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REPORT

WORKSHOP ON THE IMPACTS OF SEISMIC AND OFFSHORE WIND ENERGY DEVELOPMENTS ON COMMERCIAL FISHERIES



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All presentations can be found on the NWWAC website [here](#).

1 **WELCOME FROM EMIEL BROUCKAERT, NWWAC CHAIR**

Brouckaert welcomed all participants and speakers to the workshop.

He recalled the establishment of the joint Focus Group established in 2020 by the North Western Waters AC and the Pelagic AC on impacts from seismic activities and offshore wind farms on fisheries. This Focus Group developed two separate advice submissions to the Commission for a non-recurrent request to ICES on seismic impacts and for a non-recurrent request to ICES on the impact of marine wind energy developments on commercial fish stocks, the latter also supported by the North Sea AC.

Since the Advisory Councils' submissions in 2020, two important reports have been published – one by DG MARE on the effects of offshore wind farms on fisheries and aquaculture, and the second by the European Marine Board on underwater noise in Europe - both of which are being presented on today.

Both reports make additional recommendations which the Advisory Councils strongly support and wish to follow up on in light of their own requests from 2020.

Finally, Brouckaert mentioned the resolution approved by the European Parliament in July 2021 on the impact of offshore wind farms and other renewable energy systems on the fishing sector.

In light of the war in Ukraine and the subsequent and ongoing energy crisis, emphasis is being placed on the expansion of renewable energy sources and many Member States are looking specifically to offshore wind energy to achieve and even surpass the targets set under the Green Deal. This will have impacts on the marine environment and its existing users. Brouckaert noted that noise impacts are intrinsically linked to offshore wind energy developments both during construction as well as operating phases. Offshore wind energy developments have additional impacts on the marine environment, for example habitat loss and seabed changes.

Brouckaert acknowledged that the Commission is trying to reconcile multiple crises including climate and biodiversity in addition to the effects of the war in Ukraine, but in many discussions the production of aquatic protein in the various Member States and their contribution to Europe's food security seems to have been left out.

He added that he was looking forward to receiving an update on the current state-of-play regarding the most recent research in the EU on both topics in order to identify key research priorities which the ACs feel still need to be addressed, as well as potential solutions to enable a successful coexistence of the sectors in the context of the existing EU strategies, including the Biodiversity Strategy, the Renewable Energy Strategy, the Green Deal and the Sustainable Food Systems Initiative.

Finally, he invited DG MARE's Head of Unit for Blue Economy Sectors, Aquaculture and Maritime Spatial Planning, Mr. Felix Leinemann, to take the floor for the keynote speech.

2 KEYNOTE ADDRESS FELIX LEINEMANN (Head of Unit DG MARE A.2)

Felix Leinemann started by recalling the European Commission’s objectives for becoming climate-neutral by 2050 through the adoption of the European Green Deal, in light of the challenging two years the whole world had to face. After the COVID-19 pandemic put the world in lockdown causing an economic recession, the EU was hit by a spike in energy prices due to the increased global demand for gas surpassing available supply. Finally, the war in Ukraine has brought destruction and unnecessary deaths, with millions of people driven from their homes.

“These harsh and tragic events have not changed our commitment to attaining climate neutrality. On the contrary, the case for a rapid clean energy transition is stronger and clearer than ever”, said Leinemann.

Indeed, the aggressive invasion of Ukraine has made it absolutely evident that Europe needs to move even faster to reshape its energy system and reduce dependency on Russian fossil energy in the very short term. Deploying renewables is vital in this process and would also mitigate the risk of energy price spikes, while effectively acting against climate change. In particular, offshore wind is a key solution and among the technologies with the greatest potential to scale up.

Leinemann mentioned the Offshore Renewables Strategy, published by the Commission in November 2020, which proposes specific actions and milestones to increase the installed capacity of offshore wind by 2030. The strategy sets clear ambitions: to have an installed capacity of at least 60 GW of offshore wind by 2030 in EU waters, and at least 300 GW by 2050 (both excluding the UK with its own targets). One quarter of all European electricity could be produced then by offshore wind energy. In the new geopolitical and energy context, these ambitions are probably getting outdated as Member States keep ramping up their pledges.

Offshore wind and grid projects take years to be approved and commissioned, require substantial capital investment, and are installed in marine areas with limited available space with the right wind conditions and geological properties. On top of that, the impact on biodiversity and the co-existence with other already existing uses of sea, notably fisheries, must be properly considered as well as the accommodation of emerging uses, including the protection of marine biodiversity. On this latter aspect, Leinemann specifically mentioned the EU Biodiversity Strategy and the importance of finding the right balance to ensure the delivery of the EU commitment to protect 30 percent of the seas by 2030.

