

Written evidence submitted by Sumitomo Electric Industries (IND0021)

How can UK plc capture its fair share of the economic potential of emerging or less developed energy technologies?

The clean energy transition represents enormous economic and employment opportunities for the United Kingdom. The Government has set ambitious goals around growing the UK's offshore wind capacity as part of this transition.

Sub-sea cabling is critical component to connect offshore wind projects. Nearly a third of the world's offshore wind capacity installed in the next five years will be in the UK. The UK has 14.7 GW of installed offshore wind capacity, with another 13.3 GW in construction or committed through secured government support. Ember estimates large residual capacity shortfall of over 20 GW by 2030 to meet targets. Although the pipeline of potential projects is more than sufficient for this target, rapid progress is needed to move potential sites into active project deployment in time for 2030.

To deliver on these goals, the UK will need a substantial amount of subsea cabling to expand its electricity grid. Without these crucial cables, we will have no chance of meeting our targets – and we will lose the economic and employment opportunities in front of us. However, there is a significant global shortage of these components – and the UK is one of only two G7 countries which does not have domestic manufacturing capabilities. At Sumitomo Electric Industries (SEI), we are building a £350 million subsea cable manufacturing facility at Port Nigg, Scotland – which will create hundreds of jobs while ensuring domestic production of critical components of the energy transition.

Because the UK is today one of two G7 countries to have no domestic High-Voltage Domestic Current (HVDC) production, the shortage of HVDC cables could result in delays to critical energy infrastructure projects, posing a risk to UK economic growth, energy security, and international climate targets. This is exacerbated by the world market being dominated for many decades by three EU-based companies that have chosen investments in the EU and US over the United Kingdom.

Addressing this supply constraint through enhanced domestic production capacity and strategic procurement will be essential to mitigating these risks and ensuring the successful integration of renewable energy sources into the grid.

By establishing a domestic HVDC manufacturing capability and supporting a supply chain, the UK can better control the production, quality, and availability of these essential components, ensuring timely delivery for critical infrastructure projects.

This strategic advantage not only accelerates the development of renewable energy sources, such as offshore wind, but also enhances the country's capacity to export excess energy and integrate more efficiently with European grids, contributing to both energy resilience and economic stability.

The UK's national grid must become a cross-cutting infrastructure priority with clear targets, system flexibility, and anticipatory funding and investment. Without reform it will be increasingly difficult and costly to deliver the new investments in transmission and undersea cable transmission capacity required. The needs of the UK grid in coming years requires a new approach reflecting the scale of the investment required, the globally competitive market for these products and services, and the need to capture the wider economic and social benefits from the manufacture and installation of these products.

What more can the Government do to encourage greater domestic supply chain investment in the energy industry by 2035, including through the Contracts for Difference scheme?

Domestic manufacture of HVDC cabling will grow the economy, create skills and help deliver on the UK's climate targets. However, right now, the global market for HVDC cabling is primarily controlled by three companies based offshore that are vertically integrated into offshore installation services; Other countries are doing a better job at securing the supply of these cables – which presents a threat not only to the UK's energy transition but also to affordability, energy security and national security as well.

The UK's current regulatory settings present a barrier to solving this shortage and disincentivise domestic supply and new entrants in the market. Regulations designed for a network with very little growth are inadequate for the scale of the transition we need to make.

Because of regulatory risks, UK transmission operators are pushed to procure cabling on a project-by-project basis, and because they do not purchase cables separately, they must buy installation at the same time, and they cannot reserve manufacturing capacity for future projects. The result is that UK transmission operators cannot take a strategic approach to ensuring that the UK has enough cabling for the transition. This exacerbates shortages, making the transition more costly, and puts the Government's 2030 clean power mission at risk.

These problems are already pushing up prices and causing significant project delays. This creates costs that will ultimately fall on UK consumers. Likewise, the UK's system of regulation offers no real incentive for local procurement – by focussing chiefly on keeping project costs down, the UK is stopping the creation of a local supply chain that would in the longer run create jobs and export opportunities, reduce costs and lower carbon emissions.

