ice
Institution of Civil Engineers

ICE Briefing Paper: Paying for Britain's infrastructure system

February 2025

Executive summary

When the UK Government's multi-year spending review concludes in June it will determine capital allocations for a minimum of three years, setting the tone for the rest of the parliament. The outcome is crucial for the future of public services and the UK's ability to meet its longer-term environmental, social and economic objectives.

The government will also publish a new 10-year national infrastructure strategy, which must set out how the UK's transport, water and energy systems will be built, fixed and upgraded following decades of underinvestment.

However, with public finances constrained, the government faces a huge funding gap. The additional investment must come either through more taxes or by exploring other ways of spreading the cost.

The government has pledged to mobilise greater levels of private finance and reduce spending on the public balance sheet. To do so, it needs to engage private investors whose view of the UK as a good place to invest in infrastructure plummeted in the wake of political uncertainty and stop/start decision-making about major projects like High Speed 2.

Through its Next Steps Programmes, the ICE convenes global public debates to discuss what needs to happen next on key policy issues affecting civil engineering and society. This project examines the UK Government's options to use a finite pot of public money – along with all the other levers available to government – to maximise private investment. It also explores the public's attitude towards the current approach to infrastructure investment in the UK, alternative options and the role of the private sector.

The public ultimately fund new infrastructure, whether through taxes, utility bills or user charges. However, in polling carried out by Opinium for this project over half of respondents (55%) described major infrastructure projects in the UK as currently underfunded. Almost two-thirds (62%) felt that major infrastructure projects are poorly communicated to them.

This briefing paper draws on insight from infrastructure professionals and other experts. It sets out the following key messages:

- The government needs to clarify its infrastructure investment plans. The 10-year national infrastructure strategy must enable development of a prioritised, stable pipeline of investible projects aligned with society's needs.
- The government should focus on improving infrastructure delivery to build investor confidence. More early-stage work, closer collaboration with the supply chain and less political interference once projects are launched can reduce risk.

ice
Institution of Civil Engineers

- Commercial capability needs to be strengthened across government. Key skills, like contract management, procurement and negotiation, are too thinly spread. Projects need better advice on which funding model to use.

- Public and private investment must be complementary. A more collaborative narrative around private investment could improve investors' risk appetite. Public investment should target high-growth, innovative sectors to crowd-in private investors.

- The public want to hear more about infrastructure projects. The government should engage people more about how infrastructure investment meets their needs and the benefits of private sector involvement, as well as the costs.

The paper covers the following areas:

- Section 1: The UK's infrastructure investment gap – The UK's record of underinvestment, global competition and the public's attitudes towards infrastructure investment in the UK.

- Section 2: Boosting private sector infrastructure investment – How the government can engage private investors and work with the construction sector to improve planning and delivery and boost private sector and public confidence.

- Section 3: Private investment models - Investment models already in use in the UK or which the government could seek to adopt or evolve to help meet the country's infrastructure investment needs.

Institution of Civil Engineers

The UK's infrastructure investment gap

The UK Government must address some key strategic challenges over the current parliament. The UK has committed to reducing emissions by at least 68% by 2030, relative to 1990 levels. Its climate adaptation plan has been called 'far short of what is needed' in the face of increasing climate change.[1] Income inequality is continuing to widen.[2] This parliament is also the last opportunity to make significant progress towards the 2030 Sustainable Development Goals.

The National Infrastructure Commission's (NIC) recommendations in its second National Infrastructure Assessment should be the focus for the government's upcoming 10-year national infrastructure strategy.[3] Priorities identified by the NIC include delivering new infrastructure at pace to meet increased electricity demand of around 50% by 2035, halving emissions from buildings in the next decade, improving urban connectivity to unlock regional productivity, and reducing flooding in the face of climate change.

The UK's record of underinvestment

To meet these challenges, the NIC forecasts that overall infrastructure investment must increase from an average of around £55 billion per year over the last decade to around £70 to 80 billion per year in the 2030s and £60 to 70 billion per year in the 2040s. Much of this additional capital will need to come from private investment, which must grow from around £30 to 40 billion per year over the last decade to £40 to 50 billion per year in the 2030s and 2040s.[4]

The required leap in investment is high by historical standards – and some believe it could even be a conservative estimate.[5] However, the UK has a major underinvestment problem, with the lowest level of investment in the G7 for 24 of the last 30 years.[6] Not only is UK public investment low, it has also tended to be volatile and short-termist. This is not connected to any single political party or government but has been a long-term systemic challenge. As a result, the country's future infrastructure investment gap is massive. EY estimates the UK has £1.6 trillion worth of capital programmes and projects through to 2040 that are currently unfunded.[7]

The global competition for private investment

The Labour Government has pledged to mobilise more private capital to close that gap.[8] However, in 2022 the UK had the lowest business investment in the G7 and ranked 28th among 31 OECD countries.[9] The UK's reputation as one of the most attractive countries for infrastructure investment has tumbled, although there are signs that business and investor sentiment may be recovering.[10]

---

[1] Climate Change Committee (2024) Independent Assessment of the Third National Adaptation Programme
[2] Office for National Statistics (2023) Household Income Inequality, UK: Financial Year Ending 2022
[3] National Infrastructure Commission (NIC) (2023) Second National Infrastructure Assessment
[4] Ibid.
[5] Boston Consulting Group (2024) Reshaping British Infrastructure: Global Lessons to Improve Project Delivery
[6] Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain; NIC (2023) The Second National Infrastructure Assessment
[7] EY (2024) Mind the (Investment) Gap
[8] HM Treasury (2024) National Wealth Fund – Mobilising Private Investment
[9] IPPR (2024) Rock Bottom – Low Investment in the UK Economy; Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain
[10] GIIA (2024) Infrastructure Pulse – Europe and the Americas Q2 2024; PwC (2024) PwC's 28th Annual Global CEO Survey

Political instability, policy reversals, an unattractive regulatory regime (especially in the water sector, where many large investors have stakes) and the lack of a clear and stable project pipeline have weakened confidence, made it hard to build effective partnerships and created the perception that UK infrastructure is too high risk.[11]

The UK does have a lot of advantages that should give investors confidence, including its binding net zero target, strong rule of law and institutions, and a global financial centre in London. Returns on capital have been relatively high, suggesting worthwhile opportunities are not being pursued.[12] There is already a lot of private finance in infrastructure assets, and no shortage of capital looking for more opportunities. EY estimates funds and investors are sitting on at least a further £264 billion in 'dry powder' waiting to be deployed.[13]

However, the UK Government is not alone in seeking to substantially increase private infrastructure investment to meet its long-term objectives. A lot of available capital is globally mobile – it can go where the risks appear lowest. Governments around the world are working hard to attract it. There is also competition from outside of public infrastructure projects - for example a lot of money is flowing into projects like data centres.

