Deliverable 2.1 – Stakeholder Engagement Strategy

Work Package 2 – Stakeholder Engagement

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Abstract	The report details the Multi-Stakeholder Engagement Strategy (MES), as put forward in Deliverable 2.1 of Work package (WP) 2: Multi-Stakeholder & Citizen Engagements of the ULTFARMS project. The MES aims to streamline all stakeholder engagement activities of the project (on pilot level, sea basin level and European wide). This is done to avoid stakeholder fatigue and to maximise potential synergies and collaborations with other relevant projects and initiatives in the sea basins, as well as with ongoing EU-wide and international initiatives. Best practices and lessons learned from other projects are detailed in this report, as well as identification

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	and analysis of relevant stakeholders. Stakeholder analysis is based on three characteristics: power, interest, and expertise. Needs for stakeholder interaction in each pilot and work package are assessed and linked up where possible. In each pilot country a Community of Practice (CoP) is formed, a.o. with stakeholders deemed to have high influence and expertise. The strategy for roll-out of stakeholder engagement within the CoPs is described for pilot countries Belgium and Germany, where a new CoP will be formed. In The Netherlands and Denmark, the CoPs will be linked to existing initiatives. An Industry Sounding Board is formed with key industry stakeholders.
Keywords	Stakeholders engagement, project strategy,

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Acronyms

Ars	Associate Regions
CoP	Community of Practice
EC	European Commission
EU	Europe
HELCOM	The Helsinki Commission
KPIs	Key Performance Indicators
ISB	Industry Sounding Board
LoI	Letter of Intend
LTA	Low-Trophic Aquaculture
LTAPs	Low-Trophic Aquaculture Pilots
MES	Multi-stakeholder Engagement Strategy
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
OWFs	Offshore Wind Farms
ToR	Terms of Reference
VASAB	Vision and Strategies around the Baltic Sea
WP	Work Package

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EXECUTIVE SUMMARY

The report details the Multi-Stakeholder Engagement Strategy (MES), as put forward in Deliverable 2.1 of Work package (WP) 2: Multi-Stakeholder & Citizen Engagements of the ULTFARMS project. The main objective of the ULTFARMS project is to demonstrate profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea, and while doing so contribute to restoration of the ecosystem. The MES aims to streamline all stakeholder engagement activities of the project (on pilot level, sea basin level and European wide). This is done to avoid stakeholder fatigue as much as possible and to maximise potential synergies and collaborations with other relevant projects and initiatives in the sea basins, as well as with ongoing EU-wide and international initiatives. Through the MES, ULTFARMS will establish stakeholder-centred approach for multi-use concepts in the North and Baltic Sea region. The engagement of stakeholders will prove to be essential in creating public acceptance and up-take of ULTFARMS outcomes, leading to successful commercialisation of products and services resulting from the project.

A survey of best practices for engaging with stakeholders and lessons learned from previous projects is conducted, based on public deliverables and project reports, as well as informal interviews with the persons responsible for stakeholder engagement. Best practices and lessons learned are distilled in nine main points.

Stakeholders for the ULTFARMS project are identified during a workshop held at the Kick-Off Meeting of the project in January 2023, and subsequent online meetings. Stakeholder analysis is based on three characteristics: power, interest, and expertise, as adapted from scientific literature on stakeholder engagement to fit the objectives of stakeholder engagement in ULTFARMS. Members for a Community of Practice (CoP) in each pilot country (Belgium, Denmark, Germany, The Netherlands) are identified using an analysis of power and expertise. This is done to ensure the CoP consisted of stakeholders who will be able to contribute to successfully achieve the objectives of the respective pilots. In Belgium and Germany, a new CoP will be formed, where a minimum of three CoP meetings will be held throughout the lifespan of the project. Some CoP members will be interviewed to assess their interests for topics discussed during the CoP meetings. In Denmark and The Netherlands, the CoPs will be held in collaboration with existing initiatives and sister projects, seeing as these countries already have many such initiatives in place. An Industry Sounding Board (ISB), consisting of key industry stakeholders, is formed to ensure the relevance of all project results relative to the current market needs and to facilitate a wide uptake of the project outputs within the industry.

Stakeholder engagement of each WP is mapped, and will be linked as much as possible to the CoP meetings, organised by the pilot countries, and events organised by other projects, such as BlueMissionBANOS, Prep4Blue, etc.

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1 Introduction

1.1 Objective of task 2.1

ULTFARMS is a collaborative project led by a consortium of industry leaders and academic institutions, supported by the European Union's Horizon 2020 research and innovation program. The goal of ULTFARMS is to develop and promote innovative and sustainable solutions for low-trophic aquaculture production and nature restoration in offshore wind farms. The project utilizes renewable energy sources and integrates aquaculture and nature restoration with offshore wind power generation to address the challenges of food security and sustainable production of both food and energy.

This report describes the Multi-stakeholder Engagement Strategy (MES) (Deliverable 2.1) for the ULTFARMS project, as a part of Work Package 2 (WP2): Multi-Stakeholder & Citizen Engagements. The objective of WP2 is to centralise and coordinate stakeholder engagement on all levels in the project to ensure support, empowerment, and co-creation of solutions. The MES was developed to coordinate the stakeholder participatory processes in each of the pilots, at Basin level and at the EU level, to ensure an efficient stakeholder engagement in view of the short- and long-term goals of the project and to minimise the risk of stakeholder fatigue. The actual implementation of the strategy is part of the tasks 2.2, 2.3 and 2.4.

This deliverable aims to streamline the engagement activities across pilots, and across Sea Basin level (Baltic Sea and North Sea), to coordinate policy engagement within these basin lighthouses and to maximise possible synergies and collaborations with other relevant projects and initiatives in the sea basins, as well as with ongoing EU-wide and international initiatives. Additionally, this report will provide a guideline to establish a common vocabulary used by all partners in the ULTFARMS project (Chapter 1: Introduction).

The report includes four key steps: 1) a survey on best practices, where experiences of previous projects will be collected to formulate lessons learned and best practices, together with an analysis of engagement cultures and needs (Chapter 2: Survey of best practices); 2) stakeholder mapping, consisting of the identification and analysis of the (key) stakeholders and stakeholder groups for each pilot test site (Chapter 3: Stakeholder mapping and analysis); 3) development of the engagement blueprint Including expansion to include the Associated Regions (AR) and other EU level initiatives (Chapter 4: Engagement Blueprint); and includes a monitoring procedure and Key Performance Indicators (KPIs), allowing for the implementation of potential mitigation actions (Chapter 5: Monitoring and Evaluation).

1.2 Importance of stakeholder engagement

ULTFARMS will pave the way to demonstrating a profitable, sustainable, and eco-friendly Low-Trophic Aquaculture (LTA) in an offshore aquaculture setting, shared with wind farms in the North Sea and Baltic Sea. This will be demonstrated using the production of species of low trophic levels, such as molluscs, including oysters and mussels, and seaweed. The exploitation of outcomes resulting from this project by a multitude of users will be driven by the co-creation approach adopted in this project, extending its lifetime. As such, ULTFARMS aims to establish a stakeholder-centred approach for multi-use concepts in the North and Baltic Sea region, where stakeholders from different target groups will be engaged at various phases throughout the project. The engagement of stakeholders will prove to be essential in creating public acceptance and up-take of results, leading to successful commercialisation of products and services resulting from the project.

1.3 Terms and definitions

1.3.1 Stakeholders and stakeholder groups

Despite the large number of scientific studies on stakeholder engagement and projects involving stakeholders in their process, the definition of "a stakeholder" has not been formally defined ((Schwermer et al., 2020)). A broadly accepted definition of a stakeholder has been proposed by Freeman et al. (2010) and is defined as "any group or individual who can affect, or is affected by, the achievement of the organization's objectives". For the ULTFARMS project, this definition can be adapted to:

> *"any group or individual who can affect and/or is affected by the achievement of the project's objectives or the products and services resulting from the project"*

Stakeholders can be categorized in one of four overarching types according to the Quadruple Helix Model, as proposed by Carayannis and Campbel (Carayannis & Campbell, 2009): "Industry", "Science", "Policy and Governance" and "Society at large".

1.3.2 Stakeholder engagement

Like the currently lacking formal definition for a stakeholder, a consensus on the definition of "stakeholder engagement" has not been formed (Schwermer et al., 2020). In the context of this report, stakeholder engagement will be defined as:

> "*any interaction, be it uni- or bi-directional, with a stakeholder or stakeholder group*"

Stakeholder engagement can include, but is not limited to providing information in the form of flyers, a website or social media, the filling out of surveys or conducting interviews, organising workshops, etc. The most relevant format of stakeholder engagement should be chosen in line with the goal of the engagement (e.g. to

provide information; to gather input in the form of information on attitudes and opinions, or data to facilitate co-creation; to enthuse and motivate; …)

1.3.3 Engagement tools

An engagement tool is any method used to interact with stakeholders. Tools require active participation of a stakeholder (workshop, focus group, interview,…) or can reach the stakeholder without requiring further action (website, flyer, factsheet,…). Tools include, but are not limited to, ordered by increasing intensity of interaction: project website, posters, posts on social media, videos, articles in sector magazines or general media, blogs, written reports, surveys, interviews, thematic seminars/webinars, training workshops, scenario modelling, etc.

1.3.4 Community of Practice

A Community of Practice is a group of stakeholders that meets regularly with the aim to discuss their common interest and by doing so, learn from each other to increase their success. In ULTFARMS, regular meetings will be held with local stakeholders in each pilot region, where progress of the pilot will be discussed in the three phases of the project (design, implementation, exploitation). Feedback resulting from these meetings can be considered in the next steps to create ownership of results and solutions by the stakeholders, creating value for all parties involved. This will in turn enhance wider acceptance and uptake of results, maximising exploitation and facilitating commercialisation.

1.3.5 Industry Sounding Board

The Industry Sounding Board (ISB) will be formed in the project to gather the key industry stakeholder e.g. final users of the products and services resulting from the project. The ISB is meant to ensure the relevance of the project results with regard to the current market needs and facilitate a wider uptake of the project outputs within the industry. Engagement with the industry in the framework of the ISB will help track how ULTFARMS activities contribute to real market needs and integrate market trends such as sustainability, natural ingredients, and safety. The ISB is meant to meet several times during the project, in the framework on the Open Innovation A series of online and in-person interactive workshop sessions will be rolled out during the project in order to receive the feedback to the pilot solutions and encourage their dissemination and exploitation.

1.4 Ethics of Communication and Engagement

Laying out ethical principles and procedures is vital when engaging with stakeholders of any kind. In ULTFARMS, stakeholder will be engaged to participate in workshops, interviews and surveys, allowing for a possibility of collection of personal data. The European Commission has prescribed ethical principles and a practical informed consent procedure to follow, as summarised below.

- The principle of proportionality, demanding that cause and effect, or action and consequences are proportional. This means that questions posed during interviews and surveys should be proportional to the project's aims;

- The right to privacy, meaning the absence of public attention. Information collected during interviews and surveys will be treated confidentially;
- The right to protection of personal data, ensuring protection of data collected during interviews, surveys and/or workshops. Data will be stored securely in compliance with latest GPDR 2016/697 regulations (POPD – Requirement no. 2);
- The right to physical and mental integrity of a person. No physical or mental pressure of any kind will be applied during the recruitment and the informed consent procedure;
- The right to non-discrimination, ensuring no discrimination, of any kind, will take place during the identification and recruitment of research participants. More specifically, no discrimination based on colour, race, gender, religion, political preference, age, nationality, or marital status;
- The need to ensure a high level of human health protection. It is ensured that research participants will only participate in interviews, surveys and/or workshops under high levels of human health protection.

These principals will be strictly adhered to throughout the lifetime of the ULTFARMS project and applied in all communication and dissemination activities, as well as recruitment of members of the CoPs, and identification and recruitment of stakeholders participating in interviews, surveys and/or workshops and associated data gathering and processing. Furthermore, guidelines on safety and protection in relation to the activities to be carried out in the context of the project will be adhered to ensure those working within the project are provided with robust ethical standards.

1.4.1 Informed consent

Stakeholders will be presented with an informed consent (Annex 1: Consent form) form prior to participating in interviews, surveys and/or workshops organised by the ULTFARMS consortium. In this document the participant is provided with information about the project's aims and details how data will be processed and/or stored. The consent form includes:

- A summary of the project objectives
- Purpose of the data collection
- Benefits and risks associated with participation
- Statement of compliance with ethical and legal regulations
- Details on privacy and data protection
- Procedure for withdrawal from participation
- Identity of the researcher and data controller

Signed documents of informed consent will be kept on file by the data controller and stored and retained in a dedicated folder until three years after the project.

1.4.2 Respect of GDPR

Besides following the ethical principles as set out by the European Commission and a practical informed consent procedure, the General Data Protection Regulation (GDPR) represented by the Regulation (EU) 2016/679 will be respected as well ("Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC (General Data Protection Regulation).")

1.4.3 Application of ethics in ULTFARMS

All personal data from stakeholders collected by partners of the ULTFARMS project, will be compliant with the applicable European and national laws on data protection. Only data that is strictly necessary will be collected. Involved parties will be informed what data will be collected and processed, for which purposes and for what period the data will be stored. Contact lists will in no circumstances be shared with third parties.

2 Survey of best practices

2.1 Methods

Information on lessons learned and best practices regarding stakeholder engagement was collected from case studies in other (European) projects. Relevant projects were identified based on the general topics and aims. Projects with the following topics were included: 1) multi-use of space and resources, and Marine Spatial Planning (MSP); 2) mariculture and aquaculture; 3) wind energy from offshore facilities. When a project was active in one or more of these topics but did not have a significant focus on stakeholder engagement, it was not included. The geographical scope of projects was the North Sea and/or Baltic Sea.

To identify relevant projects, the combination of a basic internet search and snowball method was used. For the snowball method, project partners were asked about projects they or their network were involved in, which might be relevant based on aforementioned criteria.

Information was gathered from project deliverables and reports, such as communication plans, stakeholder engagement strategies, reports on the monitoring and evaluation of stakeholder engagement activities, and literature reviews concerning stakeholder engagement.

Additionally, the persons involved in stakeholder engagement of a subset of projects was invited to participate in informal interviews. Questions asked during these interviews included (not verbatim):

- "How did you identify and analyse the stakeholders/stakeholder groups?"
- "What were the main stakeholders/stakeholder groups involved in this project?"
- "How did you contact the stakeholders involved? Which media were used?"
- "Which tools for engagement did you use (workshops, webinars, interviews, conference, …)?"
- "Were the tools used successful to engage with the stakeholder, did they reach the required results?"
- "What are recommendations you would give to future projects? What are potential pitfalls to look out for?"

This resulted in the inclusion of information on lessons learned and best practices from 12 projects (Table 1). A limiting factor for including a project was the availability of deliverables and reports that were freely accessible online, and the availability of contact persons.

Table 1: Projects used to gather information on lessons learned and best practices concerning engagement of stakeholders in relevant topics.

Project name	Website	Topic relevant to ULTFARMS
UNITED	https://www.h2020united.eu/	Multi-use of space - Aquaculture in offshore windfarms
MUSES	https://muses-project.com/	Multi-use of space and resources
TETRAS	https://www.submariner-network.eu/tetras	Multi-use of resources - Aquaculture
EDULIS	https://bluegent.ugent.be/edulis	Multi-use of space - Aquaculture in offshore windfarms
InnoAquaTech	https://www.submariner-network.eu/innoaquatech	Aquaculture
AQUA-LIT	https://aqua-lit.eu/	Aquaculture
FutureEUAqua	https://futureeuaqua.eu/	Aquaculture
AquaVitae	https://aquavitaeproject.eu/	Aquaculture
PartiSEApate	http://www.partiseapate.eu/	MSP
Capacity4MSP	https://vasab.org/project/capacity4msp/	MSP
MSP4BIO	https://msp4bio.eu/	MSP
NorthSEE	https://northsearegion.eu/northsee/	MSP

The information distilled from the project deliverables/reports and interviews was complemented by comprehensive analyses and reviews of stakeholder engagement and included the 'Research Impact Handbook' by Prof. Mark Reed(Machado & de Andrés, 2023), and 'Guidance on stakeholder engagement practices to inform the development of area-wide vector control methods' by Thizy et al. ((Thizy et al., 2019)).

2.2 Best practices and lessons learned

Lessons learned from previous projects and recommendations for best practices for stakeholder engagement were summarised in nine key points, as detailed below.

1) Make a plan

The first good practice identified is the conceptualization of a formalised engagement strategy, that considers the objectives and the context for engagement, as well as the required engagement activities across a project. This allows for the appropriate selection of engagement tools, formats, mechanisms,

and timelines. As such, a comprehensive strategy for the various work packages and pilots is essential to avoid stakeholder fatigue, by streamlining the interactions between project partners and stakeholders. Additionally, with the recent boom in projects seeking to engage with stakeholders, a predefined strategy for stakeholder engagement could allow for opportunity to create synergies with other projects. The possibility to combine events, questionnaires, and other stakeholder activities could avoid excessive and repetitive interactions with stakeholders and thus limit stakeholder fatigue, as well as reduce the required resources and associated costs.

2) Think of timing

To ensure actual implementation of a co-creation approach, stakeholders should be engaged, informed, and consulted prior to the design of a project. This has been especially proven for projects focussing in on the design and/or implementation of MSP. Local residents, most affected by implementation of these plans, as well as other stakeholders from society at large, are often informed on the proceedings of a project after plans have already been drawn up. The use of an iterative engagement approach, that allows for multiple feedback loops and that starts in the designing phase of a project, is essential to facilitate public acceptance.

It is important to keep in mind that flexibility and adaptability are intrinsic aspects of any plan. The interest of stakeholders and their need for information and/or engagement may change as a project progresses. Therefore, the engagement strategy should include pipelines from which feedback can be collected and include ways to incorporate this feedback.

