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REPORT

2ND UNITED PROJECT WEBINAR

GET TO KNOW THE OCEAN MULTI-USE DEMONSTRATION PILOTS

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1. INTRODUCTION

The second UNITED webinar took place on Wednesday, 27 October 2021 from 10:00 - 12:30 CET. The event had an overall aim to increase the visibility of UNITED project pilots and their activities, facilitate a wider discussion and raise awareness about the ocean multi-use topic.

The interactive webinar showcased advancements in five real-life ocean multi-use UNITED demonstration pilots. Attendees had an opportunity to interact with the pilot leads throughout the sli.do Q&A.

- **See the annex below for a selection of key questions and answers.**

Most of the multi-use technologies researched and implemented by UNITED are first being tested in more subdued conditions near-shore before their implementation in more critical conditions offshore. The aim is to bring offshore technology level (TRL) in the five pilots – from validation and demonstration in relevant environment (TRL 5 and TRL 6) to system prototype demonstration in operational environment (TRL 7) within the next 2 years.

The presentations focused on the following questions:

- At what stage is the multi-use implementation in 5 UNITED pilots?
- What challenges were encountered on the way and are there any lessons learned for future such endeavors?
- What are the key next steps in the coming period?
- How can interested stakeholders engage with the pilot and obtain regular updates on the development progress?

What is UNITED?

UNITED is a research project co-financed by the European Union Horizon 2020 programme. The acronym UNITED stands for Multi-Use offshore platforms demoNstrators for boostIng cost-effecTive and Eco-friendly proDuction in sustainable marine activities. The project will run from 2020 until 2023 and provide evidence for the viability of ocean multi-use through the development of five demonstration pilots in the real European marine environment.

Each of the two sessions was followed by a panel involving the industry actors relevant for the presented multi-use combinations.

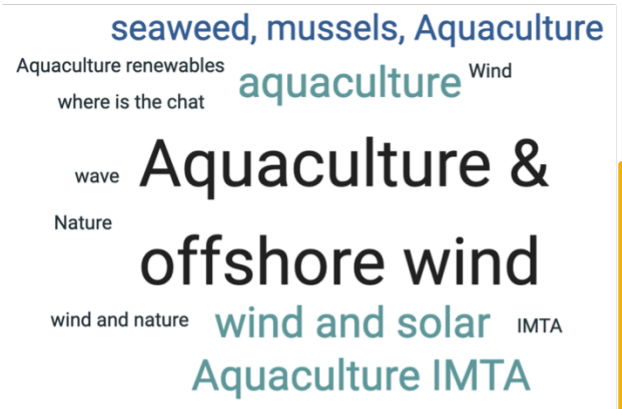
To find out who the panelists were Download the agenda here:

https://www.h2020united.eu/images/10-21-Registration-A4-agenda-v2.pdf

From which countries were webinar attendees?

2. INSIGHTS FROM THE AUDIENCE

What type of multi-use has the most potential?



What challenges should be overcome for the implementation of multi-use?

What are the main advantages of going for a multi-use vs single use?

3. KEY HIGHLIGHTS FROM SESSION 1: OFFSHORE WIND AND AQUACULTURE

The first session of the webinar was dedicated to the offshore wind farm (OWF) and aquaculture multi-use combinations. This multi-use is driven by the large growth of offshore wind energy, and the high demand for aquaculture as one of the key sources of food security. Thus, this session investigated how the areas assigned to offshore wind farms can potentially accommodate additional applications such as seaweed and shellfish farming, as well as nature restoration.

The speakers highlighted several challenges for the implementation of aquaculture in OWF, including obtaining insurance licenses, and government permits. Permitting can take a long time especially for such innovative activities for which not a lot of evidence is available. In Germany, for example, the UNITED pilot is the first one to deal with this sort of multi-use. The process of obtaining all the necessary permits took some time and it required a continuous close engagement with the relevant government officials.

Sharing the scientific evidence, for example from other countries, and comparable environments, with the authorities, can be useful to build awareness of the authorities and reduce time spent on permitting procedures.

For the OWF industry, the key drivers for multi-use are the regulation, and the need to use the offshore space in a more synergetic and space-efficient, shared manner, and accommodate several social objectives – food security, renewable energy production and nature restoration. Given the scarce space in some of the areas, multi-use is increasingly being considered as a criteria/condition for awarding concessions to potential tenders. By being a part of the research projects, such as UNITED, the OWF industry can gain some experience and prepare for potential future larger-scale projects.

Having a marine spatial plan in place and pre-destinated areas where aquaculture can take place in offshore wind farms can facilitate a more straightforward development of multi-use. Nevertheless, having offshore wind farm concession holders interested and ready to collaborate is also a precondition.