In short, the current set of regulations and approaches to cabling will not deliver the Government's policy objectives: the UK will miss its climate goals, miss the economic opportunities that come with it, and find itself exposed to energy shortages, price risks for core components, and national security risks. The project approval process is designed in a way that means Transmission Operators (TOs) in the UK do not secure cabling outside of a fully designed and approved project, for which Ofgem has approved the procurement and costs.

Alternative approaches are worth considering. Germany has developed a coordinated, forward-looking strategy that allows for more flexibility and efficiency compared to traditional project-by-project procurement models. Germany's Network Development Plan (Netzentwicklungsplan) outlines long-term transmission infrastructure requirements, including the expansion of HVDC capacity to support renewable energy integration and cross-border interconnectors. This centralized planning allows Germany to take a comprehensive view of its energy needs, identifying potential bottlenecks and ensuring sufficient cable supply is in place for upcoming projects. By purchasing HVDC cables in bulk, Germany can plan multiple projects over a longer time horizon, which helps avoid procurement delays and inefficiencies, particularly in a market where the supply of HVDC cables is limited.

The Contracts for Difference (CfD) mechanism has been effective for supporting the development of offshore wind generation. However, the highly competitive nature of CfD auctions has discouraged collaboration, including in supplier development and procurement. The nature of auction-based processes means that developers do not know whether they will secure a route to market in any given round. This can reduce the forward visibility of demand for elements of the supply chain and make it harder to aggregate demand to underpin investment cases for new factories. There is some evidence that developers are reluctant to commit to contracts until after the CfD is awarded, meaning suppliers are unable to invest in where additional capacity is required in time to supply these projects.

SEI believes the focus of the CfD process needs to shift from competition for generation projects to supporting many wind farm sites through to development. The Department has several options to consider, including a single large auction with a preset strike price, a rolling auction process, profit-sharing mechanisms, and more explicitly linking offshore wind targets with auction volumes.

A more collaborative process would significantly improve the ability of offshore wind developers to collaborate with their supply chains. Such an approach may remove some of price pressure, however this is unlikely to be material over the long term. It is worth noting that every 1 GW of offshore wind installed would displace annual fossil gas consumption by enough to heat 630,000 homes. UK offshore wind has an overall levelised cost 60% cheaper than fossil gas and is forecast by the government to improve further to 70% cheaper by 2030. As gas is the marginal price setter in the UK's electricity market, the greatest impact on reducing energy costs will come from displacing fossil gas rather than the marginal extra price pressure in the CfD process. In this way, the desire for price pressure on transmission projects is in fact significantly costing consumers over the medium term.

Does the UK have the supply chain capacity to deliver the required energy infrastructure by 2035, including an expanded electricity network?

No, in our view the UK currently does not have the supply chain needed to overcome global shortages of components, and risks missing significant economic development opportunities if action is not taken to increase domestic manufacturing.

Domestic manufacture of HVDC cabling will grow the economy, create skilled jobs in Scotland and help deliver on the UK's climate targets. The delays caused by UK procurement processes lead to UK TOs missing opportunities – both in terms of available supplies and prices.

As mentioned above, the project approval process is designed in a way that means Transmission Operators (TOs) in the UK do not secure cabling outside of a fully designed and approved project, for which OFGEM has approved the procurement and costs.

This is primarily caused by the lack of ability to “advanced purchase” or enter “capacity reservation” agreements for key components, such as HVDC cabling prior to a project being fully designed and approved by OFGEM, and the financial risks that would be taken on by the Transmission Operators (TOs) if they procure goods or services outside of such a fully designed and approved project.

Such project-by-project procurement places UK TOs at a disadvantage in the global market for HVDC and other capacity constrained products, by preventing them from securing future capacity. This may delay projects if supplies are not available when the TO is permitted to start procurement.