“To minimise impact and risks, proper maritime spatial planning is a fundamental starting point, clearly defining where to place the offshore renewables that Member States aim to achieve”, stated Leinemann.

The Maritime Spatial Planning Directive sets out rules to consult and coordinate the maritime spatial plans (MSPs) of each MS with neighbouring MS in the same sea basin. Last year marked the first year of implementation by MS of the Maritime Spatial Planning Directive, making the EU the most advanced continent in this field.

Last week, the Commission adopted its first progress report on the implementation of the Directive. The report identifies the challenges that MS encountered when establishing MSPs, namely limited space, multi-use, data availability and compatibility, stakeholder involvement and public participation in times of a pandemic. However, according to the report, good cross-border cooperation was

achieved through EMFF-funded projects in all sea basins which focused especially on cumulative impacts and data cooperation.

Leinemann reported that the Commission is aware that the development of offshore wind farms (OWF) is very likely to have a big impact on fisheries in many different ways (including potential positive effects such as fishing around OWF becoming more attractive, job diversification opportunities through multi-use with aquaculture or seaweed farming, etc.). This includes noise impact during the construction phase, but also during the operational phase. Therefore, DG MARE launched a study on the impacts of offshore wind on fisheries and aquaculture which was presented later in the workshop.

In accordance with the MSP Directive, the planning process has to be inclusive and involve local stakeholders through appropriate consultation channels under existing rules: strategic environmental assessment, maritime spatial plans, which has happened in different ways across the MS.

Multi-use is underlined as *the way to go* in order to implement the European Green Deal in many recent EU strategies and regulations and more and more projects are developed in the EU, notably through Horizon Europe. *“We would particularly like to see more cooperation between fisheries communities and offshore renewables, within the safety limits that exist”*, said Leinemann.

He then added that the European Commission supports MSP cooperation projects in all EU sea basins and beyond through the European Maritime, Fisheries and Aquaculture Fund (EMFAF). An ongoing project is focusing on the creation of community of practices in the North and Baltic Seas on MSP-related issues. Future progress will focus on data, involvement of regions and the EGD.

Leinemann highlighted that the Commission will continue its policy work and to work closely with Member States, Regional Organisations (such as the North Seas Energy Cooperation, HELCOM, OSPAR), Advisory Councils and ICES specific working groups to build up knowledge, prevent conflicts and increase potential synergies at sea. In addition, the Commission is currently putting in place, with the support of experts from MS, a European Blue Forum bringing together all stakeholders to develop synergies between activities such as fisheries, aquaculture, shipping and tourism and marine renewable energy. Leinemann explained that the forum should be operational by the end of 2022 and encouraged the ACs to participate.

Moderator: Patricia Comiskey, Simply Blue Group

The moderator Patricia Comiskey took the floor and introduced the discussion and the speakers.

She highlighted the importance of the ACs as fora for open communication and thriving cooperation between stakeholders. *“In my view, the model of the ACs should be emulated for all marine sectors. If we want the European blue economy to truly thrive, we must work together, listen to each other and respect opinions even and possibly especially when we do not agree, and we must find compromise”*, stated Comiskey.

SEISMIC RESEARCH / UNDERWATER NOISE AND COMMERCIAL FISH SPECIES

3 POTENTIAL IMPACT OF SEISMIC ACTIVITIES/NOISE ON FISH STOCKS

Peter Sigray (DG ENV Chair TG Noise), Maud Casier (DG ENV C.2 Marine and Water Industry Unit)

Maud Casier opened with an overview on the work carried out at EU level to reduce underwater noise, for example via the Birds and Habitats Directive, the Strategic Environmental Directive and the Environmental Impact Assessment Directive, which safeguard the protection of species and of the environment ensuring the integration of environmental considerations.

She particularly focused on the Marine Strategy Framework Directive (MSFD), which aims at achieving good environmental status (GES) of marine waters. The MSFD's holistic approach considers all possible pressures and impacts that undermine the environment. One of the 11 descriptors of good environmental status established by the Directive is dedicated to underwater noise and sets out specific measures.

To support the objective of achieving GES, a specific Commission decision from 2010 describes specific indicators defining what GES means in relation to underwater noise. This decision was reviewed in 2017 and has led to the definition of new criteria, specifications and standardized methods for underwater noise monitoring and assessment, to assess the extent to which GES is being achieved for impulsive and continuous noise: D11 criteria 1 and 2: spatial distribution, temporal extent and levels of anthropogenic impulsive and continuous low-frequency sound sources do not exceed levels that adversely affect populations of marine animals.

In order to set up the framework for implementation descriptor 11, a specific expert group has been established - the Technical Group on Underwater Noise (TG-Noise) - which is part of the Marine Strategy Coordination Group where Member States are gathered together with the Commission. She identified that regional cooperation is essential to ensure coherence in MSFD implementation.