The UK public's views on infrastructure investment

Public support for any increase in infrastructure investment is key. UK public polling and focus groups conducted by Opinium Research[14] for this project suggests the public recognise the UK's infrastructure investment challenge:

- Over half of respondents (55%) described major infrastructure projects in the UK as currently underfunded.
- Funding constraints were seen as a major barrier to building new major infrastructure (chosen by 41% of respondents), as well as shifting priorities (32%) and poor project management (32%).

The polling also suggests that the public recognise that infrastructure investment can deliver wider benefits – but this recognition is stronger at a local level:

- Meeting society's needs was ranked as the main factor the government should prioritise when building new projects (chosen by 42% of respondents).
- Respondents believed the most important benefits that could come from new infrastructure projects in the UK were boosting economic growth (43%), more reliable public services (35%) and improved transport and connectivity (32%).
- However, the link between infrastructure investment and the UK's national goals was less apparent – reducing regional inequalities (14%), climate resilience (12%) and decarbonisation (11%) scored much lower.

> *"Just in general, if there was a project near me, I'd like to know how I was going to benefit from it." – Opinium focus group participant*

[11] National Audit Office (2024) Lessons Learned: A Planning and Spending Framework that Enables Long-term Value for Money; CBI (2024) The Crucial Role of Long-term Commitment to Infrastructure Investment: The HS2 Case Study
[12] Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain
[13] EY (2024) Mind the (Investment) Gap
[14] Opinium Research conducted three virtual focus groups, each with 6-8 UK adults aged 18+, between 14 and 16 January 2025 and an online survey with a nationally representative sample of 2,007 UK adults aged 18+, between 5 and 8 February 2025.

ice
Institution of Civil Engineers

The public lacks confidence in the government's ability to oversee major infrastructure projects. Concerns included short-term decision-making, financial mismanagement and inefficient project planning and delivery:

- Almost half (44%) believed projects are often delayed or go over budget and 40% believed projects end up costing more than necessary.
- The private sector was seen as better at delivering infrastructure projects efficiently and quickly (45%), compared to just 13% who trust the public sector in this area.

"Civil servants have a different mindset and culture to businesspeople, you know, who are trying to get value for money." – Opinium focus group participant

The polling suggests people are uncertain about how major infrastructure projects are funded. The government will need to be much more transparent and better at engaging the public to gain support for more investment to deliver its 10-year national infrastructure strategy:

- Almost two-thirds of respondents (62%) felt that major infrastructure projects are poorly communicated to them (only 19% believed they are currently well communicated).
- People were keenest to hear about why projects are being built and what the benefits will be (47%), who is paying for the projects (38%) and what it will cost them individually (37%) – the latter being a higher concern than the overall cost.

"I don't think we get, hardly any information at all really, unless you go digging it out and you call up and ask somebody maybe." – Opinium focus group participant

Respondents were also divided on the fairest way to pay for new infrastructure:

- They were relatively evenly divided on whether new projects should be funded by everyone through taxes (33% thought most or all of the funding should come through taxes) or by those who use them (39% thought most or all of the funding should come from those who use them).
- When paying for new major infrastructure projects requires either raising prices for service users or raising taxes for everyone, the public lean towards raising prices for service users (38%) rather than raising taxes (16%).

"It depends if there's a wider benefit maybe to the country and to everyone. If a public transport service was improved in a way that helped reduce a country's carbon footprint - that could perhaps justify more of a wider spread of the cost." – Opinium focus group participant

Institution of Civil Engineers

Boosting private sector infrastructure investment

One of the key messages the ICE heard through this Next Steps Programme is that new investment models are not the answer to the UK's infrastructure investment challenge. Nor can the government hope to rival the scale of subsidies and incentives offered in the US under the Biden Administration's Inflation Reduction Act. Instead, the UK Government needs to focus on improving the fundamentals of strategic infrastructure planning and delivery to increase certainty and lower risks, costs and delivery time.

The government has multiple levers it can use to do this. It has already set out an ambitious policy agenda for this parliament and has begun to address some of the key blockers to efficient delivery, notably reforming the planning system. This section explores some of the core areas experts have told the ICE the government should focus on to boost investor confidence.

Strategic and pipeline certainty

The lack of strategic clarity, stable policymaking and commitment to major projects in the UK has deterred investment. These concerns were reflected in Opinium's research, which a common sentiment was that government-backed infrastructure projects often lacked a coherent long-term strategy, resulting in frequent changes to project scope and inflated costs. One concern was excessive impact of short-term political motivations and electoral gains on infrastructure investment decision-making, leading to projects that did not necessarily align with public needs.

The government has committed to developing a 10-year national infrastructure strategy as well as a new industrial strategy and an Integrated National Transport Strategy. It will also move to more frequent rolling spending reviews to remove 'cliff-edge' funding and reduce the uncertainty that departments face, which has knock-on effects on the wider funding landscape.

The 10-year national infrastructure strategy can be the vehicle for achieving a lot of the measures investors are looking for if it is a genuinely strategic document – not just a high-level list of objectives, targets and projects. It should set out a long-term vision in line with the NIC's recommendations in the second National Infrastructure Assessment. Setting out wider outcomes and not being too prescriptive about the detail or methods will help guide investors, the supply chain and other partners to develop local and market-driven solutions and drive innovation and efficiency in delivery.

Investors and the supply chain also want long-term certainty. Infrastructure master-planning needs to happen over a 25- to 30-year horizon to allow for better resource management and to ensure that industry is incentivised to invest in building capacity for the long term, to continuously innovating and positioned to learn from project to project . This does not sit well with five-year political cycles. It is therefore important that the government tries to build cross-party support for the strategy to allow for that long-term thinking.

> *"There's a distinct lack of long-term thinking going on, frankly. Certainly, governments don't think much more beyond the five-year cycle. So, yeah, if we could be going ten, fifteen, twenty years in the future, I think it'd be great." – Opinium focus group participant*

Ahead of the strategy's publication in June, the government has provided some of the signals investors are looking for about how it wants infrastructure investment to drive growth. These include announcements on HS2 running to Euston Station, a third runway at Heathrow Airport, development of the Oxford–Cambridge corridor and the delivery

ICE
Institution of Civil Engineers

of clean power by 2030, as well as Green Book reform to channel more investment outside London and the South East. The priority sectors proposed for the industrial strategy appear to be in growth sectors where investment can be targeted.

Clarifying the public/private investment split

However, more clarity is still needed on how the government intends to split public and private funding across different infrastructure sectors. This includes which investment models it intends to use and the availability of government-backed guarantees or support.