3) Personal approach

Just as the motivation and incentives of different stakeholders to engage with a given project will differ among stakeholders and stakeholder groups, the way to engage them will be different. There is no 'one size fits all' when it comes to communication directed towards various stakeholders. Both between groups (industry, science, policy, society at large), as well as between and within sectors (e.g. aquaculture, wind energy, tourism, …),, incentives may differ and thus communication and engagement tools should be adjusted to the target audience.

To successfully reach stakeholders on a personal level, it is essential to understand their needs and preferences, as well as the context in which they operate. Taking time to identify the stakeholders' local characteristics, norms, and past experiences prior to designing a project could help create a strategic, targeted approach, which could then drastically increase the impact of this project. The use of a knowledge broker, or trusted messenger like an appointed 'local champion', could facilitate the community engagement process. Multiple studies have shown that the messenger, more than the content of the information provided, can exert influence on attitudes, opinions and behaviour. If people feel distrust towards the source of information, they may feel alienated or disengage from the project, and potentially become entrenched in their opinion regardless of new information that arises.

4) Create value

Establishing interest and continuous commitment can be achieved by creating added value for the stakeholders involved. Added value that is tailored to the interests of the stakeholder could stimulate buy-in and a sense of ownership. For stakeholders in industrial sectors, value could be created for example by inviting them to participate in events as speaker or to join socialising opportunities, thus providing them a platform to gain publicity. This can be especially interesting for start-ups and growing Small and Medium-sized Enterprises (SMEs), who are seeking to expand their customer-base. Larger industrial stakeholders might see benefit from first-hand information, evidence of involvement, as well as having input into the output e.g. recommendations towards policy. For society at large, added value could be found in providing them with knowledge and information about the objectives, results and impacts of a project, or by creating economic value by making them the direct beneficiaries of the results of the project. Examples of these custom-tailored benefits for public stakeholders are community funds, equal distribution of revenues resulting from the project, creation of jobs and employment opportunities, as part of the project or through tourist facilities, and educational programs, traineeships, and studentships. Additional added value can be created when members of the public are provided with the opportunity to voice their concerns, provide feedback and thus be a part of the co-creation process. Policy and governmental stakeholders might see value in the already existing network of participating members of different sectors. By being able to closely interact with members of the public and their own potential stakeholders, government officials are presented with the opportunity to get first-hand insights into the culture and needs of their community, enabling them to anticipate and act accordingly. Added value for researchers could lie in the possibility to participate in the project, thus providing them with opportunity to contribute to and/or gain from results and insights of the project.

5) Chose the right tools

There is a huge variety of engagement tools already available to involve stakeholders. Nonetheless, coming up with creative ideas and innovative ways to engage with stakeholders could make the process more enjoyable for all parties involved. Creativity and out-of-the-box-thinking could spark interest and enthusiasm, help to connect more to the target audience and thus achieve more impact. Similar to the necessity for a custom-tailored communication strategy, it is important to realise which tools will prove to be most effective to engage which (groups of) stakeholder(s). Using a variety of different tools and including creative solutions could reduce the risk of stakeholder fatigue by avoiding repetitiveness.

Regardless of the tools used, it is important to actively approach the stakeholder you want to involve, and not wait for them to come to you: being present on relevant events hosted by other organisations, taking their time schedule in consideration when planning activities whenever possible, etc. Limiting the effort needed from the stakeholder could reduce the threshold to engage.

6) Use what is already available

Over the course of the last decade, a myriad of platforms, working groups, decision support tools, etc., have been developed, all with the goal to engage with stakeholders interested in marine related topics. Many such working groups and tools show a similar pattern with a peak of popularity during the project, followed by a slow decline into inactivity after the project is completed. Instead of putting efforts in continuously reinventing the same concepts, many projects seeking to engage with stakeholders could benefit from using tools and platforms brought to life by overarching, intergovernmental organisations, and previous projects.

An example of a tool that can be used to engage with stakeholders is the 'MSP challenge', developed by Keijser et al. (2018). This 'serious game' is designed to assist in the development of a better understanding of the issues involved in MSP through creative and imaginative role playing, considering the relevant professional and personal experience of the players. Similarly, the AquaSpace tool (Grimpel et al., 2018) is an open-source GIS (Geographic Information System)-based planning tool that allows for a spatially explicit and integrated assessment of indicators reflecting the economic, environmental, inter-sectorial and socio-cultural risks and opportunities for potential aquaculture systems. The Stakeholder Analysis Tool developed in STAR2Cs project, as a part of the Interreg 2 Seas Mers Zeeën 2014 – 2020 Programme, helps to identify stakeholders important for a given project and to define an appropriate level of participation for each of them. The tool can help project planners to develop a targeted participation plan when planning stakeholder engagement. Examples of existing platforms where stakeholders can come together to discuss and learn from each other are the Dutch Community of Practice North Sea, the Sustainable Aquaculture Working Group created by Friends of the Ocean, among many others.

7) Disseminate results

Offering information both about and as a result of the project is highly valuable to engage with stakeholders. This information should be accessible and freely available, and not be limited to formats such as project deliverables or scientific articles, but include results of e.g., workshops, surveys, discussions, etc. Sharing results using visual representations, such as infographics or videos could reach a larger audience and thus achieve more impact.

While providing general information can be useful to inform a large audience, providing detailed, in-depth information, in the form of thematic webinars, workshops or working groups, could speak to those interested in the topic on a more personal level, increasing interest and potential buy-in.

8) Capacity building inside the team

Stakeholder engagement requires resources, like time and financial means, and continuous effort to be successful and sustain its impact. This, again, highlights the importance of designing a stakeholder engagement strategy prior to the start of a project, to avoid running out of required resources by the end of a project's lifespan. Building capacity for stakeholder engagement inside the project

consortium could help sustained knowledge exchange throughout the project. It is important to manage expectations and communicate responsibilities of project partners concerning stakeholder engagement from the start of the project. There is a need to clarify the benefits of engagement and build the commitment for the stakeholder engagement within the partnership and particularly of those responsible for the stakeholder engagement in pilots.

9) Measurable indicators for success

To evaluate the success of the engagement strategy and tools used, measurable indicators should be identified prior to the roll-out of the strategy. This evaluation should include 1) the identification of a specific objective (e.g., to inform, to receive feedback, to gain insights, etc) or the impact to be achieved, 2) a timeframe in which these objectives should be achieved, 3) a Key Performance Indicator (KPI).

2.3 Stakeholder attitude and needs regarding aquaculture, wind energy and multi-use in the marine environment

2.3.1 Stakeholder attitude surrounding (offshore) wind energy

Although public opinion towards renewable energy in Europe is generally positive (Karasmanaki & Tsantopoulos, 2021), OWFs may face societal opposition and disapproval, especially from local communities (Bell et al., 2005; Devine-Wright, 2009)or even tourists visiting the area (Machado & de Andrés, 2023). These conflicting views could be explained by the 'NIMBY' (Not In My Back Yard) concept commonly seen in wind energy facilities both on land and at sea. This concept is used to explain an attachment-driven public opposition to new developments near homes and communities, particularly with wind farms or electricity pylons (Bell et al., 2005; Devine-Wright, 2009). Despite the distance of OWFs to the coast, a strong feeling of place meaning is present where great value is put on the natural setting of an area, which in turn carries a strong connection with place-protective feelings. The large structures associated to wind energy, such as wind turbines, are then considered a symbol of an intangible loss, disturbing the visual landscape or extended 'backyard'. The disturbing aspect tends to decline with increasing distance from the coast, as well as the degree of the development profile of the landscape (pristine versus industrialized). Expanding OWFs towards locations farther from shore could prevent adverse landscape effects but could subsequently pose barriers to operationality of the facilities (Machado & de Andrés, 2023).

These contrasting views, on one hand offering support for renewable energy and on the other hand opposition towards the perceived visual pollution of the constructions associated particularly with wind energy, are also seen in the countries of interest in the ULTFARMS project. A study of public attitudes on offshore and onshore wind energy in Denmark found that respondents had a strong preference for offshore wind energy, compared to onshore wind energy, and this preference increased with increasing distance from the coast and the number of wind turbines seen from their residence ((Ladenburg et al., 2020)). A

study of public attitudes of renewable energy technologies in Belgium concluded that wind energy technologies, both offshore and onshore, were generally considered to contribute more positively to population health and job creation when compared to other renewable energy technologies such as biomass and waste-to-energy technologies (Buchmayr et al., 2021). In this study, the visual impacts on the landscape were evaluated more negatively for onshore and offshore wind than for the other technologies, although there was no difference found for those living closer to the facilities compared to those living far away (Buchmayr et al., 2021). More than 80% of the participants in a study aiming to map the public acceptance of offshore wind in the Netherlands reported having a positive feeling about offshore wind farms, supported them as renewable energy resources, and showed a willingness to purchase the energy produced by them (Dion, 2019). Although the public attitude towards offshore wind energy has not been specifically studied, the visual impact of electricity structures on the landscape, regardless of their respective technology, was found to the biggest concern among citizens living close by (Linzenich et al., 2020). Interestingly, this study also found that higher self-reported knowledge of the infrastructure types associated to wind energy, electricity distribution, and mobile phone masts was linked to decreased perception of risks associated to them (Linzenich et al., 2020), which points to the importance of unbiased information flows.

The EU Strategy on Offshore Renewable Energy has set targets for an installed capacity of at least 60GW of offshore wind and 1GW of ocean energy in Europe by 2030, and 300GW and 40GW, respectively, by 2050 (EU, COM(2020) 741). The current installed capacity of offshore wind energy reached 25 GW in 2020 (Komusanac et al., 2021). Despite the first-mover advantage of bottom-fixed turbines that the offshore wind industry benefits from, significant upscaling is needed to reach the targets for installed capacity set out by the European Commission. Expansion of offshore wind facilities of this extent could cause externalities affecting other users of maritime space, highlighting the need for proper MSP to avoid conflicts for space with other ocean users (Machado & de Andrés, 2023).

2.3.2 Stakeholder attitude surrounding (marine) aquaculture

Aquaculture is a globally important economic activity, providing a contribution of over 50% of total fisheries and aquaculture yield of seafood products for human consumption in 2020 (FAO, 2022). The growth rate of this contribution has been gradually decreasing from nearly 9.5% during the period 1990–2000, to 4.6 percent during 2010–2020, with a marked further decrease of 3.3% in the period from 2015 – 2020 (FAO, 2022). Thus, despite ample worldwide availability of ocean space with suitable conditions to upscale productivity (Weiss et al., 2018), aquaculture production is growing at a slower rate than expected, especially offshore.

The mechanisms behind the lagging expansion of aquaculture worldwide were studied by Galparsoro et al. (2020), who found that obstacles associated with aquaculture growth and expansion can be divided in four categories. The first category of obstacles that was identified consisted of policy and management issues, namely the complexity and costs associated to administrative procedures

and licensing. Environmental issues were reported as the second largest category of obstacles to aquaculture expansion, although this is more applicable to finfish aquaculture. For low trophic species, such as seaweeds and bivalves, this issue is less prominent. Economic and market issues presented another bottleneck for expansion, especially for small scale producers who struggle to balance high production costs associated to offshore facilities with low product prices on the market. Lastly, conflicts with other users of ocean space were reported frequently, associated with incompatibility between or among aquaculture activities and tourism, fisheries, and navigation. A lack of social licensing could contribute to these conflicts, in particular for finfish aquaculture, as well as a public opposition based on concerns about negative environmental impacts (Galparsoro et al., 2020).

The lack of social acceptance for finfish aquaculture has been identified by other studies as a factor that is hampering the development of new aquaculture projects and the expansion of existing facilities (Cavallo et al., 2021, 2022). Although substantial effort has been made to improve the environmental, economic, and social sustainability of finfish aquaculture, mistakes made in the past have weakened public trust of the aquaculture sector as a whole. A study on the perceptions of shellfish aquaculture in British Colombia, Canada found that participants generally considered aquaculture to have economic benefits but were uncertain or positioned negatively towards its environmental effects (D'Anna & Murray, 2015). Uncertainty originated mostly from a lack of freely available and concise information. Additionally, D'Anna & Murray (2015) found that a participant's perception was dependent on their position in the aquaculture industry. Interviewees active in the aquaculture sector tended to focus on the environmental and economic benefits, whereas non-industry interviewees typically expressed questions and concerns about environmental and economic benefits. Similarly, based on a survey on the perception of aquaculture in Sweden, Thomas et al. (Thomas et al., 2018) found that people who were generally more aware or knowledgeable of aquaculture tended to be more supportive compared to people who were generally less knowledgeable. These studies highlight the importance of raising awareness about aquaculture and providing a candid, scientifically based stream of information, to reduce public aversion and ultimately support sustainable development of aquaculture.

2.3.3 Stakeholder attitude surrounding marine spatial planning and multi-use of space

Over the past few decades, the use of ocean space by human activities has increased intensely, focused mainly within the coastal areas. If not managed properly, this could lead to an over-crowded and dysfunctional seascape with costly socioeconomic conflicts (user-user conflicts) and serious environmental impacts (user – environment conflicts). Initially stimulated as a way to develop marine protected areas – the Great Barrier Reef Natural Park being one of the first examples where zoning was implemented to improve spatial organization of human activities and resource exploitation – MSP has now matured to a practical approach to facilitate the sustainable development of ocean space and subsequently the 'Blue Economy' (Ehler, 2021). To address some of the major

challenges humanity is currently facing, such as global climate change and ensuring food security, emerging technologies like offshore energy and marine aquaculture are being put forward (Díaz & Guedes Soares, 2020; Galparsoro et al., 2020). While these 'newcomers' are expected to continuously expand their area of activity in the coming decades, conflicts resulting from competition for space are starting to arise with 'historic' users of ocean space, like shipping transport, recreational water sports, and commercial and recreational (Jentoft & Knol, 2014; Navarro et al., 2022). Concerns have been raised that address the imbalanced landscape of influence, where ocean uses that enhance an economic benefit, like offshore wind energy, have been strategically facilitated by MSP at the expense of other sectors, such as recreation (Aschenbrenner & Winder, 2019; Ramírez-Monsalve & van Tatenhove, 2020).

Although stakeholder engagement has been identified as one of the key factors to ensure acceptance and public trust (Aschenbrenner & Winder, 2019; Billing et al., 2022; Frazão Santos et al., 2019; Gopnik et al., 2012), major issues such as poor communication and the notion that decision-making may be biased contribute to the exclusion and even non-engagement of certain stakeholders in MSP (Flannery et al., 2018; Pesch, 2019). Additionally, public sessions seeking to engage with stakeholders from the public leading up to MSP tend to have a predefined format with a strong focus on nearby residents, with the exclusion of people living outside of 'planning areas' (Pesh et al., 2019), leaving many stakeholders unaware of MSP, or unsure how to interact (Kull et al., 2017). To overcome this challenge, responsible entities should engage stakeholders at the earliest opportunity, from the very beginning and throughout the entire planning process instead of only when a final marine spatial plan is developed. Simultaneously, stakeholder engagement in MSP should be meaningful, transparent, and reflect (or at least address) the existing complexity of socio-spatial relationships in the marine environment (Frazão Santos et al., 2019).

2.3.4 Need for information

Based on the information gathered to inform on the culture and needs surrounding offshore wind energy, marine aquaculture, MSP and multi-use, it is clear that public support will be crucial to ensuring the uptake of results and further commercialisation of products resulting from the project. With growing public awareness surrounding the importance of natural areas obtaining and retaining Good Environmental Status, concerns on the impacts of human activities are gaining more and more traction in decision making, be it on land or in the marine environment. The actual, or perceived, impacts of a project on the environment lies at the core of social acceptability. Subsequently, ensuring an objective flow of information could provide the public with the possibility to make informed decisions and could increase trust and by consequence, public support. Moreover, stakeholders of the public, such as members from local communities, wish for their voices to be heard and to be involved in projects, rather than being informed on the decisions made. This stands in stark contrast to the current trend of stakeholder fatigue, where (groups of) stakeholders, particularly from the industry sectors, are overwhelmed by the requests to participate in and collaborate on

emerging projects. This presents the need for a delicate balance between scale-up of stakeholder engagement to include the voice of the public and strategizing engagement with stakeholders who are at risk of becoming fatigued by the increasing demand for engagement.

Public support is not only crucial to obtain success in ULTFARMS, but it also represents one of the many building blocks for support of large-scale actions targeting sustainable ocean use. To achieve the United Nations' Sustainable Development Goal (SDG) 14: Life Below Water by 2030, an estimated €147 billion per year globally is needed. To date, €16.8 billion originating from domestic and international public sources and €4.2 billion from private investors is available to achieve this, totalling to €21 billion. This leaves a funding gap of €126 billion. The mobilisation of private capital is critical to closing this gap. Although investors' interest in projects aimed at sustainable development has recently seen a strong rise, availability of information and investment data on projects is limited. This presents obstacles to identifying opportunities and estimating expected returns (Directorate-General for Maritime Affairs and Fisheries, 2023).

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3 Stakeholder mapping and analysis

3.1 Goal of the stakeholder engagement strategy

The success of this multi-use concept of aquaculture and wind energy as a part of the transition towards marine sustainability will in part depend on the level of societal uptake and (local) acceptance. A wide range of impacts in scientific, societal, technological, and economic contexts will be achieved by the coupling of the products and services that will results from this project and strong, targeted stakeholder and citizen engagement, communication efforts, dissemination of results and exploitation actions. This can only be achieved through active collaboration with multiple stakeholder groups across a wide range of geographic areas.

