joint newsletter was released by AANCHOR in January 2022. It features AquaVitae and other H2020 projects. The second newsletter was sent in July 2022 reaching over 2,000 recipients.

Figure 11: Snapshots of the 1st and 2nd issued joint newsletter lead by AANCHOR.

The coordination between ASTRAL and AquaVitae is highlighted in every newsletter released by AquaVitae.

There are other collaborations in the framework of H2020 projects. Philip James, AquaVitae´s coordinator, featured on the AtlantECO podcast broadcasted on November 16th where he presented the project and its achievements.

Figure 12: Philip James presenting AquaVitae in November 2022 AtlantECO podcast: https://bit.ly/3Fnb6KA



A thorough description of the 'mapping and networking initiatives on aquaculture in the Atlantic Ocean' will be included in Deliverable 9.8 in Month 50.

Analysis of the implementation of the *First Interim Plan*: deviations and improvements

In this section, the First PECDR will be reviewed to evaluate the performance of the steps suggested therein during the period covered. This assessment allows us to identify what was implemented and improved, and what is necessary to put focus on to enhance any possible deviation from the First PECDR or to adapt this Plan to the progress of the project.

A shared strategy

The lack of certain synergies or actions in the First PECDR led us to propose a series of corrective steps. WP9 wanted to increase AquaVitae´s visibility by creating a repository for partners and the general audience to check the progress of the project. Images and information on those advances were needed to support the communication material and activities. Thus, WP9 asked the Consortium for support to populate that repository with visual information on Cases Studies and project progress to achieve this goal.

WP9 encouraged partners to share photos, videos and activities of field work as well as other achievements. Industrial partners were very active during the period reflected in this plan, namely the industrial partners from CS3 and CS6 plus other representatives from CS5.

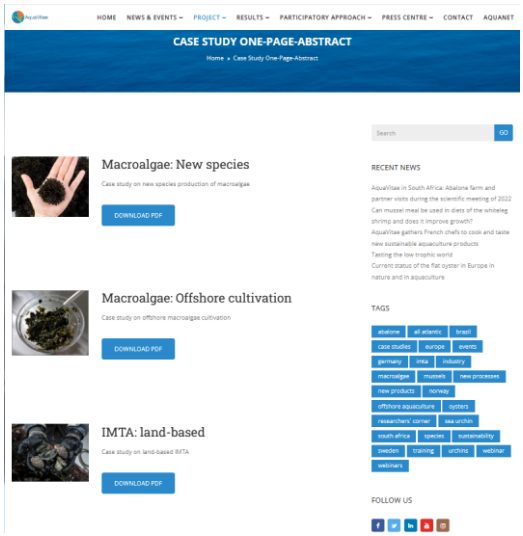
In the First Plan WP9 realized that the project could do better in terms of communication and dissemination by encouraging partners to share their work and spread their advances. After several meetings, WP9 helped them to understand that fieldwork (where they were very active) is as important as communication activities to show the scientific community and the general audience the advances of the project. Little by little they started sharing updates on their activity and providing content for WP9. They understood that WP9 is a crosscutting tool within AquaVitae and that we need each other to show the world the importance of such a project. They became more active in communication and dissemination terms resulting in a win-win experience that reinforced the communication with WP9.

Website refinement

The first element to be improved in terms of communication was the AquaVitae website, the main tool to visualize the project results. In this period, a series of meetings were held with CS and WP leaders to update the website with digested information on project progress.

As a result of the above-mentioned encouragement of CS contribution, one-page abstracts on CSs were finalized in March 2022 and uploaded on the website.

Figure 13: Case Study One-page abstract on the website. Link: https://aquavitaeproject.eu/case-study-one-page-abstract/



One-page abstracts for WPs were also finished and included on the website. The ensemble of CS and WP one-page practise abstracts gives audiences, interested in studying the project in more detail or interested in any particular matter, the opportunity to get to know the project in a format presented by each working/research group.

Following this strategy Deliverables submitted were also uploaded on the website making them accessible not only to AquaVitae members (previously only on SharePoint) but also to those interested in the project. Technical reports can also be found on the website.

It is important to mention that the homepage of the AquaVitae project was also improved by embedding the graphic-motion movie. The final project movie will be embedded on the homepage to welcome visitors with a video that sums up what the project is about in a visual way with an appropriate background story.

Social media

During the first 18 months of the project, Twitter and Instagram gained followers far in excess of Facebook interaction, raising questions as to whether it should be maintained. Ultimately, Facebook AquaVitae was maintained although it is not that popular anymore and it is significantly less used than Instagram. However, Facebook AquaVitae still plays an important role in promoting some events, such as the webinars. Every month a Facebook event on the webinar is posted to reach those with no Instagram account, which is more used by young followers, and – as mentioned above – is highly used by Brazilian audiences that like our content, make stories out of it, and tag the project if they post related content. Instagram reaches an important audience whereas Facebook is falling behind.

Low-trophic life webinars

Low-trophic life webinars were born to circumvent Covid restrictions and the lack of face-to-face workshops. This webinar series was started in November 2020. The webinars are online encounters with young researchers presenting their advances on the matter. They are held every last Thursday of each month. WP9 continues broadcasting this space since it is easy to organize and has gained a steady audience with new spectators approaching the project thanks to their dissemination of different topics related to the low trophic aquaculture.

These webinars are also a way to engage youth and enhance low trophic aquaculture research. Furthermore, it gives young researchers the possibility to showcase their work, to gain experience as speakers/presenters and to make their research more visible.

After the webinar is held, the video recorded during the session is uploaded on the AquaVitae website, intranet and on YouTube so more people can watch it for the first time or revisit it. Numbers show that the webinars are of interest to the scientific community, further underling the value of continuing with this practice.

The presenters are also reached after the webinar to give them the opportunity to write an article about their topic. This strategy enhances the webinars´ visibility because the video is embedded in different sites and at the same time young researchers can disseminate their work and gain experience in the writing of scientific articles.

Peaks of audience

While revising the Communication and Dissemination Plan, AquaVitae realised that during vacation breaks (Christmas and summer) audience diminishes because very few events are celebrated, and people are on holiday. Thus, WP9 applied another strategy during those periods.

AquaVitae started promoting the project on social media with dynamic material such as videos presenting the project and its CS or WP. Also, news or webinars are reposted so people can enjoy them again or for the first time. New hashtags are written in this type of content trying to reach another type of audience.

Spreading the word in other languages

Although English is the working language of the project, translating contents into Brazilian Portuguese was (and still is) considered for some products/results of the project. AquaVitae counts on different partners from Brazil, as well as stakeholders and followers on social media to become a supporting community. As a result, the graphic motion movie was dubbed and subtitled in Brazilian Portuguese.

Figure 14: Graphic motion movie dubbed and subtitled in Portuguese. Link: https://www.youtube.com/watch?v=cI98wqGvuBI

AquaVitae Project Movie (Brazilian Portuguese - Subtitled)

AquaVitae is considering the translation of other material like the final project movie or the AquaVitae game into Brazilian Portuguese in order to raise awareness on aquaculture in the framework of D.9.5. In fact, the testing of the game was very successfully completed in Spanish because the testers were from Spain and the target audience did not speak sufficient English to play.

Cross-cutting Case Studies

Case Studies 12 and 13 were to be given the same visibility as CS 1 to 11. At the beginning they were not mentioned in the DoA explicitly but as cross-cutting CSs. The work done by these CS gained the same relevance as the other CSs, which entailed a special, separate communication and dissemination activity for each. This is the reason why including cross-cutting case studies in promotional material was one of the objectives after the First Interim Plan was delivered.

Thus, CS12 and CS13 were represented in the updated leaflet and in the roll-up. They also wrote their own one-page abstracts.

New steps and strategy for the last year of the project

Based on this analysis, a set of measures are suggested:

- Some material was already translated to Brazilian Portuguese for events organized in Brazil. The final movie project will also be launched in this language.
- Involve partners in content creation and encourage them to create and suggest topics for the website and other digital media with their results.
- Make the MOOC available on the website once it is launched.
- Scope where to store content such as the legacy booklet, the MOOC or the game beyond the project life, since the website will only exist for 2 years after the end of the project.
- Try to post more stories on Instagram since it reaches a lot of people and they have a lot of impact outside the scientific community.
- Try to include the AquaVitae game (D9.5) in other events as a strategy to communicate and disseminate the project in a dynamic way.
- Low-trophic webinar attendee figures are lower than usual recently. WP9 has realized that even if new audience is participating, AquaVitae partners are not attending at previous levels. WP9 needs to explore the reason why they are not joining the webinars (workload could be a reason) and encourage them to register again. However, the webinars are recorded and available online in perpetuity and so the communication team in AquaVitae will discuss and revise the format of these webinars for the final project period.
- Consider TikTok as a new social media outlet to implement in the project as it has become an important tool for youth. Since AquaVitae targets this audience, we may consider popular tools used by this group.
- As almost all the Deliverables are 'Open' and once approved by the EU they are made available on the AquaVitae website in increase the dissemination of this information.

4. - Review and update of the dissemination plan

Dissemination activities are planned in four main ways: preparation of summaries or news releases; participation at conferences, workshops and other events; publishing of scientific papers and technical reports; and training actions. Additionally, AquaVitae has developed materials like videos, roll-ups, one-page abstracts and infographics.

At each annual meeting, the dissemination plan is reviewed, and new conferences, meetings, papers or other publications are suggested to disseminate AquaVitae progress. However, as COVID started to spread globally, many activities were cancelled due to lockdowns which have led to a reduction of dissemination activities.

This situation, where few events were held, lasted long enough to directly impact many of the dissemination tasks and stakeholder engagement activities planned within the framework of the project.

A contingency plan for communication and dissemination and stakeholder engagement was set in order to keep the visibility of AquaVitae using different tools. Some activities that were supposed to be held physically were held online instead. Digital tools were reinforced, and new mechanisms were introduced to organize meetings or spread the word of AquaVitae.

The new circumstances showed how digital literacy was a challenge for some people. However, with good training and practice (digital tools such as Teams or Zoom were used almost every day since then), the Consortium (and the audience) endured and progressed despite the difficulties posed by the pandemic and post-pandemic situation.

When restrictions were lifted to allow onsite events, partners started to get involved in face-to-face activities again. It is important to highlight that hybrid events are normalised, bringing the opportunity to reach a public that in other circumstances could be gathered together in a physical meeting.

Main KPIs

A thorough description and overview of the dissemination activities performed by AquaVitae partners is given in table 7. Many AquaVitae members participated in events of international relevance, including different editions of Aquaculture Europe, the European Maritime Day, and the All Atlantic Conference in Washington (detailed below). Furthermore, it is important to highlight that some events held at the project level were crucial for project dissemination from an international point of view.

Table 7. Main KPIs for dissemination activities at a glance.

Tool	KPIs at M16	KPI at M41	Target at M54
Open access peer-review publications	2	13	12 publications in peer-reviewed journals
AquaVitae Workshops and meetings	7 events with around 80 participants	25 events with > 1150 participants	45 events with > 400 participants
Training activities	MOOC under development One student exchange approved	> 30 certificates delivered 6 student exchanges 5 apprenticeships	50 certificates in AquaVitae training actions 5 student exchanges 5 apprenticeships
Conferences, trade fairs and events	3 events of international relevance	15 events of international relevance	10 events of international relevance
Final conference	n/a	n/a	250 participants

These KPI´s demonstrate that AquaVitae did well in the period up to M41 and even surpassed some targets. The only figures that do not exceed the target at this stage of the project are the ones referring to workshop and meetings. Although the number of events is lower than expected (mainly due to COVID restrictions), the participation is much higher than anticipated.

Along with WPs leaders, WP9 designed a template for AquaVitae technical reports that can be found on Zenodo´s repository. AquaVitae publications from November 2020 to October 2022 are listed in this table uploaded on the project´s website:

https://aquavitaeproject.eu/reports_presentation/

Table 8. The AquaVitae publications.

Title	Authors	Link
Assessing the impact of bivalve aquaculture on the carbon circular economy	A.A. Alonso, X.A. Álvarez-Salgado, L.T. Antelo	Link
Evidence of total suspended solids control by Mugil liza reared in an integrated system with pacific white shrimp *Litopenaeus vannamei* using biofloc technology	Mariana Holanda, Gabriel Santana, Plinio Furtado, Ricardo Vieira Rodrigues, Vinícius Ronzani Cerqueira, Luís André Sampaio, Wilson Wasielesky, Luis Henrique Poersch	Link
Defining nature-based solutions within the blue economy: the example of aquaculture	Hughes, Adam D.	None
Mapping existing and emerging LTS aquaculture in the Atlantic Region	Strand Å, Rydstedt A, Lindblom E	Link
Prospects of low trophic marine aquaculture contributing to food security in a zero-carbon world	Gesche Krause, Lewis Le Vay, Bela H. Buck, Barry Antonio Costa-Pierce, Tobias Dewhurst, Kevin Gerald Heasman, Nancy Nevejan, Pernille	In press

	Nielsen, Kåre Nolde Nielsen, Kyungil Park, Maximilian Felix Schupp, Jean-Baptiste Thomas, Max Troell, Julie Webb, Anna-Lisa Wrange, Friederike Ziegler and Åsa Strand	
Nannochloropsis spp. as feed additive for the Pacific white shrimp: effect on midgut microbiology, thermal shock resistance and immunology	Ariane Martins Guimarães, Cristhiane Guertler, Gabriella do Vale Pereira, Jaqueline da Rosa Coelho, Priscila Costa Rezende, Renata Oselame Nóbrega and Felipe do Nascimento Vieira	Link
Cultivation of the seaweed *ulva spp.* with effluent from a shrimp biofloc rearing system: different species and stocking density	Mateus Aranha Martins, Vitor Fernandes da Silva, Patricio René Tarapuez, Leila Hayashi, Felipe do Nascimento Vieira	Link
Effects of microalgae addition and fish feed supplementation in the integrated rearing of Pacific white shrimp and Nile tilapia using biofloc technology	Vitor F. Silva, Patriula K. M. Pereira, Mateus A. Martins, Marco A. d. Lorenzo,Herculano Cella,Rafael G. Lopes, Roberto B. Derner, Paola Magallón-Servín and Felipe d. N. Vieira	Link
CO_2 budget of cultured mussels metabolism in the highly productive Northwest Iberian upwelling system	X.A. Álvarez-Salgado, M.J. Fernández-Reiriz, I. Fuentes-Santos, L.T. Antelo, A.A. Alonso, U. Labarta	Link
Hatchery protocols for production of blue mussel seeds	Camille Saurel, Clarie Ng, Pascal Barreau, Iarfhlaith Connellan, Colin Hannon, Adam Hughes, Pernille Nielsen	Link
Blue mussel spat availability and settlement on longlines in a Faroese Fjord	Danielsen, Eirikur; á Norði, Gunnvør	Link
Comparison of the growth of *Saccharina latissima* at a cultivated natural area and an aquaculture site in Sørvágsfjørður, Faroe Islands	Mayleen Schlund	Link
Overview of culture systems for low trophic species	Åsa Strand, Jason Bailey, Anton Rydstedt, Philip James, Jefferson Legat, Simone Sühnel	Link

Aquaculture Europe Conferences

AquaVitae maintains strong participation in every European Aquaculture Society (EAS) conference. During the period covered AquaVitae attended EAS Aquaculture Europe in 2021 and 2022 held in Madeira, Portugal, and Rimini, Italy, respectively. In addition to the partners' oral presentations at the event, a number of posters were showcased.

Joining forces from Europe to South Africa at the European Maritime Day

CETMAR organised a workshop called "*Joining forces from Europe to South Africa with new food systems in aquaculture"* at the European Maritime Day Event (EMD) that took place in Ravenna, Italy, on 20th May 2022. The AquaVitae coordinator, Philip James, led a discussion among five representatives from the project whose CSs are devoted to algae in different geographical points: Gercende Courtois de Viçose (Spain), Sylvain Huchette (France); Ólavur Gregersen (Faroe Islands); and Cliff Jones and Ann Wu (South Africa). It was an important event to show the world the trans-Atlantic collaboration and the results of the project.

Figure 15. Round table in the EMD event.

Tasting the low trophic world

CETMAR and AWI helped the industrial partner France Haliotis and the environmental organisation Ethic Ocean to organize *the Masterclass AquaVitae: tasting the low trophic world* that took place on October 10th in Plouguerneau, in French Brittany.

The event gathered partners of the AquaVitae and InEVal projects as well as producers, chefs and students from Germany, Ireland, and Norway. The aim of the workshop was to present low trophic products (algae, sea urchins, oysters, sea cucumber and abalone) in a testable and usable format, highlighting their benefits to the industry (primarily chefs and producers) and potential consumers. The objective was to further introduce these products into restaurants and in people´s diets.

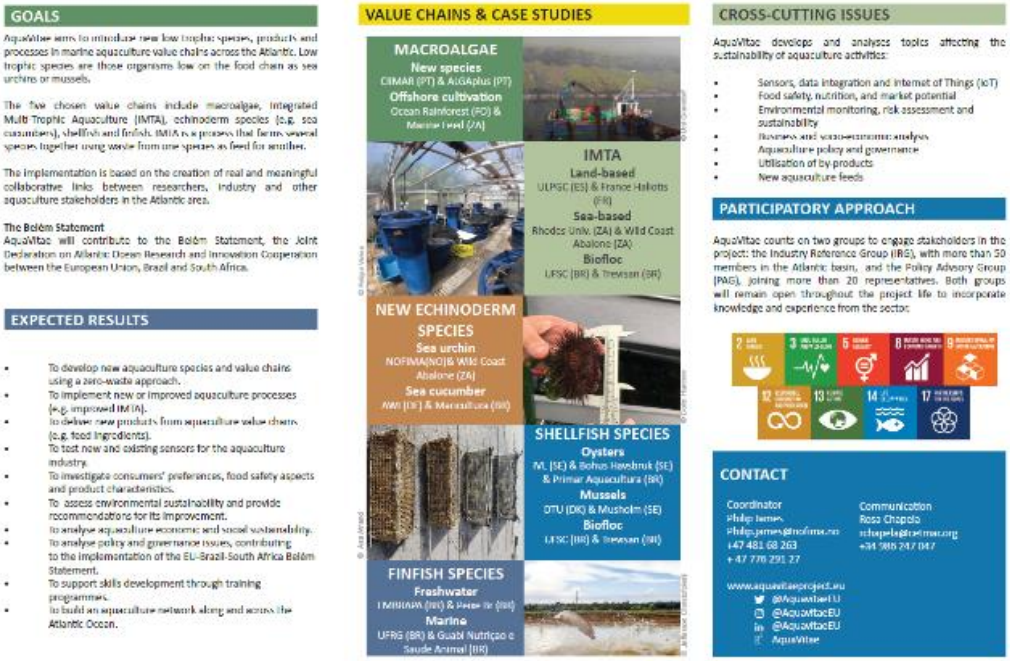
More information on the event is included in Chapter 5 (page 39) as it was relevant in exploitation.

Dissemination material

New material was created during from November 2020 to November 2022 to disseminate AquaVitae´s advances and results.

The leaflet designed at the beginning of the project was updated considering results or advances achieved. Also, CS12 and CS13 were represented in the new leaflet.

Figure 16. AquaVitae´s first leaflet on top versus AquaVitae´s updated leaflet below.



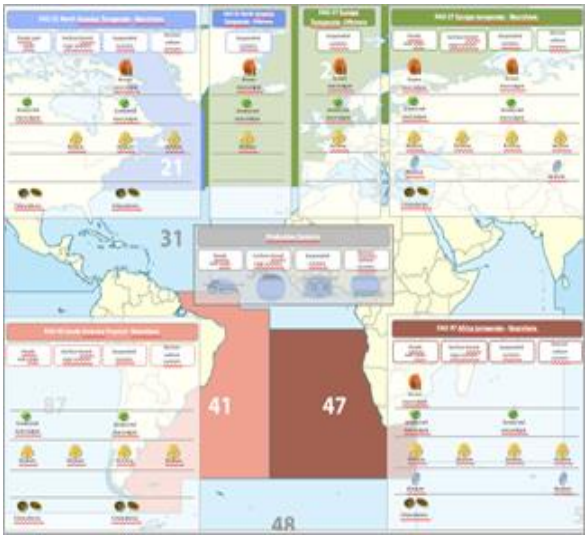
AquaVitae´s roll-up was also updated and CS12 and CS13 were also included.

One-page abstracts (tailored material for each CS) were uploaded on the website and printed on durable foam board for use in exhibitions and other vertical installations. Furthermore, people can take, touch and see the information presented on a tough but light material.

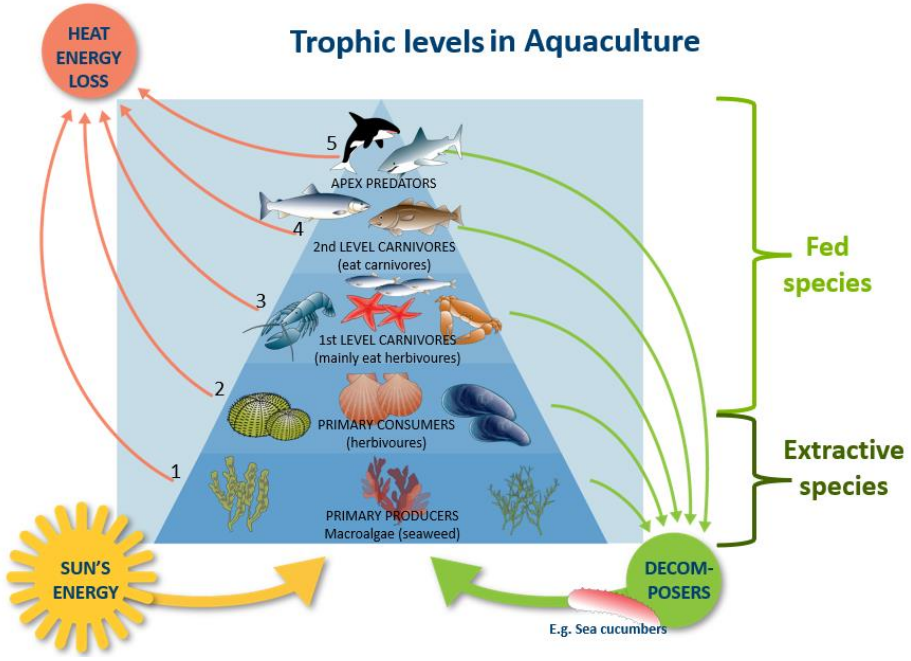
Specific dissemination graphics were developed with partners as required. For example, a dedicated visualisation of WP6 sustainability framework was finalised between IVL and CETMAR

as well as a diagram depicting the trophic levels in the Food Web, used in various presentations and outputs (Figure 17 a & b).

