Written Representation on: Decommissioning the Cottam Solar Project.

Introduction

It is easy to see developers of solar farms, and especially large-scale solar farms, are seen as lucrative businesses for investors with deep pockets of funds. The global market for a few decades has been awash with opportunities, with Governments attempts in meeting net zero emissions by 2050.

Investors of large-scale solar projects have quickly learned to use the system of finding agreeable landowners, community engagement, local planning authority involvement and specialist consultants to overcome regulation and obligation routes to gain approvals to projects.

However, there appears to be an aspect that is not given a great deal of publicity or consideration and that is the financial risk and financial liability, in a solar project from its very beginning to its end of life.

The capital cost and risk of developing and implementing a solar project is largely in the hands of the project owner/investors in the expectation of resulting profits. The landowner is unlikely to be financially involved in the early stages prior to approval of the solar project and with little risk.

However, the capital cost of decommissioning has little to no return on investment, so project efficiency, regulatory compliance and achieving cost certainty, in decommissioning, is fundamental.

Decommissioning plans put forward appear generally too vague. They'll say, 'we'll do this, and it's going to happen in 20 to 25 years' time' and they're required to put money aside, but the detail is lacking.

There will be a growing onus on investee companies to demonstrate good product stewardship and end-of-life management of renewable energy assets as financial watchdogs focus more on decommissioning and waste management.

Landowners and Developers Contractual Obligations

The basic contractual documents that are generally put forward in Phases as follows –

1.**Option Agreement:** which gives the developer permission to enter the land and undertake assessments allowing the developer to then apply for planning permission including decommissioning.

2.**Draft long Lease:** which will define the life of the lease (25-35-60 years) setting out the obligations by both parties, the rent to the paid, the lands to be leases (by reference to a map) and any easements.

3.**Lender Direct Agreements** a Lender Direct Agreement may be used which allows a lender to "step in", in place of the developer, if there is a breach of the agreement with the developer.

The landowner will then have a legal agreement with a lending institution in place of the developer which may result in a very different relationship. That lender to the developer, might not be a mainstream local bank but could be from anywhere in the World and may deal with the overall nature of the transaction very differently.

As it stands, responsibility for decommissioning ultimately lies with the asset owner and landowner. But without clear regulatory guidance, it is largely seen as a future problem for someone else.

The developer GBEP has Submitted a **Framework Decommissioning Environmental Management Plan,** (DEMP)and as part of the DCO Application information for the **decommissioning** of the Scheme. Whilst this is comprehensive, there are numerous questions on decommissioning which should be examined at this stage.

At 1.1.1 The design life of the Scheme is expected to be at least 60 years, although the operational life could be longer than this; the condition of equipment will be reviewed at the end of the anticipated design life to determine whether it remains in a viable condition to continue operation after that time. 60 years suggests that the Scheme is certainly not temporary!

The suggestion that the Scheme will be determined by the condition at the end of the anticipated design life. What design life is to be considered? Will it be the batteries, solar panels, inverters, etc? each of which will have a different design life?

Bonds

Solar scheme operators are required to clearly allocate funds necessary to decommission their assets. However, liability does not end when the physical decommissioning project is complete. Future risk liability in the short- and long-term post decommissioning must also be considered.

Banks are increasingly setting decarbonisation targets for their lending portfolios albeit in the face of substantial pressure and criticism. And investors – both asset managers and owners – are increasingly focusing on the overall credentials of companies, rather than just the products in which they invest. As a result, it should become harder for corporates to make inauthentic claims to sustainability, as many are seen to be doing as the number of pledges to achieve net-zero emissions rises.

Investors are not seen to be sufficiently concerned about the potential environmental and social damage that may result from an asset reaching the end of its life. “The expected benefits of the so-called circular economy may mean that investors are not properly recognising such liabilities, says the Chief Executive of UK non-profit organisation the Climate Bonds Initiative (CBI). “So, there is an investment risk not yet factored in, and it should be factored in.”

For any significant renewable energy development linked to green bonds, I would expect there to have to be qualitative disclosures on how the end of life is managed."

The CBI, which provides green debt labels, says it is not examining this area now, though it may do so in the future. The green bond label can include a life cycle analysis of an asset from an emissions perspective, but it is not a requirement for the issuer to provide that information.

The solar farm owner is liable for decommissioning and may enter into an agreement with an investor/bank or insurance company or the incumbent landowner/s of the site through a bond.

However, should the solar farm fail, for any reason, resulting in liquidation of the solar farm owner, who then becomes financially liable for the decommissioning of the solar farm?

