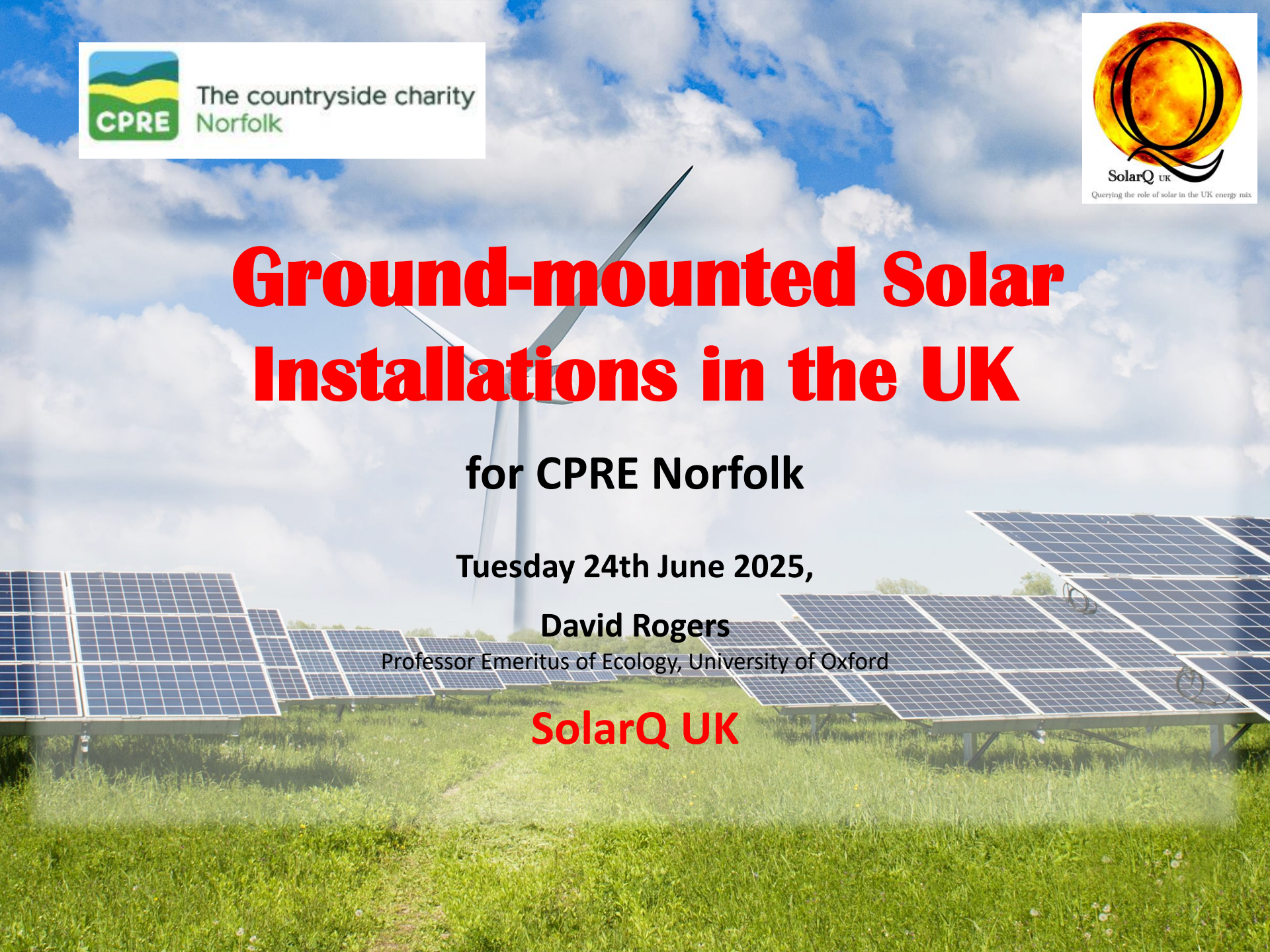

Ground-mounted Solar Installations in the UK

for CPRE Norfolk

Tuesday 24th June 2025,

David Rogers
Professor Emeritus of Ecology, University of Oxford

SolarQ UK

SOLAR IN THE UK

Facts not myths

Solar in the UK

- **Is not efficient** (Load Factors of 10.6% -10-year UK average figure)
- **Is not morally clean** (China produces 80% of the world's solar panels, some of which involve Uyghur forced labour)
- **Is not environmentally green** (every kWh of electricity produced by solar involves the release of three times more CO_2 than every kW produced by wind turbines. Total Life Cycle figures)
- **Is being built with no overall plan**
- **Occupies far more land than the industry admits to**
- **Occupies disproportionately more, good-quality (BMV) land**
- **Threatens food production/security in a climate-changed world**

Finally.....

Recent developments and policy changes.

https://www.solarq.org/
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THE PLAN. HOW MUCH DO WE NEED?

THE PLAN. HOW MUCH DO WE NEED?

