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December 2025

NUCLEAR REGULATORY REVIEW 2025

The Nuclear Regulatory Review 2025 (the "**Review**")[1] provides a comprehensive assessment of the UK's nuclear industry. Historically, the UK once led the world in nuclear energy. Following decades of decline and some false starts, the UK is now leading the charge in developing new nuclear projects within Europe. This is evidenced by the continued development of Hinkley Point C, the achievement of financial close for Sizewell C (both gigawatt-scale twin reactor projects), the recent announcement of a fleet of Small Modular Reactors now proposed at the Wylfa site in North Wales and the affirmation in its recent Budget of a commitment to 24 gigawatts ("**GW**") of new nuclear by 2050. But the UK Government recognises that to attract investment at the scale needed to achieve its net zero ambitions in a competitive market, more can – and indeed needs to – be done to streamline the consenting and regulatory processes and ensure proportionate safety requirements are embedded across the industry.

The Review cites a need to guard against excessive bureaucracy, fragmented regulatory responsibilities, and disproportionate safety requirements, leading to higher costs and longer project timelines. Such issues are not unique to the UK's nuclear ambitions. Many of the issues raised are equally applicable to other nationally significant infrastructure projects in the UK and can best be solved through a fundamental reshape of the UK's regulatory landscape. Key findings and recommendations from the Review are summarised below, and recommendations for policy makers in other markets looking to enter the nuclear power sector are included by the authors of this paper.

THE IMPORTANCE OF NUCLEAR IN THE UK

Nuclear energy is central to the UK's ambitions for energy security, to achieving net zero carbon emissions by 2050 and for meeting a projected doubling of electricity demand. As a reliable, low-carbon power source, nuclear complements renewables (like wind and solar) to provide a stable energy mix; nuclear power provides vital baseload capacity at scale. The sector also supports high-paying jobs and is critical for the expansion of future industries such as AI-powered data centres, expected to require **at least six GWs of electricity by 2030**.[2] A highly skilled nuclear

[1] John Fingleton, *Nuclear Regulatory Review 2025* (November 2025), available at: https://assets.publishing.service.gov.uk/media/692080f75c394e481336ab89/nuclear-regulatory-review-2025.pdf accessed on 8 December 2025.

[2] ibid ch 2, pp 16.

sector is also essential for the UK's defence capability and its AUKUS partnership with Australia and the USA.

Currently, nine civil nuclear reactors[3] supply about 15% of the UK's electricity,[4] down from a peak in the late 1990s of about 25%. With all but one reactor scheduled to retire by 2030, new projects (like Hinkley Point C and Sizewell C), and the rollout of small modular reactors (starting at Wylfa), are essential to meeting the UK's future electricity needs.

A SYSTEMIC REGULATORY FAILURE

Despite these priorities, the nuclear sector, like all major infrastructure, is subject to a complex regulatory framework. A single project may face oversight from up to six different regulators[5] (including in the nuclear context, the Office for Nuclear Regulation ("**ONR**"), Defence Nuclear Safety Regulator ("**DNSR**"), and the Environment Agency ("**EA**")), each with its own statutory duties, its own procedures, and no single designated lead. This results in misalignment, inconsistency and delay. In response, the Review recommends a "one-stop shop" regulatory model, beginning by merging some regulatory functions (for example, the DNSR with the ONR). As an interim step, the ONR should act as a default lead regulator for significant projects, with the ultimate goal of establishing a single Commission for Nuclear Regulation as the final arbiter on all major regulatory decisions.[6]

The Review highlights the UK's "goal-based" ALARP approach to nuclear safety, which requires risks to be reduced "as low as reasonably practicable". This is similar to the US ALARA ("as low as reasonably achievable") and the principle of SFAIRP ("so far as is reasonably practicable") used more broadly in health & safety law. The Review argues that the application of this principle in the nuclear context has led to a maximalist risk reduction approach, leading to industry being so risk-averse that there is often little corresponding safety benefit. The focus has shifted towards driving risks "as low as possible", with less attention paid to the "reasonably practicable" aspect of the principle. For example, the risk targets for radiation exposure are set **over 100 times lower** than the level of radiation most people naturally receive each year, which reflects a level lower than that adopted by many other countries.[7] The Review recommends that the government should define what level of risk is genuinely tolerable and proportionate, aligning UK standards with accepted international standards.[8] It remains to be seen however whether the British public will accept a reduced standard to that enjoyed over many decades and which has to date seen the UK recognised as the gold standard in "goal-based" nuclear safety that is the envy of many nations embarking on their civil nuclear journey.

