

**SOLAR ENERGY WALES BRIEFING**

# Ground mounted solar farms and agricultural land: The Facts

Dec 2022



## Overview

Claims that ground mounted solar farms jeopardise food security are false. The opposite is true, and this briefing explains the role of solar farms in supporting the food supply in Wales, as well as its contribution to wider economic and climate change objectives.

It is intended to help members of the public, Senedd Members, MPs, planning officials and others with an interest in countryside management to understand how solar energy fits into Wales' land use needs.

The briefing looks at the relationship between ground mounted solar and land use and soils, energy costs and food security.

Solar Energy UK is available to discuss the topics in this briefing at request.

## Summary

- **Solar helps address climate change, which is the single biggest threat to food security.** This is according to the Westminster Government's Department for Environment, Food and Rural Affairs, which says that climate change could reduce the stock of high-grade agricultural land by nearly three-quarters by 2050. Because solar farms generate near zero-carbon electricity, they help address climate change. This means that solar can help protect, and even improve, long-term food security.
- **Solar cuts costs, which helps keep farmers in business.** Solar provides some of the cheapest electricity in history. Without solar, energy prices would be even higher. This is important, because costs are increasing for agricultural businesses, just like everyone else. Solar can also provide a direct and long-term revenue stream for farmers who choose to host a project on their land. By addressing the energy crisis, and helping to keep farming profitable, solar is also helping to secure the domestic food supply.
- **Solar preserves agricultural land and can support soil recovery.** Solar farms do not use land, they borrow it: planning permission is typically granted on the condition that a project is completely dismantled at the end of its life. As such, any land use change is temporary, and reversible. Furthermore, because agricultural land under a solar farm is in effect left fallow, soil health can recover. [i] Solar farms themselves occupy a very small area, and even with five times as much capacity as has currently submitted a planning application, solar farms would still only occupy 0.17% of Welsh land.

# How does solar support food security?

## 1. Tackling climate change.

Evidence for the third UK Climate Risk Assessment for Wales, published in 2021, describes climate change as the number one driver impacting food production patterns. This is further supported by the UK Government Food Security Report, published in December 2021, which explicitly states that: “The biggest medium to long term risk to the UK’s domestic production comes from climate change and other environmental pressures like soil degradation, water quality and biodiversity.” [ii]

The report quantifies this risk, noting that under a medium emissions scenario, climate change could reduce the proportion of ‘Best and Most Versatile’ agricultural land from a baseline of 38.1% to 11.4% by 2050. This would mean a reduction in the UK’s prime agricultural land of almost three quarters. Warmer temperatures and extreme weather patterns caused by climate change are impacting growing seasons. This in turn makes prices more volatile, and alters productivity in the long term.

The evidence is already available: for example, the drought of 2022 literally caused the potato crop to shrink. [iii] Solar farms directly address these threats by reducing carbon emissions. By helping to address climate change, solar farms are therefore helping to defend Welsh, UK and global food supply.[iv]

Solar farms also present an opportunity to address the Welsh biodiversity crisis. The industry’s leadership on managing natural capital led to the development of a Natural Capital Best Practice Guidance which outlined opportunities to increase biodiversity at every stage of a solar farm’s lifecycle. Well designed and well managed solar farms can deliver a variety of ecological enhancements, including new wildflower meadows, the planting and infilling of hedgerows, orchards and woodlands, and the creation of wetland features, to name a few. Planting wildflower meadows provides habitats for pollinator species such as bees and flies; research from Lancaster University shows that land on a solar farm managed for wildflowers rather than grassland can boost bumblebee numbers by up to four times. [v]

A diverse range of wildlife and environmental organisations have in addition signed Solar Energy UK’s open letter on the topic of solar farms and the environment. [vi]

## 2. Addressing the energy crisis.

The energy crisis enveloping the country is a problem for farming and agricultural businesses as well as domestic consumers. Welsh businesses could see their bills increase by 500% in 2022. [vii] This could be a catastrophe for farmers, who are already facing major economic uncertainty. [viii]

Solar farms can address this problem in two key ways:

First, they produce some of the cheapest electricity in history. Indeed, if Welsh Government is going to achieve 70% of electricity consumption to be generated by renewable energy by 2030, solar will undoubtedly need to play a key role [ix].

