Assessing cumulative effects: Challenges faced by offshore wind developers

2020 State of Science Workshop

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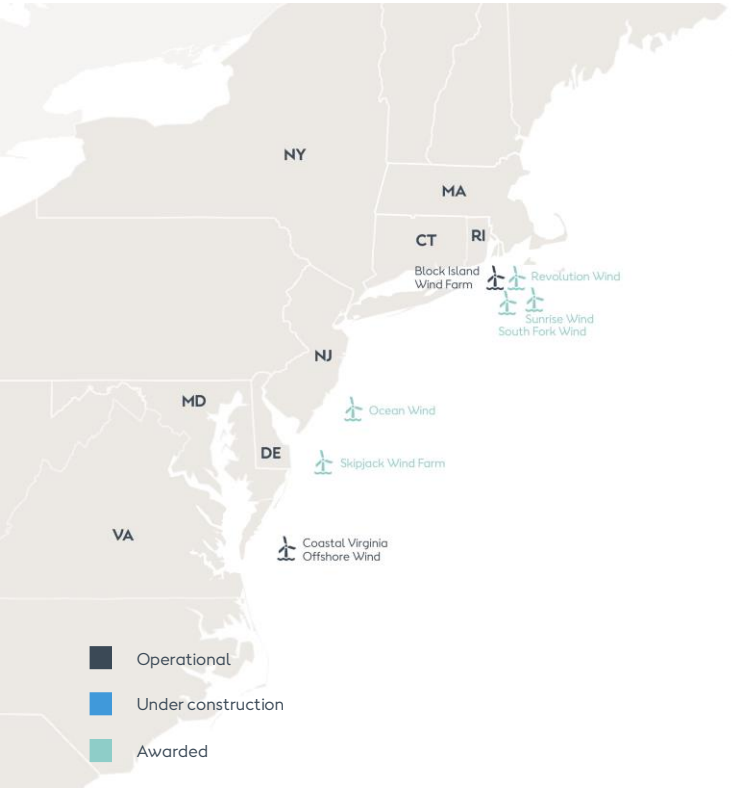
Ørsted

Ørsted Offshore North America portfolio

Awarded over 2,900 MW of offshore capacity on the East coast



In Operation

Block Island Wind Farm: 30MW

Coastal Virginia Offshore Wind: EPC contract, 12MW demo project

Awarded

Revolution Wind: 50/50 JV w/ Eversource, 704MW (400MW to RI, 304MW to CT)

