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NIA response to the Business, Energy and Industrial Strategy Committee inquiry on Post-pandemic economic growth: Levelling-up

1. The Nuclear Industry Association (NIA) welcomes the chance to respond to the Business, Energy and Industrial Strategy Committee inquiry on Post-pandemic economic growth: Levelling-up.
2. The NIA is the trade association and representative body for the civil nuclear industry in the UK. We represent around 250 companies operating across all aspects of the nuclear fuel cycle. This includes the current and prospective operators of nuclear power stations, the international designers and vendors of nuclear power stations, and those engaged in decommissioning, waste management and nuclear liabilities management.
3. In our recent report, [Forty by '50: The Nuclear Roadmap](#), the NIA outlines the potential contributions of the UK nuclear industry to reaching Net Zero and details six short-term recommendations for industry and Government to meet in order to reach these ambitions. The three most relevant recommendations are the following:
 - The Government should articulate a clear, long-term commitment to new nuclear power. There are opportunities to do this in the upcoming Energy White Paper and in the National Infrastructure Strategy.
 - Progress must also be made on an appropriate funding model for nuclear new build to stimulate investment in new capacity and reduce the cost of capital.
 - Publish a National Policy Statement on small reactors, the development of which could stimulate local economies and bring jobs and investments to areas of the UK disproportionately affected by Covid-19.

Nuclear and Net Zero

4. To meet the challenge of climate change, the UK needs bold and urgent action through the deployment of clean energy across the country. Particularly during this difficult period, we must also protect and enhance our quality of life by ensuring there is affordable power for homes, businesses, schools and hospitals, as well as providing jobs and career opportunities in the green economy.
5. In the Committee on Climate Change (CCC)'s Net Zero report, the UK's electricity use is predicted to double between 2017 and 2050 (excluding hydrogen), which means that we need to build 9-12 GW of generation capacity every year until 2050. The CCC also says that 38% of our electricity should come from 'firm' power – nuclear is the only current commercially viable technology in this category. As nuclear currently generates around a fifth of the UK's electricity, this means a quadrupling of our nuclear power output; undoubtedly, this is no small feat.
6. Today in the UK, the nuclear industry provides nearly half of our clean electricity, powers one in five homes across the UK, prevents 20m tonnes of CO₂ emissions annually – equivalent to taking a third of all cars off UK roads – and employs 65,000 people directly, while supporting a further 95,000 indirect jobs across the UK in nuclear fuel manufacturing, operation, new build, construction, decommissioning, and other associated activities.
7. Taking into account the entire end-to-end process from mining to decommissioning, it has the same carbon footprint as offshore wind, and a third that of solar power. It is non-weather dependent and its technical characteristics, unique amongst low carbon technologies, contribute to the stability of our national electricity grid.
8. The CCC states that “power sector decarbonisation does not rely on variable renewables alone, but a portfolio of technologies including nuclear power”. Nuclear is the only proven source of low carbon generation and its role in the energy mix has been supported by multiple reputable institutions, including the OECD, IEA (2019), EIB (2019), IPCC (2018), MIT (2018) and the Energy Systems Catapult (2020).

How could a green economic recovery stimulate local economies and embed upskilling at a regional level?

How could 'shovel ready' growth projects in England drive local growth and jobs?

9. If the UK is to meet net zero, then nuclear power is ready and able to play its part in enabling decarbonisation – both as an emissions free way of generating constant power, and as a primary fuel, as low carbon electricity becomes an increasingly important player in decarbonising the UK's power sector and others.
10. Nuclear represents a multi-billion-pound economic stimulus opportunity as the country looks to rebound from the impact of COVID-19 and establish strong and enduring global trading relationships. By acting now, we can secure major domestic investment, maximise export potential and lock in a pipeline of engineering innovation which will deliver high quality, inspiring jobs for future generations, in every nation and region of the UK.

