# Realising the Fingleton Review

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Foreword by Rt Hon Anne-Marie Trevelyan

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Policy Exchange

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# Contents

# Foreword

*Rt Hon Anne-Marie Trevelyan*

The UK's future energy security, assurance of economic growth and continued technological global leadership are indivisibly linked to the successful future delivery of new nuclear energy. In an increasingly uncertain and unstable world, our ability to generate high baseload, low-carbon energy domestically is not just an option – it is a matter of paramount importance to ensuring our economic and national security. The urgency and weight of this task requires the Government to set its plan of action for our nuclear renaissance into play urgently.

The Nuclear Regulatory Taskforce Review conducted by John Fingleton CBE marked an important step in analysing the roadmap required to realise the next generation of UK nuclear capabilities. The report's diagnosis is clear: the UK's nuclear sector has been constrained not only by technological challenges, but most limited by the cumulative effects of fragmented governance, regulatory delay and the absence of sustained strategic direction. If we are serious about delivering secure, affordable clean energy for our citizens and our economic growth, the primary regulatory barriers to nuclear capacity build and generation must be removed.

This latest report from the Policy Exchange Nuclear Enterprise Commission makes an essential contribution to this task. It accepts the Fingleton Review's central argument that regulatory reform is essential, while rightly recognising that regulatory reform alone will not deliver new nuclear capacity. Delivery requires government institutions, industry, financing, skills, supply chains and infrastructure to move in concert. This will only be achieved if all aspects are supported by clear political leadership setting the priority, and a coherent national strategy. If the Government is serious about realising our nuclear ambitions, it needs to recognise this Policy Exchange Nuclear Enterprise Commission report's warning that, without the full set of other enabling factors operating in unison, there is real risk that regulatory reform will fail to translate into delivery.

The recommendations set out in this report provide a practical pathway from ambition to implementation, supplementing the Fingleton Review by focusing on Government's nuclear blind spots, closing the gap between policy and delivery of the next generation of nuclear technology expansion for clean energy generation. Without this coordinated approach to align the constituent parts of our nuclear system, the UK could inadvertently

repeat the pattern of delay and cost escalation that has undermined confidence in nuclear delivery for decades. The strength of this report lies in its recognition that nuclear success depends not on a single area of reform, but on the synchronisation of the entire delivery ecosystem.

We must not underestimate the importance of getting this roadmap and its relevant investment right. A revitalised nuclear sector will be central to the UK's energy independence and security. Our ability to harness new energy-hungry industries alongside providing cheap, clean energy to our existing businesses struggling today with global energy prices, and the opportunity for skilled job creation across the country, will be transformational. The UK's industrial heritage and world-leading scientific expertise in nuclear technology are at a crossroads for future success. This report and future work by the Nuclear Enterprise Commission set out how this can be achieved and we hope Ministers will consider seriously our report's suggestions – successful government policy is all in the delivery.

# Introduction

The recent Nuclear Regulatory Taskforce Review ('the Fingleton Review') represents a significant step forward in rebuilding the UK's nuclear industry in the years ahead. It identifies the primary barriers to affordable nuclear energy as regulatory.[1] The Government's acceptance of the Review's recommendations[2]as the backbone of "radical change"[3] identified as "essential for achieving national security, energy security, and Net Zero targets"[4] is certainly welcome. Further, the commitments made in Budget 2025, which signal renewed political backing for nuclear, including increased investment and a clear intent to remove barriers to delivery that have historically driven cost and delay were a concrete step in the right direction.[5]

However, regulatory reform, while crucial, is only one part of the picture. The Government's response to the Review is positive insofar as it accepts the recommendations. The credibility of the Government's plan to deliver 'a golden age of nuclear'[6]is, however, undermined by the absence of a roadmap accounting for the full range of enabling elements required to turn ambition into delivery. While the March 2026 response represents a significant step toward implementing the Fingleton Review's recommendations, it does not yet constitute a full framework addressing the full set of enabling conditions required for nuclear expansion. This roadmap must tackle the full range of enablers that will be key to the success of the nuclear sector, including:

a. Governance – A clear programme of strategic leadership, accountability and decision-making to align institutions into a single coherent system that can turn nuclear ambition into delivery.
b. Regulation, financing and innovation – drawing together regulation, early-stage funding and research into a coordinated delivery pipeline that moves nuclear technologies efficiently from design and approval through to construction and operation.
c. Supply chains and skills – sustaining and strengthening the industrial capacity, secure supply networks, and skilled workforce aligned with industry needed to deliver nuclear projects at scale with long-term resilience.
d. A ready and compatible energy system – investing in our electricity grid so that it can rapidly use new nuclear electricity generated in real time and without curtailment, operating continuously as a core part of the power system to underpin intermittent renewable power generated.

1. Nuclear Regulatory Taskforce, 'Nuclear Regulatory Review 2025', 24 November 2025, link
2. The Department for Energy Security and Net Zero and the Ministry of Defence, 'Overhaul of nuclear system to speed up building and cut costs', 13th March 2026, link
3. The Department for Energy Security and Net Zero and The Prime Minister's Office, 'Prime Minister's strategic steer to the nuclear sector following the 2025 Nuclear Regulatory Taskforce's Review', 26th November 2025, link
4. The Department of Energy Security and Net Zero and The Ministry of Defence, 'Nuclear Regulatory Review 2025: summary', 24th November 2025, link
5. His Majesty's Treasury, 'Budget 2025', 26 November 2025, link
6. The Department for Energy Security and Net Zero and the Ministry of Defence, 'Overhaul of nuclear system to speed up building and cut costs', 13th March 2026, link

These four enabling elements must be resolved in concert, addressed through a single, coherent strategy. Addressing them piecemeal and in isolation from one another would reproduce the same systemic issues as not addressing them in the first place. Thus, realising the high ambitions established by the Government requires focusing attention on governance and strategy tailored to address the specific enabling factors.

The purpose of this report is not to address in full the enabling factors necessary to deliver tangible progress. Many of these subjects will be addressed in later papers. Instead, it should be read alongside the Government's response to the Review as a companion piece, accepting the Government's focus on regulation and planning, while examining the absence of a roadmap and the additional enabling conditions that must sit around regulatory reform to translate into delivery. In doing so, this report seeks to highlight the key enablers that must be put in place if these ambitions are to be realised, and to frame a practical agenda for further work by the Policy Exchange Nuclear Enterprise Commission to support the delivery of a sustained and credible expansion of civil nuclear energy in the UK.

# Recommendations

## 1. Governance

a. Create an empowered Nuclear Regulatory Implementation Panel (NRIP) to act as central delivery body for nuclear regulatory reform, reporting to the Prime Minister. It must be given formal statutory authority to direct departments and regulators, to mandate joint timetables, integrated processes and delivery plans, and to control the nuclear implementation plan as a live delivery instrument.
b. Strategic planning for nuclear should be treated as a core function of governance, not a one-off policy exercise by establishing a standing, system-wide approach to decisions on timing, siting and sequencing of nuclear projects, ensuring alignment with grid investment, industrial policy, workforce planning and other major infrastructure programmes.
c. Strategic planning should explicitly account for international regulatory alignment, trusted supply chains and opportunities for cooperation with allied states.
d. Finalise EN-7, which provides the policy framework for a decision on new nuclear siting, as a matter of urgency to provide stable expectations on nuclear siting and assessment.

## 2. Design Regulation, Financing and Innovation

a. Expand and actively manage regulatory capacity by establishing a clear policy for the scale and prioritisation of the Generic Design Assessment (GDA), ensuring sufficient capacity to assess multiple reactor designs in parallel and prevent regulatory throughput from constraining competition or embedding technology lock-in.
b. Introduce earlier, flexible regulatory engagement for new designs, enabling earlier regulatory dialogue, lowering early-stage risk for developers and widening the technology pipeline without committing prematurely to full assessments.
c. Treat development expenditure as a pipeline instrument covering the entire lifecycle of projects and those phases where risk is highest.
d. Permit earlier conditional access to Contracts for Difference and Regulated Asset Base frameworks, providing credible revenue

pathways that lower the costs ahead of construction.

e. Use the National Wealth Fund to provide development-stage capital to nuclear projects, sharing early risk in return for upside as projects mature, crowding in private investment and accelerating progress toward financial close.
f. Government should facilitate the use of long-term Power Purchasing Agreements (PPAs) between nuclear developers and electricity-intensive consumers as a complementary financing route that strengthens demand certainty and reduces reliance on public subsidy.
g. A greater share of nuclear R&D funding should be explicitly directed toward deployment-focused outcomes to shorten timelines and reduce lifetime costs.
h. Government should pursue closer integration between civil and defence nuclear governance and research to reduce duplication, improve value for money and accelerate the flow of innovation into deployable technologies.