The UK's 2022 renewable energy auction saw solar farms successfully bid to generate power at prices four times cheaper than gas.[x] (without solar, energy prices would be even higher). This is important, because costs are increasing for the agricultural sector, just like everyone else. [xi]

Second, farmers can receive direct rental and other income if they choose to host a solar farm on part of their land. [xii] Solar farms offer long term, stable revenue, in an uncertain economic environment. [xiii] By providing financial security, solar is helping to keep Welsh farming profitable, and to allow for the continuation of traditional farming practices. Keeping farmers in business means securing Wales's food supply. [xiv]

*Mr and Mrs Rasbridge, landowners, and farmers in Wales, installed a 9MW and a 6.2MW solar farm on their land in Swansea.*

*"The addition of solar on our land has provided us with a stable income at a time when the agricultural industry is becoming increasingly challenging. Throughout the farming cycle you only receive income when you are selling produce, however through the addition of solar, we know we can rely on the revenue every three months. Installing solar has diversified our income whilst allowing us to continue farming. We have also seen wider benefits, for example an increase in the amount of wildlife on and around the farm, which is great to see."*

The ability to decarbonise assets, continue agricultural practices and diversify revenue are some of the reasons why solar projects are popular with farmers. Indeed, this was supported by Tom Bradshaw, deputy president of the National Farmers Union. "Renewable energy production is a core part of the NFU's net zero plan and solar projects often offer a good diversification option for farmers." [xv]



### 3. Safeguarding Wales' land and soils.

Planning permission for a solar farm is typically granted only on the condition that the project can be completely dismantled at the end of its life. As such, land use change is temporary and reversible – unlike almost all other development. The extended fallow period enables a recovery of soil health, degraded through many years of cultivating arable land. This in turn increases the amount of organic matter and allows for greater soil carbon sequestration. Further, solar farms can support continued use of agricultural practices as farmers make use of livestock to help graze the grass around the panels itself, supporting a functioning, productive soil remains in place. [xvi]

Solar farm developers, builders or tenants who are members of Solar Energy UK also agree to comply with the industry's 11 commitments on good land management, respecting landscape, local heritage and access and community engagement, to ensure projects are developed responsibly. [xvii] A further best practice guidance focusing on solar farm planning and community engagement is now under development, as the solar industry continues to be a responsible steward of the countryside and advocate for supporting rural communities.

It should be noted that solar farms, which are hugely popular, occupy a minuscule proportion of Welsh land. [xviii] Even if projects are built with five times as much capacity as those which have currently submitted a planning application, they would still occupy only 0.17% of Wales' total land area. [xix] This is a small amount of land needed to help improve energy security. More solar means more home-grown energy, resulting in less dependence on Russia and the Middle East.

This is patently in the strategic interest of Wales, although it is just one of the many benefits of solar technology. Solar farms reduce our carbon footprint, displace extortionate fossil fuels, cut bills, create jobs, benefit nature, and bolster the nation's energy security. [xx]

[i] Defra R&D project SP08016, Best Practice for Managing Soil Organic Matter in Agriculture. See <https://randd.defra.gov.uk/ProjectDetails?ProjectId=15536>

[ii] <https://www.gov.uk/government/statistics/united-kingdom-food-security-report-2021/united-kingdom-food-security-report-2021-theme-2-uk-food-supply-sources#united-kingdom-food-security-report-2021-theme2-indicator-2-1-1>

[iii] [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1077015/United\\_Kingdom\\_Food\\_Security\\_Report\\_2021\\_19may2022.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1077015/United_Kingdom_Food_Security_Report_2021_19may2022.pdf) and [https://www.theguardian.com/environment/2022/aug/12/mass-crop-failures-expected-in-england-as-farmers-demand-hosepipe-bans?CMP=Share\\_AndroidApp\\_Other](https://www.theguardian.com/environment/2022/aug/12/mass-crop-failures-expected-in-england-as-farmers-demand-hosepipe-bans?CMP=Share_AndroidApp_Other).

[iv] Solar farms produce near zero-carbon electricity. See <https://www.carbonbrief.org/solar-wind-nuclear-amazingly-low-carbon-footprints/>.

[v] Blaydes H., Gardner, E., Whyatt J.D., Potts S.G., & Armstrong A. 2022, Solar park management and design to boost bumble bee populations. Environmental Research Letters – [http://www.research.lancs.ac.uk/portal/en/publications/-\(2f23dd74-a7d7-42eb-9024-a575f0c9035f\).html](http://www.research.lancs.ac.uk/portal/en/publications/-(2f23dd74-a7d7-42eb-9024-a575f0c9035f).html)

[vi] <https://solarenergyuk.org/wp-content/uploads/2022/09/28.09.2022-SEUK-Joint-Letter-on-Land-Use.pdf>

[vii] <https://www.cornwall-insight.com/press/businesses-could-see-energy-bills-increase-fivefold-in-october/>

[viii] The situation is so serious that in 2022 the government had to bring forward the cash payments it provides in England as part of the Basic Payments Scheme: <https://www.gov.uk/government/news/payments-brought-forward-to-help-farmers-with-cashflow>. See also the 2022 Farmers Weekly state-of-the-industry survey, which reported that seven out of eight farmers “had no clear idea” how their business would survive without the BPS: <https://www.fwi.co.uk/business/business-management/agricultural-transition/survey-farms-hampered-by-uncertainty-over-future-income>.

