

The Answer to the UK's Energy and Cost of Living Crises? Clean Energy Industrial Strategy



Josh Freed

Senior Vice President for the Climate and Energy Program

[@jsfreed](https://twitter.com/jsfreed)



Isabelle Chan

Senior Research Advisor, Climate and Energy Program

[@Isabelle_Chan](https://twitter.com/Isabelle_Chan)

Introduction

After a summer of crippling energy prices and energy company bankruptcies, the United Kingdom is entering a fall and winter of more privation and a mounting cost-of-living crisis. Global supply chains are extremely strained by the Covid pandemic and Russia's illegal invasion of Ukraine. Gas and oil imports are unreliable. Authoritarian leaders like Putin and Xi are looking to exploit instability, further deepening the challenges experienced in the West. Today, the UK is poorer, less stable, and less secure because of these dynamics.

The goal of net-zero emissions did not cause or contribute to these crises, but it is a key solution. To accomplish this, the UK should consider borrowing a page from the United States and implement a true clean energy industrial strategy. In many ways, the UK is already well-positioned

to be ahead of the US on this. For example, the UK has the Business, Energy, and Industrial Strategy Department. It also has set and met ambitious clean energy goals and has the potential to produce an enormous amount of clean electricity, heat, and hydrogen with offshore wind and nuclear power. With the right national policies, this shift could also spur a reindustrial revolution. That's because the emerging global clean energy market is expected to be worth well over £2 trillion annually. A clean energy industrial strategy could provide the UK with affordable, secure energy, reduce its vulnerability to spikes in international oil or gas prices, and become a net-energy exporter.

Why Industrial Strategy?

The United States just enacted \$500 billion clean energy industrial strategy investments within historic legislation (the Inflation Reduction Act, CHIPS Act, and Infrastructure Law) that will cut emissions by one gigaton in a decade. It did so by making a bet that only government policy could move the economy and private sector to embrace clean energy at scale; and the only way to do this required restoring US manufacturing, addressing the supply chain crisis, and making energy both carbon-free and cheap. Atlantic columnist Robinson Meyer summarized the strategy best by describing it as, "For America to decarbonize, it must reindustrialize."

Economic Opportunity

Industrial strategy is useful because the world is moving to clean energy. The International Energy Agency estimates that there will be more than £1.2 trillion in clean energy investments in 2022, with investment growing by 12% since 2020, up from 2% in 2015. The UK could win a large share of this expanding market. According to the UK Export Finance, clean trade could deliver up to £170 billion of export sales in goods and services for the UK by 2030. That doesn't include opportunities in many of the rapidly emerging clean technology sectors. New Third Way Analysis of clean energy market potential led by the Boston Consulting Group (BCG) estimates that by 2050, segments from key industries that support six clean technologies it initially studied will have a market of **£2 trillion a year**.¹

Even without looking beyond its borders, the UK must build a tremendous amount of new clean electricity to meet growing demand, replace aging gas boilers, and abate rising costs. Cutting-edge modelling conducted by Carbon-Free Europe finds that the UK could do this in a way that generates enough electricity to match growing electricity demand with domestic clean energy and become a net-exporter. By our model's estimates, UK electricity demand will increase by approximately 240% compared to current demand. This will result in the UK seeing the second largest reduction in consumer gas demand in Europe and the third largest drop in consumer oil demand. It will also require an extensive build out of nuclear power and a 3.5x increase in the pace of renewables deployment.

While the climate goals are important broadly, the economic benefits for the UK are most striking. If the UK sets this as a national target, backed by a strategy where the government partnered with

the private sector to make investments and incentivize clean energy, it would spur significant reindustrialisation and set the UK up to become:

- An essential exporter of electricity and hydrogen to mainland Europe.
- The second largest constructor of new transmission, strengthening ties with France, Norway, Denmark, Belgium, and the Netherlands and exporting large amounts of energy to serve German loads via Denmark and the Netherlands.
- The leading builder of nuclear power and offshore wind in Europe (more than any EU country) – and a top energy producer and exporter of low-carbon hydrogen.
- A leading nation in carbon management, storing the fourth largest amount of captured carbon and helping reduce emissions from heavy industries like cement production.
- The sixth largest producer of biofuels to replace fossil fuels, primarily in aviation and chemical manufacturing.