11. The industry currently provides around 65,000 direct jobs, extending to 160,000 when further job creation in the wider supply chain is included. Annually, the sector contributes £6.2bn in Gross Value Added (GVA) to the national economy, with £4bn in the Northern Powerhouse area alone.
12. A programme of nuclear new build, from large to small-scale, would bring major strategic benefits to the UK, including economic levelling up across the UK and its regions, as well as providing global industry leadership opportunities. Based on comprehensive modelling commissioned by the NIA, we conservatively estimate the domestic value of a thriving nuclear sector to:
 - Deliver up to 40% of the low carbon power in a net zero economy.
 - Be worth, by 2050, in excess of £33bn in GVA to the economy per year.
 - Provide well over 300,000 job opportunities.
13. Large GW scale projects bring major investment, each with over 20,000 roles in construction, including around 700 apprentices per project, and over 800 long-term jobs during operation
14. New nuclear projects also have beneficial supply chain impacts on major strategic industries. An example is UK steel, with 200,000 tonnes of Welsh steel being used on the Hinkley Point C project alone. There are several large-scale nuclear sites in the UK that are under development, some of which are shovel ready. With political and financial support these projects will help bring prosperity to the regions in which they sit. They are:
 - **Hinkley Point C (HPC), Somerset** – Hinkley is the only new nuclear plant currently under construction in the UK. To date, £1.67bn has been spent in the South West, 10,300 jobs have been created, including 644 apprentices, and there has been £199m directly invested into the community.
 - **Sizewell C (SZC), Suffolk** – The project offers 25,000 employment opportunities and 1,000 apprenticeships during construction. Up to 70% of the construction value will be spent with UK companies, with an estimated total of £1.5bn spent over the construction period in the local supply chain alone.
 - **Wylfa Newydd, Anglesey** – Work on Wylfa was paused in January 2019. Starting construction on the site will trigger £5.3bn in supply chain opportunities; £875m of which will be seen in first two years alone. Work will also create up to 9,000 jobs including over 700 apprentices and contribute £100m of GVA a year locally for 60+ years.
 - **Bradwell B, Essex** – This station will generate enough electricity to power 4m homes. It offers long-term employment opportunities and 10,000s of jobs during construction, 3,000 of which will go to the local population. The local and regional economies will benefit from billions of pounds of investment, including support for schools and colleges in the development of STEM skills.
15. Our growing expertise in the next generation of nuclear technologies includes Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs). There are several UK companies and consortia which are well-placed to develop SMRs and AMRs. These include Rolls-Royce, Moltex Energy, U-Battery and Westinghouse. Internationally, the USA, Canada and China are actively pursuing development pipelines, including designs by NuScalePower, GE Hitachi and the China National Nuclear Corporation. There is strong interest from international players in the UK market, including opportunities to localise content.

16. The **UK SMR consortium** led by Rolls-Royce estimates that exporting SMR technology could be worth £250bn if its programme is successful. The consortium predict construction on the reactors could start as early as next year, with expected deployment by 2025, creating 1,000s of jobs.
17. Nuclear powers potential extends beyond traditional electricity generation. There will be an increased role for hydrogen in our future energy mix for heating homes where direct electrification is not possible, and to replace petroleum products in long-distance transport.
18. The Government's Hydrogen Taskforce predicted that the UK hydrogen industry to be worth £18bn and create over 75,000 across the transport and power sectors by 2035.
19. The NIA believes that the potential of hydrogen in a future clean energy mix can only be fulfilled through the publication of a comprehensive framework and strategy that considers all existing technologies, like nuclear, as well as future technologies such as CCS, to support the rapid development of the hydrogen sector. Without action now, the hydrogen sector will not be in place soon enough to fully realise the UK's current expectations of hydrogen by 2050.
20. Nuclear can help the UK hydrogen sector achieve its full potential.
21. Either through electrolysis, or from the use of primary heat from nuclear power stations, nuclear offers an efficient, carbon-free alternative to producing hydrogen, and is an option that doesn't rely on unproven technologies. Nuclear, alongside renewables, is the only currently available at-scale option for clean hydrogen production.
22. A recent report by the Nuclear Innovation and Research Advisory Board (NIRAB) states that clean hydrogen from nuclear energy could be produced for \$2.5/kg-H₂, compared to the cost of production from natural gas with CCS which is in the region of \$2.3/kg-H₂ where electrolysis is not available. This shows that hydrogen production from nuclear is not only highly cost-competitive but also a reliable commercially viable technology that should be considered given the status of CCS technology at this given time. There is also further evidence that suggests producing hydrogen from nuclear is of similar cost to technologies with carbon emissions equivalent to renewables.
23. One of the obvious advantages of the integration of the nuclear and hydrogen sectors is the use of existing infrastructure. The use of nuclear sites across the UK – either existing, under construction or proposed – would provide a significant boost to the levelling-up of the hydrogen sector, particularly in the Industrial Clusters identified by the Government, and provide these areas with local high-skilled jobs from the deployment of modular reactors.
24. Nuclear's history is deep-rooted in local communities, often those far removed the infrastructure benefits of city life, such as Copeland, Hartlepool, Anglesey, and Bridgwater. The sector has showcased how to successfully engage with and support local economies, through the creation of jobs, supply chains and educational resources.
25. As with any economic recession, these areas will likely be disproportionately affected by Covid-19. There are many of brownfield sites across the UK that could be appropriate for both large and small nuclear reactors to bring prosperity to those areas. This would add not only sources of