3.2 Identification of stakeholders

The identification of stakeholders and stakeholder groups that should be involved in the project is an important task in the process, as the efficiency of the engagement strategy will depend largely on the right options assumed in this phase. A first step in the identification of stakeholders for ULTFARMS was performed in January 2023, during the Kick-Off Meeting of the project. A workshop was held where members of each of the pilot test sites identified stakeholders relevant for their pilot site. Two general questions were asked to all persons present:

1. "Which organisations and/or groups can be identified as relevant stakeholders within this pilot project?"
2. "What needs and issues originating from the stakeholders could arise concerning the project and its outcomes?"

Participants could freely add stakeholder groups and/or specific organisations they considered relevant to create a baseline for stakeholder identification in each pilot. Information obtained from this workshop was expanded and polished in the weeks thereafter. This resulted in the identification of a long-list of various stakeholders in one of 14 subgroups (Figure 1) for each pilot site.

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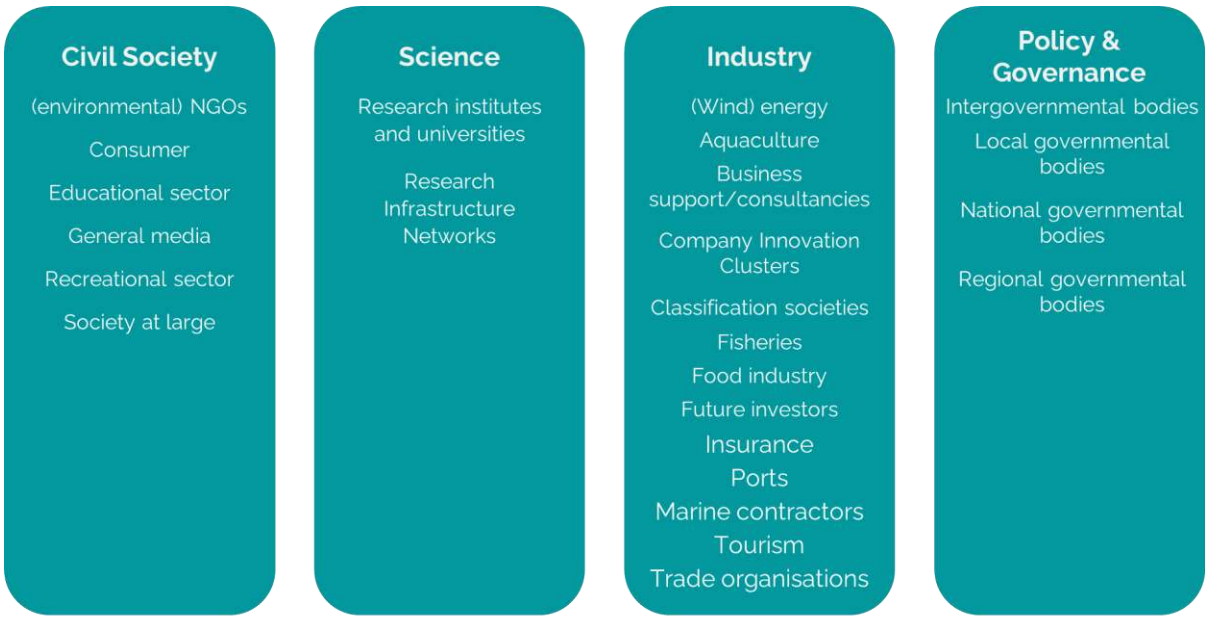

Figure 1: Stakeholder groups and their associated subgroups

The answers to second question that was asked during the Kick-off workshop, meant to explore needs and issues that could present as an obstacle for the success of the pilots were analysed and visualised in a word cloud (Figure 2). Common concerns centred around commercialisation/market uptake of results, maritime space, obtaining permits and insurances, technical operations and concerns about the environment. These topics correspond to the concerns raised in the section 2.3 Stakeholder attitude and needs regarding aquaculture, wind energy and multi-use in the marine environment, and multi-use in the marine environment. These concerns will be used to inform topics discussed during the Community of Practice meetings (see section 4.2 Tools for stakeholder engagement in pilots).

Figure 2: Word cloud representing the concerns raised by pilot partners of the four participating countries during the kick-off meeting workshop in January 2023

3.3 Stakeholder analysis

3.3.1 Theoretical basis for the analysis of stakeholders

Although stakeholder approaches and concepts have been articulated in business management from the early 1930s, there is no standardised method for stakeholder analysis, especially in the context of marine multi-use projects. Through the recent increase of research related to the mapping and analysis of stakeholders, many analysis concepts have been developed.

Mitchell et al. (1997) proposed the analysis of stakeholders based on three main attributes, defined as follows:

1. Power: "A relationship among social actors in which one social actor, A, can get another social actor, B, to do something that B would not have otherwise done." The bases for power can be 'Coercive-force/threat', 'Utilitarian-material/incentives' and/or 'Normative-symbolic influences."
2. Urgency: "The degree to which stakeholder claims call for immediate attention."
3. Legitimacy: "A generalised perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, definitions." The bases for legitimacy can be individual, organisational, and/or societal."

Based on the score of a stakeholder on each of these attributes (low – medium – high), eight groups were established ('Dormant', 'Discretionary', 'Demanding', 'Dominant', 'Dangerous', 'Dependent', 'Definitive', 'Non-stakeholder'). These definitions were proposed in the context of business management. In the framework of a nature conservation project, de Lopez (2001) used an Influence – Interest matrix, which categorised the stakeholders in one of four groups: 'Key players', 'Context setters', 'Subjects' and 'Crowd' (Figure 3). Balane et al. (2020) presented an adapted framework for stakeholder analysis based on Knowledge, Power, Interest and Position in the context of health policy.

The approach used to interact with a stakeholder will depend on the group to which they have been assigned, e.g., in the case study of de Lopez at al. (2001), it is stated that priority should be given to engaging actively with 'Key players', whereas 'Context setters' may be difficult to reach and will require particular effort to engage. Because 'Subjects' have low intrinsic influence but may become influential by forming alliances with other more influential stakeholder, they should therefore not be excluded from the engagement processes. The 'Crowd' are stakeholders who have little interest in or influence over desired outcomes, and so there is little need to consider them in much detail or to engage with them (Figure 3).

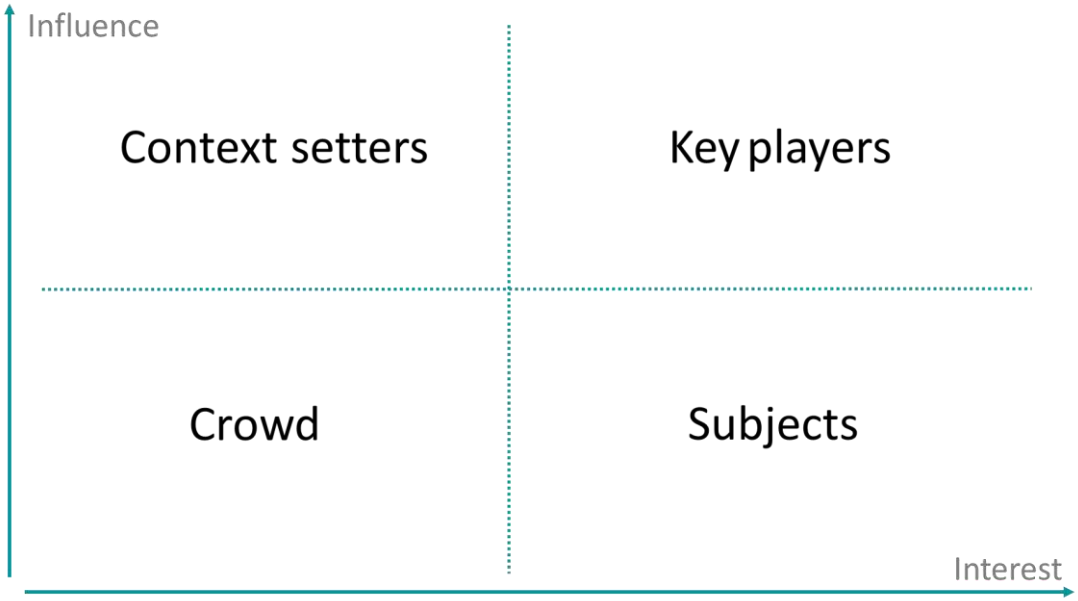

Figure 3: Influence – Interest matrix categorises stakeholders in four groups, based on de Lopez, 2001.

A more in-depth analysis of the interaction with stakeholders was formulated by the International Association for Public Participation (IAP2[1]). This Framework is designed to help organisations select the appropriate level of participation required to achieve the objectives of different stakeholder activities and to clarify the role of the public (or community) in planning and decision-making. Five levels of participation are defined in this framework (Figure 4).

[1] https://www.iap2.org/page/guidelines

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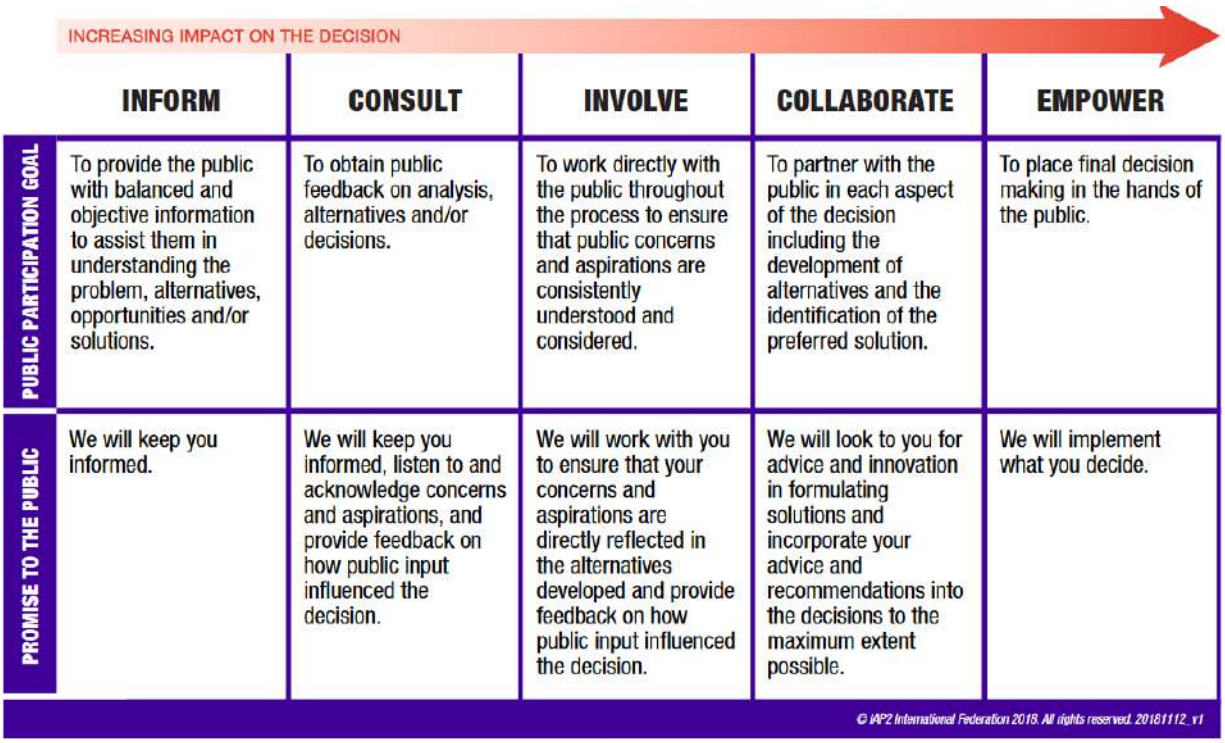

Figure 4: The IAP2's Spectrum of Public Participation.

1) Inform

The first level, Inform, assumes a one-way interaction, where information is provided to the public without the opportunity for them to give feedback. Sensu stricto, the Inform level cannot be considered as a form of public engagement, as there is no opportunity for the public to participate in the process, or to influence decision-making. Nonetheless, informing a wide audience is essential to ensure members of the public are able to form informed decisions and opinions. When providing information, one should assume the role of a neutral knowledge broker, without the intent to persuade or manipulate the target audience. Tools used on the Inform level include: the project website, flyers, written reports, etc.

2) Consult

The second level of participation, Consult, assumes a limited two-way interaction, where feedback is gathered from the public, but excluding the promise that it will be applied or taken into account in the next steps of the project, only to listen and acknowledge. In essence, Consult is a one-way interaction originating from the public to the project coordination, which can be minimally bi-directional when feedback is in fact considered. To ensure continued support of stakeholders, it is important to manage expectations and clearly communicate intentions and what is negotiable in terms of applying feedback. Consulting stakeholders can be useful when assessing (public) opinions on planning, ideas, options, or issues. Attitudinal surveys, (short) questionnaires, focus groups, public meetings are tools that can be used for this purpose.

3) Involve

The Involve level of participation allows for a true two-way interaction between stakeholders and the project. As the name suggests, stakeholders are involved in the decision-making process, but final decision-making is done by the project. As with Consult, it is important to manage expectations concerning the extent to which stakeholders can exert influence from the beginning of the process to avoid frustration among stakeholders. The interactions are intended to be continuous throughout the project in an iterative loop, to ensure true co-creation. Tools that can be used to involve stakeholders include workshops, focus groups, meetings, and dedicated simulation games. The latter is used particularly in MSP projects.

4) Collaborate

When the interaction with stakeholders is implemented on the Collaborate level, stakeholders and members of the project are considered partners. Final decision-making remains the responsibility of the project coordination, but feedback of the stakeholders is considered 'to the maximum extent possible' (Figure 4). Efforts to implement participation on the Collaborate level can increase trust from the stakeholders in the project, though this will take time and other resources. To be able to sustain these efforts, it is advised to consider the available resources when inviting a large number of stakeholders to participate on this level. Examples of stakeholder interaction on the Collaborate level are consensus building workshops, joint decision-making, and partnerships such as a Community of Practice.

5) Empower

Although the final level, Empower, allows for the highest degree of joint decision-making, this does not necessarily require the most intense interaction. This can be illustrated by looking at the example of a referendum: the public is asked to vote on a certain question, idea or proposal, and the decision made by the majority of votes will decide the next steps. The interaction in this example is limited to the voting process, which requires little effort in the way of community engagement. Participation on the level of Empower, ensures the existence of a pathway where all parties who would be affected by the decision can voice their interests.

3.3.2 Stakeholder analysis as applied in ULTFARMS

In ULTFARMS, the analysis of stakeholders will be based on knowledge from all partners gathered from earlier projects and developments, which is adapted to fit the objectives of the project. Stakeholders will be analysed based on the characteristics of power and expertise. Applied to the context of this project, any stakeholder that has the ability to change the course of one or more outcomes of the project, should this party choose to act, whether or not motivated by intrinsic interests, is considered to have a high level of power. Power can originate from a party's legal authority or their influence on other actors. When a stakeholder has gained a high level of knowledge or skill on a certain topic and/or technique, through experience and/or research, this stakeholder is considered to have a high level of expertise.

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The analysis of stakeholders in the framework of this project will be based on the characteristics of power and expertise, and not power and interest as is put forward by previous stakeholder analyses (de Lopez, 2001; Reed & Curzon, 2015). The choice to emphasize expertise over interest in this analysis is made to ensure especially those who are believed to be instrumental to achieving the goals of the pilot(s) in each country i.e., those who will contribute to the success of the co-design, co-implementation, and co-commercialisation of products and services resulting from the pilot, are identified from the start. High levels of interest are attributed to the stakeholders whose values and/or regular activities show a thematic overlap with the overarching topics present in the project. Exploratory analyses of the levels of expertise and presumed level of interest of stakeholders show significant overlap, where stakeholders who are assumed to show generally high levels of interest have a corresponding level of high expertise (Figure 5). The level of interest of various stakeholders may change over the course of the project as it gains more notoriety. In contrast, a stakeholder's level of expertise will likely not show the same trend, which is why it will be essential to reassess levels of interest in later stages of the project's lifespan to ensure no stakeholder will be excluded. Providing information to the stakeholders who are already interested in the project, or reaching out to inform those who are not yet interested is also essential and will be part of and discussed in more detail in WP11: Communication and Dissemination.

Figure 5: Example of an exploratory Power – Interest matrix, with visualisation of levels of Expertise. Those who are considered to have high levels of interest at the start of the project tended to show high levels of Expertise.

All the relevant stakeholder groups for each pilot country (Belgium, The Netherlands, Germany, Denmark) are scored on attributes power and expertise, ranging from low, medium to high. This results in a Power – Expertise matrix for

each pilot country (Figure 6). Four groups of stakeholders are identified: 1) Key Stakeholders, who have a high level of power and high level of expertise; 2) Facilitators and Deal-breakers, who have a high level of power but are not particularly knowledgeable; 3) Multipliers, having high levels of expertise but not power; and 4) Interested Parties, with neither high power nor expertise. By applying the framework proposed by the IAP2, it becomes clear how each of these groups should be engaged (Figure 7).