Finally, Casier mentioned the European Green Deal and its initiatives, namely the Action Plan to conserve fisheries resources and preserve the marine ecosystem, which is strongly committed to reduce marine pollution (including noise pollution), and the review of the MSFD coming up in 2023 which is taking into account the state of implementation of EU laws addressing key pollution sources and the need to reduce plastic and other litter, underwater noise and contaminants

Peter Sigray followed with a presentation on TG-Noise work and objectives. He explained that noise is divided into two categories: continuous noise and impulsive noise, and that policy mainly considers impulsive noise, in particular piling, air guns, underwater explosions and sonars are the main sources that MSFD descriptor 11 is dealing with.

He specified that information on the use of impulsive sources is not accessible in real time, that noise events have to be reported by the Member States in a registry after they have happened. This registry contains pre-specified information which is used to estimate the impact of an event by the concept of

Bang Days. The spatial and temporal coverage of Bang Days are finally converted into threshold values. The registry can then be used to assess cumulative impacts from all impulsive sources in the different MS.

Sigray explained that there are unfortunately very few data on position, dates and source intensity coming into the registry. He also pointed out the challenge of merging disjunct metrics into manageable quantity.

Finally, Singray identified three scientific evidence-based studies the TG has been working with:

- *Predicting the effects of anthropogenic noise on fish reproduction (2021)*. The study looked at effects of stress masking on different life stages. It concluded that the vulnerability of a species to noise-induced stress will mainly depend on its potential to reallocate reproduction to more quiet time or locations and on its vulnerability to masking and hearing-loss on the function of sound communication in its reproductive behaviour.
- *Behavioural effects of seismic dose escalation exposure on captive mackerel (2021)*. Schools of penned mackerel were exposed to impulsive sounds from a 90 cubic inch seismic (airgun) source towed behind a research vessel, in a dose-escalation design. Conclusion highlighted no abrupt change of behaviour and no startle response. Subtle behavioural changes were observed as a gradual increase in school coordination, which culminated around the time of closest point of approach.
- *Effects of pile driving sound on local movement of free-ranging Atlantic cod in the Belgian North Sea (2022)*. Local fish remained in the exposed area during and in-between pile-driving activities. The tagged cod did not increase their net movement activity, but moved closer to the scour-bed (i.e. hard substrate), surrounding their nearest turbine, during and after each piling event.

4 Underwater Noise in Europe: Findings from the European Marine Board Future Science Brief No. 7

Frank Thomsen (Danish Hydraulic Institute A/S)

Introducing the role and work of the European Marine Board (EMB) Frank Thomsen referenced the 2008 EMB report on risk management for underwater noise for marine mammals, which was quite influential in setting the scene on how to actually estimate and manage underwater noise impacts on the marine environment for many years. The EMB then decided to form a new group with both high level and specific objectives.

On a high level, the group was tasked with updating the progress relating to this topic since the 2008 EMB publication, raising awareness of the current knowledge and research gaps, broadening the scope to all marine organisms, and highlighting the existing conflicts and solutions related to underwater noise. Considering all of the above, the key specific objective for the group was to identify key actions related to research, monitoring, policy and management needs

Thomsen mentioned the United Nations Decade of Ocean Science for Sustainable Development, as its outcomes and challenges are very applicable to EMB work and aims. He praised the Working Group team, composed of 12 scientists from all disciplines, which managed to work very effectively during the pandemic and publish the [report “Addressing underwater noise in Europe”](#) in October 2021.

Thomsen then introduced some of the concepts and the chapters from the report:

- Chapter three identifies four broad categories of impacts on marine life as exposed to underwater noise in relation to the distance from the sound source location: masking, behavioural response, impaired hearing and physical and physiological effects.
- Chapter four refers to international, regional and national regulations and other key drivers. It includes a timeline from 1982 until 2021 on initiatives and regulations concerning underwater noise.
- Chapter five highlights emerging technologies and methods, including animal movement models, passive acoustic monitoring and drones.
- Chapter six contains the conclusions of the report, including 13 suggestions for concrete actions and research.

Thomsen concluded his presentation by highlighting the most relevant recommendations:

1. Develop collaborative international standards applicable to all steps of the risk framework.
2. Conduct comprehensive monitoring combined with spatial ecological modelling of marine species' dynamic habitat use, movements, behaviour and distribution to establish baselines.
3. Conduct further studies on behavioural response of marine mammals and fishes due to exposure to high intensity impulsive sounds to assess population consequences via e.g., displacement.
4. Conduct dedicated studies including multi-species investigations, predator-prey interactions, and interaction with other food web levels, addressing the question of how noise impacts combine with other stressors.
5. Conduct dedicated modelling and field studies to improve understanding on effectiveness, safety and cost-effectiveness of noise mitigation devices, mitigation measures and management options.