Figure 17. a) A draft version of the sustainability framework.



b) The trophic levels in the Food Web



AquaVitae also disseminated some of its outputs in an article by Matthew Slater (Editor for resilience in the aquaculture industry) within the "Blue Resilience Brief: Towards a more resilient and sustainable blue economy", a relevant document published by the United Nations at the end of 2020: https://unglobalcompact.org/library/5787.

Training activities

Improving the professional skills and competence of aquaculture organizations was key for WP9. This is the reason why different actions were outlined at the beginning of the project to address those interested in low trophic or sustainable aquaculture. Training activities compile different actions such as the AquaVitae exchange program, the low trophic life webinars and the MOOC.

AquaVitae exchange program

There were 11 exchanges involving partners from South Africa, Brazil, the United States, Norway, Iceland, Sweden, France, Germany, the Faroe Islands, Scotland, Ireland and Portugal. In addition to their exchange activities. Six of the 11 exchange members joined the AquaVitae annual meeting in Porto, Portugal, in April 2022 where they presented their objectives for the exchanges and got to know other consortium members. There are at least two more upcoming exchanges planned in the project at this stage.

Table 9. Exchanges to come in 2023.

STUDENT	EXCHANGE	PERIOD	OBJECTIVE
Fernando Silva	UFSC → Alga+	Feb-May 2023	Test the protocol for *Ulva* developed by UFSC at commercial scales, as part of the task 1.4 of CS1
Andreas Langdal	UiT → CIIMAR	March-June 2023	Create a Life Cycle Assessment for the production of blue mussels and their use in fish feed

Low Trophic Life Webinars

Covid-19 entailed new dissemination activities that were not planned at the beginning of the project. Low trophic life webinars were created precisely to promote low trophic aquaculture online. Young researchers show their work in this 30-minutes-webinars held every last Thursday of every month (except during summer break).

Table 10. List of webinars held during this plan period.

DATE	LOW TROPHIC LIFE WEBINAR	PRESENTER	LINK
17/12/20	Advances in IMTA & Biofloc Research at UFSC	Esmeralda Chamorro and Mateus Martins, UFSC	https://youtu.be/Ir8pS7LI_DM
28/01/21	Life cycle assessment (LCA) of low-trophic species in aquaculture	Jean-Baptiste Thomas, KTH	https://youtu.be/LPcqB_GVNzA
25/02/21	Fouling on Blue Mussels	Kristina Svedberg, IVL	https://youtu.be/DHjDd7OLXFo
30/03/21	Hormonal induction in Arapaima Gigas (Pirarucu)"	Laíza Silva, UNESP	https://youtu.be/XgK3W5DnpUE
29/04/21	Optimising IMTA performance in South Africa – Case: Wild Coast Abalone	Emmanuel Falade, RhU	https://youtu.be/Q6IY-6N9yyk
27/05/21	Enhancing oyster production with artificial intelligence & new protocols	Mariela Johanssen, University of Gothenburg	https://youtu.be/QDFiw9iJEkY
SUMMER BREAK			
28/10/21	How biosensors can modernize sulphite monitoring process in shrimp aquaculture	Arrate Jaureguibeitia, Biolan	https://youtu.be/23fB5eNPxag
16/12/21	Macroalgae from IMTA: Substitute Diet for Abalone Aquaculture?	Uchenna Ben Opara, UiT	https://youtu.be/8G4kK7JO2Tw

24/02/22	Synergic Effect of the Atlantic Acidification and Salinity Variation in Shrimp	Andressa Ramaglia, CAUNEST	https://youtu.be/vhf7QXRWBTQ
24/03/22	A module on Integrated Multitrophic Aquaculture in the AquaVitae Massive Open Online Course (Work resulted from an exchange)	Nyiko Mabasa, RhU	https://youtu.be/hWIZ5E7m-gU
26/04/22	Young in aquaculture Some students from the Exchanged programme joined the annual meeting in Porto, Portugal, and presented their experience.	Stef Claessens, Abigail John, Mayleen Schlund, Stefany Almeida, Gerardo Díaz	https://youtu.be/qzHlhgeLyGc
26/05/22	What about macroalgae? Comparison of sugar kelp growth in the Faroe Islands (Work resulted from an exchange)	Mayleen Schlund, AWI	https://youtu.be/bWjfYbnrUyo
23/06/22	The possibilities of flat oyster aquaculture in Europe, defining flat oyster seed production	Sebastian Wensveen, University of Gothenburg	https://youtu.be/ieMneD3bxpk
SUMMER BREAK			
20/10/22	Does mussel meal improve the growth of the whiteleg shrimp?	Stef Claessens	https://youtu.be/cNXGCfpkg7A
24/11/22	Characteristics and strategies of oyster markets in the Atlantic	Daniel Fitzgerald, Erasmus Mundus Master of Food Identity	https://youtu.be/Fap2Y0k22oo

As mentioned in the Communication section the format of the Low Trophic Life webinars will be discuss and possibly revised for the final project period to maximize the dissemination for the effort.

The Massive Open Online Course (MOOC)

The MOOC on Sustainable Aquaculture for Low Trophic Species (SALTS) is a collective effort of academics, researchers and industry representatives that builds upon the work carried out in AquaVitae and provides an interdisciplinary view of the most recent developments in low trophic aquaculture. It was developed by UiT, the Arctic University of Norway.

Course participants are encouraged to explore topics ranging from biology and the various ways of cultivating molluscs, macroalgae, echinoderms and freshwater finfish to themes such as governance, sustainability, business economics, and consumer behaviour while addressing multiple challenges and discovering future opportunities.

MOOC Dissemination activities plan

The course is currently under a final, major revision and will be released to the public in March/April 2023. The course will be available openly and free of charge on the Open edX platform.

The MOOC will be self-paced with no need for supervision of the students. AquaVitae aims to keep the course open and running for a minimum of 5 years after the end of the AquaVitae project. This poses some challenges regarding the uptake and upkeep of the course; we are therefore putting in place mechanisms to ensure the continuity of the course:

1. Continuous advertisement

AquaVitae, but particularly UiT, the partner in charge of the MOOC´s development, will set up reoccurring advertising campaigns using the ifttt.com (If This Then That) platform. IFTTT will help us automate tweets and posts using the existing AquaVitae social media channels and the AltaNet website. This will enable us to disseminate the course for a minimum of 5 years after the end of the project and ensure continuous recruitment.

2. Incorporating the course into existing programs

AquaVitae will identify the existing courses at partner universities where the MOOC is/can be included as an obligatory or optional course e.g. UiT, Master Program in Fisheries and Aquaculture Management.

3. Technical operability

The MOOC is hosted on the Open edX platform at the UiT server. UiT will ensure the technical operability of the course by carrying out necessary updates and upkeep of the Open edX platform and Vimeo account, where the videos are hosted.

4. Extended stakeholder list

UiT is compiling an extended stakeholder list of universities, institutions, networks, media, and interest groups. The groups will be contacted prior to the public release of the MOOC with detailed information about the course with the intention of promoting it through their social media platforms.

A thorough review of the course content and structure took place in September and October 2022. A group of master students carried out a guided evaluation of the videos, readings, and assessments. The reviewers were provided with a list of 20 leading questions, they were asked to evaluate the quality of the course content from the scientific and pedagogical perspective, ensuring the content's alignment and the suitability of the material's flow and complexity.

The MOOC was first presented at the 2021 Aquaculture Europe conference, on October 5th. More than 40 people participated in the Ocean Awareness and Capacity Building session. It was shown during the AANChOR Side event on Showcasing Atlantic Ocean Capacity Building programmes in marine Science with a special session led by Adrianna Kochanska: *Capacity Development in Low Trophic Aquaculture*. Finally, it was presented within the UiT, the Arctic University of Norway on 2nd November 2022 at the “Use of digital tools in teaching – Showcasing the MOOC as a good practice example of digital tools in teaching” conference. More than 20 conference participants from academia were present.

The MOOC has been further presented and communicated in multiple settings within the AquaVitae Consortium. These include the AquaVitae MOOC Contributors’ meeting in Copenhagen in September 2021 (7 participants) or in the Scientific Committee Meeting in November 2021 (36 participants).

During 2023 the MOOC will be presented to the Brazilian stakeholders in a special session at Aquaciencia Conference in April 2023. Then, some days later, the MOOC will be launched at the AquaVitae annual meeting.

A session (provisionally entitled “Using the MOOC in a classroom setting”) during this Annual meeting will be held to provide guidelines on how the MOOC material can be utilised by teachers in a flipped classroom format.

Playing with low trophic species and sustainable aquaculture

CETMAR is leading the gamification task (9.7 Deliverable is due in month 47). AquaVitae has designed a game that combines the philosophy of a serious game, game storming techniques and dynamics that remind the player of traditional board games.

The DoA established that the industry and stakeholders of AquaVitae should be the audience for the workshop on raising awareness of aquaculture using techniques of gamification. During the analysis of this topic by the AquaVitae working group, different types of audience were considered. It was agreed that the aquaculture industry is not the audience that needs to be addressed to raise awareness on aquaculture considering they are already aquaculture advocates.

Later, in Rimini, within the framework of the European Aquaculture 2022, CETMAR presented the prototype of the game in a meeting with DGMARE, in particular to the Deputy Head of Unit-Blue Economy Sectors, Aquaculture and Maritime Spatial Planning Department. Then DGMARE suggested addressing youth with the game, the same target audience of their awareness-raising campaigns.

Finally, young students, particularly high-level students enrolled in degrees or master studies such as Marine Science, Oceanography, Aquaculture and Biology, were conceptualised as the target audience for the gamification task in the AquaVitae project. Considering the new audience, the contents of the game were adapted to younger people.

A workshop to play the *beta* test version was held in November 2022 at CETMAR. The audience was selected according to the new criteria: young students from two masters related to the LTA topics. Aquaculture and Sustainability master students were invited to play the *beta* test and to proffer feedback to improve the final version.

Figure 18. Invitation to the gamification workshop.

Taking advantage of the Aquaculture Day (held on 30th November), CETMAR organized this workshop to test the game with the Spanish public organization “Fundación Biodiversidad”.

The project was presented providing new knowledge on low trophic aquaculture. Dissemination material (roll up, one-page abstracts) was displayed and shared (leaflets). A follow-up mail was sent in order to get new followers and subscribers for the biannual newsletter.

Figure 19. Pictures of the test workshop.

The game was also played with young researchers on board during a marine research campaign in the Atlantic with the help of Antón Alvarez Salgado, CS12 leader.

Since the *beta* test was promoted, CETMAR has recorded very high interest in the game. The didactic and dynamic experience of playing the game disseminates the project effectively. The game could become part of the ocean literacy material spread in educational institutions. This is also the reason why the AquaVitae game is now seen as an exploitable result (see more information Chapter 5, in page 39).

Audience of dissemination activities

Dissemination activities have been numerous during the period covered by this report, reaching a very large audience and in most cases surpassing the expected results at this stage. The following table summarizes these activities and the audience reached. Once again, youth were important and addressed. They have been categorized within the label “Others”.

Table 11. Number of dissemination activities.

Dissemination activities	Number of events
Organisation of a conference	1
Non-scientific and non-peer reviewed publications (popularised publications)	2
Participation in a workshop	16
Organisation of a workshop	8
Other	3
Participation in a conference	50
TOTAL	**80**

Table 12. Average and total audience in AquaVitae dissemination activities.

Dissemination activities	Average per event	Estimated total size of audience
Organisation of a conference	25	25
Non-scientific and non-peer reviewed publications (popularised publications)	500,000	1,000,000
Participation in a workshop	60	960
Organisation of a workshop	20	160
Other	15	45
Participation in a conference	150	7,500
TOTAL	**1,270**	**1,008,690**

The multi-actor platform in communication, dissemination & exploitation activities

The AquaVitae multi-actor platform consists of an ensemble of stakeholders from different sectors, from industry to consumer groups or policymakers from around the globe, but particularly from the countries involved in the project. The nature of their role is considered when integrating them into the Industry Reference Group (IRG) or the Policy Advisory Group (PAG).

The open character of this platform makes it possible to incorporate new stakeholders during the life of the project, engaging them in different events, tests, and asking for their feedback or sending information on the project such as newsletters. Their insights and expertise provide feedback on the research work. This feedback is collected both in conversations (in online and onsite meetings) and surveys.

At this stage, over 200 stakeholders have been identified. Alongside companies or policymakers, many other actors related to the sector have been included in the platform, such as chefs and environmental associations. The list of members is updated regularly and available on the Aquanet.

The character of this multi-actor platform is so important that one of the Exploitable Results of AquaVitae is precisely the network of low trophic aquaculture in the Atlantic creating the bases to further knowledge development related to low trophic aquaculture.

The structure of the stakeholder platform facilitates the implementation of the multi-actor approach in all Case Studies. WP9 is in charge of facilitating these interactions coordinating the

meetings and/or helping CS leaders to create or circulate the surveys. The double-loop process (2-round-meetings to identify and discuss barriers and opportunities) finished in 2022; 2023 interactions will be devoted to uptake meetings and final encounters to discuss final outputs, gather final feedback and implement the reports and comments in the research work.

Although this plan concerns the target audience depicted in Chapter 1, some communication, dissemination and exploitation tasks have been developed within the platform with the AquaVitae Stakeholders as the main target group. WP9 facilitates the encounters and relationships with stakeholders. However, the references here to the stakeholder engagement are related to their involvement in communication, dissemination and exploitation activities in AquaVitae.

More information on the multi-actor platform will be detailed in D.9.11. AquaVitae multi-actor platform, which is due in month 51 of the project.

Relationship with stakeholders beyond the platform

The nature of the stakeholder platform is based on the exchange of knowledge and expertise, analyzing what is important at the research level but considering stakeholders´ feedback, their backgrounds and the practices they are involved in that may produce a different approach to the project.

Obviously, this relationship comes to fruition in special events addressed to these stakeholders. There are meetings to gather and evaluate their feedback (e.g., double-loop meetings), but stakeholders are also invited to other type of events that aim at communicating or disseminating the project. Precisely this involvement of stakeholders in this type of event is assessed in this section.

The contingency plan during and after Covid

Although the pandemic obstructed old dynamics in some way, it also offered new opportunities that were used during and after the pandemic.

A contingency plan was designed to solve problems resulting from the pandemic: digital tools were implemented to hold meetings, digital forms were created and managed by CETMAR to collect stakeholders´ feedback, validate the CS activities and provide relevant analysis on the development process.

After the pandemic one lesson learnt is that stakeholders (and other agents) are reconsidering their presence during meetings and, when possible, they try to attend online, avoiding travelling and fatigue due to business trips. They are very selective when deciding where to go or participate.

A remarkable communication and dissemination event where stakeholders decided to join was the *Master Class: Tasting the Low Trophic World* depicted above.

The event offered the opportunity to show (communication and dissemination) the project and its products to a wide range of stakeholders (from industry to producers or students). At the same time, they were asked for their feedback in two surveys: one prepared by CSs along with CETMAR and another carried out by UiT.

The latter evaluated the willingness to pay for low trophic aquaculture products tested and presented. Sociodemographic information was collected. Also, participants were invited to take part in a choice scenario to evaluate their preference for the products on display at the event through four inherent characteristics for each product (nutritional value, environmental-friendliness, social responsibility and price). The results of this survey will be included in the AquaVitae deliverable WP5.

Stakeholders were not only present as stakeholders that provided feedback, but also as attendees that learnt about the project while participating in the workshop, cooking, watching, tasting, summing up, experiencing low trophic species and their advantages.

Another important workshop at the dissemination level but with stakeholders´ participation was the AquaVitae game: raising awareness on aquaculture, before mentioned. Once again students were invited to test the AquaVitae game is creating for D.9.5. Besides playing the beta test game and giving feedback on it, CETMAR presented the project and displayed dissemination material during the event.

Analysis of the implementation of the *First Interim Plan*: deviations and improvements

The main purpose of this Second interim PECDR is to assess the current state and implementation of "D9.3 First Interim Plan for the Communication, Exploitation and Dissemination of Results" and its impact in order to correct deviations that may have been produced. The results of the implementation of these actions will be now described:

Partners were encouraged to participate in scientific activities (conferences, publications, etc.) to enhance the visibility of AquaVitae work. Despite Covid restrictions, a great number of activities were carried out both online and physically. Face-to-face events were possible since late 2021 and from that date onwards, partners attended different events to showcase AquaVitae research and achievements.

WP9 offered digital services for online meetings. Zoom and Teams were implemented and successfully used even after restrictions were lifted. Currently, these two platforms are used on a regular basis for day-to-day meetings and/or hybrid events.

Other digital interactive tools were implemented during the pandemic and used afterwards: Miro or Mural were successful for meetings needing interaction among the participants while Mentimeter was implemented to circulate surveys and get feedback, particularly from stakeholders.

Comprehensive stakeholder surveys were run by Work Packages 1, 2 and 3. These are ongoing and the results to date have been reported in the M36 reporting and will also be covered in the M54 reporting. A number of additional surveys have been initiated by WP5, 6, 7 and 8 on topics related to the relevant WPs.

Mentimeter gives the opportunity to circulate presentations and interact with attendees both online and face-to-face. Attendees can use it on ubiquitous laptops or smartphones. The main advantages of Mentimeter are two: firstly, this platform allows the session to be made dynamic in a very simple and fluid way; secondly, facilitators can receive feedback, show it on the screen to the participants and store it for later analysis. Mentimeter converts the information received into an Excel sheet and into a PDF document with graphics or cloud words.

More personnel were allocated to online events since digital meetings require more preparation. A back-end-moderator was needed in online or hybrid events for testing connections, rehearsals and content adaptation. Among others, Kasper Thøring, from Nofima, assumed this role for monthly webinars and Rosa Chapela, from CETMAR, filled the role for the hybrid workshop during the European Maritime Day.

The multi-actor platform was reviewed with CSs and WPs to ensure suitability and geographical and topical stakeholders' representability. The number of stakeholders increased significantly.

It is important to highlight the inclusion of chefs, consumer groups and environmental organizations during the last year.

New steps and strategy for the last year of the project

Some actions are suggested in view of these indicators:

- Encourage partners to disseminate content on their social media.
- Scope the interest of translating the game into Brazilian Portuguese since a session on the game is planned during the annual meeting.
- Prepare the dissemination plan for some exploitable results such as the game.
- Submit applications or organize side events where the game can be played to spread the word on low trophic aquaculture in a didactic and dynamic form.
- Avoid stakeholder fatigue wherever possible by careful selection and monitoring of tasksAttend and present AquaVitae activities in as many conferences/workshops as possible during the last year of the project.
- Review the multi-actor platform with CSs and WPs to ensure suitability and geographical and topical stakeholders' representability.
- Take advantage of the coming events to hold stakeholders´ meetings and engagement during the last year of the project (e.g., round table with policymakers in Brussels or Aquaciência in Brazil during the 2023 annual meeting).
- Planning and preparation of the final AquaVitae scientific conference.

5. - Review and update of the exploitation plan

The aim of this exploitation plan and activities described herein are to monitor and report exploitable results (ERs), to select key exploitable results (KERs) arising from AquaVitae, and to support the owners (developers/researchers), of both ERs and KERs in their understanding and development of specific exploitation activities.

Exploitation means the use of results in further innovation and research activities other than those covered by AquaVitae, including commercial exploitation such as developing, creating, manufacturing and marketing a product or process, creating and providing a service, or in standardisation activities. Specific examples of outputs may be spinoffs, licensed co-products and Intellectual Property (IP) protection of ERs and KERs, but also extended stakeholder interaction (and use of exploitable results) along with supporting the use of data in future research.

The EDC the PMG and the Innovation Manager (IM) periodically assess both exploitation potential and IP throughout the project. This is summarised and reported, along with an exploitation plan, at 18 and 36 months (extended to 42 months). The DoA also outlines the role of the PMG in discussion of any potential opportunities and conflicts related to intellectual property and their mediation.

For those results arising from the project's 13 case studies that run through the three innovation work packages (WPs) 1 (Hatchery / Seedling Production), 2 (Post hatchery/seedling to harvest processes) and 3 (New or improved products), in particular results related to experimental and developmental work within those case studies AquaVitae maintains structures to monitor and report outputs in the form of ERs. This is complemented by similar structures within WP4 (Sensors, data integration and Internet of Things) specifically related to the exploitation of results of experimental and developmental work therein.

The PMG and IM collects and summarizes ERs from the remaining WPs, i.e. 5 (Food safety and nutrition, and market potential), 6 (Environmental monitoring, risk assessment, and sustainability), 7 (Business and socio-economic analysis, profitability and exploitation), 8 (Aquaculture policy and governance) and 9 (Knowledge building, training, communication and network facilitating).

This approach is well-suited for implementing selection of KERs and their further development. It also supports so-called horizontal activities within such a large EU-funded project and contributes to integrated project management as maintained within AquaVitae.