[ix] <https://gov.wales/sites/default/files/publications/2022-06/energy-generation-in-wales-2020.pdf>

[x] See [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1088875/contract-s-for-difference-allocation-round-4-results.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1088875/contract-s-for-difference-allocation-round-4-results.pdf) and <https://www.carbonbrief.org/analysis-record-low-price-for-uk-offshore-wind-is-four-times-cheaper-than-gas/>.

[xi] It should be noted that an additional economic challenge for UK agriculture, and something which is causing food insecurity, is the labour crisis in the sector. The Westminster Parliament’s Environment, Food and Rural Affairs Committee said in March 2022 that it had found “clear evidence that labour shortages have badly affected the food and farming industry – threatening food security [...] causing crops to go unharvested and left to rot in fields.” See <https://committees.parliament.uk/publications/9580/documents/162177/default/>.

[xii] For an example of a landowner FAQ from a solar developer, see <https://jbm-solar.com/faqs/>.

[xiii] <https://www.thetimes.co.uk/article/farmers-fear-devastating-effect-of-solar-power-restrictions-zmnr27g8>

[xiv] Many farming businesses also choose to install rooftop solar panels, which Solar Energy UK strongly supports. See, for example, <https://www.bbc.co.uk/news/uk-england-gloucestershire-62437048>, and [https://solarenergyuk.org/wp-content/uploads/2022/06/CBGuide\\_June2022.pdf](https://solarenergyuk.org/wp-content/uploads/2022/06/CBGuide_June2022.pdf) for a guide to commercial rooftop solar.

[xv] <https://www.cityam.com/leading-farming-union-defends-solar-panels-from-tory-attacks/>, Examples of diversification stories. <https://www.thescottishfarmer.co.uk/diversification/20071963.energy-costs-soar--even-scotland-comes-sun/>, <https://www.walesfarmer.co.uk/news/20297233.pembrokeshire-farmer-wins-woman-farmer-year-title/> and <https://www.nfuonline.com/updates-and-information/solar-farms-and-the-british-landscape/>. A guide to commercial rooftop solar is available at [https://solarenergyuk.org/wp-content/uploads/2022/06/CBGuide\\_June2022.pdf](https://solarenergyuk.org/wp-content/uploads/2022/06/CBGuide_June2022.pdf).

[xvi] <https://www.bbc.co.uk/news/uk-england-humber-62352061>.

[xvii] <https://solarenergyuk.org/wp-content/uploads/2022/08/11-Commitments-on-Solar-Farms--Final.pdf>.

[xviii] There is extensive and up to date industry, government and private sector polling which demonstrate solar’s enormous popularity, including solar farms. See, for example, [https://solarenergyuk.org/wp-content/uploads/2022/01/Copper-Consultancy\\_Solar-Energy-UK\\_Public-attitudes-to-solar\\_January-2022.pdf](https://solarenergyuk.org/wp-content/uploads/2022/01/Copper-Consultancy_Solar-Energy-UK_Public-attitudes-to-solar_January-2022.pdf), [https://solarenergyuk.org/wp-content/uploads/2022/01/Copper-Consultancy\\_Solar-Energy-UK\\_Public-attitudes-to-solar\\_January-2022.pdf](https://solarenergyuk.org/wp-content/uploads/2022/01/Copper-Consultancy_Solar-Energy-UK_Public-attitudes-to-solar_January-2022.pdf), and <https://www.businessgreen.com/news-analysis/4053952/tory-members-stronger-green-energy-policies-sunak-cools-heat-pumps>.

[xix] Based on an assumed additional 2.43 GW of ground-mounted solar, occupying an average of 3 acres / MW (figure via BEIS: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1015236/en-3-draft-for-consultation.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1015236/en-3-draft-for-consultation.pdf)). Wales’ total land area is 2.1 million hectares (see <https://www.bbc.co.uk/news/uk-wales-46737277>). As solar technology improves, the land area required for a given generation capacity continues to decrease.

[xx] The UK solar industry is, in general, a job-creation machine. Solar Energy UK analysis shows the UK solar industry could support 60,000 jobs by 2035, with corroborating evidence from, for example, the UK Energy Research Centre, and Green Alliance. See [https://ukerc.rl.ac.uk/UCAT/PUBLICATIONS/UKERC\\_Green-job-creation-quality-and-skills\\_A-review-of-the-evidence\\_Final.pdf](https://ukerc.rl.ac.uk/UCAT/PUBLICATIONS/UKERC_Green-job-creation-quality-and-skills_A-review-of-the-evidence_Final.pdf) and <https://green-alliance.org.uk/wp-content/uploads/2022/07/Powering-the-labour-market.pdf> respectively.





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