National Infrastructure Planning
Cleve Hill Solar Park
CPRE Kent (Reference 20022146)

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SUMMARY AND REFERENCES

There is lot of evidence against the proposals but the links between all the different pieces of evidence must be drawn together.

It may not be possible to fully assess some evidence, but it must be included, because International, European & UK law require the Precautionary Principle to be applied.

This says that where there is some evidence of an impact, but there is uncertainty of the scale of the impacts, then we must take precautions to avoid those impacts.

For example, the UK judged the risks of BSE required strong precautionary action before the full impact was known, which was accepted by the European Court of Justice[1],[2].

For Graveney Marshes, the evidence about the dormouse may not seem very strong, but there is evidence of them, so they must be protected and supported.

Dormice have relatively strong protection. Many other species, including essential insects and the
all-important earthworm, are without such protection, have not received much scrutiny, but are vital to the ecosystem.

Likewise, the ability of land to sequester carbon dioxide, including the action of glomalin, is not fully understood, but it is known that glomalin is correlated with the productivity of ecosystems, decreases soil erosion and stabilises water retention[3]. The Royal Society emphasises the importance of soils for carbon capture[4]. See also abstracts below.

The full impacts of the Proposals on all these are uncertain, but would be adverse.

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[1] ECJ Judgment in BSE case (C - 180/96 United Kingdom v. Commission [1998] ECR I – 2265).
[2] RE-FRAMING SUSTAINABLE DEVELOPMENT: A CRITICAL ANALYSIS *The Chartered Institution of Water and Environmental Management (CIWEM), March 2013* www.ciwem.org
[3] *Carbon Dioxide Sequestration:* Assessing the efficiency of changes in land use for mitigating climate change, NATURE. See Abstract below. *Glomalin* www.sciencedirect.com/topics/agricultural-and-biological-sciences/glomalin
[4] **REFERENCES:** https://royalsociety.org/news/2018/09/greenhouse-gas-removal/
also the earlier: https://royalsocietypublishing.org/doi/pdf/10.1098/rstb.2007.2185

Carbon Farmers of America estimate that an increase of a mere 1.6 % in the organic matter of the world's farmed soil **would solve** the problem of climate change.

The Applicant cannot prove that the proposals will not harm dormice, the soil, nor other wildlife, biodiversity or ecology.

The UK Sustainable Development Strategy recognises the **interdependence** of the economic, social, and environmental spheres.

The health of the economy relies on a healthy society, which itself relies on a healthy environment. Very importantly, the reverse is not true, so we must protect the environment first, because damaging the environment is not sustainable.

There are less damaging ways to decarbonise electricity, and economically this huge solar power station connected to the grid is unlikely to be profitable.

The Institution of Engineering and Technology is very concerned of high risks of national grid failure because of the rapid and diverse changes in the energy world, thus risking the Proposal's viability[5].

Likewise strong competitive pressures to reduce costs have closed several electricity distributors. The grid connection means that the scheme costs PLUS the additional costs of distributing electricity to users are likely to be higher than consumers will be willing to pay, so the proposals so would be uneconomic.

All these factors create an overwhelming case against this application.

So we cannot allow the proposal to go ahead, damaging the environment, especially as it is unnecessary and uneconomic.

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[5] www.theiet.org/media/press-releases/press-releases-2019/20-august-2019-interim-report-national-grid/

REFERENCES

Nature. 2018 Dec;564(7735):249-253. doi: 10.1038/s41586-018-0757-z. Epub 2018 Dec 12.
Assessing the efficiency of changes in land use for mitigating climate change.
Searchinger TD, Wirsenius S, Beringer T, Dumas P.

