ICE Briefing Paper: Net zero infrastructure – what should the ‘Day 1’ priorities be for a new UK Parliament?

March 2024

Executive summary

The net zero transition is a huge opportunity to improve the health and prosperity of the public. The UK does not lack ideas about how to meet the net zero challenge while maximising the wider economic, environmental and social benefits. The Climate Change Committee (CCC), National Infrastructure Commission (NIC), and the ‘Mission Zero’ review have provided robust, credible policy recommendations, which broadly all need to be implemented in the decades up to 2050.

What is needed is more strategic clarity and the urgency to deliver at the pace and scale required.

The UK’s next general election must happen before late January 2025. The next government will be responsible for achieving outcomes in 2030. It must seize the moment to focus minds and accelerate the country’s progress towards the 2050 net zero target.

Day 1 net zero priorities for the next UK government

Previous governments have used ‘Day 1’ of a new parliamentary term to make bold decisions with long-standing impact, such as the 1997 Labour government making the Bank of England independent.

Net zero needs similarly decisive leadership. The ‘Day 1’ measures the next government should prioritise are:

- **Deliver a public engagement strategy** emphasising the benefits of the net zero transition to mobilise people;
- **Establish an urban Tram Delivery System and use fare and regulatory reform to incentivise public transport and active travel use,** and **accelerate freight decarbonisation through targeted rail electrification** to reduce emissions from the highest emitting infrastructure sector;
- **Ensure sufficient funding to reduce energy demand in social housing** and **introduce half-hour metering and charging for domestic energy** to reduce emissions from the second largest emitting sector and support the people most at risk from the financial costs of decarbonisation; and
- **Accelerate sustainable construction practices** to decarbonise this vital but carbon-intensive sector.

These measures should be accelerated in addition to delivering the range of vital infrastructure upgrades the UK urgently needs. The next government will have to get to grips with the nationwide energy and transport systems especially – a new energy network is required to achieve net zero. At the same time, many of the UK’s social and productivity issues would be solved by better transport and communications infrastructure.

Net zero in the UK: why the next parliament matters

The UK has made rapid progress towards net zero. It is the first G7 country to halve its carbon emissions relative to 1990 levels. However, the second half of emissions reductions will be much harder to achieve.

The government has committed to reduce emissions by at least 68% by 2030, relative to 1990 levels, and by 78% by 2035. The next parliament is also the last opportunity to meet the 2030 Sustainable Development Goals.

However, progress towards those targets is slowing.

The CCC has expressed 'low' confidence in the UK meeting its 2030 emissions target. A lack of urgency, policy gaps and rollbacks on key commitments have lowered expectations. Recent progress has been mainly achieved in the electricity supply sector alone. Reductions outside this sector need to accelerate four-fold to meet the 2030 target, according to the CCC.

Infrastructure is key

Two-thirds of UK emissions currently come from economic infrastructure, including, transport, energy (including heat), water and waste.

Infrastructure is also the bedrock of society. It is the key to tackling economic, environmental and social challenges and improving the lives of the public. It needs to be planned and refreshed regularly by any government.

In other countries, governments have begun to grasp the transformative social and economic opportunities arising from the net zero transition and stepped up policymaking and investment. The US Inflation Reduction Act and the EU Net-Zero Industry Act have increased international competition for investment, resources and skills. Without strong leadership underpinned by clear, stable policymaking, the UK risks being left further behind.

That said, effective climate action requires a coordinated global response. The next UK government can determine the country's delivery of its 2030 commitments and beyond, stepping up its leadership on the world stage at a critical juncture.

How the ICE selected these measures

- **Delivering public benefits:** The purpose of infrastructure is to improve people's lives. These measures would have a positive impact on the health, well-being and prosperity of the public.
- **Enabling sustainable development:** These measures would either have a positive impact or would not harm the UK's biodiversity and nature, climate resilience and circularity objectives.
- **Achievable and impactful by 2030:** These are priority measures needed to deliver net zero by 2050 which a new government can implement to achieve tangible outcomes in the next parliament.
- **A systems approach:** Infrastructure is a system of systems. These measures encompass transport, energy and heat in buildings but are interlinked and mutually reinforcing. Progress in one system can enable progress in others and help maximise the co-benefits.
- **Affordable:** In a time of fiscal constraint, these measures are viable proposals for the next government and the private sector to invest in.
- **Deliverable using existing technology:** Achieving impact by 2030 must be primarily based on existing technologies. However, implementing these actions can also help buy time for new technologies to be developed or reduce the new infrastructure required, particularly energy and carbon capture capacity.

