

Cohabitation necessary: what's new in combining solar PV with animal habitats

Wildlife | More than ever before, solar developers are implementing measures to support animal habitats and improve the biodiversity of their sites. Alice Grundy explores how this cohabitation can be encouraged - and the challenges left to tackle.

Solar farms have significant potential to create habitats for wildlife and deliver substantial net gains for biodiversity, and many developers pride themselves on the benefits that can be achieved.

As is the case for many areas of the industry, some of the biodiversity benefits that can be achieved are driven by regulation. Environmental impact assessments (EIA) are a common feature of planning regulations, although not every country requires them.

As part of an EIA, developers will need to appoint consultants to conduct surveys of the land and produce an environment statement. This document works through the relevant environmental factors on a site and categorises them according to impact. The steps needed to mitigate any impacts on the environment will then be determined.

But not every site will require an EIA, with certain criteria - whether physical changes will need to be made to the site, the presence of protected areas and the use of natural resources among other factors - all determining whether one is needed.

The purpose of an EIA is to establish the base position of a site, according to Christian Silk, head of infrastructure planning at law firm Foot Anstey, and then understanding what impact a development will have on that. "EIA is much more around mitigating the impacts on environmental matters, particularly ecology and wildlife, as opposed to necessarily enhancement. It can identify opportunities for enhancement, but that isn't its key purpose," he says.

In the UK, new regulations - the Environment Act 2021, to be specific - are



Credit: G Parker, NextEnergy Emberton 2019

to require solar developers to achieve a 10% biodiversity net gain on their sites, although these have yet to come into force.

Many developers in the country are, however, going above and beyond that requirement. Indeed, UK-headquartered renewables developer and service provider Anesco is expecting to achieve a 173% biodiversity net gain at its 10MW High Meadow 2 site and a 216% net gain at its 25MW Moat Farm site, both of which are located in the UK.

Sarah Webb, Anesco's director of development and technical, says that the level of net gain that can be achieved depends on a number of factors, including the size of the site itself. With larger sites, there's more room to implement extra trees and ponds.

Wildflower meadows are one of many ways to enhance solar sites, providing benefits to pollinators such as bees.

Alona Armstrong, senior lecturer in energy and environmental sciences at Lancaster University, adds: "At some sites, just because of their underlying characteristics, there's more potential for biodiversity than there is at others. It's not a level playing field of where you start."

However, Webb says that most developers will always try and make the most of every site and make sure they're putting in as many reasonable measures to increase biodiversity as they can.

Progression versus regression

What about those countries that don't require EIAs and have weaker wildlife

protection laws? Tris Allinson, senior global science officer at non-governmental organisation (NGO) BirdLife International, says that there is a “regulation vacuum” in countries such as India, where land that appears to be empty – as in not used for agricultural or other purposes – is often being used for solar, however these are often important habitats for local wildlife.

In Brazil, meanwhile, some renewable developers are looking to cut a scrub habitat home to birds such as the Lear’s macaw, while the increasing levels of solar and wind development in the Western Rajasthan area of India is posing a real threat to the great Indian bustard, a critically endangered bird that due to poor eyesight is prone to collision with powerlines. With more solar and wind – and the associated powerlines – being built in its native habitat, renewables are posing a real threat. There are only around 100 of these birds left in the wild, with it estimated that between ten and 15 of the birds are striking powerlines every year.

“You have the incredibly tragic situation that before we lose any species to climate change, we could lose one to renewable energy,” Allinson says.

To avoid situations like this, Allinson says the first step is to see if a solar site can be located elsewhere. If that’s not possible, steps can be taken to mitigate the risk of powerlines through designs that do not incur electrocution risk to birds, as well as ensuring there are bird flight diverters. In the most sensitive of areas, burial of powerlines is also an option.

If there’s still going to be damage incurred, Allinson says that the NGO will work with companies to offset that by creating additional habitats elsewhere.

