

WHEN TRUST MATTERS

# Assessing net impacts on biodiversity from offshore wind development

A marine biodiversity net gain (MNG) pilot for Utsira Nord

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Havvind og miljø seminar | Offshore Norge | 3 November 2026

# Agenda

- Pilot project
- Marine biodiversity net gain (MNG) method
- Results of the pilot study
- Benefits for decision making
- MNG versus  principles for marine  Net Positive Impacts (NPI)



# Piloting how MNG accounting supports project decision making

## PROJECT CASE

Floating offshore wind at southern Utsira Nord: 24 turbines, shared suction anchors, mooring lines, inter array cables.

## DECISION USE

Explore technical options, avoidance, expose impact drivers, information gaps, focus monitoring efforts, and the effect of possible mitigation measures.

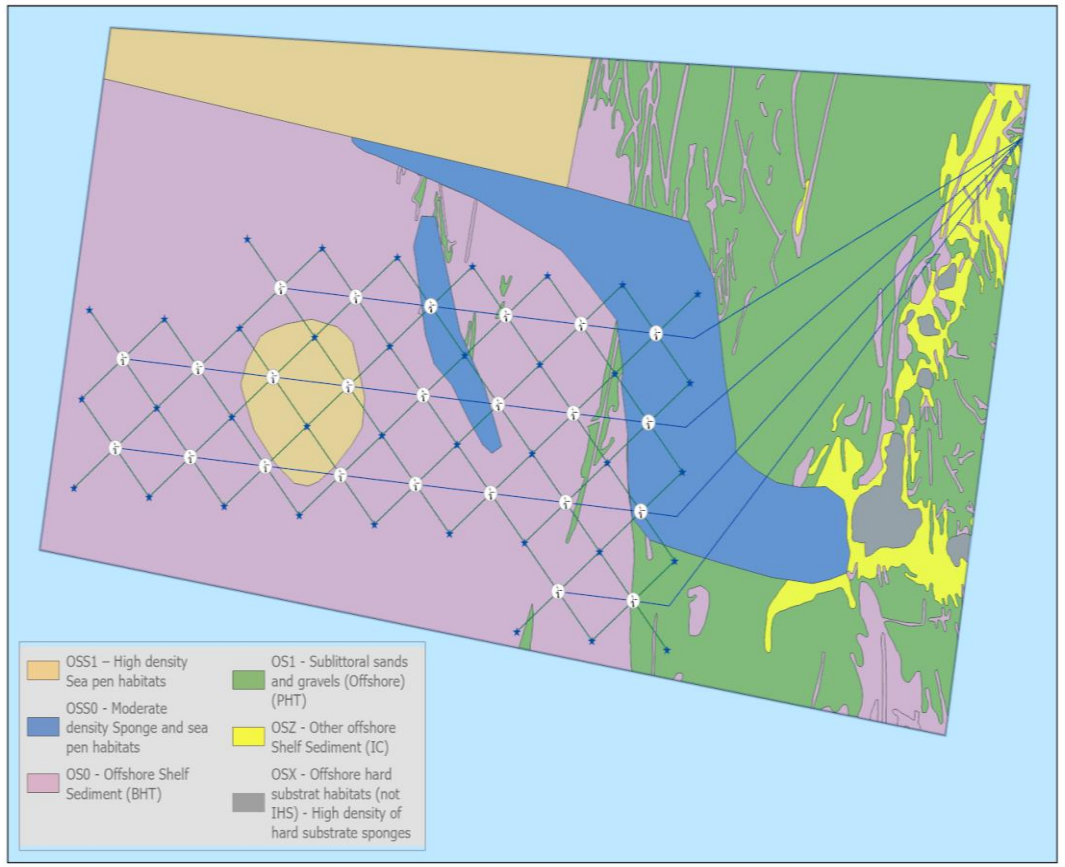
## PILOT OBJECTIVE

Test how MNG accounting based on the mitigation hierarchy can provide meaningful input to decision making in OW project development

## CAVEAT

Early design assumptions and incomplete baseline data. Results are illustrative.

Progress before perfection – gaining experience through testing and learning





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# MNG accounting including both habitats and species



## HABITATS

Area × distinctiveness × condition | Loss, new surfaces, enhancement and restoration.



## SEABIRDS

Group score × sensitivity × abundance | Collision risk and displacement are reflected in increased mortality and abundance change.