low carbon electricity, but also clean heat and production of hydrogen in industrial clusters that will help safeguard strategic industries, such as steel production, as they decarbonise.

26. With potentially thousands of highly-skilled jobs – many of which are signposted for the local population – nuclear sites can offer both short and long-term prosperity to these regions. Jobs at risk in manufacturing or in fossil fuels could be easily transferrable into the nuclear industry, either in the construction of new sites or in STEM roles. Recruitment remains a key priority for the sector, as detailed in the Nuclear Sector Deal published in 2018.
27. It is a misconception that to get a job in the nuclear industry, you have to have a nuclear physics degree. The nuclear sector offers a range of technical apprenticeships as well as graduate positions which can build the skills base ready for new build projects and ongoing decommissioning work.
28. The nuclear industry has already been focusing on reskilling and transferability as a result of the Net Zero target and as the UK moves away from its dependence on fossil fuels. It is therefore well prepared to accept skilled workers that may have lost their livelihoods because of Covid-19. However, a growth in jobs is reliant on political support for nuclear and its significant contributions to Net Zero.
29. Some examples are:

Hinkley Point C, Suffolk	Sellafield, Cumbria
HPC has created 10,300 job opportunities to date and it is on track to deliver a peak of 25,000 jobs during its construction phase of the project	Of the £2.1m GVA contribution made by Sellafield, some 70% was generated in Cumbria and Warrington
40% of the workforce has been recruited from the local area, surpassing its target of 34% during construction	Most is concentrated in Copeland, where it sustains nearly 60% of Copeland’s GVA
£1.67bn has been spent with companies in the South West to date, again surpassing its target of £1.5bn during construction	Sellafield sustains over 40,000 jobs, most of which are based in Cumbria and Warrington
The nuclear industry has also benefitted nationally, with 64% of the value of HPC contracts going to UK-based companies	Almost 60% of the workforce at Sellafield are local, and the average salary is nearly £10,000 above the national average
£119m has been spent on the local community, supporting areas such as economic development, tourism, health, leisure and infrastructure	Copeland’s productivity is almost 35% above the regional average and GVA per job levels are 40% higher than the UK average and over 10% higher than UK manufacturing
HPC is part of a consortium that opened a British welding centre at the local Bridgwater College, which aims to train up to 500 welders a year	Social impact is at the heart of Sellafield’s corporate strategy, including working with local schools to develop STEM skills

Wylfa Newydd, Anglesey and North Wales

Construction of this project will grant £5.3bn in supply chain opportunities

£875m of this will be seen in first two years alone, and companies across Anglesey and North Wales will have access to a programme worth more than £300m

More packages of work, including earthworks and infrastructure construction, will be worth £575m

Horizon – the developers – will look first to UK suppliers to provide nearly 1m cubic metres of concrete, over 76,000 tonnes of structural steel and over 6.5m metres of cables and wires, amongst other essential materials and equipment

Work will also create up to 9,000 jobs, including over 700 apprentices

The project will contribute £100m of GVA a year locally for 60+ years

30. As has historically been the case, a future investment programme in the nuclear industry will drive regional economic growth, innovation, and centres of excellence beyond metropolitan areas. The North West Nuclear Arc spanning from Anglesey in North Wales, across to Manchester and beyond to West Cumbria is well placed to benefit, along with the East and South West of England.