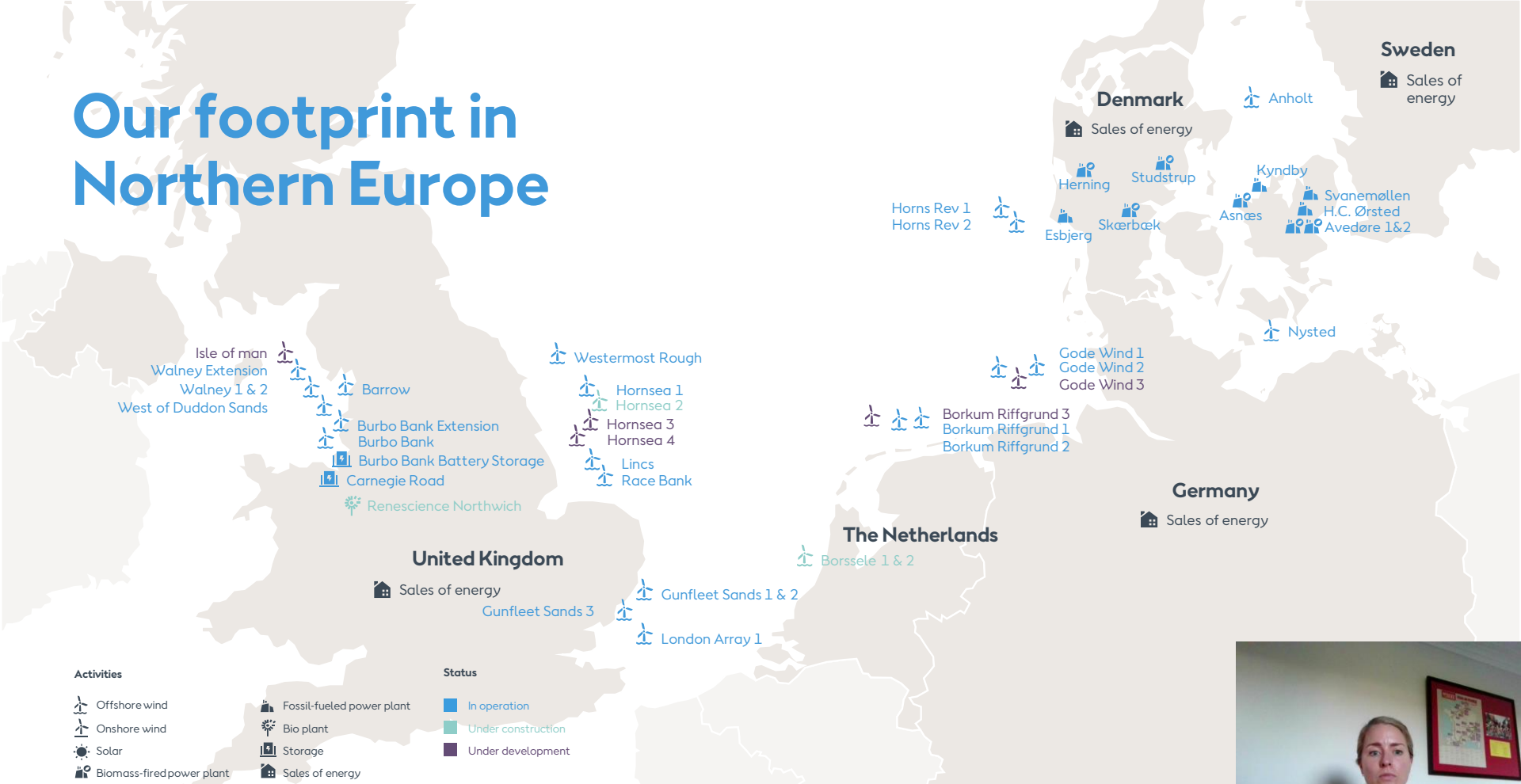
South Fork Wind: 50/50 JV w/ Eversource, 132MW

Sunrise Wind: 50/50 JV w/ Eversource, 880MW

Ocean Wind: with the support of PSEG, 1,100MW

Skipjack Wind Farm: 120MW

Our footprint in Northern Europe



The challenge of Cumulative Impact Assessment

1. Uncertainty in the assessment process as a result of inconclusive guidance
2. Scope of the assessment, which projects are “reasonably foreseeable”?
3. Uncertainty over project level effect which become compounded at a cumulative level
4. Lack of impact thresholds to understand how cumulative effects can be managed

How and when are cumulative impacts assessments carried out?

In general terms, CIAs are undertaken in the following circumstances:

- By a **developer as part of project-specific EIA or assessment**, where there is a likelihood of significant impacts from more than one operation or activity: *this typically reflects Ørsted's experience in the majority of its offshore projects.*
- By a **regulator** or decision maker **to provide supporting information** to master planning or individual project assessments, where there is a likelihood of significant impacts as a result of the activities of more than one operation;
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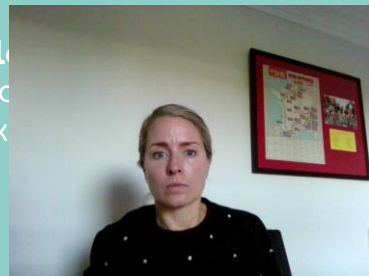
- **To inform a broader statutory pl** strategic assessment of an offsh project: this has been Ørsted's ex Netherlands, for example



