Minutes

Joint NWWAC/PelAC Focus Group Spatial Dimension

Virtual meeting via Zoom

29 April 2025

Participants

Gonçalo Carvalho (Chair)	Sciaena
Enda Conneely	IIMRO
Falke de Sager	Rederscentrale
Ed Farrell	KFO
Simon Jennings	ICES
Mo Mathies	NWWAC Secretariat
Alexandra Philippe	EBCD
Claus Reedtz Sparrevohn	DPPO
Paul Thomas	PelAC Secretariat

1 Welcome from the Chair (G. Carvalho)

The Chair Gonçalo Carvalho welcomed all participants. Apologies were received from Solène Prevalet (FROM Nord) and John Lynch (ISEFPO) prior to the meeting. The agenda was adopted.

Action points from the last meeting:

1	Nils Bunnefeld and Marco Gauger will share their presentation slides with Mo for circulation among members and inclusion on the NWWAC and PelAC websites. They will also provide details about the upcoming participatory workshop, which will be circulated to members.
	Information was circulated and published on the websites.
2	Members were encouraged to forward any additional questions about the presentations to Mo, who will compile and share them with the speakers for written responses.
	Nothing received

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2 EU request on economic, social, and ecological impacts of offshore wind farms (OWFs) and floating offshore wind farms (FLOWs) on fisheries in the Baltic Sea, Celtic Seas, and Greater North Sea – Simon Jennings, ICES

Simon Jennings thanked the ACs for the invitation and welcomed the opportunity to present this advice which was published just over 2 weeks ago.

He explained that this was a very wide-ranging request ICES had received from DG MARE. It had 8 elements spanning the observed and potential economic, social, ecological and cumulative impacts of offshore wind farms and floating offshore wind farms, particularly with a focus on the scope of existing evidence, methods to assess impacts and mitigation options to avoid or reduce unwanted impacts on fisheries.

Regarding the context for the request he outlined that the main drivers were the EU Strategy on Offshore Renewable energy and the Member States' ambitions and targets for energy production, particularly by 2030. Jennings pointed out that there is also the European Wind Power Action Plan as well as the communication on delivering the EU offshore energy ambition.

The overall objective was to better understand the social and economic impacts of these very fast and large-scale developments that can be seen and are expected, and to understand their impacts on marine ecosystems and fish populations and hence the knock-on implications for fisheries. ICES was asked to particularly focus on the Baltic Sea, Celtic Seas and the Greater North Sea and to focus on bottom fixed offshore wind farms. ICES was also asked to bring in evidence from floating offshore wind farms (FLOW) where this was available.

Jennings made it clear that the evidence base for floating offshore wind farms is a lot weaker than it is for the bottom fixed offshore wind.

He pointed out that developing the advice has been fairly significant for ICES in terms of the types of requests that are usually addressed. Around 30 of ICES' existing expert groups had to be involved which span various aspects of fisheries science as well as marine ecosystem services and effects. The work was structured into a number of parts to provide coherent areas of work for these experts and to align it with the science that was contributing to the ICES ORE roadmap, which we published last year. And this roadmap was really intended to catalyse a step change in ICES' capability to support the sort of science and advice that was emerging around offshore wind developments.

The framework and process for the development of the advice followed the usual ICES advice principles, i.e. developing the knowledge basis through experts and then refining and peer reviewing the advice through the advice drafting group and the Advisory Committee.

Work was initiated with three separate but coordinated expert workshops that brought together much of the detailed evidence. This was then consolidated in a major workshop, WKCOMPORE, where the work was brought together in an attempt to harmonise any discrepancies and interpretation. This was then followed by an international peer review process leading to an

advice drafting group and review by the ICES Advisory Committee, and finally the release of the advice.

Jennings then provided a break down of the advice though but using a structure that did not exactly match the parts that the DG MARE had asked ICES to address in order to simplify the presentation.

