Anemoi | Interreg North Sea | Co-funded by the European Union

Anemoi Newsletter

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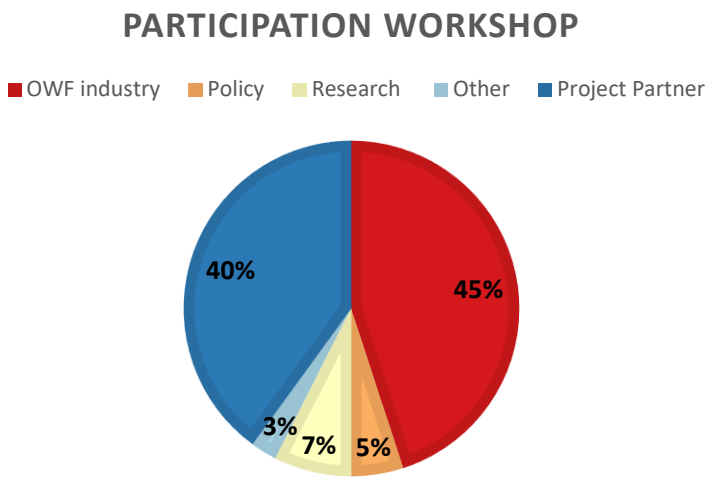
Content

Workshop Attendance

A big thank you to all 40 of you who joined the first Anemoi stakeholder workshop in Hamburg.



Recap of the stakeholder workshop in Hamburg, Germany May 30th-31st

On the first day, we started the workshop with a session on the state of science on chemical emissions from offshore wind farms. Then, we broke into two groups to brainstorm challenges and solutions to achieving:

1. Reasonable, effective, and harmonised regulations for chemical emissions impact from OWF.
2. Effective and environmentally safe methods, systems, and routines for minimizing impacts from chemical emissions.

On the second day, we had two keynote speakers:

1. **Nico Nolte** from the German Federal Maritime and Hydrographic Agency spoke on the challenges that come with the extension of offshore wind energy.
2. **Geneviève Deviller** from Deviller Environmental Risk Assessment of Chemicals spoke on EU chemical emissions regulations impacting offshore wind farms with a focus on properties of concern and risk assessments.

We found the workshop helpful to our work, and we hope you did as well!

Main results from the participatory sessions and survey

Figure 1: Ranking of how we should prioritize the brainstormed solutions

1. Better characterise risk

Smart, risk-based monitoring is necessary for the impact characterisation of different contaminants. This was confirmed in our survey, where 41 to 53% (n=19) of the participants could not assess if current emissions could inflict damage to the ecosystem or human health. Risk assessments and optimal solutions may differ between sea basins and must be evaluated separately. Additionally, degradation products should also be considered in risk assessments.

2. Harmonise regulations and standards

Based on our survey, 76% (n=19) agree that there is a need for harmonisation on an international level to minimise national differences. This was also confirmed during the workshop. The sector can also benefit from increased standardisation in operations, construction, and maintenance. Standardised monitoring methods and programs can increase data comparison.

3. **Increase communication between different actors**

Currently, there are knowledge silos. Using knowledge from other sectors (i.e., oil and gas), ensuring clear communication from regulators to industry about what lies ahead in terms of regulation, and creating spaces for a wide range of actors to gather and discuss will be key to overcoming these silos.

4. **Reduce at the source**

Existing standards for offshore wind farms can be challenging (46% agree according to our survey), and potential metal (100%), pain flakes (76%) and organic (59%) emissions can be expected. Reduction at the source should be based on identified risks. We should work to avoid chemicals that contain risk, but if this is not feasible, we should work to minimise the use of these chemicals and monitor them. Also, an investigation of how coating systems break down could lead to better solutions for protecting the coating systems.

5. **Gather more monitoring data**

Currently, we lack: (1) monitoring methods to identify concentrations of different contaminants, (2) methods to assess the effects of chemicals and to link lab-based experiments to in-field effects, (3) data on concentrations, impacts and effects, and (4) knowledge of how solutions and risk assessments differ between sea basins. According to our survey, 23 to 53% of the participants (n=19) did not know if chemical emissions could be challenging or impose a risk on the marine ecosystem or human health. This highlights the importance to gather more data on

these subjects and communicate project outputs towards stakeholders. There is also a need for modelling to assess the distribution and distinguish between different sources.

