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THE ECONOMIC IMPACT OF THE CIVIL NUCLEAR INDUSTRY

REPORT FOR THE NUCLEAR INDUSTRY ASSOCIATION

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Nuclear Industry Association

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EXECUTIVE SUMMARY

The UK's civil nuclear sector has a long history of delivering innovation and investment, creating high skilled jobs, and providing low carbon power across the UK. The sector includes not only the operators of nuclear power stations, but also fuel fabricators, decommissioning and waste processing organisations, engineers and construction specialists, project managers and consultants, and nuclear researchers.

Our analysis of the sector shows that it **contributes a range of benefits to the UK economy, from its provision of energy through to its investment in skills and innovation.** The value created by the sector delivers billions of pounds worth of economic output, supports tens of thousands of jobs, and generates a substantial stream of tax revenues for the UK Exchequer. Generating this value depends upon the coordinated efforts of a broad range of firms spanning numerous civil nuclear activities. This assessment considers several dimensions of the sector's contribution to the economy, to quantify the total size of its "economic footprint" in 2024.

We calculate that the UK's 86,908-strong civil nuclear workforce directly added about £8.0 billion to UK GDP in 2024. This amounts to around 0.3% of the UK's total economic output in that year, or around 70% the equivalent figure for the chemicals industry. Furthermore, through taxes levied on the sector's revenues, profits, wage payments, and properties, the civil nuclear industry also directly contributed £5.8 billion in revenues to the Exchequer—sufficient to cover the average annual salaries of over 160,000 nurses.[1]

This scale of output points towards the remarkable productivity of civil nuclear sector workers. The average civil nuclear worker generated £91,882 of GDP during 2024, a rate 45% higher than the UK median figure. This level of productivity puts employees of civil nuclear firms firmly within the third most productive 10% of the UK workforce.

Beyond this direct impact, our analysis also traces the wider economic footprint of the sector through its supply-chain and wage-consumption multiplier effects. The inputs required by the civil nuclear sector stimulate a broad and complex network of supply chains reaching all parts of the economy. The spending of wages by the sector's employees (and those within its supply chains) creates further economic activity in the consumer economy.

Taking all these channels of impact together, the sector's total contribution to GDP more than doubles, to an estimated £20.4 billion. This means it has a GVA multiplier of 2.6. In other words, for every £1 of value added by the nuclear sector, another £1.6 is generated across the wider UK economy. The total contribution is equivalent to 0.8% of the UK's total GDP in 2024. This contribution is associated with a total employment footprint of around 255,500 jobs, and around £9.1 billion in tax revenues raised.

While the impact is felt across the UK, its local and regional impacts are also important. Many of the jobs within the industry are in rural areas, where there are less high paying alternative job

[1] The average annual salary of nurses was £35,513 in 2024. See ONS, "Annual Survey of Hours and Earnings" (Statistical bulletin), 2024

opportunities. Similarly, the industry is a significant provider of employment opportunities in deprived areas, helping to address regional inequality.

But the economic advantages provided by nuclear power do not end there. The technology is a crucial component in the UK's electricity mix, accounting for 14% of its total electricity generation during 2023 and making it a key source of low-carbon energy for the UK. This has become even more important in the wake of Russia's decision to restrict the supply of gas to Europe in the wake of its illegal invasion of Ukraine, adding further upwards pressure on energy prices in the UK.

We also examine the sector's importance as an investor in the UK's future economic potential. The high-technology nature of nuclear activities means that continual innovation and research and development (R&D) are essential to ensure competitiveness. Breakthroughs emerging from such activity have important applications in other contexts, thereby enhancing the productivity and prosperity of disparate industries across the economy. One example of this is in fusion energy, a field in which the UK is an important partner in international research efforts as shown by the recent experiment that succeeded in producing more fusion energy than energy input into the experiment. Future breakthroughs in this field could have transformative consequences for all economic activity.

Another area where nuclear energy is becoming increasingly vital is in supporting the UK's ambitions in digital infrastructure and artificial intelligence (AI). As demand for high-performance computing and AI-driven applications accelerates, so too does the need for reliable, low-carbon electricity to power energy-intensive data centres. Nuclear energy — with its consistent baseload supply and minimal emissions — is well-suited to meet this challenge. Emerging plans to co-locate small modular reactors (SMRs) with data centres or within dedicated "AI growth zones" underscore the strategic alignment between clean energy and digital transformation.[2] By enabling the growth of AI and data infrastructure on a sustainable footing, the nuclear sector is not only advancing the UK's climate goals but also reinforcing its future economic competitiveness in the global tech-driven economy.

The civil nuclear sector is also a significant investor in the UK's human capital, in the form of training and development opportunities for its workers. At least 1,200 civil nuclear workers participate in structured graduate or apprentice training programmes, highlighting the industry's commitment to enhancing the pool of skills available in the UK's labour force. Such training boosts the productivity of the recipients and their colleagues, enhances the adoption of new technology and methods, and increases innovation in products and processes.

This is just some of the broader value that the civil nuclear sector delivers to the UK economy. Other benefits include the strategic advantages that result from reducing the UK's dependence on a steady stream of imported fossil fuels. While the full economic value of this cannot be straightforwardly quantified in monetary terms, it is certainly another important area when appraising the sector's full economic significance for the UK.

[2] AI Opportunities Action Plan: government response – GOV.UK

1. INTRODUCTION

The nuclear sector is a major engine of economic prosperity for the UK, offering significant benefits through three key channels: supporting the green transition, enhancing energy security, and fostering the development of soft power.

Nuclear energy will play a crucial role in the UK's green transition, serving as the country's only proven source of clean, reliable energy. Currently, it powers 12 million homes, providing consistent electricity regardless of weather conditions, which is essential for ensuring a stable and sustainable energy supply.[3] As other renewable sources like wind and solar depend on weather patterns, nuclear offers a dependable alternative that can complement these intermittent power sources.

Moreover, nuclear energy boasts the lowest lifecycle carbon footprint of any energy source, from mining to final disposal. This makes it the most sustainable option available, significantly contributing to the UK's efforts to reduce carbon emissions. In fact, nuclear energy has already saved the UK more CO_2 emissions than any other energy source, cutting an impressive 2.3 billion tonnes of carbon, further solidifying its critical role in the nation's green energy future[4].

Nuclear energy is essential for enhancing the UK's energy security, particularly in light of recent global disruptions. Following Russia's invasion of Ukraine, energy supply chains have been disrupted, driving up gas prices and highlighting the need for more domestic, reliable energy sources. As a stable, low-carbon power source, nuclear can reduce the UK's dependence on imported fossil fuels and mitigate the risks associated with geopolitical instability, providing a secure and resilient energy future for the nation.

Developing nuclear capabilities within the UK has the potential to enhance the country's soft power, particularly through strategic high-profile sales to foreign clients and the development of high-quality, skilled and secure jobs. This can influence international perceptions and build trust, creating a positive investment and trade environment.

For example, the UK is investing in nuclear capabilities, including government-backed initiatives and MOUs to produce High-Assay Low-Enriched Uranium (HALEU) for advanced nuclear technologies such as SMRs, AMR and MRs.[5,6] As countries start to adopt advanced nuclear technologies, the UK's role in HALEU production presents a key opportunity for influence. With only Russia and China currently able to produce HALEU at scale, the UK's exports of this critical fuel could strengthen its position in the global energy market, boosting its soft power and geopolitical leverage.

In this context, this report assesses the current economic impact of the nuclear sector in the UK. The study is to include a core analysis of the nuclear industry's contribution of the UK's GDP, employment, and tax revenues in 2024. It will look at the industry's own economic activity, the impact of its procurement on its supply chain and the economic activity that is supported by the wages paid by the nuclear industry and by firms in its supply chain.

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[3] Why Nuclear? - Nuclear Industry Association

[4] Why Nuclear? - Nuclear Industry Association

[5] UK aims for Urenco-built HALEU facility by 2031 - World Nuclear News

[6] Westinghouse and Urenco Sign First Agreement to Support Fuel for eVinci™ Microreactors - Westinghouse

The report disaggregates the national economic impacts, described above, into regional impacts for the four countries in the UK and the nine English regions.

The report will estimate two further impacts not captured by the economic impact assessment:

- Social impact, quantifying the nuclear industry's impact on inequality through its spreading opportunity into some of the UK's more deprived communities through the provision of employment.
- Boost to UK's active potential, investigating the contribution of the nuclear industry to the UK economy through the development of its productive capacity through channels such as training and R&D.

Our definition of the "nuclear sector" rests upon the organisations that are members of the NIA and identified through the survey. This encompasses firms directly involved in the generation of nuclear power, and those in its "nuclear-specific" supply chain. This definition includes:

- Operators of the UK's nuclear power stations.
- Firms that fabricate nuclear fuels, as well as those that work in the "back-end" of the fuel cycle, such as waste processing and management.
- Companies engaged in the decommissioning of nuclear power stations and reactors that are no longer active.
- Those providing specialised components, infrastructure, and expertise such as nuclear engineering, manufacturing, and consultancy firms.
- Organisations conducting nuclear research, for example into reactors, fuel, waste, and

INTRODUCTION TO ECONOMIC IMPACT ANALYSIS

The economic benefits of the civil nuclear industry are assessed using a standard means of analysis, called an economic impact assessment. This involves quantifying the sector's impact across three "core" channels, consisting of:

- ***Direct impact,*** which relates to the civil nuclear sector's own activities. It encompasses the economic activity and employment generated directly by firms in the civil nuclear sector, and the taxes it generates.
- ***Indirect impact,*** which encapsulates the economic activity and employment supported in the supply chain of the civil nuclear industry, as a result of its procurement of goods and services from firms in other sectors.
- ***Induced impact,*** which comprises the wider economic benefits that arise when employees within the civil nuclear industry, and its supply chain, spend their earnings, for example in local retail and leisure establishments.

The sum of these channels make up the civil nuclear industry's total impact on the UK and local economies. Three main metrics are used to present a picture of the industry's economic contribution:

- ***GDP,*** or more specifically, the *gross value added (GVA)* contribution to GDP.[7]
- ***Employment,*** measured on a headcount basis.
- ***Tax revenues***, the estimated fiscal contribution resulting from transactions and employment sustained by the civil nuclear industry.

The results are presented on a gross basis. They therefore ignore any displacement of activity from other energy sources. Nor do they consider what the resources currently used by the civil nuclear industry or stimulated by its expenditure could alternatively produce in their second most productive usage.