2030 TARGETS

Offshore wind (currently 15GW) ……43-50GW
Onshore wind (14GW)……27-29GW
Solar (15GW)…… 45-47GW
Battery storage (5GW)…… 23-27GW

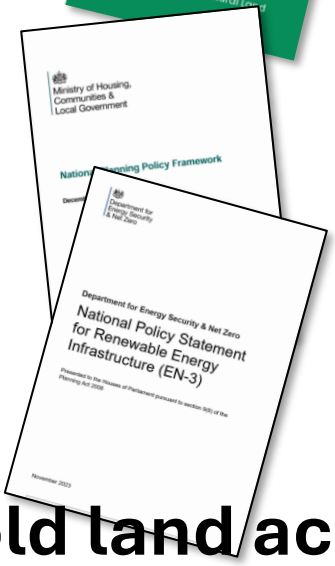
GROUND-MOUNTED SOLAR IN THE UK

Myths

- **Amount of land taken?**

"<0.1% of UK land now and at most 0.6% by 2050 (90GW capacity)" (SEUK June 2024).

- **Type of land taken?**



NPPF "areas of poorer quality land should be preferred to those of a higher quality." (December 2024)

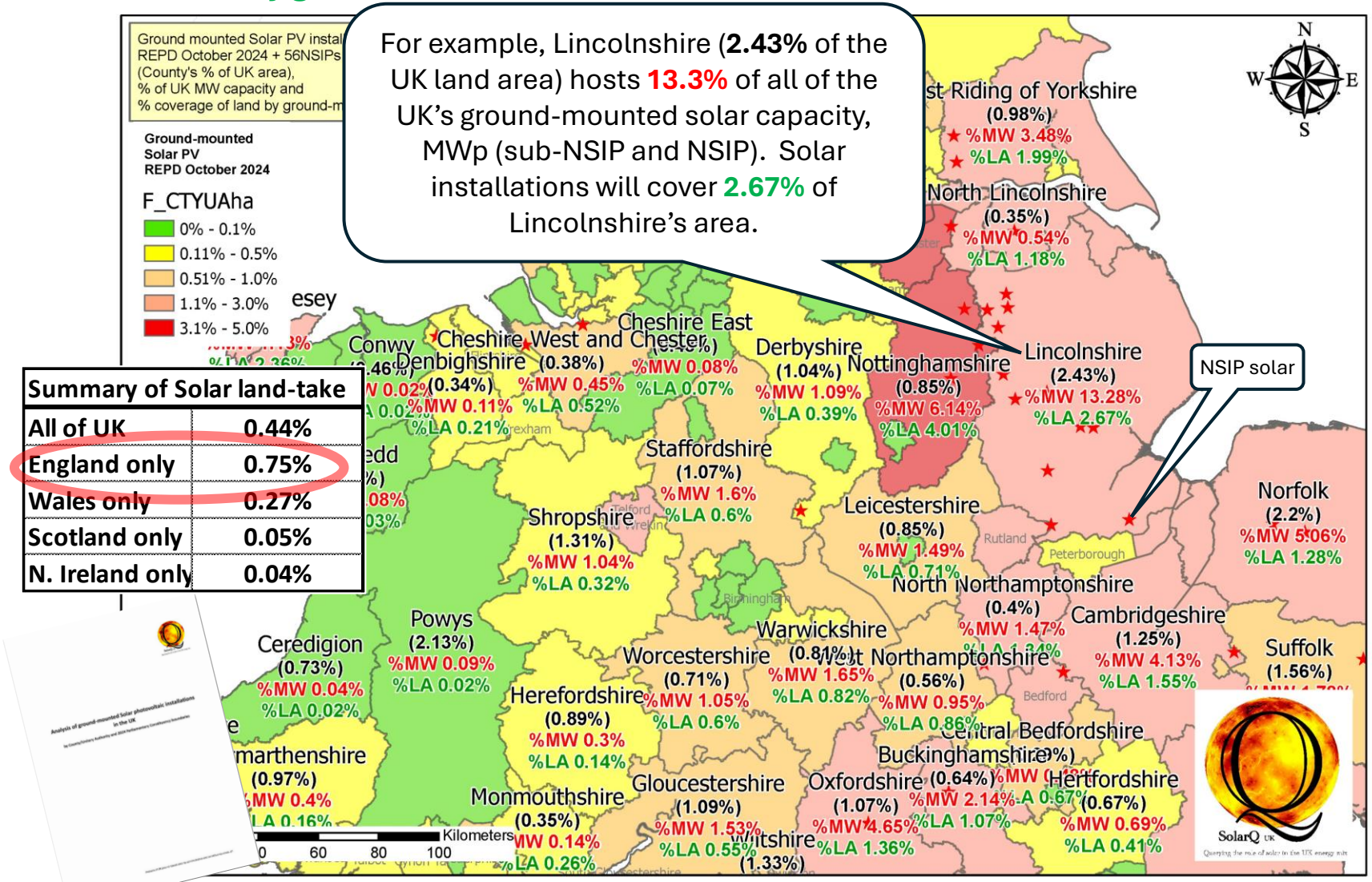
NPS EN-3 "..land type should not be a predominating factor in determining the suitability of the (solar) site location.." (April 2025)

- **Leasehold or freehold land acquisition?**

NPS EN-3 "..Given the temporary nature of solar PV farms,..."
("temporary" = finite period).

