

Written evidence submitted by the Institution of Civil Engineers

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Overview

The Covid-19 pandemic has had an unprecedented impact on the UK's economy. At the same time, the recovery represents a once-in-a-generation opportunity to recalibrate the economy around greener growth. Infrastructure is a key enabler for achieving a range of economic, social and environmental goals. In addition, infrastructure investment can act as a stimulus for economic recovery in both the short and medium term, while helping governments achieve their longer-term objectives. This submission recommends greening the post-Covid recovery by:

- ensuring government's immediate economic response to Covid-19 is driven by the UK's existing long-term challenges, including population growth, meeting the 2050 net-zero emissions target and the UN Sustainable Development Goals.
- reforming the use of HM Treasury's Green Book so infrastructure investment, focused on economic stimulus packages, aligns with net-zero outcomes.
- investing in new and improved infrastructure, such as accelerating the roll-out of both full-fibre and 5G communications infrastructure, and greater active travel (cycling and walking) provision.
- establishing a UK Investment Bank, with a sustainability mandate, to drive investment in net-zero-aligned infrastructure as part of post-Covid recovery.
- developing an Infrastructure Skills Plan to inform the design of stimulus packages so the UK has a workforce capable of delivering the net-zero emissions target and public investment delivers green infrastructure jobs throughout the country.
- digitalising infrastructure so existing assets can be operated more flexibly in response to changing conditions post-Covid and so new infrastructure assets can be delivered more efficiently and achieve cost and carbon savings.

In this submission, we have chosen to answer five (1, 2, 3, 6 and 7) of the Committee's questions.

Question 1: How can any fiscal and economic stimulus packages be aligned with the UK's ambitions on net-zero, biodiversity, the circular economy, and Sustainable Development Goals?

Investment in well-designed and delivered infrastructure is needed to help rebuild the UK and deliver a stronger, cleaner and more resilient economy. Despite its present impact, Covid-19 has not changed the fundamental challenges that face the UK in the long term. Therefore, government's economic response to Covid-19 must be driven by the UK's existing long term challenges, including population growth, meeting the 2050 net-zero emissions target and the UN Sustainable Development Goals (SDGs).¹ Notably, 72% of the Sustainable Development Goal indicators are linked to investment in networked infrastructure and the UK currently has gaps in policy or is performing inadequately across 57% of the domestic targets.²

The economic response to Covid-19 presents a unique opportunity for the UK to recalibrate its approach and rebuild the economy around the achievement of the 2050 net-zero target. This was the contention of ICE's recently published major report, *State of the Nation 2020: Infrastructure and the 2050 Net-Zero*

¹ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

² ICE (2020) [Covid-19 and the UK's Sustainability Challenges – Lessons for the New Normal](#)

Target.³ The report makes a series of recommendations on the policy interventions that will be required for the UK's infrastructure sector to play its part in ensuring that the target is met.

In particular, *State of the Nation 2020* calls on government to reform HM Treasury's Green Book to better reflect the net-zero target in infrastructure project appraisals and assessments.⁴ Public procurement is a primary lever by which government can pursue its strategic objectives. Government is currently undertaking a review of the Green Book to make sure that public investment spreads opportunity across the UK as part of the 'levelling up' agenda.⁵ As part of this review, the use of the Green Book should be improved so public investment can better deliver government's long term social, economic and environmental strategic objectives. This would help to prioritise investments in emissions reduction and ensure infrastructure decisions, focused on economic stimulus, align with net zero.

Generally, ICE would like to see public procurement and funding models become more intelligent and outcomes-based, so that communities and businesses get the infrastructure that will deliver the greatest social, economic and environmental benefits. One way to achieve this would be to move from project-by-project bespoke procurement to programmes based on delivery outcomes.⁶

Question 2: How should the policy response to the current crisis differ from the response to the global financial crash in 2008?

In contrast to the 2008 response, ICE would like to see new and well targeted infrastructure investment aimed at achieving the 2050 net-zero target. For infrastructure investment to be an effective stimulus, it needs to be targeted at the right projects and be delivered in the timeframes required. Examples of approaches that would be effective include accelerating the roll-out of both full-fibre and 5G communications infrastructure, and greater active travel (cycling and walking) infrastructure provision (details of specific infrastructure policy responses are detailed in the subsequent question).⁷ These infrastructure investments can be delivered immediately, provide short term stimulatory benefits, and will also fulfil long term priorities (e.g. support a shift to more flexible working arrangements). As was discussed in the previous question, this policy response must not be fixated on short term priorities (e.g. deficit reduction), but rather longer-term outcomes such as the net-zero target or the SDGs.

