

## **Session: How prepared is IA for next-generation renewable energy megaprojects?**

**Friday, 26 April, 14:00-15:30**

### **Learning from the Front Line: Experience from Marine Energy Mega Projects**

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Ambitions for the expansion of offshore wind are massive with plans for deployment at an unprecedented speed and scale. Whilst offshore wind is now an established marine industry, understanding of its effects in the is limited (especially long term effects) and the ever-changing nature of the technology involved means that the effects are changing also. This means that there are real challenges for impact assessment in ensuring that assessments are robust whilst being timely and proportionate.

RoyalHaskoningDHV have experience of over 15 years of assessing impacts associated with what are now marine energy megaprojects – but which have evolved over that time from projects which though innovative at the time are considered tiny now. This experience has yielded valuable insights which continue to shape the future of project impact assessment, and which continue to evolve as the scale, location and technology of different projects develops. The desire and drive for flexibility and adaptability in project design requires the same of the impact assessment process. But assessment outputs must remain credible, coherent and robust in the face of stakeholder and regulator interest, and in some cases challenge and opposition. This presents ever-increasing challenges in respect of assessment and communication. Maintaining proportionality in the scale and focus of the assessment process also represents a significant challenge to developers, assessors and decision-makers alike.

Whilst there are many practical issues associated with the expansion of offshore wind (supply chains, ports, skills) , we will consider the key issues for assessment which could be a barrier to development. The key issues from an assessment perspective are:

- Technological flexibility – this has two components a) assessment of novel technology and b) flexibility of the design envelope
- Evidence of effect – there are many uncertainties around effects given the relative newness of the industry, complexities of marine systems and limited long-term monitoring
- Cumulative effects – real world and ‘paper’ effects

The resolution of these issues is in some part with developers and regulators whilst the long-term understanding of how offshore wind changes the marine environment needs long term investment to deal issues around uncertainty and complex systems.

The immediate challenge for impact assessors is to ensure that assessment is robust and clear – that it provides realistic scenarios, identifies uncertainty and is future proofed. It should also provide the tools for long-term understanding in terms of monitoring and stocktaking.

Technology flexibility is key for assessment. Typically, and offshore windfarm will be built five years or more from when consent is granted (which could be years after the envelope for assessment was fixed). This means the designs need to be flexible to accommodate the uncertainties of the site (e.g. in terms of

fine scale geotechnical and geophysical information or ecology), available technologies and construction methodologies and foreseeable opportunities. This design uncertainty is very apparent in the range of floating offshore wind foundations currently being proposed but can be seen even in traditional fixed-bottom foundations -where footprints and even the types of impacts can be wildly different between foundation options. Recent moves to incorporate hydrogen offtake in envelopes has caused even more confusion as projects may have cables or pipelines to shore, a wide variety of onshore infrastructure or even no connection to shore. In some cases it is very difficult to understand what 'the project' actually is. This can be exacerbated if not only are the technologies and impacts of options different but they are also geographically different, affect different receptors etc. These design uncertainties can be compounded by construction scenarios that may have real implications for how and when impacts occur. Presenting a wide range of design options with multiple build-out scenarios that translates into a meaningful assessment that stakeholders can understand is a real challenge. It is not just that assessments become bulky, but they also become difficult to follow. But if flexibility is limited, developers may end up with a consent for a project that is out-of-date, uneconomic or undeliverable which may require further consents or variations.

To resolve this issue as far as possible – the impact assessor must work closely with the developer to whittle down the design envelope and scenarios as far as possible to remove unnecessary flexibility. The assessor needs to explain to the developer's designers and engineers why the flexibility they desire may not be deliverable and work on delivering a more constrained envelope. At the same time, the developer should be educating stakeholders on the need for the retained flexibility and clearly communicate what in practice the project will look like.

On the regulators part it is necessary for them to develop their skills and provide specialist advisors who understand the issues around the offshore wind industry. This includes reviewing and understanding previous decisions, assessment and studies undertaken. Importantly there needs to be more emphasis placed on learning from the past and extrapolating to new scenarios. Just because a particular technology is new / requires larger infrastructure does not mean that there are not analogues from previous assessments or even other industries that cannot be applied. There are many instances in the UK where analogues have been rejected because they are from assessments that are 'too old' or even simply from a different region. There is a wealth of learning from the work undertaken by existing projects and this should be a primary source for deriving new assessments, we should be building on knowledge not developing bespoke approaches for each new project.

In terms of proportionality, we should be considering the sensitivity of the receiving environment when looking at how detailed assessment should be. Whilst of course there is a need to reduce impacts where possible, if there are few or no sensitive receptors, assessment should focus on other areas. The focus of impact assessment needs to be on potential significant effects, not any effect.

Determining significance is of course difficult in the absence of repeated long term data sets to use as evidence, but this should not be a barrier to making proportionate sensible decisions at scoping and in terms of assessment conclusions. Where uncertainty exists, this should be the springboard for monitoring and research to fill the knowledge gaps. The critical element that has been missing in the UK has been the feedback loop from monitoring and research into impact assessment. Whilst some of this relates to the applicability of monitoring from early projects, too much monitoring and research falls into a black hole. Reporting will go to the regulator but not always made freely available. There is a clear

need for the collation of information from assessments on a topic-by-topic basis to provide a knowledge base for all parties to learn from. Such an evidence base has been previously proposed (by RoyalHaskoningDHV's Industry Evidence Programme project run for The Crown Estate in 2017) and is even more important given the number of projects now in development which makes it impossible to track the evolution of best practice and the evidence base.

The issues around uncertainty are all amplified when considered cumulatively. This leads in many cases to cumulative assessments being highly precautionary and unrealistic. This was not so important when there were few projects and they were small, but as projects have proliferated and grown in size, precautionary assumptions are magnified. This can lead to situations where levels of impacts are inflated and mitigations or compensation are required which slow down the development process. This issue could be solved in part by ensuring that there information on final project design (so called 'as built' details) is readily available so that future assessments can take account of changes made and at regular points impacts across the industry reevaluated. In the UK, cumulative totals for impacts upon birds are inflated for many species because 'headroom' between what has been consented from worst case scenarios and what has actually been built has not been recognised.

In summary then, offshore wind is a relatively new industry with limited long term understanding of it's effects. The need to develop at speed to meet the needs of climate targets is a challenge when there technology itself is constantly changing through innovation and invention. This has lead in the UK at least to assessment getting more complex and consent times extending, which is the opposite of what we need to meet net zero goals. There needs to be cooperation between all parties in the assessment process to:

- Develop clear, understandable design envelopes
- Differentiate genuinely new impacts from those which are merely a variation on those previously assessed
- Enable better use of existing information from assessment and monitoring
- Undertake reporting and stocktaking of the as-built picture – so we understand what is happening in our seas.