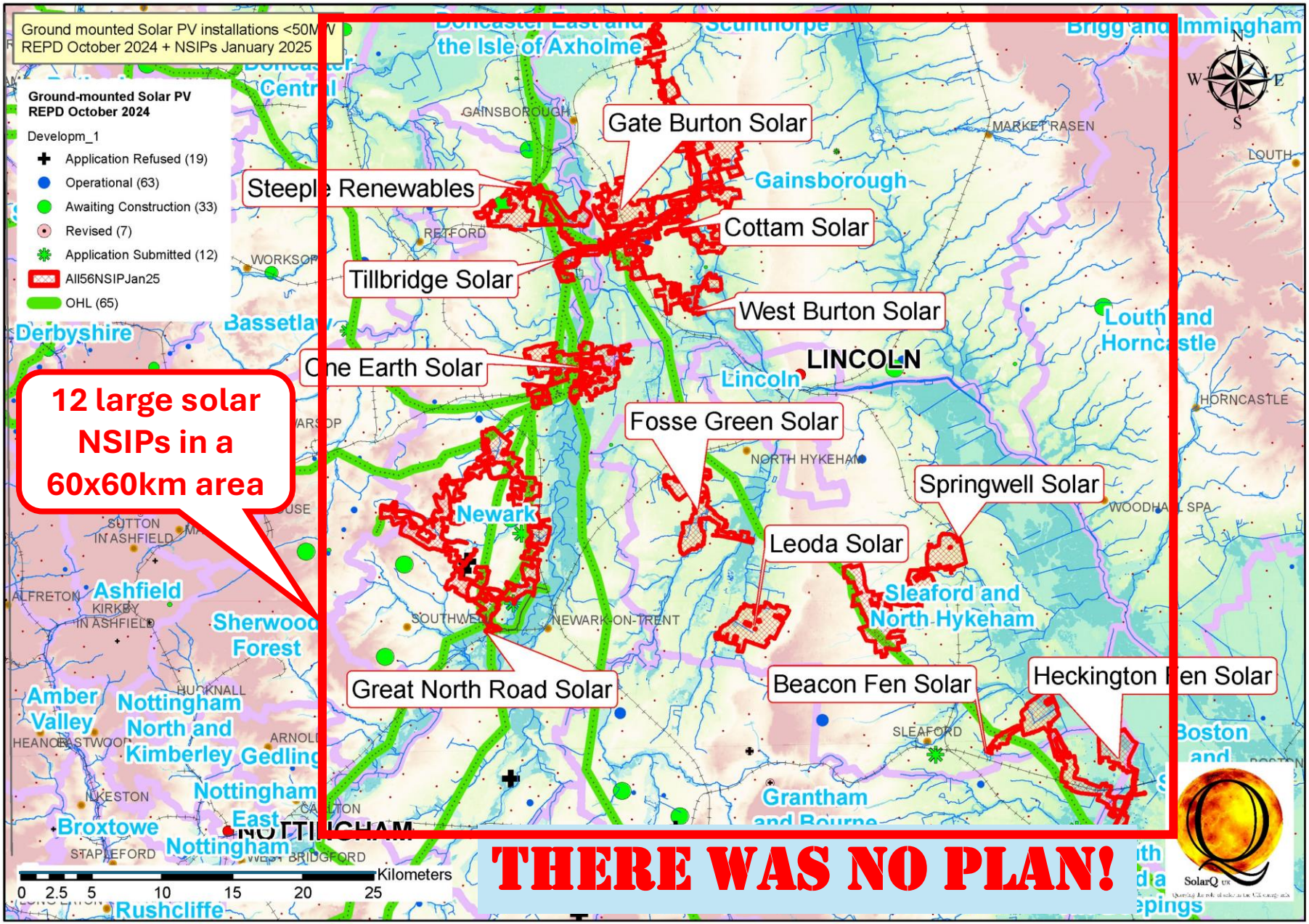
LAND TAKE? ....THE REALITY

County areas (as % of UK total; figures in black), **Installed MWp solar capacity** (as % of UK total; figures in red) and **Land-take by ground-mounted solar** (as % of county area; figures in green; also variable background colours)