Regulations /Precedents/Conditions

In the UK, guidance on the regulations clearly states that an asset owner is **liable in perpetuity** for any residue associated with their decommissioned assets.

Precedent Reference 1:

Town and Country Planning Act 1990 (Section 62A Applications) Development of a ground mounted solar farm with a generation capacity of up to 49.99MW, together with associated infrastructure and landscaping At Berden Hall Farm, Ginns Road, Berden.

The National Planning Practice Guidance (NPPG) states that "Planning obligations… should only be used where it is not possible to address unacceptable impacts through a planning condition". Regulation 122 of the Community Infrastructure Levy Regulations 2010 (as amended) also limits the use of planning obligations to circumstances where they are necessary to make the development acceptable in planning terms; directly related to the development; and fairly and reasonably related in scale and kind to the development.
The securing of decommissioning of the site **is capable of being (and is routinely) dealt with via planning conditions rather than planning obligations.**
Paragraph 27 of the UK Government's planning practice guidance for renewable and low carbon energy states that "**solar farms are normally temporary structures and planning conditions can be used to ensure that installations are removed when no longer in use and the land is restored to its previous use".**

It is, therefore, accepted practice to secure the **decommissioning of solar panels via condition.**
There is no policy basis to require an applicant to enter planning obligation and/or decommissioning bonds with a local planning authority.
This has been acknowledged in the Planning Inspectorate's recent S62A decision to grant consent for another solar scheme in Uttlesford's administrative area1.

Further, **such arrangements are not required for either of the much larger nationally significant solar schemes consented via the development consent order regime (Little Crow, 150MW; or Cleve Hill, 350MW).**
Such an S106 for this development would not meet the statutory test of CIL regulation
Decommissioning of these sites is secured via requirements (the DCO equivalent of conditions) and there is no obligation within the DCOs to secure a decommissioning bond. **It therefore cannot be said that requiring a decommissioning S106/bond for a solar site of fewer than 50MW is necessary or fairly and reasonably related in scale and kind to the development regulation 122 and would, therefore, be unlawful.**

The precedent clearly identify here is no policy basis to require an applicant to enter planning obligation and/or decommissioning bonds with a local planning authority and decommissioning is secured via requirement, the DCO equivalent of condition.

Precedent Reference 2:
Planning Application No. 18/0945, Variation of condition 2 (operational length) and condition 3 (solar farm decommissioning) to extend from 30 to 40 years attached to appeal approval APP/H0928/W/16/3147861, Land south of Dallan Bank Wood, Newby
Meeting of Planning Committee, Thursday, 14th February 2019 9.30 am (Item Pla/156/02/19)
RESOLVED that be GRANTED subject to the following conditions.

1. The development hereby permitted shall be implemented by 25 January 2020.**Reason:** To comply with the provisions of the Town and Country Planning Act 1990 as amended by Section 51 of the Planning and Compulsory Purchase Act 2004

2. The permission hereby granted shall expire after 40 years following the date when electrical power is first exported ('first export date') from the development to the electricity grid network, excluding electricity exported during initial testing and commissioning. Written confirmation of the first export date shall be provided to the local planning authority no later than one calendar month after the event.
Reason: To avoid any ambiguity as to the duration of the approved development.

3. Within 6 months of the cessation of the export of electrical power from the site, or within a period of 40 years and 6 months following the first export date, whichever is the sooner, all infrastructure associated with the development shall be removed from the site and the site restored to its original condition in accordance with the submitted Construction, Decommissioning and Traffic Management Method Statement dated July 2015.
Reason: To ensure the site is restored once the development is complete and in the interests of the amenity of the area.

These precedents clearly identify there is no policy basis to require a solar farm owner to enter planning obligation and/or decommissioning bonds with a local planning authority and decommissioning is secured via requirement, the DCO equivalent of condition.

The solar farm owner is liable for decommissioning and may enter into an agreement with an investor/bank or insurance company or the incumbent landowner/s of the site through a bond.

However, should the solar farm fail, for any reason, resulting in liquidation of the solar farm owner, who then becomes financially liable for the decommissioning of the solar farm?

Financial Considerations

Two main elements of a project contribute to emissions: the manufacturing and the decommissioning, and if you are not looking at one or both, you are not looking at the whole impact of the project on the environment."

Decommissioning in the renewable energy sector will be a challenge. It is currently the tip of the iceberg compared to the more urgent problem the industry faces in the future as assets become stranded or obsolete.

There is a risk that some solar farm owner may not be able to fully fund the decommissioning programs for which they are responsible and make ask for the setting aside of decommissioning funds.