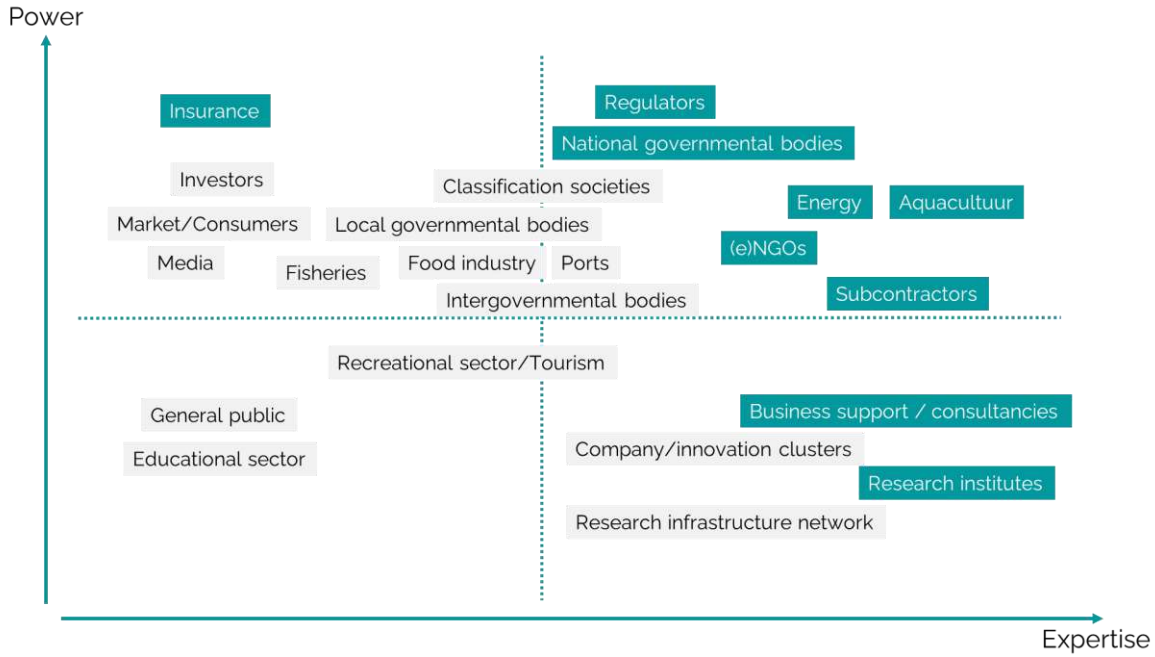

Figure 6: Power – Expertise matrix, used to identify members of the Community of Practice. Stakeholders indicated in dark colour are considered most relevant as members of the CoP because of the level of intrinsic power and/or expertise.

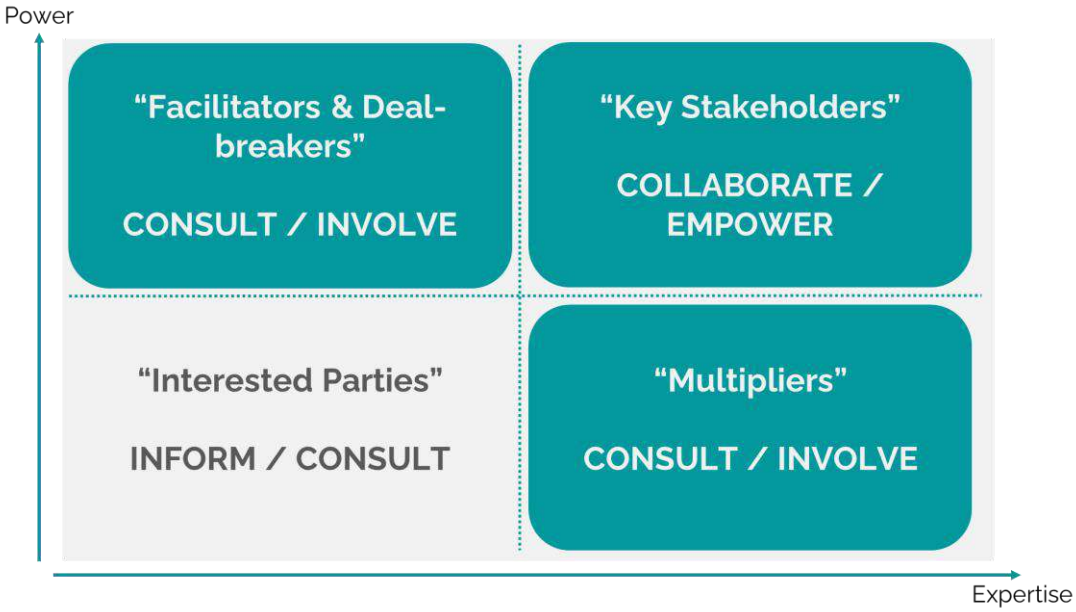

Figure 7: Power – Expertise matrix and associated stakeholder categories and level of involvement.

The Key Stakeholders will be invited to participate on the levels Collaborate and Empower, as they will be instrumental in reaching the objectives of the pilots and by extension, the overarching objectives of the project. Facilitators, Deal-breakers and Multipliers will be engaged on the levels Involve and Consult. Although the support of these groups may not be decisive in the short-term success of the project, it could be fundamental to ensure long-term impact and market uptake. The last group, the Interested Parties who do not possess relevant expertise nor have substantial influence over the course of the project, might be consulted during public information sessions to assess their position towards the project as well as to get insight into their needs (e.g. as a consumer). However, for the most part interaction with this group will be limited to the level Inform throughout the project's lifetime. This level of the IAP2 spectrum will be handled in WP11: Communication and Dissemination, as the interaction is limited to one-way communication.

3.4 Iterative approach to the analysis of stakeholders based on interest

As mentioned above, it is important to note that the identification and analysis of stakeholders should not be considered as a one-time event. Some attributes, especially interest, might fluctuate and change over time for certain stakeholders and stakeholder groups throughout the lifetime of the project. For example, in the start-up phase of the project, interest of stakeholders such as investors might not yet have been sparked as the benefits of the multi-use concept of low-trophic aquaculture in offshore windfarms may appear vague as long as tangible outputs have not been achieved. Similarly, members of the general public might become more interested once products and services resulting from the project, such as

seafood products or job opportunities, start appearing in their day-to-day lives. It is therefore essential that stakeholder mapping and analysis is an iterative process and roll-out of stakeholder engagement can be adapted to include other stakeholders if necessary.

3.5 Identification of current local Stakeholders engagement initiatives

3.5.1 Belgian pilot

The North Sea Vision for 2050 process, discussing the future Marine Spatial Planning of the Belgian part of the North Sea, initiated by the State Secretary for the North Sea in 2016, created a new form of interaction between stakeholders from a variety of industries and fields. The North Sea Council saw an opportunity to extend this unique dynamic in the form of an independent Think Tank North Sea. Think Tank North Sea is a neutral and unaffiliated body in which stakeholders from a wide range of backgrounds (science, policy, civil society, industry and society) consider subjects related to the North Sea. Think Tank North Sea is driven by three goals: 1) extending the support on the ground for subjects relating to the North Sea; 2) providing a seedbed for future visions for the North Sea; 3) preparing science-based recommendations on subjects relating to the North Sea. So far, visions were developed for the following topics: Sustainable Blue Economy (2022), Working with nature and Living with climate change (2019), Naturalness, Blue Economy and Innovation and Multiple Use of Space (2018). The stakeholder working groups generally consisted of 20-30 enthusiastic stakeholders that wanted to actively be involved in the process.

In the framework of the Horizon Europe United project, several online workshops and seminars were organised as well as one physical workshop focussing on the economic and social aspect of multi-use of Offshore Windfarms. Stakeholders from different groups were present (Policy, Industry, Science, Public).

In 2022 the Federal Ministry of the North Sea requested a vision development for Aquaculture as well for the decommissioning of the existing offshore windfarms. Again, a large number of stakeholders from different stakeholder groups were involved and actively participated to ensure their vision would be included.

Some national research and innovation projects are supported by a strategic advisory board consisting of stakeholders from the industry, policy and public organisations, e.g., within the SUMES project in which offshore wind and aquaculture are the test cases for development of a model to assess the overall cost benefit analysis (considering Ecosystem Services and Life Cycle assessment).

Although multiple stakeholder engagement initiatives have been initiated and have run in the past, there is still an opportunity to bring together the community of stakeholders around the topic of aquaculture within offshore windfarms.

3.5.2 German Pilot

In the context of the German pilot project, stakeholder engagement extends to various industrial partners, and the involvement of key organizations and networks.

The SUBMARINER Network is a platform that brings together stakeholders from various sectors involved in the sustainable use of marine resources in the Baltic and North Sea regions. This network facilitates knowledge exchange, promotes innovation, and supports collaboration among stakeholders. The SUBMARINER Network hosts the Baltic Mussel working group and Macroalgae community group. , Engaging with these groups will enable knowledge sharing, access to best practices, and potential collaboration opportunities in relation to mussel farming and macroalgae cultivation.

The German Offshore Wind Energy Cluster comprises companies, research institutions, and stakeholders involved in offshore wind energy production. Collaborating with this cluster will allow the German pilot project to explore opportunities for integration, complementarity, and knowledge transfer between offshore wind energy and other marine-based activities under consideration.

The HELCOM-VASAB Planners Forum serves as a platform for policymakers, planners, and experts involved in marine and spatial planning in the Baltic Sea region. By establishing links with this forum, the German pilot will ensure that its policy and planning recommendations are disseminated to relevant actors in the policy community. This engagement helps create awareness, gain support, and influence decision-making processes at the regional and national levels.

3.5.3 Danish pilot

OLAMUR (Offshore low-trophic aquaculture in multi-use scenario realisation in North and Baltic Seas, 2022 – 2026) the Horizon 2020 sister project of ULTFARMS, aims to bring together key marine sectors to develop and demonstrate a sustainable solution for commercial aquaculture and wind energy production, thereby combining blue food and green energy. OLAMUR has active test sites in the Baltic Sea, located in Germany, Denmark and Estonia, thus stakeholders identified in OLAMUR will show significant overlap with the stakeholders of ULTFARMS. Win@Sea, a collaboration between Vattenfall and Danish universities and companies, will investigate how to produce offshore wind power and sustainable food, and at the same time aiming to improve the marine environment and biodiversity in the same marine area.

The SUBMARINER Network, see section above, and its community groups are also involved Danish stakeholders and the network and community groups are therefore also relevant existing initiatives to mention for the Danish pilot.

3.5.4 Dutch pilot

For the Dutch pilot, a myriad of existing groups of stakeholders working around topics such as multi-use of ocean space, offshore wind energy and marine aquaculture can be identified. The first, and most prominent working group is the Community of Practice Noordzee (ENG: North Sea). Founded in 2018, the CoP Noordzee brings together a network of entrepreneurs, research institutions, civil

society organizations and governments and other top industry sectors with the aim to strengthen the balance between energy, nature and food in the North Sea and stimulate a Sustainable Blue Economy, and by doing so, preserving the balance between new activities and the natural values on the intensively used North Sea.

Furthermore, the European project eMSP NBSR (Emerging ecosystem-based Maritime Spatial Planning topics in North and Baltic Sea Regions, 2021 - 2024) envisages two compatible "learning strands": CoP Ecosystem based approach and CoP Sustainable Blue Economy. These CoPs will focus, among other topics, on criteria development of different sets of multi-use options.

The Native Oyster Restoration Alliance (NORA) is a European network aiming at reinforcement and restoration of the native European flat oyster (Ostrea edulis). Network members are representatives of governmental agencies, science, non-governmental organizations, as well as oyster growers and other private enterprises. NORA was established during the international workshop on oyster restoration that was held in Berlin in November 2017.

Lastly, tender procedures are running for the development of new wind farm concession zones in the Dutch North Sea. This will take up a large part of the time of the stakeholder groups ULTFARMS is envisaging as well.

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4 Develop the engagement blueprint:

Since engaging a broad range of stakeholders is widely recognized as crucial to responsible research and innovation activities and good research governance (Häberlein & Hövel, 2023), including in marine related projects, ULTFARMS plans to engage stakeholders at different moments throughout the project. To ensure uniformity of results, maximise efficiency and minimise stakeholder fatigue a stakeholder engagement strategy is developed for the project.

To develop a fit for purpose strategy, the following step-wise approach is taken (Figure 8).

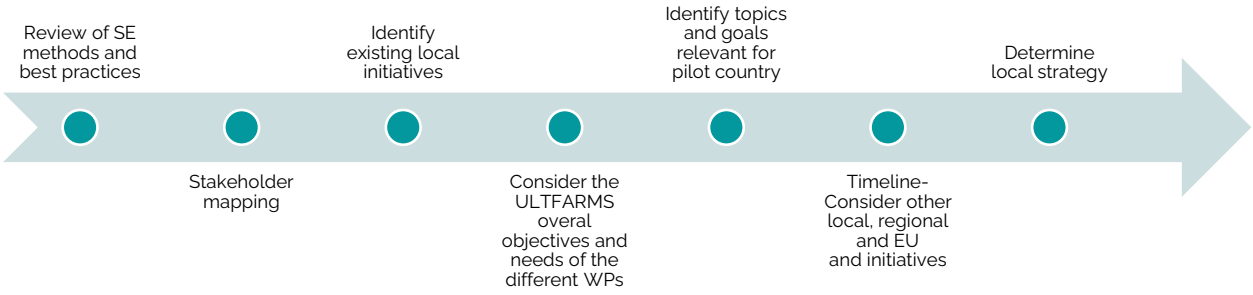

Figure 8: stepwise approach to setting the engagement blueprint

The review of best practices and stakeholder mapping and identification of already running local engagement initiatives was described in earlier chapters 2 and 3. The required input from stakeholders towards other Work packages for the overall project aim will be identified (4.1 'Need of stakeholder engagement in WPs') and translated to pilot specific stakeholder engagement tools (4.2 'Tools for stakeholder engagement in pilots') and project wide stakeholder engagement methods (4.3 'Regional and EU wide stakeholder engagement'). Timewise, in order to minimise efforts and fatigue of stakeholders, the strategy will also look at combining efforts with other projects with a similar target audience (4.4 'Link and collaboration with sister projects and similar initiatives').

4.1 Need of stakeholder engagement for WPs

Stakeholder engagement is an important method of information gathering and therefore a large number of Work Packages are linking up with WP2 to engage with stakeholders and gather the necessary input. Table 2 gives an overview of the Work Packages, the stakeholders they need to interact with and the information they need to gather. The text below the table expands on the requirements of the different work packages.

Table 2: Overview of stakeholder interactions required for the different Work Packages

WP	Task	Description	lead	*With whom will you need to interact?*	*What information do you want to gather?*	*When in the project?*
3		System Design: Mariculture Structures, Renewables, and Sensors	Ugent	Park owners, legislative institutions, insurance companies	Information regarding permit requirements, legal aspects, insurance,	M1-28 At the start and at each permit request /legal action that needs to be taken
4	T4.3	Co-management	FuE	Wind park operators, offshore infrastructure providers, offshore shipping companies, licensing authorities, different aquaculture and offshore wind associations, NGOs	Information regarding permits, legal aspects, combined trips and processes (monitoring and automation, maintenance of existing offshore structures, sharing of infrastructure & logistics), options for environmental services	M6-M24 every 6 months
5	T5.1	Exploitable results definition and market analysis	OR	End-users (market/consumers), Investors, Policymakers and public bodies, Energy industry and Food industry	Obtain objective feedback that reflects the real needs and requirements of the market and society in general.	M30 and M42
5	T5.2	Business modelling and commercialisation planning	CTA	End-users (market/consumers), Investors, Policymakers and public bodies, Energy industry and Food industry	To gather stakeholder opinion and finalise the KERs business models.	Deadline M36
9	T9.2	Mapping of the governance landscape at pilot level, Basin level & beyond	SUB	Industry, policy, insurance, NGOs	info on actors, rules, regulations	Deadline M12
9	T9.3	Identification of governance bottlenecks for multi-use and resolution for pilots	WR	Industry, policy, insurance, NGOs	Input on governance bottlenecks that hampers the commerce of MU and define solutions	Deadline M26
9	T9.4	Regulation, Labelling, (certifications) and standards	CTA	International standardisation bodies	Screening of regulations and eco-labelling	Deadline M32

4.1.1 WP3 – System Design: Mariculture Structures, Renewables, and Sensors

To ensure an effective and permissible design of the pilots' interaction with different stakeholders will be required. Interactions will be needed mainly on a one-on-one basis to enable quick and efficient responses, mainly during the initial year of the project.

4.1.2 WP4 – Demonstration: Testing, Deployment, Production, and Processing

To ensure an effective and permissible installation and deployment of the infrastructure in the pilots, interaction with different stakeholders will be required. Interactions will be needed mainly on a one on one basis to enable quick and efficient responses, mainly during the first 2 years of the project.

For task 4.3, stakeholders will be consulted and engaged with (ideally during CoPs) to look at **co-management** opportunities for optimisation of a LTA project in OWF.

4.1.3 WP5 - Commercialization: Exploitation and business planning

WP5 aims to promote and boost the **commercialization** of project results. To do so, the main exploitable products and results of the project will be identified and ways to exploit them will be defined to effectively deliver project results to European society. For this, WP5 requires input from stakeholders to obtain objective feedback that reflects the real needs and requirements of the market and society in general. The stakeholders who are relevant to be contacted in the framework of WP5 are:

- End-users (market/consumers): the type of product they usually consume, and their opinion/perception and acceptance of products produced through innovative systems and means such as those proposed in ULTFARMS. For example: Prioritization of products from more sustainable systems?
- Investors: be contacted to find out first-hand how they feel about investing in the products generated by the project.
- Policy makers and public bodies: to understand the current rules, procedures and administrative barriers governing the results generated, and their commercialization, and those that may apply in the future, and their opinion on the matter.
- Energy industry: to find out what the energy industry thinks of ULTFARMS' innovative systems and whether they would be willing to use the products developed in the project, and what advantages and disadvantages they see.
- Food industry: to find out what they think about the food products produced by the systems developed in the project, what advantages and disadvantages they see, and their place in the market.

In order to speed up contact with the different stakeholders and minimize the required interactions, it is considered more convenient to contact them through

the pilot leaders as part of the CoP. Therefor the timing and topics of the CoP in the pilot countries will be streamlined to match the timing and topics of WP5. If deemed necessary, direct contact can still be considered at some point during the course of the project.

Once the Key Exploitable Results will be defined, the questions to be asked to each of the aforementioned stakeholders will be narrowed down and the possibility of including some other group of stakeholders will be considered.

