

Response to Scottish Energy Strategy and Just Transition Plan – May 2023

About GreenPower

GreenPower is an independent originator, developer, owner and operator of renewable energy assets with projects in onshore wind, hydro, hydrogen and solar. Founded in 2000, GreenPower is based in Alloa, central Scotland and has a specialist team leading development, construction, acquisitions, and operation of renewable energy projects. GreenPower has consented over 270MW of renewable assets and currently have projects in development of over 400MW with further ambitious growth targets.

Our objective is to play our part in tackling the climate emergency by developing and operating projects that directly reduce carbon emissions and deliver economic and social benefits to local communities and the wider Scottish economy.

GreenPower also broadly supports the submission of Solar Energy Scotland in its response to the consultation as an active member of that organisation. Please record in your analysis, that the key policy recommendations made in the SES submission as being shared by GreenPower.

1. What are your views on the vision set out for 2030 and 2045? Are there any changes you think should be made?

GreenPower supports the long term vision and general direction of the energy strategy. There is a clear commitment to ambition and action to tackle climate change and to address the many energy related policy challenges and opportunities faced in Scotland. The commitment to *“Significantly scale up renewable energy production, including on- and offshore wind power, renewable hydrogen, marine energy, solar and hydro.”* is very welcome. Such political leadership to commit to deployment levels across different technologies is much needed, as it then directs all other policy levers to be focussed on achieving deployment at the scale and pace required.

This is particularly important in three significant areas: grid, supply chain and planning. If government is committed to volumes of renewable energy deployment – this sends a strong signal to regulators and regulated companies responsible for ensuring grid and energy networks capacity in their forward plans. It also sends a signal to decision-makers in the planning process, that renewable energy schemes be looked upon much more favourably than previously, and so complements the measures proposed in the newly adopted National Planning Framework. Furthermore, it provides confidence to investors and across the industry supply chain to gear up for delivery.

The commitments to offshore and onshore wind and hydrogen production levels by 2030 and beyond is very welcome indeed, but the notable outsider is solar. The consultation document does suggest a commitment to a level of ambition for solar and does ask what that level should be. See more detailed comments on that specific question, but we presume this means that a solar target or 'level of ambition' will be set in the final strategy document and not lag behind in a parallel process.

We welcome the commitment to rapidly grow Scotland's hydrogen economy and support the setting of a target for green hydrogen production.

We welcome the Scottish Government's commitment to moving away from oil and gas as quickly as possible. It seems therefore very difficult to follow the logic of why the Scottish Government should be looking so positively at carbon capture and storage which has shown limited effectiveness both technically and economically, when renewables can fulfill the same energy system need – whether from electricity or from other fuel sources such as green hydrogen.

CCUS appears to be an oil and gas industry support measure, will likely slow the process of the transition, and is arguably directly against the interests of the renewables industry and a just transition.¹ Many of the arguments made by the Scottish Government about the folly of nuclear power, which we strongly agree with, particularly on grounds of cost and delivery timescales – would appear to be the same for CCUS. Indeed, within the vision it is stated that: *“Carbon Capture Utilisation and Storage will be on its way to being an established technology in Scotland”* by 2030! This really does beg the question, why do this, when renewables and green hydrogen can do the same job faster and cheaper? And later in the vision it is stated that the Scottish Government will *‘Continue to build the evidence base for carbon capture and storage deployment in Scotland’*. That does not sound very convincing that it is a solution for the here and now – which is what our response to the climate emergency requires. Renewables plus storage is the solution, and they exist, in the here and now.

As the Scottish Government may be aware, there are significant recruitment challenges at the moment across the renewable sector. There are literally thousands of jobs waiting to be filled now, and over the next 5-10 years – a much faster and more deliberate transition from oil and gas could deliver a more rapid redeployment of skilled people from dirty energy to the clean energy sector. That transition of jobs should be based on a “pull” from the renewables sector and not a “push” from oil and gas – provide support to the renewables sector to attract talent across from oil and gas and to support the training and skills development.

The sections on pages 18-21 on renewable production and energy use and exports is interesting, but does not really make a clear enough link to the fact that it will be renewable electricity that will primarily drive decarbonisation of heat, transport and industry. Neither does the graph on page 18 include an ambition level for solar energy production, nor from onshore wind – and appears to be focussed almost entirely on offshore wind. These should be amended.