## 3. Supply chains and skills

a. Treat supply chains and skills as interlinked delivery elements by aligning skills policy with supply chains and industrial capacity.
b. Support and expand the domestic nuclear fuel supply chain by fostering long-term investment at facilities such as Springfields, formalising long-term fuel supply contracts linked to the future reactor fleet and integrating fuel-cycle capability explicitly into nuclear deployment policy.
c. Reduce exposure to adversarial and fragile supply chains by rebuilding domestic capability for critical materials and components alongside strengthening broader allied cooperation and friendshoring solutions where domestic processing is not considered financially or technically viable.
d. Create mature supply chains via fleet-based nuclear delivery with government acting as an anchor customer capable of providing predictable, repeated demand, design standardisation and long-term delivery pipelines.
e. Supply-chain development should be treated as an integral part of strategic planning, not a consequence of individual project decisions.
f. Nuclear skills policy should be explicitly mapped onto critical components and manufacturing strategy by tying training provision to real delivery schedules, with employers and suppliers shaping curricula alongside education providers.
g. Strengthen workforce renewal and broaden the skills base by expanding trainee and apprenticeship schemes with financial and corporate incentives, supporting skills transfer across civil, defence

and other major infrastructure programmes while planning for wider construction and project-delivery skills alongside nuclear-specific expertise.

## 4. A ready and compatible energy system

a. Government should plan for our future UK electricity grid to take 25% of total generation from nuclear, treating it as a defining feature of system design, with further capacity created through PPAs with direct supply to high energy users such as data centres off-grid as further capacity
b. Nuclear projects should receive explicit prioritisation within grid connection and reinforcement planning to reflect their capital intensity, continuous operation and sensitivity to delay at commissioning.
c. Strategic planning should deliberately coordinate the siting and sequencing of new nuclear generation with large, continuous demand sources to reduce grid congestion, strengthen demand certainty and improve system efficiency.
d. The Strategic Spatial Energy Plan should explicitly account for nuclear's requirements by identifying where and when nuclear capacity is expected, aligning this with projected demand and grid reinforcement to provide a predictable investment environment.
e. Grid investment should be undertaken in advance of nuclear commissioning to guarantee timely connection and avoid curtailment.
f. Decisions on nuclear, renewables and transmission infrastructure should be taken together rather than sequentially, embedding coordination into strategic planning to minimise avoidable cost, delay and system stress.

# The NRT Review and Government Response

The NRT Review notes the UK's nuclear sector has reached a critical inflection point. The UK has become one of the slowest and most expensive jurisdictions in the world in which to deliver nuclear projects on account of systemic regulatory failure, characterised by fragmented oversight, excessive risk aversion, inflexible processes and weak incentives across government, regulators and industry.[7] The consequence is a fragmented, risk-averse and procedure-driven framework, misaligned with the pressing national priority of nuclear expansion.[8]

The core issue identified by the Review is fragmented oversight, with responsibility divided between multiple bodies without a clear lead authority to create overlapping remits and inconsistent decisions, duplication and delay. Fragmented oversight operates in tandem with regulatory judgements that are often disproportionate to the risks they seek to manage, a dynamic reinforced by legislation and guidance that favour compliance over delivery. Successive Governments have failed to articulate acceptable risk despite a positive shift in nuclear energy generation in recent years. Although the regulatory system does enable flexibility and proportionate judgement, too many with governance responsibilities have chosen to take the most conservative application of the As Low As Reasonable (ALARP) principle with decisions taken in isolation and without a sector-wide (or national-scale) realistic understanding or assessment of risk. Current environmental and planning regimes intensify these problems: impact and habitats assessments are rigid, repetitive and highly exposed to legal challenge, encouraging delay rather than environmental improvement. The Nationally Significant Infrastructure Projects regime (NSIP), intended to accelerate major projects, has instead become slow and ineffective, adding years to nuclear delivery timelines.

Together, these factors have entrenched high costs and long timelines, embedding a status quo preference that undermines the viability of a profitable nuclear sector. As the NRT concludes, nuclear delivery will not improve without a wide-ranging regulatory reset that clarifies authority, restores accountability and rebalances decision-making towards delivery. Fragmented oversight and excessive risk aversion can only be addressed by concentrating regulatory authority, setting out a clear national view of acceptable nuclear risk to guide proportionate judgement. Environmental and planning regimes must move away from process-driven compliance towards outcomes, with nuclear treated as a critical national priority to

7. World Nuclear News, 'Taskforce calls for reforms to UK nuclear regulation', 12 August 2025, link
8. Nuclear Regulatory Taskforce, 'Nuclear Regulatory Review 2025', 24 November 2025, p.6-7, link

meet increasing electricity demand and zero carbon energy generation.

Two days after the NRT's publication, the Government affirmed it "accepts the principle of all the recommendations"[9] and the Prime Minister issued his first strategic steer per the Review's recommendation.[10] The Government's receptiveness to the NRT's recommendations was furthered in the Budget, which clearly articulated the centrality of nuclear power to both energy security and its growth strategy. It reiterated the commitment to regulatory overhaul following the NRT Review, alongside concrete project and financing commitments: confirming £14 billion for Sizewell C, reclassifying it as 'Mega Projects Capital Annually Managed Expenditure' outside of standard Departmental Expenditure Limit lines, approving the first SMRs at Wylfa and adding nuclear to the Green Financing Framework.

Most recently, the Government published its full response to the NRT, accepting its recommendations and aiming to complete implementation by 2027.[11] The response commits the Government to regulatory reform, embedding the shift towards a more proportionate and risk-informed regulatory approach. It also signals reforms to streamline planning and environmental assessment for nuclear infrastructure, including the use of Environmental Outcomes Reports, with the intention of reducing the time and cost of delivery. Alongside planning reform, the Government's response committed to strengthening research and innovation, including £65.6 million in government funding for seven nuclear R&D programmes delivered through UK Research and Innovation and the creation of a new nuclear skills pipeline, funding for 500 nuclear PhD places across four annual cohorts to expand the specialist workforce. These specific commitments constitute a firm commitment to removing the most prominent inhibitors to nuclear expansion and a proactive approach to supporting the nuclear sector as part of a wider indication that the present Government is taking nuclear seriously. Despite these commitments, there is a conspicuous absence of how the further reforms concerning the specific enabling elements necessary to realise nuclear expansion. As Policy Exchange noted in its first briefing paper on the subject,[12] regulatory reform is the foremost priority for a healthy nuclear sector, but the commitments made by the Government must be accompanied by a full plan for implementation addressing all other elements required for full nuclear delivery. The Government may have accepted the Review and published an implementation plan, but it is defined by the notable absences within it.[13]

Moreover, achieving this ambition of implementation by 2027 will require sustained and coordinated governance effort. Delivery by the end of 2027 remains achievable only with concerted action and sustained focus on implementation, underlining the importance of strong governance and delivery oversight – issues the Commission will examine in greater detail in a subsequent paper.

The remainder of this report outlines the key enablers that will be needed to translate ambition into reality, in line with the ambitions of the Government and the independent review.

9. His Majesty's Treasury, 'Budget 2025', 26 November 2025, p.70, link
10. Prime Minister's Office and the Department for Energy Security and Net Zero, 'Prime Minister's strategic steer to the nuclear sector following the 2025 Nuclear Regulatory Taskforce's Review', 26 November, link
11. The Department for Energy Security and Net Zero and the Ministry of Defence, 'Overhaul of nuclear system to speed up building and cut costs', 13th March 2026, link
12. Edward Barlow, 'A Brief History of Nuclear Energy in the UK', Policy Exchange, 6 June 2025, link
13. The Department for Energy Security and Net Zero, 'Building our nuclear nation: government response to the Nuclear Regulatory Review 2025', 13th March 2026, link

# 1. Governance

The foremost priority for the Government, wishing to "establish a clear and ambitious course to renew our nuclear sector", must be governance.[14] Achieving this requires an overarching plan, one which draws together all facilitating elements into a single, coherent roadmap, while clarifying those responsible for delivery and the powers they possess to enable delivery. If the Government is serious about creating a viable nuclear sector capable of acting as the bedrock of our secure future prosperity, it must assert clear leadership, align institutions around a single plan, and equip those responsible for delivery with the authority to act.

