North Sea Energy – a second life

Why geopolitical challenges make it even more urgent that the UK develops a 'North Sea 2' programme with our neighbours to promote energy security and manage the transition to renewable energy.

Nick Butler

June 2026

Our Scottish Future

About the author

Nick Butler is a visiting professor at King's College London and the founding chairman of the Kings Policy Institute. He chairs Promus Associates, The Sure Chill Company. From 2007 to 2009 he was chairman of the Cambridge Centre for Energy Studies.

Foreword

The energy crisis resulting from the US and Israeli attack on Iran and the Iranian retaliation which has closed the Straits of Hormuz and caused major damage to energy facilities in Kuwait, the UAE, Saudi and Bahrain has put energy security at the top of the political agenda in the UK and in many other countries which are dependent on imports of crude oil, natural gas and refined products.

The UK imports some 60 to 65 per cent of its daily oil and gas needs and relies on numerous global supply chains which are based on feedstocks produced and processed in different countries around the Persian Gulf. North Sea production is declining year by year but oil and gas consumption remains strong with the inevitable result that imports will continue to grow for the foreseeable future.

The growth of renewables led by offshore wind is displacing some gas demand in the electricity sector, but since electricity still meets only 20 per cent of final demand the economy as a whole cannot operate without oil and gas. To make the energy equation balance the UK needs more renewables, a sustained programme of electrification and secure supplies of oil and gas.

In 2023 Our Scottish Future published North Sea 2 which summarised what could be done to use existing North Sea infrastructure and facilities including rigs, pipelines and onshore processing plants to build a new generation of activities to replace, over time, the existing oil and gas production which has sustained the UK economy for the last 50 years.

The paper set out the potential for more offshore wind, carbon capture and storage, green hydrogen and looking further ahead the scope for creating a pan North Sea power grid linking the various littoral states to create a common power transmission facility, based on multiple sources of supply which would materially enhance the energy security of all those involved.

The case for North Sea 2 is even stronger now because of the way in which events have demonstrated that frictionless globalisation cannot be taken for granted or relied upon to maintain national energy security. As the Chief Executive of Shell Wael Sawan said recently "countries cannot have national security if they do not have energy security".