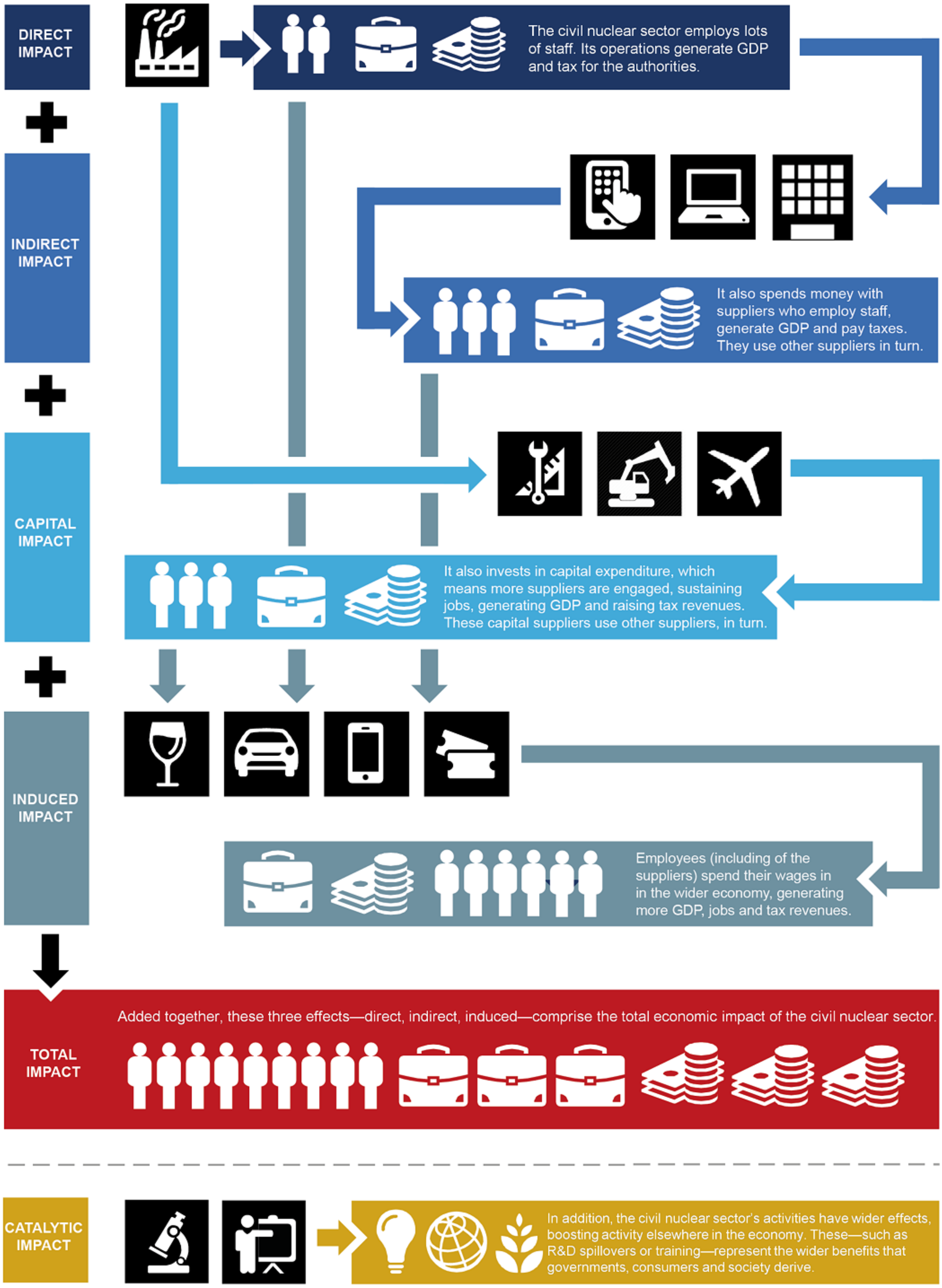
The report also examines the ***"catalytic"*** impacts the civil nuclear sector has on the UK economy. The catalytic impacts represent the wider benefits other industries, government, consumers, and society gain from the industry's productivity boosting activities. In this report, we examine two channels through which the industry generates these wider benefits:

- The civil nuclear industry's investment into skills, training, and education; and,
- The impact of the civil nuclear industry's innovation and R&D activities, which lead to the development of new products and processes.

Fig. 1 overleaf sets out how the various channels of a standard economic impact study relate to one another. Further detail about the economic impact methodology is included in the Appendix to this document.

[7] GDP, or Gross Domestic Product, is the total value of final goods and services produced in an economy over a given period. The contribution of an individual producer, industry or sector to GDP is easiest thought of as the value of output (goods or services) less the value of intermediate inputs used up in their production.

Fig. 1: Channels of impact



2. CORE IMPACT OF THE UK'S CIVIL NUCLEAR SECTOR

This chapter presents our estimates of how the civil nuclear industry contributed to UK GDP, employment, and tax revenues in 2024.

This analysis draws upon the NIA's Jobs Map data, an annual research programme across its membership that estimates the scale and distribution of civil nuclear sector employment in the UK. It also utilises data from a survey of the NIA's members, which informed our updated modelling of their nuclear-related activities.

2.1 DIRECT IMPACT

The direct impact of the sector captures the economic contribution made by the civil nuclear sector's own employment and operations. This encompasses businesses and entities operating nuclear power plants, those working in decommissioning and waste management, and those engaged in nuclear-specific engineering, construction, manufacturing, consulting, research and other services.

The sector's employment amounted to 86,908 people in 2024. This means that the sector's employment was larger (by around 15%) than the UK's aerospace manufacturing industry rail sector, [8] and 31% larger than the UK's entire rail sector[9]. This figure, which amounts to a significant increase (of 36%) when compared to 2021, includes workers across all manner of occupations, and within firms undertaking many combinations of the nuclear-specific activities listed above.

The activities of these civil nuclear sector workers generated a £8.0 billion gross value added (GVA) contribution to GDP during 2024. This is calculated based on the mix of activities taking place within the civil nuclear sector and estimates for the average level of output associated with workers undertaking each type of activity.

This scale of activity among civil nuclear firms means that they directly accounted for 0.3% of the UK's entire GDP during 2024. This is broadly equivalent to 38% of the direct GDP contribution of the pharmaceuticals industry; or over twice as much as the UK's air transport sector in 2023.

Employees in the civil nuclear sector are highly productive. In 2024, each worker contributed an average of £91,882 in GVA to the economy—a rate 45% higher than the UK median figure. This places the UK's civil nuclear workforce firmly within the eighth most productive decile of economy, as shown in Fig. 2. This high productivity reflects both the highly skilled nature of the civil nuclear workforce, and the intensive use of advanced technologies to add value.

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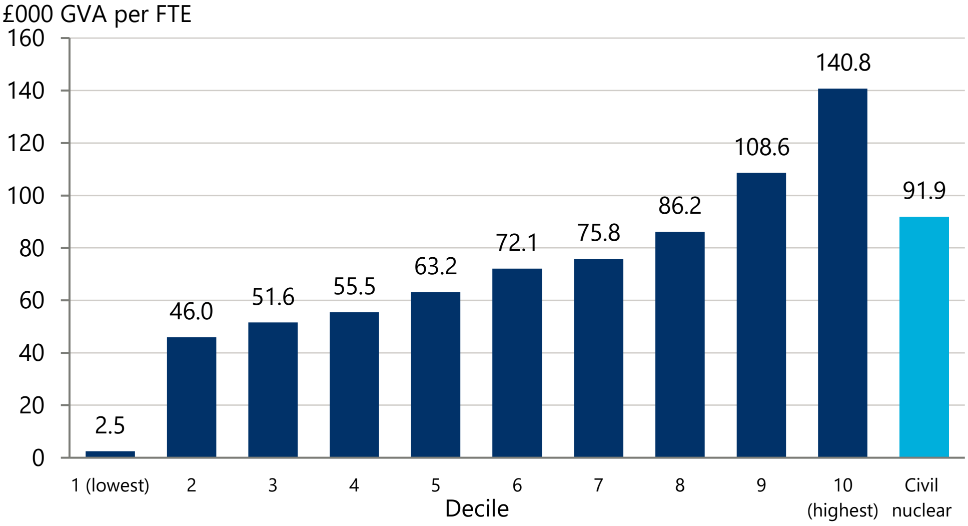
[8] Employment in the aerospace manufacturing industry (SIC code 30.3) amounted to 74,300 in 2023. See ONS, "Business Register and Employment Survey".

[9] Employment in the rail transport sector (SIC codes 49.1 and 49.2) amounted to 59,800 in 2023. See ONS, "Business Register and Employment Survey".

The industry having high productivity workers is important as it can enhance its price competitiveness or boosts its profit margin. Both potentially add to GDP and raise living standards in the UK.

Fig. 2: Distribution of productivity within the UK's workforce by decile[10]



Source: Oxford Economics/NIA/ONS

The civil nuclear industry also generates substantial sums in taxes for the Exchequer. Through generating electricity, procuring inputs, accruing profits and employing workers and paying wages, the sector is liable for many different forms of tax payments. These include VAT and other product taxes, business rates, Corporation Tax, and labour taxes, such as income tax and employees' and employers' National Insurance Contributions (NICs).

We estimate that the direct activities of the civil nuclear sector gave rise to around £5.8 billion in tax payments in 2024. This is equivalent to the gross annual salaries of over 160,000 nurses, or almost 130,000 police officers.[11]

2.2 INDIRECT IMPACT

The civil nuclear sector draws upon a vast and complex network of supply chains. The nuclear-specific proportion of these supply chains—for example, the specialised activities of nuclear engineers, consultants, and manufacturers—are captured within the NIA's membership and are thus encompassed in the direct impact described above.

[10] The productivity distribution of the UK workforce is as of 2023. The values in Fig. 2 show the lower-bound of each decile and can be interpreted as follows. If all the UK's workers were arranged in a line from least to most productive, the productivity of the first 10% of these would range between £2,500 and £46,000 (first decile). The productivity of the second 10% would range between £46,000 and £51,600 (second decile), and so on. The productivity of the eight decile–the third group of most productive workers in the economy–would be between £86,200 and £108,600. This decile would include the civil nuclear workforce.

[11] The average annual salary of police officers was £45,107 in 2024 and the average annual salary of nurses was £35,513 in 2024. See ONS, "Annual Survey of Hours and Earnings" (Statistical bulletin), 2024.

However, the civil nuclear sector also depends upon other, non-nuclear specific inputs. This involves billions of pounds' worth of operational and capital expenditure with other industries in the UK, procurement spending that supports further GDP and employment contributions among its suppliers. In addition, these firms draw upon their own suppliers, and so on along the supply chain, extending across all sectors and regions of the UK economy.

The civil nuclear sector spent an estimated £8.1 billion on inputs of goods and services from non-nuclear UK firms. This estimate adjusts for the extent of procurement with other civil nuclear industry firms (this spending, and its resultant economic activity, is captured in the sector's direct impact).[12] It also adjusts for the extent of imports, which 'leak' out of the UK economy and are assumed to provide no further economic benefit.