Abstract
Land-use changes are critical for climate policy because native vegetation and soils store abundant carbon and their losses from agricultural expansion, together with emissions from agricultural production, contribute about 20 to 25 per cent of greenhouse gas emissions1,2. Most climate strategies require maintaining or increasing land-based carbon3 while meeting food demands, which are expected to grow by more than 50 per cent by 20501,2,4. A finite global land area implies that fulfilling these strategies requires increasing global land-use efficiency of both storing carbon and producing food. Yet measuring the efficiency of land-use changes from the perspective of greenhouse gas emissions is challenging, particularly when land outputs change, for example, from one food to another or from food to carbon storage in forests. Intuitively, if a hectare of land produces maize well and forest poorly, maize should be the more efficient use of land, and vice versa. However, quantifying this difference and the yields at which the balance changes requires a common metric that factors in different outputs, emissions from different agricultural inputs (such as fertilizer) and the different productive potentials of land due to physical factors such as rainfall or soils. Here we propose a carbon benefits index that measures how changes in the output types, output quantities and production processes of a hectare of land contribute to the global capacity to store carbon and to reduce total greenhouse gas emissions. This index does not evaluate biodiversity or other ecosystem values, which must be analysed separately. We apply the index to a range of land-use and consumption choices relevant to climate policy, such as reforesting pastures, biofuel production and diet changes. We find that these choices can have much greater implications for the climate than previously understood because standard methods for evaluating the effects of land use on greenhouse gas emissions systematically underestimate the opportunity of land to store carbon if it is not used for agriculture.

<u>Glomalin</u>
<u>www.sciencedirect.com/topics/agricultural-and-biological-sciences/glomalin</u>
Glomalin is a glycoprotein associated with carbohydrates, contains 30–40% (w/w) C (González-Chávez et al., 2004), is assumed to be stable and persistent in soil, and is thought to be produced in copious quantities by arbuscular mycorrhizal fungi (Glomeromycota). This reference source has numerous articles up to 2019, which illustrate the complexities of soil, as well as glomalin benefits.

<u>Carbon sequestration</u>
Royal Society:
<u>https://royalsociety.org/news/2018/09/greenhouse-gas-removal/</u>
The UK 2050 net-zero scenario
GGR technologies suitable for the UK to use to meet net-zero emissions by 2050

- Ready to use GGR methods such as forestation, habitat restoration, soil carbon sequestration, and building with wood or carbonated waste could provide just over a quarter of the target to reach net zero emissions

- Biochar, enhanced terrestrial weathering in agricultural soils, direct air capture (DACCS), and bioenergy with carbon capture and storage (BECCS) could contribute to the rest of the 2050 target
- Page 33 of this report says: "Storage potential and longevity of storage: Rates for soil carbon sequestration vary considerably, depending on land-management approaches, soil type, and climate region. When scaled globally, the technical potential for soil carbon sequestration is estimated between 1.1 and 11.4 $GtCO_2$ pa, with more conservative estimates suggesting an upper limit of 6.9 $GtCO_2$ pa. Estimates for the UK potential for soil carbon sequestration are 1 to 31 $MtCO_2$ pa. "

Preliminary assessment of the potential for, and limitations to, terrestrial negative emission technologies in the UK. Smith P, Haszeldine RS, Smith SM. Environmental Science: Processes & Impacts. 2016;18(11):1400–5. Available from: http://dx.doi.org/10.1039/C6EM00386A

Carbon sequestration. Rattan Lal.
https://royalsocietypublishing.org/doi/pdf/10.1098/rstb.2007.2185
Published:30 August 2007

Abstract

Developing technologies to reduce the rate of increase of atmospheric concentration of carbon dioxide (CO_2) from annual emissions of 8.6 $Pg\,C\,yr^{-1}$ from energy, process industry, land-use conversion and soil cultivation is an important issue of the twenty-first century. Of the three options of reducing the global energy use, developing low or no-carbon fuel and sequestering emissions, this manuscript describes processes for carbon (CO_2) sequestration and discusses abiotic and biotic technologies. Carbon sequestration implies transfer of atmospheric CO_2 into other long-lived global pools including oceanic, pedologic, biotic and geological strata to reduce the net rate of increase in atmospheric CO_2. Engineering techniques of CO_2 injection in deep ocean, geological strata, old coal mines and oil wells, and saline aquifers along with mineral carbonation of CO_2 constitute abiotic techniques. These techniques have a large potential of thousands of Pg, are expensive, have leakage risks and may be available for routine use by 2025 and beyond.

In comparison, biotic techniques are natural and cost-effective processes, have numerous ancillary benefits, are immediately applicable but have finite sink capacity. Biotic and abiotic C sequestration options have specific niches, are complementary, and have potential to mitigate the climate change risks.