Additionally, specific exploitation and commercialisation activities, particularly product testing during the project, are outlined in the planned activities of WP3. WP3 selects potential products from case studies and tests these with potential customers as beta testers providing feedback for commercialisation steps and further product optimisation. An outline of the method and application of the AquaVitae Exploitation Plan and the resulting data sets including KERs, their reporting and selection for extended exploitation activities are provided in the following section.

Guidelines for communicating, monitoring, classifying, developing and reporting Exploitable Results (ERs) and Key Exploitable Results (KERs)

Communication of the plan

In order to ensure whole consortium awareness of exploitation planning, support and reporting with AquaVitae, the activities of the innovation manager, the terminology of the exploitation plan and required inputs from all AquaVitae participants have been presented and communicated to all project participants at all AquaVitae consortia events and meetings. This communication of the exploitation plan has been coupled with a focus on outreach to Case Study (CS) leaders and the WP leaders involved in so-called "evaluation work packages" considered important in production of their own WP-derived exploitable results (ERs).

In addition to several online meetings to identify ERs in each WPs, a particular session on "Exploitation Awareness" was held during the AquaVitae meeting in Copenhagen, Denmark in November 2021. In order to raise cross consortium awareness of the potential of exploitation of results from within AquaVitae, the details of the then active booster sessions led by the external consultant Dr Olesen were presented as part of the exploitation activities. An exploitation activity was conducted at the meeting after the booster and exploitation plan were presented. All consortium participants were divided into case study groups and spent 30 minutes conceptualising and developing their chosen/defined ER/KER along the booster service framework. Participants were then required to complete a one-minute elevator pitch of their selected products or processes. The outcome of the booster service itself is part of section 3A.

All communication activities had the benefit of raising awareness of the exploitation of AquaVitae results, the exploitation plan and resources available and engaging all WP and CS participants across the entire consortium in defining and querying their outputs in exploitable terms.

Monitoring / Reporting results as ERs

According to the Horizon 2020 Annotated Model Grant Agreement: (EC 2019 - H2020), a **Result** is defined as:

> "Any tangible or intangible output of the action, such as data, knowledge and information whatever their form or nature, whether or not they can be protected, which are generated in the action as well as any attached rights, including intellectual *property rights*".

The Horizon Results Platform Team (EC 2020) describes a **Key Exploitable Result** as:

> "an identified main interesting result (as defined above) which has been selected and prioritised due to its high potential to be "exploited" – meaning to make use and derive benefits- downstream the value chain of a product, process or solution, or act as an important input to policy, further research or education"

AquaVitae applies these descriptions for (exploitable) Results (ERs) and KERs. The project has established and maintains the case study reporting database (for more info on the database please see D1.2, D2.2 and D3.2- "AquaVitae WP 1 – 3 database"). Each case study is requested

to report what they consider ERs arising from their work to the database at each internal reporting period. The ER data is collated and managed in the database by WP 3 and the innovation manager (IM). This has resulted in an exhaustive and up-to-date overview of all potential ERs recorded in the database, 137 in total (Appendix II). This reporting mechanism of ERs has been extended to all WPs as the project has advanced.

In further development of the exploitation plan, ER monitoring now includes periodic reporting on the intended utilisation of exploitation mechanisms for ERs. A simplified ER table has been agreed by the EDC and approved by the PMG (Table 13). This table expands the reporting of ERs by CS and WP leaders by collecting data on ownership status, sector of application, and planned exploitation and protection measures for each ER. This table will be filled during the next round of CS reporting planned for month 48 and completed in the Final PECDR.

Table 13. Simplified ER reporting template to record exploitation mechanisms.

GUIDE TO RESPOND KER Template	
IDENTIFIER	Individual number to identify ER by
KER	Name + Brief description of the ER
OWNER	Partner / Partners
OUTPUT TYPE	Product / Method / Report …
STATUS	current status: prototype/testing/market/other
COMMERCIALIZATION	YES/NO
EXPLOITATION MECHANISM	IP / License / Spinoffs / stakeholder interaction / Future Research
TARGET GROUP	Industry/consumers/policy makers/etc.
EXPECTED IMPACT	Expected solutions/benefits/advantages in society/ecosystem services
CHALLENGES	Barriers/ ethics/security/standards or norms/IP rights
BUSINESS PLAN	Basic business plan parameters.
MARKET STUDIES DONE	Type/where/target group/results
PATHWAY	Ways of placing it in the market or addressing consumers, key message to disseminate/activities to promote the ER (media, workshop, conference, etc.)/channels & tools
TIMELINE	Timeframe for exploitation

The additional details related to exploitation mechanisms will allow the innovation manager and IP manager to approach advanced and selected flagship ERs (see below; cf. CS8 “Oysters "Spin off" and WP4 Technologies) for additional consultation support.

While this exhaustive list of 137 potential ERs has proven useful in obtaining an overview of many potential results from the CSs in AquaVitae, further agreement had to be found over a series of meetings amongst the PMG and the EDC along with the leaders of WPs 1, 2 and 3, to more clearly classify the most promising exploitable results in terms of commercialisation, particularly for exploitation activities during the project (see Section 3, Exploitation of Results). The most relevant were shortlisted as “flagship Exploitable Results” (fER). The selection process for this short list included an open consultation with the CS leaders who were identified as "owners" of the exploitable results.

CS leaders selected the most mature ERs from their R&I activities at an appropriate industry as their flagships. These were then discussed by CS leaders individually with the leaders of WP1-3. In some cases, one or more potential ERs of one CS task were combined into one fER. This resulted in narrowing down the number ERs to a total of 45. Appendix III summarises these together with an individual, detailed description.

The potential ERs and fERs identified / collected in the case study reporting database are also formulated in tabular form. This is formatted in accordance with the portal requirements for recording ERs and outlined under "Managing Project Results in the Horizon Results Platform Access the Funding & Tenders Portal" in tabular form.

This recording will be carried out in addition to requests that individual KER owner's complete publication of their results on the Horizon Results Platform for increased visibility (see below for KER selection). The Horizon Results Platform could be found in the following link:

https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform/search

Final Selection and Identification of KERs

A selection meeting will be held to assess the list of 45 fERs (Appendix III), and any additional ERs originating from WP4-9 (Appendix IV), following the EC recommended criteria (a) degree of innovation, b) exploitability and c) impact in 2023). Selection will also take into account exploitation activities conducted to date e.g. the Booster service or testings. EDC (with input from the PMG) will make up the committee and will derive a final division of the results of AquaVitae into ERs and KERs; these KERs will be reported and supported as outlined in section 4 in the following.

With these thorough methods for monitoring and reporting, as well as classifying/selecting ERs and KERs in place, the next step in exploitation planning and action is the support of exploitation mechanisms (see Section 3D, Future specific exploitation activities planned). Many exploitation activities have already taken place during AquaVitae. An overview of the results exploitation and support activities conducted to date on selected fERs and existing "products" is provided in the following section 3, Exploitation of results.

Exploitation of results

Booster Service Project Exploitation Services Module C

The EU Booster Service was employed by AquaVitae to promote, develop and test exploitation strategies of selected AquaVitae products, processes and methods with their "owners" and the EDC. The H2020 Booster Service is an initiative of the European Commission which aims to bring innovation to the market and maximise the impact of public funded research within the European Union (horizonresultsbooster.eu).

The case study reporting database allowed WP 3 and the IM to recommend ERs for concrete support measures (e.g. Booster) towards exploitation of those considered most advanced at the time. Therefore, the filters were set for the level of completeness and the current Technology Readiness Levels (TRL). With this process 20 ERs were selected with an estimated level of

completion above 60% within case studies. The EDC (together with input from the PMG) then selected the following four ERs. These are hereafter defined as potential KERs (pKERs). The respective CS leaders (including the WP leader for WP4) were invited by email to participate in the service:

- CS4 Output / pKER 2.3 - Seabed and land based IMTA algae in abalone feed - Cliff Jones / Dirk Weich (Marifeed, South Africa)
- CS5 Output / pKER 2.2 - Shrimp grown by new IMTA Biofloc system – Felipe Vieira (UFSC, Brazil)
- CS8 Output / pKER 1.1 - New microalgal diet for C. gasar larvae in hatchery production – Åsa Strand/Simone Sühnel (IVL, Sweden)
- WP4 Key Output - DTU underwater camera work – Petter Olsen, Fletcher Thompson and Patrizio Mariani (Nofima, NO / DTU, DK).

All invitees agreed and attended two EU Booster Service (PES Module C) Exploitation Strategy Seminars (ESS) held on the 2nd and 9th of December 2021, led by Dr Annie Olesen. The process was joined by 11 consortium members representing 8 organisations (table 14).

Table 14. AquaVitae attendees to EU Booster Service (PES Module C) Exploitation Strategy Seminars (ESS) held on the 2nd and 9th December 2021.

No. Partner	Organisation	Name and Surname
1	Nofima	Philip James
4	UFSC	Felipe do Nascimento Vieira
7	Aqua DTU	Patrizio Mariani
11	AWI	Matthew James Slater
11	AWI	Björn Suckow
21	Rhodes University	Ann Wu
21	Rhodes University	Cliff Jones
24	CETMAR	Yolanda Irawan
24	CETMAR	Rosa Chapela
27	IVL	Åsa Strand
27	IVL	Simone Sünel
34	Marifeed Pty Ltd	Dirk Weich
37	Sjókovin-Blue Resource	Juliana Arias

Although 4 Exploitable Results were initially identified for discussion at the ESS, the time at these Seminars allowed only for two results to be discussed. At the ESS it was decided to leave out the "Shrimp grown by new IMTA Biofloc system as it was not considered appropriately mature for exploitation at that stage. It was also decided to exclude DTU's underwater camera system WP4. The group discussions were general, in such a way that everyone (also the partners from non-selected ERs) could contribute, with the aim to be useful/instructive for all the attendees and that it would become understandable and acceptable and satisfying for all. As such the service provided the base for further developing of the non-selected ERs as well. It helped to focus on the main aspects to be considered in the future exploitation of all of AquaVitae's results by the end of the project's life and afterward.

In order to prepare the Final Plan for Exploitation and Dissemination of Results (PEDR), the approach, the methodologies and the tools which have been presented and exercised during the ESS will be useful and we will explore the possibility to introduce the methodologies for

other ER and KERs. In particular, the final PEDR will address the risks for exploitation of our identified final ER and KERs to improve the impact of mitigation actions.

The process of full booster document analysis and report production was completed and can be found in full in Appendix V of this deliverable.

Exploitation highlights from Case Studies - Product testing within WP3

As part of their activities in WP 3, AWI arranged and supported the test of prototypes coming from the CSs. At least four promising products had to be tested by industry stakeholders external to the project. The database was used continuously by AWI to identify potential products ready for testing. The WP3 leader has identified applications for the new products. The following products were identified due to their market potential and companies were contacted that acted as specialist testers for B2B product testing.

Product test 1 – Result 3 of CST (Case Study Task) 4.2

The first external product test was run with Case Study Task Prototype (CSTP) 4.2.3 "seeding and growing macro algae on mussel rafts to improve infrastructure use (macroalgae produced using IMTA in South Africa)". The newly developed protocol was used by Blue Ocean Mussel (South Africa) to grow *Gracilaria* on mussel rafts. The results were promising: Pilot-commercial scale macroalgae production was successful (see figure below). An additional, to evaluate the effect on the primary species (mussels) and to optimize the method further followed; this trial was not part of the original tasks that were planned and was considered additional work. Although the production process of algae was optimized further, the mussel production data was inconclusive and there was no evidence to suggest that mussel production was compromised in any way. Despite the first successful demonstration of algal production using IMTA, the final feedback received showed that this practice is unlikely to be pick by the industry at this time, because there is currently insufficient demand for farmed *Gracilaria*.

Figure 20. Pictures from successful macroalgae production during product test 1.

Product test 2 – Result 8 of CST 13.1

Following up on the B2B-feedback on the test of CSTP 4.2.3 the freshly produced *Gracilaria* biomass from Blue Ocean Mussel (ZAF) was integrated into CSTP13.1.8 "Diet for African abalone with sea-based IMTA macroalgae". This was selected as the second output to be tested externally. The abalone diet that contained sea-based IMTA-produced algae was formulated, produced and feeding trials were carried out Whale Rock Abalone Farm (Aqunion Pty Ltd, ZAF)

on a pilot/small commercial scale. The results were positive, with the IMTA-based algae in the diet being successfully included in the abalone feed up to a rate of 6% without negatively influencing abalone growth.

Figure 21. Pictures of feed produced for and abalone grown in product test 2.

Product test 3 – Result 3 of CST 7.3

Project partner Wild Coast Abalone (WiCoAb) in South Africa successfully introduced the Warty Sea Cucumber (*Neostichopus grammatus*) as an organism capable of cleaning the abalone grow out tanks of faecal material and other deposits. The new process poses a chance to reduce handling frequency of the abalone stock since tanks need to be cleaned less frequently (with subsequent increased in abalone growth performance) and substantially reduce the manual labour to clean the tanks. This was identified as a potential key exploitable result if there was a chance to market the sea cucumber as well. Thus, another external product test was conducted. In this case WiCoAb approached Hong Kong based company Extra Smart Technology Ltd and requested a look into the potential marketability of this unknown species of sea cucumber in the Hong Kong and Chinese market. WiCoAb supplied some dried samples of the species for testing.

The available sample was too small to do actual test marketing at retail level and test the reaction from consumers. So, after receiving the sample, Extra Smart Technology Ltd approached several of their clients and asked for their opinion on the marketability of the Warty Sea Cucumber, based on their knowledge of the wholesale and retail seafood markets in Hong Kong and China. The sample was also cooked into food and served to employees of Extra Smart Technology Ltd.

In the tasting test the warty sea cucumber did well and proved to be flavoursome. Visually it also shares some characteristics with the most expensive sea cucumber on the Chinese market that comes from Japan. But when cooked for food the warty sea cucumber did not present well, thus it will have to be incorporated into other dishes. Due to this, and because it comes from an unknown origin, the only safe assumption to make about a price point is to initially look at the lowest end of the scale i.e. USD 25/kg dry. Since the yield from the Warty Sea Cucumber is very low (6.3%) this converts to a price of about USD 1.57/kg wet. With development of the market with stable supply of consistent quality and a reasonable quantity (20-ton dry p.a.) Extra Smart Technology Ltd estimate that it is possible that the price could be increased to about USD 2.00 to USD 3.00/kg wet.

Product test 4 to 10 – Masterclass: Tasting the low-trophic world

One of AquaVitae's goals is to provide novel, low trophic seafood. AWI has identified the following potential products from the database:

Table 15. Low trophic aquaculture (LTA) products for human consumption originating from different CSs.

CS #	LTA product for direct human consumption	Tested in tasting event
1	Velvet fingers (*Codium tomentosum*)- fresh/dred in powder	N
1	Dulse (*Palmaria palmata*) - fresh/dried	Y
2	Dried Sugar kelp (*Saccharina latissima*)	Y
2	Dried oarweed (*Laminaria digitate*)	N
2	Dried winged kelp (*Alaria esculenta*)	N
3	Abalone (*Haliotis tuberculata*)	Y
4	Abalone (*H. midae*)	N
5	Dried Sea lettuce (*Ulva spp*)	Y
6	Enhanced sea urchin roe (*Strongylocentrotus droebachiensis* & *Paracentrotus lividus*)	Y
7	Sea cucumbers (*Neostichopus grammatus, Holothuria forskali* & *H. grisea*)	Y
8	West African mangrove oyster (*Crassostrea tulipa*)	N
8	Pacific oysters (*C. gigas*)	N
8	Flat oysters (*Ostrea edulis*)	Y
9	Mussels (*Mytilus edulis*)	N

As most of these are currently only being produced at experimental or small scale the most likely end-users were identified as being restaurants/chefs. Following up on this idea and the believe that a higher visibility of LTA products in restaurants, will increase the likeliness of their consumption throughout society on the long run, AWI supported by AquaVitae Partners France Haliotis, CETMAR and Nofima were active in organising and co-hosting a product testing and tasting event *Master Class: Tasting the low trophic world*. It was held in Plouguerneau, France in October 2022 (see also page 28).

At the farm site of France Haliotis, AWI and ULPGC presented data and fact sheets on AquaVitae food products (and related KERs). The attending chefs and cooking school students were then challenged to prepare highest quality meals from AquaVitae LTS products in a cooking masterclass for sustainable marine foods. The products were prepared by young chefs from France and Ireland (including one Michelin Stars).

Some wonderful LTS recipes were created and the 45 attendees (including some retailers and media) were able to see, prepare and taste fine AquaVitae food products first-hand. The event provided a great deal of positive and novel information related to LTS and their sustainable use in human food and activities, along with new recipes and video material for internal and external exploitation.

Figure 22. Group picture of attending chefs and professionals at the tasting event.

After the masterclass, France Haliotis had a number of requests from the chefs who attended the event. Samples of products such as abalone or seaweeds were sent to different cooking schools in France so that the chefs were able to spread the word to other students or colleagues. Demos were made in:

- École hôtelière de Dordogne (Boulazac) - online demo by Stéphanie Bernhard with abalone and seaweed with Qingdao cooking school (China) - 26th October.
- Lycée hotelier de Granville (Normandie) - demo by Léa Combelonge with abalone and seaweed (12th October).
- École Ferrandi (Paris) - Fabien Auffret made a demo with sea-lettuce powder (15th November).
- Other demos will take place in the coming months in various cooking schools as a result of our collaboration.

The following figures provide some impressions from the event itself.

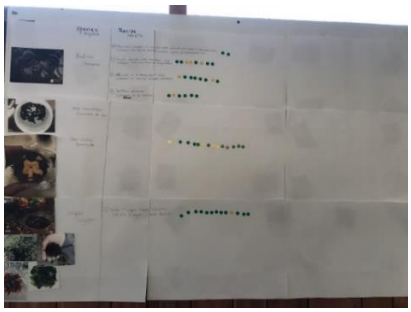
Figure 23. On the left, a representative of AquaVitae, a producer and a chef around a flat oyster dish prepared during the event; on the right, chefs and students.

Figure 24. On the left, dried seaweed (Dulse, Sugar kelp and Sea lettuce) that was rehydrated and assembled with vinegar, oil, onion, gherkins to become a tartar during the event: on the right, and one of the four abalone dishes prepared during the meeting.


Figure 25. On the left, participants being taught to prepare sea urchin roe; on the right, sea urchins opened.


Figure 26. On the left, sea urchin prepared by chef Manon Fouchard; in the middle, rehydrated sea cucumber; on the right, experimental recipes and score sheet during the event.





<u>Outstanding product test – CSTP5.2.4</u>

Despite having fulfilled the required number of external product testing, more is planned for the final reporting period. A German consortium of industry partners (Nordsee GmbH, Pulp Tec GmbH & Co. KG and Hengstenberg GmbH & Co. KG) together with the University of Applied Sciences reached out to AWI to acquire macroalgae biomass with the aim to optimise a patented process for the production of a disposable, edible packaging solution from macroalgae for food retailers.

A number of different macroalgae species are being produced within AquaVitae such as *Codium tomentosum* (CS1), *Saccharina latissima* (CS2), *Gracilaria gracilis, Palmaria palmata, Alaria esculente* (all CS4) and *Ulva ohnoi* (CS5). **CSTP5.2.4** (*Ulva sp. grown by new IMTA Biofloc system*) was chosen as the most suitable one. When the next production batch from CS5 is available, it will be sent to Germany for testing the feasibility of using that biomass as a raw material to

produce an edible take-away packaging. This will likely be *Ulva ohnoi* produced in a closed biofloc IMTA system (with shrimp and mullet).

Exploitation highlights from WPs 4 – 9

As described above in this exploitation chapter, the WPs4 to 9 were also invited to the AquaVitae exploitation meetings to identify their ER. The following paragraphs summarise the progress made within these WPs with regard to the exploitation of their respective results.

WP4: Sensors, data Integration and Internet of Things

The main tangible and (potentially) exploitable outputs from WP4 are the three biosensors: the DTU underwater camera, the Biolan sulphite sensor, and the Norce sensor integration platform. Extensive discussions, activities, and stakeholder consultations have been carried out for all these three sensors to establish how to best exploit the work done after AquaVitae has finished. Below is a summary of the respective activities and conclusions:

<u>The DTU underwater camera</u>

As detailed in D4.4, "Report on second development phase for IoT-enabled sensors" the original plan for DTU was to base the development on an advanced and expensive Underwater Time Of Flight Image Acquisition (UTOFIA) system developed in a previous EU project. Unfortunately, the UTOFIA camera that was considered at proposal stage got damaged beyond repair and DTU had to switch to a cheaper, more portable but less accurate stereo camera.

The stereo camera selected can be purchased commercially but was not used before in underwater applications. Hence, a different and more extensive development and testing pathway was implemented to tailor the system for underwater applications in mussels' farms. Specifically, development was required to have a proper enclosure and integration in underwater operations, as well as extensive calibrations of the camera with deployments in underwater environments were performed and software and protocols for operations in mussel farms with biomass measurements were defined. It was demonstrated that by combining different stereo images the software can provide point clouds and then estimate biovolumes and biomass of mussels lines within farming sites.

This work has been done, and the camera has been tested both in laboratory conditions, and also integrated in underwater Remote Operated Vehicles (ROVs) operated in actual mussel farms. Hence the starting TRL was estimated to be 3 (software did not exist, stereo camera not previously used for this purpose or in any underwater setting, camera not integrated in ROVs), and the ending TRL is estimated to be 7, i.e., the system prototype is modular and composed by camera+software+ROV and the integrated system demonstrated in operational environment. The system prototype has been demonstrated to stakeholders, both internally in AquaVitae (CS9 – Mussels) and externally, including at the High Tech Summit for the Black Sea in September 2022 and to the Danish mussel farm industry organization. Feedback has been positive, but there are still challenges relating to obtaining an accurate biomass estimate from volumetric reconstruction, especially when conditions are challenging (dynamic lighting, murky water, many large particulates in the water).