4.1.4 WP9 – Holistic Socio-Ecological Governance

This Work Package contributes to the development of a **governance framework** for multi-use in the context of the European Missions and lighthouses including other relevant policies. It maps the governance landscape at the pilot and basin level and the broader societal level including the governance at EU level that deals with multi-use concepts and food production. It contributes to the identification and resolution of bottlenecks and takes advantage of opportunities regarding governance structure and decision making. The WP will address regulations, standards and ecolabelling by screening current applicable regulations and drafting ways for project results to comply with European regulations when entering the market in collaboration with WP5.

Input from external stakeholders will feed into Task 9.2 (mapping of the governance landscape), Task 9.3 (Identification of governance bottlenecks of multi-use) and Task 9.4 (Certification and standardisation).

4.2 Tools for stakeholder engagement in pilots

4.2.1 One on one interaction

In order to get direct information from certain stakeholders, direct one on one meetings or interviews will be used. To limit the number of interactions, WP leads are required to contact the pilot leads when planning a stakeholder interaction to check if interaction moments/questions should be combined and to indicate their need for stakeholder input. Stakeholders should be contacted maximally one time per year. The desired number of CoP members to participate in the interviews is set at 5 to 10 per pilot country. To limit the carbon footprint associated to travel interviews organized by ULTFARMS partners will be organised online.

4.2.2 Community of Practice

4.2.2.1 Invitation of members

A guiding document (Annex 2: Terms of Reference guidelines) is prepared to ensure uniformity in the selection of CoP members across the pilots (Annex 3: Members of CoP per pilot country). The longlist of potential members of the CoP consists of stakeholders that have high scores in the attributes power and expertise (as mapped as part of chapter 3). However, partners limited to having high power only, or high expertise only could prove to be indispensable for reaching said goals, and could therefore also be considered to be included in the CoP. In general terms, from the main groups of interest as members of the CoP will

be stakeholder sectors such as relevant industry (aquaculture, wind energy, subcontractors, etc.), environmental NGOs, business support and consultancies, research institutes, national governmental bodies, and insurance companies. These groups are presumed to have the highest power and expertise, relevant to achieve the desired objectives of the pilot sites. Additionally, other stakeholders could be included as seen suitable on a local scale, e.g., stakeholders from organisations such as local parliaments, social NGOs, researchers, or consultancies with specific expertise that may lack among the test site partners.

Stakeholder groups identified as a potential member of the pilot's respective CoPs are indicated in Table 3. Overall, stakeholders from all stakeholder groups relevant to the stakeholder engagement in ULTFARMS (see section 3.3.2 Stakeholder analysis as applied in ULTFARMS) will be included in at least one of the pilot's CoPs, with the exception of three stakeholder groups: the consumer, the recreational sector, and society at large. All three these groups are part of the overarching stakeholder type 'Civil Society' in the Quadruple Helix Model of Carayannis & Campbell (2009) (see also section 1.3.1 Stakeholders and stakeholder groups).

Consumers represent an important stakeholder group in this project. The consumers can have a strong influence on the success of commercialisation and up-scaling of production of molluscs & seaweed production from offshore aquaculture activities, which are both sub-objectives of the ULTFARMS project. The consumers directly represent the off-set market for these products. Without this stakeholder group, there would be little need to produce. However, this stakeholder group is indirectly engaged through the involvement of industry stakeholder groups, such as the food industry and trade associations. It is assumed that these stakeholders will be aware of the interests and needs of consumers, seeing as they are the target audience of both stakeholder groups. The recreational sector is not engaged through the CoPs, despite the fact that this groups is considered to be an important stakeholder when it come to the use of ocean-space. As of yet, recreational use of the offshore ocean-space surrounding the wind farms is restricted to ensure the safety of the recreational user, as well as the industrial operations. Seeing as the activities of ULTFARMS will not affect recreational ocean users, and to limit the number of stakeholders to ensure quality, this group will not be directly involved in the CoPs. Society at large will be engaged indirectly through the involvement of eNGOs, and media, be it general or thematic media channels. All three of the stakeholder groups not directly engaged with will be kept informed as a part of the communication activities set out in WP11: Dissemination & Communication.

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Table 3: Stakeholder groups included in the CoP per pilot country; filled squares (■) refer to project partners, open squares (□) refer to stakeholder organisations.

		BE	NL	DE	DK
Civil Society	(environmental) NGOs	□	□	□	□
	Consumer				
	Educational sector		□		
	General media		□		
	Recreational sector				
	Society at large				
Science	Research institutes and universities	■	□ ■	■	■
	Research Infrastructure Networks			□	
Industry	(Wind) energy	■	□ ■	□ ■	□ ■
	Aquaculture	□	■	■	■
	Business support/consultancies	□ ■		□	
	Company Innovation Clusters	□	□	□	
	Classification societies			□	
	Fisheries	□	□	□	
	Food industry	□	□	□	
	Future investors	□	□	□	□
	Insurance			□	□
	Ports	□			
	Marine Contractor/Subcontractors	■	□	□	
	Tourism		□		
	Trade organisations		□	□	□
Policy & Governance	Intergovernmental bodies		□		
	Local governmental bodies		□		
	National governmental bodies	□	□		□
	Regional governmental bodies	□			

For each of these stakeholder categories, one main and one alternative point of contact is chosen from the longlist (Annex 3: Members of CoP per pilot country), in case the first is not available/interested to join.

However, in practice, the analysis of stakeholders and identification of potential CoP members leads to the conclusion that in some pilot countries (the Netherlands, Denmark) the relevant parties are already engaged in existing initiatives (see section 3.5Identification of current local Stakeholders engagement initiatives. As limiting stakeholder fatigue is one of the main concerns of this engagement strategy, these existing organisations will be contacted instead of the individual stakeholders.

4.2.2.2 Planning and content of the CoPs

Each pilot site commits to organising four (4) CoP meetings over the course of the project (Table 5). The organisation of the CoPs will be the responsibility of the pilot leads.

There is no maximum number of members to participate in the CoP, however a wide variation across the different stakeholder groups is advised. The CoP will Ideally be an in person event of half a day.

During the CoPs, presentations will be held by UTLFARMS partners, respecting IPRs, as well as by CoP members, to increase engagement and create a sense of ownership. An interactive section will be added to each meeting to stimulate feedback originating from the CoP members, in the form of a discussion or poll. Feedback will be considered in a manner that will ensure feedback loops, allowing for management of CoP members' expectations and tracking of progress over time. Additionally, these meetings should provide the opportunity for socializing and making contact between CoP members. In addition to meetings, CoP members will be engaged to participate in one-on-one interviews, to solidify engagement and establish a closer interaction between CoP members and project partners.

Because of the iterative approach embedded in the design of the project, the key phases (co-design, co-implementation, and co-commercialisation) may show iterative loops and could run in parallel or show a certain level of overlap. Therefore, topics discussed during the CoP meetings should be related to the progress made in the pilot sites at the time and should relate to these key phases of the project. Nonetheless, pilots are free to choose the exact topic of the meeting, while considering the long-term goal of the development of aquaculture in offshore wind farms in a multi-use setting. Input collected from the Kick-off Meeting workshop concerning issues and needs of stakeholders to achieving the goals of the prospective pilot sites, as identified by project partners (see section 2.1 Methods), can be used to guide the choice of topics. Topics should be chosen in a way that allows for discussion, thus not limiting to the presentation of information.

The stakeholder engagement actions will build on and collaborate with already existing efforts and initiatives (see section 3.5 Identification of current local Stakeholders engagement initiatives) to ensure efficient information gathering and

sharing, complementarity and reduction of efforts and maximize local impact. The CoPs will be in person events to ensure efficient interactions and discussions and enabling networking between the stakeholders. However, to limit the carbon footprint associated to travel and to limit efforts required from stakeholders to attend, links with events/workshops organized by ULTFARMS partners will be coordinated and combined as much as possible, as well as linked up with events/workshops of other projects, such as sister project OLAMUR, BlueMissionBANOS, PREP4BLUE, etc (see also section 4.4.2 Link with other initiatives). Input required for the WP tasks (see Table 2) will be taken into consideration for the planning of the CoPs by linking this input to the topics discussed during these meetings. An overview of the tasks, deliverables and milestones that will require input from stakeholders over the span of the project is visualised in Figure 9, the deliverables, milestones and their respective delivery dates are listed in Table 4. The arrows in Figure 9 visualise the possible interactions between tasks, deliverables, and milestones with the different CoPs. These interactions will be used to set out potential topics to be discussed during these meetings. For example, because of the overlap of the timing for D9.2 Mapping of the governance landscape , D10.1 State of the Art revisions for LTA in OWFs, and D10.2 Technical innovation for LTA implementation within OWF, which are all due around the end of the first operational year of the project (2023), the topics discussed during first CoP meeting could revolve around technical and permit requirements, governance frameworks and challenges for sustainable LTA within OWFs (fig 9, Table 5). Topics discussed during the second CoP meeting could include governance barriers and solutions, Integration of LTA within MSP, Co-management opportunities, seeing as this CoP could feed into D3.1 Co-design of production-related activities, D4.3 Implementation possibilities of production and processing, MS5.1 Interim Exploitation and business plan, D5.2 Economic analysis, D9.3 Governance bottlenecks to multi-use. Since D5.1 Exploitation and business plan, D8.4 Training material, manuals, and E-learning material, D9.4 Regulation and standards for commercial production are due around the third year of the project, one of the topics discussed in the third CoP meeting could be Business models and market uptake. As stated above, pilot leaders are free to add any other topic as considered relevant to the current developments of the pilot. WP leads are responsible to discuss the required input from stakeholders with the pilot leads to incorporate in the topics of the CoP.

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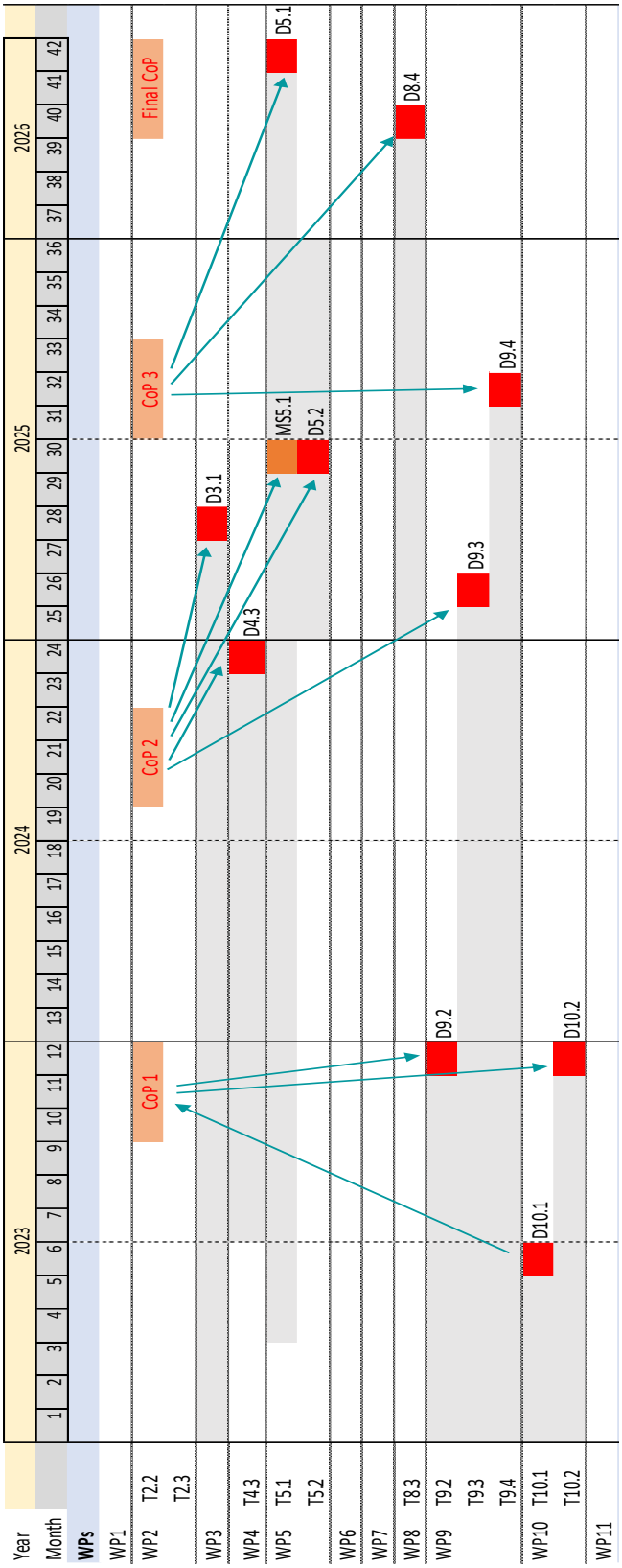

Figure 9: Timeline of CoPs, and tasks, deliverables and milestones that require input from stakeholders per Work Package

Table 4: Overview of deliverables and milestones that will require input from stakeholders and their respective delivery date.

WP	Deliverable (D) or Milestone (MS)	Deliverable name	Delivery date
3	D3.1	Co-design of production-related activities	M12
4	D4.3	Implementation possibilities of production and processing	M36
5	MS5.1	Interim Exploitation and business plan	M30
	D5.1	Exploitation and business plan	M42
	D5.2	Economic analysis	M30
8	D8.3	Training material, manuals, and E-learning material	M39
9	D9.2	Mapping of the governance landscape	M12
	D9.3	Governance bottlenecks to multi-use	M26
	D9.4	Regulation and standards for commercial production	M36
10	D10.1	State of the Art revisions for LTA in OWFs	M6
	D10.2	Technical innovation for LTA implementation within OWF	M12

Table 5: General overview of proposed schedule and topics of CoP meetings and interviews.

Type of engagement	Time frame	General purpose	Targeted questions and topics	Input for Deliverable
One-on-one interview	May-Sept 23	To set expectations of CoP member and establish a close interaction	Scoping of the local context - to find out what is out there already, what relevant initiatives are they aware of or a part of, what have been the challenges to date, who are the key actors to partner with, etc.	
One-on-one interview	2025	To get feedback on progress	To get feedback if the project results are in line with the expectations and talk future developments.	
CoP meeting	Q4 2023	Sharing knowledge, informing CoP members on project	- Technical and permit requirements - Governance frameworks - Challenges towards sustainable LAT within OWF.	D9.2 D10.1 D10.2

			- Other specific topics indicated by member of the CoP	
CoP meeting	Q4 2024	Sharing knowledge, informing CoP members on progress	- Governance barriers and solutions - Integration of LTA within the new MSP - Co-management opportunities - Other specific topics indicated by member of the CoP	D3.1 D4.3 M5.1 D5.2 D9.3
CoP meeting	Q4 2025	Sharing knowledge, informing CoP members on progress	- Business models and market uptake - Other specific topics indicated by member of the CoP	D5.1 D8.3 D9.4
CoP meeting	Q3 2026	Sharing knowledge, informing CoP members on progress and discuss future plans	- Future engagements - Final vision/roadmap from the CoP regarding LTA in the BPNS	

4.2.2.3 Community of Practices in Belgium and Germany

A document detailing the Terms of Reference (ToR) (Annex 4: Terms of Reference, example for the Belgian pilot) and a template Letter of Intent (LoI) (Annex 5: Letter of intent) was sent to invite the stakeholders to participate. The LoI indicates a commitment of the stakeholders to participate in the CoP and to avoid any and all unclarity regarding the nature of engagement stakeholders commit to.

Prior to the start of the engagement activities, a consent form (Annex 1: Consent form), as referred to in section 1.4.1 Informed consent) will be presented to be signed to all stakeholders who wish to participate. This consent form will detail informed consent for the collection and (temporary) storage of contact information and data gathered during interviews, surveys and/or workshops.

4.2.2.4 Community of Practice in Denmark

An agreement has been made with the sister project OLAMUR and the associated Danish national Win@sea project to coordinate stakeholder involvement and have combined stakeholder meetings. At the Win@sea initial project meeting, most of the relevant stakeholders were present and a first take on their position was presented.

4.2.2.5 Community of Practice in the Netherlands

A cooperation between the existing initiatives of RVO/LNV – the organizers of the current CoP Noordzee in the Netherlands and main partners of the eMSP project – has been set-up. The aim is to determine the most efficient solutions to organize a CoP in the Netherlands on the topics relevant for the Ultfarms project, in corporation with the ongoing initiatives. A first joint CoP will be organized on eco-system based thinking.

4.2.2.6 Milestone 2.1 Formation of Community of Practices

A document detailing the accomplishment of MS2.1 Formation of the Community of Practice (CoP) in each pilot site, due M4, as part of Task 2.1 Practical roll-out of the Multi-Stakeholder Engagement Strategy in the pilots, is included in Annex 6.

4.2.3 Other engagement sessions

In addition to the CoP, Information and consultation sessions will be organised for the wider public and all interested stakeholders. The objectives of these sessions will be twofold: (1) Informing and awareness raising of the group of stakeholders with currently less expertise, interest and influence regarding the topic of Aquaculture in Offshore Wind farms and (2) Consult these stakeholders in regard to their needs (e.g. consuming habits, education,…). These outreach campaigns will be organised in collaboration with WP11 and in cooperation with similar currently running initiatives and projects and key multiplier networks. Ideally these sessions could be open to the wider public and could be organised back to back to other events.

4.3 Regional and EU wide stakeholder engagement

A series of online and in person sessions will take place throughout the project in order to ensure the collaboration with existing regional and EU-wide platforms and initiatives.

ULTFRAMS pilots will establish the link with their regional governance initiatives such as the Helcom-VASAB in the Baltic (German and Danish pilots), and OSPAR in the North Sea (Dutch and Belgium Pilots),

EU wide engagement with marine planners will take place via the DG Mare organized events and initiatives such as the Blue Forum, MSP Platform MSP MSEG, and the new Energy Transition Partnership for EU fisheries and aquaculture.