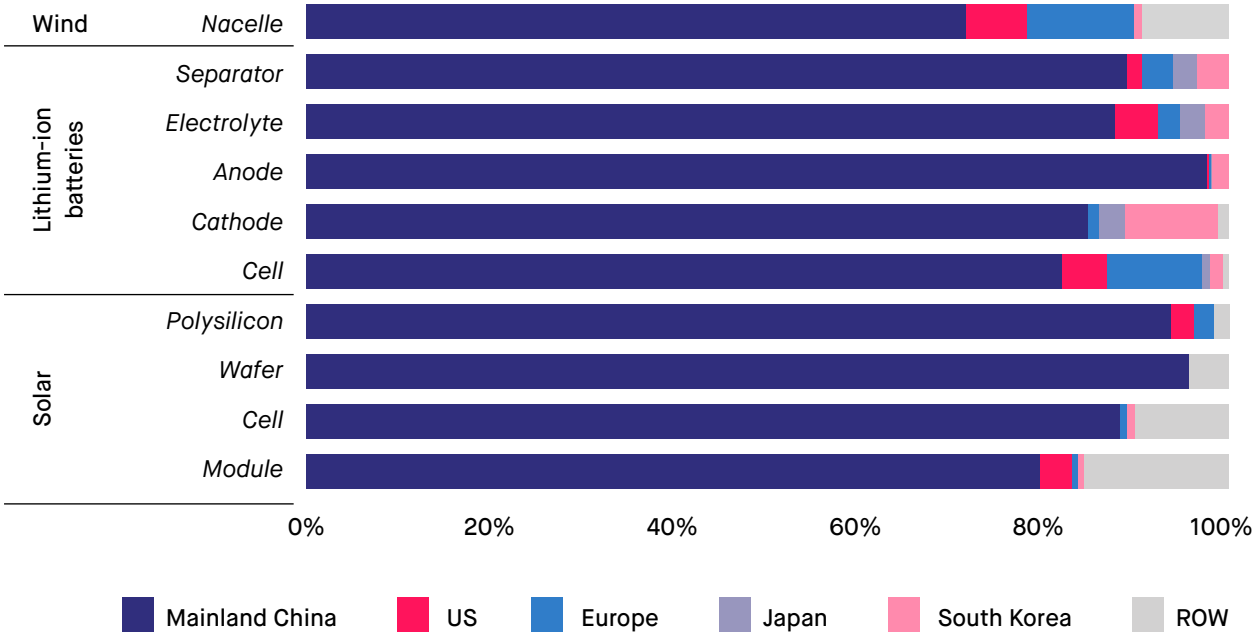
THE BENEFITS OF NORTH SEA 2 INCLUDE

- Enhanced employment prospects – preserving and extending the high-level skills for instance in offshore engineering and subsea technology which have been developed across Scotland and through supply chains extending across the UK.
- The creation of a new distinctive offshore low carbon industry whose skills can be exported to other countries as the scope for offshore development is recognised around the world.
- The potential to develop a distinctive new industrial sector providing the equipment and services associated with low carbon offshore development which does not rely on imports.
- The attraction of investment capital and the development of new sources of wealth creation, providing an additional source of revenue for the Exchequer and for local communities in Scotland and elsewhere.
- The productive use of existing offshore infrastructure and onshore facilities which will otherwise be decommissioned and scrapped at a considerable cost to the industry and to Government.
- The renewal of a neglected refining sector which has been allowed to decline, adding to current problems because of the reliance of the UK and much of Europe on the refining of oil products such as jet fuel and diesel on refineries located in Gulf which have been damaged during the war. With supplies likely to be short for some time the resulting increase in prices is already reflected in the amounts consumers are having to pay. Refining should be seen as a strategic asset to be managed collectively between Britain and its neighbours.

Realising these benefits requires a period of transition. During such a period, running perhaps over the next decade, the remaining oil and gas reserves (some 3 billion barrels of oil and gas according to the North Sea Transition Authority) and additional potential resources which are yet to be found and developed (some 10 billion barrels of oil and gas) should be developed with a share of the proceeds going to the development of North Sea 2. In this way North Sea development would be aligned with national climate policies and at least some of the very damaging effects of the current run down of the industry on regions such as North East Scotland mitigated.

The decline of North Sea activity over the last decade has cost some 75,000 jobs and a detailed study conducted by Robert Gordon University predicts a fall in the workforce from around 115,000 in 2024 to between 57,000 and 71,000 by the early 2030s with the precise number determined by policy and the level of investment (https://www.rgueti.com). As things stand with significant projects blocked by legal challenges and with a rigid ban on all new exploration activity the number of jobs lost is likely to be more than 50,000. The loss of jobs will be accelerated if fields such as Rosebank and Jackdaw are not developed and if more companies and investors turn away from the hostile environment which has been created for the oil and gas industry in the UK. North Sea 2 could mitigate that trend and if successful lead to a material growth in employment over time particularly if linked to creation of an industrial base in low carbon capable of competing with China which holds a powerful global leadership position as this graph illustrates.

Figure 1: Clean energy manufacturing capacity by location in 2024



Source: BloombergNEF. Note: Chart reflects the share of capacity by market and is based on the locations of production facilities

A determined programme of activity across the North Sea could also contribute an additional reduction in emissions taking us and our neighbours closer to the Net Zero targets for 2050.

National initiatives

A number of initiatives are already in place at national level in many of the countries around the North Sea. Some countries have also begun to look beyond the basic steps to concepts of offshore industrial development using low cost energy supplies.

Norway

In Norway low carbon offshore activity centres on the development of large scale floating wind farms, the electrification of oil and gas platforms using wind power and the offshore development of Carbon Capture and Storage (CCS).

The Hywind Tampen project – the world's largest floating wind farm – is designed to deliver 88MW of power to the Snorre and Gullfaks oil and gas fields. Platforms on the Troll, Valhalla, Johan Sverdrup and other smaller fields are already fully or partly electrified.

Two CCS projects at Sleipner and Snohvit are already operating and the Longship and Northern Lights projects are developing open access transport and storage infrastructure to take CO2 from industrial sites in Norway and other European countries.

Beyond these existing plans Norwegian R and D programmes are exploring the potential for low carbon offshore power grids to connect all the various offshore activities in an efficient manner, and the possibilities for reusing existing offshore infrastructure to create offshore floating data centres cooled by seawater and powered by offshore renewables.

Denmark

Denmark has been a leader in the development of offshore wind and has numerous projects in operation or planned in both the North Sea and the Baltic. In addition the Danes are now developing the concept of artificial North Sea and Baltic energy islands based on wind power and using HVDC links to bring the power to shore for local use and for export through interconnectors. These islands are being designed to host so called "Power to X" facilities capable of converting surplus wind power to green hydrogen for use in sectors such as shipping and aviation. By integrating different sources of renewable power the offshore islands are designed to make a material contribution to the supply of power in the European grid.

Denmark is also working to develop offshore CO2 storage facilities to support industrial decarbonisation in North West Europe.

Germany

Offshore wind from facilities in the North Sea and the Baltic are under development in the German sector of the North Sea and should be connected to the grid by 2030.

