ICE Next Steps Programme: What are the pinch points to delivering on the UK's infrastructure ambitions?

September 2025

The UK government has now published its 10-year infrastructure strategy alongside a new industrial strategy, an online infrastructure pipeline tool and the outcome of its multi-year spending review. Together, they set out ambitious plans for infrastructure investment to be a driver of economic growth, regional rebalancing and the net zero transition.

They also mark a shift from a planning phase to a delivery one – but how successful the next phase will be will depend on the capacity of the infrastructure ecosystem to respond to the government's vision. Recent global events have exposed vulnerabilities in supply chains. Rising construction costs and skills shortages have raised questions about the affordability and deliverability of major projects around the world.

Against this backdrop, the Institution of Civil Engineers is launching this Next Steps Programme to explore the structural and operational barriers – pinch points – that could constrain infrastructure delivery and the UK government's ability to achieve its long-term objectives.

The ICE supports the government's ambitions and direction of travel for infrastructure. The aim of the programme is to identify where systemic challenges exist in the UK and the policy options that could help mitigate them and support more efficient infrastructure delivery. Many of these challenges are not unique to the UK, and this work will aim to highlight what the UK can learn from how other governments have approached them.

This initial briefing paper explores some of the potential pinch points. It is based on a literature review as well as insight from experts gathered through interviews and roundtables. The ICE is seeking views on the areas highlighted and particularly responses to the following questions:

1. How can the resilience of UK infrastructure supply chains be improved?
2. How can the UK's reliance on imported construction materials be reduced while supporting sustainability goals?
3. How can the UK develop (a) a sustainable pipeline of skilled labour and (b) the leadership talent pool required to deliver future infrastructure?
4. What else does the government need to do to attract private finance now the 10-year infrastructure strategy and pipeline are in place?
    - 4.1 What mechanisms could improve access to long-term, affordable finance for infrastructure projects across all regions?
5. How can planning, consenting and regulatory reform be streamlined without compromising public trust and wider environmental, safety and other concerns?
6. How effective will the Modern Industrial Strategy be at addressing these pinch points and improving infrastructure delivery?

Responses to these questions will form the basis of a final policy paper to be published later this year. To share your views, please contact policy@ice.org.uk by **Friday 24 October 2025**.

17 September: Initial briefing paper launch and consultation opens

- Contact policy@ice.org. uk to share your views
- 24 October: consultation closes

15 October: Next Steps panel debate on pinch points to delivering the UK's infrastructure ambitions

- Sign up here

Autumn 2025: Final briefing paper launched with recommendations

The government's ambition

The UK government's key objectives as set out in its 10-year infrastructure strategy include:[1]

- Delivering a clean power system by 2030, including reaching 43–50 GW of offshore wind, 27–29 GW of onshore wind and 45–47 GW of solar projects by 2030.
- Progressing several major transport projects, including High Speed 2 (HS2), East West Rail, the Lower Thames Crossing and a new Northern Powerhouse Rail programme.
- Quadrupling investment in new water infrastructure over the next five years, including developing nine new reservoirs.

For the first time, the strategy combines economic and social infrastructure. The government has promised to build 1.5 million new homes in England during this Parliament, a 50% increase on the past five years. Other plans include delivering rebuilding projects at over 500 schools and 35 hospitals in England, and three new prisons. These objectives also sit alongside the government's commitment to raise defence spending to 2.6% of GDP by 2027.

To help deliver those ambitions, the government's Modern Industrial Strategy emphasises supply chain resilience, labour market reform and access to finance.[2] In addition, reform of HM Treasury's (HMT) Green Book reflects a growing recognition of the need for systemic change in how infrastructure decisions are made.[3]

Demand risks

This vision will mark a 'huge rapid uplift' in capital investment across multiple sectors at a scale unseen in the UK for almost 75 years. Delivering it is further complicated by several more factors, identified by Boston Consulting Group (BCG):[4]

- Growing competition for skills and resources at three levels: internationally between the UK and other markets, domestically between sectors that use the same supply chains, and within projects where different parts may compete for resources.

- Significant overlaps of large projects in some regions: the East of England, London and northern Scotland will see significant capital investment due to Sizewell C, HS2 and offshore wind respectively. Regional hotspots can boost local employment and economies, but can also fuel inflation if poorly handled. Other risks include the ability to source skills and to transport significant raw materials and large components in often remote locations.

- Many of the projects in the pipeline are complex and/or novel: this may be for technical, regulatory, political or economic reasons. For example, almost all new infrastructure will have significant digital elements and demands for AI integration.

[1] HM Treasury (2025) UK Infrastructure: A 10 Year Strategy
[2] Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[3] HM Treasury (2025) Green Book Review 2025: Findings and Actions
[4] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?

Scale also adds complexity. Since 2010, 80% of projects have been smaller than £250 million but for the next five years that is expected to drop to 64%.