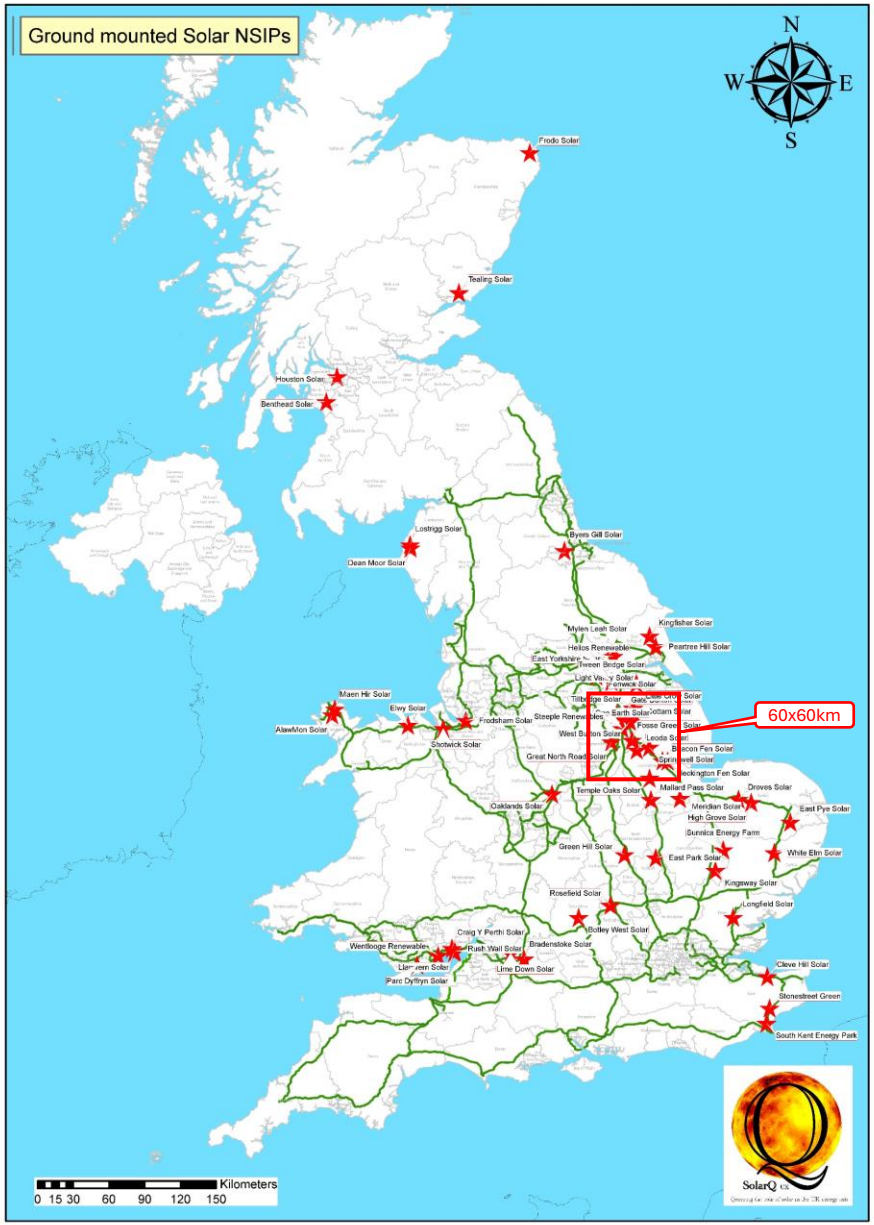


Summary of Solar land-take	
All of UK	0.44%
England only	0.75%
Wales only	0.27%
Scotland only	0.05%
N. Ireland only	0.04%

NSIP ground-mounted solar in Nottinghamshire/Lincolnshire



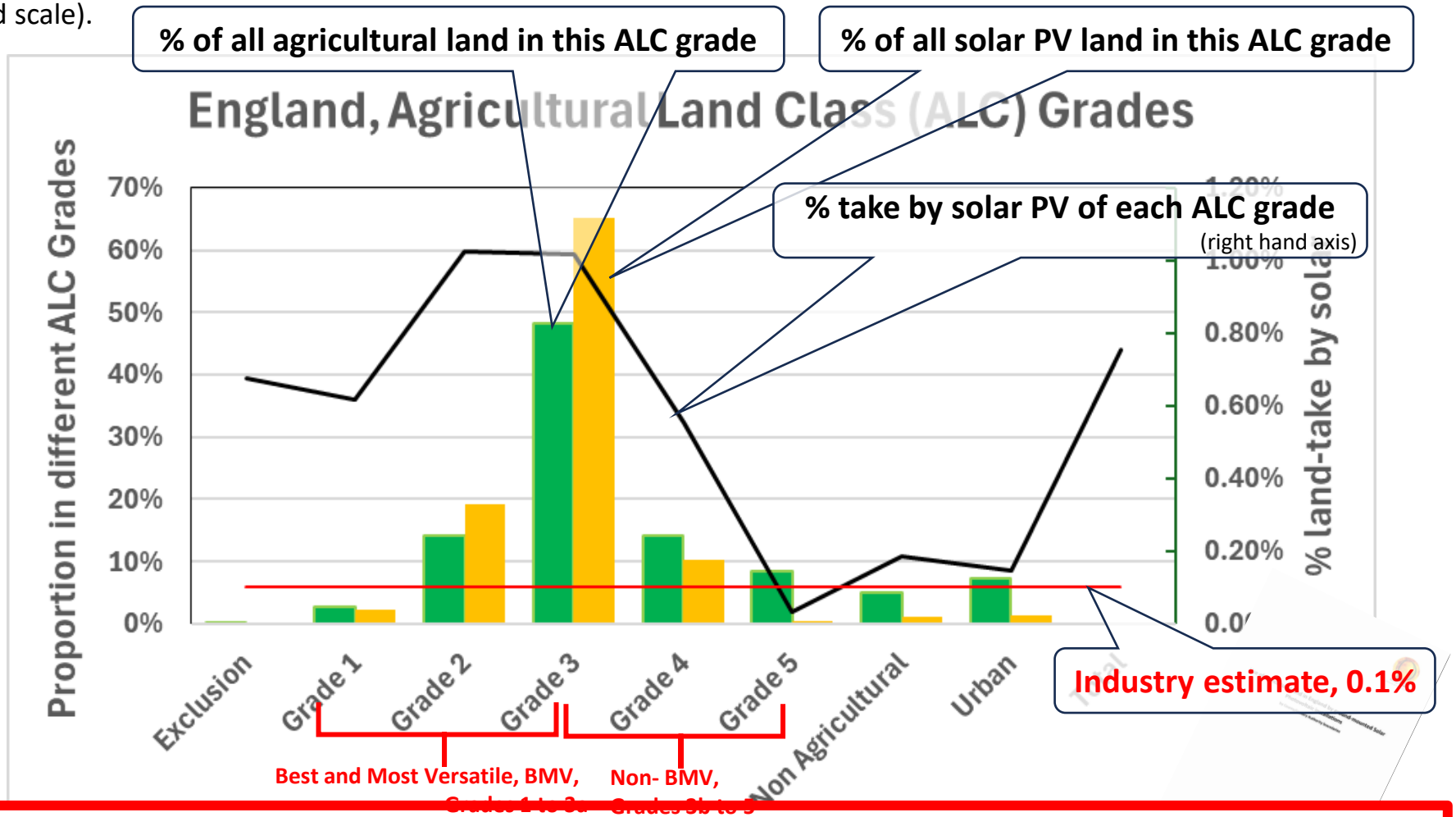
THE PLAN. WHERE SHALL WE PUT IT?