If these governance arrangements are not established early, the risk is that individual projects begin to move forward in the absence of a coherent framework, recreating the very fragmentation and inertia that the Review seeks to overcome – albeit not limited to regulation. Governance reforms, including the creation of an empowered delivery body and the establishment of a standing strategic planning function within government, should therefore be announced immediately and operational no later than three months.

## 1A. Strategic Planning

Effective nuclear expansion depends on early, authoritative choices that bring coherence to decisions across government, regulators and industry. Absent such direction, individual projects proceed in isolation, creating avoidable delay and cost, with a lack of reassurance to financiers of pace of delivery and power generation. A clear strategic framework, backed by strong delivery institutions and timely policy decisions, is essential to move from ambition to execution. It is crucial that nuclear delivery is not treated as a series of discrete developments, but as a coordinated national programme aligned with long-term energy, economic and security objectives.

Strategic planning – deciding where and when infrastructure projects, including nuclear, will be built – is the central element of creating a coherent approach to nuclear governance. It is not limited to the siting of individual projects, but setting clear decisions about where and when nuclear capacity will be built, how projects are sequenced and how they fit within the wider energy and infrastructure system. This informs the broad direction of travel, as well as the success of individual projects and the effectiveness of other enabling elements. Given the capital intensity, long lead times and importance to economic and national security of nuclear, the state must take a leading role. That leadership must be exercised in

14. Prime Minister's Office and the Department for Energy Security and Net Zero, 'Prime Minister's strategic steer to the nuclear sector following the 2025 Nuclear Regulatory Taskforce's Review', 26 November, link

close partnership with the private sector, whose capital delivery capability and supply chains ultimately determine whether projects proceed at pace. The task of the state is, therefore, to provide clarity and coordination regarding the overall strategy, unlocking present blockers in order to minimise uncertainty and facilitate investment at least cost.

The Government has accepted the Review's recommendation to establish a Nuclear Regulatory Implementation Panel (NRIP) to support the implementation of regulatory reform and coordinate delivery across government, regulators and industry. This constitutes an important step toward creating a dedicated mechanism for oversight of the reform programme. However, as currently defined, the NRIP appears primarily advisory and coordinative rather than directive. Without formal authority to direct departments, mandate integrated delivery timetables or resolve cross-government conflicts, its ability to translate strategic intent into operational delivery may be limited. Strengthening the NRIP's authority to direct would, therefore, help ensure that regulatory reform is implemented at the pace and scale required.[15]It is vital that strategic planning is outward-looking and system-wide, coordinated with other plans. Decisions on the timing and siting of new nuclear projects shape a wide range of downstream choices, influencing grid investment, the direction of industrial policy, workforce planning, and where new energy-intensive projects such as data centres[16] will be located. Developing these agendas in parallel without alignment causes entirely preventable friction. From grid bottlenecks that slow commissioning and competition between NSIPs to missed opportunities to strengthen domestic supply chains, overlapping but unaligned strategic plans only work to damage nuclear expansion itself as well as downstream sectors. Effective strategic planning depends on purposeful coordination with wider national programmes, ensuring that nuclear is within a coherent long-term vision for both the energy system and the broader economy.

Strategic planning must also recognise that nuclear expansion does not occur in isolation from international markets or the trusted regulatory systems of allied states. While domestic enablers are paramount, delivery depends on purposeful international coordination by aligning regulatory approaches, recognising foreign design assessments where appropriate and integrating supply chains with trusted partners. To this end, full strategic planning should not neglect the scope of international interconnectivities and their potential benefits.

Nowhere is the need for clarity and coordination more immediate than in the finalisation of EN-7 – the national policy statement for nuclear energy generation that sets planning and siting criteria for new nuclear projects**.** [17] Delays to its completion create uncertainty at the very earliest stages of the development process,[18] and such uncertainty directly feeds into cost-raising extended timelines and a consequent culture of risk aversion on the part of investors. Parliament's Energy Security Committee, in an October 2025 report, stressed that while the draft EN-7's flexible, criteria-based approach to siting is welcome, investors and developers

15. The Department of Energy Security and Net Zero, 'Building our nuclear nation: government response to the Nuclear Regulatory Review 2025', 13th March 2026, link
16. Adam Clark, 'Data centres: planning policy, sustainability, and resilience', House of Commons Library, 3 November 2025, link
17. Department for Energy Security and Net Zero, 'National Policy Statement for Nuclear Energy Generation EN-7', February 2025, link
18. Department for Energy Security and Net Zero, 'National Policy Statement for Nuclear Energy Generation EN-7', February 2025, link

need clear guidance and urged the Government to finalise.[19] Ensuring fast finalisation of EN-7, therefore, grounds the nuclear programme in a clear set of expectations about where development is acceptable and how it will be assessed, enabling a shift from ad hoc project decisions towards a more coherent, programmatic approach.

In sum, regulatory reform will not deliver new nuclear capacity without an empowered delivery mechanism in the form of the NRIP, supporting a wider programme of system-wide strategic planning which aligns institutions, sequences decisions and resolves problems in real time. Clear strategic leadership, a single accountable delivery framework, and empowered institutions are not ancillary to nuclear expansion, but its prerequisite. Establishing a robust governance system early is, therefore, essential both to realise the Government's ambitions and to prevent the problems faced by the nuclear sector presently.

## Recommendations

1. Government should establish the NRIP without delay as the central delivery body for nuclear regulatory reform, reporting to the Prime Minister.
   - The NRIP must be execution-focused with formal statutory authority (not just advisory) to direct departments and regulators, to mandate joint timetables, integrated processes and delivery plans, and direct the nuclear implementation plan as a live delivery instrument.
   - Appointment of a small, senior and delivery-focused Nuclear Regulatory Implementation Panel, chaired by a minister with delegated authority, with members appointed within two months of approval to ensure immediate momentum and accountability.

2. Strategic planning for nuclear should be treated as a permanent, system-wide function of governance, not a one-off policy ex ercise.
   - Government should establish a standing, system-wide approach to decisions on timing, siting and sequencing of nuclear projects, ensuring alignment with grid investment, industrial policy, workforce planning and other major infrastructure programmes.

3. Strategic planning should explicitly account for international regulatory alignment, trusted supply chains and opportunities for cooperation with allied states.

4. Finalise EN-7, which provides the policy framework for a

19. Energy Security and Net Zero Committee, 'The new National Policy Statement for nuclear energy generation', 24 October 2025, link

decision on new nuclear siting, as a matter of urgency to provide clear, stable expectations on nuclear siting and assessment.

# 2. Design Regulation, Financing and Innovation

Reducing the cost of nuclear power is inseparable from how the UK manages the upstream pipeline, from concept to construction, and whether such management is effective. Regulation, development expenditure and innovation policy are not, therefore, separate policy areas, but interlocking elements which enable cost reduction across the nuclear lifecycle.

Firstly, the regulation of nuclear technology is central to unlocking early-stage nuclear investment and reducing the long-term costs of development by providing clarity and speed at the approval of design stage. Second, unlocking development expenditure to mature projects earlier, at low cost and throughout construction, is key to ensuring a reduced financial burden on new nuclear projects. Third, R&D must be directed toward long-term cost reduction, ensuring that innovation translates into repeatability and lower delivery risk for future technologies. Together, these pillars form a single delivery pipeline whose effectiveness will determine the viability of nuclear expansion.

## 2A. The Generic Design Assessment

A critical constraint to reducing cost resides in the capacity and operation of the Generic Design Assessment (GDA) process, through which all novel nuclear technologies must pass to evaluate the safety, security and environmental viability of new reactor designs. Cost reduction depends on enabling innovation by fostering competition between multiple designs, and subsequently preventing being prematurely locked into a narrow set of technologies. Yet, there is currently limited clarity on how many assessments the system can credibly handle at once and over what timeframe. This renders regulatory capacity itself a binding constraint on competition, embedding unaffordability.

A prominent example of this constraint can be seen in the ONR's small modular reactor (SMR) reviews. The ONR began reviewing the Rolls-Royce SMR design in 2021,[20] and only in late 2023 did it begin assessing a second SMR (GE Hitachi's BWRX-300),[21] with other aspiring vendors effectively in a queue behind these assessments. While understandable, given the ONR's limited resources, linear review has considerable cost and output implications. If regulatory capacity limits the number of designs that can progress, competition is suppressed, innovation is slowed, and the scope for cost discipline through design choice and fleet deployment is reduced.

