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Life Cycle Analysis (LCA) as a Policy Tool

Illustrative Information

Dr Tim Cockerill
Senior Lecturer in Energy Policy & Technology
ICEPT (Imperial Centre for Energy Policy & Technology)

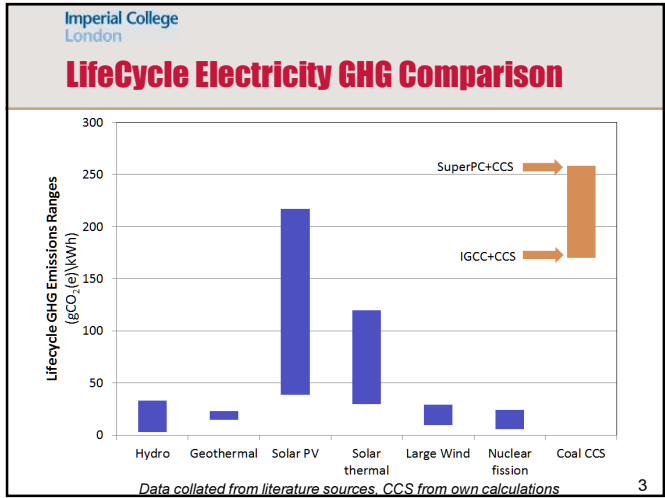
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Energy supply decarbonisation

- Decarbonisation objectives
- Current UK Grid emissions: $\sim 540\text{gCO}_2(\text{e})/\text{kWh}$
- Newly built energy sources should have lower life cycle GHG emissions i.e. $\text{gCO}_2(\text{e})/\text{kWh}$
- GHG emissions arise throughout the supply chain for all sources

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Notable Example: Transport Biofuels

Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change
Searchinger et al, Science, 29 February 2008

- Gallagher Review in UK
- Biofuels sustainability requirements

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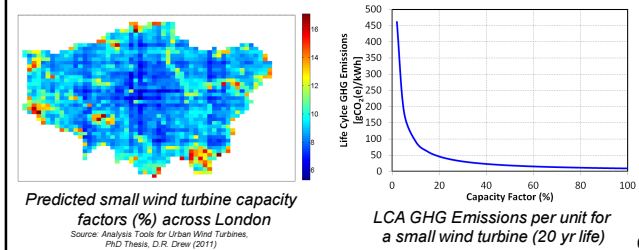
Uncertainty

- LCA results, like those of any modelling activity, are dependant on the input data
- Complex systems so much input data
- Many assumptions to complete an analysis e.g. what happens to waste products, where do upstream energy inputs come from?
- System boundary definition: To what extent are socio-economic effects included? How 'good' is the data? What scale of deployment is assumed?

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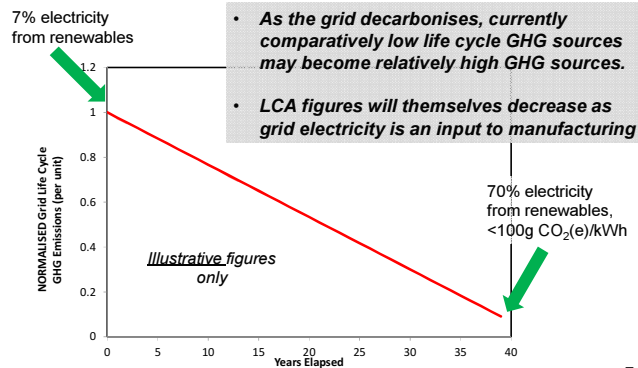
Spatial Issues

- LCA results can be significantly influenced by the **location** of the technology
- **Especially true for many renewables** – energy production depends on the local resource



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Temporal Issues



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Key points

- Growing recognition of importance of LCA for evidence based policy
- In shorter term, LCA approaches make fossil (with CCS) look more attractive
- In longer term, as the grid decarbonises, what are the implications for fossil with CCS?
- LCA location dependent, dangerous to use as a technology order of merit figure
- Uncertainties over scope and data (especially far removed from the core the technology) complicate policy application

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