GreenPower strongly supports the Scottish Government's stated intention to continue to press the UK government and Ofgem to decouple electricity from gas prices in the energy market, and also to press for a better and fairer grid charging regime.

We also support the commitment to enhance biodiversity through energy development. With solar this can be achieved straightforwardly as it is part of the natural benefits of solar arrays, and the onshore wind industry has a long track record of positive outcomes for nature as part of best practice and planning conditions for habitat management.

2. What more can be done to deliver benefits from the transition to net zero for households and businesses across Scotland?

GreenPower supports the commitment to a Just Transition as we move away from polluting forms of energy production to clean, renewable sources.

In many ways, the simple fact that onshore renewables, principally solar and onshore wind, are widely distributed where the diverse energy resources are found, means that renewable energy development is inherently better placed to offer benefits across the country, than traditionally concentrated forms of power production such coal and gas, or offshore energy or sourcing fuel on a global market (for example relying on uranium ore from Kazakhstan, Uzbekistan, Russia, Australia and Canada in a global commodity market.)

¹ [Carbon capture remains a risky investment for achieving decarbonisation | IEEFA](#)

Solar and storage behind the meter also allow consumers to provide future flexibility services, benefitting them financially and helping to smooth demand curves and better utilise the distribution network. Solar reduces bills, aids the electric heat and transport transition, supports the establishment of local energy networks, and grows consumer engagement.

The economic benefits of a strong solar and onshore wind sector, and their associated supply chains, have the potential to make significant contributions to local and regional employment, and to provide many of the green, skilled, jobs the country needs.

The proposal to apply windfall taxes onto all energy companies is a little vague – and does not address the key issue, that oil and gas companies can offset windfall taxes against new investment in new oil and gas fields, yet this does not apply to the renewable sector to invest in new renewable projects. This position should be reversed, and it would be good to see the Scottish Government take a specific view on this.

3. How can we ensure our approach to supporting community energy is inclusive and that the benefits flow to communities across Scotland?

The onshore wind sector has proven over many years that benefits over long periods of time can make a huge difference to communities. In more rural and remoter areas where the wind resource tends to be higher and where particularly fragile communities can gain significant levels of benefit to make a meaningful and positive difference.

GreenPower supports a clear obligation on renewable developments to provide community benefits to the local area around projects. It should be noted however, that there is no equivalent obligation on any other industries outside renewables, particularly the oil and gas sector, whether in extraction, processing, distribution or resale.

Solar intrinsically can benefit homes and businesses directly and can assist greatly in reducing domestic and business energy costs.

4. What barriers, if any, do you/your organisation experience in accessing finance to deliver net zero compatible investments?

Access to finance is generally readily available for investment in renewable energy schemes, but in a no subsidy environment it is important that government does not impose burdens on development that undermine the economic case for the investments. If projects are 'salami-sliced' by costs then not only will developers struggle to make projects work, but community projects will also suffer. Therefore, great care needs to be taken to avoid unreasonable demands on development – whether through planning conditions or through significant costs of grid connection for example.

Policy stability and clarity on the direction of travel are essential to attracting and maintaining access to finance – at affordable levels.

5. What barriers, if any, can you foresee that would prevent you/your business/organisation from making the changes set out in this Strategy?

The single biggest barrier to rapid solar deployment in Scotland is a lack of deployment ambition. In the last two years the Scottish Government has shifted significantly in being much more supportive of solar. Having an ambitious target for solar deployment would enable and build investment in the skills and supply chain that will be needed to deliver net zero and provide an impetus to deliver a stronger and more strategic investment plan for the grid system at both distribution and transmission level.

In addition to the need for an ambitious target, we believe that there is also a need for a clearer, more comprehensive, long-term policy direction for solar. Clarity of policy direction exists for

other technologies such as wind, heat pumps, hydrogen and EV charging and policy uncertainty in the solar sector is stifling the ability of businesses to invest in the skills, processes, certifications, quality systems, and expertise that they wish to. This lack of industry confidence is, in turn, risks preventing young professionals from considering the solar and storage sector as a viable long term career paths.

More efficient use of the electricity grid could be enabled if all grid connected battery systems were 'zero-rated' so that they operate in support of renewables and do not compete with them.