Well-designed public investment can crowd-in private sector investment, boost the economy and unlock network effects and new markets.[15] The National Wealth Fund and other new institutions, such as Great British Energy, show investors that the government is putting skin in the game. The Chancellor's changes to the fiscal rules to focus on the value of public investment, and not just on the costs, should enable more public sector borrowing for infrastructure investment.

These are positive steps, but to crowd-in rather than crowd-out private investors, public investment should target higher-risk, high-growth and innovative sectors, (such as hydrogen or floating offshore wind), not mature sectors where the private sector is well-established. Deloitte has recommended the government take a portfolio view across infrastructure that also directs private investment into revenue-generating sectors, while focusing limited public spending on sectors where there is little alternative.[16]

The National Infrastructure and Construction Pipeline

The National Infrastructure and Construction Pipeline is intended to give investors and the supply chain an overarching view of planned UK infrastructure projects. However, its most recent iteration falls short of setting out the scale of infrastructure investment and transformation required in the coming decades. The lack of detail about the overall size of the pipeline and the focus across different sectors affects business decisions about growth, investment and recruitment. For example, uncertainty drives employers in the supply chain towards prioritising contract labour and skills rather than investing in building in-house capability.

The pipeline needs to be prioritised, stable and integrated across all sectors (infrastructure and others like defence and housing) where projects will demand similar skills and resources and set out credible investment opportunities. Businesses have suggested that too many projects in the current pipeline are not economically viable but more indicative of political aspirations. Projects need to get to market quicker and be subject to less political interference once they are launched. The pipeline could further support investors by providing more detail, including investment and delivery models – with clear rationales for the chosen approaches, risk profiles and maintenance requirements.[17]

Integration is key to controlling costs. With highly elastic labour costs in a labour constrained market, the distribution of the projects by sector, geography and timing will influence costs significantly. Unless labour supply and its absorption into projects is improved, co-ordinated and optimised, labour costs will rise and impact deliverability and affordability.

---

[15] CBI (2020) Investing in Infrastructure; IPPR (2024) Rock Bottom – Low Investment in the UK Economy
[16] Deloitte (2024) Unlocking Private Investment in UK Infrastructure
[17] ICE (2018) State of the Nation 2018: Infrastructure Investment; CBI (2020) Investing in Infrastructure

ice
Institution of Civil Engineers

Infrastructure Australia's Infrastructure Priority List has been highlighted as an example of a 'user-friendly' pipeline containing information that is readily accessible to investors.[18] The emphasis is on ensuring the list is credible and it is being reformed to be more evidence-based and targeted, ensuring it identifies the Australian Government's top infrastructure investment priorities that are unfunded and ready for investment.

Commercial expertise in the public sector

Commercial expertise and project sponsorship need to be strengthened in both central and local government. As the ICE has previously highlighted, the government needs to prioritise and invest in recruitment and training to ensure departments are ready to deliver the 10-year national infrastructure strategy and deploy the funding models the government selects.[19] The Major Project Leaders Academy (MPLA) has many benefits but does not fulfil all these training requirements.

There is no one-size-fits-all infrastructure funding model – expertise is needed across a range of options currently being used across different sectors and which are all at different levels of maturity. Key skills, like contract management, procurement and negotiation, are too thinly spread and projects may not be getting the right advice on which funding model to use.

Decisions on the need for investment should also be separate from the decision on best funding model, to avoid business cases being skewed towards a preferred solution. For example, the ICE has heard that one of the factors behind a lot of unsuccessful PFI projects was business cases being skewed to make PFI look better than a public solution because PFI was the only way to get the project done.

Green Book option appraisal does not give due consideration to funding models and their financial permutations. Its guidance could be strengthened to push for clearer financial optioneering at business case stage to ensure all options are considered.

Other proposals to boost capability include an 'investment playbook', or even sector-focused playbooks, co-developed by the government and the private sector. This could consolidate best practice and codify a framework, setting out the different acceptable private investment models for different types of infrastructure projects and clarifying public and private sector roles.[20]

Such a best practice framework could help the development of bespoke funding models in sectors where models are either maturing (such as transport and housing) or still emerging (such as net zero retrofit). As models become more tried and tested, as in sectors like regulated utilities, the emphasis can be on standardisation and replication to deploy them at pace and at scale.

Other institutional reforms have been proposed to build expertise and drive private investment. These include embedding a central support team within the Treasury on private finance in infrastructure, a new independent PFI/PPP body to support mediation between stakeholders and provide guidance to procuring authorities, or a dedicated growth and productivity institution to advise and hold the government accountable.[21]

---

[18] CBI (2020) Investing in Infrastructure; Infrastructure Australia Infrastructure Priority List
[19] ICE (2024) ICE Briefing Paper: The Cancellation of HS2's Northern Leg – Learning Lessons
[20] Arup / Urban Transport Group (2024) Rail and Urban Transport Review; Deloitte (2024) Unlocking Private Investment in UK Infrastructure
[21] Grantham Research Institute (2024) Boosting Growth and Productivity in the United Kingdom through Investments in the Sustainable Economy; Demos (2024) Partnership in Practice; Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain

Institution of Civil Engineers

Like the UK, New Zealand has a record of underinvestment and a large infrastructure gap. To help close it, the New Zealand Government recently set up National Infrastructure Funding and Financing Limited to act as a 'shopfront' for investors in public infrastructure and a 'centre of expertise' on infrastructure funding and financing.[22] One of its functions is to provide public agencies with financial and commercial support and expertise when developing business cases and procuring large-scale projects that may benefit from private finance or the use of a PPP model.

Improving infrastructure delivery

Investors need the confidence that the government's 10-year national infrastructure strategy is deliverable. However, while the UK is not uniquely poor at delivering infrastructure efficiently, it is among the worst performers among comparable countries. It performs particularly poorly in certain sectors, including rail, road and nuclear power.[23]

According to the NIC, construction costs have risen by 30% more than GDP per capita has in the UK since 2007.[24] Inflation has played a part, but it is a global challenge. The ICE's research on lessons from the cancellation of High Speed 2's northern leg identified other UK-specific factors behind spiralling delivery costs, including problems with oversight, insufficient client and departmental capability, limited development time and the lack of strategic clarity.[25] The NIC has highlighted the UK's inefficient consenting and compliance regime and supply chain constraints caused by a highly fragmented construction industry.[26]