This risk-aversion extends into environmental regulation, often the bane of many developers of large-scale European infrastructure. Whilst environmental protection is increasingly important in the UK, the current approach often leads to disproportionate costs for uncertain benefit. For example, **£100 million was spent on a tunnel to protect just 300 bats, and Hinkley Point C spent £700 million on fish protection measures. In contrast, a £100,000 river project reopened 160km of salmon habitat**, illustrating how resources could be better spent in delivering appropriate environmental impact mitigation.[9] The Review recommends allowing developers to make a substantial up-front payment to a new nature fund (to be distributed to organisations engaged in nature conservation and restoration), as an alternative to years of expensive site-specific studies.[10]

Environmental and planning regulations are also often slow and duplicative. Developers face lengthy permitting processes, often delayed further by reluctance to challenge regulators or steel manning the approach to mitigate against potential Judicial Reviews and follow-on appeals processes, despite the consultation processes being designed to front load objections and enable the developer to deliver mitigations. The planning process for Nationally Significant Infrastructure Projects ("**NSIPs**") can take four or five years, with each project treated novelly – even for standard designs. Some applications have generated more

[3] Twin Advanced Gas Cooled reactors at each of Torness, Heysham 1, Heysham 2 and Hartlepool and a single Pressurised Water Reactor at Sizewell B.
[4] ibid ch 2, pp 15.
[5] ibid Introduction, pp 6.
[6] ibid Introduction, pp 6-7; ch 5, pp 39-47; ch 12, pp 140-142.
[7] ibid ch 6, pp 51-56, esp paras 215-219.
[8] ibid ch 6, rec 6, pp 57; see also rec 7, pp 59.
[9] ibid ch 7, pp 67-68.
[10] ibid ch 7, pp 71.

than **90,000 pages**[11] **– so lengthy that it would take an average planning officer over a year to read!** The Review calls for a "fleet approach" to standardise designs and processes across multiple projects, reducing the need for repeated regulatory scrutiny and paperwork.[12] Certainly, this is an approach already deployed successfully by the ONR with its Generic Design Assessment process, which gives regulatory approval for a technology's technical design, leaving site specific factors to be determined through the nuclear site licencing process and short-circuiting this review.

The UK nuclear sector faces a substantial skills gap, with **around 40,000 new workers needed over the next five years** to deliver future programmes.[13] The shortage of skilled professionals with the experience required to navigate such a technical field contributes to risk-averse decision-making and slower regulatory processes. As a result, the sector increasingly relies on outsourced technical work. The Review advocates investing in both technical and non-technical skills, encouraging secondments between industry and regulators, and embracing digital tools and AI to improve delivery.[14]

The UK's approach to regulation means it often fails to benefit from international standardisation. Historically, UK regulators have rarely accepted international regulatory approvals, even for proven designs. For example, Hinkley Point C, which uses the European Pressurised Reactor (EPR) design already licensed and operating in France, had to undergo costly and time-consuming modifications to meet UK requirements, resulting in 7,000 design changes.[15] The Review suggests, in line with the UK's "goal-based" regulatory approach, allowing dutyholders to rely on accepted standards from reputable jurisdictions to reduce costs and accelerate deployment.[16] As long ago as March 2024, the UK's ONR, the US Nuclear Regulatory Commission and the Canadian Nuclear Safety Commission signed a trilateral memorandum of cooperation on the assessment of Small Modular Reactor (SMR) and Advanced Modular Reactor (AMR) designs to enable both good practice and experience of reviewing SMR/AMR designs to be shared between regulators.[17]