Multi-use is seen as an opportunity for aquaculture expansion and commercialization. Apart from providing sustainable sources of food and feed, seaweed also has important uses in pharmaceuticals, smart materials, and biotechnology, including biofuels production.

For producing a bigger volume of seaweed, a move offshore is needed where more space is available. Since there are also ambitious plans for a large-scale rollout of offshore wind energy, cooperation between the two industries becomes inevitable. Seaweed can be not only used for the biofuel production - a low emission alternative to fossil fuels, but growing seaweed has at the same time strong C02 sequestration properties – this makes it even more attractive to combine multiple sources of renewable energy, i.e. offshore wind, solar and biofuel from seaweed, at the same space.

Conditions are harsh offshore, so solar farm can make a bit calmer environment for the aquaculture i.e. by dampening the waves. Potentially the two activities offshore can share the monitoring and maintenance activities, while the renewable energy produced at the site can be directly used to power the automated aquaculture systems or ROV for unmanned activities such as taking samples and pictures. Research projects such as UNITED are important to gain experience with such innovative solutions and obtain tangible data.

Moreover, aquaculture products derived from multi-use systems can potentially be marketed as a premium product, thus potentially attracting big retailers.

Finally, for the development of this multi-use potential conflicts and trade-offs with other ocean users such as fishery, should also be carefully considered.

4. KEY HIGHLIGHTS FROM SESSION 2: TOURISM RELATED MULTI-USE

The second session of the webinar focused on the multi-use combinations with tourism e.g. boat or diving tours in combination with aquaculture or offshore wind farms.

Combining the multi-use tourism offer with education and awareness-raising is the key – this includes, for example, educational boat tours, scuba diving, school presentations and open info days for the public.

A multi-use combination of aquaculture and tourism can raise local awareness about the opportunities of sustainable aquaculture for food production and improve the overall public perception of the aquaculture activities in the area. This is especially relevant for sustainable fish aquaculture – for example, diving and seeing the farm underwater can improve the knowledge about this type of aquaculture and change the negative perception about it in the local communities. Moreover, by benefitting from this tourism activity the local community may well gain more interest and a more positive attitude towards the sustainable aquaculture activities.

Combining offshore wind farms and tourism i.e. boat tours, can also encourage a positive perception of the public about the renewable offshore energy production, and help better acceptance of future projects. For example, a boat tour to the offshore wind farm in the Danish UNITED pilot gives the opportunity to people to learn about the project, ask questions firsthand, and thus reduce doubts and negative opinions. However, it should be noted that whereas in the Danish pilot it is possible to physically visit the turbine and climb up to the top, in the next generations of wind turbines this is no longer the case. Hence replicability of the Danish example may prove to be of limited scope.

Multi-use can provide alternative sources of income, diversify tourism, and thus support a more stable local economy.

Tourism operators can diversify their activities, by expanding their offer to encompass tours to the aquaculture site or offshore wind farm. This can ensure a more stable offer even after the regular tourism season is over. On the other hand, aquaculture operators can secure an alternative source of income from tourism and awareness-raising activities. For example, in Germany, during the COVID crisis, restaurants were closed and were not buying seafood, thus the aquaculture business was down. To bridge this challenging period, the aquaculture operator started giving educational tours and lessons at local schools.

ANNEX: PUBLIC Q&A

The table below shows the selection of questions received through the interaction with attendees during the webinar. Some of the questions have been merged or modified for clarity.

1. Is the inventory of the legal, insurance, risks, and governance aspects publicly available?

Not yet – the first report of the UNITED legal, regulation and governance research pillar be available in early 2022. The Legal, Policy and Governance Pillar will assist in the development of ocean multi-use solutions by analysing the societal context, addressing risks and legal challenges and supporting the rollout and upscaling of activities. The activities will focus on: Addressing challenges to support the rollout and upscaling of activities, with special attention to insurance aspects; Addressing health and safety aspects of ocean multi-use solutions; Translating the substance and core principles of governance to the context of risk and risk-related decision-making; Involving stakeholders when assessing safety and health aspects, as well as in the development of viable business models for ocean multi-use solutions. Short informative videos have been produced addressing the health and safety aspects of ocean multi-use solutions. They provide insights about the health and safety framework which will be applied in the UNITED project. UNITED is developing a series of videos on this topic that will be uploaded here as they become available.

For more information about this pillar of UNITED please see here:

https://www.h2020united.eu/themes/9-pillars/30-legal-policy-and-governance-pillar

2. Does BE or any other country has a procedure of joint permitting for multi-use projects to reduce the administrative hurdles?