6. **Create better quality control systems**

Increasing the quality of materials/quality in paint application methods could reduce maintenance. However, high-quality materials and methods come with a high price tag. Integration of responsible business practices in tenders could help to ensure the entire product life is accounted for. Sensors could help to measure the degradation of offshore wind farms and predict their remaining life span.

Other important points

There is a need to focus on how to optimise and adapt existing technologies rather than focus on developing new technologies, as it takes time for industry to adopt new technologies and new technologies pose new risks with respect to the technical performance as well as to the environment.

Regulators must ensure the aquatic system is protected while also creating space for innovation and growth in the offshore wind sector.

In general, it was emphasised that while offshore wind is a relatively new industry, research and regulations of this industry should be conducted in the context of and building upon more established industries, such as offshore oil and gas as well as shipping.

Project Progress

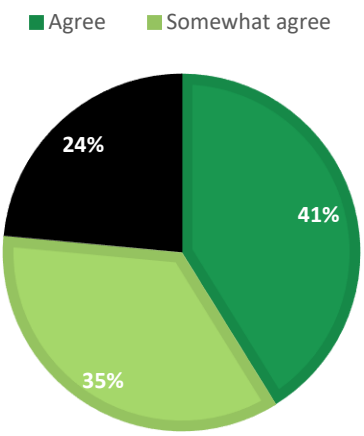
Sampling campaigns

In April and May, we went on two sampling campaigns taking samples in and nearby offshore wind farms and at reference locations in the Belgian and German parts of the North Sea. Sediment was collected with a box corer and will be used for the analysis of organics, inorganics, and particles. Water samples were taken at 10 m of depth and will be used to analyze inorganics, like metals. Finally, seawater was filtered over three different filters allowing us to assess the number of coating particles.

Testing of reference materials

To understand how paints used on OWFs can potentially leach into the marine environment, small plaques were made and painted using the same coatings as used in the majority of OWFs in the Belgian and German parts of the North Sea. These plaques will be used to set up a first list of possible leachates using solvent extraction and natural extraction in seawater. Next, plaques will be used to examine the eco-toxicity of these paints and leachates on organisms, like mussels.

Detailed survey results (n=19): Regulations and standards for OWFs

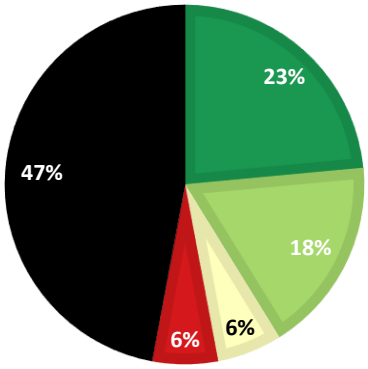


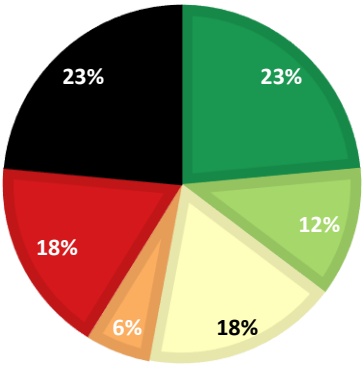
I foresee problems originating from poorly harmonised regulations for offshore wind farm emissions between countries.

- Harmonisation is needed to align regulation at an international level.
- Projects may impose restrictions, which may not follow the general regulation.
- Need to improve data sharing to harmonise the acceptable level of impact across countries.
- Need for international standards and research practices.

The existing standards for corrosion protection of offshore structures create challenges for offshore wind farms.

- Industry-specific standards have been developed over the last few years.
- Current standards could be further adapted or optimised.
- The effects of potential emissions should be better known to assess how challenging the problem will be.