20. Office for Nuclear Regulation, 'Rolls-Royce SMR', link

21. Office for Nuclear Regulation, 'ONR Project Assessment Report Generic Design Assessment of the BWRX-300 Step 2 Summary Report', December 2025, link

The absence of clarity over GDA capacity and sequencing shapes behaviour well before formal assessment begins. Developers and investors are being asked to commit considerable capital to advance their designs without any assurance that they will gain access to the regulatory process in a timely manner, or, in some cases, at all. This raises risk in the earliest stages of development and increases the cost of capital – particularly for new technologies. In practice, this creates an implicit technology policy under which the system gravitates toward a small number of designs simply because its capacity leaves little room for anything else, irrespective of whether the Government intends that outcome.

If the Government is serious about reducing the costs of nuclear, it must make deliberate choices about how regulatory capacity is allocated and how assessments are sequenced. Not doing so presents a twofold risk: government support becomes concentrated behind a narrow set of technologies, reducing competitive pressure and limiting the scope for innovation-led cost reduction. Second, technology selection occurs by default rather than by design, with outcomes determined by regulatory throughput rather than strategic intent or long-term needs. The absence of a clear policy will likely produce both.

Canada provides a compelling illustration of how a more open regulatory approach can support competition and, ultimately, cost reduction. Its regulator, the Canadian Nuclear Safety Commission (CNSC), offers a flexible Vendor Design Review (VDR) process that allows multiple SMR developers to engage in pre-licensing dialogue, clarifying regulatory expectations and identifying potential issues before committing to full licensing. As of 2025, the CNSC has completed eleven VDRs from a range of companies at different points along reactor development.[22] In parallel, Canada has pursued bilateral regulatory cooperation with the U.S. Nuclear Regulatory Commission (NRC), including joint initiatives to align licensing approaches for SMRs and advanced reactors formalised in the 2019 Memorandum of Cooperation and expanded in 2022. These measures widen the entry point to the regulatory system, lower early-stage risk and help sustain a competitive technology pipeline capable of driving long-term cost reductions.

## 2B. Development Expenditure

Another core element of reducing the costs of nuclear is how project development is financed and de-risked before and during construction. Development expenditure is a central cost-reduction lever because it determines how quickly projects can be matured, how much risk is borne by private capital at the most uncertain stages and the affordability of financing once projects reach construction.

While long-term financing mechanisms such as the Regulated Asset Base model and Contracts for Difference help create a stable environment for projects when they reach construction, they offer far less support during the early stages of development, when risk is greatest. Advancing a nuclear design through early development and into the UK regulatory

22. Canadian Nuclear Safety Commission, 'Vendor design review', link

system requires substantial upfront investment in design work, safety case preparation, regulatory engagement and market entry. For novel technologies in particular, these early development costs can be prohibitive, slowing project maturation and limiting the number of designs able to progress into the construction pipeline.

Consequently, the current system tends to favour a small group of well-capitalised developers who can shoulder substantial early-stage risk, rather than supporting a wider and more competitive range of technologies. This Government has acknowledged the need for targeted early support through schemes like the AMR Feasibility and Development Competition, but the pledged £40 million remains relatively modest.[23] For international developers, considering a variety of potential markets, the lack of clear UK support for development-stage costs further undermines the UK's appeal, increasing the likelihood that projects will be brought to fruition elsewhere.

This can be seen in Rolls-Royce's SMR development. In 2021, £210 million of public funding was committed to the project to progress the design to the point it could move through the regulatory process, also being matched with significant private co-investment.[24] Even in this case, the highest-risk capital was required well before deployment was credible or financing terms could reflect lower construction-phase risk. Only a small number of developers can carry such exposure without sustained state partnership. Where government does not share early development risk, otherwise promising projects are likely to stall under the combined pressures of financial exposure and an uncertain regulatory pathway, raising costs or preventing construction altogether.

If development expenditure is to function as a genuine tool of cost reduction, it must extend beyond early design and regulatory entry. The highest-risk phases of nuclear delivery occur after development, encompassing site-specific project development, regulatory approvals for both technology and location, early-stage construction, supply-chain mobilisation and decommissioning. A more effective approach would treat development expenditure as a pipeline instrument. Government should consider allowing nuclear projects to qualify for a CfD or RAB at an earlier point in development, even when construction remains some way off. Securing conditional access to these mechanisms earlier would provide investors with a credible pathway to revenue recovery, reducing risk and lowering the cost of capital during development and early construction. A potential model for this proposal can be found in the recent Advanced Nuclear Framework, which establishes early structured engagement for advanced nuclear projects with government, regulators and investors. Currently, this only applies to advanced modular reactors, but should be used as a template for a range of other nuclear projects. These changes would make it easier to draw in private investment while allowing projects to mature more quickly and bring down the overall cost of delivery.

Equally, government itself could take a larger role in project development.

23. Department for Energy Security and Net Zero, 'Advanced Nuclear Technologies', 19 November 2025, link

24. Science, Innovation and Technology Committee, 'Delivering nuclear power: Government Response to the Committee's Eighth Report', 25 October 2023, link

International experience suggests that early-stage nuclear projects mature more quickly and at lower overall cost when the state is prepared to deploy capital alongside the private sector, sharing risk in return for upside as projects advance. In the United States[25] and Canada,[26] public institutions routinely provide development-stage capital (through loans, equity stakes or structured co-investment) to bridge the gap between early design and construction, helping projects reach financial close without crowding out private investment.

The UK should adopt a similar model by utilising the National Wealth Fund to provide commercial development expenditure to nuclear projects. Rather than acting as a subsidy, this capital should be deployed with clear expectations of repayment or return as projects mature. Using the NWF to take on early risk enables the government to cluster private capital more easily, while accelerating projects and reducing the cost of capital.

Alongside greater public involvement in development finance, there is also scope to broaden the sources of private capital available to nuclear projects, reducing reliance on Government support over time. One increasingly important mechanism is the use of long-term power purchase agreements (PPAs), a contract in which a buyer agrees to purchase electricity from a specific energy generator at predetermined prices and terms, typically between nuclear generators and large, electricity-intensive consumers, particularly data centres. In the US, such arrangements are becoming a growing feature of the nuclear financing landscape, as hyperscale data operators seek reliable, firm power and are willing to underwrite long-term demand.[27]

Encouraging the development of nuclear-linked PPAs could make nuclear projects significantly easier to finance. These agreements give nuclear developers a predictable income from the start, which helps them secure funding and reduces financial risk while the plant is being built. For the Government, PPAs attract private investment and help guarantee future demand for nuclear power, while keeping the need for direct state spending lower. As electricity use grows through new technologies, such as the artificial intelligence and data centres who need completely stable continuous power supply, introducing PPA-based financing into the nuclear development toolkit offers a pathway for cost reduction while enabling new non-nuclear technologies which are critical to the UK's future economic growth and security.

## 2C. Innovation

Long-term reductions in the cost of nuclear power will depend critically on the direction of research and development toward making new technologies cheaper, faster and more reliable to deploy. While the UK continues to invest in nuclear R&D, including recent funding commitments announced alongside the Government's response to the Review, the overall structure of this innovation system remains only partially aligned with the practical challenges of deployment. Much of the existing research activity operates across multiple institutions and programmes with differing timelines and

25. US Department of Energy, 'Advanced Nuclear Energy – Loan Guarantees', Loan Programs Office, link and US Department of Energy, 'Title 17 Clean Energy Financing Program', Loan Program Office, link

26. Government of Canada, 'Canada Invests in the Next Generation of Canadian-Made, Clean, Affordable Nuclear Energy', 5 March 2025, link

27. Hana Chabinsky, 'Understanding the "Hyperscale Shift": The Link Between Nuclear Energy and Hyperscale Data Centers', Last Energy, November 2023, link

objectives. Consequently, although the UK maintains significant scientific capability, the connection between research priorities and the cost-reducing challenges of real-world project delivery is not yet sufficiently direct.

For an expansion programme to succeed, innovation must be focused not only on long-term breakthroughs but also on whether projects can be built quickly and at lower cost. This places particular weight on improvements in areas such as materials performance, advanced manufacturing and safety-critical components, where even incremental gains can shorten construction timelines, strengthen regulatory confidence and enhance long-term plant performance.