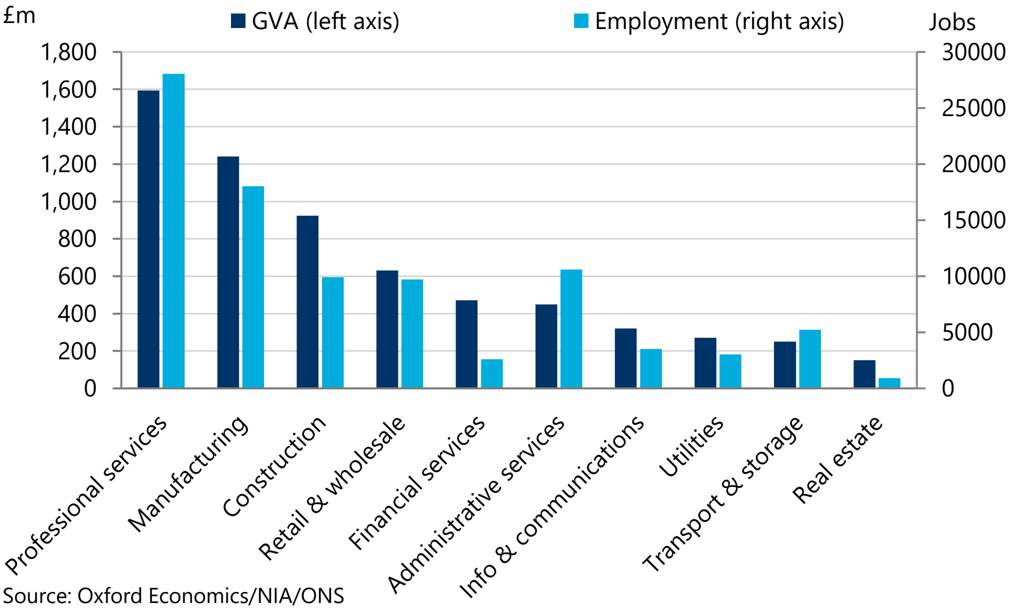
The procurement expenditure generated a further £6.7 billion in UK GDP during 2024. This GDP contribution benefitted a range of industrial sectors across the UK. The largest beneficiary industry in terms of GVA was the professional services sector, which saw almost £1.6 billion in GVA, accounting for 24% of the total indirect impact. This reflects the importance of engineering and other technical services in the civil nuclear sector's supply chain, as well as other business services such as legal, accounting and management advisory.

A significant indirect GDP contribution was also seen within the manufacturing and construction sectors. Demands for advanced equipment, components, infrastructure, and maintenance by all parts of the civil nuclear sector help to drive this impact, supporting £1.2 billion and £924 million, respectively, in indirect GVA. This amounts to one third of the nuclear sector's total indirect impact.

The procurement activity supported an estimated 97,100 jobs in 2024, across the length of the supply chains providing goods and services to the civil nuclear sector. The largest indirect employment impact was again among the professional services industry, in which over 28,000 jobs were supported by the procurement demands of the civil nuclear sector. Manufacturing, construction, and administrative services such as facilities management and employment agencies, also enjoyed large shares of the total indirect jobs impact. Together, these sectors saw 38,500 jobs supported.

[12] This figure has risen strongly since our assessment in 2021, from £5.7 billion to £8.1 billion.

Fig. 3: Indirect impact of the civil nuclear sector 2024: Top 10 supported industries



Source: Oxford Economics/NIA/ONS

This economic activity generated £1.7 billion in tax receipts in 2024. This comprised of labour taxes, corporation taxes, and other taxes on products and production.

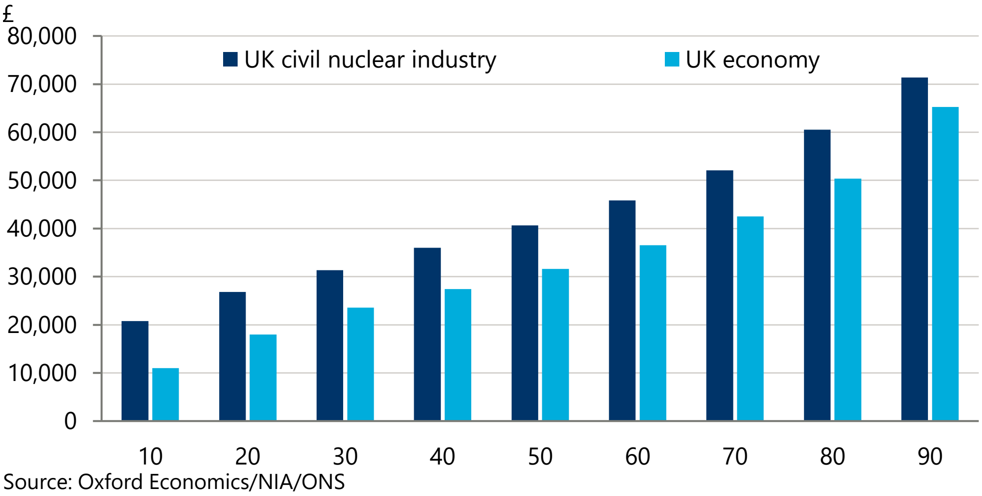
2.3 INDUCED IMPACT

The final channel of 'core' economic impact that we consider is the induced impact of the civil nuclear sector. This describes the GVA, employment, and tax revenues supported throughout the UK by the wage-financed consumption of workers in the civil nuclear sector, and by workers in its supply chain.

An estimated £4.1 billion in gross wages and salaries were paid to the civil nuclear sector's staff in 2024. This is a considerable wage bill and is reflective of the high average salaries throughout the sector. Fig. 4 below sets out the estimated distribution of salaries throughout civil nuclear organisations in the UK. Across the income scale, the civil nuclear sector's salaries far exceed UK averages, with a median salary 1.3 times as high as the equivalent figure for the UK economy as a whole.[13] This disparity underlines the prevalence of highly specialised skills among workers in the civil nuclear sector. Having highly paid workers living in the local community has beneficial impacts for the survival of local businesses (such as retail outlets on the high street).

[13] The median salary was £31,602 for all employee jobs in the UK in 2024 while that in the civil nuclear industry amounted to £40,630. See ONS, "Annual Survey of Hours and Earnings" (Statistical bulletin), 2024.

Fig. 4: Distribution of gross annual salaries in the UK and civil nuclear sector by percentile 2024

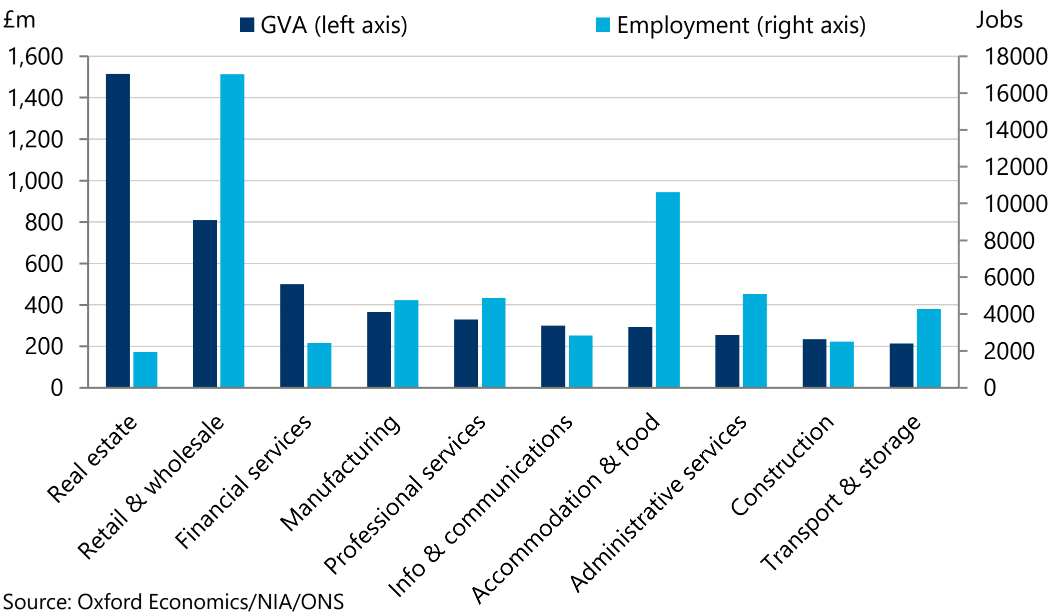


Source: Oxford Economics/NIA/ONS

A portion of these wages are expended in the form of consumption spending: including spending at retail and dining outlets, on leisure activities, utilities, housing, and so on. Similarly, wage payments by companies throughout the civil nuclear sector's supply chain will also stimulate consumer spending.

In total, this wage-financed consumer spending generated a further £5.6 billion contribution to UK GDP in 2024. The real estate sector and retail/wholesale industry account for the largest shares of this impact, at £1.5 billion (27%) and £809 million (14%), respectively.

Fig. 5: Induced impact of the civil nuclear sector 2024 Top 10 supported industries



Source: Oxford Economics/NIA/ONS

This induced consumption, attributable to the civil nuclear sector, also supported over 71,000 jobs in 2024. The sector seeing the greatest number of jobs supported was the retail and wholesale industry, which saw around 17,000 jobs supported – 24% of the total induced jobs impact. A further 10,600 jobs (15% of total) were supported in the hospitality sector, encompassing restaurants, cafes, bars and hotels. The small employment impact of 1,900 in the real estate sector (relative to its GVA impact), reflects the very capital-intensive nature of the industry.

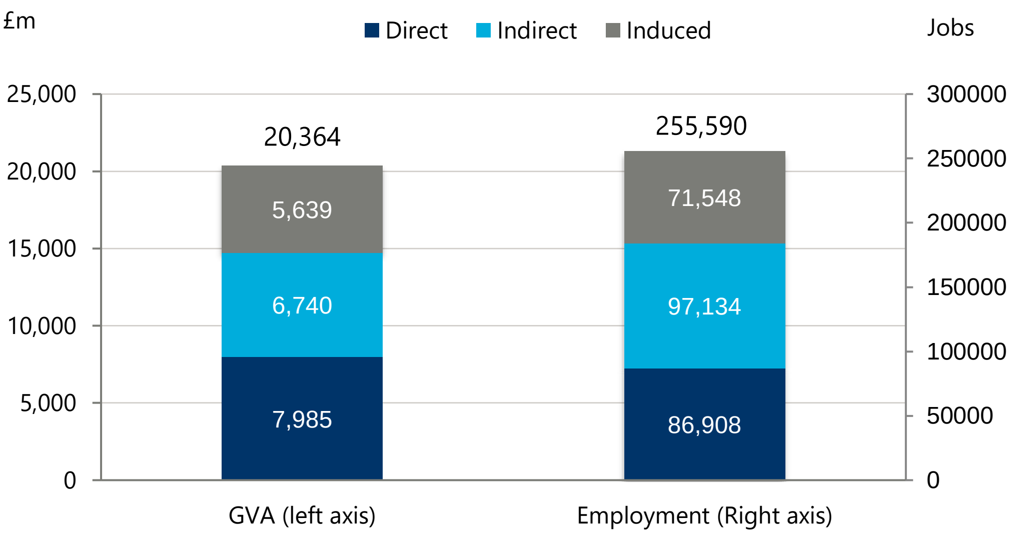
This induced activity also gives rise to additional revenues for the Exchequer. The wage-financed spending of civil nuclear sector workers, and employees within its supply chains, incur VAT and other product taxes. Moreover, the firms meeting these consumer demands also pay taxes on their profits and salary payments. These induced tax contributions reached £1.6 billion in 2024.