NSIP solar proposals (red stars) are sited near the 400kV overhead lines of the National Grid (green lines) (Scotland's grid not shown).

LAND QUALITY? ....THE REALITY

% of land grades across the whole of England (green histograms) and within ground-mounted solar sites (golden histograms). Each histogram set adds up to 100%. % of each type taken by solar (thin black line, right-hand scale).



Developers are disproportionately using BMV land and are <u>avoiding</u> ALC Grades 4 and (especially) **5 (worst agricultural quality) land.**

FOOD SECURITY

Official Statistics

United Kingdom Food Security Report 2021: Theme 2: UK Food Supply Sources

Updated 22 December 2021

"The biggest medium to long term risk to the UK's domestic food production comes from climate change and other environmental pressures like soil degradation, water quality and biodiversity."

"The UK imports 46% of the food we consume (2020 figure)."

Climate change will result in more flooding of productive land (e.g. East Anglia).

"It will reduce the proportion of 'Best and Most Versatile' (BMV) agricultural land from a baseline of 38.1% to 11.4% by 2050."

Solar Energy UK

the solar industry claims that

Solar farms will stop **climate change** so that a **food crisis** is **avoided**

….. therefore Solar Farms should be allowed to go ANYWHERE.

FOOD SECURITY

There is/will be a food crisis as well as a climate change crisis

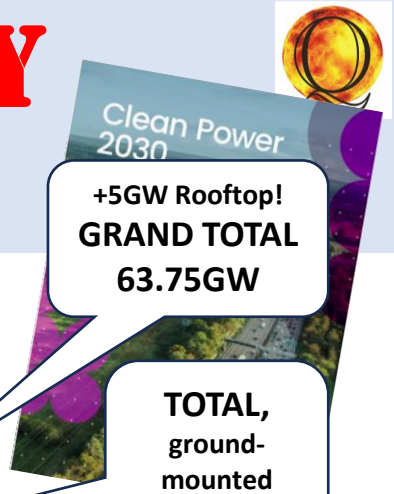
The UK population was 57.2 million in 1990 and is now 68.0 million.

That's more than 10 million more mouths to feed!

Groundswell talk by Tim Lang at
https://www.youtube.com/watch?v=EEMulgdU8G4

TOTAL UK SOLAR CAPACITY

ARE WE NEARLY THERE YET?