Other animals at risk from the buildout of solar include ground nesting birds, with species such as skylarks requiring wide open areas to feel safe enough to nest. However, Guy Parker, founder and co-director of Wychwood Biodiversity, says that even with the habitat lost, these birds will often use the farms to forage, while wide open areas around solar farms can be incorporated either around or inside the solar farm to mitigate the loss.

While the physical space solar farms take up can result in a loss of habitat, the construction phase can also pose a risk to wildlife. “In a wet winter a site can get really damaged. You lose your grass cover, there can be soil compaction and

flooding,” Parker says. However, if an EPC provider is careful about construction, such as by constructing in dry conditions or using low pressure vehicles, then those impacts can be limited.

Other risks during construction include open trenching and fuels, but these can also be minimised with careful management, Parker says.

“It’s a short construction period, and once construction is over there’s very little disturbance to wildlife on the solar farm on the whole.”

Going above and beyond

It may seem a little doom and gloom, but the potential for improving the biodiversity of solar farms and providing habitats for local wildlife is vast. Establishing wildflower meadows is an easy way of doing this, with such meadows supporting bees and other pollinators. Tussock grassland, meanwhile, is a suitable habitat for around the edge of a solar site as it grows much taller and thicker than wildflowers and provides foraging habitat for fledgling birds and nesting places for bumblebees. Trees and shrubs can be grown, and if a site has naturally wet areas, a pond can be established.

Bird and bat boxes are also an option if suitable, while Armstrong suggests that hedgerows are another great option as they provide habitats and have been linked with carbon storage.

These sorts of measures are not without cost or additional time, of course. Webb gives the example of needing to ensure any planting is done planting season, which can sometimes mean a site is mobilised before the planting takes place.

“That costs us quite a bit to come back to a site and do any necessary planting. But it’s important that we do it,” she says.

Maintenance is also an important consideration; hedgerows and newly planted trees, for instance, need to be nurtured in the early stages of life. “They need to be watered regularly, they need to be maintained; you need to maintain them and monitor them quite carefully,” Webb says. However, once they’re more established, they can be mostly left alone.

What comes next

One area that Parker is beginning to look at is decommissioning planning for solar sites, although this is still a little way off in the UK due to the age of its solar fleet. While it’s hard to discern what the policy

will be for this, based on current policy the obligation is to return solar farms to their original land use. That there will remain a need for renewable energy beyond current asset lifetimes would suggest the majority of sites will continue to have generating technology.

Parker says it’s likely that if a site does need to be returned to its original use and there are protected species on site, measures would need to be taken to protect them and ensure their habitats remain.

Kutahya Cherry, managing associate, Foot Anstey, says: “If you’ve spent significant effort to improve the land from a particular biodiversity perspective or carbon perspective, there shouldn’t really be an obligation to reinstate the land back to what it was before, because it would be effectively putting it back into a worse state.

“There’s lots of discussions going on about that. I don’t think the market has really landed on what will become market standard, or if there will be a market centred on that.”

Beyond being a requirement for many solar farms, increasing biodiversity can have other benefits. One challenge often faced by solar developers moving through the planning process is getting the general public on board, with an anti-solar local community having stopped many applications in their tracks.

“Community engagement on all of these developments is absolutely critical,” Cherry says, suggesting that that’s why developers are moving towards going beyond statutory requirements.

However, Silk adds: “What you’ll see particularly with the well-established solar farm developers and the solar investment funds is that it’s a standard part of their business values; that business is more than just renewable energy, it’s about the wider impact on the environment.”

That willingness to put biodiversity and the impact on the environment as a key part of a solar development – or business – is one of the main enabling factors for biodiversity. Regulation of course plays its part, and campaigning from and partnerships with organisations such as BirdLife International certainly contribute.

But as Parker says: “Ultimately, to encourage biodiversity on a solar farm, you need a willing project owner, a sensible biodiversity management plan, a diversity of habitats and consistency in management to enable wildlife to flourish.” ■