6. Where do you see the greatest market and supply chain opportunities from the energy transition, both domestically and on an international scale, and how can the Scottish Government best support these?

The opportunity for the Scottish and UK supply chain to develop is significant across all technologies. This new energy strategy, with bold ambitions for deployment across different technologies is particularly positive – because it creates an expectation of volume and long term commitment.

Significant potential for Scottish based manufacturing, services industries and innovation opportunities exists within a range of fields – in battery storage, network flexibility, electrical engineering, and power systems, civil engineering, cable manufacture and more. With renewable generation and green hydrogen, it will be possible to manufacture green steel for solar and wind, but also for other sectors, such as transport and the wider construction industry. Technologically smart, low carbon and low energy homes, both in new housing and in retrofit has immense potential for supply chain growth and employment.

7. What more can be done to support the development of sustainable, high quality and local jobs opportunities across the breadth of Scotland as part of the energy transition?

By its very nature as distributed forms of energy generation, the opportunity for the creation of local jobs is much greater than historically concentrated forms of energy generation such as nuclear and fossil fuels. It is also important to note that onshore wind projects are already doing this. Undoubtedly there is room for improvement of course, particularly in wind turbine production. If Scotland is operating 20GW of onshore wind by 2030, it seems likely that at least 500MW of projects will be repowered each year, and that in itself is a significant opportunity to revisit tower and blade manufacture and nacelle assembly within Scotland alongside green steel production for the longer term.

Figure 26 on page 89 of the draft Energy Strategy (and the academic panel report on future energy scenarios) inexplicably underestimate the number of jobs that solar could deliver in Scotland, which is presumably because when these were produced, government had not indicated much interest in solar. Please refer to the Solar Energy Scotland submission which points to many thousands of jobs being delivered by 2030 and beyond.

Sending the signal that Scotland is serious about solar would support the Scottish solar industry to make long-term investment decisions, generate thousands of green jobs, reduce domestic energy costs, and enable Scotland to meet its climate change obligations.

There is a huge amount of focus in the document about the North East of Scotland given its historical association with North Sea oil and gas. Quite rightly, it is important to stress the opportunities for that region in a clean energy future. Yet, no mention is made of the significant solar resource on the east side of Scotland where irradiation levels are comparable with many areas of the south of the UK such as Birmingham for example.

A clear ambition for solar deployment out to 2030, and support for skilled apprenticeships – upskilling, and retraining workers in traditional energy industries - would enable Scottish solar businesses to grow and expand and Scottish workers to access stable, green jobs, both now and in the long-term, that are ready and waiting in the solar industry.

13. Do you agree the Scottish Government should set an ambition for solar deployment in Scotland? If so, what form should the ambition take, and what level should it be set at? Please explain your views

Yes, we agree with the Scottish Government that a target or ambition should be set, and support the response by Solar Energy Scotland on this matter. The Scottish Government should set a target of a minimum of 4GW with an ambition to reach 6GW of solar energy deployed by 2030. Solar Energy Scotland's 6GW ambition for 2030 would be achieved through 3.5 GW of deployment coming from ground mounted solar (solar farms), 1.5GW from domestic rooftops and 1GW from commercial rooftops. A minimum target of 4GW would put Scotland in line with the deployment trajectories of other European economies.

Ambition in the solar industry around the world is escalating sharply. Governments are setting enormous deployment targets – for example, Germany recently announced plans under which it could install 200GW of solar energy by 2035.

An ambitious deployment ambition for solar energy in Scotland will help the wider transition to net zero and can do this in at least two ways. Firstly, greater solar power on the system, will make more efficient use of the grid infrastructure that we already have due to different and complimentary generation profiles of wind and solar. Secondly, strategic direction on solar deployment targets will also further incentivise investment in the electricity grid, which is needed and will benefit communities and businesses across Scotland. Setting a national deployment ambition for solar would provide the distribution network operators (DNOs) and planning authorities with the clarity of policy direction required to make decisions about infrastructure and investment in urban and rural areas alike. These network upgrades and expansions will be essential if we are to reduce long term costs and improve our energy security. A defined ambition would send a clear signal to investors and decisions makers that Scotland is ready to use every tool at its disposal to meet its carbon reduction commitments and avoid climate disaster.