The first part of the request dealt with **assessing the data and resources available** for the analysis of the economic and social impacts of offshore wind farms, and the known and projected impacts on fisheries and the information, methods and data needed to advance understanding of the impact. There were four key findings:

1 The assessments of economic and social, and that includes cultural impacts, require vessel positional data, fisheries, catch and effort, data, fisheries, economic data, fisheries, social data and information on the distribution of the wind farms themselves. Methods for data processing may need to evolve in future, for example, the current emphasis is on fishing positions from VMS data, where in the context of offshore wind, steaming positions are also important because expense may be incurred by the industry moving around these impediments to navigation.
So although there are a lot of data out there, their specificity to the questions that are now being asked about offshore wind farms is not necessarily that high. Another issue is the capacity to link the social data and the economic data to the detailed positional data that's mostly collected at present for the ecological purposes associated with fisheries.

2 Available data are mostly not collected or collated at sufficiently high resolution and cannot be linked in ways that enable a full evaluation of the direct and indirect social and economic impacts.

3 When the underlying expert groups conducted a systematic review of available European studies, these identified impacts on income, fishing grounds, catch opportunities and operating costs in the fisheries that were studied. It is worth saying that for all impacts, there were more studies reporting negative impacts on fisheries than studies reporting positive impacts.

4 Impacts of wind farms are hugely context dependent, which is a key point. The type of offshore wind farm, the development phase, whether it is preconstruction, construction, operational decommissioning, and the adaptive capacity of the fisheries all influence the observed and expected impacts. This message came through again and again throughout the advice.

Jennings felt that it is extremely difficult to generalise about social and economic impacts because the regulations around offshore wind farms in the different Member States are very variable, and the types of fisheries that are able to utilise areas in and around these wind farms are also very variable.

The next section of the request dealt with **summarising the known ecological impacts on commercially fished populations**, and case studies of impacts on recruitment of Western Baltic herring and Baltic Harbour porpoises.

Based on a very comprehensive literature review, the advice concludes that some pressures associated with all phases of offshore wind development have known or predicted local impacts on commercially fish species.

But ICES did not identify any population level assessments, and instead, the advice describes what requirements for these population level assessments would be.

At present the science has not really evolved beyond descriptions of local effects to assess the effects at the stock level as would, for example, be done in providing fisheries management advice. Jennings felt that that the scaling up the local effects to the effects at the scales of the stocks is going to be a critical connection going forward.

In terms of the western Baltic herring, there was not sufficient evidence to make a direct assessment. But there was no evidence at the moment to infer that the existing offshore wind farms were affecting that stock, and the experts felt it unlikely that future developments would be a concern because they would likely be outside the main spawning areas of main component of this stock which tends to spawn in shallow and lagoonal type waters.

The situation was a different in terms of the Baltic proper harbour porpoise population. The group found there was not a great deal of evidence, but the difference here was that it is clear from other studies that OWF and FLOW developments do have an effect on these species. The group felt they could infer from this that there was a risk to this critically endangered population. FLOW developments occurred in the core distribution area and underwater noise is a particular concern, as is elaborated more in the body of the advice.

ICES was then asked to recommend the **next steps to develop methods for modelling the cumulative, i.e. the collective effects** of offshore wind on commercial fisheries and the possibility to adopt mitigation measures to address these. There were two key findings:

1. There has been some confusion over the interpretation of cumulative impacts. So, for the purposes of this request, ICES defined this as the combined effects which could be additive, synergistic or antagonistic of renewable energy developments in a defined sea area on some specified aspect of commercial fisheries, such as social, economic or ecological, via the impacts on the fish stocks themselves.
2. ICES identified some existing methods and models that would be suitable for assessing these cumulative effects. However, there is not currently enough information to parameterise and apply these models. But if we could parameterise and apply these models, then it would be possible to identify and modify some mitigation options

The next part of the request was to provide a **review**, based on the most recent literature, **to describe how changes in hydrodynamic conditions produced by wind farms might change food availability and influence phytoplankton primary production**. These effects occur as a

result of the physical effects of offshore wind developments. Two physical effects were considered. The first obviously is changing the wind field because the turbines are taking energy out of the atmospheric system, and the second is changing the conditions in the water column because the turbine bases themselves act as obstructions, and this creates turbulent flow where the currents flow across them. Especially in seasonally stratified areas, two contrasting effects can be seen.

The wind wakes reduce primary production because of lower mixing of the water column when the wind energy is reduced, but this is countered by increased mixing which is caused by the underwater structures interrupting the tidal flows and creating a non-laminar flow that tends to circulate nutrients up from the lower areas of the water column towards the surface.