CONCLUSION

The Review concludes that the UK's regulatory system is **too complex, too cautious, and too slow**. Without a radical reset of its regulatory landscape, the UK will struggle to deliver the safe, timely, and cost-effective nuclear programmes needed for its national security, energy security, and net zero targets. The Review's recommendations aim to simplify regulation, focus on real risks, and restore the UK's position as a nuclear leader. In its recent Budget, the UK Government committed to presenting a full implementation plan within three months, taking account of our international obligations, national security considerations, and planning, environmental and court processes.[18]

RECOMMENDATIONS FOR OTHER MARKETS

The risks posed by the civil nuclear energy sector are real and it would be remiss of any policy makers in other countries not to proceed with caution. The recommendations in the Review primarily concern large GW-scale reactors, rather than SMRs – which are increasingly gaining traction in many countries. That said, the Review also makes the following additional recommendations for UK policy makers, many of which may have broader relevant for other countries::

1. Appoint one lead regulator as opposed to a myriad of regulators whose remit crosses with each other. This will ensure greater focus and efficiencies.[19]

2. Research and define what level of risk is genuinely tolerable and proportionate to the

[11] ibid ch 8, pp 92.
[12] ibid ch 8, rec 32, pp 98-99.
[13] ibid ch 9, pp 111.
[14] ibid ch 5, pp 40; ch 9, pp 114-115.
[15] Office for Nuclear Regulation, *ONR's Regulatory Influence on the EPR Design in the UK* (2023), available at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.onr.org.uk%2Fmedia%2Fqr2ifif4%2Fonrs-regulatory-influence-on-the-epr-design-in-the-uk.docx&wdOrigin=BROWSELINK accessed 8 December 2025, Executive Summary pp 1; ch 1, pp 4.
[16] John Fingleton, *Nuclear Regulatory Review 2025* (November 2025) ch 10, pp 119-125; see also case study – HPC Analogue Secondary System, pp 121.
[17] Office for Nuclear Regulation, *ONR signs Memorandum of Cooperation with NRC and CNSC* (13 March 2024), available at: https://www.onr.org.uk/news/all-news/2024/03/onr-signs-memorandum-of-cooperation-with-nrc-and-cnsc accessed 11 December 2025.
[18] HM Treasury, *Budget 2025* (6 March 2025), available at: https://www.gov.uk/government/publications/budget-2025-document/budget-2025-html accessed 11 December 2025.
[19] ibid ch 13, recs 2-4, pp 145.

state that are also aligned with accepted international standards and International Atomic Energy Agency ("**IAEA**") guidance. Policy makers need to consider not only the welfare and wellbeing of their residents, but also those in neighbouring states under their international treaty obligations.[20]

3. Environmental protections should be proportionate and should not dominate the overall regulatory process or decision-making for nuclear projects.[21]

4. Reduce the need for repeated regulatory scrutiny and paperwork by utilising standardised designs, whether utility scale or SMRs. This will help reduce regulatory delays and enhance efficiencies across multiple projects, which is particularly important with the intended deployment of fleets of SMRs in certain states in order to realise economies of scale.[22]

5. Review and embrace international standards so as to reduce regulatory and design scrutiny. To that end, also engage with global experts such as IAEA and the International Energy Agency ("**IEA**").[23]

6. Invest in a skilled workforce early. Incentivise training in the sector as well as the ability to attract a skilled workforce, which can itself then become an exportable commodity.[24]

7. The clearer and more predictable the regulatory environment, the more discernible the economics, which can then be expected to lead to foreign investment, thus relieving the state from carrying most of the financial burden.[25]

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[20] ibid ch 6, rec 6, pp 57; see also rec 7, pp 59.
[21] ibid ch 7, recs 11–12, pp 66–70.
[22] ibid ch 8, rec 32, pp 98.
[23] ibid ch 10, rec 42, pp 126.
[24] ibid ch 9, recs 39–40, pp 113–116.
[25] ibid ch 13, pp 144.