The UK's nuclear fusion programme provides a strong illustration of how genuinely deployment-oriented R&D can be structured around long-term cost reduction. Through the UK Atomic Energy Authority (UKAEA), sustained investment has been directed toward addressing the fundamental engineering challenges that would otherwise make fusion prohibitively expensive.[28] This includes the development of new radiation-resistant materials capable of withstanding extreme environments, alongside advanced robotics and remote-handling technologies designed to allow maintenance and component replacement in highly hazardous conditions.[29] These efforts are explicitly motivated by the need to reduce future construction, maintenance and operational costs, recognising that these advances are the precondition for commercially viable fusion energy.[30]

The example of the UKAEA demonstrates the value of R&D that is closely aligned with the realities of deployment, rather than operating as an abstract research effort. The issue is not just a matter of overall R&D spending, but how it is structured and what it is intended to achieve. Presently, funding is spread across multiple programmes with differing timelines and objectives, creating a risk of fragmentation. Responsibility for nuclear innovation is spread across multiple organisations with distinct remits. Strategic direction and programme funding sit primarily with the Department for Energy Security and Net Zero, while UK Research and Innovation, largely through the Engineering and Physical Sciences Research Council and Innovate UK, supports university research and industry-led development. Applied fission R&D and fuel-cycle capabilities are concentrated in the National Nuclear Laboratory, while fusion research and prototype plant development are led by the UKAEA. Great British Nuclear is assuming a growing role in managing the transition from innovation to deployment, working with private manufacturers and site operators. Collectively, this innovation landscape provides a breadth of capabilities, but without strong coordination risks dispersing effort across institutions, funding streams and timescales rather than aligning research with the practical demands of deployment.

Closer alignment between R&D activity and the practical demands of deployment would help ensure that research priorities reflect the needs of stakeholders and can realise sustained cost reduction. Drawing together

28. Department for Energy Security and Net Zero and Department for Business, Energy and Industrial Strategy, 'Towards fusion energy 2023: the next stage of the UK's fusion energy strategy', 16 October 2023, link
29. Department for Business, Energy & Industrial Strategy, 'The impact of the UK's public investments in UKAEA fusion research', January 2020, link
30. UK Atomic Energy Authority, 'Robotics challenges for fusion energy', 2024, link

R&D and the requirements of deployment would help ensure that research priorities are shaped by the cost and delivery challenges faced by developers, regulators and supply chains.

The experiences of France and the US reinforce the value of civil and military bodies working more closely. France's CEA and its navy work hand-in-hand,[31] while the US naval reactor program at Bettis & Knolls labs has contributed significantly to commercial reactor technology – pressurised water reactor designs themselves were first naval.[32] Without this alignment, innovation risks arriving too late or being insufficiently integrated into real projects to influence outcomes.

This is not to say that long-term breakthroughs should be deprioritised, or that overall funding levels are unimportant. Fundamental research remains essential to sustaining the UK's technological edge and enabling future generations of reactors, and the recent commitment of £65.6 million in new funding is a critical investment.[33] Rather, the R&D system would benefit from being more closely tied to the practicalities of delivery. A greater share of the R&D directed toward cost reduction and deployment readiness should allow innovation to support delivery more directly without diminishing the value of longer-horizon research.

The time has come for a proper debate about a closer relationship between civil and defence R&D, particularly in foundational areas such as material sciences and advanced engineering. The UK holds substantial technical capability within its defence nuclear programmes, and there is considerable overlap in the skills, facilities and outputs between civil and defence sectors.[34] These strengths are not always leveraged in a coordinated way. A shared funding mechanism could help bring these strands together, reducing duplication and making better use of existing R&D capabilities. This approach would not only improve value for money but also create a more coherent pipeline of expertise, equipment and research outcomes. Most importantly, closer integration would allow advances in areas such as materials science and advanced manufacturing to flow more directly into both civil deployment as well as defence applications. Rather than operating as a separate research effort whose benefits remain disconnected from real projects, R&D would become a practical driver of deployment while reinforcing the UK's strategic industrial base.

The affordability of nuclear delivery will largely be determined by upstream factors, namely GDA capacity, site approvals, development finance and R&D – meaning that they should be understood as a single, coherent pipeline rather than as disconnected policy silos. Without deliberate management of regulatory capacity, early-stage capital and deployment-focused innovation, costs will continue rise. If the ambition for expansion is to translate into sustained delivery, the Government must move beyond regulatory reform alone to proactively shape the delivery pipeline as a core instrument of cost reduction and industrial strategy.

The Government's recently published Advanced Nuclear Framework reflects growing recognition of this pipeline challenge, particularly in financing the next generation of reactors.[35] By proposing a structured

31. The French Alternative Energies and Atomic Energy Commission, 'Defence and Security', link
32. US Department of Energy, 'The History of Nuclear Energy', link
33. The Department of Energy Security and Net Zero and the Ministry of Defence, 'Overhaul of nuclear system to speed up building and cut costs', 13th March 2026, link
34. Department for Business and Trade, 'The UK's Modern Industrial Strategy', November 2025, link
35. The Department for Energy Security and Net Zero, 'Government to unlock advanced nuclear to grow economy', 4th February 2026, link

"'concierge-style' service"[36], advanced reactors may receive greater government recognition, regulatory guidance and potential access to financing discussions, reducing early-stage uncertainty and crowding in private capital. While still at an early stage, this approach points toward a more deliberate management of the development pipeline for advanced reactors – a subject the Commission will examine in greater detail in future work.

## Recommendations

1. Expand and actively manage regulatory capacity
   - Government should set out a clear policy for the scale and prioritisation of the GDA, ensuring sufficient capacity to assess multiple reactor designs in parallel and prevent regulatory throughput from constraining competition or embedding technology lock-in.

2. Introduce earlier, flexible regulatory engagement for new designs.
   - The UK should adopt a pre-licensing engagement model akin to Canada's Vendor Design Review process, enabling earlier regulatory dialogue, lowering early-stage risk for developers and widening the technology pipeline without committing prematurely to full assessments.

3. Development funding should be structured to support projects beyond early design to cover the entire lifecycle of projects and those phases where risk is highest.

4. Nuclear projects should be allowed to secure conditional access to CfD or RAB mechanisms earlier in development, providing credible revenue pathways that lower the costs ahead of construction.

5. The National Wealth Fund should provide development-stage capital to nuclear projects, sharing early risk in return for upside as projects mature, crowding in private investment and accelerating progress toward financial close.

6. Government should facilitate the use of long-term PPAs between nuclear developers and electricity-intensive consumers, particularly data centres, as a complementary financing route that strengthens demand certainty and reduces reliance on public subsidy.

36. Ibid

7. A greater share of nuclear R&D funding should be explicitly directed toward deployment-focused outcomes which shorten timelines and reduce lifetime costs.

8. Government should pursue closer integration between civil and defence nuclear research programmes, particularly in foundational engineering and materials science, to reduce duplication, improve value for money and accelerate the flow of innovation into deployable technologies.

# 3. Supply Chain and Skills

Regulatory reform, in tandem with a better-aligned innovation ecosystem, will achieve little unless the UK also rebuilds the industrial and human capabilities required to execute projects at scale. These cannot be taken as ancillary concerns, but core determinants of cost, durability and pace of delivery. Without sustained demand, design standardisation and a credible pipeline of work, neither suppliers nor workers can invest with confidence. Moreover, the UK must address the more fundamental issue of secure access to nuclear fuels and parts, which largely lie in the possession of adversarial states – posing a direct challenge to energy security. Addressing these constraints requires an integrated approach that treats industrial capacity and skills formation as inseparable elements of a single delivery system reliant on resilient access to core inputs such as nuclear materials.

## 3A. External Vulnerability

The first issue with the UK's supply chains lies in its vulnerability to exogenous dynamics. In an increasingly fractious international environment, exposed supply chains pose a major problem to the supply of nuclear materials to British reactors. Nuclear expansion will require the UK to secure access to nuclear fuels in addition to critical materials, which are currently dominated by adversarial actors. Notably, Kazakhstan produces around 40% of the global uranium supply, while a 'significant proportion of this production is held in joint ventures with Russian and Chinese interests.'[37] More widely, Russia controls 46% of the global uranium enrichment market and over $1bn worth of nuclear-related exports.[38] This is worsened by the complete supply chain dominance of China and Russia across extraction, enrichment and production as they vertically integrate supply chains between their plants globally.