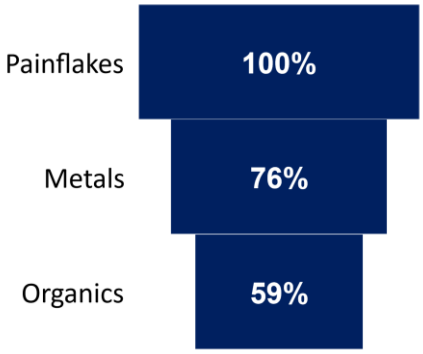


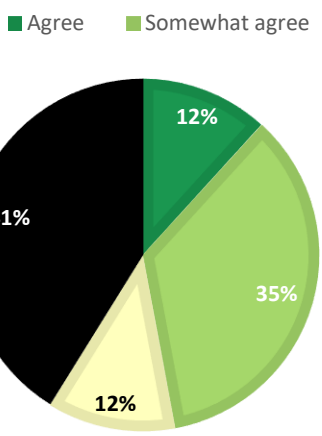
There is a conflict between environmental regulations and the operation of offshore structures.

- Need for harmonization of black-listed products (PU-topcoats, ICCP vs galvanic anodes) between countries.
- Ongoing industrialisation increases pressure on the marine ecosystem and regulations to protect the environment are often not binding.
- Need to assess opportunities for nature enhancements in and around OWFs.

Which chemical emissions from offshore wind farms do you expect?

- According to our survey, pain flakes are expected as a source of emission, followed by metals and, to a lower extent, organics.
- Other emissions listed:
    - Resins, polymers, and coating materials
    - Materials from cable protection
    - Sewage
    - Hydrocarbons, oil
    - Phenols, Bisphenols, Isocyanates, etc.



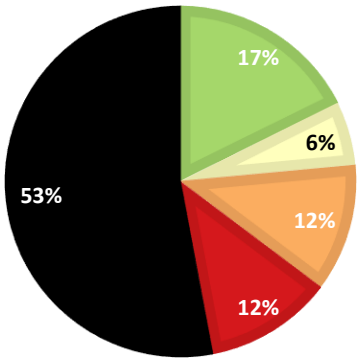


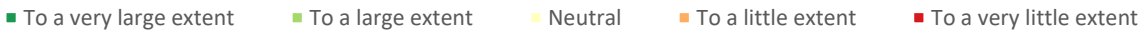
Do you expect that marine life will be at risk by these chemical emissions (Paint flakes/Metals/Organic contaminants/Others)

- Paint flakes will result in microplastics, which can enter the food chain.
- Paints can also contain leaching chemicals.
- Risks are mostly unknown and should be investigated carefully and neutrally.

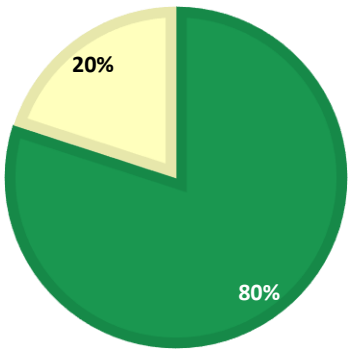
My personal health is compromised if I eat seafood farmed in conjunction with offshore wind farms due to chemical emissions from the turbines.

- According to our survey, the risks of chemical emissions on human health are mostly unknown.
- There is a risk of bioaccumulation throughout the trophic levels.
- This topic should also be investigated carefully.

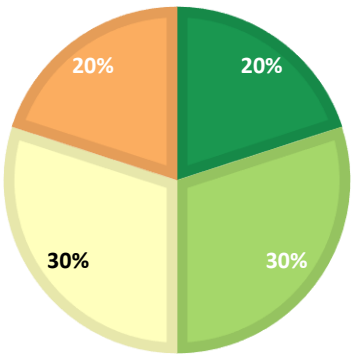




Do you have sufficient capacity to implement the required regulations for offshore wind farms?



Do you have sufficient capacity to meet the requirements set by regulations for offshore wind farms?



According to the small sample, there is mostly enough capacity to meet and implement the required regulations.

Partners and Additional co-Financiers

For more information

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