2.4 TOTAL IMPACT

The total economic contribution that the civil nuclear sector makes to the UK is the sum of the three channels of impact discussed in this chapter—direct, indirect, and induced.

Through these three channels, the civil nuclear sector supported a £20.4 billion GVA contribution in 2024. This amounts to 0.8% of the UK's total GDP, and is greater than all of Liverpool's GDP in that year. Of the total contribution, 39% was made by civil nuclear organisations themselves, with the remainder supported through the sector's procurement spending and wage payment impacts. The sector is therefore estimated to have a GVA multiplier of 2.6. So for every £1 million it directly contributed to UK GDP, it supported another £1.6 million elsewhere in the economy through its expenditure.

Fig. 6: Total impact of the civil nuclear sector 2024



Source: Oxford Economics/NIA/ONS

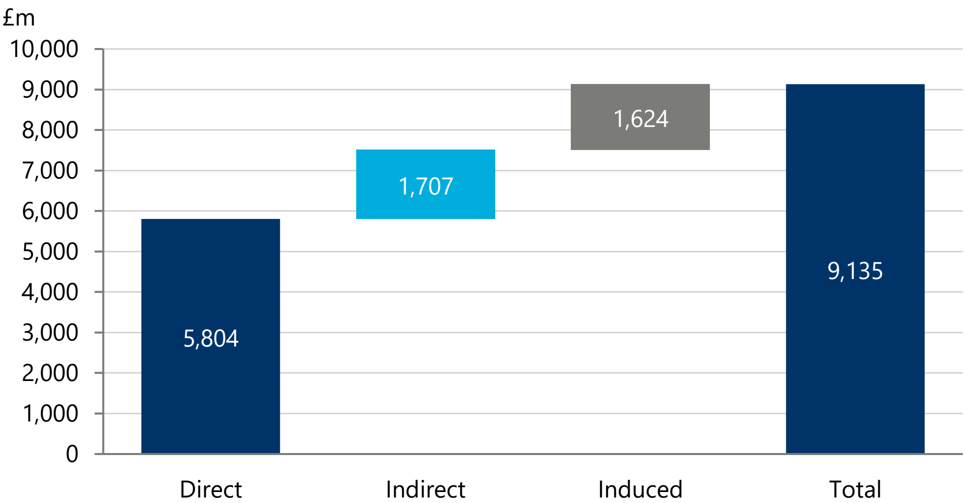
Through these three channels, the civil nuclear sector sustained around 255,500 jobs in 2024. This means that one in every 126 jobs in the UK was in some way supported by the civil nuclear sector's activities.[14] Some 86,900 of these are employees working directly in the civil nuclear sector, making up 34% of the total. Another 38%, some 97,100 jobs, were supported in the industry's non-nuclear supply chain. The remaining 71,500 jobs (28%) were sustained through wage consumption

[14] Total employment was 32.3 million in 2023. See ONS, "Business Register and Employment Survey".

impacts. This implies that the sector had an employment multiplier of 2.9. So for every one job in the nuclear sector, it supported another 1.9 jobs in the rest of the economy.

The output and employment supported by the civil nuclear sector also supported an estimated £9.1 billion in tax receipts in 2024. This includes Corporation Tax, income taxes and NICs, and other taxes on production and products. Well over half (64%) of this contribution to the Exchequer was attributable to the civil nuclear sector's own activities, with the remainder attributable to its wider multiplier impact.

Fig. 7: Total tax impact of the civil nuclear industry 2024



Source: Oxford Economics/NIA/ONS

3. REGIONAL CONTRIBUTION

This section investigates the impact that the civil nuclear sector has on each of the UK's constituent nations and regions. We also examine how the presence of a civil nuclear industry works to provide opportunities for those in "left behind" areas, helping to reduce regional disparities.

The UK has larger geographical differences than many other developed countries as reflected in income, education, or health outcomes.

Studies have shown that countries with larger regional disparities experience lower long-term economic growth.[15] This is because regional disparities can lead to economic inefficiencies, with opportunities for those stuck in "left behind" areas limited, so labour and other resources are underutilised.[16] Meanwhile scarcity of resources in overheated areas leads to the bidding up of prices and people working longer hours than optimal, so they become less productive.

Regional disparities also raise equity concerns. They contribute to overall within-country inequality as well as inequality of opportunity.

3.1 CONTRIBUTION TO REGIONAL GVA

The civil nuclear sector has the largest economic impact on the North West of England. The industry supported around 1.6% of all regional output in 2024, twice its share of total UK output at 0.8% (Fig. 8). It supported a £4.2 billion contribution to the North West's GVA. The region's civil nuclear activities are largely dominated by the decommissioning and waste management processes that continue at Sellafield (the UK's largest nuclear site), as well as the two Heysham plants, multiple fuel fabrication facilities, the Low Level Waste Repository, and four of the National Nuclear Laboratory's (NNL) six UK sites. Many other businesses have clustered around these centres, meaning that the North West houses an extensive civil nuclear skills base, encompassing engineering and construction, operations support, and supply chain services.

The South West region saw the next-largest impact from the civil nuclear sector, totalling an estimated £4.0 billion in 2024. The region is a focal point for the UK's nuclear new build program. Output in the region is mainly linked to Hinkley Point C, the UK's most significant current nuclear construction project, which will position the South West as a critical hub for the future of low-carbon energy in the UK. Alongside new build, the region is also managing decommissioning activities at Hinkley Point A and B, ensuring the safe closure and cleanup of legacy sites including Berkeley, Oldbury, and Winfrith. The region's civil nuclear sector has also formed a significant array of engineering and project management expertise. Altogether, civil nuclear activities accounted for 2.0% of the regional economy in 2024, a higher share of regional output than in the North West.

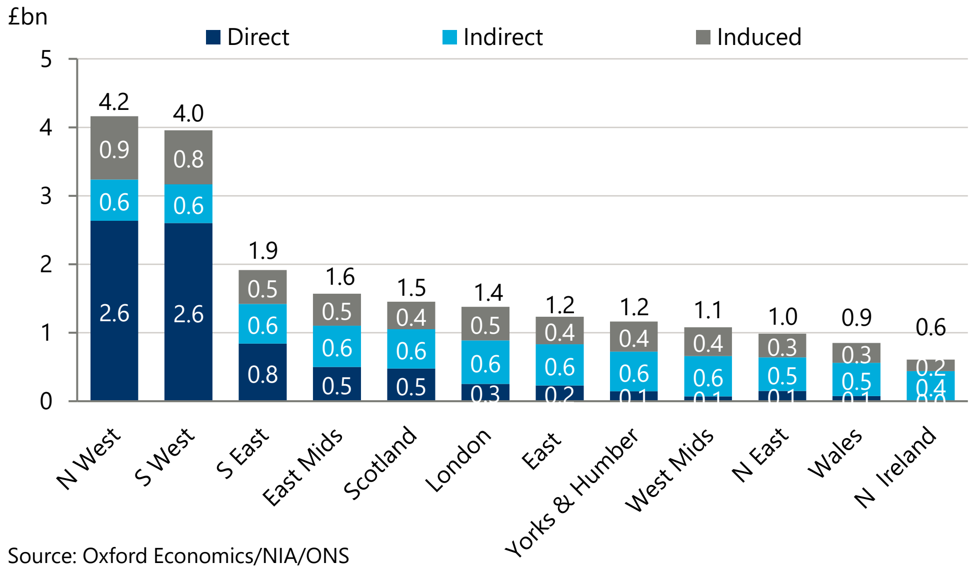
[15] Natasha Che and Antonio Spilimbergo: "Structural reforms and Regional Convergence," *IMF Working Paper 12/106*, April 2012.

[16] Holger Floerkemeier, Nikola Spatafora, and Anthony Venables: "Regional Disparities Growth and Inclusiveness," *IMF Working Paper 21/38*, February 2021.

Outside of these two principal clusters, the civil nuclear sector's impact is felt mainly in regions featuring active or decommissioned reactors, or research-oriented facilites. The South East, home of the Dungeness and Harwell sites as well as the UK Atomic Energy Authority and the Civil Nuclear Constabulary, remains a significant hub, contributing the third largest impact (£1.9 billion in 2024, equivalent to 0.8% of the regional economy). The impact in the East Midlands, amounting to £1.6 billion (1.1% of the regional economy) is predominantly driven by the presence of Rolls Royce in the region, including its role in the UK's SMR programme.

In the East of England, where the civil nuclear industry currently contributes £1.2 billion, we expect the sector's footprint will expand significantly. Output in the region will likely grow in the coming years with the construction of a new build nuclear station at Sizewell C.[17]

Fig. 8: GVA impact of the civil nuclear sector, by UK nation/region 2024



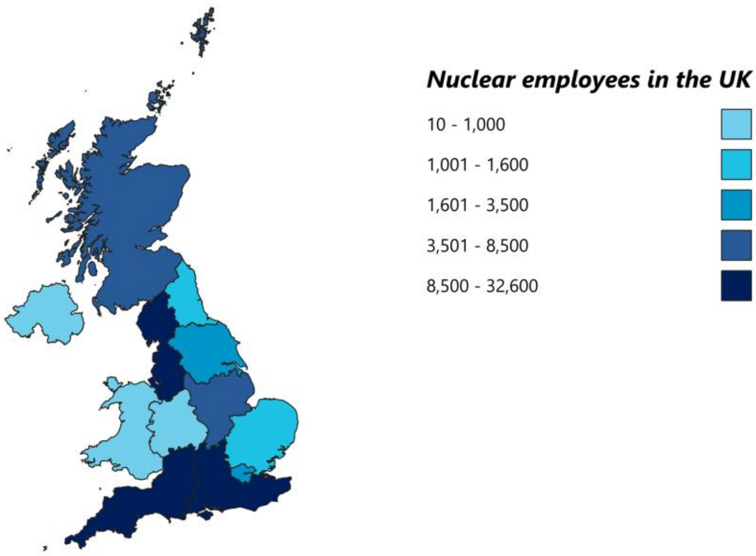
Source: Oxford Economics/NIA/ONS

3.2 CONTRIBUTION TO REGIONAL EMPLOYMENT

The regional profile of the employment supported by the civil nuclear industry is very similar to its contribution to GVA. It supported the most jobs in the North West, and South West of England (Fig. 9).