The science to assess the tradeoff between these positive and negative effects is not strong at the moment, so effects can only be described in broad directional terms, and not in relation to quantitative implications and effects higher up the food chain on commercial species.

Jennings pointed out that the structures are also supporting communities of filter feeding organisms, for example mussels, that attach to them. These will consume primary production that would otherwise be available to the phytoplankton food chains. Again, the wider effects of this are now known.

The next part of the request was to provide a **review,** based on recent literature, **of the ways in which artificial structures would influence colonisation by new species**, both indigenous and non-indigenous.

There are three main conclusions.

1. Offshore wind farms introduce artificial hard substrates in many areas that are typically dominated by sedimentary and mobile sea beds. If these were away from natural rocky coasts and sea beds, then the wind farms become obvious stepping stones for the organisms.
2. Their impact on indigenous and non-indigenous species in relation to other hard substrates is not really known, so they are one of a number of structures that can have an effect on the distribution of these species.
3. The transport of floating offshore wind farms between ports and the wind farm locations may facilitate the spread of non-indigenous species. This is known from the colonisation of other structures associated with the oil and gas industry, for example, if they were manufactured in the South of an area but then transported to the North of an area for operational reasons.

The next part of the request examined the **reaction of pelagic species to dynamic cables suspended in the water column**, which are effectively the free hanging cables that are associated with FLOWs.

1. They may affect pelagic species at the local scale because of direct energy emissions, for example sound and electromagnetic fields, physical effects and/or indirect ecological effects.
2. ICES has not actually been able to locate any studies of the effects of dynamic cables, but a lot is known about the effects of cables that are already used on fixed offshore wind farms for transporting energy along the seabed. Therefore, it was deemed reasonable to infer effects from these studies which, again, tend to describe local rather than population level effects.

At present there is not enough scientific knowledge to assess if these effects would matter for the stock or for the population.

The last part of the request dealt with **options for mitigation, measures, good practices and spatial planning** for these developments and assessing their strengths, weaknesses, implications and uncertainties. ICES was asked to list priorities for research and monitoring related to these options.

Jennings reiterated the importance of context. He explained that these developments are somewhat unusual as fisheries are managed through the CFP, but the development around offshore wind facilities is largely within the jurisdiction of Member States, so the range of rules and regulations that apply to the different offshore wind farms and the type of interactions between the fishing industry and the wind farms that can occur are very variable. It is quite difficult for ICES to generalise about impacts because they are so context specific. But one advantage of this sort of situation is that the evidence base is increased so that the different contexts that apply in different regions can be compared and contrasted in order to learn from those which offer the weaker or stronger solutions in terms of interactions with fisheries.

1. Mitigation is intended to reduce or compensate for adverse economic, social and economic impacts of the offshore wind farms.
2. There are a whole range of technical mitigation measures available that can be employed, such as the siting of cables and noise abatement, modifying aspects of wind farm design to help fishing vessels operate within and around them, and to reduce adverse ecological impacts. A particular focus in the advice has been the provision of corridors for navigation. These reduce the costs and expense associated with moving around wind farm areas.
3. Maritime spatial planning and the subordinate planning processes, instruments and supporting policies contribute to identifying and implementing mitigation opportunities, and we've seen examples of multi-use and co-use that enable at least some level of coexistence between users and activities.
4. When that is not possible there is also mitigation through compensation to provide substitute resources or environment. Whether compensation is made available is a policy decision.

5. Stakeholder engagement and co-design have typically helped to develop technically, economically, politically, socially and ecologically feasible approaches that are supported or at least to some extent accepted by stakeholders. Early engagement in the process has typically resulted in planning that has led to less conflicts than planning that did not follow these types of approaches.

The Chair thanked Jennings for the extensive presentation and opened the floor to questions.

Falke de Sager asked for clarification regarding the availability of evidence for FLOW.

Jennings responded that there are currently far fewer FLOWs in operation. Bottom-fixed OW has been in place for many years in several EU countries with fairly extensive studies and some monitoring in place as well as experimental work on things such as electrical fields.

De Sager followed with a query on bottom-trawling in FLOW and wondered if this had been taken into account in the advice.

Jennings commented that it was difficult to access planning information on installations and that this is not collated internationally at the moment. Without this information on the various types of mooring systems in relation to spatial scales that matter to the fishing industry it is hard to provide good advice on the impacts. "This level of coordinated data collection, as is known in the fisheries context, needs to be developed in the offshore renewable energy space as well."