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. Please contact policy@ice.org.uk to share your views on the issues set out in this briefing paper.

Day 1 priorities for the next UK Parliament

Public engagement

1. Deliver a public engagement strategy emphasising the benefits of the net zero transition

- Establish responsibility in government for net zero public engagement and education

- Establish an independent source of reliable information for homeowners and small businesses

Why this is a priority

The UK's net zero progress so far has been achieved with little impact on people's day-to-day lives. The remaining emissions cuts cannot be achieved in the same way – over 65% of emissions reductions to 2035 alone must involve some form of public choice.[1] To make those choices, people will need a sense of understanding and agency about their role in the transition rather than viewing net zero as something being done to them.[2]

Yet, the UK still does not have an overarching public engagement strategy for net zero.

Recent polling for the ICE's policy paper on public behaviour change shows that most of the public want to make changes, but need more engagement, support and incentives.[3] For example, access to impartial public information is a 'key differentiating factor' in successful demand reduction programmes.[4] Instead, low trust in government communications, confusion over the options and fears of higher costs are disincentivising many people from acting.[5]

What benefits will be delivered by 2030

In the CCC's tailwinds scenario for buildings an extra 8 MtCO2e emissions reduction could be achieved by 2030 through higher behaviour change in homes alongside faster uptake of energy efficiency measures in all building types.[6]

Public engagement strategies can achieve significant impact quickly if delivered effectively. For example, during the energy crisis in 2022, the German Government launched an information campaign on energy savings in June, whereas the UK's equivalent did not launch until late December. That winter overall energy demand in Germany fell by 5% compared to 1% in the UK.[7]

Public engagement that starts with energy demand could be developed to encourage beneficial behavioural changes in other areas, such as water efficiency and waste reduction. The UK's climate resilience and the health of households would also benefit from buildings advice that considers overheating and air quality risks alongside energy efficiency installations.

While there will be upfront costs, people who act will also benefit from lower bills by 2030. A lack of investment in green technology like solar panels, insulation, heat pumps and electric cars over the last decade added up to £1,900 to household bills in 2023.[8]

[1] Climate Change Committee (2020) Sixth Carbon Budget
[2] Tony Blair Institute (2021) Polls Apart? Mapping the Politics of Net Zero
[3] All Party Parliamentary Group on Infrastructure and ICE (2024) What are the public behavioural changes required to meet net zero?
[4] Energy Savings Trust (2023) National or local retrofit advice?
[5] Climate Change Committee (2023) 2023 Progress Report to Parliament; National Infrastructure Commission (2023) Second National Infrastructure Assessment
[6] Climate Change Committee (2023) 2023 Progress Report to Parliament
[7] Ibid.
[8] Energy & Climate Intelligence Unit (2024) Cost of NOT zero in 2023

Is it doable and affordable?

An overarching UK public engagement strategy is low-cost to implement and already overdue.[9] Without one, achieving net zero will be far less cost-effective, much riskier and the co-benefits for society lower.[10]

Reducing energy demand is the easiest and cheapest way to ensure the UK's energy security by reducing gas and oil demand. A substantial reduction could also reduce the size of the future electricity system from around four times to twice its current size. According to one estimate, lifestyle changes could lower the cost of the energy transition by £70 billion.[11]

There are many proven models of effective engagement strategies and information portals to learn from, including:[12]

- Home Energy Scotland: Almost half (47%) of customers who received impartial advice installed at least one energy efficiency, low carbon heat or renewable energy improvement and 38% planned to install at least one improvement in the next 12 months. In a weighted comparison, Scotland is 'racing ahead' of England in solar and air source heat pump installation.

- MaPrimeRénov': France's retrofit scheme helped deliver 670,000 renovated homes in 2022. A streamlined customer journey engages homeowners through a one-stop-shop service that includes comprehensive, impartial advice, a directory of installers, and access to funding schemes.