The decommissioning element may sit outside any 1st or 3rd party financing arrangement with decommissioning not seen as a major risk. It may be an increasing focus for all parties, and something not easily ignored in the future.

The Sustainable Finance Disclosure Regulation (SFDR) will by 2023 require investors to report on the "adverse impacts on sustainability" of the asset they hold and the entity issuing it. The EU has identified 64 'adverse impact' indicators under the SFDR, of which waste levels is one of 18 compulsory metrics.

Sustainability/Environment

Ultimately, however, increasing disclosure and accountability amounts to nothing if it does not solve the problem in hand: the mountains of fibreglass, composite materials, solar panels, and batteries heading for landfill.

Much renewable energy infrastructure is resource-rich and includes rare earth elements and other valuable materials, such as steel, copper and glass. Recovering these and reintroducing them into the production cycle can present a commercial opportunity and reduce the reliance on raw minerals.

The EU predicted that, by 2030, the following would be recycled annually: 95% of 1.5 million tonnes of photovoltaics, up from just 5,000 tonnes in 2020; and 100% of 240,000 tonnes of lithium-ion batteries (40,000 tonnes last year).

Billions of pounds are pouring into the clean energy that is seen as crucial for the transition to net-zero emissions. But the financial sector is not taking sufficient account of what happens to such assets when they reach the end of their life. It may soon have to.

Renewable energy investment is growing fast, but the similarly rapid build-up of non-recyclable waste is an environmentally and **financially costly risk that cannot be ignored.**

Regulations will put more onus on banks and investors to consider waste management and decommissioning in renewables financing plans.

A small percentage of solar panels and batteries are now recycled but that figure is forecast to shoot up in the coming decades. Globally, 60 to 78 million tonnes of photovoltaic solar panels must be decommissioned by 2050, according to respective studies by Cambridge University and the International Renewable Energy Agency. Meanwhile, the boom in electric vehicles is raising concerns about what will be done with the thousands of tonnes of spent batteries.

Solar power production is essential for reducing emissions worldwide, but photovoltaic modules are expensive to recycle. In the US, only about 10% of panels are recycled, says a report by the Massachusetts Institute of Technology.

With up to 78 million tonnes of panels forecast to be decommissioned by 2050, more sustainable solutions than landfill need to be developed.

Summary

The capital cost of decommissioning has little to no return on investment, so project efficiency, regulatory compliance and achieving cost certainty, decommissioning, is fundamental.

In the UK, guidance on the regulations states that an asset owner is liable for their decommissioned assets.

A significant effort across the UK in both Central and Local Governments, as well as industry is needed to ensure that processes are put in place to cover any long-term potential risk to the environment, public health and including financial risk.

Billions of pounds are pouring into the clean energy that is seen as crucial for the transition to net-zero emissions. But the financial sector is not taking sufficient account of what happens to such assets when they reach the end of their life. It may soon have to.

Renewable energy investment is growing fast, but the similarly rapid build-up of non-recyclable waste is an environmentally and financially costly risk that cannot be ignored.

With up to 78 million tonnes of panels forecast to be decommissioned by 2050, **more sustainable solutions other than landfill need to be developed.**

Decommissioning of renewable energy assets has not been a focus of financing arrangements or corporate relationships, with the issue typically seen as someone else's problem.

For any significant renewable energy development linked to green bonds, it would be expected to have to be qualitative disclosures on how the end of life is managed.

The UK requires owners of renewable assets to submit decommissioning plans in their financing bids, which are signed off by the Government?

The EU predicted that, by 2030, the following would be recycled annually: 95% of 1.5 million tonnes of photovoltaics, up from just 5,000 tonnes in 2020; and 100% of 240,000 tonnes of lithium-ion batteries (40,000 tonnes last year).

The precedents clearly identify there is no policy basis to require a solar farm owner to enter planning obligation and/or decommissioning bonds with a local planning authority and decommissioning is secured via requirement, the DCO equivalent of condition.

It is likely that the solar farm operator will dispose of its asset at some time or cease to exist.

Will they absolve any commitment they have through contract exchange, or will, for whatever reason, not able to continue supply and enter liquidation?

This raises some complex and interesting questions. **What happens if the operator ceases to exist by the time an environmental or safety issue occurs?** Just how recoverable these costs will be, is a relative unknown with few past examples.

Will the ExA ensure that there will be NO financial burden on the public and especially the local community and the financial risk must be dealt with by the incumbent landowner and the asset owner?