The DTU underwater camera was selected to participate in the Horizon Results Booster service, and the conclusion from that process was that currently commercialization is not viable. Recently the prototype has been submitted as a use case for the X-Tech innovation program at DTU aiming at developing a business case and advance on the commercialization of the product. However, the main focus for the exploitation of the system produced will remain in the further refinement of the software interface with end-users and delivering the software as open-source, leaving it to commercial partners or to future projects to build on the results achieved within AquaVitae. To facilitate this the work will be presented at various upcoming technology events, and a scientific paper or a separate report on the work will be published. To support this strategy a collaboration with Blue Atlas Robotics, ApS in Denmark has been recently established to use their system (a specialized multi-camera device) in mussel-monitoring applications, hence increasing accuracy and precision of our estimates while still benefitting of the portability and modularity of the solutions identified in Aquavitae.

The Biolan sulphite sensor

BIOLAN (a SME commercial company) had a sulphite sensor in their product portfolio prior to Aquavitae (BIO 700 Sulphite), being the aim of the project to develop a new, and significantly improved biosensing solution for on-field sulphite analysis. This new biosensing platform (BIO 7000 Sulphite) was conceived as a smaller, sleeker, IoT-enabled through a Bluetooth connection, based on System on Chip (SoC) electronics device. Additionally, it was envisioned to be used in combination with new eco-designed strips, allowing for a reduced plastic waste and a more efficient manufacturing process. A water sample is introduced into the strips, and a sulphite concentration is calculated by the platform in less than 1 min.

With only minor deviations (due to challenges related to Bluetooth pairing) the BIOLAN work has gone according to plan, and a complete and qualified system (the BIO 7000 Sulphite IoT-enabled device, strips, software, App and cloud platform for data transfer) is in the process of being demonstrated to two stakeholders within the seafood industry. At project end TRL will be 8, and after verification, testing, and upscaling of production the BIO 7000 Sulphite platform including all features mentioned will be produced and sold commercially by BIOLAN, so TRL will be 9. No particular exploitation measures are required by AquaVitae; the sensor will be marketed and sold in the same way and through the same channels as the rest of the BIOLAN products. The first potential customers to be addressed will be current users of the previous version BIO 700 Sulphite platform. It is expected that this initial market entry will place the BIO 7000 Sulphite platform as competitive product within the seafood industry and pave the way to a fast market expansion.

The Norce sensor integration platform

In previous projects Norce had developed a prototype of a sensor integration platform for use in a salmon aquaculture production environment, capable of receiving different types of data from a number of sensors. In AquaVitae the objective was to develop this IoT platform further, adding smaller low-power IoT sensor nodes at the edge, support for automatic transfer and storage of data, as well as simple visualization.

Technically this work has gone largely according to plan, and a resilient and power efficient IoT platform with improved connectivity to the edge has been developed, together with a

visualization tool / a dashboard. With respect to exploitation of the platform and the work done in the context and aftermath of AquaVitae there are two challenges:

- The travel restrictions imposed by Covid significantly hampered the ability to test and demonstrate the sensor integration platform at remote sites, including in most AquaVitae CSs.
- Unlike finfish (particularly salmon) aquaculture sites, the available Low Trophic Aquaculture (LTA) sites seem at a development stage where sensor deployment and automation are limited. Thus, in the context of AquaVitae it has been difficult to demonstrate the benefits of a sensor integration platform.

To alleviate these problems a closer collaboration than originally intended was initiated between Norce and the two other WP4 sensor developers; DTU and Biolan, and the sensor platform has been integrated with several versions of the Biolan sulphite sensor device and will be integrated with the latest DTU underwater camera.

To mitigate lack of access to sites for testing, Norce developed a PoC use-case to demonstrate and evaluate the applicability of the sensor platform on situation awareness in macroalgae production. This encompasses buoys with IoT sensors containing GPS devices and accelerometers. This enabled the sensor integration platform to be tested with real data in a rough environment, and because the data delivered by the buoy has the potential to be useful when trying to determine tension, current, unexpected movements, or damage to the cage, net or rope that the buoy is attached to.

The sensor integration platform, IoT nodes, and the buoys have been tested in Buksnesfjorden in Lofoten, areas where also fish farms are located. TRL at project end is estimated at around 7. Interest from some stakeholders have been significant, especially macroalgae production. Exploitation of the platform and also of the buoys IoT sensors after project end is very likely, also in other areas outside algae production. NORCE has already demonstrated the use of the platform and IoT devices in environmental monitoring.

The work will be presented at various upcoming technology events, and a scientific paper or a separate report on the work will be published.

WP5: Food safety and nutrition, and market potential.

Most of the results from WP5 have the potential to be developed as ERs. Currently, WP5 leads aim to develop two ERs. The first one is the guidelines on performing health risk benefit assessment, and the second one is the guidelines on market driven strategies for LTS aquaculture products. These two guidelines will be presented in the AltaNet platform as online tools which can be accessed by wider audiences.

WP6: Environmental monitoring, risk assessment and sustainability.

The results of the work form WP6 will be integrated into the policy brief made by WP8. This may have a great practical impact as a KER from WP8. Similarly, WP6 is integrated into the MOOC – a KER from WP9.

Regarding further exploitation from WP6, in D6.2, WP6 quantified ecosystem services and disservices Nature contributions to people (NCPs) provided by low trophic species. In one part of this work, the nutrient budgets of different production systems were evaluated. The results illustrated a large release of nutrients from one specific farm operation. Based on the results, the farm has now reduced the addition of nutrients during the production cycle by 50% actively exploiting the newly gained knowledge. Collaborative work between the company and WP6 is ongoing to enhance the process further through simulations of nutrient concentrations, flow rates and growth rates of the production species, as an effort to further enhance both the environmental and economic sustainability of the operation.

Business plans in WP7

WP7 contributes to the aims of AquaVitae by conducting socioeconomic and business analyses relevant for the exploitation, commercialisation, and development of business plans of selected new species and processes studied in the project. The business exploitation plans aim to synthesise the different innovation outputs of the project in terms of technology, product development, production processes, market and marketing, value chain management, economic feasibility, and other relevant aspect of selected CS. These documents will be written in a sectorial basis aiming to be a reference for other parties interested in developing a business plan of their own within this industry.

Also, the business plans should be useful for further exploitation activities and stakeholder interaction, as well as a beyond the life of the AV project. With that, the business exploitation plans contribute towards building a lasting network of aquaculture industry partners along and across the Atlantic Ocean, and to facilitate business opportunities; and, towards developing training programmes both for industry (industry training and apprenticeships) academia (university-level course modules and student exchange), and for general audiences.

The business exploitation plans will be developed for case studies that have been through the different analysis from WP7 including value chain analysis, profitability analysis and socioeconomic assessments. Consideration also will be given to those case studies that have been selected for valuation of Marine Ecosystem Services. The selected case studies so far are:

- CS2 Offshore macroalgae
- CS3 Land-based IMTA
- CS6 Sea urchins
- CS9 Mussels
- CS10 Freshwater finfish

The business exploitation plans for the selected case studies will also be promoted widely within planned AquaVitae exploitation. The business exploitation plans are expected by the end of the project at month 46.

WP8: Aquaculture policy and governance

Policy-relevant evidence and recommendations arising from AquaVitae activities will be synthesised in two upcoming deliverables: D8.4 Policy Brief for Low-Trophic Level Aquaculture (due M49) and D8.5 Report on Good Practice for Policy Development for Low-Trophic Level Aquaculture (due M52). From these, the policy brief (D.8.4) is being developed as a concise

stand-alone publication which translates AquaVitae's complex body of evidence into accessible and actionable recommendations for policymakers and regulators. It will bring together key aspects relevant to policymakers on the state-of-the-art of low-trophic aquaculture (LTA), placing LTA in the context of current governance challenges and policy needs, and defining recommendations for action.

Once ready for dissemination and exploitation, the policy brief will be directly shared with DG MARE and DG RTD, as well as circulated through the AquaVitae stakeholder platform, made available in the AquaVitae website and submitted to the newly established EU Aquaculture Assistance Mechanism (coordinated by NTT Data, with Thessaloniki University, SCOPE, EAS and EATIP) for inclusion in their collection of resources, and in order to better ensure wide availability and access to potential interested parties beyond the lifetime of the project.

In order to start a dialogue with policymakers, during the development and ahead of the release of the policy brief, AquaVitae WP8 has continued to engage with policymakers to identify policy needs and provide a space to discuss how scientific evidence could meet these needs. To this regard, AquaVitae has met with DG MARE colleagues at Aquaculture Europe 2022 (Rimini, Italy, September 2022) to discuss the present policy context and policy areas currently active, and where research could potentially support it.

A policy-round table is also currently being planned for March/April 2023, in order to keep an open dialogue between the project and stakeholders, discuss policy-relevant findings with policymakers and key stakeholders and explore policy needs and pathways forward. The ASTRAL project has been invited to attend this meeting so that they can build on the policy activities carried out in AquaVitae.

WP9: knowledge building, training, communication and network facilitating

The variety of contents and tasks developed in WP9 took also into consideration two potential KER´s at the beginning of the project: the Massive Open Online Course (MOOC) as the main training result, and the trans-Atlantic network of aquaculture stakeholders, supporting industry-driven innovation. In addition to these, AquaVitae has identified a third ER among WP9 results: the AquaVitae game.

<u>The MOOC</u>

After analyzing the availability of open/online course material on low trophic aquaculture, AquaVitae conclude there was a need for highly comprehensive and interdisciplinary material on LTA. The result of this work is the MOOC on Sustainable Aquaculture for Low Trophic Species (SALTS). One of the major challenges of the product is to uptake and upkeep after the project ends. It will be free and internationally distributed Massive Open Online Course (CC BY-NC-ND 4.0) for the general public but specifically for practitioners and master-level students. (For more info on the MOOC see page 31).

<u>The trans-Atlantic network of aquaculture stakeholders</u>

The trans-Atlantic network of aquaculture stakeholders, supporting industry-driven innovation aims at finding a lasting network of aquaculture industry partners across the Atlantic Ocean, including industrial apprenticeship opportunities.

AquaVitae presented a pledge in the All-Atlantic High-Level Event held in 2021 (see page 19) in order to implement this ER. The pledge aims at establishing an All-Atlantic trans-national low trophic and integrated multitrophic aquaculture (IMTA) aquaculture hub. In 2023 this network will be presented as a new pledge on the Mission Oceans campaign order to reinforce the relationships among H2020 projects that deal with aquaculture and different stakeholders.

This network will last beyond the project thanks to AltaNet, a website for networking that collects news, stories and events about low-trophic aquaculture from all over the world and will be further explored into the final PECDR. The AltaNet initiative is co funded by the Norwegian Research Council.

The AquaVitae game

The WP9 Task 9.7, dealing with gamification on raising awareness on aquaculture, led WP9 to create a game (more info about the game is described on page 34). AquaVitae is evaluating the possibilities of the game as an ER.

Before the final PCEDR is due, AquaVitae should consider the impact of the game and if we should commercialize it or offer it for free on platforms such as CORDIS or FAO´s website. If so, we should reflect on matters such as business plans, IP rights appropriate for this type of product and exploitable activities.

Within the scope of WP 9, AquaVitae is committed to the conceptualisation and publication of a voluntary European standard in the form of a European Committee for Standardization workshop agreement (CWA) focused on best practice recommendations for the production of low trophic species. This will be made available for all other actors to exploit by project end.

Future specific exploitation activities planned

The AquaVitae exploitation at EDC level (supported by the PMG) culminates in a selection committee to define the project KERs. Some of these exist already following the Booster and other activities outlined in section 3 of this document, however these will be reassessed accordingly. These KERs will be the focus of KER reporting to the established EC portals (as outlined in Section 2 above) and targeted approaches to KER owners to specify next exploitation steps.

The data recorded during CS and WP reporting (table 13) on exploitation mechanisms planned will inform the selection process. Further information on potential exploitability and impact will be supplied by the inclusion of the data gathered and summarised by the WP 3 leader and relevant Cross-Cutting Case Study leaders in "DL 3.4 Report on novel applications of LTS in food and feed products, with analysis of challenges related to safety, nutrition, sustainability, profitability, and market acceptance".

Targeted approaches to KER owners or contacts will determine and propose their planned next exploitation steps using the following exploitation mechanisms:

1. extended stakeholder engagement
2. licensing of products or processes

3. IP mechanisms including patents
4. potential spinoffs or internal companies
5. future PHD / postdocs
6. business plans.

The targeted outreach to KER owners will be accompanied by a full description of the mechanisms listed above, contacts with the IP manager, and compiled lists of EU and national services for the implementation of those mechanisms (Appendix VI).

As mentioned above (as part of the reporting and dissemination), owners will be further requested to separately publish their KERs on the Horizon Results Platform.

An important "all Consortium" exploitation activity within the AquaVitae project will be an online "exploitation outreach" symposium with all consortium members invited. The symposium will offer a presentation of the exploitation goals and definitions of the commission, a set of presentations on the status of the KERs selected for Booster development and product testing, an overview of exploitation mechanisms 1 to 6 mentioned above, and finally an overview of the resources available to all CS and WP leaders to support exploitation and commercialisation of AquaVitae results after the project period is complete. It is foreseen for March 2023. The symposium will be followed up by an exploitation session at the annual consortium meeting in Brazil (April 2023) to reiterate the results and prepare the final timeline and exploitation activities for all KERs within AquaVitae. The Brazil session also functions as an alternative date for those not attending the online session.

NB, Additional dissemination and planning activities are numerous and open within AquaVitae, each of which will contribute significantly to exploitation activities. These are outlined in the following sections and will be supported by the innovation manager to ensure maximum valorisation for results from exploitation in AquaVitae.

Dissemination for exploitation by other actors and stakeholders

AquaVitae data not under specific intellectual property protection or other commercial limitations are available and will continue to be made available on open access data platforms, in accordance with the data management plan outlined in the description of action.

Exploitable materials available to other actors have been available since the inception and release of the massive online open course (MOOC). These materials will be expanded upon by developments of the AquaVitae game to encourage interaction with low trophic species aquaculture currently in testing and to be in April 2023.

Intellectual Property Rights (IPR) Management

The IPR support and leader Kjell-Åge Rognli at Nofima provides bespoke advice and evaluation of IPR protection with IP owners within AquaVitae. This occurs by self-reference, or by reference through the innovation manager. Reference, for example, will be provided to all owners of selected KERs following their selection in 2023. The IPR manager and the consortium also collaborate closely with the EU Commission’s IPR Helpdesk to manage Intellectual Property (IP) and Intellectual Property Rights (IPR) where the need arises. This resource is also made available

to KER owners in the case of any potential conflict or the need to obtain independent advice on IP concerns.

As the purpose of IPR is to make the best benefit of the work to society and industry the pathway of how to achieve this must be evaluated on a case-by-case basis. In some situations, as in the case with the image analysis project showcased by CS 8 and discussed with the IPR manager. In CS 8, the best option is to make the work openly available to spur innovation and act as a proof of concept to generate additional development. In some situations, it may be better to protect the work to favour product development as this may be costly and there must be a reasonable probability of return on investment for an interested industry partner.

In the advanced case, of oyster sorting and identification software, the TRL of the work completed in AV remains too low for companies to implement the results directly and additional work is needed to produce a product that can be commercialised. The next step of the work is to develop a photo-booth/technical solution for the sorting of oyster seed. For this, IPR should be discussed, but at this stage there is higher value in sharing the work openly. CS8 leaders plan to do this by submitting the developed code and reports (in Swedish due to requirements from the national funding body that co-founded the work in AquaVitae) together with the dataset metadata template from the data management plan to Zenodo shortly.

6.- Conclusions

AquaVitae´s communication and dissemination activities have improved considerably with the new actions carried out within the framework of this Plan. This includes: increasing social media followers and the visits on the webpage, and a greater presence at events where its progress can be shown. For this, constant communication and commitment to the AquaVitae platform of stakeholders have been maintained and, in addition, a greater level of engagement with young people has been created, both in the world of research and innovation and among young students. Many of the communication and dissemination actions have been oriented towards this group as potential influencers of low trophic aquaculture, both in research and in improving their knowledge in society.

Actions and events like Low Trophic Life Webinars, the AquaVitae Game, the MOOC, the students exchange or the student invitations to attend AquaVitae meetings and international conferences confirm that the youth are a key target group for Aquavitae dissemination and communication.

The pandemic has had a significant impact on the project plan. Almost all activities have undergone a digital transformation. The situation entailed some disadvantages but also some advantages, for example, broader participation using online platforms. Digital tools were implemented and changed both routine work and event organization. In fact, when restrictions were lifted, some activities remained online or became hybrid with good results. The AquaVitae final scientific conference will be held as a hybrid event to maximise dissemination.

This PECDR sums up the active and dynamic conceptualisation and implementation of communication and dissemination measures during and after the pandemic. It also presents a set of measures optimised to enhance the communication activity of AquaVitae partners. It includes content creation, network building and dissemination strategies. Each of these activities has contributed to the excellent reach of the AquaVitae project, communicated to many millions and actively participated in by tens of thousands of members of a diverse set of audiences around the world.

This PECDR is complemented and supported by an exploitation plan which actively promotes exploitation awareness within the consortium. The exploitation plan guides how WP3 monitors, reports and supports the testing and development of the exploitable results arising from AquaVitae. The established exploitation methods, along with high-impact activities to test products with customers at multiple links along the value chain ensures the impact of the arising exploitable results (ERs) and key exploitable results (KERs) beyond the project timeframe and scope. The use of EC mechanisms (Booster Service) to develop product concepts and encourage steps towards commercialisation has accelerated the selection and development of KERs. The exploitation is supported more broadly by an increasing number of exploitable outputs from WPs and will be promoted more widely and with more impact in relation to the project and EC mechanisms (Results Portal) at the completion of KER selection.

The PECDR is a living document that is constantly updated. For the remaining months of the project, it will be very important to continue improving the audience figures and adapting the diffusion to specific objectives. In terms of exploitation, the identification of the final KERs will be crucial in order to prepare the business plans and all the activities around their communication and commercialization.

7. References

European Commission (2019): Making the most of your H2020 project. Boosting the impact of *your project through effective communication, dissemination and exploitation* (2019) https://op.europa.eu/en/publication-detail/-/publication/3bb7278e-ebf3-11e9-9c4e-01aa75ed71a1/language-en/format-PDF/source-164620962

European Commission, (2019). EU Grants: H2020 AGA — Annotated Model Grant Agreement: V5.2 – 26.06.2019;

European Commission, (2020). "Join the new and improved Horizon Results Platform!". Retrieved 11.02.2021, 2021, from https://ec.europa.eu/newsroom/informatics/items/689551/en.

European Commission: Horizon Results Booster, https://www.horizonresultsbooster.eu/

European Commission: Horizon Results Platform - https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/horizon-results-platform/search

Appendix I. Dissemination and communication activities M18-M42

Partner involved	Date	Title	Type of Dissemination or Publication Activity	Type of Audience	Countries Adressed	Size of audience	Link
IVL	5-Nov-20	Call for collaboration related to Image analysis project at NORA 3 conference	Participation to a conference	Scientific community (higher education, research)	Europe	150	https://noraeurope.eu/nora-moving-forward-nora-3rd-conference-in-november-online/
UFSC	5-Nov-20	Recognition as distinguished graduate from Universidad de Nariño to Esmeralda	Social media	Scientific community (higher education, research)	Colombia	383	https://www.youtube.com/watch?v=ajZY25DZF9E&t=1986s&ab_channel=TELEPASTO
CETMAR	16-Nov-20	AquaVitae participation in the section pitches- Breves do mar of sectoral event Business2Sea	Participation to a conference	Scientific community (higher education, research)	Portugal	50	http://business2sea.org/curtas_es/
EmBraPa	25-Nov-20	Students involved in Aquavitae participated on Scientific Events 25th November ("Cultivo multitrófico integrado de camarões e macroalgas no Nordeste brasileiro" - Stela Valenti Raupp)	Participation to a workshop	Scientific community (higher education, research)	Brazil	50	
UNESP, Nofima	26-Nov-20	Webinar #1: Low Trophic Life series - "Seaweeds as key components in pond IMTA systems"	Training	Scientific community (higher education, research)	World	30	https://aquavitaeproject.eu/event/webinar-seaweeds-as-key-components-in-pond-imta-systems/
UFSC	27-Nov-20	First meeting of the Horizon 2020 projects @ UFSC: AtlantECO, iAtlantic, Triatlas, Mission Atlantic	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	Brazil	10	
UFSC	28-Nov-20	Integración de especies utilizando la tecnología de biofloc	Participation to a conference	Scientific community (higher	Peru	1500	https://www.facebook.com/107301191024611/videos/412117369972115

				education, research)			
UFSC	30-Nov-20	Projetos da UFSC nas áreas marinha e oceânica são contemplados em editais da União Europeia	Communication campaign (e.g. radio, TV)	General public	Brazil	100	Projetos da UFSC nas áreas marinha e oceânica são contemplados em editais da União Europeia
Nofima	3-Dec-20	3rd All Atlantic Forum - European Commission - South Africa Online - AquaVitae presentation	Participation to a conference	Policy makers	Belgium	300	https://allatlanticocean.org/view/events/all-atlantic-ocean-research-forum
IVL	3-Dec-20	Presentation of CS8 work at University course for University of Gothenburg	Training	Scientific community (higher education, research)	Sweden	20	
EmBraPa	3-Dec-20	Live webinar on Governance with 2 participants of Aquavitae (Mayara Fabris, WP6 and Eric Routledge, WP9).	Participation to an event other than a conference or workshop	General public	Brazil	512	https://www.youtube.com/watch?v=CM2OOff3H4E
CCMAR	4-Dec-20	Article of AquaVitae at UALGzine in Portugal	Communication campaign (e.g. radio, TV)	General public	Portugal	2500	https://www.ualg.pt/pt/content/revista-ualgzine
DTU	15-Dec-20	Presentation of Aquavitae CS9-work to the SUBMARINER Mussel Working Group	Participation to a workshop	Industry	Germany, Denmark, Sweden, Norway, Estonia, Latvia	20	
UFSC, Nofima	17-Dec-20	Webinar #2: Low Trophic Life Series - "Advances in IMTA & Biofloc Research at UFSC"	Training	Scientific community (higher education, research)	World	30	https://aquavitaeproject.eu/event/low-trophic-life-webinar-advances-in-imta-biofloc-research-at-ufsc/
Nofima	1-Jan-21	News on: "Sea urchins - the new oil?" (original title: "Kråkeboller - den nye oljen?")	Communication campaign (e.g. radio, TV)	General public	Norway	3000	
NOFIMA	11-Jan-21	News: Snart kan sjømatnæringen søke på milliarder av EU-penger	Communication campaign (e.g. radio, TV)	General public	Norway	1000	https://www.fiskeribladet.no/tekfisk/snart-kan-sjomatnaringen-soke-pa-milliarder-av-eu-penger/2-1-939037
NOFIMA	13-Jan-21	News: EU skal dele ut forskningsmilliarder til sjømatnæringen	Communication campaign (e.g. radio, TV)	General public	Norway	1000	https://paper.opoint.com/?id_site=21229&id_article=56077&code=455