Transport

2. Establish an urban Tram Delivery System

- Set up a project pipeline accelerator to develop ten urban tram schemes in five years – in a further five years they can be delivered

3. Incentivise increased public transport usage and active travel

- Use fare and regulatory reform and new urban mass transit networks to reduce car usage and massively increase journeys by public transport and active travel

Why this is a priority

Surface transport is the UK's highest-emitting sector, contributing 23% (105 MtCO2e) of total UK emissions in 2022. The vast majority (98%) of these come from road transport.[13] Air pollution causes 65,000 early deaths each year and is much higher on average in more deprived parts of the UK.[14]

Implementing the Zero Emission Vehicle Mandate is critical for the next government, but uncertainty about the pace and emissions impact of electric vehicle (EV) uptake requires robust modal shift policies to mitigate the risks.[15] Achieving a cost-effective net zero transition and maximising the co-benefits will be much harder without reducing car-driven miles.[16]

[9] Climate Change Committee (2023) 2023 Progress Report to Parliament; Department for Energy Security and Net Zero and Department for Business Energy and Industrial Strategy (2023) Mission Zero: Independent Review of Net Zero
[10] Climate Change Committee (2023) 2023 Progress Report to Parliament
[11] Centre for Research into Energy Demand Solutions (2021) The role of energy demand reduction in achieving net-zero in the UK
[12] All Party Parliamentary Group on Infrastructure and ICE (2024) What are the public behavioural changes required to meet net zero?; Energy Saving Trust and Green Alliance (2023) Climate policy that cuts costs: International policy comparison
[13] Climate Change Committee (2023) 2023 Progress Report to Parliament
[14] Green Alliance (2020) Balancing the energy equation: three steps to cutting UK demand; Institute for Public Policy Research (2024) Healthy Places, Prosperous Lives

However, while many people want to switch from cars to cleaner transport modes, they face limited options. Two-thirds of people in comparable European cities can reach their city centre by public transport in 30 minutes, compared to only 40% of people in large UK cities.[17] Poor transport connectivity also means large regional English cities are less productive than similarly sized European counterparts.[18] Better transport networks are essential to unlocking economic growth across the UK as well as achieving net zero.

What benefits will be delivered by 2030

By 2030, a new urban tram delivery body could develop the evidence base and a replicable model for designing and delivering new urban tram infrastructure. Over the same period, 10 UK towns and cities could develop plans for new schemes to be delivered in a further five years.

The case for urban light rail

Evidence suggests that light rail encourages modal shift in passengers who are less likely to use other public transport modes:[19]

- In Nottingham, 30% of tram users had switched from cars, and 29% of Metrolink users in Manchester would use a car for their journey if the tram service were unavailable.
- In Greater Manchester, the number of passengers carried on light rail lines is now six times higher than on the previous heavy rail services. The frequency, accessibility, and street-level access of the tram are significant pull factors for users.

A full tram can take 90–150 cars off the road.[20] Mid-sized European cities with new urban rail or tram systems experienced, on average, a 7.7% reduction in road congestion and a 1.4% decrease in travel times.[21] In the UK, traffic congestion cost the economy almost £8 billion in 2018.[22]

Trams can also catalyse urban regeneration by stimulating local economic activity along the route and enabling street reconfigurations that favour active travel.

Reducing demand for car travel through home-working and modal shift could contribute reductions of around 14 MtCO2e by 2030.[23] Government modelling suggests that in a mode-balanced transport scenario, with a high and fast uptake of EVs and a greater share of public transport, emissions would fall from 83.7 MtCO2e to 60.4 MtCO2e (-27.8%) by 2030.[24] Reducing traffic by 20% by 2030 would avoid the 11.5MtCO2e emissions overshoot in the medium EV uptake scenario.[25]

New urban tram systems would significantly contribute to the government's ambition to attract more investment to large towns and cities outside of the South East by delivering 'London-style' public transport throughout England.[26] Raising the effective size of the UK's big cities to European levels could increase agglomeration benefits by £23.1 billion annually.[27]

The government could also generate £115 million annually in healthcare cost savings by improving public transport in six of the UK's largest cities.[28] Active commuting is associated with a 10% decrease in the risk of cardiovascular disease and