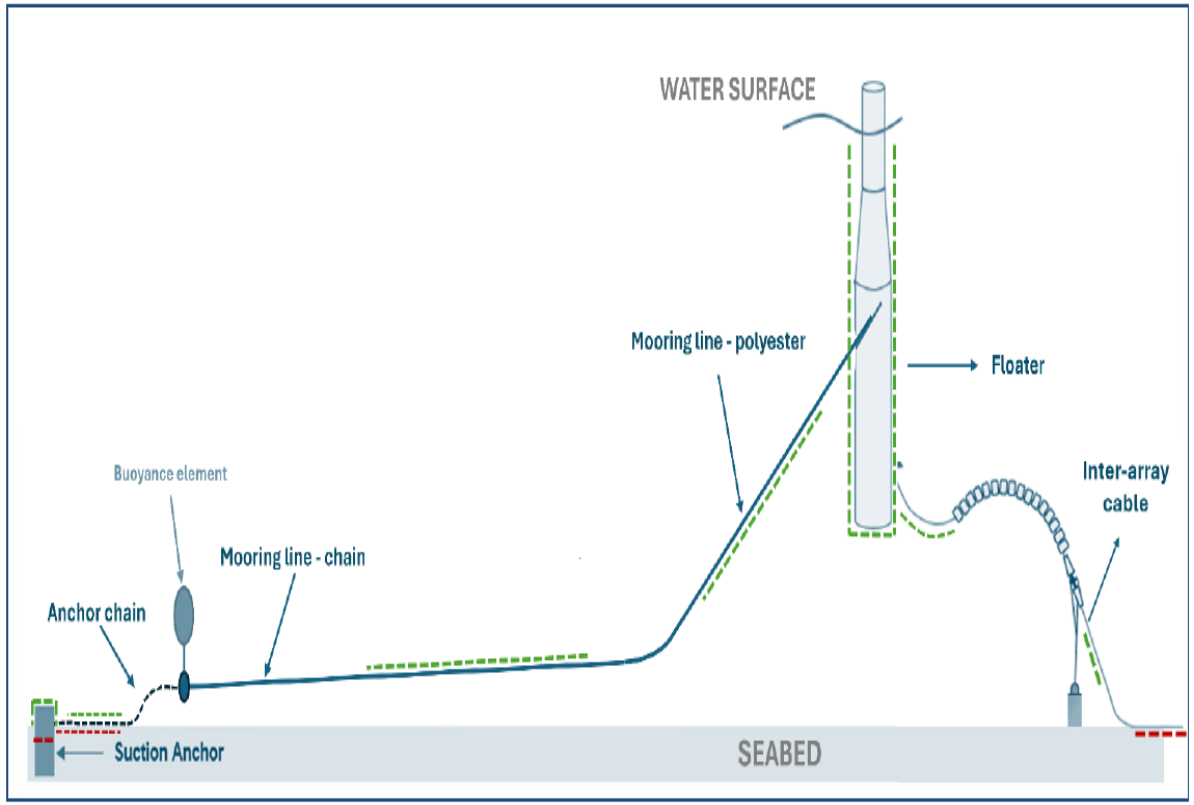
## MARINE MAMMALS

Group score × abundance × noise exposure | Temporary hearing loss (TTS) and behavioural response assessed separately.

Baseline → project impact → mitigating measures → residual result


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# Habitats: design creates both losses and new ecological surfaces




## NEGATIVE

Anchors, chain sweep and cables remove or disturb existing seabed habitat.

## POTENTIAL POSITIVE

Floaters, anchors and cables create hard substrate and marine growth.

## RISK-ADJUSTED GAIN

New or restored habitat is discounted for spatial, delivery and temporal risk. Predicted colonisation is not counted as certain.

## Additional conservation measures

Coastal seagrass restoration was explored due the habitat's biodiversity benefits; providing habitat and food for a wide variety of marine life, nursery area for fish, and foraging areas for seabirds .


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# Species: impacts were assessed for groups of seabirds and marine mammals through prioritised species

| SEABIRDS | | | |
|---|---|---|---|
| Code | Species group | Key species/Target species | Pre-Total |
| PDS | Pelagic diving seabirds | Common guillemot | 8,3 |
| PSFS | Pelagic surface foraging seabirds | European storm-petrel | 395 |
| CDS-FF | Coastal diving seabirds - fish foragers | Horned grebe | 0,3 |
| CDS-BF | Coastal diving seabirds - benthic foragers | Common scoter | 5,7 |
| CSFS | Coastal surface feeding seabirds | Lesser black-backed gull | 27,6 |
| WS | Wading seabirds | Brent goose | 8,9 |