[17] Sizewell C 'The power of good for Britain', accessed June 2025.

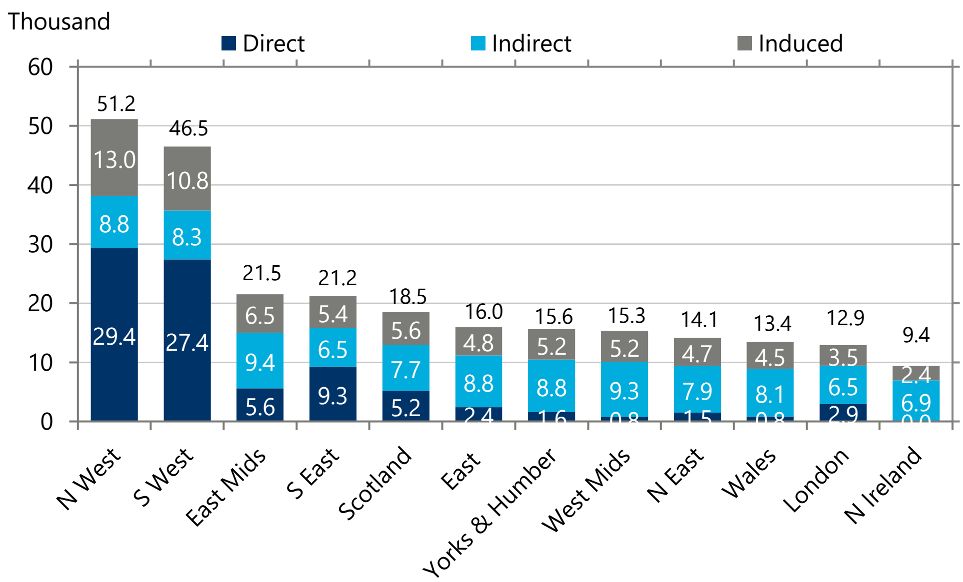
Fig. 9: Regional distribution of civil nuclear employees in the UK, 2024



Source: Oxford Economics/NIA/ONS

Our modelling suggests that in comparison to direct jobs, indirect and induced jobs supported by civil nuclear activities are spread more widely across the UK. While all of these jobs are linked to the sector itself, the supply chain and consumption spending "ripples out" to form a wider footprint than the UK's nuclear organisations themselves. This is illustrated in the case of Northern Ireland, where around 9,400 jobs are estimated to be supported by the civil nuclear sector (virtually all in the supply chain and consumer economy), despite the relatively scant presence of civil nuclear organisations there.

Fig. 10: Employment impact of the civil nuclear sector, by UK nation/region 2024

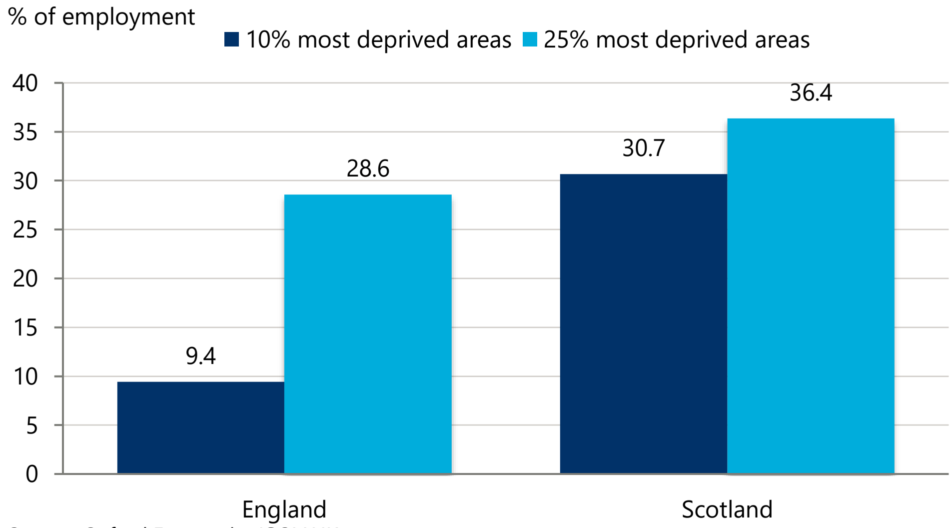


Source: Oxford Economics/NIA/ONS

3.3 CONTRIBUTION TO AREAS WITH LOW LEVELS OF OPPORTUNITY

A significant proportion of employment in the civil nuclear sector is located in deprived areas. **In England, almost 28.6% of direct employment in the civil nuclear sector occurs in the most deprived 25% of local authorities (Fig. 11).**[18] The figure for Scotland is higher, at 36.4%. (Northern Ireland and Wales are omitted as the civil nuclear sector directly employs a limited number of people in these regions.)

Fig. 11: Share of civil nuclear industry employment in local authorities with highest levels of deprivation



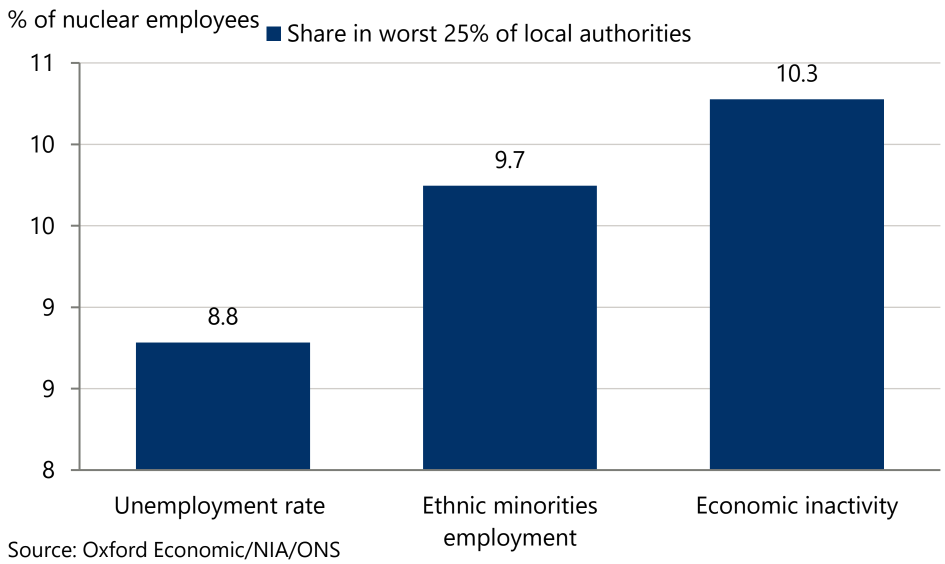
Source: Oxford Economics/GOV.UK

A significant share of employment in the civil nuclear sector is also located in geographical areas with low employment levels. **Some 10% of civil nuclear employment is in the worst 25% of local authorities for economic inactivity levels (Fig. 12 overleaf).**

Perhaps more significantly, civil nuclear employment is also disproportionately located in the local authority districts forecast to experience the lowest growth in employment. **Some 31% of civil nuclear employment is located in the 25% of local authorities predicted to have the slowest growth in employment over the next five years and 20% of employment is located in the 10% of local authorities forecast to have the slowest growth in employment** (Fig. 13 overleaf). The trend is also similar when looking at employment forecasts over the next decade.

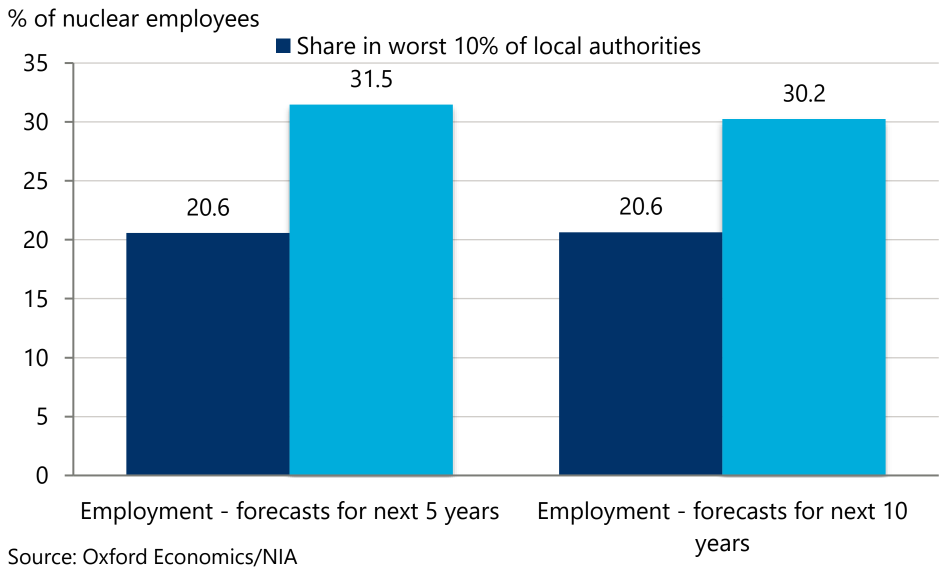
[18] As defined by the Index of Multiple Deprivation (IMD).

