Bioenergy with Carbon Capture and Storage (BECCS): A Double-Edged Sword for the Environment?

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- NERC-funded on the 'ADVENT' project (Addressing Valuation of Energy & Nature Together).

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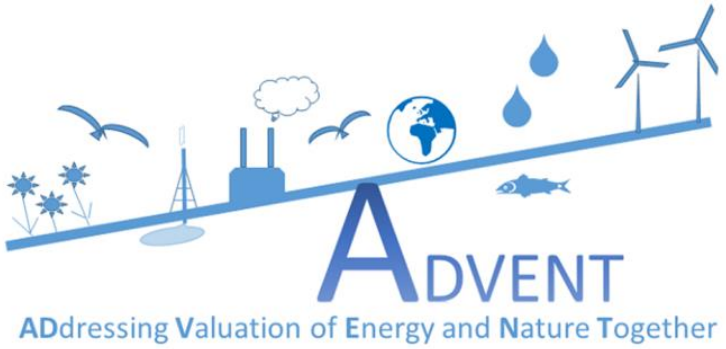
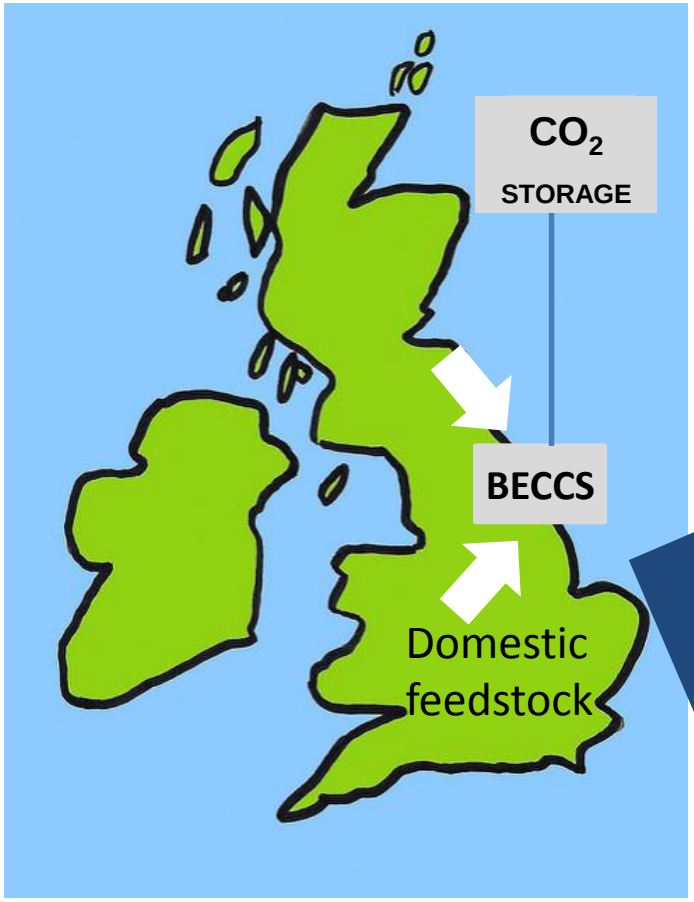


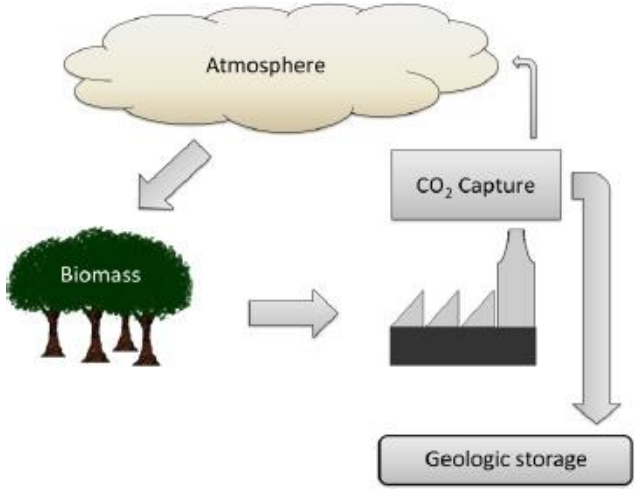
UK BECCS Scenario

BECCS in 2050:

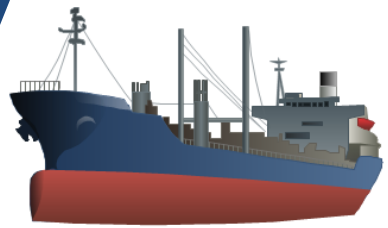
- 10% of UK energy.
- 55mt of CO_2 captured.
- Requires circa 1.4m ha land in UK.
- Requires “moderate” biomass imports.
- NB: UK marginal land = c.0.8m ha.

(ETI Scenario)