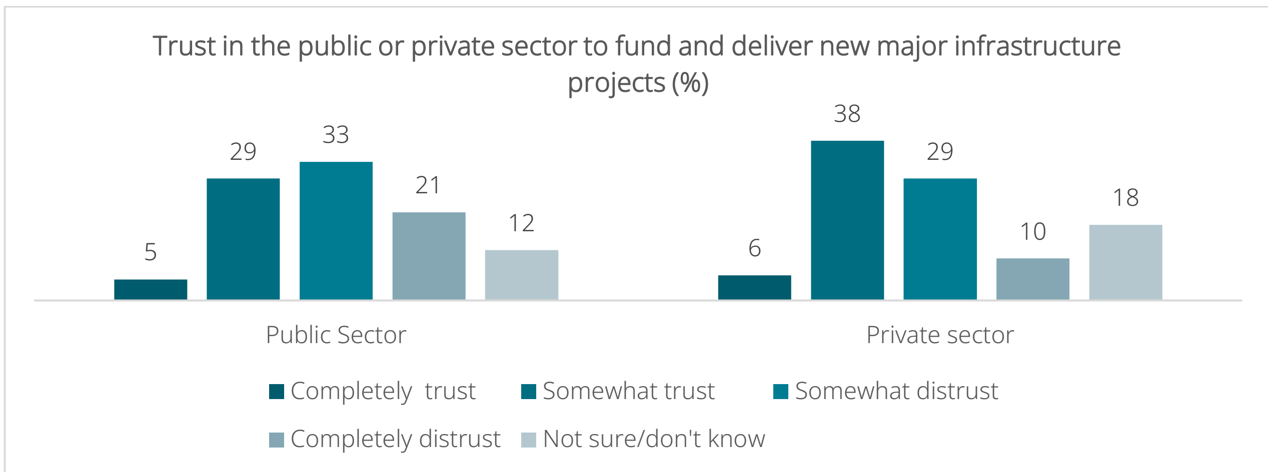
The UK's infrastructure needs cannot be met through more investment alone. It must deliver infrastructure faster and cheaper to attract private investors, reduce the investment needed and deliver enough infrastructure at the scale and pace required. That is not a challenge for the government alone. It must work with the construction supply chain to improve efficiency and address key enablers like skilled labour availability, planning system reform and accelerating the digital transformation. It also means increasing transparency. Polling by Opinium for the ICE found the public perceive there to be a lack of accountability in government for delivering infrastructure projects effectively.

Delivery capability

The combination of the NIC and the Infrastructure and Projects Authority (IPA) has done a lot of good for the UK's infrastructure planning and delivery capability, but the ICE has also heard concerns it falls short of providing investors with enough confidence it can fix the country's delivery challenges. For example, interventions by the IPA can be too reactive and project assurance is done too late.

In Opinium's public polling for the ICE, respondents considered delivering projects on time and on budget the second most important priority for new projects, behind ensuring they meet society's needs. However, the research suggests the public lack confidence in the government's ability to deliver infrastructure efficiently. Almost half of respondents believed projects are often delayed or go over budget (44%) and end up costing more than necessary (40%). Distrust in the government to fund and deliver major infrastructure projects in the UK was higher than in the private sector (54% vs 39%). Complete distrust in the government was over twice as high as in business (21% vs 10%, respectively).

[22] New Zealand Government (2024) New Infrastructure Agency Up and Running
[23] Boston Consulting Group (2024) Reshaping British Infrastructure: Global Lessons to Improve Project Delivery
[24] NIC (2024) Cost Drivers of Major Infrastructure Projects in the UK
[25] ICE (2024) ICE Briefing Paper: The Cancellation of HS2's Northern Leg – Learning Lessons
[26] NIC (2024) Cost Drivers of Major Infrastructure Projects in the UK



The government is creating a new unit, the National Infrastructure and Service Transformation Authority (NISTA), to combine the functions of the NIC and the IPA and oversee infrastructure strategy and delivery. NISTA is an opportunity to embed some best practices, like mandating compliance with the Construction Playbook, which was created in 2021 in conjunction with industry to enable faster, better and greener infrastructure delivery. The NIC has also developed a set of design principles to help save money, reduce risk, add value and support environmental net gain.[27] However, NISTA will need real authority and the independence to proactively challenge the government and raise difficult issues.

"I would have a fair amount of confidence that they [the government] would serve the public interest. But my concern would be getting value for money .... my observations and experiences is that there isn't a tight enough control over costs." – Opinium focus group participant

Improving capability and reducing skills gaps within government departments must cover all stages of the project life cycle – from bidding to delivery and ongoing operations. There needs to be a more structured process for the transfer of responsibilities between each of the project stages and between individuals as employees cycle on and off the project. The loss of corporate memory was one of the key issues the ICE identified as affecting costs and delivery on HS2.[28] The government has prioritised speeding up the planning system, but without training and recruiting enough new planners there will be a bottleneck as more applications come through.

De-risking projects

Investor confidence can also be built with a better balancing of risk and more work to de-risk projects. The balance between innovation and risk – for example, the appropriate use of standardised practices and assets to deliver projects – could be explored more within government. De-risking projects early can require significant upfront investment but ultimately makes projects more attractive to investors and sets them up for better delivery.[29]

Long-term programme planning in areas of strategic need can support early phase work to assess the technical feasibility and costs of potential projects before their inclusion in the pipeline. Pre-approvals and consents from procuring entities would greatly expediate bidding and remove risks which would not need to be priced in.

---

[27] NIC (2024) Design and Funding
[28] ICE (2024) ICE Briefing Paper: The Cancellation of HS2's Northern Leg – Learning Lessons
[29] Ibid.

Institution of Civil Engineers

Transparency is also key. Access to more data, such as asset registers and asset condition surveys, can allow for accurate pricing and significantly cut risk and therefore bid price. The National Audit Office (NAO) has emphasised that spending decisions should be based on realistic assessments of deliverability and affordability, noting that government tends to underestimate costs and over-promise on outcomes.[30] Major projects like HS2 and Sizewell C have been beset by concerns about costs escalating far above initial estimates. The Green Book benefit-cost ratio (BCR) approach can allow for 'gaming' projects to maximise social benefits and minimise capital expenditure costs, giving a false picture of its cost and impacts to maximise its BCR – something private investors will be wary of.

Arm's-length bodies can help protect projects from excessive political interference. For example, Crossrail Ltd was an arm's-length body while a joint sponsor unit was set up to represent the interests of Transport for London (TfL), the Department for Transport and HM Treasury in a more controlled, purposeful way. This was underpinned by a legal agreement that limited political interference. The project's governance was not perfect – its 'long arm' was too long and allowed problems to develop to the point where oversight had to be increased – but it did help shield the project from excessive political interference.