The workshop sessions will be organized at key EU-wide events such as the European Maritime Days, Aquaculture Europe, NORA or Wind Europe in order to engage on a wider scale and conduct the outreach and dissemination. These events are also meant to discuss how the results and findings of ULTFARMS and its pilots can feed into the future governance and planning frameworks.

4.4 Link and collaboration with sister projects and similar initiatives

4.4.1 Collaboration with sister projects

The collaboration with the sister projects e.g. OLAMUR will take place (e.g. as part of the stakeholder engagement in the Danish pilot) mainly via the existing platforms and collaboration foras such as Prep4Blue (EU-wide) and BlueMission BANOS (Baltic and North Seas).

A link will be established with the Ocean Mission Arenas aiming to support the transferability of project results in specific regions of the Baltic and North Seas. The first Arena taking place in Gothenburg in November will be used to gather all the ocean multi-use related projects and learn from the existing initiatives on the topic. A first wider stakeholder engagement action will take place on this event, meant to engage not only the industry, regional authorities, researchers from the region, but also the students, thus maximizing the knowledge transfer and supporting the rollout of the multi-disciplinary knowledge exchange.

4.4.2 Link with other initiatives

Industry groups: Link with other initiatives and platforms in the sphere of sustainable low tropic aquaculture, nature restoration and renewable energy will also be established. For example, a collaboration will be established with WindEurope in order to collect the industry perspective during the co-design phase. The NORA series of conferences will be used to disseminate the findings of the Belgian pilot on the restoration of the North Sea flat oyster. The Ritch North Sea initiative will. be used to engage with a wider set of NGOs, companies and research community working on the topic of nature restoration and enhancement within offshore wind farms. The Nature webinar series organised in the framework of the Renewable Grind Initiative or similar initiatives will also be a good platform to reach the relevant industry stakeholders.

The **Industry Sounding Board** (see also chapter 1.3.5) will be established in the project as consultative body to facilitate and streamline the process and to gather experts from key sectors, including mussel farming, seaweed farming, oyster farming/restoration, and offshore wind farm industry. The ISB aims to provide guidance and advice to the project pilots regarding industry and market readiness. The ISB meetings will serve as a platform for pilots to present their progress and receive valuable feedback from ISB members. The ISB will convene both in-person, preferably back-to-back with the project's general assembly meetings, and online to ensure regular and effective engagement. The aim is to have 4-6 people actively involved in the IBS. It Is not the aim to have the same members in the ISB as in any of the other bodies of the project incl. the Communities of Practice in pilots. The formation of the ISB represents Milestone 2.2 in the ULTFARMS project.

Ocean Mission: The collaboration will also be established with the Prep4Blue project and Smart Specialisation Strategies in both sea basins, via the SUBMARINER Network. The Blue Mission BANOS will also be used to collaborate

not only with sister projects, but also other smaller and regional initiatives. A series of 'Arena' events organised in the sphere of Blue Mission BANOS will be used to actively engage with regional stakeholder and align with sister projects, thus avoiding the stakeholder fatigue.

Associated Regions: The call for Associated Regions will be released in the framework of this project to provide technical and financial assistance to the regions not covered in the project, in assessing the transferability of ULTFARMS results and solutions. The process will be outlined in the Terms of Reference which is currently under preparation (June 2023). It is foreseen that the engagement with the regional authorities and possibly other stakeholder will take place in the framework of this task in order to facilitate the exchange and knowledge transfer across the regions, and initiative a wider discussion about the topic of multi-use development.

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5 Monitoring and evaluation of the MES

Measuring and evaluating your stakeholder engagement is not a one-time activity, but a continuous cycle that requires regular monitoring and review. This means tracking and measuring your indicators over time, and comparing them with your baseline and targets.

KPI	target	method
X number stakeholders engaged in CoP	10 per pilot site	NA
X number of (co-) organised stakeholder workshops	3 per pilot site (or combined with other local or regional initiatives) and 1 EU wide	NA
X % of satisfied stakeholders	90%	Feedback forms

Participants will be asked to complete a feedback form after each engagement moment.

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Annexes

Annex 1: Consent form

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DOCUMENT OF INFORMED CONSENT

Grant Agreement number	101093888
Project Title	ULTFarms
Start date of the project	01.01.2023
End date of the project	30.06.2026
Project Website	https://ultfarms.eu/
Funded by the European Union Horizon 2020 Research and Innovation Programme under Grant Agreement no 101093888. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.	

By signing this form, you agree to become a member of the ULTFarms Community of Practice (CoP) in the Belgian pilot test site and participate in stakeholder engagement activities of the ULTFarms project in the form of an event (e.g. workshop with multiple stakeholders), a survey, and/or an interview. Specifically, more information on the purpose and your role as the Community of Practice (CoP) Member are determined in Annex 1 Community of Practice Terms of Reference. Before participation, please read the information below carefully. If statements in the document are unclear to you, do not hesitate to ask the contact researcher or coordinator for clarification.

1. Project summary

Marine aquaculture is coming under ever increasing pressures from a wide array of stakeholders, resulting in conflicts for the use of space in the coastal and near shore zones. With continual roll-out of offshore wind capacity globally, it is essential to share the marine space in multi-use settings to establish commercially viable production of Low-Trophic Aquaculture (LTA). **ULTFARMS (2023 - 2026) will demonstrate a profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea.** Integrating LTA within Offshore Wind Farms (OWFs) reduces the footprint of these activities, increases the societal acceptability of offshore development, and provides an ideal opportunity for realizing true multi-use systems.

ULTFARMS will deploy LTA activities within 6 OWFs in Belgium, Germany, The Netherlands, and Denmark and operate these installations over two or more production years. The solid presence of wind farms, the existing operational and maintenance activities, and the monitoring schemes in place enables synergistic developments between LTA and OWF to achieve higher sustainability than either could accomplish in exclusive zones. This approach involves stakeholders from across the value chains of

OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation.

To facilitate coordinated co-creation (co-design, co-development, co-ownership) of solutions in each of the pilots as well as the maximisation of the buy-in and exploitation of the products and services coming out of the project, a **Community of Practice (CoP)** will be set up for each pilot country. The CoP will consist of local stakeholders such as aquaculture sector, renewable energy sector, policy makers and regulating bodies, NGOs, etc. Regular meetings with members will take place to ensure that their feedback is considered at all steps of the pilot and project development

2. Purpose of data collection

Information gathered during the engagement moments will be used as input to reach the objective of the project.

3. Benefit of participation

The members of the CoP will have a unique opportunity to gain first hand insights into the pilot advancement and be involved in the co-design, co-implementation, and co-commercialisation of solutions that will support the development of aquaculture in offshore wind farms in a multi-use setting. By becoming a member of the CoP, you will have the chance to engage with a select group of stakeholders who are instrumental in achieving aquaculture in offshore wind farms in a multi-use setting.

The topics discussed during the CoP meetings will be related to the progress made in the pilot sites and will relate to the key phases and needs of the project at the time, considering the long-term goal of the development of aquaculture in offshore wind farms in a multi-use setting. This will allow for discussion and ensure that the solutions developed are relevant to the needs of the stakeholders involved. Overall, the ULTFARMS pilot Community of Practice offers a unique opportunity for you to be directly involved in the development of aquaculture in offshore wind farms in a multi-use setting. Your participation will allow you to provide valuable insights, contribute to the success of the project, and help shape the solutions developed.

4. Risk of participation

There are no risks foreseen associated to participating in the CoP of the ULTFarms project.

5. Compliance with ethical and legal regulations

We comply with EU and national ethical and legal regulations, including the latest GDPR (General Data Protection Regulation 2016/680) framework of the EU.

6. Privacy and data protection

Data gathered during surveys, interviews and/or interactive workshops can be recorded and stored on secure servers. This data will not include any personal identification, so that data cannot be traced back to you as the source of the data. Data might be processed and analysed for publication in reports, scientific journals and other forms of project outputs, only in anonymized form. None of the data will be transferred to third parties. Retention time of the original research data is the same as the project duration, although the anonymized resultant data may be stored for longer periods of time to be used in future research. A copy of informed consent is kept on file up to three years after project closure by the data controller and access can be requested by the research participant.

ULTFarms project partners and project management team reserve the right to use any photograph/video taken at any ULTFarms event without the expressed written permission of those included within the photograph/video. Project partners and project management team may use the photograph/video in publications or other media material produced, used or contracted by ULTFarms including but not limited to: brochures, invitations, books, newspapers, magazines, television, websites, etc.

7. Withdrawal of participation

At any point you may withdraw your participation to the event, survey, or interview by emailing your withdrawal request to:

Insert your contact

8. Researcher contact

In case of any issues or questions you can contact:

Name:	Contact:

9. Consent statement

By signing this form, I agree to the Terms of Reference provided in the Annex of this form to become a member of the Community of Practice of the Belgian pilot test site of the ULTFarms project.

I state that I have read all information on this document of informed consent, I understand the information provided, and I agree with the terms and conditions provided on the informed consent document.

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Name of participant	Signature	Date

Name of pilot lead	Signature	Date

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Annex 2: Terms of Reference guidelines

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ULTFARMS: Circular Low Trophic Offshore Aquaculture in wind farms and Restoration of Marine Space

Guidelines Terms of Reference

Aim of guidelines:

This document aims to clarify the main characteristics and identify potential members of the Community of Practice (CoP), and a general schedule of engagement with the CoP.

Timing:

Terms of Reference (ToR) and consent forms should be sent out to CoP members by the mid-March 2023. Signed consent forms are expected to be delivered to project coordination latest by the 30th of April 2023.

CoP members

Stakeholder register

A longlist of organisations that are relevant (that could either be impacted in anyway or that could impact/influence your pilot) will be collected in an excel sheet. This long list includes all stakeholders that have a certain level of influence, expertise and interest in the subject. The register will include an indication of the stakeholder category and an estimation of their level of involvement and timing of involvement.

Who to contact as potential CoP member?

Members of the CoP are those who are believed to be instrumental to achieving the goals of the pilot(s) in each country, i.e., those who can contribute to the success of the co-design, co-implementation, and co-commercialisation of products and services resulting from the pilot. As such, the shortlist of stakeholders will be those members that have high scores in attributes of influence and expertise in the stakeholder analysis matrix (Fig. 1) and are therefore mainly the ones you want to collaborate/empower with (cf. Fig. 2), however also those stakeholders with high power only or high expertise only, could also be relevant to consult and involve in the process. The ones with low influence and low expertise still need to be kept informed (part of the communication section) since it is important to create general awareness and build capacity.

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Figure 1: Example of a stakeholder analysis matrix, as defined for the Belgian pilot, based on level of influence and expertise.

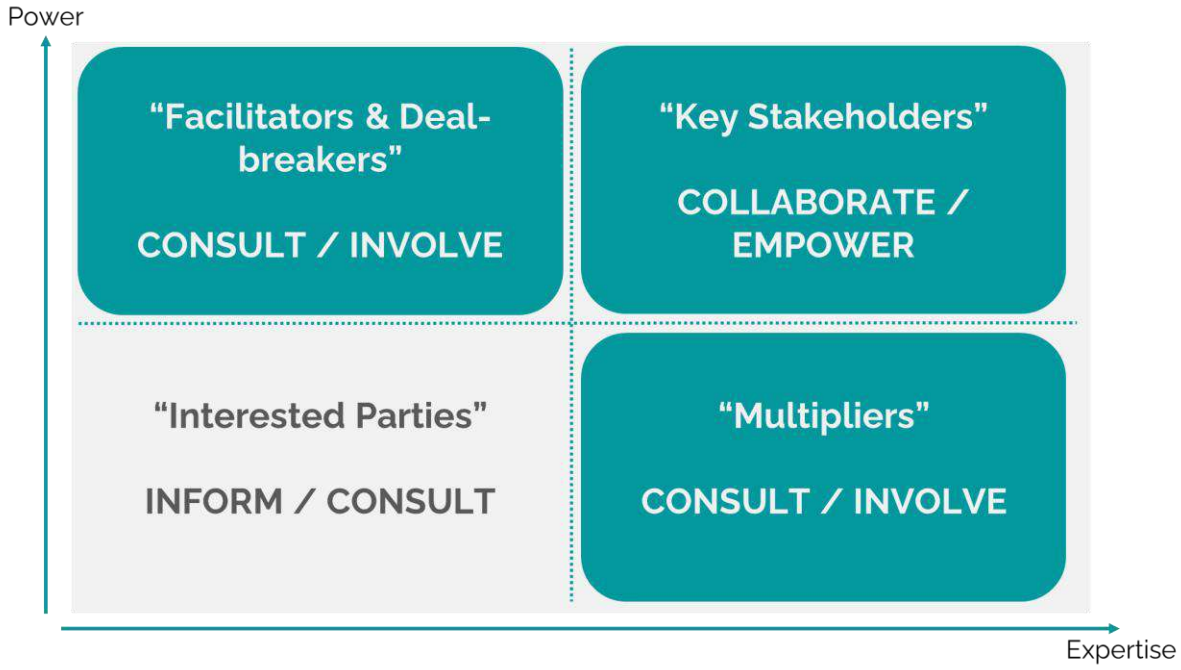

Figure 2: Level of involvement of stakeholders in a Power - Expertise matrix.

In general terms, members of the CoP will be identified in following areas:

- Relevant industry: aquaculture, wind energy, subcontractors, etc.
- Environmental NGOs
- Business support and consultancies
- Research institutes
- National governmental bodies and regulators
- Insurance companies

But will definitely also include other as seen suitable locally (local parliament, social NGO, researcher, consultancy with specific expertise that may lack among the test site partners)

For each of the categories identified by the stakeholder analysis, choose one main and one alternative stakeholder from your longlist. In case the first is not available / interested the alternative should be contacted. The desired number is min 5 max 10 per pilot country for the interviews, but this can be a longer list for the interactive CoPs.

GDPR

The names and contacts won't be shared due to the GDPR. The names of organisations are only to be shared in order to identify potential duplications across countries and streamline information sharing.

How to contact potential CoP members?

Each pilot is to prepare the following communication for the CoP members, as indicated in the draft ToR:

1. The name of the pilot test site(s) and a short description of its characteristics, what is the experimental setting, the main expected results, and the potential challenges?

2. What is the direct benefit of being a part of the CoP? (General draft already Included but needs to be checked and made perhaps more specific to your pilot)

3. Engagement schedule: (see below for general strategy but could be made more specific for your pilot)

Methods for engagement

Engagement schedule:

Meetings with CoP members will be held on a regular basis throughout the project lifespan to ensure their feedback is considered at all steps of the pilot development. A maximum of 2 one-on-one interaction moments (eg. via interview/survey) and 3 interactive meetings will be organised over the course of the project.

Because of the iterative approach embedded in the design of the project, the key phases (co-design, co-implementation, and co-commercialisation) may show iterative loops and could run

in parallel or show a level of overlap. Therefore, topics discussed during the CoP meetings should be related to the progress made in the pilot sites at the time and should relate to these key phases of the project, but pilots are free to choose what the topic should be, considering the long-term goal of the development of aquaculture in offshore wind farms in a multi-use setting. Topics should be chosen in a way that allows for discussion, thus not limiting to the presentation of information.

CoP meetings

The CoP meetings will be held in the format of live or online meetings. Presentations will be given by ULTFARMS partners, respecting IPRs, as well as by CoP members, to increase engagement and create a sense of ownership. An interactive section will be added to each meeting to stimulate feedback originating from the CoP members, in the form of a discussion or poll. Feedback will be considered in a manner that will ensure feedback loops, allowing for management of CoP members' expectations and progress tracking over time. There should also be enough time for making contacts between the members (eg. include lunch or after meeting drinks).

It should also be aimed at to combine ULTFARMS CoP with other projects CoPs/workshops or events to minimize efforts of stakeholders.

In addition to meetings, CoP members will be engaged to participate in one-on-one interviews (1-3), to solidify engagement and establish a closer interaction between CoP members and project partners.

Engagement schedule

Type of engagement	Time frame	General purpose	Targeted questions and topics
One-on-one interview	Month 1 - 6	To set expectations of CoP member and establish a close interaction	Scoping of the local context - to find out what is out there already, what relevant initiatives are they aware of or a part of, what have been the challenges to date, who are the key actors to partner with, etc.
One-on-one interview	To be decided	To get feedback on progress	To get feedback if the project results are in line with the expectations and talk future developments.
CoP meeting	Month 1 - 12	Sharing knowledge, informing CoP members on project	Tackling the challenges towards sustainable LAT within OWF. Specific topic to be determined per pilot

CoP meeting	Month 12 - 30	Sharing knowledge, informing CoP members on progress	Status update and advice gathering Specific topic to be determined per pilot
CoP meeting	Month 30 - 42	Sharing knowledge, informing CoP members on progress	Validation and co-commercialization Specific topic to be determined per pilot

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Annex 3: Members of CoP per pilot country

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Annex 3A: Belgian pilot - Stakeholders selected as potential members of the Community of Practice for the Belgian pilot.

	Stakeholder group	Name of organisation
Civil Society	(e)NGOs	4Sea
Industry	(Future) investors	KBC
	Aquaculture	Brevisco
		Oesterput
		Zeeboerderij
	Business support/consultancies	Haedes
		Mantis
	Company (innovation) clusters	De Blauwe Cluster
	Fisheries	Technische Werkcommissie Visserij (TWV) van de Strategische Adviesraad voor Landbouw en Visserij
		Vlaamse Visveiling
	Food industry	Colruyt
	Insurance companies	Marsh Ireland, (alternatief VanBreda)
	Ports	Port Oostende
	Marine contractors	GeoXYZ
		BOP
Policy & Governance	National governmental bodies	FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu
		Kabinet Noordzee
	Regional governmental bodies	Provincie West-Vlaanderen
		Vlaamse Overheid - Departement Landbouw en Visserij

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Annex 3B: Danish pilot - Stakeholders selected as potential members of the Community of Practice for the Danish pilot.