Claus Reedtz Sparrevohn commented that knowledge on population and ecological scale is much less available than it is on a local scale and asked how knowledge at population level could be obtained in future.

Jennings explained that this has been discussed, and a table is contained in the advice to show studies of local effects. He stated that there is quite good understanding regarding the local effects on certain species. These could be used for scaling the analysis up to population level. Given the types of population models that already exist, especially for ICES Cat. 1 and 2 stocks, an additional mortality term could be brought in in relation to some effects of OWF. The intersections between the distribution and abundance of the population and the distribution and the impacts of the offshore renewable energy installations need to be understood better. This comes back to the data question as offshore installations across the entire distributional range of the population would need to be examined. However, once we have the data the methods themselves are unlikely to be a large step from the type of risk assessment analyses that have been done in some data poor fisheries, for example PSA type analyses that look at overlaps between fishing activity and a population distribution. "This would in effect be looking at overlaps between a population distribution and the offshore wind farms, and trying to infer the level of risk at the population level."

Reedtz Sparrevohn queried if potential positive effects were also addressed in the advice.

Jennings outlined that there is clear evidence that there will be changes in systems as a result of these installations. It is also clear that the evidence base at the moment draws on a very short-term perspective and to an extent, these installations will change the architecture of the ocean, i.e. there will be hard-bottom substrates in areas which are dominated currently by soft bottoms, which may lead to some redistribution of populations. In the context of pelagic species there was a discussion among the experts regarding OW potentially acting as aggregation devices, for example similar to the FADs used in tuna fishing. However, commentary on this is not part of the advice.

Referring to multi-use and coexistence, **Paul Thomas** commented that this was being highlighted by developers. He was wondering if ICES had looked at the potential trade-offs regarding this and the use of compensation. In addition, he queried ho this work might be used regarding limiting the deployment of OWF and FLOW to avoid impacts on fish spawning and nursing habitats.

Jennings responded that ICES is currently unable to quantify trade-offs between costs and benefits due to data limitations. He added that the working group (developing the knowledge basis for the advice) had discussed changes in use, for example from bottom trawling to potting in the long-term. He related this to the local vs. stock issue and pointed out that the advice is clear in relation to something like not putting an offshore wind farm in a herring spawning ground. But subtle effects at a stock level cannot yet be evaluated.

The Chair wondered what the next steps were for ICES now.

Jennings stated that work to support the offshore renewable energy roadmap is ongoing, i.e. developing the scientific capability and addressing some of the questions that were also raised now. Discussions are ongoing on how to bring spatial data more effectively together, such as high-resolution data and steaming locations. “There are a lot of questions about linking positional data with economic and social data, and the current data connection framework does not make this an easy task.” He mentioned an additional request on cumulative effects, including offshore wind, as received by ICES from the Dutch government on behalf of the Greater North Sea Basin Initiative. The resulting advice is expected to be published in November 2025.

De Sager mentioned work being carried out by the Cornish POs in relation to the UK’s Celtic Sea OWF developments. Data plotters are now being used instead of AIS? and VMS data to look at the difference between fishing grounds and steaming locations.

The Chair wondered if ICES was planning to hold a stakeholder workshop on these issues in the future.

Jennings explained that as part of ICES’ previous work a stakeholder exercise was held as part of WKCOMPORE (link). The report to this workshop lists stakeholder concerns in one of the annexes (Annex 9).

3 Review and discussion of draft advice

The Chair recalled that the advice was based on presentations and discussions from the webinar in February which was not well attended by FG members. He asked participants if they felt that webinars were less important than presentations in Focus Group meetings.

Mo Mathies suggested that since not many members are present today, it might be better to collect members' opinions via written procedure.

The Chair agreed and suggested that a questionnaire might be useful.

He added that it might be best to continue with the draft advice via written consultation. This suggestion was followed by a discussion on how to proceed, and members made several suggestions regarding content development.

4 AOB

None raised

5 Timeline and summary of actions agreed

The NWWAC Secretariat will update the current draft advice to include issues raised today and reference the ICES advice presented by Jennings.

This will be circulated to FG members as soon as possible who will then have a week to review and comment on the draft prior to initiation of the relevant approval procedures in both ACs.