Changing mindsets and narratives

Concerns about long-term planning and poor delivery mean UK investors seem particularly risk averse. International investors also see the UK as a place for low-risk or 'defensive' capital. According to PwC, it means the UK is massively 'underweight' on the high-risk growth capital the net zero transition requires. For example, 56% of energy sector decarbonisation requires technologies that are not yet commercially mature.[31] High risk aversion can lead to 'perverse risk aversion', whereby the impact of all investors being risk averse is to increase, rather than reduce, the amount of risk (as well as costs) in the system.[32]

The government needs to try to work with the market. The ICE has heard concerns that HM Treasury is too focused on controlling spending, not driving growth. Regulation often inhibits strategic, long-term thinking and delivery of core infrastructure networks. Current defined regulatory periods governing utilities are too restrictive in the face of market shifts and quickly evolving technologies. Regulators with a primary duty to protect the interests of consumers have sometimes prioritised short-term affordability for consumers at the expense of driving long-term investment in critical infrastructure. Regulation needs to become more dynamic and flexible. The government will publish an action plan in March with a view to making the system more agile and growth-oriented.

Similarly, the government can ensure its tax and subsidy system is aligned with its infrastructure and industrial strategies. In the US, much of the Inflation Reduction Act's support for green energy investment was through tax credits but the approach has been less successful in the UK.[33] For example, corporation tax has changed regularly prompting calls for more stability.[34]

Public and private investment must be complementary. However. the government's power is not just financial – it is uniquely placed to convene stakeholders and build relationships. A more confident, collaborative narrative could help shift investors' risk appetite. This may create difficult questions for the government about where to invest limited public funds – for example, between supporting struggling older sectors and stimulating newer ones.

[30] National Audit Office (2024) Lessons Learned: A Planning and Spending Framework that Enables Long-term Value for Money
[31] PwC (2024) De-risking the Energy Transition in Europe
[32] ICE (2024) Presidential Roundtable Summary: The Future of Infrastructure Finance
[33] National Institute of Economic and Social Research (2024) Productivity and Investment
[34] Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain

ice
Institution of Civil Engineers

The need for public engagement

In Opinium's public polling for the ICE, almost half the respondents (44%) thought the government should fund most major infrastructure projects. Only 17% thought the private sector should be the main funder – highlighting the public engagement challenge the government faces as it seeks to boost private sector involvement.

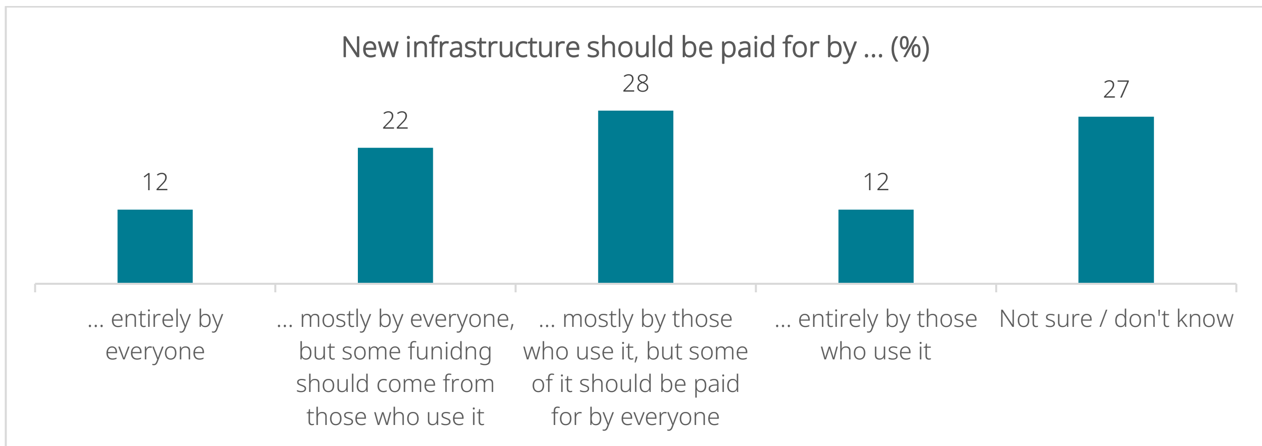
Opinium's research found concerns among the public that private companies would prioritise profit over public good resulting in poorer service quality, underinvestment in long-term maintenance and pricing people out of essential services.

> *"You may also drive away people who may never have used that infrastructure from ever using it in the future." – Opinium focus group participant*

Trust in the private sector's involvement in infrastructure investment appeared conditional on strong regulation and government oversight. Evidence of a strong sense of social responsibility and investment in communities were also important. However, people do also associate the private sector with better innovation, speed and cost controls.

How likely is public / private project financing to achieve the following (Opinium public polling)	Public sector (%)	Private sector (%)
Match society's needs	21	14
Consider the needs and objections of communities	26	16
Be delayed or go over budget	38	16
Cost more than it needs to	36	22
Use innovation and technology	14	49
Efficiency and speed	13	45
Prevent overspending	18	35

The public ultimately fund new infrastructure, whether through taxes, utility bills or user charges. Respondents were relatively evenly divided on the fairest way to fund new projects (see below). In Opinium's focus groups, resistance to taxes was linked to doubts about government efficiency and how the money would be allocated. Concerns about user charges focused on the affordability of services and the risk of pricing people out of essential infrastructure and widening social and economic disparities. However, the significant proportion (27%) of unsure people suggests a lack of awareness of how infrastructure is financed.



Making the case for private infrastructure investment

A clear and compelling narrative from the government on infrastructure investment is important to both investors and the public. The UK's media and political environment tends to dwell on failures instead of celebrating successes, and on project costs rather than benefits. This deters investors and is also contrary to what the public want to hear.

In public polling by YouGov, commissioned by the ICE in 2022, over two-thirds (68%) of people said they want to hear more about the benefits of major infrastructure projects rather than focusing on the costs. The most important success metric was that infrastructure projects will regenerate and benefit communities. Just 3% said that the most important factor is the overall cost of construction.[35] Opinium's polling shows that while meeting societal needs and delivering wider benefits are important to the public, people are sceptical about projects actually delivering those outcomes, regardless of how they are financed.

There needs to be more engagement with the public about why infrastructure is necessary, how it is paid for, and the trade-offs involved. Almost two-thirds of respondents to Opinium's polling (62%) felt that major infrastructure projects are poorly communicated to them. The government needs to build a case for the private sector's involvement that goes beyond the additional money it will bring to focus on wider outcomes and benefits as well as addresses the public's concerns.

For example, any engagement strategy could highlight the potential for benefits being more quickly realised through more private sector involvement. Objections to a project often fall away once it is complete and people can use it – but that clarity needs to be brought forward earlier in the process.