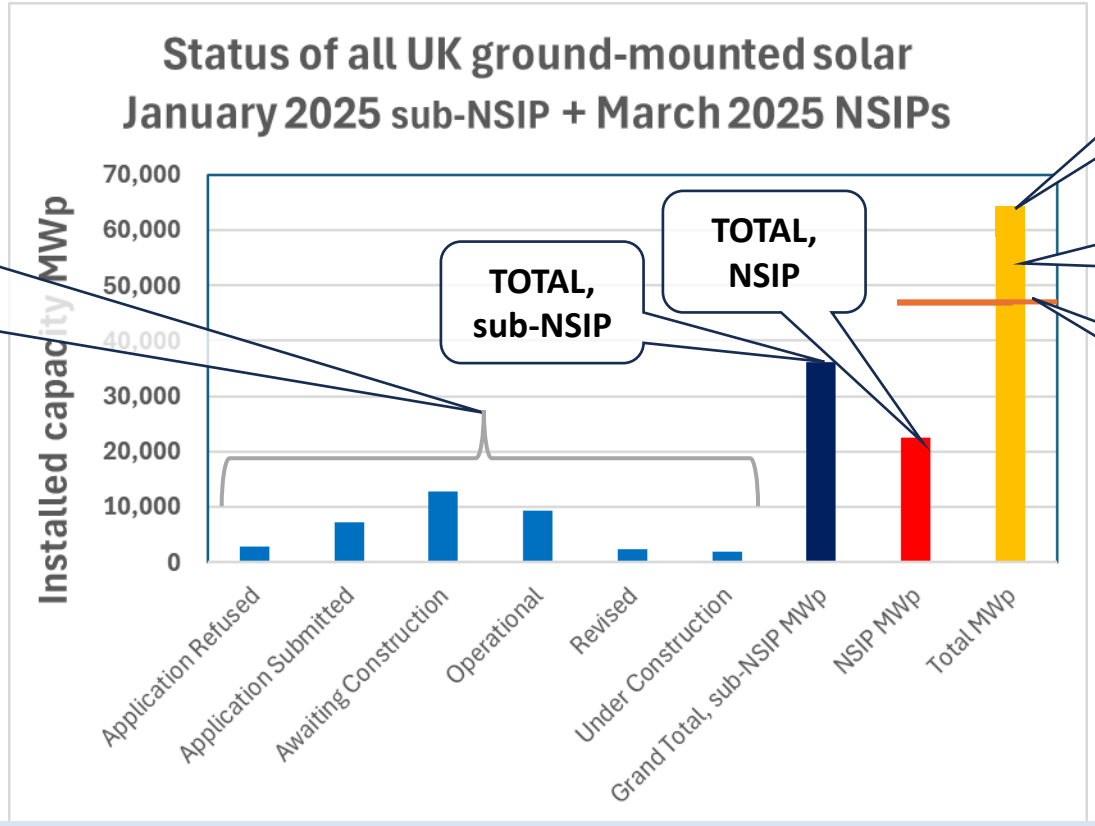


+5GW Rooftop!
GRAND TOTAL
63.75GW

TOTAL, ground-mounted
58.75GW

2030 target, 47GW

Sub-NSIP proposals at different 'viable' development stages (REPD, Jan 2025)



WITHOUT ANY SPATIAL PLAN WE HAVE ALREADY EXCEEDED OUR 2030 SOLAR TARGET!

New solars/NSIP solars continue to say they are a response to national renewable energy 'needs' and/or to the Net Zero targets for 2030, 2035 and 2050.

TOTAL UK BESS CAPACITY

AR

BESS GRAND TOTAL

ross

27GW

Fire Technology
© 2024 The Author(s)
Manufactured in The United States
https://doi.org/10.1007/s10694-024-01682-x

Check for updates

Remarks on the Safety of Lithium -Ion Batteries for Large-Scale Battery Energy Storage Systems (BESS) in the UK

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Received: 26 June 2024/Accepted: 18 November 2024

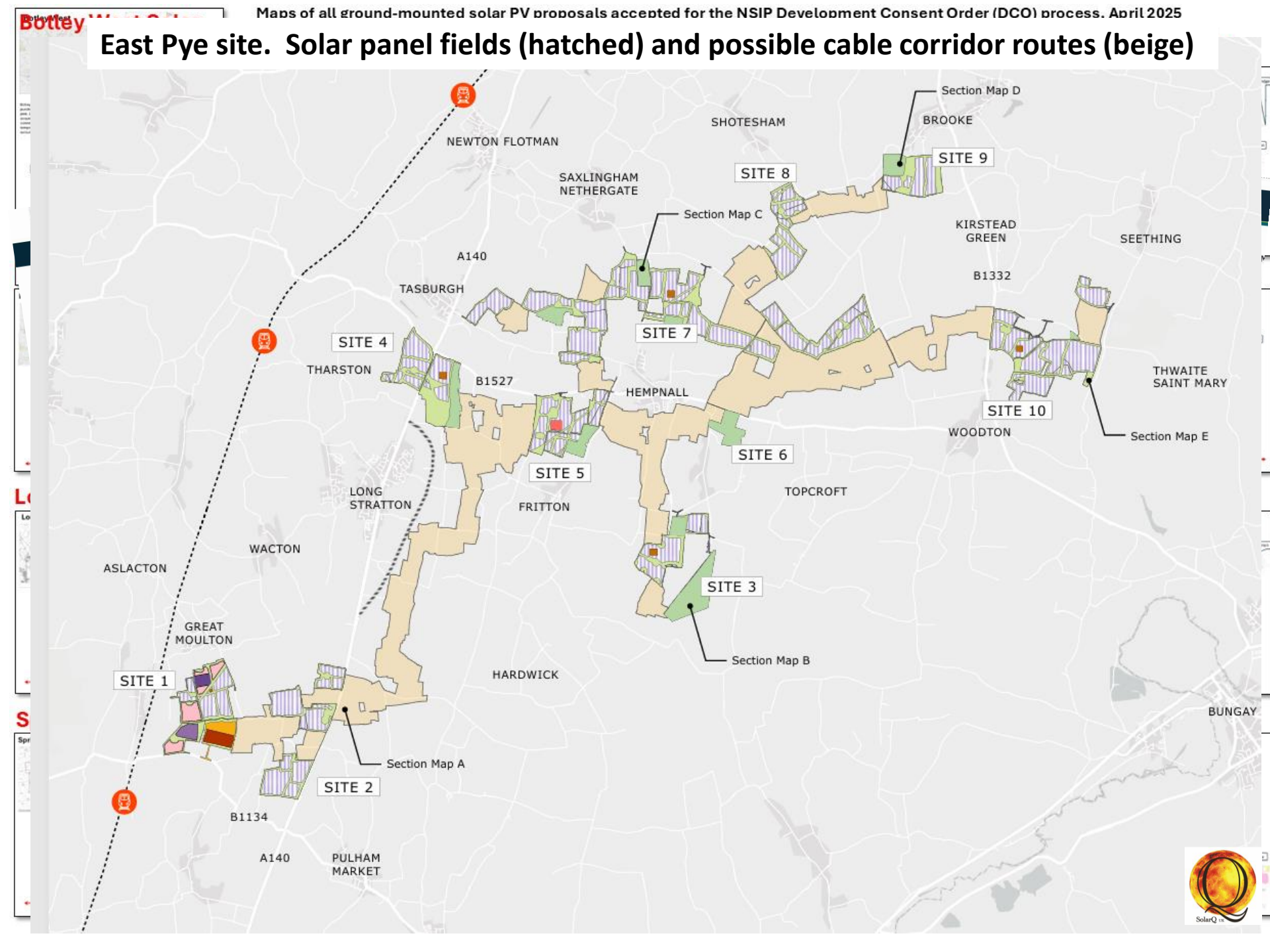
"There is a worrying possibility that BESS could become the next legacy—fire safety issue with all the risks to the public from fire, explosion and toxicity and the attendant clear dangers to employees at these facilities, to First-Responders, Firefighters and the local population as well as to their impact on the environment."

