

[Nextgen Nano](#) Why the UK should follow the EU's solar energy plan



After COP27, Mary Robinson, Chair of the Elders Group, said that the world remains on the brink of climate catastrophe and progress made on cutting emissions has been too slow. As the UK watches the aftermath of this summit, all eyes are on Rishi Sunak's new cabinet to ensure the UK increases its efforts to reach net zero. Here Dr Franky So, Chief Technology Officer at nanotechnology research company NextGen Nano, explains why the new UK government should look to the EU for inspiration on increasing solar energy infrastructure in the UK to help hit net-zero targets.

According to the UK, there is not a clear strategy to make all the UK's electricity come from clean sources by 2035. Should the government wish to stick to its Net-Zero target by 2050, it will need to focus more on implementing new renewable energy initiatives, scaling up existing infrastructure, and building better energy storage. Some inspiration can be taken close to home from the EU.

In 2022, the European Council agreed to phase out Europe's dependency on Russian energy imports with a plan named RepowerEU. The plan focuses heavily on substituting fossil fuels with renewable energy, particularly solar. One proposal in its

solar strategy is to install rooftop solar panels for all new buildings and all existing buildings where the energy performance is class D and above.

The Commission's analysis indicates that the investment into these proposals will pay off and save the EU €80bn in gas import expenditures, €12bn in oil import expenditures, and €1.7bn in coal import expenditures per year by 2030. If the plans were fully implemented, it would also lower gas consumption by 30% by 2030, which is equivalent to 100bn cubic meters of emissions.

In its Net-Zero Strategy, the UK government said it will create a facilitative environment for deploying unsubsidized rooftop solar. Evidence has shown though that consumers are more receptive to buying solar panels when there are subsidies. Over the last decade, subsidies as a result of EU renewable energy policies have helped decrease the cost of solar photovoltaics by 82%. This has made solar power more accessible for businesses and households, boosting demand. In 2011, there was 52GW of total installed PV capacity in the EU and this has risen to almost 160GW in 2021.

The UK government could also reap these benefits by setting up national support programs to deploy rooftop solar energy in public buildings like schools and administrative offices. UK Government bodies like the Ministry of Defence are already investing in building solar farms with initiatives like Project Prometheus. One of the first pilot sites is already comprised of over 4,000 solar panels, spanning four hectares.

Successful solar projects aren't necessarily the largest solar farms. Instead, the UK government could focus on the integration of renewable energy in government-owned buildings. With a property empire of around 136,000 buildings worth £158bn, the amount of solar energy gained by installing solar panels would be great. If each building had ten 4kW solar panels, the average number for a three-bedroom house, there would be 1,360,000 solar panels generating around 4bn kWh of electricity per year.

Utilizing solar power also brings other benefits. In 2020, the solar PV industry employed 357,000 full-time members of staff, this is expected to double by 2030. Moving to solar energy will also reduce our dependence on imported fossil fuels, which has become a contentious topic recently because of geopolitical events and the energy crisis.

Further research into the capabilities of photovoltaics will make innovative solar solutions more accessible to the UK. NextGen Nano is developing transparent organic photovoltaics (OPVs) using advanced nanotechnology. OPVs, like NextGen Nano's PolyPower, are intrinsically stable and can maintain >80% of the original performance for up to 30 years. PolyPower is also made from flexible and durable

earth-friendly biopolymers in an effort to replace traditional solar cells made from toxic metals like lead-based perovskites.

As it is developed at a nano level, the semi-transparent thin layer has the potential to be applied on the windows of buildings to generate more power. This means that roof space no longer needs to be an issue when deciding whether to implement solar panels onto newly built buildings like skyscrapers. It can also be used on the sunroofs of electric vehicles to partially power the EV with solar energy.

Enforcing the installation of renewable energy technology, like solar panels, can solve two problems. Not only is it one of the best ways to combat climate change by rejecting the burning of fossil fuels, but it also solves the problem of energy dependence on other countries. To help reach these goals, we need to keep investing in the research of new forms of solar technology.