

*This paper forms part of the proceedings from the BOU conference **Climate Change and Birds**.
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ABSTRACT

LIFE CYCLE ASSESSMENT AND RENEWABLE ENERGIES

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Renewable energy has significant potential to reduce greenhouse gas emissions, together with the emissions of other air pollutants, by displacing fossil fuel-based electricity generation. However, alongside other activities, renewable energy potential to produce some negative impacts on the environment and on human beings, and many local and national governments have established planning, permitting, and siting requirements to minimize those impacts. Life cycle assessment has been used to assess these potential concerns, both from a broader environmental perspective and more recently with a focus on life cycle GHG emissions assessment as a subset of full life cycle assessment that directly addresses the climate change impact of energy generation.

This presentation will focus on the assessment of wind power as an example of the application of life cycle assessment to renewable energies, addressing both the wider environmental impacts that have been identified as potentially arising from wind power, and the potential of wind power from a greenhouse gas mitigation perspective. These issues, while often dealt with separately, need to be considered as part of an overall assessment of role and environmental impact of renewable energy: the direct and immediate nature of some environmental impacts of renewables against the longer-term role of renewables in addressing both environmental issues such as climate change, and political and societal issues such as energy security. This presentation will identify the linkages between these issues, and summarise the best available knowledge on the most relevant environmental net benefits and more specific ecological impacts of wind power.

CITATION: Sinden, G. 2010. Life cycle assessment and renewable energies. *BOU Proceedings – Climate Change and Birds*. <http://www.bou.org.uk/bouproc-net/ccb/sinden.pdf>