Given the UK's vulnerability in nuclear fuels, it must invest in the nuclear fuel supply chain. Sellafield was originally the site of Calder Hall, the world's first commercial nuclear power station, subsequently housing three reactors until 2003.[39] Following this, the site's main function became recovering uranium and plutonium from the spent fuels of other reactors. This fuel reprocessing function, however, has diminished in recent years as the reprocessing of oxide fuels ceased in 2018 and Magnox reprocessing stopped in 2022. Sellafield's focus is now the remediation and clean-up of nuclear (and non-nuclear) facilities.[40] While the 'clean-up' element of its work is important, it underscores the wider strategic gap: at the moment when the UK is seeking nuclear expansion, it is progressively

37. Nick Clarke, 'The UK Needs to Confront the Weaponisation of the Nuclear Supply Chain', RUSI, (2023), link

38. Theo Zenou and Thomas Munson, 'Harnessing the Power of the Atom', Henry Jackson Society, February 2025, link and Darya Dolzikova, 'Atoms for Sale: Developments in Russian Nuclear Energy Exports', RUSI, 14 February 2023, link

39. Office for Nuclear Regulation, 'Sellafield Limited', link

40. Ibid

losing participation in the nuclear fuel supply chain.

A more positive example can be found in the nuclear fuel production installation at Springfields, which plays a central role in energy resilience. In 2025, Westinghouse's Springfields facility signed an expanded contract with Terrestrial Energy to support the design and construction of a pilot Integral Molten Salt Reactor (IMSR) fuel plant, with construction scheduled to begin in 2026, to meet the demand for next-generation nuclear fuels.[41] This follows earlier funding to expand fuel fabrication capabilities and for advanced fuels such as High-Assay Low-Enriched Uranium at Capenhurst.[42] These steps are crucial for the UK's nuclear resilience not only because they preserve skills and industrial capacity, but also because they reduce exposure to concentrated global fuel markets and import dependencies. To build on this momentum, the Government could go further by formalising long-term fuel supply contracts tied to the new reactor fleet, extending strategic funding frameworks to underpin sustained capital investment at Springfields, and integrating fuel-cycle capability explicitly into wider nuclear deployment policy to give industry the certainty needed to scale up production.

Without deliberate investment to sustain and rebuild domestic fuel-cycle capabilities elsewhere in the system, new reactors will be locked into long-term dependence on overseas fuel suppliers, embedding dependence risk into the heart of the electricity system. Therefore, investment in the nuclear fuels supply chain must be treated as a core enabler of nuclear resilience and as a central component of building a resilient economy, which must be pursued in parallel with new build commitments.

Adversarial supply dominance also extends beyond nuclear materials to critical equipment and components, where the UK has limited domestic capability and faces significant strategic exposure. Global production of nuclear-specific components is highly concentrated, largely in East Asia,[43] and even where capacity exists, production is limited and insufficient to meet growing demand.[44] As the Government has acknowledged, reliance on overseas inputs beyond nuclear materials creates serious national and energy security risks. Where core systems and components are sourced from suppliers linked to China or Russia, the UK's ability to deliver, operate and expand its civil nuclear programme becomes contingent on wider geopolitical vicissitudes, ingraining persistent vulnerability. We saw China's willingness to stop exports of critical minerals to the USA last year as a clear act of retaliation against the tariffs imposed, leading to real world impact on US defence industry capacity and progress.

Dependence on fragile supply chains poses an acute strategic risk that could undermine the ambition for nuclear expansion. Secure and diversified access to inputs is a prerequisite for ensuring that nuclear power delivers its intended national security benefits. The UK should therefore continue to deepen engagement with trusted partners to secure alternative supply. Allies such as Canada and Australia together accounted for around a quarter of global uranium production in 2020.[45] In 2023, the UK signed agreements with France,[46] the US,[47] Japan and Canada[48] to strengthen

41. Terrestrial Energy, 'Terrestrial Energy, Westinghouse Sign Expanded Contract for IMSR Advanced Nuclear Fuel Plant at Springfields', 5 November 2025, link
42. European Nuclear Society, 'Westinghouse Awarded New Grants From UK Nuclear Fuel Fund', link
43. Damona, 'Nuclear supply chain under pressure in a fragmented world', 3 December 2025, link
44. The Department for Business and Trade, 'Critical imports and supply chains strategy', 17 January 2024, link
45. IAEA, 'Uranium 2020 Resources, Production and Demand', (2020), link
46. Joint Statement of Cooperation in Nuclear Energy
47. The Atlantic Declaration
48. Sapporo 5

cooperation on supply chains and construction, but there remains scope to expand both the number of partners and the breadth of collaboration. There is no clear rationale for limiting such agreements to fuel alone. A more comprehensive framework of allied cooperation, covering the wider range of non-fuel inputs alongside developing domestic capability, would reduce strategic vulnerability and strengthen the credibility of nuclear expansion as a pillar of national security.

Further, allied cooperation on supply is not just a matter of mitigating exposure. Rather, it is an opportunity to scale shared manufacturing capacity, harmonise standards and create repeat demand across the markets of allied states. This would help address global bottlenecks in specialised equipment while reinforcing domestic capability through predictable, fleet-based demand shared across allied programmes.

## 3B. Mature Supply Chains and Specialised Equipment

A distinct, but connected, second problem is in developing mature supply chains. Mature supply chains depend less on nationality than on predictability, characterised by repeated demand, standardised designs and the long-term pipelines which justify investment in the entire industrial chain.[49] This is precisely the certainty identified in the Industrial Strategy as essential for unlocking business investment across frontier and foundational sectors.[50] The current model of nuclear delivery does the exact opposite. Where delivery is serialised and predictable, suppliers can invest in specialised tooling, process optimisation and workforce training, which in turn reduces unit cost and delivery risk. Conversely, stop-start nuclear programmes undermine cost discipline by preventing suppliers from repaying capital investment across repeated orders, locking projects into higher-cost, bespoke procurement. The result is predictable: weaker cost discipline, reduced system resilience and a growing dependence on overseas suppliers, all of which leave the UK more vulnerable to global supply disruptions. The UK's recent nuclear experience illustrates this dynamic clearly as successive projects have had to be delivered as isolated, one-off builds, after decades of neglect, limiting learning effects and preventing the emergence of stable, repeat-order supply chains capable of enforcing cost and schedule discipline.[51]

The single most powerful lever available to government is adopting the fleet approach, which would necessitate mature supply chains.[52] A fleet approach means committing to building multiple standardised projects in sequence as a single programme, creating predictable, repeatable demand that gives suppliers the confidence to invest while strengthening supply chains. As the Industrial Strategy recognises, government must act as an anchor customer where markets alone cannot create confidence.[53] Fleet-based commitments would provide the volume certainty required to stabilise supply chains while deepening domestic capacity.[54] With a stronger supply chain, the opportunities for off-grid nuclear and exports of UK-designed and built SMRs becomes viable and investible. Government must also ensure that the wider conditions for sustained delivery are in

49. Energy and Net Zero Committee, 'Revisiting the nuclear roadmap - Oral evidence', 17 December 2025, link

50. Department for Business and Trade, 'The UK's Modern Industrial Strategy', November 2025, link

51. The Nuclear Energy Agency, 'Unlocking Reductions in the Construction Costs of Nuclear', 17 August 2020, link, and Farooq Ahmad and Shoaib Usman, 'Advanced and Small Modular Reactors' supply chain: Current status and potential for global cooperation', Progress in Nuclear Energy, vol.184, June 2025, link

52. International Energy Agency, 'The Path to a New Era for Nuclear Energy', 16 January 2025, link

53. World Nuclear Association, 'Heavy Manufacturing of Power Plants', 21 November 2025, link

54. Elisa De Ranieri, 'Nuclear power: Doesn't have to cost the earth', *Nature Energy*, vol.1, (2016), link

place. Volume certainty only delivers its full effect if it is accompanied by proper strategic planning, most notably clear sequencing and stable design choices. Treating supply-chain development as an integral part of strategic planning, rather than a downstream consequence of it, helps ensure that investment in facilities, training, and specialist capability is aligned with demand. In doing so, risk can be reduced and industrial resilience enhanced to support a sustained programme of nuclear expansion.

Nuclear expansion also requires reliable access to a narrow but critical set of highly specialised components, without which projects cannot proceed. This matters particularly for nuclear because many of the most critical inputs are produced by a very small number of global suppliers, meaning that without a sustained and predictable pipeline of orders, domestic capability will not be commercially viable. These include nuclear-grade steel and large forgings, reactor pressure vessels and other safety-critical components such as valves and pumps, in addition to advanced instrumentation and control systems.[55] There are no short-cuts to increasing production of technically specialised inputs: these inputs are inherently difficult to expand at short notice because they rely on specialised capabilities which will take years to train individuals for and bring through regulatory scrutiny. As these capabilities supply critical inputs used across multiple sectors and rely on consistent demand to stay viable across different parts of the economy, they are especially susceptible to underinvestment and exposed to global bottlenecks. In the absence of clear, long-term signals on nuclear deployment and design standardisation, suppliers have little reason to sustain or expand capacity, leaving the UK more exposed to international constraints and geopolitical pressures just as demand is set to increase.