Yes, the Netherlands has developed the ocean multi-use procedure and some of the UNITED partners have been involved in this process. For more information, please see here:

https://www.northseafarmers.org/projects/multi-use-procedure

3. Which glue do you use in the BE pilot? Did you already tested the toxic effect?

Within the Belgian pilot, the AlgaeBinder from AtSeaNova was used for the direct seeding trials of Saccharina latissima. We are not aware of any toxic effects from the binder and have previously tested it with several seaweed species in small-scale lab experiments without any noticeable toxic effects.

4. Can you give some more specificities on the scour protection that was used for the oysters in the BE pilot?

In preliminary trials, several scour protection materials (granite, 0-200mm (1/4 basket, origin: Norway (NO)); granite 25-125mm (1/4 basket, origin: NO); limestone 90-180mm (1/4 basket, origin: BE) and limed granite 25-125mm (1/4 basket, origin: NO)) have been tested, but we did not find significantly different results for flat oyster settlement between the different scour stones. Hence why we chose to only add limestone (a material already used as scour protection in offshore wind farms), and mussel shells as calcareous material (preferred by oyster for settlement). We installed four restoration structures on the scour protection of two monopiles within the Belwind OWF. Hence, two tables per monopile. In two out of four restoration tables, we additionally added adult oysters as juvenile flat oysters would prefer settlement in the neighbourhood of adult flat oysters. Hereby, we want to study differences in settlement between tables filled with and without adult oysters and study whether the OWFs could be suited as restoration sites for European flat oysters

5. Are there any means to avoid conflicted interests and the dominance of the most powerful interests in ocean multi-use? best practices per case

As it has been showcased in the Belgian pilot, the collaboration between the different users such as offshore wind farm developers, aquaculture farmers as well as openness for innovation and learning is the key for multi-use. Nevertheless, it has also been emphasized that the government has a strong role in considering several public priorities such as food and energy security as well as nature protection through highlighting suitable multi-use areas in maritime spatial plans. Ongoing stakeholder engagement processes such is the North Sea Community of Practice in the Netherlands can help establish trust and motivate the discussion and collaboration between different stakeholders.

6. Are the results/experiences of UNITED moved forward to European CEN standards?

In the exploitation phase the UNITED results will be used to advise the possible future standards and procedures related to the combined use of ocean resources. Given that the project pilots are at the interim stage it is still early to judge what standards and procedures exactly may be affected.

7. Have you made preliminary assessments of the economic case for multi-use? Can it be profitable/economically sustainable?

The economic assessment of different UNITED multi-use solutions is taking place in parallel with the demonstration activities. While the UNITED project pilots are for research purposes and not commercial scale, the study on the economic business models and cases is taking place to provide wider insights for future commercial scale developments. For more information please see: UNITED economic pillar where more information from the assessment will be published in 2022.

8. Is water quality and pollutant concentration measured in seaweed/mussels in test sites in the German pilot (given intense shipping routes in North Sea/Channel)?

Standard measurements are planned in the offshore pilot site. Mussels are already monitored concerning pollutants, toxins and bacterial contamination in the nearshore site and comply with the highest food safety standards. The German nearshore site is next to the biggest shipping line in Europe and experiences more traffic than any of the pilot sites, as no safety-zone is implemented around it.

9. Can seaweed farms be deployed within existing wind farms and if so what are the main challenges?

The UNITED Belgium pilot is testing this. The longline is not yet installed but the design was already a challenge (way of anchoring, avoiding safety zone around turbines even when one anchor lets loose....) and precise location needed to be decided in order to minimize risks for damage to the turbines. Please see here for more information: https://www.h2020united.eu/pilots/2-uncategorised/42-offshore-wind-and-flat-oyster-aquaculture-restoration-in-belgium

10. How do you take economic viability up in your pilots? Because it might be possible to farm seaweed but it will need to be economic viable in the future as well.

UNITED deals with the seaweed topic in three of its 5 pilots, Belgium, Germany and the Netherlands. The commercialization of multi-use products is one of the key topics of the UNITED and the whole research pillar has been assigned to deal with the development of business models and commercialization. There is a close collaboration with the partners that deal with the commercialization of seaweed be it for the food industry (e.g. Colruyt Group - food retailer), or for other purposes including the pharmaceuticals, feed, biotech and smart materials (e.g. The Seaweed Company, Kiel Meeresfarm, SUBMARINER - Blue Accelerator).

More about the economic assessments in the project:

https://www.h2020united.eu/themes/8-blog/27-economic-pillar

11. Are the aquaculture species being used in your pilot projects native to the sea basins? What is the synergy of your projects with nature conservation enhancement?

While the nature enhancement can cover a wider span of activities, the Belgium pilot focuses predominantly on nature restoration - restoring the native European flat oyster (*Ostrea edulis*). The aquaculture species chosen in the project, namely *Ostrea edulis* and *Saccharina latissimia*(sugar kelp), are indeed also endemic to the Belgian part of the North Sea.