Q&A

Q: What work has been carried out on the topics in the EMB report since it was published?

Thomsen: Work has been carried out on big whales obtaining good modelling data, but no hearing tests conducted as this quite challenging. Attempts failed in capturing these animals but hopefully further attempts will yield more data. A lot of research is also being carried out regarding fish, for example fisheries audiograms though care needs to be taken with sound pressure.

Q: Has any work been done on seals, for example harbour seals?

Thomsen: There is a good level of understanding regarding the hearing of many seal species, as well as hearing impairment though gaps could be improved. Additional work is needed regarding behavioural studies.

Sigray: More studies are needed on disturbance of seals. A mismatch exists between studies on fish and mammals. In addition, pure sound is used for tests but real sound is more complicated than that.

Q: The ACs are interested to learn more about the EU Blue Forum. While research on noise has been going on for many years, could the next focus include for example larval and cumulative impacts?

Sigray: Some studies on larvae are already available, and research into this is increasing as there is evidence of effects on larvae.

Thomsen: It is difficult to set up this type of studies, as it is difficult to control the research. Regarding cumulative impacts it also worth looking at population consequences. Underwater noise alone will not contribute to population decline, but populations are affected by many factors, including fisheries. All impacts must be considered together.

Frank: The EU Blue Forum was established as part of a new communication approach, but discussions as to the workings are still ongoing, and a new call for framework contract has been launched. There is not enough communication between emerging sectors and those that have been active for a long time. The ACs will be informed of any developments regarding this work.

Casier: Within the EU framework, the ongoing work of TG Noise on defining thresholds is essential regarding cumulative impacts to allow the determination of what level of noise is tolerable and the linking up with science, the management level and policy making.

Q: This is a complicated topic and there is a lot that we still do not know, but we see that noise can immediately be reduced at source. When do you consider that we know enough to actually reduce these sources?

Thomsen: Studies are needed from the animals' perspective on underwater noise with a need to tailor perspectives on what animals can hear. Just reducing sound is not helping in many cases, and it is important to know what animals are in an area and what their sensitivity is. Following the precautionary approach is a matter of course but risk assessments are also important, and more data is definitely needed.

Casier: The MSFD also requires MS to take appropriate measures to achieve good environmental status as regards underwater noise based on monitoring and their own assessment of the state of the marine environment.

Q: Fishermen have been pointed at as responsible for the strandings of mammals on the French coast. How can these smart mammals be surprised by fishing vessels fishing at low speed. We heard about the impacts of noise impairment that can lead to disorientation, so maybe they fail to see the fishing gears. But there are no studies on this.

Thomsen: Echolocation uses high frequency, and many sources do not affect echolocation abilities unless they have high frequency range. It would be worthwhile making gear more acoustically visible for example.

OFFSHORE WIND ENERGY DEVELOPMENT AND COMMERCIAL FISH SPECIES

5 OVERVIEW OF THE EFFECTS OF OFFSHORE WIND FARMS ON FISHERIES AND AQUACULTURE

Céline Frank (DG MARE A.2 Blue Economy Sectors, Aquaculture and Maritime, Spatial Planning)

Céline Frank identified that the Commission recently adopted the REPowerEU communication in response to the rise in energy prices and putting the emphasis on the need for more renewable energy. As part of this package, the Commission is going to issue guidance on renewable energy permitting with the idea to shorten the administrative procedure.

Moreover, the European Parliament has published an extensive report on the topic highlighting the importance of these developments in terms of energy production, but also the need to pay attention to food production from the sea, which is another important pillar of the Green Deal, an to which the fisheries sector contributes significantly.

She also referred to the joint resolution by the European Social Partners in the sea fisheries sector on the topic of offshore wind and fisheries, which was quite aligned with the European Parliament opinion.

Frank then references various studies and projects including the s-MSP project; Environmental Impacts of Offshore Wind Farms in the Belgian Part of the North Sea (2020); EEA report on mapping potential environmental impacts of offshore renewable energy (to be published in summer 2022); the ICES Workshop on socio-economic implications of offshore wind on fishing communities (WKSEIOWFC) + WGOWDF + WGMPCZM; and the Horizon Europe action: Wind energy in the natural and social environment.

She then moved to the results of the study prepared by DG MARE. The research was led by Wageningen Marine Research with the main objective was to develop a general understanding of the existing and potential future effects of offshore wind installations on fisheries and aquaculture.

Frank explained that the study tries to classify ecological impacts identified in the literature research as low, medium and high impacts. It was concluded that the main impacts happen during construction of wind farms, when disturbance and sediment displacement are higher. Mitigation measures already exists and have promising results, but there is not enough information on their actual efficacy. Impacts are mitigated during the operational phase, which can also have positive effects on the environment, such as the creation of artificial reefs on the wind turbines where marine organisms can find refuge and recovery. However, the ecosystem is likely to remain altered in its functions and processes. More research is needed on these aspects.