In Opinium's polling, neither the public or private sector was seen as being transparent and accountable (25% public, 22% private and 35% neither). One challenge will be making the case for private investment in infrastructure in the context of existing PFI deals coming to an end, which may bring bad news stories about poorly maintained assets falling back into the public sector while more successful ones go unnoticed.

Investors' fiduciary duty

Current guidance on and interpretations of fiduciary duty discourage investments that deliver positive economic, environmental or social outcomes as well as financial returns. The government could consider issuing new guidance on fiduciary duty to unlock more private investment into public policy priorities. The LSE's Grantham Research

[35] ICE (2022) 5 Surprising Ways that the British Public Rates the Success of an Infrastructure Project

Institution of Civil Engineers

Institute argues that, at a minimum, this should reassure trustees that they are within their duties when taking economic, environmental or social considerations into account in their investment choices.[36]

Ensuring directors' duties align with the wider interests of society and the environment, alongside financial considerations, has been endorsed by more than 2,500 businesses, academics and business groups. Updating corporate governance rules could make the UK more attractive to ESG investment, with assets under management by ESG funds predicted to rise to $40 trillion by 2030.[37]

[36] Grantham Research Institute (2023) Investing in our Future
[37] Demos (2024) Partnership in Practice

ice
Institution of Civil Engineers

Private investment models

As noted above, there is no one-size-fits-all approach to private finance. Models need to be sector-specific and aligned to the specific characteristics, complexity and risk profile of the project.[38] There is already a range of options in use across different sectors at different levels of maturity – new models are unlikely to be the answer to the UK's investment challenge. Instead, project financing should draw on established approaches where possible.

The ICE has heard that simplicity is important, especially in the wake of the excessive complexity that undermined PFI. Simplifying methodologies, establishing consistent thresholds and requirements for accessing investment, and enhancing transparency will help grow investor confidence and reduce transaction time and cost. This needs to be balanced with commercial and regulatory mechanisms that protect the interests of taxpayers and consumers.

This section examines some of the models that are already in use in the UK or which the government could seek to adopt or evolve to help meet the country's infrastructure investment needs.

Public Private Partnerships

Private finance initiative (PFI) contracts are a form of public private partnership (PPP) widely used to deliver infrastructure in the UK since the 1990s. By 2020, there were more than 700 operational PFI contracts in place, with a capital value of £57 billion.[39] However, PFI proved controversial, being perceived as expensive and inflexible.[40] In 2018, the then-Conservative Government announced it would no longer use the model.

Potential benefits of PPP/PFI could include certainty over construction costs, more operation efficiency, higher-quality assets and the ability to build in asset maintenance. However, both the National Audit Office and the Public Accounts Committee (PAC) have noted the lack of data to show whether PFI was achieving the intended benefits and providing value for money. The PAC further concluded that the size of returns for private investors suggested that departments were overpaying for transferring project risks to the private sector.[41]

Many PFI deals are now ending, prompting wariness about any potential bad news stories around excessive returns and poorly maintained assets falling back into the public sector. Managing the narrative, being transparent and demonstrating that lessons are being learned will be key to avoiding spooking investors or alarming the public about the role of private investment in infrastructure.

When PPPs could be the right approach

The ICE has heard that many investors feel 'burnt' by PFI projects in the UK and would be reluctant to engage with another UK model. On the other hand, the UK is now one of the only major economies with no active PPP model, prompting the case for revisiting the development of a new PPP/PFI-type model.[42]

Research suggests that PPPs could work best when the project to be delivered is not very complex, where there is little uncertainty and where better-quality infrastructure comes with decreased operating and maintenance costs over time. A lot of government capability has been lost on PFIs, so it would need to rebuild sufficient commercial and

---

[38] CBI (2020) Investing in Infrastructure; Grant Thornton (2024) PFI Round Table: Capital Spending in the Public Sector
[39] National Audit Office (2020) Managing PFI Assets and Services as Contracts End
[40] ICE (2024) Is it Time for a New Generation of Public Private Partnerships?
[41] National Audit Office (2020) Managing PFI Assets and Services as Contracts End; House of Commons Committee of Public Accounts (2018) Private Finance Initiatives
[42] Arup / Urban Transport Group (2024) Rail and Urban Transport Review

Institution of Civil Engineers

legal expertise.[43] Some have suggested an independent body for PPPs/PFIs which allows for mediation between stakeholders, can influence outcomes, and can provide guidance around risk allocation to procuring authorities. Other countries have dedicated units or bodies responsible for building public sector expertise, for example, New Zealand's National Infrastructure Funding and Financing Limited or the P3 offices in many US states which are responsible for running PPP projects from tender through to construction and operation.

PPPs are being used successfully in other countries so there is an opportunity for the UK government to learn from global best practice. In Australia, a review concluded that social infrastructure PPPs are delivering substantial benefits to the provision of schools, hospitals and prisons.[44] In the Netherlands, PPP was used to deliver a 96km high-speed rail line between Schiphol Airport and the Belgian border. Under the PPP agreement, the government pays an annual fee to the private consortium based on the actual level of availability of the infrastructure over 25 years. This encourages the consortium to adopt a long-term vision and ensures post-construction maintenance remains efficient and optimised.[45]

The Mutual Investment Model

The Welsh Government has developed the mutual investment model (MIM) to boost public infrastructure investment. The government says it differs from traditional PPP/PFI models by 'removing elements that did not promote the public interest' while maintaining best practice.

The model is intended to promote community benefits by requiring private partners to help deliver the objectives of the Well-being of Future Generations (Wales) Act 2015 and use locally based contractors. The public sector invests a small amount of risk capital in each scheme (up to 20%), giving it an active participatory role and entitling it to a share in any return on investment. The requirement for a local authority representative to sit on the board of the project company to provide input aims to improve collaboration and relationships.[46]

To date, the MIM model is being used to deliver investment in only three capital projects, worth £1.39 billion: the A465 dual-carriageway project, the Sustainable Communities for Learning schools programme and the new Velindre Cancer Centre in Cardiff. While there has been some support for using the model more widely across the UK, it may require further testing to assess its suitability for other sectors and larger projects.[47]

The Scottish Government intends to use the MIM for private finance projects.[48] It previously used the non-profit distributing (NPD) model to replace PFI from 2005 until 2015, when new accounting rules prompted the government to drop NPDs. In 2020, Audit Scotland also highlighted problems with the NPD model, arguing it could lead to higher annual contract payments as bidders sought to offset a lack of opportunities to increase their returns and raising concerns about transparency and accountability.[49]

---

[43] UCL Policy Lab (2024) Labour Promises to Unleash Private Investment for Public Services. Will it Work?; International Transport Forum (2024) The Future of Public Transport Funding
[44] Infrastructure Partnerships Australia (2020) Social Infrastructure PPPs
[45] Arup / Urban Transport Group (2024) Rail and Urban Transport Review
[46] Welsh Government (2024) Mutual Investment Model Report 2022–2024
[47] CBI (2020) Investing in Infrastructure; Grant Thornton (2024) PFI Round Table: Capital Spending in the Public Sector
[48] Scottish Government (2023) Infrastructure Investment Plan 2021–22 to 2025–26: Progress Report for 2022–2023
[49] Future Governance Forum (2024) Rebuilding the Nation 03: Infrastructure Investment Partnerships; Audit Scotland (2020) Privately Financed Infrastructure Investment: The Non-Profit Distributing (NPD) and Hub Models

ice
Institution of Civil Engineers

Land value capture

Land value capture aims to ensure that the direct benefit to residential, business and land values of infrastructure development contributes to paying for that infrastructure.