	Stakeholder group	Name of organisation
Civil Society	(e)NGOs	WWF Denmark
		DN.DK (Danmarks Naturfredningsforening)
Industry	(Future) investors	PensionDanmark
		Dansk TANG - Seaweed
	Energy	Vindenergi DK
	Trade associations	Green Power Denmark
		Dansk Akvakultur
		Tang Netværket
		Energistyrelsen
Policy & Governance	National governmental bodies	Kystdirectoratet
		Søfartsstyrelsen
		Fiskeristyrelsen

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Annex 3C: Dutch pilot - Stakeholders selected as potential members of the Community of Practice for the Dutch pilot

	Stakeholder group	Name of organisation
Civil Society	(e)NGOs	Ambassade van de Noordzee
		Greenpeace
		Sportvisserij Nederland
		Stichiting De Noordzee
		Stichting Ark
		Stichting Deltaplan Biodiversiteitsherstel
		Stichting Natuur en Milieu
		Watersportverbond
		WWF
	Educational sector	Noordzeeburgemeester
	Thematic media	Noordzeeloket
		The Good Fish Foundation
Industry	(Future) investors	ABP Algemeen Burgerlijk Pensioenfonds
		Global financing Fund
		Rabobank
	Company (innovation) clusters	Informatiehuis Marien
		Visbureau
		VVV Nederland
	Energy	Blauwwind
		Eneco
		Energy Beheer Nederland
		Nederlandse Windenergie Associatie (NWEA),
		Tennet
	Fisheries	Sportvisserij Nederland
		Vereniging Beroepsmatige Handlijnvissers (VBHL)
		Visned
		Vissersbond
	Food industry	* Restaurants to be determined (local)
		Hollandse Mosselcentrale
	Marine contractors	* spat supplier to be determined, at this moment not applicable

		* supplier sector: concrete, steel, ropes, floaters, mooring, electrical installations, batteries, monitoring equipment, bioplastics
		Bakker Machinebouw
		Damen
		Dutch SeaWeed Group
		Hortimare
		Murre
	Tourism	Muzeeum Maritiem Vlissingen
	Trade associations	De Mosselhandel
		Producentenorganisatie Mossel (PO Mossel)
		Productschap Vis
		United Fish Auctions
Policy & Governance	Intergovernmental bodies	ICES (International Council for the Exploration of the Sea)
	Local governmental bodies	Provincie Zeeland
	National governmental bodies	LNV (Ministerie van Landbouw, Natuur & Voedselveiligheid)
		Ministerie van Economische Zaken en Klimaat
		Ministerie van Infrastructuur en Waterstaat (I&W)
		RVO - Rijksdienst voor Ondernemend Nederland
		RWS (Rijkswaterstaat)
Science	Research institutes	NIOZ (Royal Netherlands Institute for Sea Research)
	Universities	Hogeschool Zeeland - University of Applied Sciences
		Nederlands Instituut voor Ecologie (NIOO-KNAW)
		Universiteit Utrecht - NILOS (Nederlands Institute for the Law of the Sea)
		Wageningen Marine Research

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Annex 3D: German pilot - Stakeholders selected as potential members of the Community of Practice for the German pilot.

	Stakeholder group	Name of organisation
Civil Society	(e)NGOs	WWF - World Wide Fund For Nature
Industry	(Future) investors	Olmix
	Business support/consultancies	BioMarine
		German Offshore Wind Energy Foundation
	Classification Societies	ASC - Aquaculture Stewardship Council
	Company (innovation) clusters	BAMS - Bioeconomy on Marine Sites association
		MCN - Maritime Cluster Northern Germany
	Energy	EnBW
		Vattenfal
		Veja Mate Windfarm
	Fisheries	*Esbjerg fisheries
	Food industry	Deutsche See
		Sylter Royal
	Insurance companies	Lloyds
	Marine contractors	*Hatcheries
		Murre Technologies (NL)
		Otto Wulf GmbH & Co. KG
	Trade associations	Erzeugerorganisation schleswig-holsteinischer Muschelzüchter e.V.
Science	Research infrastructure networks	EKSH (Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH)
		International Society of Applied Phycology
		TransMarTech
		Bundesalgenstammtisch

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Annex 4: Terms of Reference

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ULTFARMS: Circular Low Trophic Offshore Aquaculture in wind farms and Restoration of Marine Space

COMMUNITY OF PRACTICE - TERMS OF REFERENCE

Project Introduction

Marine aquaculture is coming under ever increasing pressures from a wide array of stakeholders, resulting in conflicts for the use of space in the coastal and near shore zones. With continual roll-out of offshore wind capacity globally, it is essential to share the marine space in multi-use settings to establish commercially viable production of Low-Trophic Aquaculture (LTA). **ULTFARMS (2023 – 2026) will demonstrate a profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea.** Integrating LTA within Offshore Wind Farms (OWFs) reduces the footprint of these activities, increases the societal acceptability of offshore development, and provides an ideal opportunity for realizing true multi-use systems.

ULTFARMS will deploy LTA activities within 6 OWFs in Belgium, Germany, The Netherlands, and Denmark and operate these installations over two or more production years. The solid presence of wind farms, the existing operational and maintenance activities, and the monitoring schemes in place enables synergistic developments between LTA and OWF to achieve higher sustainability than either could accomplish in exclusive zones. This approach involves stakeholders from across the value chains of OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation.

The project has the following objectives

- To enhance solutions to LTA farming in combined space with OWF for an optimal use of marine space and synchronized offshore activities in compliance with spatial planning targets and to demonstrate offshore LTA systems in OWF enhancing knowledge in deployment and achieving high TRL.
- To provide solutions to increase molluscs and seaweed production in offshore farming whilst ensuring the Good Environmental Status (GES), minimizing negative and strengthening positive environmental impacts.
- To ensure the share of renewable energy consumption along the full value chain of aquaculture and minimise its dependence on fossil fuel.
- To implement efficient and cost-effective monitoring strategies for aquaculture industry within unified LTA systems, enabling automatization in a data-base management system and services for supporting aquaculture producers in planning and operations.

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- To develop a socio-ecological integrated governance framework to support decision-makers in achieving synergistic offshore developments and Green Deal objectives with full potential use of multi-functional LTA.
- To increase the circularity by offshore LTA production for low-emission, zero- or low-carbon and toxic-free farming of aquatic organisms.
- To sustain biodiversity and to provide suitable habitats for fish and other biota through the inclusion of nature restoration efforts (artificial reefs) and to enhance sustainable production through minimisation of disease, alien species, and demand management.
- To exploit project results, paving the way for further commercialisation and ensuring swift market penetration of the LTA products.
- To ensure replicability, transferability, training and capacity building in other basins supported by a roadmap of guidance for solution roll-out.
- To enhance societal uptake by engaging stakeholders, contribute to public awareness and ensure the local acceptance of planned developments, proper management of citizen complaints and suggestions for maximised local benefits and customer trust.

To facilitate coordinated co-creation (co-design, co-development, co-ownership) of solutions in each of the pilots as well as the maximisation of the buy-in and exploitation of the products and services coming out of the project, a **Community of Practice (CoP)** will be set up for each pilot country. The CoP will consist of local stakeholders such as fisheries, renewable energy operators, policy makers, etc. Regular meetings with members will take place to ensure that their feedback is considered at all steps of the pilot development.

Belgian pilot - Belwind

The Belgian Pilot combines mussel, oyster and seaweed cultivation alongside nature restoration efforts within an offshore wind farm (Belwind, operated by Parkwind).
Within the ongoing UNITED project, extensive knowledge and important lessons learned implementing oyster and seaweed cultivation and oyster restoration in offshore environments was gained. However, the physical conditions within the Belgian part of the North Sea are challenging for aquaculture operations and maintaining structural integrity and therefore the focus of the pilot will be on following challenges:

- Development of suitability maps to ideally position bottom cultivation of flat oysters.
- The development of an innovative seaweed long line system which can be lowered automatically upon bad weather forecasts in conjunction with a submerged longline system for mussel and oyster aquaculture.
- The Improvement of aquaculture grow-out infrastructure (e.g., nets, droppers, baskets, lanterns).
- The use and interpretation of novel sensor data and aquaculture farm models to inform on the physical and environmental conditions within the pilot site and the aquaculture production status. Cost- and time-effective monitoring techniques to evaluate biomass growth and state of the cultivation system to further upscaled farm designs.
- Evaluation of the impact of aquaculture and effort to sustain/increase biodiversity and the conditions to create synergy.

- The effect of using different antifouling systems on the colonisation success of non-indigenous species will be monitored and studied using innovative methods such as metabarcoding.
- Testing and applying state-of-the art nature-inclusive designs of the cultivation systems and offshore infrastructure to further enhance biodiversity and the ecosystem services provided by multi-use aquaculture setups.
- The monitoring of diseases using innovative techniques (e.g. eDNA).
- The pilot will also study the feasibility for the application of power supply at sea and the use of sustainable materials as well as the potential CO2 sequestration of aquaculture and increased biodiversity.

Why are you a preferred member of the CoP?

Members of the CoP are those who are believed to be instrumental to achieving the goals of the pilot(s) in each country, i.e., those who are key contributors to the success of the co-design, co-implementation, and co-commercialisation of products and services resulting from the pilot. The shortlist of stakeholders is selected based on their high level of influence and expertise regarding LTA aquaculture and/or offshore construction and/or multi-use at sea and are therefore very relevant stakeholder to consult/involve and even collaborate/empower with.

Direct benefit of being a part of the CoP

The CoP is a unique opportunity to gain first hand insights into the pilot advancement and influence the co-design, co-implementation, and co-commercialisation of solutions that will support the development of aquaculture in offshore wind farms in a multi-use setting. By becoming a member of the CoP, you will have the chance to engage with a select group of stakeholders who are instrumental in achieving aquaculture in offshore wind farms in a multi-use setting.
The topics discussed during the CoP meetings will be related to the progress made in the pilot sites at the time and will relate to the key phases of the project but will above all concern the realisation of offshore Low-Trophic Aquaculture within offshore wind farms on the BPNS. This will allow for discussion and ensure that the solutions developed are relevant to the needs of the stakeholders involved and that guidelines developed consider the needs and suggestions of all stakeholders. Overall, the ULTFARMS pilot Community of Practice offers a unique opportunity for you to be directly involved in the development of aquaculture in offshore wind farms in a multi-use setting. Your participation will allow you to provide valuable insights, contribute to the success of the project, and help shape the solutions developed.

Engagement schedule

Type of engagement	Time frame	General purpose	Targeted questions and topics
One-on-one interview	May-Sept 23	To set expectations of CoP member and establish a close interaction	Scoping of the local context - to find out what is out there already, what relevant initiatives are they aware of or a part of, what have been the challenges to

			date, who are the key actors to partner with, etc.
One-on-one interview	2025	To get feedback on progress	To get feedback if the project results are in line with the expectations and talk future developments.
CoP meeting	Q4 2023	Sharing knowledge, informing CoP members on project	- Technical and permit requirements - Governance frameworks - Challenges towards sustainable LAT within OWF. - Other specific topics indicated by member of the CoP
CoP meeting	Q4 2024	Sharing knowledge, informing CoP members on progress	- Governance barriers and solutions - Integration of LTA within the new MSP - Co-management opportunities - Other specific topics indicated by member of the CoP
CoP meeting	Q4 2025	Sharing knowledge, informing CoP members on progress	- Business models and market uptake - Other specific topics indicated by member of the CoP
CoP meeting	Q3 2026	Sharing knowledge, informing CoP members on progress and discuss future plans	- Future engagements - Final vision/roadmap from the CoP regarding LTA in the BPNS

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Annex 5: Letter of intent

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Stakeholder Name Location, Date
Adress

Letter of Intent

Project information

ULTFARMS (2023 – 2026) will demonstrate a profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea. Integrating LTA within Offshore Wind Farms (OWFs) reduces the footprint of these activities, increases the societal acceptability of offshore development, and provides an ideal opportunity for realizing true multi-use systems. ULTFARMS will deploy LTA activities within 6 OWFs in Belgium, Germany, The Netherlands, and Denmark and operate these installations over two or more production years.

To facilitate coordinated co-creation (co-design, co-development, co-ownership) of solutions in each of the pilots as well as the maximisation of the buy-in and exploitation of the products and services coming out of the project, a **Community of Practice (CoP)** will be set up for each pilot country involving stakeholders from across the value chains of OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation. The CoP will consist of local stakeholders such as aquaculture sector, renewable energy sector, policy makers and regulating bodies, NGOs, etc. as well as stakeholders from a regional and European level to ensure EU wide support and integrations.

Commitment

XXX, represented by xxx, hereby declares its interest in the ULTFARMS projects and the Community of Practice (CoP) on the topics of Aquaculture within Offshore Windfarms. By signing this form, xxx agrees to become a member of the ULTFARMS CoP in the Belgian pilot test site and participate in stakeholder engagement activities of the ULTFARMS project in the form of interactive stakeholder meetings/workshops (e.g. workshop with multiple stakeholders), a survey and/or an interview. Specifically, more information on the purpose and your role as the CoP Member are determined in the accompanied document *ULTFARMS_CoP_Terms of Reference*.

Name of participant	Signature	Date

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Annex 6: Milestone 2.1 Formation of CoPs

Milestone 2.1 Formation of CoPs

Work Package 2 – Stakeholder Engagement

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Partner responsible	VLIZ
Contributing Partners	SUBMARINER, DELTARES
Author(s)	Charlotte van den Auwelant, Ine Moulaert, Ivana Lukic
Editor	Ivana Lukic
Approved by	Ghada El Serafy & Alex Ziemba
Project Officer	Loïc Blanchard
Abstract	This document presents the steps taken to achieve milestone 2.2. It includes description of the methodology used and the current status of the formation of the Community of Practices in the different pilots. The necessary guidelines have been prepared to guide the pilots with stakeholder identification and mapping and for the actual formation and implementation of the CoPs. For the Belgian and German pilots' stakeholders have been contacted and a schedule for stakeholder engagement moments has been drafted. For the Dutch and Danish pilots, it has been agreed by the project partners that, in order not to fatigue the stakeholders, the project

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	will hook on to existing initiatives and parallel running projects. Talks have been initiated to finetuned an effective cooperation.
Keywords	Stakeholder engagement, CoP, pilots

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MS2.1 Formation of Community of Practice in each pilot site

This document details the accomplishment of MS2.1 Formation of the Community of Practice (CoP) in each pilot site, due M4, as part of Task 2.1 Practical roll-out of the Multi-Stakeholder Engagement Strategy in the pilots. This milestone is first milestone set out for WP2: Multi-Stakeholder & Citizen Engagement.

As part of task 2.1 the strategy is being developed for the roll-out of the stakeholder engagement activities. As part of this task, guidelines have been developed for stakeholder identification and mapping as well as guidelines for the set up of engagement activities in each of the pilots. The implementation of these guidelines in the pilots is part of task 2.2.

Formation of CoP and identification of CoP members

To identify the potential members of the CoP, pilot leads were asked to complete a register (longlist) of stakeholders relevant for the pilots. This was done during a workshop held at the Kick-off Meeting in Delft on the 1st of February 2023. During a series of online follow-up meetings, this register was finalized, with special attention to ensuring stakeholders from all stakeholder groups were identified so that none would be left out.

Stakeholders identified in the longlist were mapped based on attributes of 1) power, i.e. stakeholders with the ability to change the course of one or more outcomes of the project, should this party choose to act, whether or not motivated by intrinsic interests, and 2) expertise, i.e. stakeholders with a high level of knowledge or skill on a certain topic and/or technique, through experience and/or research. The shortlist of potential members of the CoP consisted of stakeholders that have high scores in both attributes, and stakeholders limited to having high power only, or high expertise only. This was done to include the stakeholders who could potentially prove to be indispensable to successfully reach goals of the pilots, despite lacking high levels of expertise or power, respectively.

In general terms, CoP members were selected from relevant industry (aquaculture, wind energy, subcontractors, etc.), environmental NGOs, business support and consultancies, research institutes, national governmental bodies and regulators and insurance companies. These groups were presumed to have the highest power and expertise, relevant to achieve the desired objectives of the pilot sites. Additionally, other stakeholders could be included as seen suitable on a local level, e.g. stakeholders from organisations such as local parliaments, social NGOs, researchers, or consultancies with specific expertise that may lack among the test site partners. More information on stakeholder mapping will be provided in D2.1 Multi-Stakeholder Engagement Strategy.

Guidelines for forming and organising the CoP

The guidelines for the organisation of the CoP were set as part of task 2.1. It was agreed to commit to organising 3-4 interactive meetings and a maximum of 2 one-on-one interaction moments (eg. interview, survey) over the course of the project (Table 3). The desired number of CoP members to participate in the interviews was

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set at 5 to 10 per pilot country. For the interactive session, no range of members was defined.

Topics discussed during the CoP meetings will be related to the progress made in the pilot sites at the time and will relate to the key phases of the project (co-design, co-implementation, co-commercialisation). Nonetheless, pilots are free to choose the exact topic of the meeting, while considering the long-term goal of the development of aquaculture in offshore wind farms in a multi-use setting (Table 1). Not only the topics but also the timing of the CoPs will be based on the needs of the pilots and the project (input from stakeholders required by the different work packages).

Table 1: General overview of CoP meetings and interviews, timeline and purpose.