In addition to directing investment in infrastructure, an ambition of 4-6GW in Scotland could support nearly 9,000 jobs by 2030. These jobs are in a wide variety of roles from site planners and manufacturers to construction and trade roles, to communications and finance specialists and installers and developers. For more information, please see the SES briefing "Solar Skills Scotland: The job creation potential of Scottish solar." ²

Finally, a defined solar target would ensure that solar deployment is included in future energy scenarios and modelling. The energy scenarios published alongside the draft strategy were in many places directly informed by existing policy measures (wind, hydrogen, EVCP, etc.); therefore, the lack of ambition in solar deployment is self-fulfilling if no future scenarios consider the role of solar.

A national solar ambition signals to industry, policy makers, district network operators, and planning decision makers that solar is an essential part of Scotland's energy transition and opens the door to deliver stable green long term jobs.

14. In line with the growth ambitions set out in this Strategy, how can all the renewable energy sectors above maximise the economic and social benefits flowing to local communities?

Onshore wind farms have demonstrated and delivered significant benefits to local communities, not just through community benefit but in local employment and services provided by local companies.

Solar energy – unlike all other power sources – has the unique ability to reduce the electricity bills of households and businesses directly, reduce demands on the grid, and therefore smooth

² <https://solarenergyuk.org/resource/solar-skills-scotland-briefing/>

out peak demand at a national level – helping to reduce the pressures on the national electricity network.

Solar is a uniquely versatile, cheap, and accessible renewable technology, offering benefits at a community and individual level.

Peer-to-peer local energy trading (P2P) could maximise the benefits that solar can offer to communities. P2P is the buying and selling of energy between multiple parties in a community, increasing consumer choice and improving local resilience, and allowing members of a local community to receive energy directly from a local project they are hosting.

Supporting farmers to take a holistic approach when managing their land (by increasing biodiversity, generating renewable energy and continuing agriculture) is an opportunity for the future of farming and supporting rural economies.

Well designed and well managed solar farms have been shown to support thriving wildlife habitats, providing a range of biodiversity gains for the duration of their lifespan.³ These can include planting new wildflower meadows, planting and infilling of hedgerows, orchards and woodlands and creation of wetland habitats to name a few. The addition of wildflower meadows and the lack of disturbance on operational solar farms makes them good sites for apiaries, which can also boost pollination on adjacent agricultural land which could encourage greater crop yields.

15. Our ambition for at least 5 GW of hydrogen production by 2030 and 25 GW by 2045 in Scotland demonstrates the potential for this market. Given the rapid evolution of this sector, what steps should be taken to maximise delivery of this ambition?

GreenPower broadly supports the ambition for volume of hydrogen production, and this should be specific to green hydrogen.

16. What further government action is needed to drive the pace of renewable hydrogen development in Scotland?

GreenPower is developing a number of hydrogen projects in Scotland and as ever in a new industry, matching production with demand is a challenge. More support to enable hydrogen users to convert machinery and vehicles should be considered, and to promote actions and obligations that will stimulate more rapid uptake of hydrogen use. For example, Government could direct planning policy that any new filling station must include a hydrogen refuelling point or be refused planning permission.

19. How can we identify and sustainably secure the materials required to build the necessary infrastructure to deliver the energy strategy?

GreenPower recognises that part of a just transition to net zero means sustainable development and responsible production across the supply chain, from manufacturing to end of life. Recycling and re-use of wind turbine components is advancing rapidly, and the development of lower impact raw materials used in battery and electrical systems is also developing and should be encouraged further.

Last year Solar Energy UK, in partnership with Solar Power Europe, launched the Solar Stewardship Initiative, which seeks to support and enhance responsible development of the solar supply chain. Following the publication of an industry-wide code last year, the initiative began pilot audits of key manufacturing centres in China, which should be concluded in 2023.

The solar industry is also turning its attention to what happens at the end of a PV panel's life. Solar PV panels are made of silicon, glass, and metal, much of which can be recycled.

³ [NCBPG-Solar-Energy-UK-Report-web.pdf \(solarenergyuk.org\)](#)

Solar panels are usually operational for between 25-40 years, meaning that the UK has yet to reach a mass of solar panels ready for recycling that would support a UK based recycling business; however, the solar industry is investigating how solar panels could be recycled in the UK, reducing the carbon footprint of solar further and ensuring good labour and disposal practices.