It is clear that specific industrial capabilities and skills are inseparable, and the failure to address both acts as a mutually reinforcing constraint. The absence of the necessary equipment slows construction while eroding the skills base on which nuclear delivery depends. Expertise in this sector is built through continuous engagement with the manufacturing process and the problems that may arise during delivery. Intermittent or offshore production weakens experience and atrophies capabilities. On this basis, a supply-led nuclear skills strategy falls short, because nuclear skills training disconnected from sustained industrial activity is an abstract exercise unlikely to sustain, let alone expand the skills base. Skills policy must, therefore, be mapped onto a critical components strategy.

Such an approach aligns the Industrial Strategy's emphasis on partnership with business and place-based growth. Training provision should be tied to real delivery schedules, with employers and suppliers shaping curricula and progression pathways alongside further education providers to meet their needs. Equally important is accelerating judgement through secondments, mentoring and movement between our civil and defence nuclear sectors as well as into other complex infrastructure programmes. Ultimately, possessing the appropriate equipment underpins the ability to retain specialist skills, providing a sufficiently strong skills base for

55. World Nuclear Association, 'Heavy Manufacturing of Power Plants', 21 November 2025, link

sustained investment. Approaching these areas in isolation all too often weakens both; they need to be treated as an integrated problem with an integrated strategic plan if nuclear ambitions are to be realised.

The intertwined issue of industrial capabilities and skills must be viewed within the UK's wider nuclear skills issue. The government's recent commitment to expanding nuclear skills provision, including new doctoral places and training initiatives, are a meaningful contribution toward strengthening the specialist nuclear workforce. However, the scale of the challenge suggests that a more proactive approach across the entire skills pipeline will be necessary. Although the overall number of nuclear workers increased to 96,000 in 2024 from 83,000 in 2023,[56] the workforce is ageing, with attrition reaching around 20% among those aged 60 and over.[57] At the same time, the new-entrant pipeline remains relatively limited, with only around 1,150 recruits entering through the trainee route in 2024 – meaning much of the growth relies on experienced hires rather than genuine workforce replacement.[58] Addressing this gap cannot rely solely on England's largely demand-led skills system, where provision is shaped primarily by learners and employers.

Equally, the scale and timing of nuclear expansion require a more active, government-led approach that deliberately directs provision to create training places in priority skills aligned with industry demand to ensure that the right skills are developed in the right volumes and at the right time. The current plans remain primarily focused on high-skill academic and research pipelines and do not yet constitute a comprehensive workforce strategy aligned with the full industrial demands of a sustained nuclear construction programme. Moreover, for nuclear expansion to take place, Britain must address the wider portfolio of skills shortages beyond specialised technical skills. For example, engaging in lengthy infrastructure projects such as these will require a sustained increase in advanced and basic construction skills.

## Recommendations

1. Government should explicitly recognise industrial capacity and workforce capability as central determinants of cost, pace and resilience in nuclear delivery.
   - Supply chains and skills must be addressed as inseparable elements of a single delivery system, rather than as downstream or supporting considerations.

2. Government should treat nuclear fuel-cycle capability as a core component of national energy resilience, investing to sustain and expand domestic fuel production and fabrication.
   - This should involve supporting long-term investment at facilities such as Springfields, formalising long-term fuel supply contracts linked to the future reactor fleet and

56. Cogent Skills, 'Nuclear Workforce Assessment', March 2025, link
57. Ibid
58. Ibid

integrating fuel-cycle capability explicitly into nuclear deployment policy.

3. Reduce exposure to adversarial and fragile supply chains byrebuilding domestic capability for critical materials and components where feasible.
   - Deepening and broadening allied cooperation where domestic production is not viable
   - Do not limit efforts in either to access to nuclear material, instead seeking both materials and access to critical equipment.

4. Government should adopt a fleet approach to nuclear new build, acting as an anchor customer capable of providing predictable, repeated demand, design standardisation and long-term delivery pipelines.

5. Supply-chain development should be treated as an integral part of strategic planning, not a consequence of individual project decisions.

6. Nuclear skills policy should be explicitly mapped onto a critical components and manufacturing strategy.
   - Training provision must be tied to real delivery schedules, with employers and suppliers shaping curricula alongside education providers to ensure skills are developed in parallel with sustained industrial activity.

7. Further expand trainee and apprenticeship schemes, supporting skills transfer across civil, defence and other major infrastructure programmes and planning for wider construction and project-delivery skills alongside nuclear-specific expertise.

# 4. A Ready and Compatible Energy System

Regulatory reform and delivery capability will only translate into new nuclear capacity if the electricity system itself is ready to accommodate it. A future in which nuclear supplies a substantial and sustained share of our electricity generation requires deliberate system design, not retrospective adjustment. This means planning the energy system, grid and off-grid, and patterns of demand around nuclear as a foundational asset, alongside expanding renewables, rather than assuming it can be absorbed later. This demands anticipatory grid investment appropriate for nuclear's need for continuous, high-load operation at the point of commissioning. Without early, coordinated action to ensure system compatibility and readiness, nuclear risks being technically viable in theory but constrained in practice, undermining both delivery and value.

## 4A. The Grid

Retaining nuclear at around a quarter of the future demand for grid generated electricity brings the question of system readiness sharply into focus. If nuclear is to act as the stable backbone alongside expanding renewables, the wider electricity system must be deliberately planned to accommodate nuclear, rather than assume it can be absorbed later. Aligning demand growth, generation deployment and grid investment is, therefore, not an implementation detail but a core condition of delivery. Without early and coordinated action on system readiness, the ambitions set out in the Review and reinforced in the Budget risk proving technically and practically unattainable, regardless of progress on regulation or finance.

Grid connection uncertainty is one of the most pronounced delivery risks facing new nuclear projects. Because of the high capital expenditure involved in nuclear construction, once a nuclear plant reaches commissioning it must enter service promptly. This allows cash flows to stabilise, safety and operational assumptions to be proven, and ultimately for the financing costs to stop rising. Delays in securing a grid connection at this point carry disproportionate consequences, eroding financial viability and investor confidence.

These constraints are becoming more acute as patterns of electricity demand change. The rapid growth in demand for data centres is creating large, continuous, geographically concentrated loads that are highly sensitive to reliability and connection timelines. Equally, Government

policy has supported the creation of AI Growth Zones, yet without deliberate coordination, these developments risk being sited in locations that intensify grid congestion and exacerbate connection delays for both demand and generation. One of the solutions will be to assure off-grid PPA agreements with new nuclear power stations to data centres, in order to reduce grid stress. But this all requires coordinated planning and pace of regulatory approval. Nuclear generation, with its high availability and predictable output, is uniquely well-suited to underpin such loads. Treating nuclear supply and wider electricity-intensive and wider increased demand as separate planning problems risks recreating the same reactive, piecemeal approach that has historically driven delay and cost. Grid planning should instead explicitly account for the co-location and co-sequencing of nuclear generation with identified total demand.

Nuclear is distinct from modular or incremental forms of energy generation, such as wind or solar. Those technologies can often be deployed in phases, scaled gradually, or temporarily curtailed while awaiting network access, with relatively limited financial damage. In contrast, nuclear cannot be constructed speculatively and then mothballed at completion. Without a guaranteed grid connection, nuclear reactors are not a deferred opportunity, but a stranded, capital-intensive liability[59] in an energy landscape already littered with so-called 'zombie' projects.[60] Grid delays thus move from being a planning inconvenience to an existential threat to project viability.

Even if grid connection is established, nuclear plants may face the further problem of nuclear curtailment, resulting in many of the same outcomes. That is, the reduction or shutdown of a nuclear plant's output because of grid constraints, low demand or environmental factors. Nuclear plants, realising their value through sustained high-load operation, are severely undermined by curtailment as it wastes capital-intensive assets while increasing the average cost of the remaining output. At its core, curtailment is a failure of system design, not intrinsic to nuclear, making it avoidable. Avoiding wasteful curtailment requires anticipatory grid investment, coordinated system planning and built-in flexibility elsewhere in the system to absorb surplus generation.