In terms of management, Frank pointed out the importance of the MSP process, which should be accompanied with continuous discussion and consultation with the different stakeholders involved. Co-habitation between fisheries and offshore wind parks is very difficult making early and better stakeholder consultation vital. Another strategy is compensation, which has been approached in

different ways by the Member States, as some provide direct compensation to fishers while in others it comes as part of a specific fund.

In relation to the legal and socio-economic aspects, Frank pointed out that during the construction phase, navigation through the developments is forbidden, which means total exclusion of fisheries. During the operation phase different rules apply, and in some cases vessels below 24 meters can be exempted from the safety zone. Overall, more quantitative studies are needed to assess the monetary value of the loss of fishing.

Referring to the main conclusions of the study, Frank mentioned that strong progress has been made in recent years in terms of knowledge and of how it is shared, however it is clear that more data is needed, especially on the socio-economic side.

It is evident that offshore wind farms tend to restrict fisheries activities due to safety implications, but, for example in Belgium, no negative effect on fisheries were observed based on yearly aggregated VMS-logbook data between 2006 and 2017. For ecosystems, some benefits are noticed at local scale (e.g., artificial reef effect, passive refugium in the long-term), but there is no quantification at population level yet.

6 ICES WORKING GROUP ON OFFSHORE WIND DEVELOPMENT AND FISHERIES

Dr Andrew Gill (Cefas)

Dr Gill gave a brief outline of the three main groups in ICES working on Offshore and Marine Renewable Energy topics:

Offshore Wind Development and Fisheries (WGOWDF) – The work of this group focuses on the interactions between fisheries and offshore wind energy (fixed and floating). Sustainable fisheries are critical to global food security, and renewable energy is critical to energy security and climate change mitigation. Coexistence requires an understanding of the interactions between offshore wind energy development and fishing. This understanding can be used to foster the exchange of information, collaboration in addressing science questions, and support decision-making. Consequently, these activities are considered to have a very high priority across the ICES area especially as wind energy development continues.

Marine Benthic and Renewable Energy Developments (WGMBRED) - The activities of focus on how the marine benthic community of marine renewable energy devices contribute to the functioning of the marine ecosystem, and how they can act as areas where benthic biodiversity can be promoted or maintained after the lifetime of the devices.

Offshore Renewable Energy (WGORE) – The group's remit includes correlating the science from groups on specialist topics such as seabirds, benthic ecology, and fish ecology and its application in planning, consenting and regulatory processes in relation to offshore wind energy.

Gill then focused on WGOWDF, explaining its Terms of Reference (ToRs):

- ToR A focuses on the social, economic and cultural aspects of the interaction between offshore wind and fisheries;

- ToR B is about developing methodologies to assess the impact of offshore wind development on fishery resources;
- ToR C focuses on how target commercial species and their habitats might be affected by offshore wind development;
- ToR D reviews ICES expertise and identifies gaps and opportunities relative to renewable energy and marine ecosystems and sustainability.

WGOWDF has been looking at interaction between OWF developments and fisheries and the subsequent effects, considering whether they are positive, negative or neutral. It is important to determine if an effect is of significance and meaningful either to the fish population or to the fishers themselves. For example, the closed area of an OWF can provide potential refuge for fish species, create a new habitat and may act as de facto Marine Protected Areas. This in turn can produce a spillover of species from the unfished/underfished offshore wind area into adjacent fishing grounds.

However, energy emissions (e.g., noise, electromagnetic fields) could cause displacement and sublethal effects on fisheries species. Some effects could occur to different species and therefore have ecosystem food web effects locally. Displacement from customary fishing grounds could lead to the carry-over of fishing to other areas, thus intensifying fishing pressure in these areas (“knock-on effect”). Furthermore, this can affect predator-prey interactions.

The increase in OWF will potentially increase spatial exclusion of fisheries from areas (i.e., fisheries displacement). Most recurrent sources of tension appear to concern direct space-related conflicts and exclusion of fisheries. The carry-over of fishing activities from one area to another can lead to increased competition, affecting previous balances in more and more crowded areas. Gear use might require change too, as some could work in OWF (passive traps), but others not (e.g., active trawls).

Considering the socio-economic impact on fisheries communities and how they can adapt, Gill pointed out that this can include reductions in economic return, either directly as a result of limited access to the area and the resources it hosts, or indirectly as a result of a carry-over to potentially less profitable or less reliable areas. It can also increase travel costs, as a result of lengthened routes to and from fishing grounds beyond OWF, even though this specific aspect may be less of an issue through the opening of OWF for transit of fishing vessels and the wider spacing of larger and fewer turbines. It is important to consider how much a community is resilient and how easy it can adapt to utilise future potential.