Case Study 1
Hornsea Project One
Southern North Sea, England

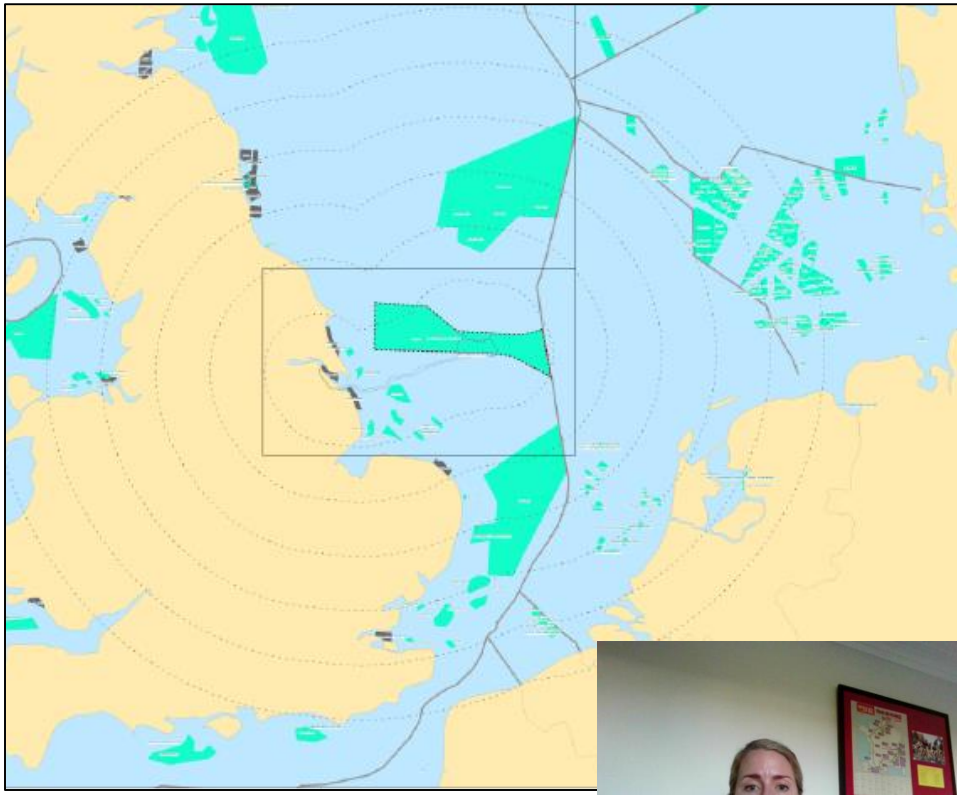
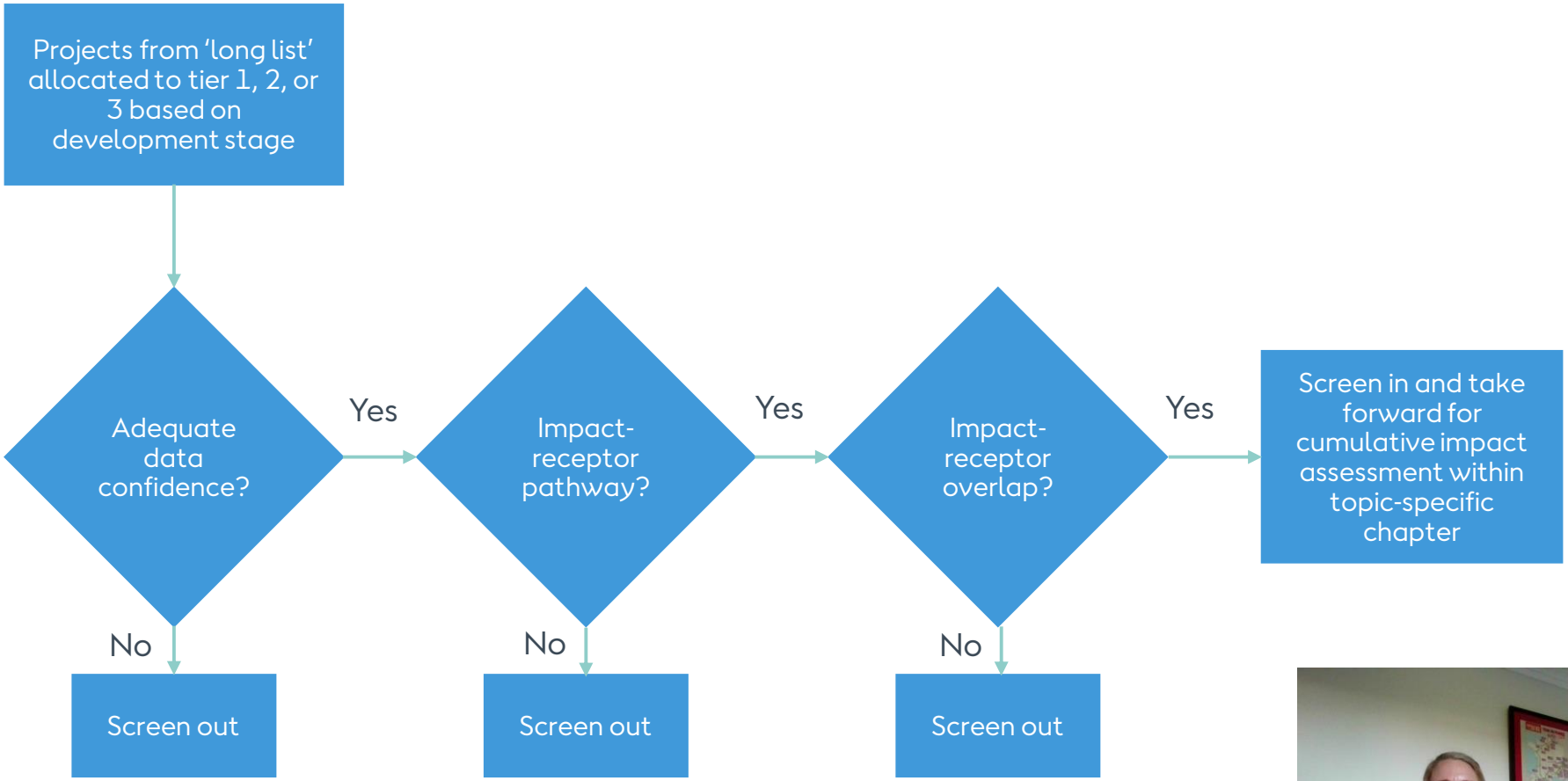