[15] National Infrastructure Commission (2023) Second National Infrastructure Assessment
[16] RAC Foundation (2023) Is it necessary to reduce car mileage to meet our carbon emission goals?; Green Alliance (2021) Not going the extra mile: driving less to tackle climate change
[17] Royal Society of Arts (2023) Unleashing the potential of the UK's cities
[18] National Infrastructure Commission (2023) Second National Infrastructure Assessment
[19] House of Lords Built Environment Committee (2022) Public transport in towns and cities
[20] TUC (2023) Public transport fit for the climate emergency
[21] Railway Industry Association (2022) The Economic, Environmental, and Social Opportunities that Rail Brings to the UK
[22] Green Alliance (2021) Not going the extra mile: driving less to tackle climate change
[23] Climate Change Committee (2020) Sixth Carbon Budget
[24] Department for Transport (2022) National Road Traffic Projections 2022
[25] Green Alliance (2021) Not going the extra mile: driving less to tackle climate change
[26] Department for Levelling Up, Housing and Communities (2022) Levelling Up the United Kingdom
[27] Centre for Cities (2021) Measuring up – Comparing public transport in the UK and Europe's biggest cities

a 30% decrease in type 2 diabetes risk.[29] Shifting 1.7% of car journeys to active travel could generate £2.5 billion of annual health benefits.[30]

The UK could also become more socially accessible and inclusive by improving transport links for the 46% of low-income households with no access to a private vehicle.[31]

Is it doable and affordable?

A scalable and replicable urban light rail model would help reduce infrastructure costs, which are currently unaffordable in many areas. Innovation, such as the very light rail system being developed in Coventry, can further lower costs. Recent light rail and tram schemes suggest ten urban tram networks could be delivered at a total cost of around £3 billion.[32]

Where light rail is not suitable, bus rapid transit schemes could encourage modal shift at a lower cost while achieving benefits similar to those of a light rail system.[33]

Additional investment could come from reforming taxes on higher-emitting transport modes. For example, taxing kerosene for domestic flights at 33p per litre, which is in line with the rate proposed by the EU, would raise £594 million.[34]

Fare schemes to incentivise public transport use are already being widely implemented in the UK and worldwide. A flat-rate bus pilot scheme, backed by £23.5 million of government funding, launched in Cornwall in January 2022 and has seen an indicative 10% increase in passenger numbers.[35] Other European governments are experimenting with fare caps to incentivise public transport use, including Germany and France's €49 travel schemes.

However, cost is not the only barrier. Urban transformation at pace is currently not possible. The next government must improve coordination and address barriers such as local planning inefficiencies.[36]

4. Accelerate freight decarbonisation through targeted electrification of key rail sections

Why this is a priority

UK road freight emissions have increased by 4% since 2019. Vans and HGVs accounted for 41 MtCO2e of 105 MtCO2e surface transport emissions in 2022. By contrast, rail emissions were just 1.5 MtCO2e. Van traffic has increased more than other vehicle types. If growth continues at post-pandemic rates, emissions reduction targets will be much more challenging to meet, and urban congestion, noise, and air quality will be adversely impacted.[37]

However, there is significant potential to cut freight emissions through modal shift from road to rail. In the construction sector, for example, rail freight already carries up to 20 million tonnes of materials every year, but this is a relatively small fraction of total construction materials.[38]

Just over half (52%) of all HGV tonne-kms are generated by trips that could be suitable for modal shift to rail, but more granular analysis suggests that over a third (38%) of HGV tonne-kms are likely well-suited to modal switch.[39]

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[28] Railway Industry Association (2022) The Economic, Environmental, and Social Opportunities that Rail Brings to the UK
[29] Institute for Public Policy Research (2024) Healthy Places, Prosperous Lives
[30] Green Alliance (2021) Not going the extra mile: driving less to tackle climate change
[31] Ibid.
[32] For example, the Luton DART cost £290 million and the Caen tram extension cost EUR290 million.
[33] House of Lords Built Environment Committee (2022) Public transport in towns and cities
[34] Campaign for Better Transport (2024) A Budget for everyday transport?
[35] Department for Transport (2022) £2 bus fare cap across England to save passengers money
[36] House of Lords Built Environment Committee (2022) Public transport in towns and cities; Catapult (2022) Integrated Planning for Net Zero
[37] Climate Change Committee (2023) 2023 Progress Report to Parliament
[38] Rail Freight Group (2024) Building better with rail freight in Greater Manchester
[39] Chartered Institute of Logistics and Transport (2023) Freight Electrification Map

What benefits will be delivered by 2030

Making it easier for businesses to move freight is a key enabler of economic growth. Rail freight network investment of around £9–12bn in capital and £500m in revenue over ten years could cut HGV emissions by 40% while generating £75–91bn in wider social and economic benefits.[40]

The Chartered Institute of Logistics and Transport (CILT) estimates that electrifying less than 60 miles of 'Infill sections' on Britain's railways would decarbonise around 2 million train miles annually. This is equivalent to taking around 80 million diesel HGV miles off Britain's roads each year.[41]

Is it doable and affordable?