Fig. 12: Share of civil nuclear industry employment in local authorities with worst current employment outcomes



Source: Oxford Economic/NIA/ONS

Fig. 13: Share of civil nuclear industry employment in local authorities with worst future employment outcomes

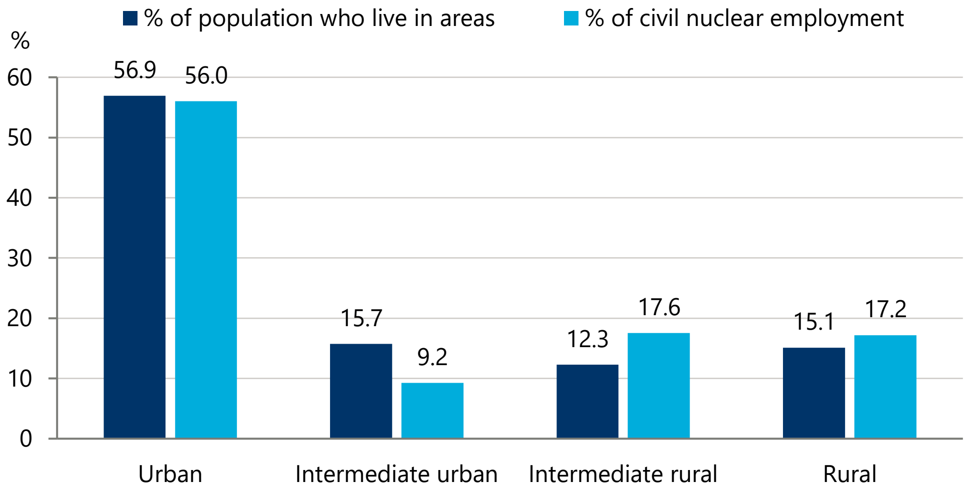


Source: Oxford Economics/NIA

Lastly, the civil nuclear sector employs a significant share of people in rural and intermediate rural areas. As illustrated in Fig. 14 below, whilst approximately 27% of the population of England lived in intermediate rural or rural areas in 2021, 35% of civil nuclear employment occurs in these areas in 2024. This is largely driven by nuclear activities at Sellafield and Hinkley, both of which are located in rural and intermediate rural areas.[19]

[19] ONS, "2021 Rural Urban Classification", last updated 6 March 2025

Fig. 14: Civil nuclear industry employment in rural-urban types and % of population who live in these areas



Source: Oxford Economics/ONS

By providing highly paid jobs in rural areas, the presence of the civil nuclear industry helps to narrow the rural-urban wage gap. In 2020, median workplace-based earnings in predominantly urban areas (excluding London) were £25,400 while predominantly rural areas were lower at £22,900.[20] The presence of the civil nuclear industry in rural areas also offers employees training opportunities. This is particularly important as those living in rural areas will typically have higher barriers to accessing these opportunities.

[20] DEFRA: "Rural earnings," 2021.

4. WIDER IMPACTS OF THE CIVIL NUCLEAR SECTOR

The previous two chapters of this report summarise our analysis of the "demand-side" impacts the UK's civil nuclear sector. They describe how the industry's expenditure (on its own operations, procurement, and payment of wages) supports jobs and GDP throughout all regions of the UK. But the sector's economic impact does not end there. There are many other dimensions through which the civil nuclear industry provides economic value: several of these are considered in this chapter of our report.

First, we examine some of the "supply side" contributions that the sector makes to the UK economy. This encompasses the investments that civil nuclear firms make in improving the productive capacity of the UK economy, through its investments in people (i.e., training and development of its employees), as well as investments in innovative technologies and research and development (R&D). These boost the stock of human and knowledge capital, respectively—in other words, improving the ingredients that are needed to support future output, incomes, and prosperity. While it is tricky to quantify these supply-side contributions, we discuss them since they undoubtedly provide meaningful economic benefits to households, industry, governments, and society more broadly.

Second, we examine the unique advantages that nuclear power provides for the UK's energy portfolio. This will outline some strategic and technical advantages that are provided by nuclear power in a decarbonising electricity mix. Furthermore, we explain that the UK's civil nuclear industry brings about security of supply benefits by being a dispatchable resource—one that can be counted on when needed—that is able to generate power during periods of system stress when demand is close to exceeding available supply.

Finally, we consider the contributions made to the economy through civil nuclear exports. This will explore the current and potential future scale of such exporting activity, in the context of existing capabilities and expertise, and the prevailing plans for nuclear power development across the globe.

4.1 SKILLS, TRAINING, AND DEVELOPMENT

The civil nuclear industry boosts the productive potential of the UK economy through its investment in staff training and the passing on of new knowledge and competencies. Some of this new knowledge may also be transferred to colleagues, as the recipient of the training will likely share some of their new skills with their co-workers. The civil nuclear industry's training increases its workforce's skills and competencies, making them more productive.

Investment in training may bring firms other benefits.[21] In particular, a more highly skilled workforce is an asset that makes it easier for companies to innovate. The skills learned on a training

[21] CEDEFOP: "The impact of vocational education and training on company performance", Research Paper No. 19, 2011.

course may help firms develop new products and services or adapt more rapidly to the introduction of new technology or changes in work processes.

There may also be knowledge spillovers from the civil nuclear industry's training its own staff to other firms in the local economy. These can occur through knowledge sharing through trade bodies, external courses, or informal interactions with other firms' staff. Alternatively, it may happen when people leave the company to take jobs elsewhere.

Organisations in the civil nuclear sector that were surveyed in spring 2025 employed 1,297 workers on apprenticeship training schemes or vocational training positions and traineeships during 2024.[22] This figure represents a lower bound for the total number of people on graduate or other training schemes that the civil nuclear sector employed. The true number is likely to be substantially higher as only organisations representing around 33% of the civil nuclear workforce responded to the survey.

Moreover, these organisations spent over £37 million, or on average £1,609 per employee, on training and development for staff in civil nuclear roles. This result is not only driven by large players. In fact, organisations across the entire spectrum of profits made substantial investments in training their staff, ranging from £50 to £3,690 per employee.

4.2 R&D AND INNOVATION

Innovation and R&D activity is important for delivering improved products and processes to businesses, government, and consumers. It is also a key component of productivity growth, which is a fundamental driver of a country's long-term prosperity.

The sector's R&D activity has benefits not only for the firms that conduct this innovation, but also the wider economy. These benefits are transmitted through more than one channel: first, continual innovation will be a key component of future growth, helping to ensure products and technologies that will ensure the sector's participation in nuclear investment around the world. Secondly, the technological advances and breakthroughs that emerge from its investment in R&D will affect other parts of the economy and society, in a so-called "spillover" process. Over the longer term, some of the sector's potential future advancements (notably in the domain of fusion energy) could have truly transformative economic spillovers.

We estimate that the UK's civil nuclear sector includes over 4,700 people who work in nuclear research. The Nuclear Innovation and Research Advisory Board report on the civil nuclear R&D landscape suggests many of those involved in industry and national laboratory R&D are focused on fusion, reactor systems, and waste management.[23]

Moreover, organisations in the civil nuclear sector that were surveyed in spring 2025 reported investments of over £139 million in R&D in civil nuclear activities. As above, the true number is

[22] This figure is made up of 916 apprentices and 381 people on other traineeships.
[23] Nuclear Innovation and Research Advisory Board. The UK Civil Nuclear R&D Landscape Survey; 4th Edition: 2022/23. 2024.

likely to be substantially higher as only organisations representing around 33% of the civil nuclear workforce responded to the survey.

The current focus of the UK's nuclear research efforts are in new-generations of nuclear technology such as Small Modular Reactors (SMRs) and Advanced Modular Reactors (AMRs) as well as fusion energy projects. Waste management and decommissioning are also prominent research areas**.**

The process of pioneering new technologies can unlock higher revenues and profits to the innovator. But there are also many ways that such innovation can spill over and diffuse into the wider economy, into other firms, academia, government, and wider society. This occurs through (for example) the formal licensing of new technology, as well as knowledge transfers via supplier-customer relationships, throughout professional networks, through corporate spin-outs and joint ventures, or via employee turnover (with expertise and innovative ideas being transferred between firms). These processes are very pronounced among knowledge-intensive sectors, as well as highly interconnected industries with established trade bodies.

These mechanisms are mostly relevant in the context of "incremental" or even "disruptive" innovations: for example, in the civil nuclear sector, these might be advances in component or reactor design, fuel fabrication or disposal techniques, engineering approaches, or safety procedures. Innovations in the UK civil nuclear sector are also likely to benefit other industries. Examples include in the field of medicine, where isotopes diagnose and treat diseases such as cancer. Nuclear power also has the potential to dramatically increase the duration of future space missions and their scientific **value.[24]But the domain of nuclear research holds the promise of even more dramatic advancements.**

Research into fusion energy is an investment that could eventually yield a future payoff with world-changing economic implications: an effectively limitless and low-carbon electricity source. While it is not possible to predict when or how these benefits would materialise, the UK's civil nuclear sector is an important contributing partner in the ambitious international effort to establish and commercialise nuclear fusion. An example of such efforts is a joint fusion energy project between UK and US governments and UK based company worth £40.5 million, announced in December 2024.[25] providing baseload energy to facilitate intermittent renewable energy sources

4.3 PROVIDING BASELOAD ENERGY TO FACILITATE INTERMITTENT RENEWABLE ENERGY SOURCES

The civil nuclear sector also delivers economic benefits through its important role in the UK's electricity portfolio. The characteristics of nuclear energy mean that it is a crucial enabler of the UK's strategic energy goals: to ensure supply of dependable, decarbonised, and cost-effective electricity.[26] By providing stable, predictable low-carbon "baseload" capacity, it enables greater penetration of

[24] Department for Energy Security and Net Zero. Civil Nuclear: Roadmap to 2050. January 2024.
[25] Department for Energy and Net Zero, December 2024. UK and US announce first joint project in fusion energy innovation.
[26] Department for Business, Energy, Industrial Strategy, "British energy security strategy", Policy Paper, 7 April 2022.

variable renewable sources (such as wind and solar). It also does this with vastly reduced emissions compared to fossil fuels generation, which would be the only other practical source of baseload energy. Furthermore, in light of recent geopolitical events such as Russia's illegal invasion of Ukraine and its curbs on gas supply to Europe, domestically produced nuclear energy allows a reduction in the reliance on fossil fuel imports (natural gas in particular, but also nuclear related inputs) from abroad and the associated risk of energy shortages.

To meet demand for electricity in the UK, many different generation technologies work in concert. The profile of electricity demand varies greatly across days, weeks, and months: short-term fluctuations lead to "spikes" at times of high demand (e.g., during mornings and evenings) and "lulls" during the night. Meanwhile, longer-term seasonal patterns see structurally higher demand in winter compared to summer.

This means that different combinations of generators are appropriate at different times. When demand is peaking, fast-reacting gas generators are incentivised to boost their output. At times of strong wind or intense sunshine, "conventional" generators reduce their output, as the electricity supplied by renewable sources takes a greater prominence. At all times, the Grid's dynamic auction systems ensure that sufficient power is available to meet demand.

Within this system, nuclear power has a unique role as a provider of "baseload" energy. Since nuclear generators supply predictable and unvarying production, they are ideally suited to cover minimum electricity demands, that persist throughout all hours and all months. More variable technologies are then deployed on top of this, to react to peaks and troughs in demand.