Image SMartWind (2013)



Adapted from SMartWind (2013)

Development	Distance from Hornsea Project One	Status of Development	Data confidence
Hornsea Project Two	<1km	Pre-application	Medium
Dogger Bank Creyke Beck Projects A&B	50-100km	Pre-application	Medium
Dogger Teesside - Projects A & B	50-100km	Pre-application	Low
Dogger Teesside - Projects C & D	50-100km	Pre-application	Low
East Anglia Project One	50-100km	Submitted	Medium
Blyth	150-200km	Operational	High
Lynn and Inner Dowsing	<50km	Operational	High

Opportunities	Challenges
The Crown Estate undertakes a degree of CIA as part of the SEA and HRA for plan level assessments to inform wind farm zone leasing rounds	Environmental monitoring undertaken by projects has been defined, typically, on a case-by-case basis, there is no government standard or facilitation. Therefore data sometimes is not seen as transferrable from one project to another and key evidence gaps still exist related to cumulative environmental assessments.
Within England **CIA is developer led** and undertaken within the framework of the project specific EIA and if required, HRA	Different parameters and assessment methodologies can be used by different developers
There has in the past been a degree of 'first past the post' in terms of ecological headroom	The race to the water, there has in the past been a degree of 'first past the post' in terms of ecological headroom
	In some cases there's a lack of collab and monitoring to understand evider

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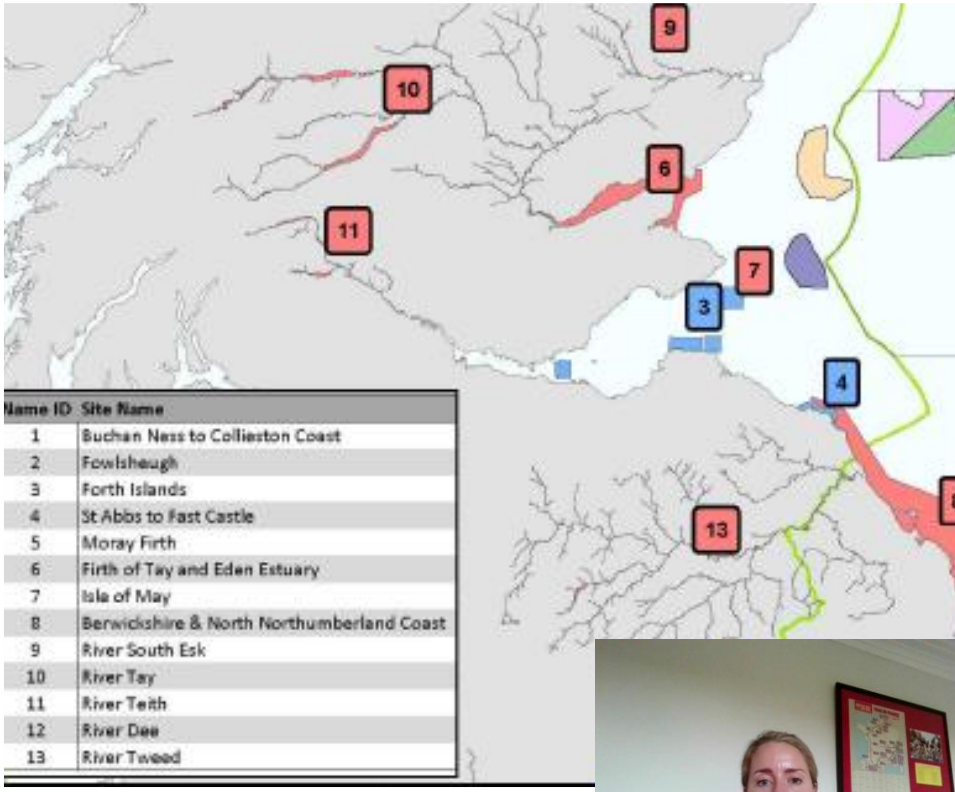
Case Study 2
Forth of Tay Wind Farms, Scotland