Components of a UK Clean Energy Industrial Strategy

A UK clean energy industrial strategy would deploy national government policy to incent and remove regulatory obstacles for the private sector to act rapidly to decarbonise and create clean energy, build it domestically, and create jobs. This is the only way to get the scale of investment and clean energy infrastructure that is needed and reduce energy costs to earn broad public support and reach net-zero emissions. Specific outcomes could include:

- Scaling up investment in clean energy infrastructure to ensure the UK becomes a net energy exporter based on low-carbon energy by 2040
- Training a transitioning energy workforce to fill the 120,000 clean energy jobs Britain will need by 2030
- Investing in an array of clean energy technologies to meet demand in the residential heat, transport, electricity, and industrial sectors and for export to Europe
- Planning for reduced energy supplies from the continent and petrol-dictatorships
- Increasing efficiency standards to save money for British households and businesses
- Partnering with the US and other allies to create democratic-lead clean energy driven alternative to the Belt and Road pushed by Xi or Russia's petro-blackmail

The National Vision

While there is clearly a range of legislative and policy changes that can be made to achieve these aims, immediate priorities could include:

- **Create a comprehensive roadmap:** The government should conduct a clean energy competitiveness study to identify the best opportunities for the country to invent, manufacture, produce, and export clean fuels, power, and products, and which domestic or international companies are in the best position to lead in the UK. It should also include which parts of the value chains in electricity generation and storage, industrial efficiency and manufacturing, carbon removal and management, transportation, and building operations it has the highest competitive advantage.
- **Make smart investments in the UK supply chain:** Based on the comprehensive roadmap, the government should significantly expand its Supply Chain Plans. This would go beyond renewables to cover every technology in the industrial clean energy economy, like advanced nuclear and carbon management. It would identify which specific parts of the clean energy supply chain are of strategic or economic interest and should be domestic. It would also provide targeted investments and other access to inexpensive capital to companies that will build out these parts of the supply chain.

Give British households a break

- **Insulate the UK:** The Government should provide a mixture of grant funding and incentives to ensure a rapid increase in domestic insulation standards. This will cost £8 billion annually up to 2050 but will produce rapid benefits in terms of reduced (imported) fossil fuel use. At 2016 prices, this would save around £6 billion per year. Given the current elevated prices, savings may reach £18 billion a year.
- **Make home heating cheap and clean:** In conjunction with making British homes more energy efficient thanks to better insulation, the government should stimulate domestic market demand and production of heat pumps and subsidise their installation for residential use. This would save households up to £1,410 annually in lower heating bills and cost less than £2.5 billion over thirty years, with the goal of ensuring that by 2030 home heat pumps are less expensive than gas-fired boilers to install and operate.

Go all in on domestic clean energy

- **Scale domestic electricity generation:** The enormity of the energy challenge should not be underestimated. [Carbon-Free Europe's modelling](#) shows that, by 2050, the UK's electricity capacity will need to be more than three times the current level. This challenge is even greater given that all of the UK's current wind capacity and all but one of the nuclear plants will need to be re-provided by 2050. The current gas and coal plants will also need to be replaced with low carbon generation.

- **Use every clean technology to generate electricity and heat:** The government should adopt a technology-neutral UK Green taxonomy that allows investment funds to finance all low-carbon developments under it, including renewables, nuclear, and carbon capture. Carbon-Free Europe’s modelling shows that this would require £770 billion in total public and private investment in key technologies over the next thirty years. This includes electricity generation and storage, clean fuels, direct air capture, and heat pumps.
- **Develop advanced nuclear:** The UK should accelerate the development and deployment of advanced nuclear for electricity and industrial heat. Public-private partnerships should be made with leading developers to deploy first-of-a-kind reactors, rapidly expand commercialisation, and to support deployment with UK-based fuel fabrication. This will increase energy reliability and replace existing reactors and natural gas assets that will be retired in the 2030s. It would also create greater flexibility in the electricity grid, lower network costs, and add new heat usages, for example, for hydrogen production. Across all forms of nuclear technology, £352 billion of investment will be required up to 2050.

Conclusion

The United Kingdom led the world into the industrial revolution in the 19th century, and can lead the world in the affordable, clean energy revolution of the 21st century. But the UK needs to act now. Too many people are suffering from high energy prices, which threaten to cripple the economy and stall the immense progress made toward decarbonisation. Investing £770 billion now and over the next three decades, while simultaneously partnering more closely with the United States will finally allow the UK to build the kind of cheap, reliable, clean energy infrastructure every modern nation must have to survive, thrive, and remain independent.

The UK must take the path of inventing, producing, and exporting the clean energy that will power the 21st century. By working together, the government and industry can create jobs, revive industry, and reduce Britain’s vulnerability to horrific energy price spikes—while simultaneously setting the pace for meeting ambitious emissions reduction goals.

TOPICS

INTERNATIONAL 1

ENDNOTES

1. Technologies included in the initial study are direct air capture, estimated at ~£2.6 - £3.5 trillion globally, advanced nuclear at ~£471 - £599 billion, low carbon hydrogen at ~£2.6 - £3.5 trillion, electric vehicles at ~£21.6 - £26 Trillion, long-duration energy storage at ~£2.6 - £3.4 Trillion, and clean steel at ~£8.6 - £13 trillion. The next study will examine carbon capture, offshore wind, and solar PV.