Decommissioning appears to be at a disproportionately higher financial risk than the other elements of a large-scale solar project. **Will the Examiner agree that the costs of designing, approving, installing, and commissioning a large-scale solar project are significant and worthy of undertaking financial due diligence including decommissioning?**

The developers have not provided information about the contracts that exist with the landowners, and this may appear unimportant and not for examination, but they are the very essence of the application and information about these contracts should be available and transparent. Will the Examiner agree with this fundamental consideration?

The applicants' submission clearly identifies decommissioning has not been considered a significant a part of the submission which is disappointing and disturbing.
There are no time frames for decommissioning. When will decommissioning start and end? How long will decommissioning take place? How will the time frames be determined and controlled?

Roy Clegg

Comments on Britain's Energy Challenges

Rishi Sunak, the Prime Minister and Claire Coutinho, the Energy Secretary, recently (11th January 2024) stated that nuclear power was the "perfect antidote" to Britain's energy challenges.

"It will be the biggest expansion of nuclear power for 70 years to **create jobs, reduce bills and strengthen Britain's energy security".**

The launching of the £300 million plan, the biggest expansion of nuclear power for 70 years, will support 80,000 jobs in the sector, the Government will ramp up the clean power by up to four times to 24 gigawatts (GW) by 2050 – enough to provide a quarter of the UK's electricity needs.

Energy Secretary, Claire Coutinho and the Prime Minister, Mr Sunak insisted a revival of the sector **will also reduce electricity bills and improve UK energy security. "It's green, cheaper in the long term and will ensure the UK's energy security for the long-term. "This is the right long-term decision and is the next step in our commitment to nuclear power, which puts us on course to achieve net zero by 2050 in a measured and sustainable way.**
"This will ensure our future energy security and **create the jobs and skills we need to level up the country and grow our economy."**

Ms Coutinho said. "From large gigawatt projects to small modular reactors, **the UK's wider nuclear revival will quadruple our nuclear capacity by 2050** – helping to power Britain from Britain."
That is why we are making the largest investment in domestic nuclear energy for 70 years – quadrupling nuclear capacity to produce up to **a quarter of our electricity by 2050. We have today published our nuclear roadmap, setting a clear path for growth.**

At the same time, we're supporting the growth of large-scale plants in the UK.
Hinkley Point C in Somerset and Sizewell C in Suffolk will provide enough secure, low-carbon electricity to power up to twelve million homes.
We're also exploring the possibility of a third major power station, which would increase that capacity by 50%.
And unlike Labour, you can be sure that when we say it, we mean it... because every single nuclear power station in this country started life under a Conservative government.
We're also on track to be the first nation in Europe to deploy smaller, next-generation reactors which can be rolled out of factories and set up where they're needed – saving both time and money.
And let's not forget, the UK is uniquely placed to succeed. **Few other nations boast the facilities, expertise, and workforce that we do.**
Our ambitious nuclear programme will help us harness those strengths.
It will keep us safe from volatile energy markets.
It will cut energy bills for hardworking families.
It will support 80,000 jobs and turbocharge our economy.

Nowhere is energy from solar power mentioned in the launching of this significant plan on Britain's energy challenges.

Will the ExA's consider and accept the above statements are significant in respect of the Schemes at Gate Burton Energy Park, Cottam Solar Park, West Burton Solar Project and others in the planning pipeline?

Roy Clegg

Written Representation on the economics of utility scale solar generation with reference to Cottam Solar Project.

Introduction

Information contained in this WR is taken from sources on the internet.

The trend in capex (Capital Expenditure) costs is consistent with the fall in the costs of solar panels and inverters, but other costs have increased over the period and appear to be affected by a scarcity of equipment and skilled labour. Further falls in the cost of solar panels will only have a limited impact on total capex costs. The rate of increase in opex (Operating Expenditure) costs is likely to increase by 2.5% to 3% per year in real terms.

Strong evidence suggests that in the UK the output of solar schemes fall at 1% to 2% per year after age 3 years after controlling for the level of solar radiation.

The combination of rising opex costs and declining performance means that existing solar plants are unlikely to cover their operating costs once their period of eligibility for ROCs comes to an end after 20 years and they move to operating as merchant generators.
Many of the owners of solar schemes have changed their accounting assumptions to increase the economic life of their assets from 25 to 35 years. This modification is ill-judged and potentially damaging to investors as the evidence suggests that the economic life of solar assets is unlikely to be significantly greater than 20 years.