More information about the Belgium pilot and the species that are being used can be found here: https://www.h2020united.eu/pilots/2-uncategorised/42-offshore-wind-and-flat-oyster-aquaculture-restoration-in-belgium

In the German pilot, all species are native to the North Sea basin, we even restrict ourselves to species that originate not further away than 100km from the pilot plants in the same sea basin. Furthermore in the German pilot only „extractive" species are cultivated, meaning more nutrients are removed from the ocean than were put in the ocean during growing the species when the species are harvested.

More information about the German pilot and the species that are being used can be found here:

https://www.h2020united.eu/pilots/2-uncategorised/40-blue-mussels-seaweed-and-offshore-wind-energy-in-germany

12. Are some multi-use options (e.g. oyster restoration) useful to implement as real compensation measures to compensate the impact of building offshore wind farms?

The UNITED project pilots work with existing offshore wind farms to maximize positive effects on the environment, thus focusing on the restoration.

For more information about the compensation measures for the offshore wind industry consider consulting the following source:

https://www.iucn.org/sites/dev/files/04_mitigation_measures_to_reduce_impact_of_offshore_wind_power_projects.pdf

13. Will pilot in Belgium have a trial deployment at site for a period of time in the wind farm. Or is it for only short trials. I did see a tray lowered

We have indeed installed four restoration structures at the scour protection of two monopiles within the Belwind OWF, hence two structures per monopile. These will remain here until the end of the project (end of 2023) and will then be decommissioned. During that time, the structures will be sampled twice per year to see whether the location and the structures are suited as restoration for the European flat oyster in the Belgian part of the North Sea.

14. What is the place of environment health assessment in these pilot projects?

One whole pillar of the UNITED research deals with the environmental assessment. The Environmental Pillar will address current gaps in know-how on how to measure and assess the cumulative environmental impacts of ocean multi-use, both at the local as well as at a broader ecosystem level. This Pillar will also respond to a need for harmonized monitoring frameworks, as well as harmonized methods to assess both negative impacts and environmental gains of ocean multi-use in the marine space. The careful combination of different maritime uses is expected to lead to a reduced environmental impact when compared to a situation where each maritime use is conducted independently. The environmental assessment framework should be able to capture the gains by applying not only a local perspective, but also a regional sea perspective.

For more information about the environmental pillar of the UNITED please visit the following page:

https://www.h2020united.eu/themes/9-pillars/28-environmental-pillar

15. Is there a foreseeable issue from commercial fishing trawlers who do use space around wind farms if that space is being used for seaweed farms?

Even without aquaculture farms, trawling cannot take place within the safety zone of an offshore wind farm. This is due to the safety risks. Please see further information on the conflicts and multi-use between the offshore wind farms and fishery here:

https://maritime-spatial-planning.ec.europa.eu/sector-information/offshore-wind-and-fisheries

16. How about social assessment of multi-use?

One pillar of the UNITED research is devoted solely to the societal aspects. The Social acceptance of ocean multi-use and the involvement of all stakeholders in the design, implementation and operation are key success factors. The UNITED Societal Pillar will serve as the primary point of contact with all stakeholders, building a centralized survey and engagement point to facilitate effective and streamlined communication channels. The Societal Pillar will: Secure consistent and coherent stakeholder involvement throughout UNITED; Support the pilot development throughout the entire project; and Capitalize on lessons learnt in UNITED to support future ocean multi-use developers.

For more information about societal pillar of the UNITED please visit the following page:

https://www.h2020united.eu/themes/9-pillars/29-societal-pillar

17. What kind of tourists are interested in combination of aquaculture and scuba diving? Scientists or also general public divers?

The majority of those taking part in the guided diving tour to the fish farm in the Greek pilot are regular tourists.

>>>KEY UPDATES FROM UNITED<<<

REGISTER FOR THE 1ST UNITED TRAINING WORKSHOP!

The first UNITED public training workshop "Offshore Platform Operation, Safety and Logistics within the context of multi-use" will be held on January 26th, 2022. The workshop will contribute to the capacity building of professionals working in offshore operations and logistics and reduce risks for the ongoing and future development of ocean multi-use solutions. It will encourage an up-to-date knowledge transfer between practitioners to address current and most pressing questions about:

- What are the greatest obstacles in MU safety and logistics?
- Which synergetic effects could be realized in MU logistics?
- Do MU offshore operations bear a greater safety risk than single-use offshore activities?
- How to best address logistic bottlenecks and pitfalls in MU offshore operations?
- Which risks need to be taken into consideration and how, when planning MU activities?
- How can risks in MU operations be mitigated? Professionals will share their expertise with you and be available for your questions during a panel discussion round. We look forward to your attendance!

Enter here to register for the event:
https://register.gotowebinar.com/register/4867430643755955214

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