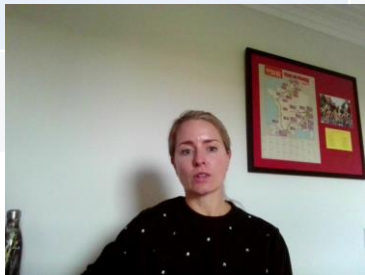


Name ID	Site Name
1	Buchan Ness to Collieston Coast
2	Fowlsheugh
3	Forth Islands
4	St Abbs to Fast Castle
5	Moray Firth
6	Firth of Tay and Eden Estuary
7	Isle of May
8	Berwickshire & North Northumberland Coast
9	River South Esk
10	River Tay
11	River Teith
12	River Dee
13	River Tweed

Image taken from Marine Scotland (2014)

Project	Parameter	SNCB Advice 7/03/14	MSS advice 10/04/2014	SNCB advice 06/06/14	SNCB Advice 10/06/2014	MSS Advice 12/06/2014	SNCB Advice 04&16/07/14	Appropriate Assessment
All Projects	Flight height data	Cook *et al* 2012	Johnstone *et al* 2014	Johnstone et al 2014		Johnstone *et al* 2014		Johnstone *et al* 2014
	CRM Band option	2&3	3	2&3		3		3
	CRM Avoidance Rate	98%	98% (&95%)	98%		98% (&95%)		98% (&95%)
	Auk displacement rate	60%	60%	60%	60% but SNCB advice and MSS advice from June 2014 indicating lower rates for some projects			

Evolution of evidence and advice



Taken from Marine Scotland: Appropriate Assessment of Neart na Gaoithe, Inch Cape, Seagreen Alpha and Bravo

Opportunities	Challenges
The Crown Estate undertakes a degree of CIA as part of the SEA and HRA for plan level assessments to inform wind farm zone leasing rounds	No statutory deadlines so permitting timescales are unknown and this can be a challenge from a permitting perspective
More strategic monitoring is carried out at a regional level, eg: Forth of Tay Regional Advisory Group	Projects in the same regions are considered together despite the timescales at which they were submitted
Different parameters and assessment methodologies can be used by different developers, but a more consistent approach is then used by the regulator during the permitting process	The race to the water, there has in the past been a degree of 'first past the post' in terms of ecological headroom
Projects in the same regions are considered together despite the timescales at which they were submitted	

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Case Study 3
KEC,
The Netherlands