These new facilities in addition to projects such as Wikinger, Baltic Eagle and Windanker in the Baltic are designed to support industrial decarbonisation in areas such green steel production and to supply future green hydrogen production and the decarbonisation of parts of the refining sector. Hydrogen remains the main focus of Germany's plans for achieving its net zero targets and offshore activity including possible infrastructure links through offshore islands offers one way of meeting the cost challenge involved.

Holland

Holland's offshore activity is focused on the development of wind power and the development of CO2 storage using depleted gas fields. The Dutch are also researching the potential for the production of green hydrogen and other Power-to-X sources such as offshore floating solar, wave and tidal power which could supply industrial clusters in Rotterdam and other European ports.

For the Dutch offshore gas industry decarbonisation projects under discussion include the electrification of platforms and the potential use of offshore infrastructure including pipelines for the transportation of both hydrogen and the movement of CO2 to storage sites. The Dutch plans foresee the development of significant economic activity in the North Sea including integrated grids, shared offshore hubs and the development of aquaculture and other innovative projects.

The UK

The UK's offshore low carbon has centred on the development of wind projects such as North Vanguard East and West, Dogger Bank South and Awel y Mor. The North Sea Transition Authority opened a carbon storage licensing round in December 2025 with the aim of storing 20 to 30 million tonnes per annum of CO2 by 2030 linked to industrial clusters in the North East potentially using repurposed gas pipelines for transportation to offshore sites.

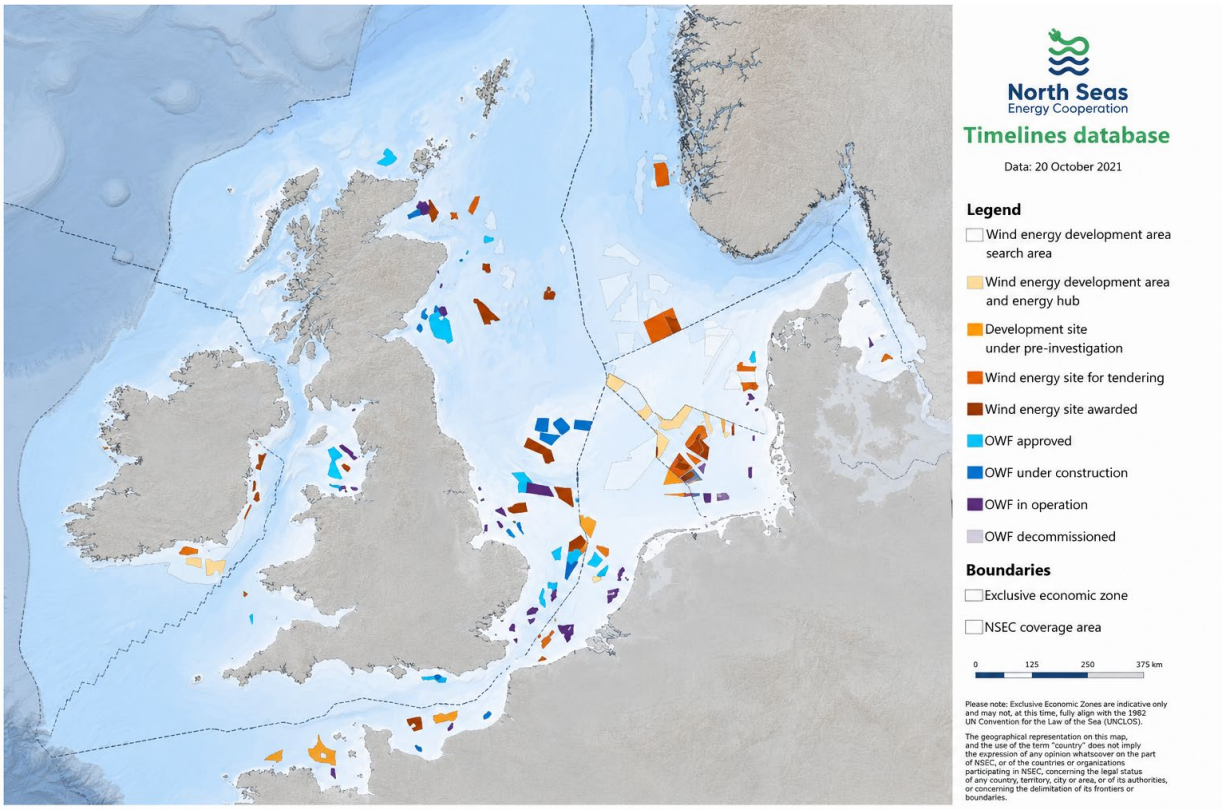
The Transition Authority is also developing plans for offshore hydrogen transportation and storage using depleted oil and gas fields in the North Sea and an energy hub at Bacton designed to integrate hydrogen, natural gas, carbon storage and offshore wind resources in the Southern North Sea.