UFSC, CETMAR	25-Jan-21	News for AquaVitae website on cultivation of seaweed witl effluent froma shrimp farm	Communication campaign (e.g. radio, TV)	General public	World	103	https://aquavitaeproject.eu/cultivation-seaweeds-with-effluent-from-shrimp-biofloc-system-mateus-martins-ufsc/
IVL	26-Jan-21	News for Aquavitae website on Swedish alliance for research on seafood	Communication campaign (e.g. radio, TV)	General public	World	69	https://aquavitaeproject.eu/multi-million-investment-in-swedish-seafood-partnership/
NOFIMA	28-Jan-21	5th Asia-Pacific Food Safety International Conference 2021: Petter Olsen: "Can Traceability Systems and Blockchain Technology Ensure Authenticity and Detect Food Fraud?"	Participation to a conference	Scientific community (higher education, research)	China	100	
Nofima	28-Jan-21	Webinar #3: Low Trophic Life Series - "Life cycle assessment (LCA) of low-trophic species in aquaculture"	Training	Scientific community (higher education, research)	World	50	https://aquavitaeproject.eu/reports_presentation/low-trophic-life-webinar-life-cycle-assessment-lca-of-low-trophic-species-in-aquaculture/
OR, FISK, Mfeed, CETMAR	10-Feb-21	Workshop with seaweed stakeholders: "Offshore macroalgae cultivation"	Organisation of a workshop	Scientific community (higher education, research)	World	150	
NOFIMA	18-Feb-21	SINTEF TechFood Conference: Petter Olsen: "Petter Olsen: Should traceability systems in the food industry be based on blockchain technology?"	Participation to a conference	Scientific community (higher education, research)	Norway	100	
PrAq	25-Feb-21	Participation on live chat on organic aquaculture and algae and Primar work in CS5 and CS8	Other	General public	Brazil	60	We were invited to an informal live, to talk about the macro and micro algae cultivated at Primar. We take the opportunity to publicize AquaVitae, the CS5 and CS8 case studies in which we are involved
Nofima, IVL, DTU, BoHu	25-Feb-21	Webinar #4: Low Trophic Life Series - "Fouling on blue mussels"	Training	Scientific community (higher education, research)	World	61	https://aquavitaeproject.eu/event/fouling-on-blue-mussels/
IVL, UNE	1-Mar-21	First trans-Atlantic exchange of students	Training	Scientific community (higher education, research)	Sweden	1	https://aquavitaeproject.eu/memorial-notice-for-linnea-sturdy/
UFSC, CETMAR	2-Mar-21	News for Aquavitae website on biofloc technology to diversify production	Communication campaign (e.g. radio, TV)	General public	World	50	https://aquavitaeproject.eu/using-biofloc-technology-to-diversify-production/

IVL	3-Mar-21	CS8 stakeholder group fedback meeting	Organisation of a workshop	Industry	Sweden	15	
IVL	10-Mar-21	Webinar on culture of extractive species: mussels and oysters -Odling av extraktiva arter-ostron och musslor	Training	Scientific community (higher education, research)	Sweden	20	Webinar in Sweden.
BoHu, DTU, IVL, CETMAR	17-Mar-21	News for Auqavitae website on fouling on blue mussels	Communication campaign (e.g. radio, TV)	General public	World	84	https://aquavitaeproject.eu/fouling-on-mussels-turning-waste-into-a-sustainable-resource-kristina-svedberg-bohus-havsbruk/
CSIC	24-Mar-21	Presentation of barriers and solutions to Galician mussel aquaculture in NAEMO workshop - CS12	Participation to a workshop	Scientific community (higher education, research)	Europe	100	It was a virtual event because of COVID-19
IVL, UNE, DTU, BoHu	24-Mar-21	Defining barriers and identifying solutions for mussel aquaculture expansion	Organisation of a workshop	Academia, industry and governance	North Atlantic (Europe and North America)	37	The workshop was hosted as part of the NAEMO network activities jointly with AV partners and AV results were integrated into the workshop
PrAq	25-Mar-21	Primar Orgânica: 28 years of challenges in Brazilian aquaculture	Webinar	Industry	Brasil	330	Discover the trajectory of one of the main ventures in Brazilian aquaculture. Aquaculture pioneering - the first farm with organic certification, obtained 18 years ago. One of the first projects to diversify shrimp production, with oysters, seahorses and more!
UNESP, CETMAR	31-Mar-21	News for AquaVitae website on the development of the Brazilian aquaculture sector	Communication campaign (e.g. radio, TV)	General public	World	76	https://aquavitaeproject.eu/aquaculture-in-brazil-a-1-million-dollar-industry-patricia-moraes-valenti-unesp/
UNESP, CETMAR	6-Apr-21	News: Investigadores del proyecto AquaVitae subrayan el potencial de la acuicultura marina en Brasil	Communication campaign (e.g. radio, TV)	General public	Spain	300	Article on the paper reviewing the Brazilian aquaculture sector by Brazilian partners.
NOFIMA, CETMAR	6-Apr-21	AANCHOR and All Atlantic projects meeting on communication issues	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	Atlantic	10	
UNESP, CETMAR	6-Apr-21	News: Investigadores del proyecto AquaVitae subrayan el potencial de la acuicultura marina en Brasil	Communication campaign (e.g. radio, TV)	General public	Spain	1000	http://www.ipacuicultura.com/noticias/ultima_hora/78172/investigadores_del_proyecto_aquavitae_subrayan_el_potencial_de_la_acuicultura_marina_en_brasil.html
NOFIMA, CETMAR, CCMAR, CIIMAR, CSIC,	7-Apr-21	AquaVitae and ASTRAL meeting on interproject synergies	Participation in activities organised	Scientific community (higher	Atlantic	10	

RhU, AWI, IVL, SAMS, GMIT, RhU, UiT, Sjokovin, EmBraPa			jointly with other H2020 project(s)	education, research)			
CCMAR, CSIC	10-Apr-21	Mussel meal as a protein source in diets of gilthead seabream juveniles	Participation to a conference	Industry	Europe	2500	
CCMAR, CSIC	10-Apr-21	Fisheries by-products as functional ingredients for aquaculture feeds	Participation to a conference	Industry	Europe	2500	
UFSC, EMBRAPA, FURG, PRIMAR	12-Apr-21	Aquaculture Europe: Biofloc and IMTA: New sustainable systems for aquaculture - CS5	Participation to a conference	Scientific community (higher education, research)	Europe	100	Presentation of CS5
NOFIMA	12-Apr-21	News: An urchin opportunity awaits in New England	Communication campaign (e.g. radio, TV)	General public	US	2000	https://www.aquaculturealliance.org/advocate/an-urchin-opportunity-awaits-in-new-england/
ULPGC, GMI, AWI, FrHa, Marifeed, WiCoAb, RhU, Nofima	12-Apr-21	LAND BASED INTEGRATED MULTI-TROPHIC AQUACULTURE (IMTA) OF LOW TROPHIC SPECIES: AQUAVITAE PROJECT'S CASE STUDY	Participation to a conference	Scientific community (higher education, research)	International	400	EAS 2020 Aquaculture conference Oral presentation
UFSC	13-Apr-21	Aquaculture Europe: Cultivation of the seaweed Ulva spp. With effluent from a shrimp biofloc rearing system: different species and stocking density -CS5	Participation to a conference	Scientific community (higher education, research)	Europe	100	Presentation of CS5 results on a conference.
CSIC	13-Apr-21	Aquaculture Europe: Biological carbon budget of mussels cultured in the Galician Rias (NW Spain): CO2 storage or sequestration? - CS12	Participation to a conference	Scientific community (higher education, research)	Europe	500	It was a virtual conference becase of the COVID-19 situation
SAMS, NOFIMA, EmBraPa, UFSC, TTZ, UiT,CIIMAR, CCMAR, RhU, CETMAR, IVL	14-Apr-21	Aquaculture Europe: Low-trophic aquaculture policy and governance around the Atlantic basin: what the regulations are, what producers want	Participation to a conference	Scientific community (higher education, research)	Europe	50	Poster summarising finindgs in D8.1 and D8.2
ORF, Fisk	15-Apr-21	Aquaculture Europe: Offshore production of Saccharina latissima in the Faroe Islands and the challenge of scaling up in the Atlantic Ocean. CS2	Participation to a conference	Scientific community (higher education, research)	Europe	500	

ULPGC	15-Apr-21	Aquaculture Europe: Land-based integrated Multi-Trophic Aquaculture (IMTA) of low-trophic species: AquaVitae's project case study - CS3	Participation to a conference	Scientific community (higher education, research)	Europe	100	
CCMAR, CSIC, EmBraPa, UFSC, ULPGC, FURG, RhU	15-Apr-21	Aquaculture Europe: Sustainable diets to promote aquaculture across the Atlantic via the AquaVitae project	Participation to a conference	Scientific community (higher education, research)	Europe	50	
Nofima, Mfee, RhU	29-Apr-21	Webinar #5: Low Trophic Life Series - "Optimising IMTA performance in South Africa – Case: Wild Coast Abalone"	Training	Scientific community (higher education, research)	World	34	https://aquavitaeproject.eu/reports_presentation/low-trophic-life-webinar-optimising-imta-performance-in-south-africa-case-wild-coast-abalone/
All partners	11-May-21	Participation of stakeholders in the second annual meeting "Sustainable aquaculture: New aquaculture species and methods in the Atlantic"	Organisation of a workshop	Industry	World	20	
PrAq	19-May-21	I International Workshop on Marine Aquaculture Planning - Bivalve Molluscs:	Participation to a workshop	Policy makers	Brazil	40	Questions about the ordering of the oyster farming activity, difficulties, obstacles and animal health care were discussed by representatives of the productive chain throughout Brazil, together with the federal health control agency. There are only 2 hatcheries in Brazil for the reproduction of Native oysters and PRIMAR is one of them. That this year it was in operation, with the AquaVitae CS8 research.
RhU, Mfeed, CETMAR	21-May-21	News for Aquavitae website on shore-based IMTA systms in South Africa	Communication campaign (e.g. radio, TV)	General public	World	50	https://aquavitaeproject.eu/optimising-integrated-multi-trophic-aquaculture-imta-on-south-african-shore-based-abalone-farms/
SAMS	25-May-21	News: Discussing the World importance of the aquaculture industry	Communication campaign (e.g. radio, TV)	General public	UK	1000	https://fuentitech.com/discussing-the-World-importance-of-the-aquaculture-industry/48770/
Nofima	27-May-21	Panel presentation of AquaVitae at the Blue Farming Stakeholder Conference	Participation to a conference	Civil society	Europe	400	Invited to contribute to panel discussion by DG Mare
Nofima, IVL	27-May-21	Webinar #6: Low Trophic Life Series - "Enhancing oyster production with artificial intelligence & new protocols"	Training	Scientific community (higher education, research)	World	14	https://www.youtube.com/watch?v=QDFiw9iJEkY&t=75s
FrHa	27-May-21	Participation with AquaVitae results at Working Group "Algae biomass valorisation" in B-Blue interreg project	Participation to a workshop	Scientific community (higher	France	20	

				education, research)			
FrHa	28-May-21	Recording of documentary on seaweed production for Tv channel ARTE	Communication campaign (e.g. radio, TV)	General public	France	1000	
PrAq	30-May-21	News on: Pesquisas ajudan empresas no RN (Brazil)	Communication campaign (e.g. radio, TV)	General public	Brazil	5000	It was a report on the importance of research for the development of small businesses in Rio Grande do Norte
30 PrAq	30-May-21	Pesquisas ajudam empresas no RN - Surveys help companies in RN	Non-scientific and non-peer reviewed publications (popularised publications)	Civil society	Brazil	1.000.000	An interview with the largest newspaper in the state, talking about companies that invest in research. In the interview we mentioned Primar Aquacultura's involvement with AquaVitae's research.
UiT	31-May-21	AANChOR Workshop on Training activities in the Altantic: All Atlantic Training Platform (AATP)	Training	Scientific community (higher education, research)	Atlantic	10	
NOFIMA, CETMAR	1-Jun-21	AquaVitae website: www.aquavitaeproject.eu	Website	General public	World	9832	https://aquavitaeproject.eu/
CETMAR	1-Jun-21	AquaVitae profiles on social media: Twitter	Social media	General public	World	931	https://twitter.com/aquavitaeEU
CETMAR	1-Jun-21	AquaVitae profiles on social media: Instagram	Social media	General public	World	561	https://www.instagram.com/aquavitaeeu/
CETMAR	1-Jun-21	AquaVitae profiles on social media: LinkedIn group	Social media	General public	World	85	https://www.linkedin.com/groups/13691465/
NOFIMA, CETMAR, ORF, UNESP, FrHa, UiT, Matis	3-Jun-21	AquaVitae, ASTRAL and EATiP side event at All-Atlantic 21: "Developing Sustainable Aquaculture in the Atlantic"	Participation in activities organised jointly with other H2020 project(s)	Policy makers	World	130	Side event organised by AquaVitae, ASTRAl and EATiP
UiT	3-Jun-21	Showcasing Atlantic Ocean Capacity Building programmes in marine sciences	Participation to a conference	Scientific community (higher education, research)	Europe	80	Joint Action of Work package 3 of the AANChOR project, outcome of the discussions during the preceding Workshop (31 May – 1 June). A main product of the workshop will be a white paper on needs and gaps of capacity development in the Atlantic science community and approaches to overcome these deficits through a coordinated and consolidated action.
CETMAR, NOFIMA, ULPGC,	4-Jun-21	AquaVitae Newsletter #4: IMTA, Strategic Guidelines, Offshore Macroalgae Cultivation	Communication campaign (e.g. radio, TV)	General public	World	350	https://mailchi.mp/6524b973897e/aquavitae-latest-news-4757594
EmBraPa, NOFIMA, CETMAR	4-Jun-21	1st Barriers and Opportunities meeting of CS10 Production of Freshwater Fish in Brazil	Other	Industry	Brazil	12	

CETMAR	8-Jun-21	Presentation on Offshore Aquaculture at the 2nd Aquahub Offshore Seminar	Participation to an event other than a conference or workshop	Scientific community (higher education, research)	Spain	50	
CETMAR	17-Jun-21	Participation in the event "Accelerating the Impact of Innovation through SPAIN-ASEAN Strategic Partnerships in Bioeconomy, Urban and Food Sustainability"	Participation to a workshop	Scientific community (higher education, research)	World	90	https://euraxess.ec.europa.eu/worldwide/asean/accelerating-impact-innovation-through-spain-asean-strategic-partnerships
Nofima, UNESP	24-Jun-21	Webinar #7: Low Trophic Life Series - "Hormonal induction in Arapaima Gigas (Pirarucu)"	Training	Scientific community (higher education, research)	World	30	https://www.youtube.com/watch?v=XgK3W5DnpUE&feature=emb_logo
IVL	6-Jul-21	Article on oyster classification "Classifying oysters using artificial intelligence" for website	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	50	https://aquavitaeproject.eu/classifying-oysters-using-artificial-intelligence/
UNESP	8-Jul-21	Articles on AquaVitae work in Brazilian magazine O Biologo	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	Brazil	500	
CETMAR	9-Jul-21	Presentation of AquaVitae's pledge on the All-Atlantic Pledging Campaign on the Networking Friday	Participation to an event other than a conference or workshop	Scientific community (higher education, research)	World	60	https://www.aircentre.org/netfridays-pledge/
EmBraPa, CETMAR	12-Jul-21	Article on CS10 meeting "Contributing to reap the potential of the Brazilian freshwater aquaculture sector"	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	70	https://aquavitaeproject.eu/contributing-to-reap-the-potential-of-the-brazilian-freshwater-aquaculture-sector/
SAMS	19-Jul-21	Policy brief published in Frontiers in Marine Science	Article in journal	Scientific community (higher education, research)	World	2165	https://www.frontiersin.org/articles/10.3389/fmars.2021.711443/abstract
FrHa	31-Jul-21	ZDF TV show: Socken aus CO2 Wie ein Klimakiller nützlich werden kann	Video/film	General public	France	130000	

NOFIMA	25-Aug-21	AquaVitae presentation with ASTRAL at AquaNor	Trade fair	Industry	Norway	100	
NOFIMA, Bellona	25-Aug-21	AquaVitae webinar on Low-trophic Solutions at AquaNor	Trade fair	Industry	Norway	80	
FrHa	25-Aug-21	Documentary on carbon capture on German TV featuring France Haliotis farm	Communication campaign (e.g. radio, TV)	General public	Germany	200000	https://www.zdf.de/gesellschaft/plan-b/plan-b-socken-aus-co2-100.html
DTU	27-Aug-21	Deployment of OpenMode platform	Communication campaign (e.g. radio, TV)	General public	World	200	https://twitter.com/DTUCoastalEco
NOFIMA	27-Aug-21	Sea urchin roe enhancement	Publication in conference proceeding/workshop	Other	Norway	100	
DTU, CETMAR	30-Aug-21	Post on social media on deployment of new mussel raft	Communication campaign (e.g. radio, TV)	General public	World	50	https://www.instagram.com/p/CTUeBPUKXlI/?utm_source=ig_web_copy_link
NOFIMA	8-Sep-21	Article on "AquaVitae is featured in Norway's new aquaculture strategy"	Communication campaign (e.g. radio, TV)	Policy makers	Norway	50	https://aquavitaeproject.eu/aquavitae-is-featured-in-norway-new-aquaculture-strategy/
UNESP, FURG, PrAq, UFSC, EmBraPa	16-Sep-21	AquaVitae session on Brazilian congress AquaCiência	Participation to a conference	Scientific community (higher education, research)	Brazil	80	https://www.instagram.com/p/CUIGL7cKTma/?utm_source=ig_web_copy_link
PrAq	16-Sep-21	Seed production of Crassostrea gasar at the Primar hatchery	Participation to a conference	Scientific community (higher education, research)	Brazil	50	
UNESP, IVL	16-Sep-21	A framework for sustainability analysis of low trophic species aquaculture	Participation to a conference	Scientific community (higher education, research)	Brazil & Atlantic	50	
NOFIMA	16-Sep-21	''Unlocking the potential of sustainable low-trophic aquaculture in the Atlantic Ocean''	Participation to a conference	Scientific community (higher education, research)	Brazil	50	

NOFIMA	21-Sep-21	''Unlocking the potential of sustainable low-trophic aquaculture in the Atlantic Ocean''	Participation to a conference	Scientific community (higher education, research)	Atlantic	80	
CCMAR	21-Sep-21	Workshop on novel aquafeeds by GAIN project	Participation in activities organised jointly with other H2020 project(s)	Industry	Europe	50	https://aquavitaeproject.eu/event/gain-workshop-on-novel-aquafeeds/
UNESP	24-Sep-21	AquaVitae poster at Global Conference on Aquaculture - GCA +20	Participation to a conference	Scientific community (higher education, research)	World	200	https://aquaculture2020.org/posters/
CETMAR, CIIMAR	28-Sep-21	Presentation on research on aquaculture at event on "Innovation and Entrepreneurship: Fishing, Aquaculture and Climate Change"	Participation to an event other than a conference or workshop	Scientific community (higher education, research)	Spain	60	
NOFIMA	29-Sep-21	Presentation of Nofima macroalage project and research	Participation to a conference	Industry	Norway	50	
NOFIMA, Bellona	4-Oct-21	Debatt: – Havbruksnæringen har vokst seg stor på laksen. Skal den fortsette å vokse, trenger den flere bein å stå på.	Press release	Policy makers	Norway	20000	https://www.bt.no/btmeninger/debatt/i/G3jq0m/fiskeriministeren-maa-dukke-ned-i-taren
NOFIMA, CCMAR, GMIT, IVL, UFSC, DTU, ORF, CIIMAR, UiT, ULPGC	4-Oct-21	AquaVitae osters at Aquaculture Europe	Exhibition	Scientific community (higher education, research)	Europe	120	
NOFIMA, CCMAR, GMIT, IVL, UFSC, DTU, ORF, CIIMAR, UiT, ULPGC	4-Oct-21	AquaVitae sessions and posters at Aquaculture Europe	Participation to a conference	Scientific community (higher education, research)	Europe	120	https://www.instagram.com/p/CUmjMU4AJqX/?utm_source=ig_web_copy_link
ULPGC	4-Oct-21	INTEGRATION OF THE SEA CUCUMBER Holothuria sanctori TO ABALONE Haliotis tuberculate coccinea GROW-OUT PROCESSES	Participation to a conference	Scientific community (higher education, research)	International	300	EAS 2021 Aquaculture conference Madeira
Nofima	5-Oct-21	Presentation at Aquaculture Europe Conference	Participation to a conference	Industry	EU	50	Accepted oral presentation at AE 2021