As part of ToR A, the WG organised a workshop on socio-economic implications of OWF on fishing communities – WKSEIOWFC, which linked to social science WGs and involved external fisheries organisations. This workshop led to the production of a paper (almost finished) describing the current state of knowledge of socio-cultural effects of fisheries effort displacement due to offshore wind farms. The workshop allowed to describe, summarise and illustrate the environmental, economic and cultural effects that offshore wind development has on fisheries. Key results are preliminary conceptual models of cause-and-effect relationships, evidence and data gaps, reflections on the assessment of the cumulative impact from offshore wind on the fishing sector and fishing communities as well as identified perceptions of similarities and differences between European and US regions. Restricting fishing activities in a larger area is expected to lead to the reallocation of fishing activities and likely knock-on effects on associated industries. Understanding socio-cultural effects of effort displacement remains one of the biggest challenges.

Gill explained that future work on the topic involves an online questionnaire with other ICES expert WGs relating to the perception of the issue of impacts of offshore wind on scientific data collections

and the production of a data collection method paper. A session on this theme is scheduled for the ICES Annual Science Conference in September 2022.

The WGOWDF is also going to break down the OWF-fisheries implications for the fisheries resource species of interest into a structure that assists in identifying and assessing the causes of the changes in fisheries resource species and the potential effects to the fishers.

Gill concluded that more research is needed to assess potential impacts of the development of offshore wind farms on the fisheries sector, local communities and economic activities onshore. This understanding can be used to foster the exchange of information, collaboration in addressing science questions, and support decision-making. Consequently, these activities are considered to have a very high priority on a global level especially as wind energy development continues.



Q&A

Q: Is there any proposal from the Commission to look into (possibly legal) protection of fishers? I there any work proposed regarding the effects on spawning in the short and long term? Is any work being undertaken on potential effects of more concentrated fishing in smaller areas as a result of fisher’s displacement from OWF?

Frank: Tools are available through EMFAF to help fishers when they lose fishing activities. The MSP Directive does not contain any legal obligation to allocate space for fishing, but Member States shall aim to contribute to the sustainable development of fisheries through their maritime spatial plans. MSP evolves based on needs and in consultation with all sectors.

Gill: Though no work is being carried out yet, spawning is something ICES hopes address in future. The knowledge on locations of spawning areas is outdated, but this information is essential especially for disturbance during construction phase. Plankton sampling modelling for larvae distribution and movement exists, but modelling is limited by data. Displacement is a complex topic that needs to be broken down into gear types. VMS data is only available for vessels over 12m. There is also a growing worry about floating installations with a lot of conflicting opinions, but ways to collect the data must be found to answer these questions.

Q: It was stated that there are no negative impacts on fisheries in Belgium, could this be because fishing activities are lower here than in other MS? Maybe this is not a good example to use as a basis for general assumptions.

Frank: The Belgian project is an example for extensive monitoring and available long-term data. It is true that generalisations in this context are difficult, but good monitoring enables conclusions. The effect of more fish appearing on the edges of this development is encouraging, but this needs to be complemented by other data on fish population.

Q: Due to the lack data and knowledge, is there enough time for additional research to feed into the decision-making process? Pressure is high to build wind farms, but do we have time to get all the info we need for example on long-term impacts?

Gill: It is not possible to compile all the information in the time available. A realistic, risk-based approach must be taken, and the collection of data is key to understanding the current status that can be used as baseline data. What spatial and time scale we need to collect the data? The EU is well placed for implementing a coordinated approach to creating a set of data collection that will allow understanding of key aspects. This will hopefully allow MS to work with together.

Q: Will potting gear not be excluded, and is this likely to change with existing windfarms? In the German sector there is an ongoing study in using potting for shrimp to test feasibility to work in windfarms.

Gill: ICES is aware of several studies in this regard. The more passive gears can be used within the windfarm, there more options there could be.

7 PANEL DISCUSSION ON THE WAY FORWARD

Maud Casier, Peter Sigraay, Frank Thomsen, Céline Frank, Andrew Gill

John Lynch, Irish South & East Fish Producers Organisation

Cristina Simioli, Programme Manager Renewables Grid Initiative

Serena Rivero, North Sea Foundation

Q: How does the Renewable Grid Initiative work?

Simioli: The Renewable Grid Initiative is a collaboration between transmission system operators (TSOs) and NGOs. We have 24 members working together and have achieved important results that do not only encompass principles for the sustainable development of the grid infrastructure but also concrete measures/actions resulting from collaborative projects at the regional and national levels. Given the important role offshore renewables plays in reaching decarbonisation targets, in 2020 we started a dedicated project and brought along the wind industry (<https://offshore-coalition.eu/>). Today we are 26 organisations working together on the sustainable deployment of the offshore renewable and grid infrastructure while preserving and restoring the marine environment. Creating a common understanding and language on basic environmental concepts are key. We are addressing topics such as MSP, mitigation measures and best practices, data gaps and data centralisation among

others. There is gap in the research, and we are open to extend the discussion with ICES and the ACs. Could developing jointly ToRs for a study be a solution to to ensure we address the right topics and ask the right questions?