Will this time be different?

While the scale of ambition makes this period exceptional, the likely barriers to delivering the current government's plans are not new but have been previously identified under past administrations, notably in the 1994 Latham Report on the UK construction industry,[5] but also in numerous major project reviews, Select Committee inquiries and other sector reports dating back decades.

In 2010, for example, a review by HMT and Infrastructure UK, which the ICE supported, published in the wake of the then-government's National Infrastructure Plan, identified stop-start investment, the lack of clarity and direction from governments, over-specification and unnecessary standards, lack of targeted investment in key skills and capability, and fragmentation of the construction industry as key systemic drivers of poor delivery.[6]

Recent decades have been marked by uncertainty and inconsistency in project pipelines, investment cycles and the direction of policy, which has degraded the UK's delivery capability. On skills, for example, research by the Institute for Government in 2022 found 30 different UK government policies or programmes relating to skills introduced since 1978.[7]

That the issues set out in this paper so closely echo problems raised in the past poses the question of why governments and industry have not learned those lessons, and whether and why this time will be different.

Supply chain resilience

The underinvestment in capacity-building means that, as things stand, the UK's supply chains cannot deliver on the government's ambition. A mismatch between demand and supply risks more bottlenecks, inflation and delays.

Signs of this mismatch were evident on HS2, where the recent independent report led by James Stewart noted that the huge main works contracts encompassed 'nearly the whole of the UK supply chain'. This effectively maxed out capacity and left little room for manoeuvre when costs escalated or schedules overran. The report's recommendations include ensuring that future projects have more regard for the capacity and capability of the supply chain when structuring contracts and deciding work packages.[8] Similarly, BCG has noted the need for 'a more strategic approach to sequencing and prioritisation rather than purely allowing that to take place through scarcity, as happens now'.[9]

Domestic construction capacity

The UK is an outlier among international comparators in having a highly fragmented construction sector made up of a large number of smaller firms and relatively few large firms. Several Tier 1 suppliers have collapsed recently, notably Carillion in 2018 and ISG last year, but well before those failures, the ICE warned in 2008 that there were relatively few UK companies big enough to lead on major UK infrastructure projects, contributing to construction inflation.[10] In 2010, HMT and Infrastructure UK noted the UK construction market was the smallest of the big five European countries, a symptom of sustained uncertainty and the cyclical nature of infrastructure investment over several decades.[11] Low returns and high risk have deterred new entrants.

[5] Sir Michael Latham (1994) Constructing the Team
[6] HMT and Infrastructure UK (2010) Infrastructure Cost Review: Main Report
[7] Institute for Government (2022) Churn in 'Levelling Up' Policies in the UK
[8] James Stewart (2025) Stewart Review – Major Transport Projects Governance and Assurance Review: The HS2 Experience
[9] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[10] ICE (2008) State of the Nation – Capacity and Skills
[11] HMT and Infrastructure UK (2010) Infrastructure Cost Review: Main Report

There is a tendency in the UK to rely on subcontracting to deliver large projects, which requires significant time and investment to manage and can introduce inefficiencies that impact productivity, costs and delivery times. It also reduces the incentives for larger firms to invest in capital or technology improvements, or maintain their own permanent workforces.[12]

The scale of planned work could be an opportunity to restore some of the strength of the domestic contracting sector in the UK. For example, BCG says more consideration needs to be given to looking at how to involve more SMEs in public procurement or whether the contracting requirements can be met by SMEs. However, it also suggests that the small number of Tier 1 contractors currently in the UK means public bodies should seek to strengthen their bargaining power by contracting further afield, in turn bringing in new expertise and capacity to the industry in the UK.[13]

Domestic manufacturing and global supply chains

Among G7 economies, the UK has seen the steepest decline in manufacturing as a share of economic output since the 1970s, according to the Institute for Public Policy Research (IPPR). A particular concern is the 'dramatic and exceptional' decline in the diversity of its manufacturing strengths. However, Britain still has the eighth-largest manufacturing sector in the world in value-added terms. In infrastructure terms, analysis by the IPPR suggests the UK already has comparative advantage in one in three 'green products' vital to the net zero transition, including equipment needed to control and analyse activity in the electricity grid, heat pump components and turbines used for geothermal or hydroelectric energy generation.[14]

However, the UK still needs to build new strengths in green products as global manufacturing capacity, while rapidly expanding, is still well below the level required. Scarcity of components is already pushing up lead times and prices in the electricity grid space.[15] The International Energy Agency has forecast a global shortfall in productive capacity of wind turbine and heat pump manufacturing products of 64%.[16] The resilience of global supply chains is subject to other disruptions to trade, such as protectionist moves like the recent tariffs imposed by the US government.