CIIMAR	5-Oct-21	Aquaculture Europe 2021: Sexual reproduction in the green macroalga Codium tomentosum – a "new species" for aquaculture	Participation to a conference	Scientific community and Industry	Europe	200	Presentation of results from CS1
DTU	26-Oct-21	CS9 2nd Barriers and Opportunities Meeting on Offshore production of Blue Mussels	Other	Industry	Denmark	20	
30 PrAq	26-Oct-21	AGRO WOMEN AWARD From grains to aquaculture, winners of the Mulheres do Agro Award prove that they are capable of leading with excellence	Participation to an event other than a conference or workshop	General public	Brazil	1.000.000	It is an online enterview of a 1st. place in the Women of Agro 2021 Award, in the Small Property Category. It was about women telling her stories and challenges, to encourage other women to come into agribusiness.
Nofima, Biolan	28-Oct-21	Webinar #8: Low Trophic Life Series - "How biosensors can modernize sulfite monitoring in shrimp aquaculture"	Training	Scientific community (higher education, research)	World	15	https://www.youtube.com/watch?v=23fB5eNPxag&t=150s
30 PrAq	29-Oct-21	MÁRCIA KAFENSZTOK, OF PRIMAR AQUACULTURA, WON THE WOMEN OF AGRO 2021 AWARD	Website	Scientific community (higher education, research)	Global	1000	Disclosure on the Aquavitae website about the Women in Agribusiness award
NOFIMA, CETMAR	3-Nov-21	Article on AquaVitae on ASTRAL newsletter	Participation in activities organised jointly with other H2020 project(s)	General public	World	60	
30 PrAq	21-Nov-21	We're targeting to the research	Non-scientific and non-peer reviewed publications (popularised publications)	General public	Brazil	1.000.000	An interview with the state newspaper, talking about Primar's investments in research and its involvement with AquaVitae and other projects.
CETMAR	24-Nov-21	Blue Atlantic Forum	Participation to a conference	Industry, Policy makers, Scientific community	Spain	50	https://blueatlanticforum.org/
Biolan	25-Nov-21	Low Tropic Life - How BIOLAN biosensors can modernize sulphite monitoring process in shrimp aquaculture	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	30	https://aquavitaeproject.eu/how-biolan-biosensors-can-modernize-sulphite-monitoring-process-in-shrimp-aquaculture/
NOFIMA	29-Nov-21	Low trophic aquaculture in the Atlantic and Norway and scaling up exposed ocean cultivation of macroalgae.	Participation to a conference	Scientific community (higher	Norway	30	

				education, research)			
BIOLAN	30-Nov-21	How BIOLAN biosensors can modernize sulphite monitoring process in shrimp aquaculture	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	50	https://aquavitaeproject.eu/how-biolan-biosensors-can-modernize-sulphite-monitoring-process-in-shrimp-aquaculture/
CETMAR	1-Dec-21	Learning about kelp in the Faroe Islands	Communication campaign (e.g. radio, TV)	General public			
CETMAR	2-Dec-21	Another way to present case study research	Communication campaign (e.g. radio, TV)	General public			
CETMAR	3-Dec-21	IMTA and aquaponics potential highlighted at Aquaculture Europe 2021	Communication campaign (e.g. radio, TV)	General public			
Nofima	7-Dec-21	Blockchain in the Arctic Seafood Industry Workshop	Organisation of a workshop	Industry	Norway	20	
CETMAR	10-Dec-21	AquaVitae Newsletter #4: IMTA, EAS21, Biolan´s biosensor for sulphite monitoring and more	Communication campaign (e.g. radio, TV)	General public	World	380	
CCMAR, CSIC	13-Dec-21	Feasibility of replacing fishmeal by mussel meal in diets for gilthead seabream juveniles	Participation to a conference	Scientific community (higher education, research)	Asia	200	
NOFIMA	16-Dec-21	Low Tropic Life - Macroalgae from IMTA: Substitute Diet for Abalone Aquaculture?	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	36	
CETMAR	1-Jan-22	AquaVitae, ASTRAL & EATiP Join Forces To Enhance Sustainable Aquaculture In The Atlantic	Communication campaign (e.g. radio, TV)	General public	World	70	
DTU	1-Jan-22	EAS meets in-person in Madeira	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)		200	The grower
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	74	

France Haliotis	10-Jan-22	L´aquaculture multitrophic integrée: un modèle prometteur	Communication campaign (e.g. radio, TV)	General public		200	Sonar, la revue du campus mondial de la mer
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	28	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	21	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	10	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	24	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	26	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	14	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	10	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	7	
CETMAR	10-Jan-22	Aquavitae interviews with partners	Video/film	General public	World	10	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	21	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	9	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	16	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	25	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	23	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	19	
CETMAR	10-Jan-22	Conference EAS21	Video/film	General public	World	12	
CETMAR	13-Jan-22	All-Atlantic Projects Newsletter - Issue #1 - January 2022	Communication campaign (e.g. radio, TV)	General public	World	300	Contribution to AANCHOR newsletter
CETMAR	13-Jan-22	AquaVitae Partner Urchinomics Endorsed By The UN Ocean Decade	Communication campaign (e.g. radio, TV)	General public	World	80	

CETMAR	28-Jan-22	Urchinomics recibe el respaldo del Decenio de los Océanos de la ONU	Communication campaign (e.g. radio, TV)	General public		300	
Nofima	2-Feb-22	Presentation for Norwegian Seaweed Association	Webinar	Industry	Norway	50	Contributed to Norwegian Seaweed Association Webinar
CETMAR	9-Feb-22	Macroalgae From IMTA: A Sustainable Diet For Abalone Aquaculture	Communication campaign (e.g. radio, TV)	General public	World	100	
Philip James	15-Feb-22	Oral presentation for Junior science news article	Communication campaign (e.g. radio, TV)	Civil society	Norway	Unsure, will come back to this when distributed	A discussion and video/news item describing sea urchins extraction for roe enhancement in Norway
RhU	15-Feb-22	ASTRAL Workshop Integrated Multi-Trophic Aquaculture and Society	Participation to a workshop	Industry	South Africa	40	The workshop was organized by ASTAL. Cliff Jones participated and represented WP2 and CS4. Please note that the workshop was attended by a broad stakeholder group, including local NGOs, community members, regulatory agencies, politicians and producers.
Nofima	24-Feb-22	Opportunities and Challenges of Sustainable Food Production from Aquaculture	Webinar	Civil society	Norway/Brazil	55	Nofima asked to contrinute to bilateral webinar
Nofima	24-Feb-22	How R&D can unlock business opportunities in the aquaculture sector	Webinar	Civil society	Norway/Brazil	55	AquaVitae referenced by ASTRAL project
CETMAR	28-Feb-22	Algae: A Solution For The Future That We Can Implement In The Present	Communication campaign (e.g. radio, TV)	General public	World	100	
Nofima	1-Mar-22	Presentation at Northern Periphery and Arrctic DisruptAqua workshop	Participation to a workshop	Industry	UK	20	DisruptAqua meeting in Inverness
30 PrAq	1-Mar-22	PROSPECTION OF NATIVE MICROALGAE TO FEED Crassostrea gasar LARVICULTURE	Participation to an event other than a conference or workshop	Scientific community (higher education, research)	United States of America	4000	Participation with a poster at the Aquaculture 2022 Congress in San Diego, California
Nofima/URCHINOMICS	2-Mar-22	Restoring kelp forests through responsible, land-based ranching of overgrazing urchins	Participation to a conference	Combination of many stakeholders	World	50	Presnetastion by stakeholder at World Aquaculture Society conference, San Deigo
Nofima/URCHINOMICS	3-Mar-22	Eating our way through a problem: Mastering a restorative seafood through aquaculture to restore kelp forests	Participation to a conference	Combination of stakeholders	World	50	Oral presnetation at World Aquaculture Society Conference, San Deigo

CETMAR	8-Mar-22	A Homage To Women In Sustainable Aquaculture	Communication campaign (e.g. radio, TV)	General public	World	150	
France Haliotis	9-Mar-22	La ruée vers l'algue	Communication campaign (e.g. radio, TV)	General public		1.000.000	
Nofima	14-Mar-22	Presentation of AquaVitae project	Meeting with embassy staff	Policy makers	Norway/South Africa	5	The Embassy staff (First and Third Secretary) visited Nofima to discuss joint activities between Nofima and South Africa
CETMAR	15-Mar-22	The Synergic Effect Of The Atlantic Ocean Acidification And Salinity Variation In The Physiology Of The Whiteleg Shrimp (Litopenaeus Vannamei)	Communication campaign (e.g. radio, TV)	General public	World	100	
Nofima	16-Mar-22	'Unlocking the potential of sustainable low-trophic aquaculture in the Atlantic Ocean'	Webinar	Scientific community (higher education, research)	Scandanavia	25	Presnetation of AV to the SUREAQUA consortium
France Haliotis	20-Mar-22	BLUE INNOV LIVE #4 : INNOVER POUR PRESERVER L'OCEAN	Communication campaign (e.g. radio, TV)	General public	World	500	
ULPGC	22-Mar-22	Abalone diets testing: Land Based IMTA	Participation to a workshop	Industry	International	50	Marifeed technical days March 2022
RhU, MFeed	25-Mar-22	Marifeed Technical Day	Organisation of a workshop	Industry	South Africa	60	The workshop was organised by MFeed and attended by a number of its customers. The work conducted by MFeed and RhU within AquaVitae was presented.
UFSC	29-Mar-22	Camarão com baixo impacto ambiental	Website	General public	Brazil	200	Publication to general public about shrimp production in biofloc
UFSC, FURG	7-Apr-22	Biofloc Workshop	Training	Industry	Brazil	30	Workshop about biofloc sytem
CETMAR	13-Apr-22	A Module On Integrated Multitrophic Aquaculture In The AquaVitae Massive Open Online Course	Communication campaign (e.g. radio, TV)	General public	World	200	
Nofima	13-Apr-22	How new approaches to aquaculture can contribute to sustainability in the Atlantic? - The AquaVitae and ASTRAL projects	Webinar	Scientific community (higher education, research)	All Atlantic	Unsure, posted on iATLANtic website	Invitation from iATLANTIC to presnet synergies
CETMAR	21-Apr-22	La tercera reunión anual de AquaVitae tendrá lugar entre el 26 y 28 de abril en Oporto	Communication campaign (e.g. radio, TV)	General public	Spain	300	
CETMAR	26-Apr-22	One-page-abstract CS1 showcased in different events	Flyers	General public		100	

CETMAR	26-Apr-22	One-page-abstract CS2 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS3 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS4 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS5 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS6 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS7 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS8 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS9 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS10 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS11 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS12 showcased in different events	Flyers	General public		100	
CETMAR	26-Apr-22	One-page-abstract CS13 showcased in different events	Flyers	General public		100	
CETMAR	22-Apr-22	AquaVitae Partners Gather Again For The Third Annual Meeting	Press release	General public	World	100	
Nofima	3-May-22	Sea urchin harvesting, transport and surveying techniques around the world	Participation to a workshop	Students and researchers	Italy/mediteranean	30	A summer schoolf for sea urchins management in Sardinia
Nofima	4-May-22	Sea urchin roe enhancement and ecosystem restoration (North Sea)	Participation to a workshop	Students and researchers	Italia	30	Workshop on sea urchin management in Sardinia and medteteranean
Nofima	5-May-22	Sea urchin fisheries and management in Norway compared to New Zealand	Participation to a workshop	Wide range of stakeholders	Italy and Mediterranean	50	A sea urchin staj\keholder meeting for Sardinia sea urchin fishery
CETMAR	6-May-22	AquaVitae Partners Reunited In The Third Annual Meeting Of The Project	Communication campaign (e.g. radio, TV)	General public	World	100	
CETMAR	6-May-22	El Cetmar participó en el año 2021 en 64 proyectos y servicios, con la acuicultura entre sus líneas de trabajo	Communication campaign (e.g. radio, TV)	General public	Spain	300	

Nofima	9-May-22	Sea urchins and kelp – new High North delicacies	Participation to an event other than a conference or workshop	Policy makers	EU	12	This was a visit by the EU commissioner to Nofima. Guests included: (including EU commissioner for Environment, oceans and fisheries; Member of EU cabinet; EU communication advisor; DG Mare international RElations Officer; EU Ambassador to Norway; Policy Officer
Nofima	9-May-22	Presentation for the European Commissioner for Environment, Oceans and Fisheries	Participation to an event other than a conference or workshop	Policy makers	EU	10	Part of the EU Commissioner Virginijus Sinkevičius visit to Tromsoe
UFSC	10-May-22	EFFECTS OF MICROALGAE ADDITION AND FISH FEED SUPPLEMENTATION IN THE INTEGRATED REARING OF PACIFIC WHITE SHRIMP AND NILE TILAPIA USING BIOFLOC TECHNOLOGY	Participation to a conference	Scientific community (higher education, research)	Portugal	100	Presentation of work at Aquaculture Europe, Funchal.
ULPGC	11-May-22	IU-ECOAQUA presenta sus resultados de Acuicultura Multitrófica Integrada de pepino de mar, oreja de mar y macroalgas	Press release	General public	Spain	300	
Nofima	12-May-22	Presentation on Altanet and MOOC	Participation to an event other than a conference or workshop	General public		400	Hav Expo in Bergen, Norway
CETMAR	16-May-22	AquaVitae Will Demonstrate How To Join Forces From Europe To South Africa With New Food Systems In Aquaculture During The European Maritime Day Event	Communication campaign (e.g. radio, TV)	General public		120	
30 PrAq	17-May-22	ERGOMARINE - Visit of Primar Organica.	Social media	General public	Portugal	200	Esnesto São Simão welcome us to their facilities and present their projects for aquaculture. We took the opportunity of the trip to Porto, for the AquaVitae Annual Meeting, to get to know what's new in Portuguese Aquaculture.
CETMAR	17-May-22	AquaVitae celebrará una mesa redonda dentro de los actos organizados con motivo del Día Marítimo europeo que este año se celebra en Ravenna	Communication campaign (e.g. radio, TV)	General public	Spain	300	
Nofima	19-May-22	Food4Future World Summit, presentation "The Global Food Analysis and Traceability"	Participation to a conference	Industry	Global	50	Invited speaker
CETMAR	20-May-22	Joining forces from Europe to South Africa with new food systems in aquaculture	Organisation of a workshop	Scientific community (higher education, research)	World	50	EMD workshop in Ravenna

CETMAR	20-May-22	EU Commissioner Virginijus Sinkevicius Visit At Nofima	Communication campaign (e.g. radio, TV)	General public	World	100	
ULPGC	20-May-22	Joining forces from Europe to South Africa with new food systems in aquaculture	Participation in activities organised jointly with other H2020 project(s)	Policy makers	European	100	European Maritime Day Ravenna 2022
FrHa, ULPGC, Ocean RainForest, RhU, CETMAR	20-May-22	Joining forces from Europe to South Africa with new food systems in aquaculture	Participation to a workshop	Scientific community (higher education, research)	World	100	EMD workshop in Ravenna
CETMAR	26-May-22	AquaVitae pone en valor la colaboración en acuicultura entre investigadores de diferentes países y continentes	Communication campaign (e.g. radio, TV)	General public	Spain	300	
CETMAR	27-May-22	AquaVitae Showed How To Join Forces From Europe To South Africa In Aquaculture At The European Maritime Day Event	Press release	General public	World	130	
CETMAR	31-May-22	All-Atlantic Ocean Research Forum 2022- Scientific Event	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	World	80	Organized in Brasilia but meeting online
NOFIMA	31-May-22	All-Atlantic Ocean Research Forum 2022- Scientific Event	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	World	80	Organized in Brasilia but meeting online
UNESP	31-May-22	All-Atlantic Ocean Research Forum 2022- Scientific Event	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	World	80	Organized in Brasilia but meeting online
DTU, GMIT, SAMS	1-Jun-22	Post on Pernille Nielsen's private LinkedIn page	Social media	General public	global	200	Case study 9, Task 9.1. AquaVitae technical report no. 3
CCMAR	5-Jun-22	Fish hydrolysates as mitigators of adverse effects of no- fishmeal dietes in seambrea juveniles	Participation to a conference	Industry	Global	500	
Algaplus	7-Jun-22	Inovação no cultivo integrado e sustentável de algas marinhas do Atlântico	Communication campaign (e.g. radio, TV)	General public	Portugal	500	Jornal de Negócios

CETMAR	14-Jun-22	Comparison of the growth of Saccharina latissima at a cultivated natural area in Sørvágsfjørður, Faroe Islands	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/comparison-of-the-growth-of-saccharina-latissima-at-a-cultivated-natural-area-in-sorvagsfjordur-faroe-islands/
CETMAR	17-Jun-22	ALGAplus: from birth to youth	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/algaplus-from-birth-to-youth/
Nofima	21-Jun-22	Nofima	Visit to Nofima by combined ministers of the nordic region (Norway, Sweden, Iceland, Faroe Islands, Denmark)	Nordik government ministers	Norway/Northern Atlantic	70	This was a visit organised during the joint meeting of the Nordik Ministers
CETMAR	23-Jun-22	AquaVite Newsletter #6 Sea-based IMTA, EMD2022, ALGAplus, one-page-abstracts and more	Communication campaign (e.g. radio, TV)	General public	World	400	https://mailchi.mp/0ec893534b5b/aquavitae-latest-news-5197277?e=c02cf419af
NOFIMA	24-Jun-22	Low Trophic Life Webinar: "The possibilities of flat oyster aquaculture in Europe"	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	50	https://www.youtube.com/watch?v=ieMneD3bxpk&list=PL1uoQHcasruG0BAdLvTJ4Q4QQ6c9gw62l&index=15
Nofima	27-Jun-22	Nofima aquaculture division projects		Scientific community (higher education, research)	Norway/New Zealand	8	Meeting to discuss common projects and areas of research. Organisations were: Nofima, Cawthron Instituite (NZ), Plant and Food (NZ)
CSIC, CCCMAR	29-Jun-22	CS12&13 Barriers & Opportunities meeting	Organization of a workshop	Industry	Atlantic	25	
RhU, AWI, GMIT	12-Jul-22	The impact of AquaVitae research on the South African aquaculture industry.	Participation to a conference	Scientific community (higher education, research)	Global	75	https://www.aasa-aqua.co.za/conferences/
RhU, Mfeed	12-Jul-22	Effect of IMTA Gracilaria gracilis on the growth of farmed abalone Haliotis midae.	Participation to a conference	Scientific community (higher education, research)	Global	40	https://www.aasa-aqua.co.za/conferences/
StellU	12-Jul-22	The production of agricultural lime pellets from waste mussel shells through agglomeration	Participation to a conference	Scientific community (higher education, research)	Global	45	https://www.aasa-aqua.co.za/conferences/

RhU, Mfeed, WiCoAb	13-Jul-22	Investigation of the reproductive biology of farmed and wild warty sea cucumber, Neostichopus grammatus	Participation to a conference	Scientific community (higher education, research)	Global	40	https://www.aasa-aqua.co.za/conferences/
RhU, Mfeed, WiCoAb	13-Jul-22	Evaluation of biosecure monoculture and IMTA-produced 5 macroalgae (Ulva lactuca) meal as dietary ingredient in feed pellets for South African abalone (Haliotis midae).	Participation to a conference	Scientific community (higher education, research)	Global	75	https://www.aasa-aqua.co.za/conferences/
RhU, Mfeed, WiCoAb	13-Jul-22	Assessment of potential biosecurity measures on the inactivation of macroalgae-transmitted abalone pathogens.	Participation to a conference	Scientific community (higher education, research)	Global	75	https://www.aasa-aqua.co.za/conferences/
RhU, Mfeed, WiCoAb	13-Jul-22	Evaluation of biosecure monoculture and IMTA-produced 5 macroalgae (Ulva lactuca) meal as dietary ingredient in feed pellets for South African abalone (Haliotis midae).	Participation to a conference	Scientific community (higher education, research)	Global	125	https://www.aasa-aqua.co.za/conferences/
CETMAR	27-Jul-22	News on Current status of the flat oyster in Europe in nature and in aquaculture	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/current-status-of-the-flat-oyster-in-europe-in-nature-and-in-aquaculture/
CETMAR	22-Aug-22	Norwegian Seaweed Association visit	Participation to an event other than a conference or workshop	Scientific community (higher education, research)		14	Norwegian Seaweed Association visited Cetmar and we presented AquaVitae project and Algalup project
Algaplus	25-Aug-22	Farmed Atlantic seaweed as an important source of phytochemicals, cultivated in a land-based IMTA system in Portugal	Organization of a conference	Scientific community (higher education, research)	Global	150	
AWI	5-Sep-22	Dissemination through booth at Seafood trade fair "fish international" 2022 in Bremen, Germany	Participation to an event other than a conference or workshop	Industry	Germany mostly		We used project flyers and PowerPoint to inform people on LTA and project activities in general
ULPGC, Rhodes University	11-Sep-22	Integration of sea cucumbers to abalone production: low trophic species IMTA systems	Participation to a conference	Scientific community (higher education, research)	Europe	200	https://www.aquaeas.org/

