



Policy position

Solar grazing with sheep

Grazing land with photovoltaics/solar panels with sheep – it's trends, challenges, advantages and future.

Background

Ground-mounted solar (photovoltaic) panels covered an estimated 21,200ha (52,000ha) in the UK at the end of September 2024 and this figure will expand as research shows it's the world's fastest growing energy source.

National solar electricity production must more than double by 2030 to reach government targets laid out in the [Solar Roadmap](#). Photovoltaic (PV) capacity was 19GW in mid-2025, - the UK government has set a national solar target of 45-47GW of solar capacity by 2030.

Government incentives aim to stimulate investment in ground-mounted photovoltaics (PVs) through planning reforms, VAT relief, and guaranteed prices to reduce developer's risk.

NSA believes

Ground-mounted PV projects should be targeted at less productive farmland - not at grade one land or good-quality grazing ground.

Solar grazing – the combination of livestock and PV systems – can be an effective way of achieving multi-functional land use (food, fibre and electricity production), providing certain criteria are met.

Graziers' requirements should be considered as part of the design consultation process – layout, space, water access, pasture species, gate placement and sheep flow.

PV sites can be designed to create a mosaic of habitats, including water features, water harvesting and biodiversity enhancement rather than blanket PV monocultures.

Panels lead to microclimatic variation in conditions, affecting sheep and grass performance, which should be assessed and monitored.

PV sites also vary, meaning subdivision and careful dynamic management is required to optimise grassland management for weed control and sward productivity with stocking intensity and stocking rate. What works at one site, may not work at another.

NSA members have been offered solar grazing for free as many PV site operators save on money strimming/managing grass. Graziers provide a cost-effective service.

Reasoning

A study published in [Applied Animal Behaviour Science](#) concluded sheep were effective graziers of PV ground, moving under and around effectively, benefiting from shade and shelter and vegetational management of PV sites with sheep has “huge potential”.

No threat from heavy metals or other products used in the PVs (cadmium, copper, lead) because they are not bioavailable – solar grazing with sheep is considered safe.

Opportunities	Challenges
• Total PV coverage is growing and likely to continue to grow. • Sheep are the perfect size to graze around and under PV panels. • Early teething problems around sward varieties, design layout, and practical challenges have been met head on by industry. • There is no adverse effect to wool quality as shown in Australia with Merino flocks. • Cleaner Energy Systems study in US found integrating US sheep to PV farms would bring about an efficiency advantage equivalent to 117,000 motorcars. • Panels offer shade and shelter from sun and rain, which is of great benefit in warmer climates. An Applied Animal Behaviour Science (2023) study found shade reduced wool surface temperature by 30%, skin temperature by 1.5c in Corriedale ewes in Brazil. • Grazing manages fire risk.	• Panel can cause poor germination and slow spring growth due to limiting optimal soil temperature and moisture availability and delay the return to full moisture capacity in the autumn. • Rewards from agri-voltaic systems will vary according to energy price and lamb market prices. • Herbage production was reduced 56% due to solar panel shade in a study in New York state stocking at 8 sheep/ha. • Panels restrict agricultural use and the ability to control or rejuvenate pasture by drilling, topping or baling. • Shade-tolerant weeds can become challenging. • Distribution of agrivoltaics is often fragmented and can lead to operational challenges such as distances from flockmasters. • Greater knowledge transfer and UK-specific research in temperate settings is required.

Future

Researchers and industry should put effort into developing understanding around grazing large and small sites, as the more sites become established, as well as working with changing PV design and materials (Perovskite) as they develop

Practical, empiric lessons are vital to ensuring that solar grazing works to benefit landowners, graziers, and wider society due to the raft of site-specific considerations and challenges presented by individual sites

Major consideration to broader societal aims should be given to PV sites - losing prime agricultural land to PV could threaten food security, and recreational and living space

Greater opportunity to build with building integrated PVs (BIPVs) could be integrated into sheep farms on lambing and machinery sheds for example, or even farmhouses.

From 2027, Future Homes Standard will see English homes built with mandatory PVs, which may reduce the requirement to cover farmland in PVs.

Solar grazing tips for sheep farmers:

- Solar grazing can be a low-cost way to grow a sheep business and suits ewes and lambs or dry ewes – avoid grazing with weaned lambs (only do so if a few older sheep are included).
- Always ask about water provision and troughs. PVs are cleaned with deionised water, which is brought onto sites.
- Security is often very good, including deer fences on the exterior and cameras, with very little public rights of way meaning interference with sheep is minimised.
- Layout is important – best sites have room for tractors and at least a quad through the middle of the park and room at the edges to erect mobile handling yards and build small internal collection fields.
- Diverse grazing mixes work well, such as grasses with clover and plantain.
- Swards should be overseeded with a quad bike. (Rough costs for clover in 2025 7.5-10kg/ha (£5-£6/kg) costs about £60/ha every 5-10 years.) Cultivations are best avoided due to underlying cables and lack of tractor access.
- Concentrating lick buckets/hard feed/water troughs in internal collection fields should facilitate sheep gathering as sheep will become familiar to these areas.
- Responsibility/liability is best shared by agreeing that if a sheep chews or stands on a panel and the panel is damaged, it's the PV owner's loss, if the sheep is damaged it's the grazier's loss. Issues are exceptionally rare.