25. Should there be a presumption against new exploration for oil and gas?

Yes. It is clear from the science, that new oil and gas exploration should be ceased. The case made by pro-oil and gas interests that domestic production of oil and gas implies lower carbon emissions or lower costs is entirely unconvincing, given the global nature of the commodity market. As a country rich in natural renewable resources, and in the face of a climate emergency, Scotland should demonstrate leadership and make the shift without having to facilitate new oil and gas fields.

26. If you do think there should be a presumption against new exploration, are there any exceptional circumstances under which you consider that exploration could be permitted?

No.

35. What are the key actions you would like to see the Scottish Government take in the next 5 years to support the agricultural sector to decarbonise energy use?

Solar farming can offer many benefits to farmers whilst supporting conservation grazing and improved biodiversity.

Extending permitted development rights to rooftop solar projects up to 1MW (or higher) would make deploying solar on agricultural buildings quicker and easier, saving farmers money on energy bills.

Additionally, we welcome NFU Scotland's proposals for a more holistic agricultural subsidy that would support farmers installing utility scale solar projects that support biodiversity.

36. What are the key actions you would like to see the Scottish Government take in the next 5 years to support the development of CCUS in Scotland?

None. GreenPower takes the view that renewable energy and associated storage, including green hydrogen, can do everything that fossil fuels can do in the economy, and so we should be focussed on that without distraction, deviation, or hesitation. Green Hydrogen is set to rapidly become cost competitive with natural gas plus CCS plus blue hydrogen, and will undoubtedly be a surer investment in a clean energy system. ⁴

Riding the CCUS horse takes demand away from renewable electricity and green hydrogen and it is a potential distraction and delay to the necessary clean energy future we need to accelerate. We do however agree that *“any strategy for deployment of these technologies must enable decarbonisation at pace and cannot be used to justify unsustainable levels of fossil fuel extraction or impede Scotland’s just transition to net zero.”* This then begs the question as to why the Scottish Government appears intent on heavily supporting CCS because it will not help to enable decarbonisation at pace.

37. How can the Scottish Government and industry best work together to remove emissions from industry in Scotland?

Renewable energy, particularly onshore wind, solar and green hydrogen, can have an enormous impact on decarbonisation of industry, and additionally make businesses more

⁴ [Fact Sheet: Blue Hydrogen in the UK | IEEFA](#)
[Green Hydrogen: A key investment for the energy transition \(worldbank.org\)](#)

financially sustainable by reducing energy bills. Setting a 4-6GW solar deployment ambition and extending permitted development rights to commercial rooftop solar projects up to 1MW (as the limit is in England), or higher or even with no limit, would support Scottish businesses to decarbonise.

Solar PV could reduce annual electricity costs by 40-80%, saving the warehousing industry £3 billion per year whilst insulating against additional electricity cost increases. The UK Warehousing Association estimates that there is roughly 120 million square ft of warehouse roof in Scotland, which could represent significant generation potential.

40. What additional action could the Scottish Government or UK Government take to support security of supply in a net zero energy system?

There is significant evidence that a 100% renewable energy system is possible, and cheaper, without nuclear and without oil and gas.⁵ Many different forms of energy storage such as pumped hydro and compressed air, together with energy conversion to Hydrogen as well as large scale battery systems can all contribute to a stable system. Interconnection and demand management can also stabilise the network. A renewables dominated electricity network does not need the outdated perception that 'baseload' provided by nuclear and fossil gas is needed. Flexible response and 'top up' is required. The distributed demand profile is also going to change dramatically with heat and transport increasingly being dependent on green electricity. Scottish Government can show leadership by setting deployment ambitions for mature technologies, such as solar and onshore wind, and working with regulators to modernise the rules and regulations that govern the electricity grid.

42. Are there any changes you would make to the approach set out in this route map?

Yes, a target of 4GW and an ambition of 6GW of solar deployment by 2030 included in the route map.

⁵ [New report shows £100bn savings with 100% renewable energy Net Zero plan - 100% Renewable UK \(100percentrenewableuk.org\)](https://www.renewableuk.org/100percentrenewableuk)