Activity across the North Sea

Almost all of the projects described above are strictly national initiatives and cross border activity is for the moment no more than an aspiration for the future. A framework for cooperation between the different states with an interest in the area was set up by the European Union in 2009. (https://energy.ec.europa.eu/topics/infrastructure/high-level-groups/north-seas-energy-cooperation_en) The UK was an original member of this grouping but left because of Brexit and rejoined but only as an associate in 2022. The North Sea Offshore Energy Integration Group is a public/private initiative designed to develop the potential which exists to create a single development plan which could make the North Sea a significant permanent source of a full range of low carbon activity at a manageable cost. (https://www.tennet.eu/de-en/news/offshore-tso-collaboration-sets-out-recommendations-delivering-integrated-offshore-energy-system-north-seas) These range from offshore wind which is now an established business proposition constrained only, in the UK and elsewhere, by limited integration with the infrastructure of the offshore grid, to carbon capture and much less mature activities such as the production and use of green hydrogen where the challenge lies in the high costs involved and the need for dedicated infrastructure.

These groups and others have produced a number of studies setting out the potential and the vision of what could be achieved by the middle of the century with a road map of what could be done to deliver each element. The potential, across different forms of renewable development, is laid out in detail here: (https://northseaenergy.projectatlas.app/atlas/page/energy-hubs?map=57.8331,2.2946,3.47,0,0).

The problem lies in the absence of a coordinating authority, or the necessary political and legal agreements to transform strictly local activity into a combined, collaborative plan. This graphic showing the development of North Sea wind farms is a good example of the problem. Numerous countries are developing offshore wind but there is no connection between the different national initiatives



Britain has so far been a minor player in the development of the long term plans for the North Sea. Given the leadership position the UK has in North Sea wind and the extensive offshore skill base and the established supply chain Britain should be leading the initiative and establishing a detailed programme of delivery which benefits all the countries involved. As in the debate on defence and security policy the absence of the UK from the EU because of Brexit should not be a barrier to ambitious cooperation across a group of countries which are our allies and neighbours and share common economic interests and policy objectives.

If the isolationism which produced Brexit and a lack of political cooperation is one barrier to the development of North Sea 2 the other, equally important, is the perceived shortage of capital, and the unwillingness or inability of Britain (and some of the other countries involved) to commit the funds necessary to establish the infrastructure for full pan North Sea integration.

This is where the current offshore oil and gas activity in the North Sea, particularly in the UK and Norway can help. Repurposing existing infrastructure such as pipelines, platforms and onshore processing facilities offers a lower cost alternative to current plans for decommissioning. In the UK the estimated budget for decommissioning is £40 bn of which

£25bn to £30bn is likely to be spent in the next decade. Under the current UK tax system that cost will be split between the companies involved and the Exchequer – diverting money from other priorities. A substantial proportion of the total can be saved if the infrastructure could be adapted to new uses.

Continued development of the UK's North Sea potential would also enhance energy security. Europe, including the UK has responded to the two energy crises of 2020s – the war in Ukraine and now the war in the Gulf – by increasing it's reliance on imports from the United States. Given the volatility of US policy such over-reliance may prove to be unwise. Energy supply stocks in the US, as elsewhere around the world, have been run down in recent months in order to soften the impact of the loss of Middle Eastern supplies. At some point reducing stocks further will cease to be practical policy. In different ways China, India and Russia have all limited their energy exports over the last few months to protect their own consumers. The US at some point could do the same. The ability to produce supplies locally is a great asset for the UK which should not be thrown away. Local production not only provides jobs and security but also revenue – some of which could be redirected to support North Sea 2 and the next generation of supplies.

Closing down North Sea oil and gas production is presented as a statement of UK leadership in the climate debate. Sometimes such gestures can make a difference but there is no sign of other countries with significant resources following the UK's lead. Only Denmark, where existing production is minimal has supported the initiative – by banning further exploration and committing to ending hydrocarbon production by 2050.

The offshore development of North Sea oil and gas over the last half century has been a remarkable (and relatively rare) example of what a successful industrial policy can achieve. The UK led the world in offshore development in a difficult environment. The North Sea is now mature and production will inevitably decline, even if policy is adapted to the current imperative of energy security and continued development is allowed to proceed in a way which limits the decline. The skills accumulated through an extensive supply chain over the last 50 years should be used to establish a new industrial success story in an area of activity which can be of enormous economic and environmental value across the world.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