Also, in an increasingly tight market, such procurement project-by-project has the likely effect of leading UK consumers to pay higher prices for the grid buildout by delaying purchasing until market is tight.

The UK's system of regulation offers no real incentive for local procurement – by focussing chiefly on keeping project costs down, the UK is stopping the creation of a local supply chain that would in the longer run create jobs and export opportunities, reduce costs and lower carbon emissions.

We are proposing fixes to these regulatory problems that would speed up the UK's energy transition and help grow a local industry and supply chain. By allowing cabling to be procured in bulk and in advance, by reforming the Sustainable Industry Rewards and Contract for Difference System, and by using the financial weight of GB Energy, the UK can solve its supply shortage, create local jobs, achieve its clean energy mission and meet its international climate commitments.

SEI's £350 million investment in a submarine cable manufacturing facility near Port Nigg is a critical component of the United Kingdom's broader energy transition. The factory will play a key role in supporting the UK offshore wind and grid transmission sectors by producing high-voltage cables for the growing demand in the North Sea and beyond. It is expected to create 330 jobs, 265 of which will be in the Highlands and Islands

and 156 manufacturing jobs on site. The current plan is for the factory to produce approximately 350 km of HVDC and over 150 km of Array cable per year. By anchoring a key part of the offshore wind supply chain, SEI's is a key part in the renewable energy economy.

To what extent would growing the domestic supply chain bolster UK energy security?

Domestic manufacture of HVDC cabling will grow the economy, create skills and help deliver on the UK's climate targets.

Until the SEI factory project, the UK was one of two G7 countries not to have HVDC manufacturing capacity. The domestic manufacture of HVDC cabling significantly enhances the United Kingdom's energy and national security by reducing reliance on foreign suppliers and ensuring a stable, domestically manufactured supply of critical infrastructure components.

The constrained global market for electricity transmission infrastructure underscores the need for sovereign capacity to reduce dependence on foreign suppliers and help insulate UK energy markets from global supply chain disruptions, such as those caused by geopolitical conflict, trade restrictions or global pandemics. Supply shortages, long-lead times, project delays and escalations costs would have a significant impact on meeting the Government's energy targets, UK consumers and the UK's wider energy independence. These concerns are more pronounced following the impact of COVID-19, Russia's invasion of Ukraine, and the impact of geostrategic competition between the United States and People's Republic of China.

Port Nigg directly addresses the strategic HVDC risk to the United Kingdom's energy transition. It will reduce supply chain bottlenecks and strengthen energy security, helping meet the needs of major UK and energy projects.

What are the key concerns with respect to the availability of raw materials in the supply chain and how might those be addressed?

SEI estimates that in 2023 the market saw the price of HVDC cables increased sharply by around 30% of which an estimated half was on account of raw material price increases (copper shortage) and the other half were price increases by the three incumbents in the European market due to shortage of cable manufacturing capacity and increased demand from renewable energy projects and grid modernization efforts across Europe and other regions.

By establishing a domestic HVDC manufacturing capability and supporting a supply chain, the UK can better control the production, quality, and availability of these essential components, ensuring timely delivery for critical infrastructure projects. This strategic advantage not only accelerates the development of renewable energy sources, such as offshore wind, but also enhances the country's capacity to export excess energy and integrate more efficiently with European grids, contributing to both energy resilience and economic stability.

Furthermore, relying on a small number of foreign manufacturers -- or manufacturers with foreign ownership from countries with differing geopolitical interests -- poses significant risks. In times of political tension or conflict, the supply of crucial components like HVDC cables could be disrupted, leaving the national grid vulnerable. It also poses significant surveillance and espionage risks.

Domestic manufacture of HVDC cabling will grow the economy, create skilled jobs in Scotland and help deliver on the UK's climate targets. The delays caused by UK procurement processes lead to UK TOs missing opportunities – both in terms of available supplies and prices.