Algaplus	14-Sep-22	Presentation on ulva production at SeaWheat COST Action CA20106	Participation to a workshop	Scientific community (higher education, research)	Europe	150	
All partners	27-Sep-22	AquaVitae at Aquaculture Europe 2022	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	Europe	150	
CCMAR	27-Sep-22	Valorisation of aquaculture value-chains in the production of gilthead seabream juveniles	Participation to a conference	Industry	Europe	150	https://www.aquaeas.org/
Nofima,	27-Sep-22	CEN Workshop Agreement (CWA) kick-off meeting	Organisation of a workshop	Scientific community (higher education, research)	World	10	
SJO	28-Sep-22	Presentation of results from student exchange in WP7 with title "A regional multi-trophic aquaculture economic model"	Participation to a conference	Scientific community (higher education, research)	Europe	75	https://aquaeas.org/Program/PaperDetail/39857
RhU, Mfeed, WiCoAb	28-Sep-22	Evaluation of IMTA-Produced Macroalgae Ulva lactuca Meal as Dietary Ingredient in Feed Pellets for South African Abalone Haliotis midae					
AWI, WCA, FHU	28-Sep-22	Presentation of AquaVitae CS7 Sea cucumbers at European Aquaculture Society Conferencee	Participation to a conference	Scientific community (higher education, research)	South Africa	80	https://aquaeas.org/Program/PaperDetail/39560
FCUP/CIIMAR, CSIC, IVL	29-Sep-22	Aquaculture Europe 2022: Nature's Contributions to People Provided by Low-Trophic Species Aquaculture	Participation to a conference	Scientific community (higher education, research)	Europe	100	https://www.aquaeas.org/Meeting/AE2022
DTU	29-Sep-22	TOTALLY TUBULAR: EXPERIENCES WITH A PROTOTYPE SUBMERSIBLE MUSSEL CULTIVATION SYSTEM. A presentation of Task9.3 at the EAS in Rimini, Italy	Participation to a conference	Scientific community (higher education, research)	European	60	https://www.aquaeas.org

Nofima	29-Sep-22	Unlocking the potential of sustainable low-trophic aquaculture in the Atlantic Ocean	Participation to a workshop	Scientific community (higher education, research)	Europe	120	https://aquaeas.org/_pdf/AE2022-ASTRAL_Workshop_Flyer.pdf
RhU, Mfeed	30-Sep-22	Effect of Processed (Biosecure) Macroalgae on Growth and Health of Abalone Haliotis midae	Participation to a conference	Scientific community (higher education, research)	Global	60	https://aquaeas.org/Program/Sessions
RhU, AWI, WiCoA	30-Sep-22	Investigation of the reproductive biology of farmed and wild warty sea cucumber Neostichopus grammatus (Clark)	Participation to a conference	Scientific community (higher education, research)	Global	60	https://aquaeas.org/Program/Sessions
AWI, WCA, RhU	30-Sep-22	Presentation of AquaVitae at European Aquaculture Society Conference Rimini	Participation to a conference	Scientific community (higher education, research)	South Africa	55	https://aquaeas.org/Program/PaperDetail/39791
CETMAR	7-Oct-22	News on Tasting the low trophic world	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/tasting-the-low-trophic-world/
FrHa, CETMAR, ULPGC, AWI, NOFIMA	10-Oct-22	Low trophic and IMTA aquaculture and resulting products from Aquavitae CS	Participation to an event other than a conference or workshop	Industry	Europe	50	Aquavitae Masterclass
FrHa, UiT, Cetmar, AWI	10-Oct-22	For our future: working on a paradigm shift towards low-trophic aquaculture	Organization of a workshop	Industry	France, Ireland, Germany	50	https://nofimaas.sharepoint.com/:f:/r/sites/extranet/aquavitae/WP3/Tasting%20Event%20France/2210%20-%20Photos%20Tasting%20Event?csf=1&web=1&e=UY79gv
UFSC	12-Oct-22	Aquavitae: low trophic species can increase aquaculture sustainability	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	Brazil	60	
CETMAR	15-Oct-22	News on AquaVitae gathers French chefs to cook and taste new sustainable aquaculture products	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/aquavitae-gathers-french-chefs-to-cook-and-taste-new-sustainable-aquaculture-products/
NOFIMA	20-Oct-22	Low Trophic Life Webinar: " Does mussel meal improve the growth of the whiteleg shrimp?"	Communication campaign (e.g. radio, TV)	Scientific community (higher education, research)	World	25	https://www.youtube.com/watch?v=cNXGCfpkg7A&list=PL1uoQHcasruG0BAdLvTJ4Q4QQ6c9gw62l&index=15

Nofima	27-Oct-22	Represent AquaVitae project	Participation in activities organised jointly with other H2020 project(s)	Scientific community (higher education, research)	Atlantic - AAORIA organisation group	10	
UiT	2-Nov-22	Use of digital tools in teaching – Showcasing the MOOC as a good practice example of digital tools in teaching	Organisation of a conference	Academia, industry and governance	Norwy	25	
EMBRAPA, NOFIMA, UNESP	4-Nov-22	AquaVitae: CS10: barreiras e oportunidades (B&O)	Participation to an event other than a conference or workshop	Industry	Brazil	20	
CETMAR	14-Nov-22	News on Can mussel meal be used in diets of the whiteleg shrimp and does it improve growth?	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/can-mussel-meal-be-used-in-diets-of-the-whiteleg-shrimp-and-does-it-improve-growth/
Nofima	16-Nov-22	AquaVitae project	Communication campaign (e.g. radio, TV)	All of the above	World - mainly Atlantic	20	https://bit.ly/3Fnb6KA
Algaplus	16-Nov-22	Inovaçao e sustentabilidade na Regiâo de Aveiro - o caso prático de ALGAplus	Participation to a workshop	Civil society	Portugal	40	
CETMAR	23-Nov-22	AquaVitae game: testing workshop	Organisation of a workshop	Scientific community (higher education, research)	Spain	25	
Embrapa	27-Nov-22	Preliminary study on the use of pressure shock for the production of triploid tambaqui Colossoma macropomum: a safe awardee for genome editing	Participation to a conference	Scientific community (higher education, research)	Global	400	http://isga.uchile.cl/
CETMAR	28-Nov-22	News on AquaVitae in South Africa: Abalone farm and partner visits during the scientific meeting of 2022	Communication campaign (e.g. radio, TV)	General public	World	100	https://aquavitaeproject.eu/aquavitae-in-south-africa-abalone-farm-and-partner-visits-during-the-scientific-meeting-of-2022/

Appendix II

Table of all 137 potential ERs resulting from WP1-3 as reported by CS by M36. (tbc = To be confirmed)

Table: All outputs related to WP1-3 and a short detail on their content at M36 (with: CS = corresponding Case Study Number; Ident. = specific identifier; Pot. Product (Y/N/tbc) = potential for becoming a future sellable product (Yes, No, to be confirmed); Complete = level of completeness with regard to what is expected by the end of the project).

CS task number	Ident.	Output type	Detail	Pot. Product	Complete
1.1	1.1.1	Process	A new reproduction method for seedling production of C. tomentosum.	tbc	80%
1.2	1.2.1	Process	A new method for cultivation of Codium tomentosum in substrates in earthen pounds.	tbc	60%
1.3	1.3.1	Process	New protocol to cultivate Ulva sp. in Southern Brazil	tbc	85%
1.4	1.4.1	Process	A new method for cultivation of Ulva sp. in substrates in earthen pounds	tbc	0%
1.5	1.5.1	Report	Composition of commercially cultivated new species	N	0%
2.1	2.1.1	Report	Site selection map for offshore macro-algae cultivation in the Faroe Islands	N	100%
2.1	2.1.2	Report	Report describing selected parameters and suitable offshore macroalgal cultivation sites in the Faroe Islands	N	100%
2.2	2.2.1	Process	Incorporating used fish farm equipment in macroalgal cultivation	N	100%
2.3	2.3.1	Process	A new mechanical harvesting method for growth lines seeded with S. latissima at MACRs	Y	95%
2.4	2.4.2	Product	Ocean cultivated kelp included in an abalone diet	Y	75%
2.5	2.5.1	Process	Optimised cultivation system. harvesting and landing logistics	tbc	100%
2.6	2.6.1	Report	Site selection map for offshore macro-algae cultivation in the Atlantic Ocean	N	100%
2.6	2.6.2	Report	Report describing selected parameters and suitable offshore macroalgal cultivation sites in the Atlantic Ocean	N	100%
2.7	2.7.1	Report	Feasibility study/knowledge transfer plan for an industrial partner outside of Europe	N	0%

3.1	3.1.1	Process	Use of Ulvella lens for settlement under organic certification standard.	N	100%
3.1	3.1.2	Process	Land based abalone hatchery system.	tbc	100%
3.1	3.1.3	Process	Method to ensure consistent settlement of South African abalone using species specific cues (abalone mucous) were developed for instances when the natural diatom cultures were inconsistent.	N	100%
3.2	3.2.1	Process	Abalone nursery production in a global warming scenario.	N	100%
3.3	3.3.1	Process	Optimized nursery system for European abalone.	N	100%
3.3	3.3.2	Product	Anemone production.	Y	100%
3.4	3.4.1	Process	Abalone/sea cucumber IMTA production.	N	75%
3.5	3.5.1	Product	New sea cucumber species optimised for shore based IMTA.	Y	75%
3.6	3.6.1	Process	Abalone IMTA production/nutrition and systems.	N	85%
3.7	3.7.1	Product	Pelletised abalone feed containing land-based IMTA grown seaweed.	Y	75%
3.7	3.7.2	Report	Life cycle analysis of land based IMTA.	N	75%
3.8	3.8.1	Report	Analysis of the products in terms of quality. sustainability and nutritional value.	N	0%
4.1	4.1.1	Process	Method to make algae biosecure when introduced to an abalone feed.	Y	75%
4.2	4.2.1	Process	Coproduction of algae with mussels	tbc	90%
4.2	4.2.2	Product	Mussels produced using IMTA in South Africa	Y	90%
4.2	4.2.3	Product	Macro-algae produced using IMTA in South Africa	Y	90%
4.3	4.3.1	Report	Data supporting use of abalone diet with alternative LTS dietary ingredient. that originates from sea based IMTA.	Y	90%
4.4	4.4.1	Process	New prototype and protocol for co-cultivation of lobsters and oysters. for increased food production and restocking purposes.	tbc	90%

4.4	4.4.2	Process	Adaptation of the culture system for Swedish environmental conditions. with stratified waters and large fluctuations in temperature. salinity and plankton availability.	tbc	90%
4.4	4.4.3	Process	Evaluation of low tech and relatively inexpensive method for on growth of lobster juveniles in sea-based systems that request minimized rearing and no additional food supply.	tbc	90%
4.5	4.5.1	Report	Production site evaluation.	N	75%
4.5	4.5.2	Process	Development of mussel seeding lines for wild settlement and optimal growth.	tbc	75%
4.5	4.5.3	Report	Evaluating the IMTA potential with salmon/blue mussel coculture.	N	75%
4.5	4.5.4	Report	Evaluation of the influence of salmon/blue mussel/seaweed coculture on fjord ecology.	N	75%
4.6	4.6.1	Product	Abalone obtained from IMTA with seaweed.	Y	90%
4.6	4.6.2	Product	Saccharina latissima obtained in abalone IMTA co-culture.	Y	90%
4.6	4.6.3	Product	Alaria esculente obtained in abalone IMTA co-culture.	Y	90%
4.6	4.6.4	Product	Palmaria palmata obtained in abalone IMTA co-culture.	Y	90%
4.7	4.7.1	Product	Queen scallop obtained from abalone IMTA co-culture.	Y	80%
4.7	4.7.2	Product	Flat oyster obtained from abalone IMTA co-culture.	Y	80%
5.1	5.1.1	Process	Optimized grow out system (optimized aeration system).	tbc	95%
5.1	5.1.2	Product	Shrimp grown by new biofloc system.	Y	95%
5.2	5.2.1	Process	New IMTA system design (shrimp. mullet and Ulva production in biofloc system).	tbc	85%
5.2	5.2.2	Product	Shrimp grown by new IMTA Biofloc system.	Y	85%
5.2	5.2.3	Product	Mullet grown by new IMTA Biofloc system.	Y	85%
5.2	5.2.4	Product	Ulva sp. grown by new IMTA Biofloc system.	Y	85%
5.3	5.3.1	Process	New IMTA production system for shrimp farmers.	tbc	60%

5.3	5.3.2	Product	Shrimp grown by new IMTA system.	Y	60%
5.3	5.3.3	Product	Oyster grown by new IMTA system.	Y	60%
5.3	5.3.4	Product	Seaweed grown by new IMTA system.	Y	60%
6.1	6.1.1	Process	Protocols for sea urchin roe enhancement - technology transfer	N	65%
6.1	6.1.2	Process	Land based holding system for sea urchin roe enhancement.	Y	65%
6.2	6.2.1	Product	Production of new species Strongylocentrotus droebachiensis from a new process (roe enhancement and out of season production).	Y	65%
6.3	6.3.1	Product	Production of new species Paracentrotus lividus from a new process (roe enhancement and out of season production).	Y	65%
7.3	7.3.1	Process	Hatchery protocols for sea cucumber larvae production in Brazil and South Africa.	tbc	60%
7.3	7.3.2	Product	Holding facilities for sea cucumber IMTA with Abalone.	tbc	60%
7.3	7.3.3	Product	Bêche-de-Mer from Neostichopus grammatus (from IMTA).	Y	60%
7.3	7.3.4	Product	Bêche-de-Mer from Holothuria grisea (from IMTA).	Y	60%
8.1	8.1.1	Product	A new diet for C. gasar larvae in hatchery production	Y	80%
8.1	8.1.2	Report	A new conditioning protocol for C. gasar	N	80%
8.1	8.1.3	Report	A new protocol for water improvements in small-scale oyster hatcheries using estaurine water	N	80%
8.1	8.1.4	Report	A new protocol for enhanced survival of flat oyster seed using small-scale. low-tech nursery systems	N	80%
8.1	8.1.5	Report	A new production protocol for flat oyster spatting pond production	N	80%
8.2	8.2.1	Report	A new protocol for sea based native oyster spat production including recommendations on new seed collector materials and new protocols adapted to local species	tbc	70%
8.2	8.2.2	Product	A new software for automatic identifiaction of oyster species	Y	70%

8.3	8.3.1	Report	Recommendations of oyster grow-out systems for Scandinavia and Brazil including adaptation of existing techniques and newly developed systems.	N	70%
8.3	8.3.2	Report	New culture system for oysters	Y	70%
8.3	8.3.3	Report	A new protocol for heat treatment of fouling on oysters will be developed	tbc	70%
9.1	9.1.1	Process	Production protocol for hatchery produced blue mussel seed.	tbc	100%
9.2	9.2.1	Process	Method for grow-out of hatchery produced blue mussel spat.	tbc	100%
9.3	9.3.1	Process	Adapted mussel cultivation systems	tbc	85%
9.4	9.4.1	Process	Protocol for heat treatment of calcifying worms on blue mussels during the production cycle.	tbc	80%
10.1	10.1.1	Process	Optimized protocol for captive reproduction of pairs of Arapaima gigas in earth ponds.	tbc	70%
10.1	10.1.2	Process	Novel method for milt collection in Arapaima gigas.	tbc	70%
10.1	10.1.3	Process	Novel method for egg collection in Arapaima gigas.	tbc	70%
10.2	10.2.1	Process	Protocol of triploid induction in tambaqui with minimum of 70% induction success.	tbc	70%
10.2	10.2.2	Report	Evaluation of triploid tambaqui reared in farms in the Amazon region.	N	70%
10.2	10.2.3	Report	Evaluation of triploid tambaqui reared in farms in other climate zones in Brazil.	N	70%
10.3	10.3.1	Report	Predictive models to identify the type. number and length variation of intermuscular bones in tambaqui. Colossoma macropomum.	N	80%
11.1	11.1.1	Process	Optimized process for larviculture in RAS	tbc	10%
11.1	11.1.2	Process	Optimized process for grow out in RAS	tbc	10%
11.2	11.2.1	Product	Diet development for juvenile Brazilian flounder.	Y	100%
11.2	11.2.2	Product	Diet development for juvenile Brazilian flounder with protein sparing effect of lipid.	Y	100%
11.4	11.4.1	Process	Protocols for natural spawning of Black Drum	Y	50%

11.4	11.4.2	Product	Southern Black Drum larvae	Y	50%
11.5	11.5.1	Process	Protocol for weaning larvae into dry diets	Y	50%
11.5	11.5.2	Report	Description of the digestive tract of Southern Black Drum larvae	N	50%
11.6	11.6.1	Report	Report on temperature on growth. survival. and oxidative status of juvenile Southern Black Drum reared in RAS	N	50%
11.6	11.6.2	Report	Report on salinity on growth. survival. and oxidative status of juvenile Southern Black Drum reared in RAS	N	50%
12.1	12.1.1	Report	Incorporation of shellfish aquaculture to the international carbon trading scheme.	tbc	100%
12.2	12.2.1	Process	Protocol for the alkalinisation of the coastal waters of Galicia.	N	80%
12.2	12.2.2	Product	Ecological paint manufacturing.	Y	80%
12.3	12.3.1	Product	Production of hydrolysed proteins and oil from fishery by-catch.	Y	100%
12.3	12.3.2	Product	Production of hydrolysed proteins and oil from sardine heads.	Y	100%
12.3	12.3.3	Product	Production of hydrolysed proteins and oil from boiled mussel meal waste.	Y	100%
12.4	12.4.1	Product	Diet for Senegalese sole with inclusion of hydrolysates.	Y	70%
13.1	13.1.1	Product	Diet formulation for European abalone macroalgae-based.	Y	53%
13.1	13.1.2	Product	Diet formulation for African abalone harvested kelp-based	Y	53%
13.1	13.1.3	Product	Diet formulation for African abalone with sea-based IMTA macroalgae	Y	53%
13.1	13.1.4	Product	Diet formulation for African abalone with land-based IMTA macroalgae	Y	53%
13.1	13.1.5	Process	Process to produce biosecure macroalgae for African abalone	Y	53%
13.1	13.1.6	Product	Diet for European abalone macroalgae-based.	Y	53%
13.1	13.1.7	Product	Diet for African abalone harvested kelp-based	Y	53%
13.1	13.1.8	Product	Diet for African abalone with sea-based IMTA macroalgae	Y	53%

13.1	13.1.9	Product	Diet for African abalone with land-based IMTA macroalgae	Y	53%
13.2	13.2.1	Product	Diet formulation for gilthead seabream with inclusion of mussel meal (IL1)	Y	53%
13.2	13.2.2	Product	Diet formulation for gilthead seabream with inclusion of mussel meal (IL2)	Y	53%
13.2	13.2.3	Product	Diet formulation for Brazilian flounder with inclusion of macroalgae	Y	53%
13.2	13.2.4	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL1)	Y	53%
13.2	13.2.5	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL2)	Y	53%
13.2	13.2.6	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL3)	Y	53%
13.2	13.2.7	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL1) as lipid replacement	Y	53%
13.2	13.2.8	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL2) as lipid replacement	Y	53%
13.2	13.2.9	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL3) as lipid replacement	Y	53%
13.2	13.2.10	Product	Diet formulation for whiteleg shrimp with inclusion of microalgae (IL4) as lipid replacement	Y	53%
13.2	13.2.11	Product	Diet formulation for pirarucu with inclusion of macroalgae	Y	53%
13.2	13.2.12	Product	Diet formulation for tambaqui with inclusion of macroalgae (IL1)	Y	53%
13.2	13.2.13	Product	Diet formulation for tambaqui with inclusion of macroalgae (IL2)	Y	53%
13.2	13.2.14	Product	Diet formulation for tambaqui with inclusion of macroalgae (IL3)	Y	53%
13.2	13.2.15	Product	Diet for gilthead seabream with inclusion of mussel meal (IL1)	Y	53%
13.2	13.2.16	Product	Diet for gilthead seabream with inclusion of mussel meal (IL2)	Y	53%
13.2	13.2.17	Product	Diet for Brazilian flounder with inclusion of macroalgae	Y	53%
13.2	13.2.18	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL1)	Y	53%
13.2	13.2.19	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL2)	Y	53%
13.2	13.2.20	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL3)	Y	53%

13.2	13.2.21	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL1) as lipid replacement	Y	53%
13.2	13.2.22	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL2) as lipid replacement	Y	53%
13.2	13.2.23	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL3) as lipid replacement	Y	53%
13.2	13.2.24	Product	Diet for whiteleg shrimp with inclusion of microalgae (IL4) as lipid replacement	Y	53%
13.2	13.2.25	Product	Diet for pirarucu with inclusion of macroalgae	Y	53%
13.2	13.2.26	Product	Diet for tambaqui with inclusion of macroalgae (IL1)	Y	53%
13.2	13.2.27	Product	Diet for tambaqui with inclusion of macroalgae (IL2)	Y	53%
13.2	13.2.28	Product	Diet for tambaqui with inclusion of macroalgae (IL3)	Y	53%

Appendix III

Table of flagship potential ERs resulting from WP1-3

Table: All flagship Exploitable Results (fER) related to WP1-3, including their number, name, short description, the specific identifier number of the output(s) that the fER is based on (→ see also "Indent." in table of Appendix II) and the WP task that the fER reports to.