Q: From a stakeholder perspective, what is best way forward for stakeholder engagement and what is the role of the ACs?

Lynch: The reality in Ireland is that stakeholder involvement started with prospective developers visiting the harbours and showing maps with sites already chosen. The fishing industry was not consulted. If you look at the current proposed developments around the Irish coast, there will be serious fisheries displacement as fishing vessels will have nowhere to go due to the sheer number of wind energy developments proposed. Especially coastal fisheries are going to be very seriously impacted. Following a bad start, we need to think about mitigation measures now, compensation for displaced fisheries. An increase in fish aggregations around these sites is possible and the use of static gears might be possible, but these are banned in most OWF sites. Mobile gear operation is impossible in OWF sites for many reasons, safety, risk of prosecution, inability to obtain insurance and the reality that fishing will not be allowed inside these areas. This will cause a huge interruption to fisheries around the coast of Ireland with a massive impact on the coastal communities dependant on it.

Q: How do we take a pragmatic way forward and keep doing and learning at the same time?

Gill: The Irish situation is an example of what is happening in many other countries as well. Early engagement is key but has not happened in most countries. Bringing together stakeholders for discussions on a national basis is the right process for understand the research that is needed. In UK waters some areas have been allocated for development with opportunities to influence the spacing arrangements of turbines, and stakeholder engagement on this is vital. Collecting data on fishing communities has been useful to understand impacts. Understanding local conditions are essential to identify questions to focus research on what information is actually needed. If stakeholders are involved from the start, some of these hard decisions might be easier to make.

Frank: In many countries plans have been changed after discussions with fishers, for example relocating a project to avoid fishing grounds, or including corridors through the wind farms. Turbines are getting bigger and there could be space for fishing between turbines which is now very restricted.

Thomsen: The focus should be on roles and responsibilities. Care has to be taken with accelerating offshore wind energy development plans, and there is a need to ensure the quality of both plans and science. This research has to be truly independent.

Q: Improving the process during planning would be needed, but this should not undermine the work of the science. Could the current system in The Netherlands be used as a model?

Rivero: The main goal of the North Sea Foundation is to have healthy seas. We want offshore wind to mitigate climate change, and there are conflicting goals. Stakeholder engagement from an early phase is key. The North Sea agreement is the main vehicle for stakeholder engagement with representatives coming together once a month to discuss MSP decisions and food transition, with multiuse as guiding principle: passive fishing, mariculture, nature (area passports being developed per wind farm). We need to identify how to collect data on biodiversity and impacts from wind energy developments. The North Sea agreement has 55 million euros invested in this, and stakeholders discuss on what research needs to focus on. It is essential to continue keeping communication open between stakeholders at EU level and national level.

8 CLOSING REMARKS FROM GONÇALO CARVALHO, PelAC OIG Vice-Chair

Gonçalo Carvalho thanked the moderator and the speakers for their participation and contributions as well as the to the Secretariats for organising the workshop.

He stated that the NWWAC and PelAC will continue to bring together people to discuss these issues and others. AS a follow up to the workshop the ACs will also draft advice based on the analysis of the discussions.

Regarding the underwater noise aspect, Garvalho felt that though this is out of sight, it cannot be allowed out of scope, and the topic is becoming more present in discussions and policy. He noted this positive evolution while emphasising the need for more research on populations and ecosystem impacts, and on the implementation of mitigation measures.

Carvalho agreed that there is a very present sense of urgency regarding the development of OWF, but that there is a need to strike a careful balance so as not to create other problems. *“While the urgency is there, the precautionary approach must be respected and the integration of existing uses and known impacts needs to happen.”* Concerns regarding the impacts on the fishing industry and marine conservation are there but there are also opportunities for integration.

He identified that information gaps exist both regarding environmental and also socio-economic aspects. Guidelines on good practices and coexistence are very much in need.

“We need better stakeholder engagement”. MSP should be a practice and not just an acronym, with new uses needing to be integrated.

“We need to find space for all these things to happen sustainably in the ocean.”



SPEAKERS' BIOS

Felix Leinemann is Head of Unit for Blue Economy Sectors, Aquaculture and Maritime Spatial Planning in the European Commission's Directorate General for Maritime Affairs and Fisheries. He and his team promote a sustainable blue economy for the benefit of humankind and the oceans. Mr Leinemann has worked for the European Commission since 2003 in various fields including fisheries and maritime policy, shipping, aviation and urban transport, as well as the EU's global navigation satellite system Galileo. From 2012 to 2014 he worked as Transport Counsellor in the EU Delegation in Washington, DC. Mr Leinemann holds a PhD from the University of Freiburg, Germany, following law studies in Germany and Italy.