CILT estimates the cost of electrifying key 'Infill sections' would be around £100m and could be delivered across two years to achieve some quick wins.

This would provide a starting point for a longer-term rail electrification programme. Such a strategy could be developed in parallel, setting out a rolling programme of works so that by 2030, greater certainty could drive investment and capacity building across the supply chain, freight industry and customers.

Energy

5. Introduce half-hour metering and charging for domestic energy

- Work with energy suppliers to identify risks and protect vulnerable households

Why this is a priority

The energy sector faces a series of challenges: reducing high energy costs, phasing out fossil fuels and delivering new infrastructure at pace to meet increased electricity demand of around 50% by 2035.[42]

Demand-side measures are essential to address these. The government aims to cut energy demand from buildings and industry by 15% from 2021 levels by 2030. For the domestic sector, this is less ambitious than the CCC's Balanced Pathway target, which is closer to 20%.[43]

Half-hour metering will be a key enabler of demand-management. Many people will benefit from more bespoke products matched to their usage and needs. However, some customers may be unable to actively manage their energy usage day by day or afford the technologies most integrated with the new approach. People who use electricity at more expensive peak periods and cannot change their usage patterns could pay significantly more.[44]

What benefits will be achieved by 2030

Delivered at scale, half-hour metering can optimise the balance of energy supply and demand to dynamically shift demand to match renewable supply. For customers, Ofgem has estimated the net benefits of the market-wide half-hourly settlement (MHHS) will be £1.5-£4.5 billion in the period up to 2045.

[40] TUC (2023) Public transport fit for the climate emergency
[41] Chartered Institute of Logistics and Transport (2023) Freight Electrification Map
[42] National Infrastructure Commission (2023) Second National Infrastructure Assessment
[43] Scottish Power (2023) Filling the Gap – Transforming Energy Efficiency in Britain's Homes
[44] Centre for Research into Energy Demand Solutions (2021) Shifting the focus: 5 Electricity: making demand more flexible

Evidence suggests that demand flexibility models positively impact customer behaviour to reduce demand:

- When Octopus Energy launched Britain's first half-hourly time-of-use tariff in 2018, 28% of people responded to price signals to shift their energy consumption outside peak times.[45]
- More than 1.5 million households and businesses participated in the Demand Flexibility Service over winter 2022-23, which gave consumers a financial incentive to shift their consumption during 22 'events'. Consumption was reduced by more than 3,300 MWh, enough to power nearly 10 million homes for one hour during peak times.[46]

An MHHS transition that helps people feel active participants in the net zero transition could drive further behavioural changes, such as making EVs more attractive if customers can save money by charging them outside peak times.

Is it doable and affordable?

Ofgem's deadline for introducing the MHHS across the electricity retail market is December 2026, although the timetable for the rollout has already slipped several times.

Over 96% of UK homes and small businesses are technically eligible for smart meters.[47] The challenge for the next government and Ofgem is ensuring suppliers and customers are prepared for the MHHS. For example, suppliers will need to be able to handle massive amounts of additional data, and more research is needed into the risks of the transition across all sectors of society.

Heat in buildings

6. Ensure sufficient funding to reduce energy demand in social housing

Why this is a priority

Heating buildings accounts for almost a quarter (24%) of fossil fuel demand in the UK and contributes 90 MtCO2e (20%) of emissions. The next ten years are crucial – emissions from buildings need to be halved in that time.[48] Without significant demand reduction, the transition to low-carbon heat by 2050 is unlikely to be achieved.[49]

The strong link between housing quality and health outcomes must also be more embedded in policymaking. Upgrading the UK's most inefficient homes would prevent over 650,000 children from developing asthma by 2030, save the NHS £2 billion in the same timeframe and prevent 6,000 excess winter deaths yearly.[50]

In the UK, there are 4 million households in the social rented sector. This is about 17% of the housing stock and includes a higher proportion of lower-income and vulnerable populations who could gain the most from energy efficiency improvements but are also least likely to be able to afford it.[51]

The risks to vulnerable households from the mass rollout of half-hour metering means improving energy efficiency is a key measure for protecting those at risk of paying more for their energy.