flagship ER No.	flagship ER Name	Impact	CSTP	WP task
fER1.1	A new reproduction method for seedling production of C. tomentosum.	A novel reproduction method for C. tomentosum that will allow improvement of genetic diversity of the biobank, and the development of efficient procedures for seeding on substrates.	1.1.1	T1.2
fER1.2	A new method for cultivation of Codium tomentosum in substrates in earthen pounds.	Cultivation of C. tomentosum in substrates will improve the deployment and harvest of biomass, and will allow upscale its production in underutilized, low cost, earthen pounds. This will be done in an organic certified land-based IMTA.	1.2.1	T2.2
fER1.3	New protocol to cultivate Ulva sp. in Southern Brazil	This will allow to stablish efficient vegetative and reproduction methods for local Ulva sp. in order to boost the cultivation of Ulva sp. in Southern Brazil.	1.3.1	T1.2
fER1.4	A new method for cultivation of Ulva sp. in substrates in earthen pounds	Cultivation of Ulva rigida in substrates will improve the deployment and harvest of biomass, and will allow upscale its production in underutilized, low cost, earthen pounds. This will be done in an organic certified land-based IMTA.	1.4.1	T1.2, T2.2
fER2.1	Report - Site selection report and map for offshore macroalgae	Identifying suitable offshore cultivation sites based on depth, current speed, wave height, and socioeconomic activities is a precursor to kick-start the seaweed industry.	2.1.1, 2.1.2, 2.6.1, 2.6.2	T2.2
fER2.2	Process - A new mechanical harvesting method for vertical grow lines seeded with S. latissima on a MacroAlgal Cultivation Rig	Fully automated harvesting will enable low-cost and high-speed handling of seaweed biomass as a necessity for upscaling of production in the Atlantic Ocean.	2.3.1	T2.2
fER3.1	Process - Optimization of abalone nursery systems	Improved settlement, survival and growth by optimising use of algae and other settlement ques in abalone hatcheries; with potential of organic certification.	3.1.1, 3.1.2, 3.1.3, 3.3.1	T1.1, T1.2, T1.3
fER3.2	Process - Co-culture of abalone & sea cucumber	Sea cucumber remove solid waste from land-based abalone tanks, reduces cleaning, labour costs, and handling. Plus, potential new product in sea cucumber.	3.4.1, 3.5.1	T2.2, T3.2

fER3.3	Process - Life cycle analysis of land based IMTA	Quantification of financial and enviro. cost/saving in land-based abalone farming, when using abalone/ulva IMTA and/or replacing fishmeal with algae in feeds.	3.7.2	T2.2, T2.4
fER4.1	Process - Method to make algae biosecure when introduced to an abalone feed.	Eliminates pathogenic bacteria, fungi and viruses, and reduces the chance of introducing macroalgae-born pathogens to abalone farms via the feed.	4.1.1	T2.2, T2.4
fER4.2	Product - Macro-algae produced on mussel rafts using IMTA	New macro-algae for the inclusion in aquafeeds, produced using existing mussel raft infrastructure.	4.2.3	T3.2
fER4.3	Process - IMTA production of lobster with minimal rearing and no additional food supply	Low tech and relatively inexpensive method for on-growth of juvenile lobsters in sea-based systems.	4.4.3	T2.2
fER4.4	Process - IMTA of salmon and blue mussel	A better understanding of the uptake of fish farm waste by blue mussels in an IMTA system.	4.5.3	T1.5, T2.2, T6.2
fER4.5	Process - IMTA of abalone and macro-algae (Saccharina/Alaria/Ulva)	Novel methods for the co-culture of abalone and macro-algae using the same space at sea.	4.6.1-.3	T2.2, T2.4, T3.2
fER4.6	Product - flat oyster obtained from abalone/oyster IMTA	New flat oyster product produced using existing abalone and kelp IMTA system.	4.7.2	T3.2
fER5.1	Process – Optimization of aeration and nitrification in the biofloc system.	Improve shrimp production in biofloc system by optimization of aeration and nitrification.	5.1.1	T2.2
fER5.2	Process – Development of an IMTA system for rearing shrimp, mullet and Ulva in biofloc system	New IMTA system in biofloc for production of shrimp, mullet and seaweed with high efficiency, yield, and low environment impact.	5.2.1	T2.2
fER5.3	Process – development of an IMTA system to produce shrimp, oyster and seaweeds in ponds	New IMTA system in ponds for organic production of shrimp, oyster and seaweed with high efficiency and low environment impact.	5.3.1	T2.2
fER6.1	Protocols for sea urchin roe enhancement	Establishing effective and industry usable protocols for sea urchin roe enhancement. Including transport of urchins to facilities, holding systems, feed regimes, live holding and transport to market.	6.1.1	T2.2
fER6.2	Production of new species *Strongylocentrotus droebachiensis* from a new process (roe enhancement and out of season production)	Production on a commercial scale of enhanced Strongylocentrotus droebachiensis in Norway.	6.2.1	T3.2

fER6.3	Production of new species *Paracentrotus lividus* from a new process (roe enhancement and out of season production)	Roe enhancement and out of season production of Paracentrotus lividus in Spain for the European industry.	6.3.1	T3.2
fER7.1	Holding facilities for sea cucumber IMTA with Abalone	Systems to integrate sea cucumbers into Abalone tanks to eat abalone faeces. Reduce tank-cleaning need and provide sea cucumber biomass as secondary product.	7.3.2	T3.2
fER7.2	Bêche-de-Mer from Neostichopus grammatus (from IMTA)	A low-medium grade sea cucumber for export market in Hong Kong / CN. Worth investigation as by-product especially if processing improved.	7.3.3	T3.2
fER 8.1	Hatchery and rearing techniques for C. gasar in Brazil	Implementation of hatchery production and rearing at a commercial scale using best practices for endemic species of oysters in Brazil.	8.1.1	T1.2, T1.3, T1.4, T1.5
fER8.2	A new production protocol for flat oyster spatting pond production	Development of a robust pond production method for the European flat oyster O. edulis.	8.1.5	T1.2, T1.3, T1.4, T1.5
fER8.3	A new protocol for sea based native oyster spat production	Implementation of wild spat collection protocols for sea-based seed collection and on-growing.	8.2.1	T1.2, T1.3, T1.5, T3.2
fER9.1	Production protocol(s) for hatchery produced blue mussel seed	Development of a hatchery protocol for production of blue mussel seed production.	9.1.1	T1.4, T1.5
fER9.2	Method for grow-out of hatchery produced blue mussel spat	Monitoring growth and survival of hatchery-based produced mussel seed/spat transferred to different areas.	9.2.1	T1.4, T1.5
fER9.3	Adapted mussel cultivation systems	Test and implement adaptions of novel production technologies to offshore conditions for mussel production and identification of different challenges within different countries.	9.3.1	T2.2
fER9.4	Protocol for heat treatment of calcifying worms on blue mussels during the production cycle	Development and implementation of protocols for sea-based fouling treatment of blue mussels at industrial scale.	9.4.1	T2.2

fER10.1	Process - Protocol of triploid induction in tambaqui with minimum of 70% induction success	Production of triploid sterile tambaqui can reduce environmental impacts of genetic diversity loss in wild stocks and issues with interspecific hybrids.	10.2.1	T1.2
fER10.2	Process - Evaluation of triploid tambaqui reared in farms in the Amazon region	Production of triploid tambaqui can potentially increase productivity with faster growing sterile fish.	10.2.2	T2.2
fER10.3	Process - Predictive models to identify the type, number and length variation of intermuscular bones in tambaqui, *Colossoma macropomum*	Ability to predict intermuscular bones in tambaqui offspring can aid genetic improvement programs to reduce/eliminate bones in tambaqui.	10.3.1	T2.2
fER11.1	Product - Diet development for juvenile Brazilian flounder.	Determination of protein requirement on diets for juvenile Brazilian flounder	11.2.1	T3.2
fER11.2	Protocol - Optimized process for natural spawning of Black Drum	Description of a natural spawning protocol for this species in a recirculating aquaculture system	11.4.1	T1.1, T1.2, T1.4, T2.1, T2.2
fER11.3	Protocol for weaning larvae into dry diets	Description of a weaning protocol for larvae of this species in a recirculating aquaculture system	11.5.1	T1.1, T1.2, T1.4, T2.1, T2.2
fER11.4	Description of the digestive tract of Southern Black Drum larvae	Development of the digestive tract of this species, from newly hatched larvae to the juvenile stage	11.5.2	T1.1, T1.2, T1.4, T2.1, T2.2
fER11.5	Evaluation of the effect of temperature on growth, survival, and oxidative status of juvenile Southern Black Drum reared in RAS	Report on the effect of temperature on growth, survival, and oxidative status of juvenile Southern Black Drum reared in RAS	11.6.1	T1.1, T1.2, T1.4, T2.1, T2.2

fER11.6	Evaluation of the effect of salinity on growth, survival, and oxidative status of juvenile Southern Black Drum reared in RAS	Report on the effect of salinity on growth, survival, and oxidative status of juvenile Southern Black Drum reared in RAS	11.6.2	T1.1, T1.2, T1.4, T2.1, T2.2
fER12.1	Process - Valorisation of shell CaCO3 into Eco-Paint	Using fine grinded biological (shell) instead of mineral CaCO3 as filler in paints to contribute keeping the carbon footprint of shellfish aquaculture low.	12.2.2	T3.2
fER12.2	Process – Production of marine protein hydrolysates from fishery and aquaculture side streams	Applying the biorefinery concept to obtain protein hydrolysates from previously discarded fish and mussel aquaculture side streams to be used as feed additives.	12.3.1-.4	T3.2
fER12.3	Product – Marine protein hydrolysates from fishery and aquaculture side streams	Delivering added-value protein hydrolysates to be used as high nutritional quality feed additives for aquafeed and pet food industry.	12.3.1-.3	T3.2
fER13.1	Product - Abalone feed with IMTA macro-algae	Feed that improves growth, FCR and gut microbiome. Cleaner production and reduced environmental impact.	13.1.4, 13.1.8	T2.4
fER13.2	Product - Shrimp feed with inclusion of microalgae	Feed that improves resistance to thermal stress and immune defense.	13.2.4-.10 13.2.18-.24	T3.3
fER13.3	Product - Gilthead seabream feed with inclusion of mussel meal	Fishmeal-free diet. Valorised side streams and less waste in mussel production.	13.2.1-.2 13.2.16-.17	T3.3

Appendix IV

Table of ERs from WP4-9

WP leader	Contri-buting WPs	Contri-buting CSs	Based on results independence	KER title	Result type	Business Sector(s)/ Related EC Policy Area	Result Description (including facts, data, value proposal, if available)	Keywords	Audience
WP4	WP4	Relevant CSs	Prototype of new online sensor for sulphite monitoring in aquaculture production	Prototype of new online sensor for sulphite monitoring in aquaculture production	· Scientific or Technological R&D Result including ICT Hardware	Food safety	Food safety testing device: fast, portable, connected, rapid and cost-effective tool for sulphite monitoring in shrimp aquaculture. The result will facilitate sulphite analyses at various points in the aquaculture process, achieving better control of sulphite addition and avoiding contamination of the final product.	food safety, food safety testing,	· Other Actors who can help us fulfil our market potential
WP4	WP4	CS2, CS8, CS9, CS10, CS11	New methods for biomass monitoring in offshore aquaculture sites	UTOFIA biomass estimates	· Scientific or Technological R&D Result including ICT Hardware	Food safety, consumers	A range-gating video camera with a customized software to measure lengths and volumes of observed objects	laser camera, machine learning, biomass, fish, mussels	· Other Actors who can help us fulfil our market potential
WP4	Wp4	Relevant CSs	IoT platform for integration of real and virtual sensor data	IoT platform for integration of real and virtual sensor data	· Scientific or Technological R&D Result including ICT Hardware	Food safety	IoT platform for integration and analysis of sensor data	IoT sensors, data communication, data analysis, visualization	· Other Actors who can help us fulfil our market potential
WP5	WP3	Relevant CSs	The nutritional and food safety information on the new aquaculture products	The nutritional and food safety information on the new aquaculture products	· Other Intangible Results (Ex. citizens engagement platform, know-how, best practices,	Food safety	Guidelines on performing health risk benefit assessment	policy, institutions, IMTA, seaweed, shellfish, EU, Brazil, South Africa, Norway, social license, aquaculture legislation	Consumers, Business and industry

					methodologies etc.);				
WP5	WP6	CS1, CS2, CS3, CS4, CS6, CS7, CS8	The information on consumer concerns and preferences in relation to new LTS products	The information on consumer concerns and preferences in relation to new LTS products	· Other - please specify in the Result Description.	Business and industry, consumers, Food safety	The results will facilitate an application of LTS product development towarding consumer preference and designing market driven strategy. The results will also be disseminated via publications and conference papers.	consumer preferences, consumer acceptance, sustainable consumption	Consumers, Business and industry
WP5	WP3, WP6, WP9	CS1, CS2, CS3, CS4, CS6, CS7, CS8 & CS9	Guideline on market driven strategies for LTS aquaculture products	Guideline on market driven strategies for LTS aquaculture products	· Other - please specify in the Result Description.	- Business and industry, consumers	Marketing roadmap for LTS aquaculture in main markets	consumer preferences, consumer acceptance, sustainable consumption, EU markets.	Business and industry
WP7	Relevant WPs	CS2, CS4, CS6, CS9, CS10, CS11	The business and socio-economic analysis of the aquaculture value chains	Socioeconomic analysis and businness plans for new aquaculture products and processes	· Other Intangible Results (Ex. citizens engagement platform, know-how, best practices, methodologies etc.);	- Business and industry - The EU Blue Growth Strategy - Green Growth & Circular Economy - SDGs	The socioeconomic analysis will investigate the possible impacts of new aquaculture product and processes on local economies. The results will be use to develop business plans for selected CSs for achieving full commerncialization of the aquaculture products. These results can be used for business development, public policy and governance studies. Business Plans will be important materials in developing business partnership among stakeholders and partners along Atlantic Ocean	Business plans, socioeconomics, commercialization, investors, business partnership, low-trophic aquaculture industry, sustainable food production	· Private Investors
WP8			The analysis of policy and governance,	Analysis of the policy framework for low-trophic species and new	· Policy Related Result	- Maritime affairs and fisheries - Animal	An analysis of policy frameworks related to aquaculture of low-trophic species in the Atlantic Area with special focus on algae and IMTA in EU countries, Norway,	policy, institutions, IMTA, seaweed, shellfish, EU, Brazil, South	· EU and Member State policymakers.

			and the policy briefs	processes in the Atlantic Area		health - Food security - Environment - Climate action	South Africa and Brazil. This will be complemented with a report on producer perceptions to identify regulation and policy role in the development of the sector. Resulting recommendations will be summrize in a policy-brief to provide recommendations, good practices, hinders and opportunities when developing an institutional framework for low-trophic aquaculture, perfectly applicable in other regions to the Atlantic Area.	Africa, Norway, social license, aquaculture legislation	
WP9	All WPs	Relevant CSs	The industry training courses, the university level course modules and the MOOCs	MOOC - GreenAquaEdu	· Services (Ex. research infrastructures, educational sources, citizen helplines, etc.);	- Education and training - Climate action - Food Safety - UNESCO's COVID-19 Education Response - The EU Blue Growth Strategy - Green Growth & Circular Economy - SDGs	Massive open online course (MOOC) and resources for teachers applying flipped classroom on low trophic aquaculture to support sustainable food production. GreenAquaEdu will improve the professional skills and competences of teachers and those working and being trained to work within the blue economy and will help to create a well-trained workforce. The course development will also help harmonize knowledge and practices in industry and academia throughout the Atlantic Ocean.	low-trophic aquaculture, sustainable food production, circular economy, governance, open science, flipped classroom	· Academia/Universities

WP9	All WPs	All CSs	The lasting network of aquaculture industry partners across the Atlantic Ocean, including the industrial apprenticeship opportunities	A trans-Atlantic network of aquaculture stakeholders, supporting industry-driven innovation.	· Other Intangible Results (Ex. citizens engagement platform, know-how, best practices, methodologies etc.);	- Maritime affairs and fisheries - Industry - Research	More than 150 stakeholders collaborate with the AquaVitae multi-actor platform, either as partners, or collaborating through the Industry Reference Group (IRG) and the Policy Advisory Group (PAG). They represent industries, policy-makers, NGOs, academia and other aquaculture organisations in Europe, Africa, North and South America. This platform will remain open throughout the project life. The cooperation with the All Atlantic Ocean Community (the AANChOR project) contributes to the enlargement of this community. The network will highlight the emerging role of low-trophic species in the blue bioeconomy.	multi-actor approach, Atlantic community, research, collaboration, interaction, industry, NGOs, policy-makers, producers, innovation	EU and Member State Policy-makers.

Appendix V

Table of ERs selected for their readiness to be used in the first round of the Exploitation Booster Service

Ident.	Output type	Detail	Requirement Specifications	Com-plete	Current TRL	M48 TRL	TL organisation	CS leader name	CS leader organisation
2.3.1	Process	A new mechanical harvesting method for growth lines seeded with S. latissima at MACRs	Improve logistics to ensure low-cost handling and high-quality storage stable macroalgal biomass	85%	7	7		Olavur Gregersen	ORF
3.3.2	Product	Anemone production.	Production of anemone (Anemona sulcata)	90%	3-4	7		Gercende Courtois de Viçose	FCPCT
4.2.2	Product	Mussels produced using IMTA in South Africa	Mussel production with reduced environmental footprint; production method will adhere to all industry and environmental specifications.	85%	3	7	RhU	Cliff Jones	RhU
4.2.3	Product	Macro-algae produced using IMTA in South Africa	New product that was not previously produced; improved use of existing infrastructure.	85%	3	7	RhU	Cliff Jones	RhU
4.6.1	Product	Abalone obtained from IMTA with seaweed.	Process will contribute to reduce environmental footprint of aquaculture production methods and will make production more cost-effective; contribute to developing new industry standards.	80%	5	8	FrHa	Cliff Jones	RhU
4.6.2	Product	Saccharina latissima obtained in abalone IMTA co-culture.	Process will contribute to reduce environmental footprint of aquaculture production methods and will make production more cost-effective; contribute to developing new industry standards.	80%	5	8	FrHa	Cliff Jones	RhU
4.6.3	Product	Alaria esculente obtained in abalone IMTA co-culture.	Process will contribute to reduce environmental footprint of aquaculture production methods and will make production more cost-effective; contribute to developing new industry standards.	80%	5	8	FrHa	Cliff Jones	RhU
4.6.4	Product	Palmaria palmata obtained in abalone IMTA co-culture.	Process will contribute to reduce environmental footprint of aquaculture production methods and will make production more cost-effective; contribute to developing new industry standards.	80%	5	8	FrHa	Cliff Jones	RhU

4.7.1	Product	Queen scallop obtained from abalone IMTA co-culture.	Queen scallop culture in benthic sea cage is new in Europe and in co-culture it may prove valuable to diversify the production and reduce its impact. It may also improve productivity through the use of phytoplankton in water.	75%	4	8	FrHa	Cliff Jones	RhU
4.7.2	Product	Flat oyster obtained from abalone IMTA co-culture.	Flat oyster culture in benthic sea cage in co-culture may prove valuable to diversify the production and improve productivity through the use of phytoplankton in water.	75%	4	8	FrHa	Cliff Jones	RhU
5.1.2	Product	Shrimp grown by new biofloc system.	High-quality shrimp produced in a sustainable intensive biofloc system without the use of chemicals like antibiotics.	60%	5	9		Felipe do Nascimento Vieira	UFSC
5.2.2	Product	Shrimp grown by new IMTA Biofloc system.	High-quality shrimp produced in an intensive sustainable IMTA system without the use of chemicals like antibiotics.	60%	5	9		Felipe do Nascimento Vieira	UFSC
5.2.3	Product	Mullet grown by new IMTA Biofloc system.	High-quality fish produced in an intensive sustainable IMTA system without the use of chemicals like antibiotics.	60%	5	9		Felipe do Nascimento Vieira	UFSC
5.2.4	Product	Ulva sp. grown by new IMTA Biofloc system.	High-quality seaweed produced in an intensive IMTA sustainable system without the use of chemicals like antibiotics.	60%	5	9		Felipe do Nascimento Vieira	UFSC
8.1.1	Product	A new diet for C. gasar larvae in hatchery production	Crassostrea gasar is a new species in Brazilian aquaculture and hatchery protocols for the species are not well developed. The food requirements of C. gasar larvae is not well known and survival in hatchery production using traditional microalgae species is low. Native microalgae species may improve hatchery production of the species.	60%	3-5	5-7		Åsa Strand	IVL
8.2.2	Product	A new software for automatic identifiaction of oyster species	Seed production using sea-based collectors is a common strategy for extensive seed production. In areas where more than one oyster species exists a mixture of seed from different oyster species will be obtained on the collectors. Automated methods to separate oyster seed by species must be developed.	60%	4-5	7		Åsa Strand	IVL

12.3.1	Product	Production of hydrolysed proteins and oil from fishery by-catch.	By 2019 the Common Fisheries Policy of the EC forces to land in ports the fishing discards. To valorise this substantial amount of waste, we propose to extract hydrolysed proteins and oil to be used as high-quality ingredients on aquaculture diets.	100%	5	7	CSIC	Antón Salgado	CSIC
12.3.2	Product	Production of hydrolysed proteins and oil from sardine heads.	Proposes to valorise this waste form the sardine canning industry, extracting hydrolysed proteins and oil to be used as high-quality ingredients on aquaculture diets. Since sardine is relatively low trophic species (about 2), this product will be transferred to CS13.	100%	5	7	CSIC	Antón Salgado	CSIC
12.3.3	Product	Production of hydrolysed proteins and oil from boiled mussel meal waste.	Proposes to valorise the undersize individuals from mussel cookers, extracting hydrolysed proteins and oil to be used as high-quality ingredients on aquaculture diets. Since mussels are relatively low trophic species (about 2), this product will be transferred to CS13.	100%	5	7	CSIC	Antón Salgado	CSIC

Appendix VI

EU Funded Commercialisation Support Opportunities for products from Low Trophic Species (Living document).

BLUEBIO VALUE Accelerator - https://www.bluebiovalue.com/

Katapult Ocean Venture Capital Challenges - https://katapult.vc/ocean/

The Restore Our Oceans and Waters Programme - https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/eu-missions-horizon-europe/restore-our-ocean-and-waters_en

European institution of innovation and technology hub EIT Food - https://www.eitfood.eu/

Blueinvest Equity Fund - https://oceans-and-fisheries.ec.europa.eu/news/blueinvest-commission-and-eif-agree-mobilise-eu500-million-new-equity-fund-blue-economy-2022-03-28_en

Bioeconomy Ventures Calls - https://www.bioeconomyventures.eu/

Pilots 4U bioeconomy innovation database – https://biopilots4u.eu/

Bio Base Europe Pilot Plant Tech 4 Biowaste Project - https://tech4biowaste.eu/

Circular bio-based Europe joint undertaking - https://www.cbe.europa.eu/

VIB Flanders EU biotope incubator program - https://flanders.bio/en/news/incubator-biotope-vib-launch