

Coláiste na Tríonóide, Baile Átha Cliath Trinity College Dublin Ollscoil Átha Cliath | The University of Dublin

Nature+

Trinity Centre for Biodiversity & Sustainable Nature-based Solutions

Impacts of Climate Change Mitigation Measures on Biodiversity

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Biodiversity is the variety of life on earth

A climate resilient, **biodiversity rich**, environmentally sustainable and climate neutral economy





Figure 2 2 A multifunctional 'scape across land, freshwater and marine biomes, including large, intact wilderness spaces (blue circles), shared spaces (yellow circles) and anthromes (red circles).

Pörtner *et al.* 2021 DOI:10.5281/zenodo.465<mark>9158</mark> Biodiversity is under serious pressure in Ireland – current conservation measures are insufficient

> Figure 1: a) Percentage of habitats in Favourable, Unfavourable-Inadequate or Unfavourable-Bad condition b) Percentage of habitats with Stable, Improving or Declining trends. *n*=59



Ireland's Article 17 Repor (NPWS, 2019)



Additional negative biodiversity impacts cannot be absorbed



The biodiversity consequences of fossil fuel driven energy





Burning the biodiversity of our peatlands

"Off-shoring" biodiversity impacts to energy exporters



Development of renewable energy sources & carbon sequestration on our own territory enables:

- direct control of biodiversity impacts
- The development of "winwin" scenarios for climate change mitigation and biodiversity protection, restoration & rehabilitation



Actions for improving the state of biodiversity:

- Establish & appropriately manage protected areas
- Protect and improve water quality
- Reduce overharvesting and pollution
- Restore & rehabilitate degraded ecosystems



Impacts are context dependent -> Needs the right action in the right place

Integrated spatial Land- and Sea-use planning are crucial



Win-Wins for Climate and Biodiversity



Restore carbon rich ecosystems



Promote agroforestry



Natural Capital Accounting



Integrate solar into the built environment



Increase offshore wind capacity



Afforestation with native trees

re wind



- Minimizes to sensitive areas and species; use sensitivity mapping tools to minimise conflict
- Minimise industry-wide impact during the construction of multiplane farms through planning
- Reduce ted by construction activities (e.g., air bubble ted by constructities (e.g., air bubble ted by construction activities (e.
- Onshore infrastructure for offshore wind needs to be developed with sensitivity to biodiversity impacts.
- Floating turbines
- Co-locate some Marine Protected Areas with off-shore wind

Onshore wind produces the most energy per ha (MW/ha)

Biofuels and solar PV produce the least energy per ha

- Footprint of turbines and associated infrastructure is low (1-3%) allowing for alternative land uses on site
- Solar PV occupies a high proportion of the site with limited opportunities for other land uses
- Biofuels occupy a large proportion of the land area and can be intensively managed



repo



- Use biodiversity sensitivity mapping to avoid conflict
- Mitigate biodiversity effects through sensitive
- Performed areas may be particularly service of the service of th
- Co-location with more intensive agricultural land uses
- Energy-environment/PFES/community schemes to promote enhancement of biodiversity in wider local landscape
- Real-time/smart monitoring to inform strategic curtailment during times of high bat and bird activity.





Solar panels should be incorporated into existing infrastructure



- Farms of solar panels should be service to incorporation in o the built envir
- If utility scale solar energy system they should be strategically placed sensitive areas and minimize negative impacts on biodiversity
- The functional use of land beneath panels should be promoted

Biofuels

- Major land-use change (intensification) should be avoided to minimise soil carbon & biodiversity losses.
- If combined with reduction in livestock & inputs, use pasture products for bioenergy
- Natural for tural areas should not be intensified – investigation of the intensified nulti-species sward & hay meadow inputs to the intensified
- Mandate the protection of important biodiversity land scape features (hedgerows, ponds, buffer strips, woodland edges etc.)
- Prioritise

waste products for bioenergy.









Afforestation

- Avoid afforestation of naturally open habitats / deep peat soils.
- Use native mixtures
- Avoid using d trees as bioenergy crops
- Avoid di -use
- Promote y estimate carbon sequestration of hedgerows and oddy habitats on farmland
- Investigate abilitation of percent closed canopy
 De-risk s and use (e.g.



Peatland restoration & rehabilitation







 Protect what we have left and to re ecological function throug water to the drainage and use

Livestock Farming

• Livestock farming is major pressure on water quality, biodiversity, GHG emissions



- Draina pils will enable expansion of dairy oils will increase GHG emissions
- intensific High Nature Value Farmland will degrade biodiversity



- Investigate alternative use of low intensity pasture product
- Multis natura

are not an alternative to

Take home messages

- Biodiversity is under serious pressure in Ireland
- Additional negative biodiversity impacts cannot be absorbed
- Impacts are context dependent -> Needs the right action in the right place
- Integrated spatial Land- and Sea-use planning are crucial to avoid death by 1000 cuts
- Land use change to facilitate expansion of livestock farming is bad for carbon, water and biodiversity

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