The model is successfully used worldwide, including Hong Kong's Rail Plus Property model. In the UK, it helped finance the London Underground Northern Line extension to Battersea. A tax increment financing (TIF) model ring-fenced portions of the net increase in business rates that were attributable directly to the project to repay upfront financing to support the capital works. It meant Transport for London (TfL) could borrow the funds to build the new line without recourse to taxpayer funding.[50]

London's £19 billion Crossrail project also used land value capture. TfL estimates that Crossrail will add £42 billion to the UK economy. The line was partly funded by five land value capture-related sources, including a business rate supplement, the Community Infrastructure Levy (CIL) and the sale of surplus land. Using multiple charges can better match benefits received and contributions made across different groups and so capture a higher proportion of the overall land value uplift.

However, the Crossrail model was also 'protracted' and 'complex'.[51] It is suggested to have captured only around 10% of the estimated land value uplift of £5.5 billion within 1km of a Crossrail station, with 90% retained by private landowners as windfall gains.[52] CIL and Section 106 have been the most effective methods for capturing planning gain in recent years, but they have tended to capture only small amounts for infrastructure relative to the overall project.[53]

Land value capture is most suitable for urban areas and must, therefore, be considered as part of a wider toolkit of available policy options.[54] The ICE has also heard that the government should be cautious about applying what works well in London to other parts of the UK.

Evolving land value capture

BusinessLDN has recommended evolving the model used for the Northern Line extension to Battersea by deploying a residential TIF model based on the principle of additionality. This would enable the Greater London Authority to borrow against, and retain, a proportion of future increases in stamp duty and council tax to finance transport projects which directly drive those specific, additional increases. It estimates this could raise up to £4.5 billion over 25 years towards TfL's priority transport projects.[55]

Development corporations have been used for large-scale developments in the UK for decades. The Bennett Institute argues that development corporations linked to public bodies like Mayoral Combined Authorities (MCAs) could better utilise land value capture to help the government meet its target of building 1.5 million homes over this parliament.[56]

This would mean taking a plan-led approach to integrating infrastructure projects with higher-density housing, helping to fund the infrastructure through the development of homes. The Levelling Up and Regeneration Act 2023 allows public authorities under certain circumstances to buy land at values close to existing use value by ignoring

---

[50] Arup / Urban Transport Group (2024) Rail and Urban Transport Review; EY (2024) Mind the (Investment) Gap
[51] BusinessLDN (2025) Generating Land Value to Grow London
[52] International Transport Forum (2024) Land Value Capture and Public Transport Funding
[53] Ibid.; Bennett Institute for Public Policy, Cambridge (2024) Townscapes
[54] ICE (2018) State of the Nation 2018: Infrastructure Investment
[55] BusinessLDN (2025) Generating Land Value to Grow London
[56] Bennett Institute for Public Policy Cambridge (2024) Townscapes

ice
Institution of Civil Engineers

the prospect of planning permission for land compensation. The authority can then capture the increase in land values through the sale of serviced plots after the infrastructure has been delivered.

Development corporations could raise finance directly from the capital market, contracting out the delivery of both infrastructure and housing, while paying back investors from market sources of funding, including land value capture. This approach has been widely used across European countries to deliver large-scale urban extensions, including in Paris and Copenhagen.

Market-led proposals

Australia is a world leader in encouraging the private sector to submit proposals to government on infrastructure projects or engage with projects of recognised need for direct consideration through market-led proposals. Every state has a framework for introducing market-led proposals.

Queensland's 'exclusive transactions' process encourages submissions from the private sector seeking a commercial arrangement with government to provide a service or infrastructure that aligns with the state government's objectives. Bids must meet the state government's criteria, including having a role for government, providing additional benefits to the government and/or community, representing value for money, presenting a clear case for an exclusive transaction as opposed to standard procurement principles, and being financially feasible with the expertise to deliver.[57]

The ICE has previously recommended that market-led proposals regarding rail in the UK be reformed in a way that simplifies applications and ensures intellectual property is protected or rewarded in the event of a successful bid. Infrastructure clients have adopted an intellectual property reward approach in the past. London Underground introduced an Innovative Contractor Engagement programme in 2011 to ensure 'good ideas the market has in response to project requirements can be brought forward and developed with the client'. This crucially included the protection of contractors' intellectual capital for innovation, through confidentiality agreements and a two-stage procurement model asking first for specifications which London Underground then purchased to put to full competition for delivery.[58]

Asset recycling

There may be policy circumstances where the government's best option, financially, is to act as a provider and builder of economic infrastructure assets and institutions, which can then be sold or licensed for a time-limited concession, creating a virtuous circle of development. The proceeds can then be recycled to provide additional capacity, improve other assets or support the government's overall balance sheet position. This practice is known as asset recycling.[59]

In Australia, the various tiers of government agreed to the National Partnership Agreement on Asset Recycling (NPA) to 'unlock funds from existing state-owned assets to invest in additional infrastructure'. The agreement ran from 2014 to 2019. A review found the benefits included A$2.3 billion in funding provided to the participating jurisdictions and unlocking over A$15 billion in additional economic infrastructure. The investment in additional infrastructure boosted economic activity through increased construction activity and employment demand.[60]

---

[57] ICE (2018) State of the Nation 2018: Infrastructure Investment; Queensland Government (2023) Exclusive Transactions
[58] ICE (2018) State of the Nation 2018: Infrastructure Investment
[59] Ibid.
[60] Australian Government (2019) Review of the National Partnership Agreement on Asset Recycling

ice
Institution of Civil Engineers

In New South Wales (NSW), asset recycling has supported infrastructure programmes including the Sydney Metro City and Southwest project, the More Trains, More Services programme and the Parramatta Light Rail. The NSW Government's Restart NSW Fund holds the proceeds from asset sales to enable the delivery of high-priority infrastructure projects. By 2020, the programme had received A$35.3 billion of funding, of which A$25.1 billion related to proceeds from asset recycling.[61]

Contracts for Difference

The UK's Contracts for Difference (CfD) scheme was created in 2013 to incentivise investment in renewable energy by guaranteeing energy providers a fixed 'strike' price for electricity produced by low-carbon generators. Contracts are issued each year through competitive auctions.