[45] Department for Business, Energy & Industrial Strategy (2018) Smart meters: unlocking the future
[46] National Audit Office (2023) Update on the rollout of smart meters
[47] Ibid.
[48] Climate Change Committee (2023) 2023 Progress Report to Parliament; National Infrastructure Commission (2023) Second National Infrastructure Assessment
[49] ICE (2023) Civil engineering insights on pathways to decarbonisation - delivering the UK government's Net Zero Strategy
[50] Citizens Advice (2023) Home advantage: Unlocking the benefits of energy efficiency
[51] Department for Levelling Up, Housing and Communities (2023) English Housing Survey 2021 to 2022: social rented sector

What benefits will be achieved by 2030

Investment in social housing is needed to ensure an affordable, just and fair net zero transition. Social housing includes a particularly high proportion of lone-parent households (18%), households with at least one member with a long-term illness or disability (54%) while 8% of social renters have experienced homelessness.[52]

For subnational authorities, more guaranteed long-term funding packages will provide more certainty to build the capacity to focus on delivery.

Is it doable and affordable?

In the next parliament, the government should commit funding and set the trajectory for a longer-term social housing retrofit programme. Once that is done, local authorities and suppliers can get on with delivery.

Domestic upgrades have been implemented successfully at scale before with direct government support. Ownership by councils and housing associations and the similarity of much of the housing stock facilitates rollout.

The NIC has recommended that the government extend the Social Housing Decarbonisation Fund to deliver £5.1 billion of capital spending on energy efficiency improvements between 2024 and 2030. It has also called for £33.8 billion to be allocated between 2024 and 2050 to deliver low-carbon heat in the social housing sector.[53]

Committed government funding will kick-start the market and enable efficient delivery and scale-up. There is currently a £30-50,000 funding gap per housing unit, which will be reduced as the programme scales up. Government-funded retrofitting of 5,000 social houses each year from 2025 to 2030 could lower the capital cost of retrofitting by 50% by 2030 due to resulting economies of scale.[54] This will also reduce costs for other housing types, potentially incentivising more households to act.

Sustainable construction

7. Accelerate sustainable construction practices

Why this is a priority

Construction is a major contributor to global emissions. In the UK, industry was responsible for 14% (63 MtCO2e) of emissions in 2022, including 12.1 MtCO2e from construction.[55] Reducing construction emissions is critical because of the scale of new infrastructure required to deliver net zero and meet the UK's other long-term challenges, such as housing demand.

Reducing the need for critical materials through more efficient construction practices will also lower the risk of shortages amid growing global competition for resources. This, in turn, will help manage the cost of construction in the UK, which is high by international standards.[56] Waste alone costs the sector £11 billion a year.[57]

What benefits will be delivered by 2030

The need to retrofit the UK's housing stock will mean carbon emissions from domestic construction will still rise by 2030 before declining towards 2050. However, more sustainable construction practices will help mitigate the impact and begin

[52] Ibid.
[53] National Infrastructure Commission (2023) Second National Infrastructure Assessment
[54] UK Finance (2022) Net Zero Homes: Time for a Reset
[55] Climate Change Committee (2023) 2023 Progress Report to Parliament
[56] National Infrastructure Commission (2023) Second National Infrastructure Assessment
[57] Green Construction Board (2021) The Routemap for Zero Avoidable Waste in Construction

reducing emissions in other sectors by 2030. Embodied carbon from infrastructure could fall by 3% to 6.9 MtCO2e in that period.[58]

Construction has a key role in moving the UK to a circular economy. Across all sectors, maximising resource efficiency could increase GDP by 0.9% by 2035, create over 200,000 gross jobs in the UK and reduce unemployment by about 54,000 jobs by 2030.[59] There will also be export opportunities if the UK becomes a world leader in low-carbon materials.

Is it doable and affordable?

Construction firms are willing to accelerate decarbonisation; many tools and frameworks already exist. Roadmaps include the ICE's Low Carbon Concrete Routemap and the Green Construction Board's Routemap for Zero Avoidable Waste in Construction.[60] However, the sector lacks mandated whole-life carbon assessments and emission reduction targets for embodied carbon to incentivise further action and innovation.[61]

Reducing emissions from construction is also affordable. The Environmental Audit Committee reported that conducting whole-life carbon assessments and reducing embodied carbon 'need not cost more' than traditional carbon-intensive methods.[62] Indeed, the Green Construction Board estimates that designing out waste and material optimisation could reduce the cost of construction by 10% by 2030.[63] It will also help hedge against volatile material prices.