The government's industrial strategy sets out plans to boost domestic manufacturing in advanced and green technologies, such as by reducing the cost of electricity or supporting companies to adopt new technologies.[17] Where this is not possible, 'friendshoring' can add resilience by rerouting supply chains to regions with lower geopolitical or economic risk.[18]

Critical minerals

Raw materials like lithium, graphite, cobalt, copper and many other minerals will also be needed in large quantities for the net zero transition. Some, such as bauxite, are common requirements across several sectors. Again, scarcity is already a problem, and in some cases global cumulative demand is expected to significantly outstrip cumulative supply up to 2030. However, the UK lacks extensive reserves of critical minerals and is lagging behind in the global race for supplies. It has a Critical Minerals Intelligence Centre (CMIC), but the existing critical minerals strategy has been called 'too broad to be helpful' and 'little more than a framework'.[19] The current government has promised to refresh it.

One sign of progress is the funding secured for a lithium mining project in Cornwall, with support from the UK Infrastructure Bank (now the National Wealth Fund), which will be the first critical minerals mining facility in the UK.[20] The National Engineering

[12] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK; BCG (2024) Reshaping British Infrastructure: Global Lessons to Improve Project Delivery
[13] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[14] IPPR (2024) Manufacturing Matters: The Cornerstone of a Competitive Green Economy
[15] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[16] IPPR (2024) Manufacturing Matters: The Cornerstone of a Competitive Green Economy
[17] Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[18] Policy Exchange (2025) Robustly Resilient
[19] IPPR (2024) Manufacturing Matters: The Cornerstone of a Competitive Green Economy; Foreign Affairs Select Committee (2023) A Rock and a Hard Place: Building Critical Mineral Resilience
[20] National Wealth Fund (2023) Bank Invests to Strengthen Domestic Lithium Supply Chain and Boost Cornish Economy

Policy Centre (NEPC) has also set out recommendations for reducing the UK's dependence on critical minerals through demand-side interventions, including better planning and design practices and applying the principles of a circular economy.[21]

Data gaps

Supply chain resilience also depends on the quality of data and digital tools available. The UK has a 'world-leading' Global Supply Chains Intelligence Programme (GSCIP) to help identify and manage risks.[22] However, concerns have been raised about limited data on the stocks and flows of critical materials and the current product and sector classifications. This makes it difficult to identify production activities being used for net zero supply chains and spot growth opportunities that could be leveraged for green manufacturing.[23]

The government has announced a new Supply Chain Centre to complement the work of the CMIC. Its role will be to review inputs, consider the impact of future trends on demand and determine future actions. This data will also be used by the government to review priorities for public financial institutions.[24]

Logistics

The government's infrastructure ambitions will also place strains on the UK's logistics capacity. For example, the offshore wind farms required to achieve the Clean Power 2030 mission will use larger turbines, be situated in deeper waters, require bigger structures and be located further from the coastline – all of which necessitate a significant increase in port capacity, installation vessels and associated infrastructure.[25]

However, underinvestment has left the UK's logistics network 'ill-equipped' to handle new demands like increasing freight volumes, according to Logistics UK. It says the UK needs a long-term freight and logistics strategy focused on improving key connections and the resilience of the network. Its recommendations include strengthening transport links with the UK's international gateways and producing infrastructure recommendations at a corridors and system level, rather than by transport mode.[26]

- **Question 1:** How can the resilience of UK infrastructure supply chains be improved?
- **Question 2:** How can the UK's reliance on imported construction materials be reduced while supporting sustainability goals?

Workforce capability

The UK's infrastructure workforce has struggled with poor productivity – in the construction sector, productivity has broadly flatlined over the last 15 years – and a skills system failing to meet the requirements for a modern workforce.[27] The government's ambition requires both a huge uptake in numbers and developing the expertise to deliver projects that may be particularly complex, novel or, as in the case of reservoirs, have not been delivered at scale in the UK for decades.

[21] NEPC (2024) Critical Materials: Demand-Side Resource Efficiency Measures for Sustainability and Resilience
[22] Tony Blair Institute for Global Change (2025) Making UK Industrial Strategy Work: A Hard-Headed Approach Guided by Green Industry
[23] NEPC (2024) Critical Materials: Demand-Side Resource Efficiency Measures for Sustainability and Resilience; IPPR (2024) Manufacturing Matters: The Cornerstone of a Competitive Green Economy
[24] Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[25] Arup (2024) Unlocking Investment in the UK's Offshore Wind Supply Chain
[26] Logistics UK (2024) The UK Logistics Network
[27] Department for Business and Trade (2025) The UK's Modern Industrial Strategy; National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK

i. The workforce

According to Department for Education data, there were 5,900 skills shortage vacancies in civil engineering in 2024, an 84% rise since 2022.[28] For other sectors involved in infrastructure delivery, the expected skills shortfalls include the following:

- The Construction Industry Training Board estimates the number of additional construction workers needed between 2025 and 2029 is 47,860 per year. This means the industry needs to recruit the equivalent of 239,300 extra workers over the next five years to cover people retiring or otherwise leaving the workforce and meet the expected growth in demand.[29]
- According to data from the Department for Education, of the top 15 job vacancies which are most difficult to fill due to skills shortages, four are in construction, more than any other single sector.[30]
- There are also shortages of professional services at the design and planning stages, where projects often require specific expertise (e.g. commissioning engineers).[31]
- According to MakeUK, there are currently 55,000 unfilled long-term vacancies in the UK manufacturing sector, which is costing the economy £6 billion in lost output each year.[32]

Common challenges across sectors and professions include higher levels of occupational-related ill health, ageing workforces and more early retirements, and stop-start investment making it harder to attract, retain and train talent. In the water sector, 23% of water engineers are expected to retire in the next five years, a significant loss of capacity and knowledge.[33] The construction workforce reduced by 14% in the four years up to 2024, as long-term retention challenges were exacerbated by the impact of the Covid-19 pandemic.[34]

It is not all bad news. For example, the UK still has significant technical expertise capacity, with the second-largest engineering-consulting workforce in Europe.[35] AI has the potential to enable a 'major leap' in construction performance but also carries risks and uncertainties and will require new specialist training and expertise.[36]

As with other potential pinch points, the availability and sharing of granular skills data is a problem which has been identified as a priority by Skills England.[37] The government collects broad information on employee skills but struggles to obtain detailed, consistent insights from employers to identify skills gaps and manage workforce deployment. Many priority sectors have skills overlaps, so they will be competing for the same skills, creating the risk that one programme or objective, such as the clean energy mission, cannibalises the workforce in other priority sectors.[38]

Restrictions on immigration, such as minimum wage requirements, as well as international competition for workers, constrain companies' ability to recruit from abroad. This currently applies to both non-specialist roles with high shortfalls and some specialist skills, like lineworkers needed to upgrade the electricity grid, which cannot be trained domestically in the numbers and to the level needed in the time available.[39]

[28] Department for Education (2025) Employer Skills Survey
[29] CITB (2025) Construction Workforce Outlook
[30] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[31] Ibid.
[32] MakeUK (2025) Skills for Success: The Reforms Essential to Our Economic Future
[33] Independent Water Commission (2025) Final Report
[34] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[35] Tony Blair Institute for Global Change (2025) Making UK Industrial Strategy Work: A Hard-Headed Approach Guided by Green Industry
[36] CECA (2025) Artificial Intelligence in UK Construction
[37] Imperial College London (2024) Written Evidence to the Energy Security and Net Zero Committee; Higher Education Policy Institute (2025) When Skills England Calls, Will Anybody Answer the Phone?
[38] Mott MacDonald (2025) Written Evidence to the Energy Security and Net Zero Committee
[39] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?

ii. Education and training

Too few new entrants, the type of training being offered, and barriers to reskilling or crossing sectors have added to the UK's workforce challenges and cast doubt on its ability to meet future demand for workers to plan and deliver infrastructure projects.

Only 9% of secondary vocational learners are studying in the engineering, manufacturing or construction sectors, compared to the OECD average of 32%.[40] The UK also produces a 'relatively large number of workers with poor basic skills' like literacy and numeracy.[41] Employers want the education system to equip future engineers with a broader range of skills, both technical (digital and data literacy alongside core engineering disciplines) and non-technical (such as resilience, adaptability and commercial awareness).[42]

There have been some successful training initiatives in the UK that the government and industry can learn from, such as the Crossrail Tunnel Academy, which trained over 15,000 people. However, good training is costly and relies on strong industry engagement. Government investment in skills has fallen by £1 billion since 2010, while employer-provided training has also declined.[43] Teachers are in short supply at all levels.[44] In post-16 education in England, staff recruitment and retention are particularly difficult in technical subject areas such as construction, engineering and digital. One factor is the widening gap between what skilled teachers could earn in industry and in schools.[45]

The government hopes the 10-year infrastructure strategy and pipeline will incentivise firms to invest more in recruitment and training. The Modern Industrial Strategy includes an engineering package through which the government will invest over £100 million over three years to support skills in England, on top of the £600 million construction skills package to train up to 60,000 more skilled construction workers over the next four years. The government has also launched a Construction Skills Mission Board with a commitment to recruit 100,000 more construction workers per year by the end of the current Parliament.