| Marine mammals | | | | |
|---|---|---|---|---|
| Category | Group | Key/Target species | Activities | Pre-Total |
| Marine mammals | Low-frequency (LF) cetaceans | Minke whale | Anchor handling vessel<br>Survey vessel<br>Cable laying vessel<br>Wind turbine<br>Maintenance vessel | 15,07 |
| | Medium-frequency (MF) cetaceans | Bottlenose dolphin | Anchor handling vessel<br>Survey vessel<br>Cable laying vessel<br>Wind turbine<br>Maintenance vessel | 286,24 |
| | High-frequency (HF) cetaceans | Harbour porpoise | Anchor handling vessel<br>Survey vessel<br>Cable laying vessel<br>Wind turbine<br>Maintenance vessel | 225,98 |
| | Phocid pinnipeds | Grey seal | Anchor handling vessel<br>Survey vessel<br>Cable laying vessel<br>Wind turbine<br>Maintenance vessel | 1506,50 |
| | Otariid pinnipeds (OW) | | | 0,00 |

## SEABIRDS | From −2,3 to -1,2 MBU with mitigating measure

The result was dominated by the European storm-petrel due to estimated high abundance during migration periods. Note: the abundance estimate is highly uncertain

Temporary shutdown of wind turbines during migration periods significantly reduced the impacts, restricted by moderate delivery risk due to reduced visibility and detection opportunities in certain weather

## MARINE MAMMALS | TTS −0.2 MBU

Temporary hearing effects were negligible in the pilot calculation, and results classified as insignificant due to negligible impacts.

## MARINE MAMMALS | BEHAVIOUR | From −21,3 to -21,1 MBU

Continuous operational turbine noise dominated the impacts due to the long period of exposure, but vessel activity also contributed. Highest impact was calculated for Grey seal (Havert).

20% maintenance-vessel speed reduction was tested as a mitigating measure but had limited effect on the overall results.


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# How the approach benefits project decision-making

1

## START EARLY

Apply the account before site layout and technology choices are fixed.

2

## TRACE IMPACT DRIVERS

A mitigation measure must address the impact mechanism that is driving the score.

3

## MAKE UNCERTAINTY VISIBLE

Prioritise surveys, abundance estimates, noise assumptions or evidence on delivery risk.

4

## UPDATE THROUGH THE LIFECYCLE

Replace predictions with survey, design and as-built data, and adapt measures accordingly.

The value is in the structured conversation between ecology, engineering and project governance.


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# How MNG accounting can support the NPI process

## IPIECA / IUCN Principles for marine Net Positive Impacts

| FRAME | ASSESS | DELIVER |
|---|---|---|
| **1** SEASCAPE APPROACH<br>Use a seascape approach to establish the appropriate ecological context and spatial scale of understanding to frame NPI action | **4** MITIGATION HIERARCHY AND OFFSETS<br>Apply the mitigation hierarchy robustly, prioritise avoidance, and seek to avoid offsets | **6** ENGAGEMENT AND COLLABORATION<br>Engage proactively, inclusively, collaboratively and meaningfully to achieve NPI |
| **2** PRIORITY BIODIVERSITY FEATURES<br>Focus on priority biodiversity features to understand losses and gains and target NPI action | **5** RESIDUAL IMPACTS<br>Assess residual project-level direct and indirect impacts, and identify contribution to cumulative impacts | **7** ACAS WITH MEASURABLE OUTCOMES<br>Prioritise the use of Additional Conservation Actions with measurable outcomes that deliver meaningful integrity gains |
| **3** ECOLOGICAL INTEGRITY<br>Frame losses and gains using an ecological integrity approach to determine significant impacts on target features within their wider ecosystem context | | **8** EVIDENCE BASE<br>Ensure an evidence-led and transparent approach: set ecologically appropriate, science-based indicators, monitor, validate, and adapt |

Source: Ipieca and IUCN 2026

## MNG contribution

### FRAME

Provides a transparent project baseline for selected priority habitats and species, with explicit components and boundaries.

### ASSESS

Approach based on the mitigation hierarchy. Quantifies predicted losses, gains and residual impacts, and tests measures with risk and deliverability factors.

### DELIVER & LEARN

Creates a traceable account for monitoring, information updates, adaptive management and transparent reporting. Basis for communication and dialog.

MNG supports selected NPI tasks.

It does not provide the full seascape, integrity, cumulative-impact, collaboration or Additional Conservation Action process.


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# Thank you!

For further dialog, please contact:

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