Patricia Comiskey is Consenting and Government Relations Manager with Simply Blue Group in Ireland. Previous to that, she was Programme Manager with the Sustainable Energy Authority of Ireland, and prior to that Environmental Officer for fisheries in Board Iascaigh Mhara, giving her more than 22 years of experience working directly with key government and marine stakeholders in Ireland and the EU. During her time in BIM Patricia was also part of the NWWAC Secretariat. Patricia has a BSc in Zoology from Trinity College Dublin and an MSc in Marine and Fisheries Science from University of Aberdeen.

Peter Sigray is a researcher at Royal Institute of Technology (KTH) in Stockholm, Sweden. His research interest is focused on bioacoustics, studying a multitude of aspects of the marine soundscape. He headed the BIAS project, which was the first world-wide attempt to make large scale assessment of the marine soundscape and has developed several novel instruments for example the particle motion sensor and the electromagnetic sledges (SEMLA). The former is used to measure acoustics using the same concept as the ear of a fish and the latter is used to map electromagnetic fields generated by sub-marine cables. Lately, he has been chairing the EU expert group on assessment and implementation of the Marine Strategy Framework Directive

Maud Casier is a civil servant from the French ministry of ecology who is currently seconded as a national expert at the European Commission. She is a policy officer in unit C2 DG ENV for marine environment protection, in charge of the implementation of MSFD descriptor 11 for input of energy including underwater noise. In this regard, she coordinates and supports the work of the Technical Group on underwater noise in the framework of the common implementation of the MSFD.

Frank Thomsen has 30 years of experience in marine mammal science, bioacoustics and environmental impact assessment. His research involved the acoustic communication in killer whales, the effects of offshore wind farm noise on fishes and mammals and the modelling of behavioral changes of marine life in response to underwater sound. As expert advisor, he has consulted national marine policy bodies including Defra, DECC (UK), BSH (Germany) and Naturstyrelsen (Denmark). On an international level Frank has provided advice to the United Nations, the International Maritime Organisation, OSPAR, the London Convention and the European Commission. Frank was the chairman of the European marine Board expert group on underwater noise. He is currently the chairman of the

6th International Conference on the effects of noise on aquatic life which will be happening in Berlin in July 2022.

Céline Frank is a policy officer at DG MARE, in the unit in charge of Blue Economy Sectors, Aquaculture and Maritime Spatial Planning. She holds a Masters degree in Marine Environment and Resources and currently works mostly on questions related to the implementation of the Green Deal in the European seas and environmental issues linked to maritime spatial planning. She has launched in 2020, together with the implementing agency, CINEA, a study led by Wageningen Marine Research on the effects of offshore wind farms on fisheries and aquaculture.

Dr Andrew Gill is a Principal Scientist, and the Strategic Lead for Offshore and Marine Renewable Energy (OMRE) at Cefas – the Centre for Environment, Fisheries and Aquaculture Science (an executive agency of the UK Govt Defra (Dept of Environment, Food and Rural Affairs)). Andrew is an applied fish and fisheries ecologist who works within the Advice and Assessment team to support and develop the scientific evidence base. He joined Cefas in 2019, with 29 years of experience principally in the University sector. His current focus is as strategic lead for OMRE and further developing Cefas-wide initiatives into the decarbonisation agenda, cumulative environmental assessments, systems approaches and environmental effects and impact assessment of energy harnessing and transmission (e.g. sub-sea cable EMF and noise). Andrew has chaired and served on several international committees and authored/co-authored numerous cross-disciplinary international journal articles, book chapters and scientific reports. He is co-Chair of ICES Working Group - Offshore Windfarm Developments and Fisheries (2020 - to date).

John Lynch is CEO of the Irish South & East Fish Producers' Organisation. A long-term member of the NWWAC and an active fisherman working out of Howth, Ireland, he and his crew regularly collaborate with Bord Iascaigh Mhara, Ireland's Seafood Development Agency, on gear trials specifically aimed at mixed demersal fisheries.

Cristina Simioli is Programme Manager for Offshore Energy and Nature activities at the Renewables Grid Initiative. She oversees collaborations between industry, Transmission System Operators and NGOs to find joint solutions to speed up renewables and grid development while ensuring the protection and restoration of nature.

Serena Rivero works as a marine ecologist at the North Sea Foundation. Serena's main focus is to ensure a healthy North Sea ecosystem, in balance with human activities allowing for nature to thrive, now and in the future. Her main areas of interest are protected areas, species protection and restoration, science-policy interface facilitation and ecological opportunities and risks of offshore wind.