The government, as a major client, wields huge buying power which it could better leverage to deliver sectoral change, such as mandating decarbonised steel and a low-carbon concrete pipeline.

[58] UK Green Building Council (2021) Net Zero Whole Life Carbon Roadmap
[59] Department for Energy Security and Net Zero and Department for Business Energy and Industrial Strategy (2023) Mission Zero: Independent Review of Net Zero
[60] ICE (2023) Low Carbon Concrete Routemap; Green Construction Board (2021) The Routemap for Zero Avoidable Waste in Construction
[61] National Engineering Policy Centre (2021) Decarbonising construction – building a new net zero industry, 2021; House of Commons Environmental Audit Committee (2022) Building to net zero: costing carbon in construction
[62] House of Commons Environmental Audit Committee (2022) Building to net zero: costing carbon in construction
[63] Green Construction Board (2021) The Routemap for Zero Avoidable Waste in Construction

Delivering these measures: roles and responsibilities

Government

- **Provide decisive leadership from Day 1 of the next Parliament.** Delivering net zero is a legal duty; there is no time to lose. Investors, the supply chain and devolved authorities will need clear direction underpinned by stable policies, investment and pipelines.
- **Listen to key advisory bodies, including the CCC and NIC.** Following independent advice delivers public benefits. When governments ignore it, problems get stored up for the future. Placing the NIC on a statutory footing would ensure the publication of a National Infrastructure Strategy once every five years and give investors further confidence and certainty.
- **Change HM Treasury's mindset about infrastructure investment.** Investment in infrastructure needs to be seen as a benefit, not just a cost. More transparency about the economic cost and wider consequences of inaction and delay will help drive this change in mindset. Confirmed longer-term funding for programmes of work will bring many savings and benefits.
- **Strengthen the National Infrastructure and Construction Pipeline.** A coherent to-do list approved by the Treasury and backed by funding commitments will give confidence to investors and the supply chain.
- **Drive the adoption of best delivery practices through the Cabinet Office**. Much good work is underway to improve infrastructure delivery and many tools already exist, including the Construction Playbook and Transforming Infrastructure Performance Roadmap.[64] The key is ensuring their widespread implementation.
- **Leverage the power of government as a client.** The government can drive change through its procurement practices and by embedding standards in the supply chain, such as PAS 2080 for managing carbon.
- **Ensure regulation facilitates investment at the pace and scale required**. Private sector investment in economic infrastructure will need to increase to £40 to £50 billion in the 2030s and 40s. The next government must continue to reform regulation and carry through the work already underway.

Private sector

- **Work with the government to reduce the cost of infrastructure delivery and raise productivity.** Compared to other countries, the cost of delivering infrastructure in the UK is very high.[65] Strong pipelines will help reduce costs, but the next government should challenge industry to deliver more for less. Visibility of a strong and committed pipeline is the necessary signal to enable the private sector to invest in capability and improve productivity / reduce costs of outputs.
- **Work with HM Treasury to develop new sources of financing.** Government and finance providers could work more closely to develop long-term, efficient, low-cost sources of net zero infrastructure financing. Better attainment of cost and programme will improve investor confidence and enable new sources of finance.

[64] Department for Levelling Up, Housing & Communities (2023) Getting Great Britain building again: Speeding up infrastructure delivery
[65] National Infrastructure Commission (2023) Second National Infrastructure Assessment

The public

- **Be active participants in the net zero transition.** Engage with government communications and adopt behaviour change opportunities. Better information and a stable policy environment will improve public trust in systems and accelerate the changes.

The ICE

- **Raise awareness** of the scale of the 2030, 2035 and 2050 net zero challenge and the lack of sufficient progress towards interim targets.
- **Provide insight** to support clear prioritisation based on technical independence, commercial viability, carbon rationality and the need to identify and accept trade-offs.
- **Monitor progress** and continue providing independent and objective advice to key stakeholders, and encourage acceleration towards net zero by 2050, if not sooner.
- **Work with other relevant organisations to change public and policymaker perceptions** of the benefits of infrastructure investment and develop a clear, positive narrative about the net zero transition.

About 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 identifying infrastructure systems priorities which are required for the UK to be on track to deliver net zero by 2050 while delivering wider environmental, social and economic co-benefits for the public.

For more information, please contact:

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