This creates a strong case for prioritising nuclear explicitly within grid connection and system planning processes.[61] Generic reforms to connection queues, while necessary, are insufficient if nuclear continues to be treated as one demand among many. The role of the National Energy System Operator (NESO) and the Strategic Spatial Energy Plan (SSEP)[62] are crucial in this. NESO is the government-owned body that operates the electricity system and undertakes long-term planning for the electricity network. The SSEP is NESO's upcoming long-term, nationwide plan that identifies the optimal future locations, types and scale of electricity generation in addition to the network infrastructure required to support it. NESO has already acknowledged that grid planning must shift away from a reactive, case-by-case basis to anticipatory, system-wide coordination,[63] but in doing so, it must place nuclear front and centre.

59. Energy Security and Net Zero Committee, 'Gridlock or growth? Avoiding energy planning chaos', 7 July 2025, link
60. Jillian Ambrose, '"Zombie"' electricity projects in Britain face axe to ease quicker grid connections, The Guardian, 8/12/25, link
61. Latham & Watkins, 'Ofgem Approves Great Britain's Grid Connections Reform', 24 April 2025, link
62. Department for Energy Security and Net Zero, 'Strategic Spatial Energy Plan', October 2024, link
63. National Energy Systems Operator, 'Clearing the gridlock: connecting Britain', link

The SSEP's scope does not guarantee that nuclear will be afforded sufficient forethought. For example, it does not produce project-specific siting recommendations, nor is it a statutory planning document.[64] Thus, the SSEP must reflect nuclear's unique characteristics, particularly the need for early grid coordination and site preparation. By identifying areas in which significant nuclear capacity is expected, and aligning those with projected demand and grid capacity, the SSEP can provide the strategic context necessary to provide a predictable investment environment. Without this level of explicit integration, the SSEP could result in a largely descriptive exercise that does not address the specific delivery constraints facing nuclear projects. The secondary consequence is that the grid preparation outlined above will be de-prioritised if nuclear-specific challenges are not accounted for in the SSEP. For nuclear to succeed, the SSEP must act as more than a distant energy map. It must set out clear expectations that define how nuclear fits into the future system, how much capacity is needed, where it should go and when it should come online. Only then can downstream planning processes act on those expectations and embed them in decisions and investment.

Cumulatively, these constraints demonstrate that nuclear is only viable where physical grid capacity, connection timelines and operational conditions are secured in advance. To an extent, this is a matter of overall strategic planning (particularly the SSEP), but grid-specific considerations must be given greater thought because they translate high-level policy assumptions into physical, time-critical delivery. Without early and binding resolution of these issues, new nuclear capacity risks being delivered into a network that cannot reliably accommodate continuous, high-load generation, undermining both operational performance and financial viability at the point of commissioning.

## 4B. Nuclear as a Proportion of the Future Energy Mix

A future electricity system in which nuclear provides at least a quarter of total generation cannot be planned as a marginal variation on today's assumptions.[65] At 25%, nuclear becomes a defining feature of system design rather than a supplementary technology. Planning frameworks must account for sustained levels of nuclear energy generation, principally in how it affects the role of renewables. The challenge is not choosing between technologies, but ensuring the system is planned to accommodate both in a coherent and cost-effective way.

There is substantial complementarity between nuclear and renewables when they are deployed within an integrated plan. Nuclear provides dependable output with high availability and long operating lives, while renewables deliver low-cost energy whose output varies by location and conditions. Planning should, therefore, assume the continued expansion of renewables, but within a framework that explicitly accounts for the presence of sustained nuclear generation. Without such coordination, a renewables-led approach focused primarily on planning ease or resource availability risks clustering large volumes of variable generation in already

64. Department for Energy Security and Net Zero, 'Draft National Policy Statement for nuclear energy generation (EN-7): government response to consultation', 12 November 2025, link

65. The Department for Energy Security and Net Zero, 'National Policy Statement for nuclear energy generation (EN-7): habitats regulations assessment', 6 January 2026, link

constrained parts of the grid. This can increase congestion, drive up constraint and curtailment costs, while undermining confidence in the overall coherence of the transition.

Planning around a nuclear backbone supplying at least 25% of grid generated electricity allows for a more resilient system design. With steady nuclear output anchoring supply, reliance on gas can be reduced and some balancing pressures eased. It opens up far more room to use renewable energy in ways that truly work alongside nuclear power, including spreading projects across different locations, drawing on several types of renewable generation that produce electricity at different times and placing new capacity nearer to demand. The objective is not to slow renewable deployment, but to ensure it is located and sequenced so that it strengthens, rather than strains, the system as a whole.

Siting decisions, therefore, are central. Choices about nuclear and renewable siting alongside transmission must be taken together rather than sequentially. A renewables-led planning framework that implicitly assumes unlimited grid flexibility risks crowding out nuclear compatibility, even where nuclear remains a stated policy objective. Conversely, explicit planning for a 25% nuclear share allows network investment and renewable siting to be co-optimised, reducing the need for costly remedial action later.

Despite the differing generation profiles of different renewables, a balanced mix can reduce periods of system stress. Nuclear's steady output is particularly valuable in winter and during extended low-renewables periods, while renewables can supply large volumes of energy at other times, provided flexibility is available to absorb surplus. Planning assumptions should, therefore, focus on system value rather than headline capacity additions, recognising that excess generation without integration mechanisms ultimately raises costs. In short, planning for an electricity system with around 25% nuclear generation requires a shift from technology-by-technology optimisation toward whole-system design. Nuclear should be treated as a foundational asset, around which renewable deployment, flexible solutions, and grid investment can be coordinated. This approach should be reflected in the SSEP and across wider strategic planning.

Overall, the case is for an electricity system planned around long-standing diversity rather than technological trade-offs. With nuclear supplying at least 25% of generation, the priority is to design a system that can integrate expanding renewables alongside this stable backbone. By focusing on whole-system planning (coordinating generation, siting, grid investment and flexibility) the system can better manage different generation profiles and patterns of demand to drive down unnecessary costs in the support of a resilient, low-carbon transition in which nuclear and renewables work effectively together.

## Recommendations

1. Government should plan the future electricity system on the basis that nuclear supplies at least 25% of total generation, treating it as a defining feature of system design.
2. Nuclear projects should receive explicit prioritisation within grid connection and reinforcement planning to reflect their capital intensity, continuous operation and sensitivity to delay at commissioning.
3. Strategic planning should deliberately coordinate the siting and sequencing of new off-grid nuclear generation with large, continuous demand sources, particularly data centres and AI growth zones to reduce grid congestion, strengthen demand certainty and improve system efficiency.
4. The SSEP should explicitly account for nuclear's requirements by identifying where and when nuclear capacity is expected, aligning this with projected demand and grid reinforcement to provide a predictable investment environment.
5. Grid investment should be undertaken in advance of nuclear commissioning to guarantee timely connection and avoid curtailment, recognising that curtailment represents a failure of system design rather than an unavoidable feature of nuclear generation.
6. Decisions on nuclear, renewables and transmission infrastructure should be taken together rather than sequentially, embedding coordination into strategic planning to minimise avoidable cost, delay and system stress, and looking at the through life costs of all types of energy generations.

# Conclusion

The Government's acceptance of the NRT Review and commitments made in the Budget constitute an ambitious and highly promising initial position in reversing Britain's nuclear decline. These measures to enable nuclear expansion will, however, prove to be a pyrrhic victory if they are enacted in isolation without the accompanying range of enabling factors.

The overarching picture that emerges is not just one of absence (insufficient supply, incompatible grid or skills shortage), but of a pressing need for comprehensive and strategic alignment of sub-objectives in achieving the ambitions established by the Government. This renders strategic planning the foremost priority as all these enablers need to be realised, but they need to be aligned, structured and made to cohere into a single supportive framework for nuclear expansion and to run alongside regulatory reform. Enablers, if not working in concert, are as worthless as their outright absence. Failure to create the supportive framework in its entirety risks the UK putting several carts in front of several horses – all at different times.

The challenge now is one of execution rather than intent. The Government has set the right destination and identified the principal barrier, but success will be determined by whether it can construct a framework capable of carrying ambition through to delivery. It must provide certainty where uncertainty has prevailed and discipline where drift has become embedded. If the UK can move from reform as aspiration to reform as practice, nuclear can once again become a dependable pillar of the energy system and a credible foundation for long-term growth. If it cannot, the risk is not simply delay, but the gradual dissipation of political will and industrial capability alike. The opportunity created by the Review and the Budget is real, but it will only be realised if the enabling conditions are made to operate as a single, purposeful system.

In the coming months, the Commission will produce detailed full-length papers on each of these areas. This research note is intended to outline both the core elements that must accompany the NRT Review and the future work of the Commission as it delves into greater detail on the granular issues at the heart of creating a successful nuclear sector.

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