The Association of Colleges (AoC) also argues that the English skills system has been too centralised and market-led, which is ill-suited for delivering the government's missions. The government has set up Skills England, with the Department for Education as the policy lead, but there is concern it may lack the independence required to drive coherence across government and coordinate with other relevant departments, like HMT and the Home Office.[46] The AoC and others also see opportunities through devolution, empowering devolved bodies through a national vision and strategy for technical education that leaves room for regional differentiation and local 'actionable' skills plans.[47]

Reskilling

The decline in training support has also made it harder to reskill people already in the workforce or looking to change careers, with fewer opportunities and lower participation in adult education in the UK.[48] The Civil Engineering Contractors Association (CECA) has called for more common standards and mutual recognition of training to help minimise barriers to workers moving between employers and projects, and the government has tasked Skills England with engaging with industry on passporting.[49] Some countries, including Australia, are asking whether long-standing training processes and requirements for entry into the

[40] Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[41] Productivity Institute (2025) Joining Up Pro-Productivity
[42] NEPC (2024) Engineers 2030: Vision and Principles Consultation Report
[43] MakeUK (2025) Skills for Success: The Reforms Essential to Our Economic Future; Productivity Institute (2025) Joining Up Pro-Productivity; Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[44] NEPC (2025) Engineers 2030: Nations and Regions
[45] Association of Colleges (2025) Written Evidence to the Energy Security and Net Zero Committee; Association of Colleges (2025) Devolution in England: A new Skills System
[46] Association of Colleges (2025) Devolution in England: A New Skills System
[47] Association of Colleges (2025) Devolution in England: A New Skills System; Productivity Institute (2025) Joining Up Pro-Productivity
[48] Productivity Institute (2025) Joining Up Pro-Productivity; Department for Business and Trade (2025) The UK's Modern Industrial Strategy
[49] CECA (2025) Written Evidence to the Energy Security and Net Zero Committee; Department for Business and Trade (2025) The UK's Modern Industrial Strategy

workforce (including recognition of prior training) are too restrictive to meet the requirements for a skilled and flexible workforce, and whether and how they could be sped up to boost entry levels.[50]

There are some existing examples in the UK, such as Offshore Energies UK and RenewableUK's energy skills passport platform and the Engineering Construction Industry Training Board, Global Wind Organisation and Offshore Renewable Energy Catapult's cross-skilling programme to support worker transferability between oil and gas and wind operations and maintenance.[51] Globally, Sweden's job security councils have been highlighted for how they provide structured reskilling and transition support.[52]

Engagement

Ensuring all the planned future trainees have jobs depends on the wider economic environment and whether the government achieves its growth and investment targets. Otherwise, there is a risk that overambition disenfranchises people further. People need clear pathways from STEM subjects in schools into training and jobs. The NEPC argues that apprenticeships and T-levels remain underpromoted compared to university routes, potentially overshadowing alternative pathways that offer hands-on experience.[53] The Centres of Excellence at Hinkley Point C are a potential model to learn from, having surpassed their target of hiring 1,000 apprentices ahead of schedule through close cooperation with Bridgwater & Taunton College.[54]

Clear pathways are part of the solution, but engineering and jobs in infrastructure need to be positioned in a way that attracts more people towards the sector. In polling by Engineering UK in 2021, only 55% of young people said they knew what engineers do.[55] Engineering is typically introduced to students only at the stage of formal career education. The ICE's schools' engagement programme includes STEM ambassadors and the CityZen competitions, while the annual 'Big Bang' competition is run by Engineering UK for science and engineering students.[56] More sustained campaigns may help transform how job roles in infrastructure are portrayed and how the outcomes are recognised in the media and wider society. For example, the linkage between clean energy and sustainability, and the skills needed to achieve it, could be made clearer in the minds of young people.[57]

It is not just a question of building awareness, but also addressing some of the barriers to entry for people from under-represented groups. Women, people from minority ethnic groups and people from lower socio-economic backgrounds are significantly under-represented in the engineering and technology workforce in the UK.[58] There is an opportunity to help close the skills gap by opening up engineering to a more diverse talent pool. But the government and employers need to understand and address some of the barriers deterring potential entrants, potentially learning from international approaches such as New Zealand's Construction and Infrastructure Workforce Development Council's (Waihanga Ara Rau) programme to boost the level of Māori talent in the workforce.[59]

iii. Leadership

Another workforce challenge is ensuring the UK has the leaders capable of overseeing the delivery of such an ambitious and increasingly complex national infrastructure programme. In 2021, the Infrastructure and Projects Authority warned of the need to plan for the shift from infrastructure delivery that is 'primarily led by traditionally trained engineers' to 'a future of complex, technology-driven project environments [which] will require a broader range of more adaptable leaders'.[60]

[50] ICE (2025) ICE Presidential Roundtable: What Does Effective Workforce Planning for Infrastructure Look Like?
[51] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[52] Imperial College London (2025) Written Evidence to the Energy Security and Net Zero Committee
[53] NEPC (2025) Engineers 2030: Nations and Regions
[54] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?
[55] IET (2022) Engineering Kids' Futures
[56] ICE ICE CityZen Competitions; ICE (2025) ICE Presidential Roundtable: What Does Effective Workforce Planning for Infrastructure Look Like?
[57] Mott MacDonald (2025) Written Evidence to the Energy Security and Net Zero Committee
[58] Engineering UK (2025) Key Stats Infographic
[59] Waihanga Ara Rau Supporting Māori Talent in Construction and Infrastructure – Resources for Employers
[60] Infrastructure and Projects Authority (2021) Transforming Infrastructure Performance: Roadmap to 2030