Feedstock imports



The Double-Edged Sword

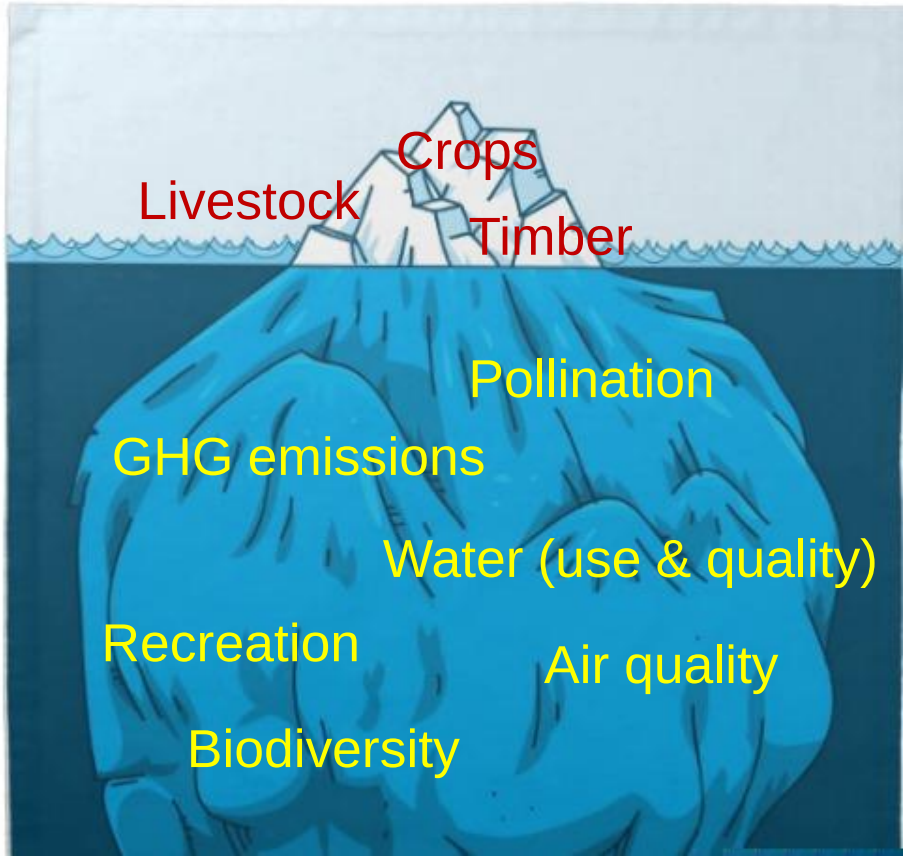
- Clean and reliable energy.
- Meeting 1.5DC, averting dangerous climate change.

- BECCS resource use: land use, water use, nutrient use.
- Social impacts: landscapes, recreation, air quality.
- Implications for biodiversity.

Market and Non-Market Ecosystem Services (ES)

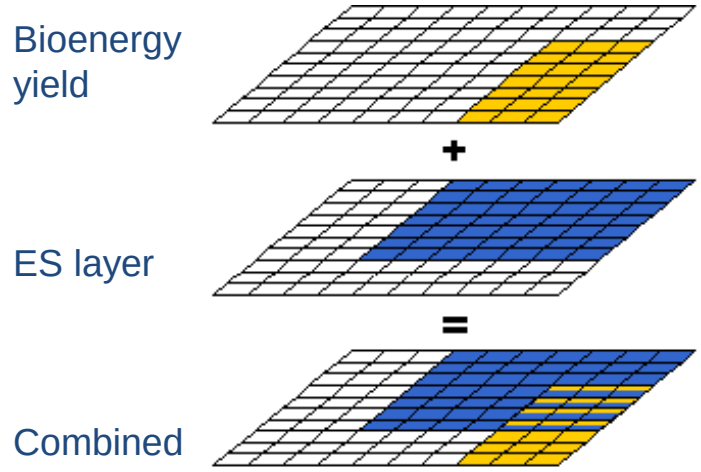
Market (£)

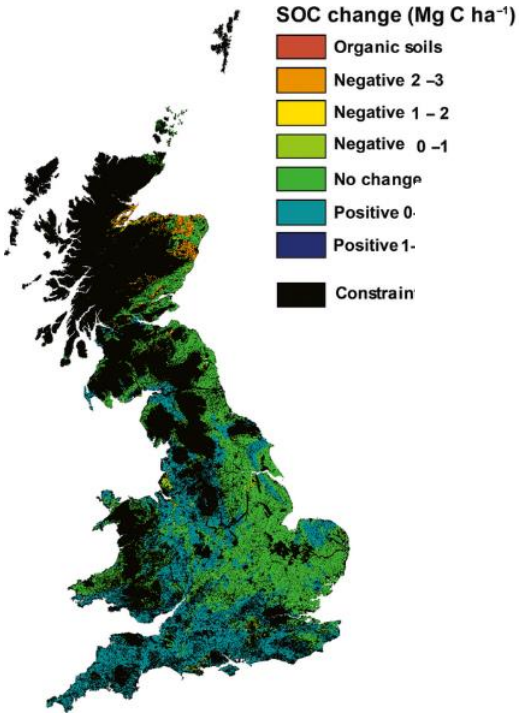
Non-Market



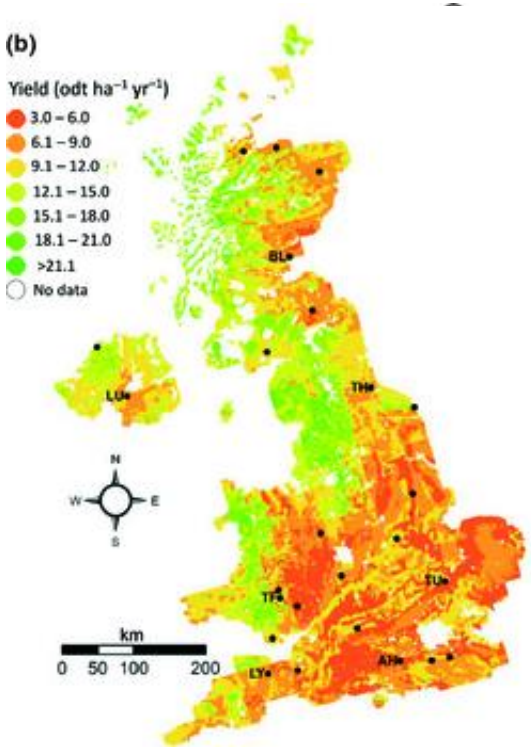
Optimal Planting Strategies

- Valuation of non-market ES.
- Optimal planting based on yield + ES values = better for society and nature.





Milner et al (2016)



Tallis et al (2012)