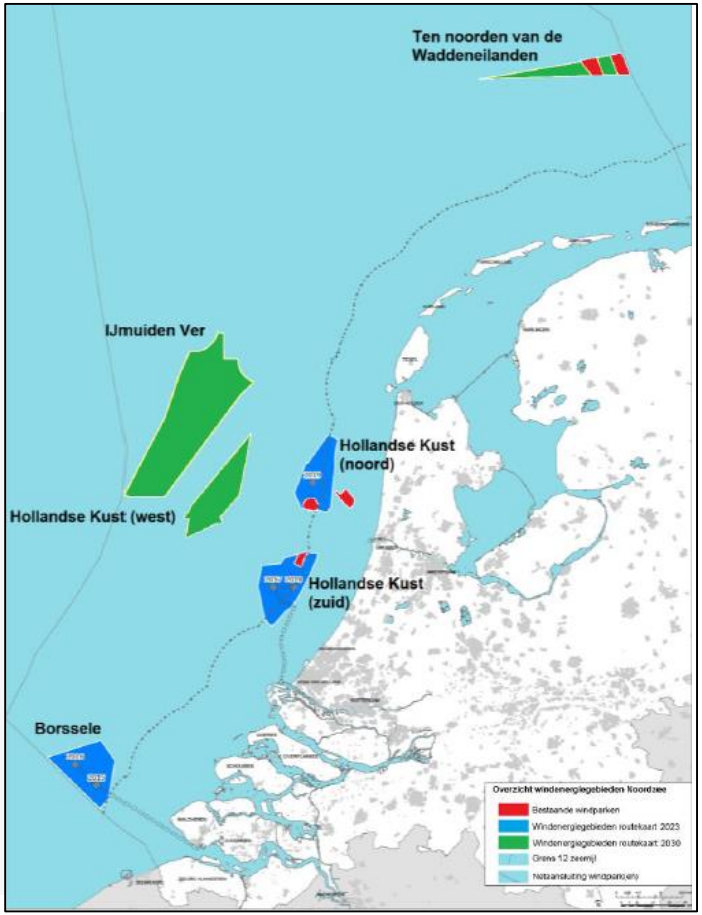
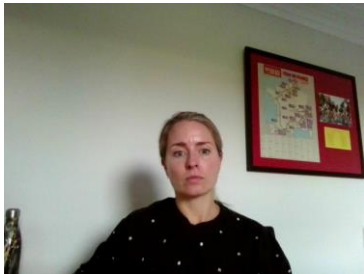


Image from Rijkswaterstaat (2019)

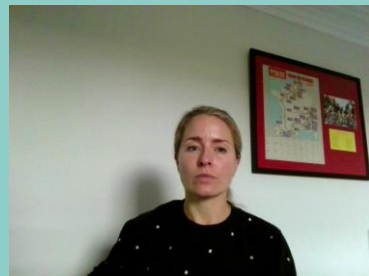


Evolution of information from KEC 1.1 to KEC 3.0

Topic	Updates in information
Ornithology	• Update to population numbers taken from 2000-2017 instead of 1991-2014 as for KEC 1.1 • The values for recovery capacity are based on the most recent IUCN 'protection status' classification (IUCN 2018) • More accurate population estimates, leading to refined potential biological removal (PBR) calculations • New knowledge about the flight behaviour of the Lesser Black-backed Gull and the Herring Gull, Gyimesi et al. (2017), WOZEP; • New information on the avoidance rates from the ORJIP study (Skov et al. 2018).
Marine Mammals	• Updates to underwater noise modelling • More recent data on local harbour porpoise densities were adopted such as SCANS III (Hammond et al. 2017); • For the 2018 KEC, the effects of disturbance by impulsive sound have been stated as an effect on the harbour porpoise population using version 5 of the Interim PCoD model. This is a full update of the previous version 2.1 based on the 2013 expert elicitation. Version 5 incorporates the results of the expert elicitation workshops in February and June 2018
Bats	• Data about numbers present were analysed further in relation to weather data and time

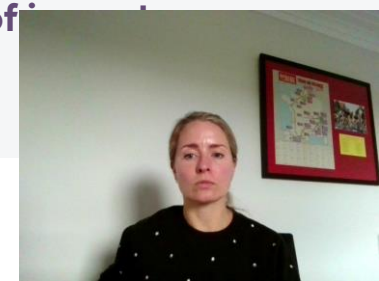
Adapted from KEC (2019)

Opportunities	Challenges
The KEC process is regarded as a strong tool for assessing the offshore wind farms on an industry/country level.	The KEC process, could be seen as being too conservative in its assessment approach with limited scope for developer involvement or influencing.
Government led with the ability to identify strategic monitoring opportunities	Permitting regime is government led so KEC lends itself well to such a process. This would be difficult to apply to other markets
Iterative process that is updated with each new "round" of wind farms	



Recommendations

- CIA approaches must fit with the current permitting regime in place, acknowledging the limitations of the regime in place
- There may always be some level of uncertainty of project level effects but understanding where these uncertainties lie and using monitoring to address evidence gaps can only improve CIA
- Consistency in approach, development of best practice and sector specific guidelines
- A consistent and transparent approach to the collation and analysis of the best available data, this could be aided with the use of a data library where projects/developer can save data in a consistent format
- Understanding of the population level effects of projects, what level of i… population withstand?



Thank you for listening!

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