The leadership challenge is not unique to the UK.[61] However, the problem seems particularly acute on UK projects. The Public Accounts Committee (PAC) has repeatedly warned that the calibre and number of leaders involved in major projects is 'not strong enough'.[62] Reviews of major project delivery frequently point to leadership failings as a key factor in projects going over budget or over time. Examples include Crossrail Ltd's failure to identify the need to start operational and systems integration planning early enough, in part because the leadership was poorly constituted and failed to adapt as the project progressed.[63]

In his review of HS2, James Stewart highlighted HS2 Ltd's struggles to recruit enough people with enough skills and experience, 'particularly at a leadership level', because the UK talent pool is too small. He called for 'more depth, especially within the commercial and delivery functions' to be developed.[64] In the Civil Service, the PAC has pointed to Senior Responsible Owners (SROs) typically managing four or five different projects, thus being unable to manage them effectively. It argues that the lack of leadership skills puts government departments in a weak position because they cannot act as 'an intelligent client'.[65] The Built Environment Committee has also criticised leadership failings at ministerial level, including a lack of 'accountability for and ownership of the process for deciding and delivering major infrastructure projects'.[66]

Leaders able to identify and address problems early are key to limiting the consequences on delivery. This requires them to build a culture which allows for 'critical friends' and for bad news to be shared in an open and transparent way.[67] HS2 and Crossrail both suffered from over-optimism, particularly about costs, which proved damaging to delivery performance.[68] Good-news cultures often mean decisions are not made and disagreements between stakeholders are not resolved. The National Audit Office (NAO) also highlights communication and influencing skills, the ability to champion, advocate and challenge constructively, and to foster transparency and honesty as vital skills for infrastructure leaders to have.[69]

While more people have gained accreditation via the government's major project leadership academy in recent years, the PAC has warned that there is still a long way to go, particularly in developing enough skilled professionals in senior positions. Public sector pay rules also constrain recruitment. Stewart warns the government 'cannot rely on a sense of "public duty" or secondments', with the best people having a choice of where to go, including the private sector or abroad, where salaries may be higher than UK-based projects can afford. Stewart's recommendations include tasking the National Infrastructure and Service Transformation Authority (NISTA) with leading an initiative to build leadership in infrastructure delivery in the UK, including developing an Infrastructure Capability Plan which covers leadership and all other levels of expertise, to develop future talent.[70]

- **Question 3:** How can the UK develop (a) a sustainable pipeline of skilled labour and (b) the leadership talent pool required to deliver future infrastructure?

Financing

The 10-year infrastructure strategy is backed by at least £725 billion of government funding for infrastructure over the next decade. Delivering it will also require significant increases in private investment. In 2023, the National Infrastructure Commission

[61] McKinsey (2017) The Art of Project Leadership: Delivering the World's Largest Projects
[62] Public Accounts Committee (2021) Lessons from Major Projects and Programmes; Public Accounts Committee (2024) Delivering Value from Government Investment in Major Projects
[63] NAO (2025) Lessons Learned: Governance and Decision-making on Mega-projects
[64] James Stewart (2025) Stewart Review – Major Transport Projects Governance and Assurance Review: The HS2 Experience
[65] Public Accounts Committee (2024) Delivering Value from Government Investment in Major Projects
[66] Built Environment Committee (2023) Infrastructure Policy Making and Implementation in Government
[67] The Infrastructure Forum (2020) Infrastructure Governance
[68] James Stewart (2025) Stewart Review – Major Transport Projects Governance and Assurance Review: The HS2 Experience; Public Accounts Committee (2019) Completing Crossrail
[69] NAO (2025) Lessons learned: Governance and decision-making on mega-projects
[70] James Stewart (2025) Stewart Review – Major Transport Projects Governance and Assurance Review: The HS2 Experience

(NIC) forecast that investment from the private sector in economic infrastructure in the UK will need to increase from around £30 to 40 billion per year over the last decade to £40 to 50 billion per year in the 2030s and 2040s.[71]

Like the competition for skills and resources, there is also a global competition for private investment – and investor sentiment towards the UK has plummeted in recent years. The ICE has called for more certainty, underpinned by a long-term infrastructure strategy and pipeline, to give investors confidence.[72] The government has set out its plans, so the question now is what else is needed to ensure the private finance required to deliver the 10-year strategy.