Solar plants in the UK are **not** financially or economically viable as pure merchant generators. They require either subsidies or non-commercial power purchase agreements which offer an average offtake price that is at least three times what they could expect to earn by selling at the average day-ahead price. Since solar schemes must compete with wind generation for CfD contracts, new investment in solar plants is likely to rely primarily on companies to pay much higher than market prices for the electricity that they produce.

Spending public money to promote solar generation the UK seems to be a very poor use of limited budgetary resources.
The UK Government's Energy Security Strategy, in April 2022 claims that: "The cost of solar has fallen by around 85% over the past decade ... We expect a five-fold increase in deployment by 2035." The first statement is demonstrably false when applied to utility-scale solar plants which account for about 50% of total capacity. The goal of increasing solar capacity by 56 GW would destabilise the grid and impose a burden of up to £10 billion per year on either taxpayers or energy consumers for practically no benefit.

Opex costs are critical because they determine the answer to a key question about solar plants: what is their expected economic life? Some solar investors and operators in the UK have adopted the assumption that the accounting life of solar assets is 35 years. That may be reasonable with respect to the physical life of the assets, but it is likely that their economic life will be much shorter than their physical life. The economic life of any asset is the period over which the expected revenue from operating the asset exceeds the expected operating costs incurred to earn that revenue.
In practice, therefore, the economic life of solar plants is likely to be little more than 20 years. Even large solar plants of 50+ MW face the prospect of opex costs which exceed the expected revenue at market prices once they switch to merchant operation. This is important for investors because in the last two years many solar SPVs have chosen to increase the depreciation life of their assets from, typically, 25 to 35 years. The change in assumptions may reflect a more optimistic view of the physical life of solar equipment but it is completely at odds with the market fundamentals that determine its economic life.

By extending the depreciation life and thus reducing depreciation charges owners can increase current accounting profits and pay out higher dividends. However, in the longer term this will be offset by write-offs when it becomes clear that the assets will not have an economic life of 35 years. The net effect of the change is to benefit current owners and operators at the expense of those with a long-term interest in solar assets.

Solar plant performance in the UK

Solar generation is not the special case which many policymakers and investors appear to believe it to be. The actual capex cost per MW of capacity for plants built in the middle of the last decade was nearly twice the level assumed by BEIS in its cost projections for 2025. The evidence available suggests that actual capex costs declined by about 10% between 2015 and 2020 even though the cost of PV modules fell sharply. This highlights the simple point that more than 50% of the total cost of building a new solar plant is spent on civil works, mounting structures, cable, grid connections and similar items. These items are not new technology whose real costs might fall rapidly and, indeed, their real costs may increase if there is a boom in new solar construction.

Irrespective of the reasons for higher operating costs and reduced performance, investors in should recognise that the economic life of solar assets is likely to be substantially shorter than the 35 years which seems to have become the default assumption made by solar operators. When eligibility for either CfD payments or ROCs expires, the abrupt fall in the expected revenue per MWh of output is likely to mean that many plants can no longer cover their operating costs from generation revenues. **Thus, the economic life of the majority of the solar plants currently operating in the UK is likely to be little more than 20 years.** The only escape from this squeeze is if real market prices are at least 2-3 times their average level between 2015 and 2019.

Conclusion

The conclusion is that the solar industry in the UK is little more than the product of an excessively generous set of subsidies. It has no firm foundation for operating on a large scale without subsidies or without a demand for greenwashing. Investors should be aware that they are doing little more than buying a stream of future subsidy payments. Once those subsidies cease, mostly around 2035, they will have assets that are effectively worthless.

The Energy Security Strategy specifies a goal to expand the total capacity of solar installations by “up to” five times the current level by 2035. Of course, “up to” could mean zero but let us take the document as expressing an intention to increase the capacity of solar installations in the UK by 56 GW in 14 years, giving a total of about 70 GW.
That is a rate of construction of about 4 GW per year for the whole period, which is a 50% higher rate of construction than during the previous boom in the period from 2014 to 2016. Paying the difference between the breakeven price for solar power and the 2015-19 market prices over 15 years implies that the total subsidy for utility-scale solar plants will be about £3.5 billion per year.

Since smaller solar installations are more expensive to build and usually have greater maintenance costs, the overall subsidy required is likely to be in the range from £8 to £10 billion per year.
In very simple terms, this level of solar generation, even without allowing for the contribution of wind and nuclear power, will destabilize the grid. The main reasons why this is unavoidable is that when solar generation is at its highest, in June – August, almost all utility-scale solar plants will have to be switched off (since the System Operator doesn’t control output from smaller solar installations) and will undermine the economics of solar investment.

Roy Clegg