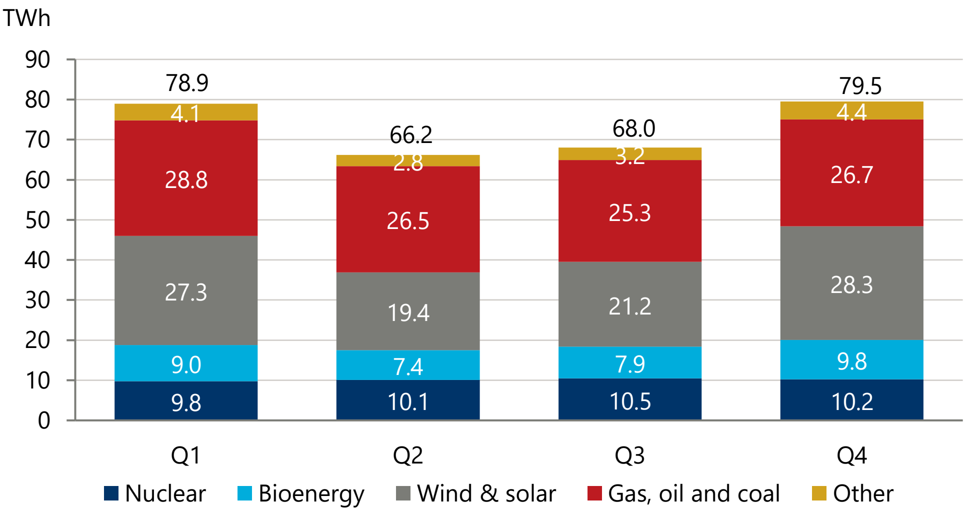
To illustrate how nuclear power supports the UK's energy priorities, we ask the question: what would happen in its absence? This is necessarily a thought experiment since the UK's energy sector has evolved over decades alongside the presence of nuclear reactors. But this analysis attempts to identify the implications for other generation sources, and the UK's energy priorities—specifically, its decarbonisation objectives**.**

Fig. 15 shows that nuclear power contributed 14% of all UK electricity in 2023. In its absence, increased production would be required to cover the resultant shortfall. It is not appropriate to assume that the resultant energy shortfall would simply be met with the average mix of remaining generation sources. This is because the substitute energy source would need to play the same role as nuclear power plants in the UK's energy mix, as a baseload supplier. This would rule out renewable technologies such as solar and wind since their power output is more unpredictable and variable. The only other sources of energy that could match this functionality are large scale hydro sources and fossil fuel generation (i.e coal and natural gas).[27] While using fossil fuels such as natural gas would contribute to higher GHG emissions, there are significant challenges to scaling hydro power due to the availability of water and the impacts of creating reservoirs. As such, nuclear can be thought of as the only proven low-carbon generation technology which can provide reliable baseload power at sufficient scale to balance intermittent renewables in the grid.[28]

[27] NEI, the importance of nuclear to a low carbon future.

[28] Department for Energy Security and Net Zero.Civil Nuclear: Roadmap to 2050. January 2024.

Fig. 15: Total UK electricity production by source, 2023



Source: Oxford Economics/ DESNEZ

Given the current state of technology and existing energy sources in the grid, we expect that in the absence of nuclear power, supply shortfalls would be met entirely by additional gas production. With gas generating over 250 times more CO_2 emissions than nuclear per equivalent unit of energy generated, the impact on the carbon footprint of the UK power sector would be significant.[29]

We estimate that in the absence of nuclear power, an additional 19.2 million tonnes of CO_2 would have been generated in 2023 (with gas making up the shortfall in nuclear). This would have resulted in the UK's electricity sector generating 44% more CO_2 emissions in 2023.[30]

As highlighted by the International Energy Agency (IEA), without nuclear power, the challenge of integrating high shares of variable renewables would be much greater.[31] The IEA points out that much more would be expected of currently unproven energy technologies such as hydrogen and ammonia to provide dispatchable power. As such, the IEA estimates that declining nuclear generation would make it more costly for countries to achieve decarbonisation goals. Higher costs would be incurred through required additional investment in power technologies as well as the costs of grid expansion to support additional renewables. Given the lack of alternative clean dispatchable sources of energy, the IEA estimate that for every 1GW reduction in nuclear capacity, an additional 3.5 GW of

[29] To estimate the emissions implications we use "life-cycle" emissions estimates of gas and nuclear from the National Renewable Energy Laboratory. National Renewable Energy Laboratory, "Life Cycle Greenhouse Gas Emissions from Electricity Generation: Update," September 2021. According to the different sources reviewed, the average estimates were (all measured in grams of CO2 equivalent per kWh of energy):

- 486 grams of CO2e/kWh for natural gas;
- 13 grams of CO2e/kWh for nuclear power.

[30] Department for Energy Security and Net Zero. Provisional UK greenhouse gas emissions national statistics 2023. Accessed December 2024.

[31] International Energy Agency (IEA), 2022. Nuclear Power and Secure Energy Transitions.

capacity from other fuel sources would be needed. Lastly, the IEA note that declining nuclear generation would lead to countries having higher exposure to fossil fuel market prices.

4.4 BENEFITS OF EXPORTING

Exporting offers the civil nuclear industry the opportunity to sell to a wider range of customers, with larger collective budgets, rather than being reliant on just domestic customers. This enables the sector to earn more revenue, creating more employment, and contributing more to UK GDP and in taxes. But it is also important in reducing risk. By diversifying its customer base, nuclear firms are less reliant on the budget constraints faced by domestic customers. Diversification should lower the volatility of firms' incomes, as different customers' spending patterns are not necessarily correlated.

Overseas customers also have different needs to domestic customers. Exporting allows the industry to expand the range of products and services it offers. A more diversified portfolio of products and services lowers the company's dependence on any individual product or service, which may become outmoded by technological change or other developments in the marketplace.

Selling more products and services to a greater number of customers enables companies within the civil nuclear sector to benefit from economies of scope and scale. This allows it to spread its fixed costs over a wider range and number of good and services, reducing its per-unit costs and making it more price competitive. This safeguards jobs in the UK, both in the industry itself, in its domestic supply chains and through wage-consumption impacts. Sales to prestigious foreign clients may also boost a firms credibility and reputation within the industry. This can help boost future business, by differentiating companies from their competition and building trust with potential customers.

Lastly, certain high-profile sales to foreign clients may boost the UK's ability to exercise soft power. This can lead to wider economic benefits through influencing perceptions and building trust, thus creating a positive investment and trade environment. An example of this is a UK based supplier recently signing several long term agreements to supply enrichment services with state-owned energy companies in Bulgaria, Ukraine and the Czech Republic.[32] Looking forward, the UK is currently developing capabilities (with UK government funding support) to produce 'HALEU', a type of nuclear fuel required for the development of small modular reactors.[33] This is a significant opportunity for the UK to be able to exert its influence globally as at present, Russia and China are the only countries that have the infrastructure to produce HALEU at scale.[34] Future global demand for HALEU is likely to be strong. Central and eastern European countries are just some of the countries looking to deploy SMRs in order to decarbonise their energy systems and increase their energy independence.[35]

Since 2014, the ONS has produced "experimental" estimates of the nuclear sector's exports, using data drawn from its Low Carbon and Renewable Energy Survey. These suggest that

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[32] Urenco, Press release, April 2023. Urenco, Press release, November 2023. Urenco, Press release, November 2024.

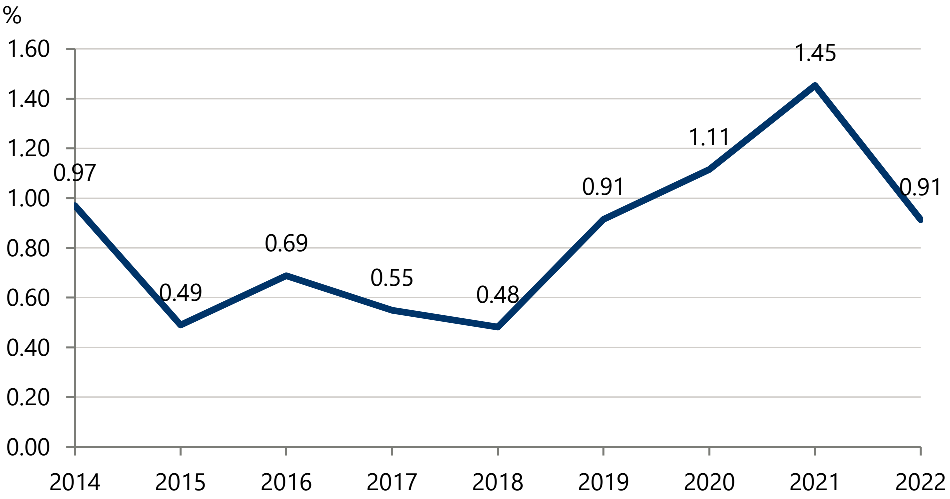
[33] World Nuclear News, May 2024. UK aims for Urenco-built HALEU facility by 2031

[34] World Nuclear Association, 2023. High-Assay Low-Enriched Uranium (HALEU). Accessed January 2025.

[35] Science Business, 2024. Widening countries look to steal a lead in next generation nuclear power stations.

between 2014 and 2022, exports have been between 0.48% and 1.45% of the civil nuclear sectors turnover (Fig. 16). Between 2019-2022 exports have averaged 1.1% of turnover which is higher than the period between 2014-2019 where exports averaged 0.64% of turnover. This suggests that in recent years, exports are making up a greater proportion of the UK nuclear sectors sales. However, it should be noted that these numbers reflect a narrower definition of the civil nuclear sector than that which is used in our report, notably excluding the decommissioning and waste management activities of the sector. Moreover, the relevant ONS bulletin notes that there is a large degree of uncertainty around these estimates, and so should be treated with caution (they are designated as experimental statistics for this reason).

Fig. 16: Nuclear exports as a share of turnover, 2014-2022



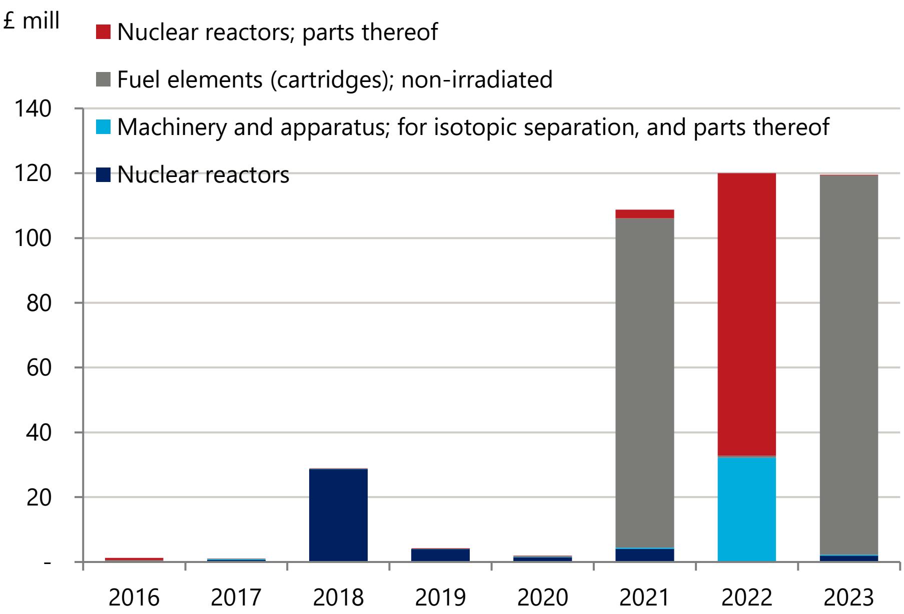
Source: ONS/Oxford Economics

Responses from our survey of NIA members suggests that around 23% of turnover is accounted for by exports. However, we note our reservations regarding this figure also, both due to the quality of survey responses in this area (many firms do not collate or could not provide this information), and the potential for our survey being biased towards larger businesses within the sector.