According to the latest data from the Global Infrastructure Investor Association (GIIA), investor sentiment towards the UK is improving, but the outlook remains 'uncertain' and below that of international comparators. The UK remains 'tarnished' by well-publicised difficulties, particularly in the water sector. However, the findings suggest the government's policies have given investors more confidence in its commitment to infrastructure.[73] The latest investor survey also preceded publication of the 10-year infrastructure strategy, pipeline and industrial strategy, and the final report of the Independent Water Commission which seeks to address the failings that have damaged that sector.

The government has also acknowledged some of the remaining challenges it must address to boost investment, including regulation and planning reform. GIIA notes that these will take time to materialise, but it anticipates 'a steady improvement' in sentiment towards the UK, particularly if the UK manages to remain relatively more isolated from US tariff impacts.[74]

Investment models

One of the main barriers identified by investors remains the lack of clarity around funding models.[75] The government has signalled the return of Public Private Partnerships in certain scenarios, including to finance the redevelopment of Euston Station.

However, the PAC has highlighted the need for the Treasury to set out more detail on 'the principles and approach for aligning private financing models to the appropriate infrastructure projects'. It adds that 'no comprehensive evaluation has been undertaken to determine the cost and benefits of these financing models' and which represent value for money for different types of infrastructure, to help public bodies decide how they might deliver infrastructure.[76]

One problem, again, is the lack of data. The PAC says the lack of a central record of private finance for infrastructure investment 'limits the Treasury's ability to spot themes and patterns and deliver value for money'. The ICE's work has also highlighted the need to strengthen commercial expertise and project sponsorship in both central and local government.[77]

Public financial institutions

The government's reforms have also led to 'a complex and fragmented' ecosystem of public financial institutions, prompting calls for further clarity on the roles of different bodies, where their remits intersect, how they work with devolved governments and bodies, and their respective ticket sizes.[78] These institutions include the National Wealth Fund (NWF) and Great British Energy in the infrastructure space, as well as bodies like the British Business Bank.

[71] National Infrastructure Commission (2023) The Second National Infrastructure Assessment
[72] ICE (2025) ICE Briefing Paper: Paying for Britain's Infrastructure System
[73] GIIA (2025) Infrastructure Pulse Q2 2025
[74] Ibid.
[75] GIIA (2025) Infrastructure Pulse Q2 2025; ICE (2025) ICE Briefing Paper: Paying for Britain's Infrastructure System
[76] Committee of Public Accounts (2025) Government's Use of Private Finance for Infrastructure
[77] ICE (2025) ICE Briefing Paper: Paying for Britain's Infrastructure System
[78] Aldersgate Group (2025) Maximising the Impact of the National Wealth Fund

The NWF is central to the government's infrastructure plans. However, it has 'a significantly smaller capital pool' than some international counterparts. This has prompted calls for it to eventually be able to raise capital through financial markets when it has a proven track record, like similar international bodies, to reduce its dependence on government funding and expand its investment capability.[79]

- Question 4: What else does the government need to do to attract private finance now the 10-year infrastructure strategy and pipeline are in place?

  4.1 What mechanisms could improve access to long-term, affordable finance for infrastructure projects across all regions?

Planning reform, environmental protection and public trust

It is well recognised, not least by the government, that the planning system is 'a binding constraint' on delivering infrastructure at the pace, cost and scale required.[80] Consenting and compliance is widely considered too 'onerous', 'overly complex' and adding unnecessary costs and uncertainty to infrastructure projects.[81]

The government has acted to try to speed up planning, primarily through its Planning and Infrastructure Bill. However, doubts about whether its plans go far enough have run up against concerns they neglect wider risks from a faster system, particularly to the environment but also regarding factors like safety, and the impact of any compromises on public trust. This raises the question of whether the two are compatible, or whether it is necessary to accept some lowering of environmental standards to meet the UK's infrastructure needs in the timeframe required.

Consenting and compliance constraints

The average consenting time for major infrastructure projects in the decade from 2010 increased from around two to around four years.[82] Indicators of inefficiency in the system include the volume of consents required on HS2 (over 8,000), the amount spent on gaining Development Consent Orders for the Lower Thames Crossing project (£267 million, with £29 million spent on public and stakeholder consultations), and the additional time Sizewell C spent consulting with the public bodies before submitting a planning application compared to Hinkley Point C (7.5 years versus 3 years), despite both using the same model of reactor.[83]

Unclear, rapidly changing or overly cautious standards for mitigating projects' impacts on the built and natural environment create uncertainty. This leads to risk aversion from clients or developers, who may choose expensive or over-designed changes to appease opposition or mitigate the risk of legal challenge. The NIC also highlighted the lack of mechanisms to make trade-offs and identify solutions at a strategic level across government. Government agencies issuing permits or requiring measures to mitigate the impact of infrastructure projects have little incentive to consider the impact of their proposals on project costs.[84]