AC

AI

Very few of these are yet operational, so we do not yet know the safety record of BESS in the UK. Shouldn't we pause future applications until we do?

East Pye site. Solar panel fields (hatched) and possible cable corridor routes (beige)



MORE UK JOBS FOR SOLAR?

The UK's industrial strategy ignores solar because – even though it is inefficient - it is both cheap to install and available now.

The previous Government's **Ten-Point plan for a Green Industrial Revolution** emphasised wind almost to the exclusion of solar. The word 'wind' appears 29 times in the 10-point plan document but 'solar' only once.

The recently released **UK's Modern Industrial Strategy** includes a **Clean Energy Industries Sector Plan**. UK Industries with the greatest growth potential are **Wind** (Onshore, Offshore and Floating Offshore), **Nuclear Fission**, **Fusion Energy**, **Carbon Capture Usage and Storage** (CCUS) including Greenhouse Gas Removals (GGRs), **Hydrogen**, and **Heat Pumps.** These will benefit from a reduction in energy costs of £35-40/MWh from 2027 (by removal of current subsidy costs).

Important but non-frontier industries are **Solar**, **Bioenergy**, storage including **Long Duration Energy Storage**, **heat networks**, and **smart technologies**. Deployment of these will be 'supported'.

https://assets.publishing.service.gov.uk/media/68587856b46781eacfd71de4/industrial_strategy_clean_energy_industries_sector_plan.pdf

CHEAP TO INSTALL, SO WHY ARE PRICES SO HIGH?

Although cheap to install renewables, including solar, have considerable 'whole system costs' that increase the prices paid by consumers. Some of these are due to the costs of backup systems (e.g. gas turbines) needed for any intermittent generator. Others are due to direct subsidies of one sort or another.

