

Offshore wind development — mitigating biodiversity impacts

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Renewable energy and biodiversity

- Renewable energy sources will play a critical role in achieving a net-zero emissions scenario.
- The transition is currently happening and should by all means be supported.
- However, we need to consider the associated transition risks, among which the loss of biodiversity.
- Policy action is necessary to ensure that this risk is managed effectively and timely.
- In particular, Marine Spatial Planning should create the enabling framework for project developers and operators to implement effective biodiversity mitigation measures (following the mitigation hierarchy).

Biodiversity impacts types associated to offshore wind

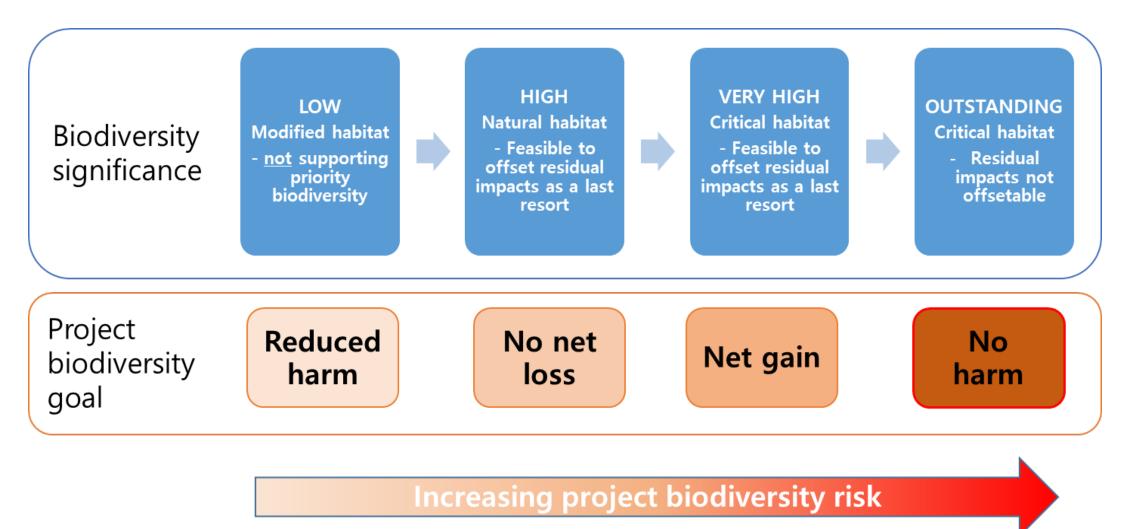
- 1. Bird and bat mortality from colliding with turbine blades and/or onshore transmission lines
- 2. Seabed habitat loss, degradation and transformation (bottom-fixed turbines)
- 3. Hydrodynamic change (bottom-fixed turbines)
- 4. Habitat creation (including reef and refuge effects associated with bottom-fixed turbines)
- 5. Trophic cascades
- 6. Barrier effects or displacement effects due to presence of wind farm (bottom-fixed turbines)

- 7. Bird and bat mortality through electrocution on associated onshore distribution lines
- 8. Mortality, injury and behavioural effects associated with vessels
- 9. Mortality, injury and behavioural effects associated with underwater noise
- 10. Electromagnetic fields of subsea power cables: behavioural effects
- 11. Pollution (e.g. dust, light, solid/liquid waste)
- 12. Introduction of invasive alien species
- 13. Indirect impacts
- 14. Associated ecosystem service impacts

The mitigation hierarchy — a focus on developers

- The mitigation hierarchy provides developers and operators with a logical framework to address the negative impacts of development on biodiversity and ecosystem services.
- It's applicable to projects in any sector, including renewable energy.
- It's based on the sequential and iterative application of four actions avoid, minimise, restore and offset.
- The mitigation hierarchy should be applied to direct, indirect and cumulative impacts.
- Clear goals should be defined in advance to ensure that the MH is results oriented.

Set goals commensurate to biodiversity values



Implementing the mitigation hierarchy

Review impacts and mitigation plan.
If acceptable, move on to project construction and implementation of mitigation and monitoring strategy.
If not, identify further mitigation and repeat evaluation.

Avoidance:

- •Is the project necessary or could the energy production be achieved by less impactful means?
- Can the project be sited in an area of low biodiversity sensitivity?
- •Are important species migration routes and seasonal breeding and feeding areas avoided?
- Have all other options to avoid impacts through project siting been adequately considered?

Offsets:

• Are there likely to be residual impacts that require offsets?

Early planning

•If so, are offsets, ecologically, technically, and socially-politically feasible?

Project design

Avoidance:

- •Is the project designed to avoid sensitive habitats and associated species?
- •Can construction activities be scheduled so as to avoid sensitive periods?

Minimisation:

• Are effective mitigation measures built into the design and operations of the project to minimise risk and significance of impacts?

Restoration:

•Can effective restoration techniques be applied to progressively restore lost or degraded biodiversity?

Offsets:

•Can biodiversity goals (e.g. no net loss/net gain) be achieved within a reasonable timeframe and at an acceptable cost to the project?

- Implement mitigation plan
- Undertake ongoing monitoring, review and adaptive management to ensure the project stays on track to deliver on its biodiversity goals

Construction; operations; end of life

Scope risks and impacts.

If acceptable, move to the project design stage.
If not, identify appropriate alternative sites to avoid impacts.

Impact avoidance through site selection — the role of Marine Spatial Plans

- The early project planning phase includes an assessment by developers of the feasibility of potentially suitable project site(s) based on a range of criteria.
- Avoidance by site selection should ideally be guided by area-based planning that integrates biodiversity considerations into renewable energy siting decisions.
 Spatial plans should be developed before permitting starts.
- Given the potentially large energy contribution and space requirements of renewable technologies such proactive strategic spatial planning and strategic environmental assessment are important to avoid undermining biodiversity conservation goals.
- Clear criteria for 'no go' areas should inform and support the planning (MSP) and assessment (SEA) processes complemented by criteria for GO AREAS.
- Once suitable areas are identified at the seascape level, further **risk screening** can then be undertaken to support site characterisation and help assess biodiversity sensitivities for one or more potential project sites.

MSP can also support biodiversity benefits

- Seize opportunities to create synergies with other climate resilient NbS activities, such as seaweed farming.
- Elaborate on potential to include MPAs within the seascape, and the collaboration with fisheries and zoning efforts.
- Promote the use of nature based solutions to solve operational and management problems (for example use of bio-enhancing materials for cement foundations)
- Promote opportunities for enhancing biodiversity associated to offshore wind farms (for example the restoration of benthic habitats in association with the wind turbine foundation).

IUCN's contribution

- In collaboration with The Biodiversity Consultancy, brought together industry leaders (EDF, EDP and Shell) and NGOs active in this area (BirdLife, FFI, TNC and WCS).
- Through a series of meetings and case studies developed *Guidelines* for mitigating biodiversity impacts associated with solar and wind energy development.
- These will be launched at the end of the year / early 2021.
- For further information contact me at <u>giulia.carbone@iucn.org</u>