Using the United Nations Comtrade database, it is possible to identify nuclear-related manufactured goods exports.[36] Fig. 17 below shows UK exports of nuclear components between 2016 and 2023. There is significant variation in the value and composition of goods exports across years. However, it appears apparent that exports of nuclear components have increased significantly in recent years. The majority of this increase is due to increased exports of fuel elements, the vast majority of which are destined for France. In 2021 and 2023, fuel elements make up 86% of total nuclear goods exports. In 2022, 73% of nuclear goods exports were parts of nuclear reactors; the majority of these exports were to Switzerland and the United Arab Emirates.

[36] The following HS codes related to the nuclear industry have been identified: HS840110: Nuclear Reactor; HS830120: Machinery and apparatus; for isotopic separation and parts thereof; HS830130: Fuel elements (cartridges) non-irradiated; HS840140: Nuclear reactors parts thereof.

Fig. 17: UK exports of nuclear goods



Source: Oxford Economics

Policy support for nuclear power has risen in recent years with many countries planning to significantly increase their future nuclear capacity. During COP28, more than 20 countries pledged to work towards tripling global nuclear capacity by 2050.[37] Many countries are showing interest in small modular reactors and the first projects outside China and Russia are expected to come online around 2030.[38] The International Atomic Energy Agencies database suggests that currently, there are 417 nuclear power reactors operating globally with 63 nuclear power reactors currently under construction.[39] The IEA estimates that when the reactors currently under construction come online this would increase worldwide nuclear capacity by nearly 20%.[40]

At the same time, many ageing reactors will be retired. The International Atomic Energy Agency (IAEA) estimates that around 200 nuclear reactors are expected to begin the decommissioning process by 2050.[41] The costs of these decommissioning activities are expected to amount to several hundred billion dollars.

The UK has extensive capabilities in the vital aspect of nuclear decommissioning and clean-up, among others. The UK already has one of the largest nuclear decommissioning and waste management programmes in the world.[42] The industry has developed unique technical solutions to complex problems in the decommissioning sphere, as well as stakeholder management, and the

[37] IAEA, 2024. IAEA Releases Nuclear Power Data and Operating Experience for 2023.
[38] International Energy Agency. World Energy Outlook 2024.
[39] International Atomic Energy Agency, "The Database on Nuclear Power Reactors", Accessed December 2024.
[40] International Energy Agency. World Energy Outlook 2024.
[41] IAEA, 2023. Nuclear Decommissioning
[42] Department for Energy Security and Net Zero. Civil Nuclear: Roadmap to 2050. January 2024.

resolution of socio-economic issues surrounding new builds. Given its significant expertise in the area, the UK is particularly well placed to capitalise on decommissioning projects around the world.

The current capabilities within the UK's civil nuclear sector point to a strong potential for exports delivery. The sector has developed a broad and deep pool of nuclear expertise, ranging from enrichment, fuel fabrication, to operating nuclear power stations, and decommissioning and waste processing. The development of next generation nuclear reactors is also an area of significant future export potential.

5. CONCLUSION

The provision of nuclear power is key to the UK's manifold energy strategy. As a dependable baseload source of green energy, it enables greater provision of low-carbon energy elsewhere on the Grid and averts the environmental damage associated with fossil fuel generation. Furthermore, it reduces the UK's exposure to fossil fuel market prices, which in recent years pushed household energy bills to record levels.[43]

Nuclear generation accounted for around 14% of the UK's electricity generation in 2023. The civil nuclear industry, encompassing power station operators, fuel fabricators, infrastructure providers, project managers and decommissioning companies, all combine to contribute to delivering this low-carbon and secure form of energy.

The provision of nuclear power in the UK drives a large economic impact that extends through several channels. Through its production and supply of electricity, its procurement of inputs along a broad and complex supply chain, and the wage consumption impact of its workers, the civil nuclear industry contributed to headline economic variables such as GDP, employment, and tax revenues. The total output impact of the sector, incorporating its multiplier effects, reaches some £20.4 billion, while the industry's jobs footprint is estimated at 255,500 jobs.

While the impact is felt across the UK, its local and regional impacts are also important. Many of the jobs within the industry are in rural areas, where there are less high paying alternative job opportunities. Similarly, the industry is a significant provider of employment opportunities in deprived areas, helping to address regional inequality.

There are also important supply-side contributions made by civil nuclear activities, that increase the future productive potential of the UK. Civil nuclear firms are engaged in continual efforts to develop new techniques and innovations to improve nuclear power and continue their leadership in fusion research. Graduate trainees and apprentices work throughout the sector, reflecting some of the industry's continual investment in skills and human capital.

Despite these advantages, the volume of nuclear electricity supplied in the UK has been declining for several years. This reflects the retirement of several reactors in recent years while the finalisation of new reactors has repeatedly been delayed. Nine reactors across five stations are currently in operation in the UK, with two further reactors under construction.

Still, nuclear energy plays an important role in the UK government's plans for future electricity generation. In its energy security strategy, the Conservative government aimed to achieve up to one quarter of electricity demand being met by nuclear energy in 2050. Whilst the newly elected Labour government has not yet set any targets for nuclear generation, they committed to ensuring the long-

[43] UK Department for Business, Energy & Industrial Strategy: "British energy security strategy" (Policy paper), April 2022.

term security of the sector in their 2024 election manifesto.[44] The government also recently announced planning reforms which will made it easier to build Small Modular Reactors.[45] While uncertainty remains regarding the details of new nuclear projects, the urgent need to minimise the use of fossil fuels and to cut the dependence on foreign energy sources means that further contributions from the nuclear sector will be key.

With market leaders in their specialist fields, and building on its 60 years of accumulated experience, the UK is well placed to capitalise on global developments in the civil nuclear industry. The UK was a pioneer in nuclear energy and has been safely operating nuclear plant since 1957. Today, many firms within the UK's civil nuclear sector have developed into market leaders within their specialist fields, operating throughout the life cycle of nuclear facilities.

[44] Extending the lifetime of existing plants and the important role of new nuclear power stations and Small Modular Reactors were cited as important in helping the UK achieve energy security and clean power while securing thousands of good, skilled jobs. Labour Manifesto.
[45] Gov.uk. Government rips up rules to fire-up nuclear power. Press release.

APPENDIX: METHODOLOGY

DIRECT IMPACT

The direct employment impact of the civil nuclear sector is derived from the NIA's Jobs Map survey. These numbers, provided on a headcount basis, are based on surveys of the NIA's membership. As these numbers include employment at firms in the nuclear supply chain, our estimate of direct impact includes some of what would traditionally be termed the indirect impact. For more detail on the scope of the sector that is included in the direct impact, refer to Chapter 1.

The components of direct GVA, namely employee compensation and gross profits, were estimated using findings from Oxford Economics' bespoke survey of the NIA's membership, conducted during spring 2025.

The incidence of corporation tax, business rates, and VAT were similarly estimated using findings from the survey, and validated using HM Revenue & Customs (HMRC) data. Labour taxes, encompassing income tax and National Insurance Contributions (NICs), were inferred from gross staff costs, using HMRC data on tax bands, thresholds and receipts in 2024.

INDIRECT IMPACT

In this report, the indirect impact captures the economic activity of the non-nuclear components of the civil nuclear sector's supply chain. This includes services such as administration and business services, utilities, manufacture and supply of non-nuclear specific equipment and infrastructure, transportation, marketing and recruitment.

The sector's supply chain was estimated using procurement data gathered from the survey of NIA members, including the amount spent and the type of goods and services purchased. Firms were asked to identify what proportion of their inputs are sourced from other members of the NIA. This spending was removed from the indirect calculations to avoid double counting, as the resultant economic benefits are captured in the direct impact.

The modelling for this study was based on the national UK Input-Output (I-O) tables, as published by the ONS.[46] They set out the goods and services that UK industries purchase from one another in order to produce their output (as well as their purchases from firms abroad). Similarly, they provide detail on the spending pattern of UK households, and indicate whether this demand is met by UK production, or imported products. In essence, the I-O table shows who buys what from whom, for the time period in question. Using the detail on these linkages provided by the I-O tables, Oxford Economics constructed a bespoke UK and regional impact model, which traces the supply chain impacts attributable to the civil nuclear industry.

Oxford Economics' impact model then quantifies all rounds of subsequent purchases along the supply chain. These transactions are translated into GDP contributions, using UK-specific ratios of value-added to gross output, sourced from the UK I-O table.

[46] ONS: "United Kingdom Input-Output Analytical Tables- industry by industry: 2020", May 2024.

Taxes were estimated using HMRC data on tax bands and receipts, along with official statistics on average profitability of each UK sector, the average wage rates seen in these sectors, and the indirect employment supported within them.

INDUCED GVA, EMPLOYMENT AND TAX IMPACT

The induced impact is modelled using a similar method. Using employment figures provided by the NIA and wage data calculated as part of the direct impact, Oxford Economics used household spending data to model the typical consumption spending of UK resident households, making allowance for 'leakages' in the form of imports and savings.

For workers within the civil nuclear industry's supply chains, we used industry-specific ratios of employee compensation per unit of output, in order to quantify how much household wages are supported among the suppliers' workers. Both of these spending streams were then fed into our I-O model for the UK, to calculate the total impact of this spending. Taxes were calculated using the same methodology as for the indirect impact.

REGIONAL IMPACTS

The direct regional impacts have been calculated using location data for each of the NIA's member firms, derived from the Jobs Map.

Oxford Economics developed a bespoke model of the UK economy that estimates employment and gross value added impacts across the country's 12 nations and regions. The model is built on techniques developed in academia, using distance-adjusted 'location quotients' to determine regional multiplier impacts. Location quotients express the intensity of a particular industry's economic activity in a particular region, relative to the nation as a whole.[47]

This procedure allows for better estimates of the spatial distribution of gross value added supported in the indirect and induced channels. Geographies with higher concentrations of industries that receive procurement or household expenditure will tend to experience greater impacts. In addition, by dividing gross value added by region-specific productivity data (where productivity is gross value added per employee per year), the employment estimates are refined.

[47] Anthony Flegg and C. Webber: "Regional Size, Regional Specialization, and the FLQ Formula", *Regional Studies. Vol. 34.6* 2000, pp. 563-9.

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