Type of engagement	**Time frame**	**General purpose**	**Targeted questions and topics**
One-on-one interview	2023	To set expectations of CoP member and establish a close interaction	Scoping of the local context - to find out what is out there already, what relevant initiatives are they aware of or a part of, what have been the challenges to date, who are the key actors to partner with, etc.
One-on-one interview	2025	To get feedback on progress	To get feedback if the project results are in line with the expectations and talk future developments.
CoP meeting	Q4 2023	Sharing knowledge, informing CoP members on project	- Technical and permit requirements - Governance frameworks - Challenges towards sustainable LAT within OWF. - Other specific topics indicated by member of the CoP
CoP meeting	Q4 2024	Sharing knowledge, informing CoP members on progress	- Governance barriers and solutions - Integration of LTA within the new MSP - Co-management opportunities - Other specific topics indicated by member of the CoP
CoP meeting	Q3 2025	Sharing knowledge, informing CoP members on progress	- Business models and market uptake - Other specific topics indicated by member of the CoP
Final Ultfarms CoP meeting	Q2 2026	Sharing knowledge, informing CoP members on progress and discuss future plans	- Future engagements - Final vision/roadmap from the CoP regarding LTA in the BPNS

Belgian and German pilots

For each of the aforementioned stakeholder categories, one main and one alternative point of contact was chosen. For the Belgian and German pilots, this led to the identification of a shortlist of potential CoP members (Table 2 & 3). An invitation to join the ULTFARMS CoP (incl. the Terms of Reference for the CoP (ToR, Annex 1) and a Letter of Intent (LoI, Annex 2) to be signed by the organisations, have been shared with the identified CoP members.

Dutch and Danish pilots

The analysis of stakeholders and identification of potential CoP members in the Dutch and Danish pilots led to the conclusion that most of the identified relevant parties were already engaged in multiple existing initiatives (Table 4 & 5). As limiting stakeholder fatigue is one of the main concerns of the ULTFARMS engagement strategy, these ongoing and parallel running initiatives and projects will be contacted instead of the individual stakeholders to hook on to or co-organise activities. Moreover, building on the relevant existing initiatives can also ensure that the already established feeling of ownership and commitment is strengthened during ULTFARMS project, and that the initive continues functioning even after the lifetime of the project.

For the Dutch pilot, CoP meetings will be coupled with existing activities organised by the Community of Practice Noordzee (English: North Sea). The CoP Noordzee brings together a network of entrepreneurs, research institutions, civil society organizations and governments and other top industry sectors with the aim to strengthen the balance between energy, nature and food in the North Sea and stimulate a Sustainable Blue Economy, and by doing so, preserving the balance between new activities and the natural values on the intensively used North Sea. Thus, the topic of ocean multi-use has been central to this initiative since its formation in 2018, motivated among others, by the Horizon 2020 multi-use MUSES project. Furthermore, the CoP of the Dutch pilot is also linked up with the European project eMSP NBSR (Emerging ecosystem-based Maritime Spatial Planning topics in North and Baltic Sea Regions, 2021 - 2024). Here, two compatible "learning strands" are envisaged: CoP Ecosystem based approach and CoP Sustainable Blue Economy. These CoPs focus, among other topics, on criteria development of different sets of multi-use options, and more specifically the Mari Park concept to further facilitate the implementation of the multi-use.

For the CoP of the Danish pilot, ULTFARMS will work together with Horizon 2020 sister project OLAMUR (Offshore low-trophic aquaculture in multi-use scenario realisation in North and Baltic Seas, 2022 – 2026) to organise the stakeholder engagement moments. Similarly to ULTFARMS, OLAMUR aims to bring together key marine sectors to develop and demonstrate a sustainable solution for commercial aquaculture and wind energy production, thereby combining blue food and green energy, and has active test sites in the Baltic Sea Additionally, in Denmarkthe with the Win@Sea, a collaboration between Vattenfall and Danish universities and companies is investigating how to produce offshore wind power

and sustainable food with the aim to improve the marine environment and biodiversity of the designated marine area. OLAMUR and ULTFARMS will TOGETHER build on the existing engagements established in WIN@SEA in order to streamline.

Table 2: Confirmed and potential members of the CoP in the Belgian pilot; stakeholders that responded positively are indicated in green.

Type	Stakeholder group	Name of organisation
Industry	Aquaculture	Oesterput
		Zeeboerderij
		Brevisco
	Business support/consultancies	Mantis
		Haedes
	Company (innovation) clusters	De Blauwe Cluster
	Fisheries	Vlaamse Visveiling
	Food industry	Colruyt
	Subcontractors	GeoXYZ
	Ports	Port Oostende
	(Future) investors	KBC
		BOP
	Insurance companies	Marsh Ireland
	Fisheries	Technische Werkcommissie Visserij (TWV) van de Strategische Adviesraad voor Landbouw en Visserij
Policy	National governmental bodies	Kabinet Noordzee
		FOD Volksgezondheid, Veiligheid van de Voedselketen en Leefmilieu
	Regional governmental bodies	Vlaamse Overheid - Departement Landbouw en Visserij
		Provincie West-Vlaanderen
Public	(e)NGOs	4Sea

Table 3: Stakeholders identified as potential members of the CoP in the German pilot.

Type	Stakeholder group	Name of organisation
Industry	Business support/consultancies	BioMarine
	Classification Societies	ASC - Aquaculture Stewardship Council
	Company (innovation) clusters	MCN - Maritime Cluster Northern Germany
	Food industry	Deutsche See
		Sylter Royal
	Subcontractors	Murre Technologies (NL)

	Subcontractors	Otto Wulf GmbH & Co. KG
	Trade associations	Erzeugerorganisation schleswig-holsteinischer Muschelzüchter e.V.
Public	(e)NGOs	WWF - World Wide Fund For Nature
Science	Company (innovation) clusters	BAMS - Bioeconomy on Marine Sites association
	Research infrastructure networks	EKSH (Gesellschaft für Energie und Klimaschutz Schleswig-Holstein GmbH)
		Bundesalgenstammtisch

Table 4: Stakeholders identified as potential members of the CoP in the Dutch pilot.

Type	**Stakeholder group**	**Name of organisation**
Industry	(Future) investors	Algemeen Burgerlijk Pensioenfonds (ABP)
		Global financing Fund
		Rabobank
	Company (innovation) clusters	Visbureau
		VVV Nederland
	Energy	Blauwwind
		Eneco
		Nederlandse Windenergie Associatie (NWEA),
	Fisheries	Sportvisserij Nederland
		Vereniging Beroepsmatige Handlijnvissers (VBHL)
		Visned
		Vissersbond
	Food industry	Hollandse Mosselcentrale
	Subcontractors	Bakker Machinebouw
		Damen
		Dutch SeaWeed Group
		Hortimare
		Murre
	Trade associations	De Mosselhandel
		Producentenorganisatie Mossel (PO Mossel)
		Productschap Vis
		United Fish Auctions
Policy	Intergovernmental bodies	ICES (International Council for the Exploration of the Sea)
	Local governmental bodies	Provincie Zeeland
	National governmental bodies	LNV (Ministerie van Landbouw, Natuur & Voedselveiligheid)
		Ministerie van Economische Zaken en Klimaat
		Ministerie van Infrastructuur en Waterstaat (I&W)
		RVO - Rijksdienst voor Ondernemend Nederland

		RWS (Rijkswaterstaat)
Public	(e)NGOs	Ambassade van de Noordzee
		Greenpeace
		Sportvisserij Nederland
		Stichiting De Noordzee
		Stichting Ark
		Stichting Deltaplan Biodiversiteitsherstel
		Stichting Natuur en Milieu
		Watersportverbond
		WWF
	Company (innovation) clusters	Informatiehuis Marien
	Educational sector	Noordzeeburgemeester
	Energy	Energy Beheer Nederland
		Tennet
	Thematic media	Noordzeeloket
		The Good Fish Foundation
	Tourism	Muzeeum Maritiem Vlissingen
Science	Research institutes	NIOZ (Royal Netherlands Institute for Sea Research)
	Universities	Hogeschool Zeeland - University of Applied Sciences
		Nederlands Instituut voor Ecologie (NIOO-KNAW)
		Universiteit Utrecht - NILOS (Nederlands Institute for the Law of the Sea)
		Wageningen Marine Research

Table 5: Stakeholders identified as potential members of the CoP in the Danish pilot.

Type	**Stakeholder group**	**Name of organisation**
Industry	(Future) investors	Dansk TANG - Seaweed
	Energy	Vindenergi DK
	Trade associations	Dansk Akvakultur
		Green Power Denmark
		Tang Netværket
		PensionDanmark
Policy	National governmental bodies	Energistyrelsen
		Fiskeristyrelsen
		Kystdirectoratet
		Søfartsstyrelsen
Public	(e)NGOs	DN.DK (Danmarks Naturfredningsforening)
		WWF Denmark

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Annex 1: Example Terms of Reference (ToR) Belgian Pilot

COMMUNITY OF PRACTICE - TERMS OF REFERENCE

Project Introduction

Marine aquaculture is coming under ever increasing pressures from a wide array of stakeholders, resulting in conflicts for the use of space in the coastal and near shore zones. With continual roll-out of offshore wind capacity globally, it is essential to share the marine space in multi-use settings to establish commercially viable production of Low-Trophic Aquaculture (LTA). **ULTFARMS (2023 – 2026) will demonstrate a profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea.** Integrating LTA within Offshore Wind Farms (OWFs) reduces the footprint of these activities, increases the societal acceptability of offshore development, and provides an ideal opportunity for realizing true multi-use systems.

ULTFARMS will deploy LTA activities within 6 OWFs in Belgium, Germany, The Netherlands, and Denmark and operate these installations over two or more production years. The solid presence of wind farms, the existing operational and maintenance activities, and the monitoring schemes in place enables synergistic developments between LTA and OWF to achieve higher sustainability than either could accomplish in exclusive zones. This approach involves stakeholders from across the value chains of OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation.

The project has the following objectives

- To enhance solutions to LTA farming in combined space with OWF for an optimal use of marine space and synchronized offshore activities in compliance with spatial planning targets and to demonstrate offshore LTA systems in OWF enhancing knowledge in deployment and achieving high TRL.
- To provide solutions to increase molluscs and seaweed production in offshore farming whilst ensuring the Good Environmental Status (GES), minimizing negative and strengthening positive environmental impacts.
- To ensure the share of renewable energy consumption along the full value chain of aquaculture and minimise its dependence on fossil fuel.
- To implement efficient and cost-effective monitoring strategies for aquaculture industry within unified LTA systems, enabling automatization in a data-base management system and services for supporting aquaculture producers in planning and operations.
- To develop a socio-ecological integrated governance framework to support decision-makers in achieving synergistic offshore developments and Green Deal objectives with full potential use of multi-functional LTA.
- To increase the circularity by offshore LTA production for low-emission, zero- or low-carbon and toxic-free farming of aquatic organisms.

- To sustain biodiversity and to provide suitable habitats for fish and other biota through the inclusion of nature restoration efforts (artificial reefs) and to enhance sustainable production through minimisation of disease, alien species, and demand management.
- To exploit project results, paving the way for further commercialisation and ensuring swift market penetration of the LTA products.
- To ensure replicability, transferability, training and capacity building in other basins supported by a roadmap of guidance for solution roll-out.
- To enhance societal uptake by engaging stakeholders, contribute to public awareness and ensure the local acceptance of planned developments, proper management of citizen complaints and suggestions for maximised local benefits and customer trust.

To facilitate coordinated co-creation (co-design, co-development, co-ownership) of solutions in each of the pilots as well as the maximisation of the buy-in and exploitation of the products and services coming out of the project, a **Community of Practice (CoP)** will be set up for each pilot country. The CoP will consist of local stakeholders such as fisheries, renewable energy operators, policy makers, etc. Regular meetings with members will take place to ensure that their feedback is considered at all steps of the pilot development.

Belgian pilot - Belwind

The Belgian Pilot combines mussel, oyster and seaweed cultivation alongside nature restoration efforts within an offshore wind farm (Belwind, operated by Parkwind).
Within the ongoing UNITED project, extensive knowledge and important lessons learned implementing oyster and seaweed cultivation and oyster restoration in offshore environments was gained. However, the physical conditions within the Belgian part of the North Sea are challenging for aquaculture operations and maintaining structural integrity and therefore the focus of the pilot will be on following challenges:

- Development of suitability maps to ideally position bottom cultivation of flat oysters.
- The development of an innovative seaweed long line system which can be lowered automatically upon bad weather forecasts in conjunction with a submerged longline system for mussel and oyster aquaculture.
- The Improvement of aquaculture grow-out infrastructure (e.g., nets, droppers, baskets, lanterns).
- The use and interpretation of novel sensor data and aquaculture farm models to inform on the physical and environmental conditions within the pilot site and the aquaculture production status. Cost- and time-effective monitoring techniques to evaluate biomass growth and state of the cultivation system to further upscaled farm designs.
- Evaluation of the impact of aquaculture and effort to sustain/increase biodiversity and the conditions to create synergy.
- The effect of using different antifouling systems on the colonisation success of non-indigenous species will be monitored and studied using innovative methods such as metabarcoding.
- Testing and applying state-of-the art nature-inclusive designs of the cultivation systems and offshore infrastructure to further enhance biodiversity and the ecosystem services provided by multi-use aquaculture setups.
- The monitoring of diseases using innovative techniques (e.g. eDNA).
- The pilot will also study the feasibility for the application of power supply at sea and the use of sustainable materials as well as the potential CO2 sequestration of aquaculture and increased biodiversity.

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Why are you a preferred member of the CoP?

Members of the CoP are those who are believed to be instrumental to achieving the goals of the pilot(s) in each country, i.e., those who are key contributors to the success of the co-design, co-implementation, and co-commercialisation of products and services resulting from the pilot. The shortlist of stakeholders is selected based on their high level of influence and expertise regarding LTA aquaculture and/or offshore construction and/or multi-use at sea and are therefore very relevant stakeholder to consult/involve and even collaborate/empower with.

Direct benefit of being a part of the CoP

The CoP is a unique opportunity to gain first hand insights into the pilot advancement and influence the co-design, co-implementation, and co-commercialisation of solutions that will support the development of aquaculture in offshore wind farms in a multi-use setting. By becoming a member of the CoP, you will have the chance to engage with a select group of stakeholders who are instrumental in achieving aquaculture in offshore wind farms in a multi-use setting.
The topics discussed during the CoP meetings will be related to the progress made in the pilot sites at the time and will relate to the key phases of the project but will above all concern the realisation of offshore Low-Trophic Aquaculture within offshore wind farms on the BPNS. This will allow for discussion and ensure that the solutions developed are relevant to the needs of the stakeholders involved and that guidelines developed consider the needs and suggestions of all stakeholders. Overall, the ULTFARMS pilot Community of Practice offers a unique opportunity for you to be directly involved in the development of aquaculture in offshore wind farms in a multi-use setting. Your participation will allow you to provide valuable insights, contribute to the success of the project, and help shape the solutions developed.

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Engagement schedule

Type of engagement	Time frame	General purpose	Targeted questions and topics
One-on-one interview	May-Sept 23	To set expectations of CoP member and establish a close interaction	Scoping of the local context - to find out what is out there already, what relevant initiatives are they aware of or a part of, what have been the challenges to date, who are the key actors to partner with, etc.
One-on-one interview	2025	To get feedback on progress	To get feedback if the project results are in line with the expectations and talk future developments.
CoP meeting	Q4 2023	Sharing knowledge, informing CoP members on project	- Technical and permit requirements - Governance frameworks - Challenges towards sustainable LAT within OWF. - Other specific topics indicated by member of the CoP
CoP meeting	Q4 2024	Sharing knowledge, informing CoP members on progress	- Governance barriers and solutions - Integration of LTA within the new MSP - Co-management opportunities - Other specific topics indicated by member of the CoP
CoP meeting	Q4 2025	Sharing knowledge, informing CoP members on progress	- Business models and market uptake - Other specific topics indicated by member of the CoP
CoP meeting	Q3 2026	Sharing knowledge, informing CoP members on progress and discuss future plans	- Future engagements - Final vision/roadmap from the CoP regarding LTA in the BPNS

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Annex 2: Template Letter or Intent (LoI) Belgian pilot

LETTER OF INTENT

Stakeholder Name Location, Date

Address

Project information

ULTFARMS (2023 – 2026) will demonstrate a profitable, sustainable, and eco-friendly low-trophic food (molluscs & seaweed) production from offshore aquaculture activities shared within wind farms in the North Sea and Baltic Sea. Integrating LTA within Offshore Wind Farms (OWFs) reduces the footprint of these activities, increases the societal acceptability of offshore development, and provides an ideal opportunity for realizing true multi-use systems. ULTFARMS will deploy LTA activities within 6 OWFs in Belgium, Germany, The Netherlands, and Denmark and operate these installations over two or more production years.

To facilitate coordinated co-creation (co-design, co-development, co-ownership) of solutions in each of the pilots as well as the maximisation of the buy-in and exploitation of the products and services coming out of the project, a **Community of Practice (CoP)** will be set up for each pilot country involving stakeholders from across the value chains of OWF and LTA to ensure environmentally sound, low-carbon, and safe LTA products from design to commercialisation. The CoP will consist of local stakeholders such as aquaculture sector, renewable energy sector, policy makers and regulating bodies, NGOs, etc. as well as stakeholders from a regional and European level to ensure EU wide support and integrations.

Commitment

XXX, represented by xxx, hereby declares its interest in the ULTFARMS projects and the Community of Practice (CoP) on the topics of Aquaculture within Offshore Windfarms. By signing this form, xxx agrees to become a member of the ULTFARMS CoP in the Belgian pilot test site and participate in stakeholder engagement activities of the ULTFARMS project in the form of interactive stakeholder meetings/workshops (e.g. workshop with multiple stakeholders), a survey and/or an interview. Specifically, more information on the purpose and

your role as the CoP Member are determined in Annex 1 *ULTFARMS_CoP_Terms of Reference*.

Name of participant	Signature	Date