UK Renewable Electricity Subsidy Totals: 2002 to the Present Day

Monday, 28 April 2025

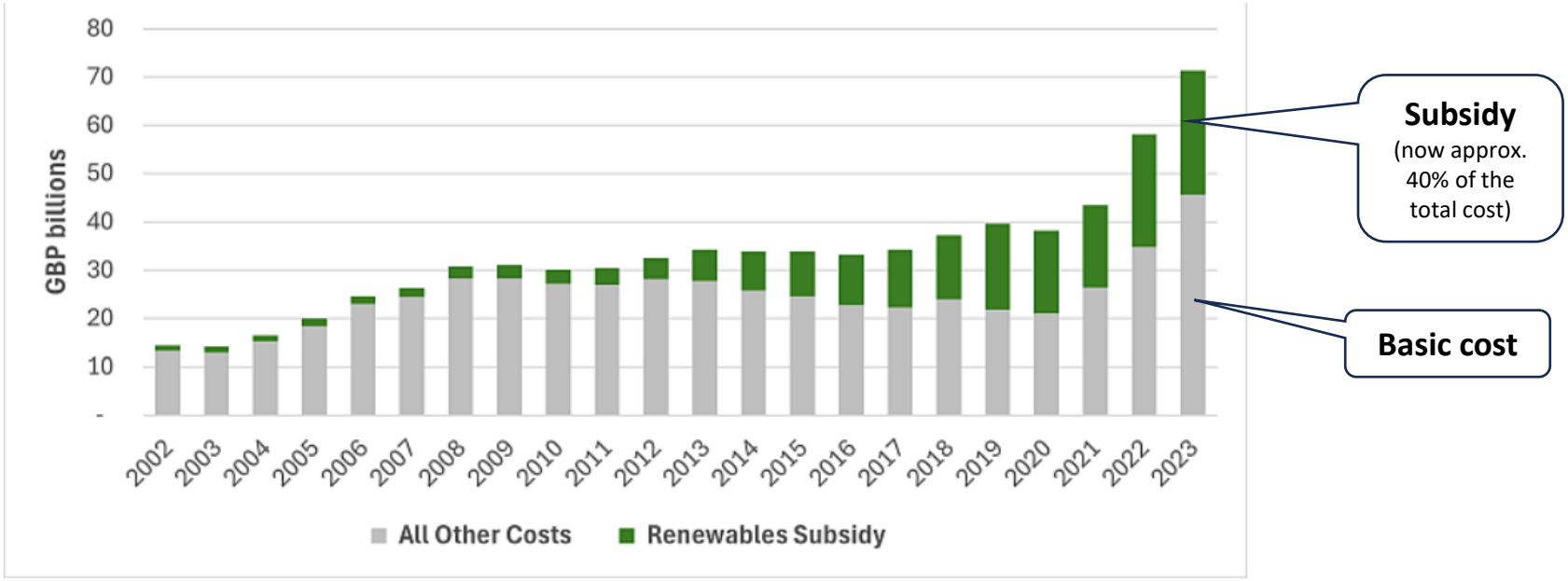


Figure 1. Renewable electricity subsidy as a share of the total cost of electricity to consumers, 2002-2023. Source: Renewables subsidy from Tables 1 and 2 below; consumers from Digest of UK Energy Statistics (DUKES) 1.3 Sales of electricity and gas by sector

Total subsidies since 2002 = £220 billion (2024 prices), or £8,000 per household

https://www.ref.org.uk/ref-blog/390-uk-renewable-electricity-subsidy-totals-

Policy Asks

1. A ban on large solar farms on the green belt and on the UK's best and most versatile (BMV) agricultural land.
2. An extension of the BMV category to include Agricultural Land Classification Grade 3b land.
3. Establish mandatory community benefit schemes at £s per MWp installed capacity or 5% of annual revenues from solar installations (as per onshore wind agreements).
4. Make land-owners, not developers, responsible for decommissioning solar installations.
5. Remove the possibility of automatic 'renewal' or 'life extension' of solar installations (after 30, 40, 60 years). Ban freehold acquisition of land using the NSIP CPO powers.
6. Make food production a Critical National Priority (CNP).
7. Due diligence on the sources of both solar panels and offshore funding for large area solar installations.
8. Prioritise and increase investment in offshore and onshore wind and in energy storage.

The UK needs an evidence-based, long-term land-use strategy that balances solar development with other competing demands.

Thank you!

https://www.solarq.org/

contact@solarq.org

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How UK energy prices compare to rest of Europe after inflation drop

Britain was among the most expensive countries in Europe for electricity last month

October electricity prices in European capital cities

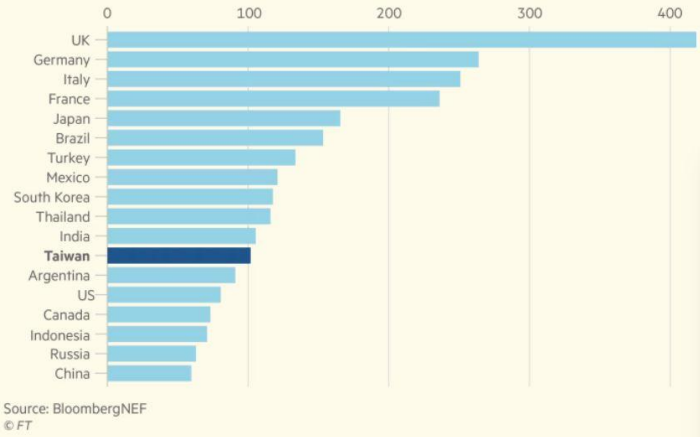
Dublin, Ireland	48.94	Paris, France	29.08
London, Great Britain	41.25	Bern, Switzerland	28.44
Berlin, Germany	39.35	Vienna, Austria	27.88
Rome, Italy	38.09	Tallinn, Estonia	25.96
Copenhagen, Denmark	37.4	Vilnius, Lithuania	25.32
Prague, Czechia	37.11	Athens, Greece	23.63
Nicosia, Cyprus	35.77	Lisbon, Portugal	22.05
Brussels, Belgium	35.56	Warsaw, Poland	21.49
Riga, Latvia	33.29	Madrid, Spain	21.46
Amsterdam, Netherlands	31.5	Luxembourg City, Luxembourg	21.41

Prices including taxes in euro cents per kilowatt hour (c€/kWh)

SOURCE: HOUSEHOLD ENERGY PRICE INDEX

We have been told time and time again that our Electricity is largely green and that green is low cost.

Figure 1: The UK has one of the most expensive energy prices in the world



Source: Financial Times, November 2024