The scheme has driven cost reductions and helped new technologies like tidal stream and floating offshore wind to mature. However, the failure of the 2023 auction to attract any bids underlined the need to ensure the scheme evolves and adapts to the wider economic situation. The government adjusted the strike price for the 2024 auction, which secured over £14 billion of investment across a record 131 projects. The upcoming 2025 and 2026 auctions will need to go much higher, by some margin, to procure the renewable energy required to meet the government's 2030 clean power target.[62]

The Climate Change Committee still warned that it will be difficult to regain the ground lost by the failure of the 2023 auction.[63] Various adjustments to the scheme have been proposed to speed up the rate of deployment and increase certainty. RenewableUK has called for more market-reflective reference price and load factor assumptions, setting target capacity (in GW) per auction pot and extending contracts from 15 to 20 years or more to reflect longer project life cycles.[64] However, a key challenge for using CfD auctions to create value in offshore wind is the shift in market power to the equipment supply chain due to demand across Europe and beyond.

Regulated Asset Base (RAB) model

Almost half of the UK's infrastructure, chiefly water and energy, is financed and delivered by the private sector, and paid for by consumers, under the Regulated Asset Base (RAB) model.

RAB models have helped fund major infrastructure projects in the UK such as the Thames Tideway Tunnel, Heathrow and in the future Sizewell C. The model is considered 'transparent, independent and stable' and so able to support significant capital investment. While some argue it may not be suitable for all sectors and projects, others think it could play an expanded role based on the approach taken to deliver the Thames Tideway Tunnel.[65]

The Thames Tideway Tunnel 'super sewer' in London combined a RAB model with enhanced government support.[66] The sewer is large, complicated and costly, running 25km along the river. Recognising that Thames Water would not be able to deliver it through the Asset Management Period mechanism, Ofwat made provision for Tideway to be

[61] Infrastructure NSW (2022) Staying Ahead: State Infrastructure Strategy 2022–2042; New South Wales Treasury (2020) Infrastructure Statement 2020–21
[62] Cornwall Insight (2024) Renewables Procurement Must Hit Historic Highs to Meet Clean Energy Goals
[63] Climate Change Committee (2024) 2024 Progress Report to Parliament
[64] Renewable UK (2024) Revitalising the Contracts for Difference (CfD) Scheme report
[65] CBI (2020) Investing in Infrastructure; The Infrastructure Forum (2020) Regulated Infrastructure Investment
[66] ICE (2018) State of the Nation 2018: Infrastructure Investment; Future Governance Forum (2024) Rebuilding the Nation 03: Infrastructure Investment Partnerships

procured through a special-purpose company which is ring-fenced from Thames Water, although it is effectively a subsidiary.

Tideway received enhanced guarantees from the government, recognising the intrinsic risk and difficulties inherent in a project of this nature. Unusually, provision was also made to fund the project before completion through Thames Water bills, providing additional support for investors if cost overruns were encountered and reducing the risk of the capital invested.

The debt equity cost also received governmental support – the project's guarantees are indexed to inflation; guarantees of cash flow last for 15 years, enabling institutional investors to offer reduced-cost investment; and £700 million was secured through a 35-year loan from the European Investment Bank.

This approach ultimately 'transform[ed] a potentially high-risk construction project into a low-risk utility-type investment, thus increasing the attractiveness of the project to investors and reducing costs at every stage'.[67] Those lower costs meant that, while early estimates suggested that the project's annual impact on bills would be £70–80 per year (2014–15 prices), more recent projections suggest it will peak at £20–25 – 70% below the level at which the government greenlit the project. The project design also included a package of 52 'legacy benefits' that the project company committed to deliver across five areas: environment; health, safety and well-being; economy; people; and place.

Other approaches

Pension funds have been called 'the only plausible source of large, long-term, domestic capital' in the UK.[68] Pension assets in the UK total £2.5 trillion, with a further £2.1 trillion on insurers' balance sheets. Currently, the majority of UK pension fund and venture capital assets are not invested in the UK.[69]

The government has pledged a review into the reforms needed to increase investment from pension funds in UK markets through 'consolidation and scale'. It says this could unlock £8 billion of new investment.[70] This appears to build on the previous government's Mansion House reforms to enable greater investment, alongside recommendations by the Resolution Foundation which called for a 'smaller number of larger, and more active, pension funds', giving them the scale to invest in UK infrastructure projects.[71]

The ICE has previously recommended the government consider replacing the existing generation of road taxes with a pay-as-you-go model for roads in England to ensure adequate funding for maintenance and upgrades. This is increasingly urgent as income from fuel duty is projected to decrease as electric vehicles proliferate.[72]

Centre for Cities has proposed a model of municipal bonds to decentralise investment and allow subnational authorities to borrow from capital markets to finance infrastructure by issuing bonds and repay them by using local tax revenues and local growth.[73]

---

[67] The Infrastructure Forum (2024) The Thames Tideway Tunnel briefing note
[68] Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain
[69] Grantham Research Institute (2023) Investing in our Future
[70] Labour Party (2024) Labour Party Manifesto 2024; HM Treasury (2024) Chief Secretary to the Treasury Sets Vision for Future of Britain's Infrastructure
[71] HM Treasury (2023) Mansion House 2023; Resolution Foundation (2023) Ending Stagnation – A New Economic Strategy for Britain
[72] ICE (2018) State of the Nation 2018: Infrastructure Investment
[73] Centre for Cities (2024) Devolution Solution: How Fixing English Local Government Will Improve Economic Growth

Some countries, including Australia, have explored an inverted bid model. Through this, the government would decide on the long-term equity ownership model it wants for a piece of infrastructure, determine the internal rate of return that a long-term investor is prepared to sign up to, scope out the project, and then work with the investor to procure and deliver it. This model could increase certainty for both the government and investors. It can cap a private investor's return if the project's scope remains fixed, but guarantees a minimum return if the scope grows significantly.[74]

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.

This project supports the ICE's strategy by exploring new options for funding and financing infrastructure in the UK, drawing on global lessons.

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

[74] ICE (2024) Presidential Roundtable Summary: The Future of Infrastructure Finance