Hinkley Point C, for example, lost out on standardisation benefits because regulators required around 7,000 changes from design standards used for other international stations. According to BCG, between 2018 and 2021, five offshore wind farms were developing mitigation measures for similar environmental impacts, which caused cumulative delays of two and a half years.[85]

[79] Aldersgate Group (2025) Maximising the Impact of the National Wealth Fund; Tony Blair Institute for Global Change (2025) Making UK Industrial Strategy Work: A Hard-Headed Approach Guided by Green Industry
[80] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[81] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK; James Stewart (2025) Stewart Review – Major Transport Projects Governance and Assurance Review: The HS2 Experience
[82] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[83] ICE (2024) The Cancellation of HS2's Northern Leg – Learning Lessons; Construction Products Association (2025) Consultation Nation: How Bureaucracy is Slowing Infrastructure; National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[84] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[85] BCG (2024) Reshaping British Infrastructure: Global Lessons to Improve Project Delivery

The NIC recommended clearer standards to make consenting easier by removing an area of potential disagreement between developers and statutory consultees.[86] Allowing previously approved Environmental Impact Assessments (EIA) to be shared and reused across the project portfolio could reduce duplication by avoiding reinventing the wheel each time and sharing mitigations previously used to address the same or similar issues.[87]

Capacity

Legislation and regulatory reform are part of the solution, but the Planning Inspectorate and statutory consultees, like the Environment Agency and Natural England, are already underperforming and under-resourced for the higher volume of projects entering the system.[88]

The Wildlife and Countryside Link has highlighted that between 2022 and 2023, Natural England failed to meet deadlines for 17.1% of Nationally Significant Infrastructure Projects (NSIP) applications, which was due to under-resourcing and workload issues in over a fifth of cases.[89] A quarter of planners may have left the public sector between 2013 and 2020 and the Home Builders Federation (HBF) reports that 80% of councils are operating at below full staffing capacity.[90]

The government's plans to recruit 300 additional local authority planners averages out to around one additional planning officer per local authority. According to the HBF, a much more significant intervention is needed – it estimates the planning skills gap in local authorities may be as much as 7,500 full-time equivalent officers, or an average of over 23 people per local authority.

Technology could also play a role in addressing capacity issues by increasing efficiency in the planning system. Increased digitalisation of the planning system could enable improved and timely access to data and information and more digestible outputs for local communities.[91]

- **Question 5:** How can planning, consenting and regulatory reform be streamlined without compromising public trust and wider environmental, safety and other concerns?
- **Question 6:** How effective will the Modern Industrial Strategy be at addressing these pinch points and improving infrastructure delivery?

[86] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK
[87] BCG (2024) Reshaping British Infrastructure: Global Lessons to Improve Project Delivery
[88] National Infrastructure Commission (2024) Cost Drivers of Major Infrastructure Projects in the UK; Mott MacDonald (2025) Written Evidence to the Energy Security and Net Zero Committee
[89] RenewableUK, Aldersgate Group and CPRE (2024) Electric Dreams: How the Planning System Can Help Deliver the UK's Low-carbon Energy
[90] Home Builders Federation (2025) Planning on Empty
[91] RenewableUK, Aldersgate Group and CPRE (2024) Electric Dreams: How the Planning System Can Help Deliver the UK's Low-carbon Energy

Next steps

The challenges and pinch points discussed above are significant – but they arise because of a huge opportunity for the UK.[92] The government's ambition to take a long-term view, the level of investment and the number of major projects set out in its 10-year strategy have the potential to transform the UK's economy and improve people's lives through much-improved services.

Addressing them will mean tackling some of the long-standing issues that have held back infrastructure delivery and the wider economic, environmental and social benefits it unlocks. But the long-standing nature of these issues points to previous missed opportunities for addressing them. Nor are the issues outlined in this paper exhaustive and the ICE is keen to hear of other pinch points that should be considered in addition to responses to the questions outlined above.

This consultation runs until **Friday 24 October 2025**.

Responses should be submitted by emailing policy@ice.org.uk. When responding, please include your name and whether you are responding individually or on behalf of an organisation or group. Please provide evidence or case studies to support your response. All responses will be treated confidentially, and respondents will not be published.

Sign up here for our Next Steps panel debate on 15 October, focusing on what are the pinch points that could derail the delivery of the UK's infrastructure ambitions.

About the ICE

The Institution of Civil Engineers (ICE) is a 97,000-strong global membership organisation with over 200 years of history.

It is a centre of engineering excellence, qualifying engineers and helping them maintain lifelong competence, assuring society that the infrastructure they create is safe, dependable and well designed.

Its network of experts offers trusted, impartial advice to politicians and decision-makers on how to build and adapt infrastructure to create a more sustainable world.

For more information, please contact: policy@ice.org.uk.

[92] BCG (2025) Uplift in Demand, Shortfall in Supply: Can the UK Deliver on Its Infrastructure Investment Ambitions?