The ICE is pleased that infrastructure has featured recently in both the Prime Minister's 'Build, build, build' speech on 30 June 2020⁸ and in the Chancellor's 'A Plan for Jobs' speech on 8 July 2020.⁹ ICE believes infrastructure investment has a major role to play in the recovery from the Covid-19 crisis¹⁰ because it is:¹¹

- an investment in an asset that endures, with quantifiable secondary benefits.
- historically not invested in at the rate required so what is 'needed' is often easy to spot - particularly repair and maintenance.
- currently a labour-intensive process compared to other industries.

³ ICE (2020) [State of the Nation 2020: Infrastructure and the 2050 Net-Zero Target](#)

⁴ Ibid

⁵ HM Treasury (2020) [Budget 2020](#)

⁶ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

⁷ Ibid

⁸ PMO (2020) ['Build, build, build': Prime Minister announces New Deal for Britain](#)

⁹ HMT (2020) [A Plan for Jobs speech](#)

¹⁰ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

¹¹ ICE (2020) [Build? Build? Build? What any Covid-19 stimulus package should prioritise](#); AECOM (2020) [The Future of Infrastructure](#)

Within advanced economies, research undertaken by the IMF has shown that increasing investment in infrastructure by a single percentage point of GDP increases the level of output by 0.4% in the same year and by 1.5% four years after.¹²

The stimulatory effect of infrastructure investment applies throughout an asset's life cycle, from planning all the way through to operation, creating a range of demand multiplier effects.¹³ First, there is a multiplier on spending associated with the planning, procurement and design of the infrastructure. Second is the multiplier associated with building the infrastructure. Finally, once the infrastructure is built, the asset then facilitates the demand for infrastructure services to be met and for the asset to be maintained.

Analysis conducted by Oxera on behalf of ICE found that the Office for National Statistics estimates of multipliers by infrastructure sector range between 1.5 and 2.7. Therefore, for each £1 spent on infrastructure, there would be an additional £1.50 - £2.70 of demand due to multiplier effects.¹⁴ Tangible examples include the following:

- Investment in faster digital connectivity can result in an increase of between 0.4% and 3.2% in the number of businesses operating in an area.¹⁵
- Projects funded under the first Road Investment Strategy were estimated to generate £22 billion of economic benefits over their lifetimes, at a cost of £5 billion.¹⁶
- In 2014 the Environment Agency estimated that every £1 of capital spending in flood management schemes resulted in £8 of benefits from prevented flood damage.¹⁷

Question 3: In what areas should interventions be targeted to deliver both economic and environmental benefits in the short and long term?

The UK has long term social, economic and environmental goals that remain, despite Covid-19, such as achieving the 2050 net-zero target and the 2030 UN SDGs. The SDGs all link to recognised long term challenges in the UK, including regional economic inequalities, poor productivity and a workforce lacking the right skills.¹⁸ UN analysis shows that the Covid-19 crisis is likely to have a profound and negative effect on sustainable development efforts. A prolonged global economic slowdown will adversely impact the implementation of the SDGs' 2030 Agenda and the Paris Climate Agreement.¹⁹

Its therefore imperative that even amid the current Covid-19 crisis, long term planning continues to be driven by the UK's existing long-term challenges, including population growth, meeting the 2050 net-zero emissions target and the UN SDGs.²⁰

As far back as 2016, ICE's National Needs Assessment highlighted the need for policy decisions on infrastructure to focus on driving the economic growth necessary to enhance the UK's position in the global economy, support a high quality of life and realise a low-carbon future.²¹ Short term infrastructure policy interventions are key to a green post-Covid recovery that delivers long term economic and environmental benefits.

¹² IMF (2014) [World Economic Outlook: Legacies, Clouds, Uncertainties](#)

¹³ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

¹⁴ Analysis conducted by Oxera on behalf of ICE (2020)

¹⁵ Hasbi, M. (2017) [Impact of Very High-Speed Broadband on Local Economic Growth: Empirical Evidence](#)

¹⁶ Department for Transport (2015) [Road Investment Strategy: Economic Analysis of the Investment Plan](#)

¹⁷ ICE (2020) Covid-19 and the new normal for infrastructure systems – next steps; National Audit Office (2014) [Strategic Flood Risk Management](#)

¹⁸ ICE (2020) [Covid-19 and the UK's Sustainability Challenges – Lessons for the New Normal](#)

¹⁹ United Nations (2020) [Shared responsibility, global solidarity: Responding to the socio-economic impacts of COVID-19](#)

²⁰ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

²¹ ICE (2016) [National Needs Assessment](#)

The ICE strongly supports the Committee on Climate Change's recent advice on how climate policy should play a part in the economic recovery.²² ICE's policy positions²³ align closely with the Committee's recommendations for government to seize the opportunity to turn the COVID-19 crisis into a defining moment in the fight against climate change.²⁴

The Committee on Climate Change's advice parallels recent research from the Oxford Smith School of Enterprise and the Environment, which demonstrates that green Covid-19 recovery packages will boost economic growth and help to mitigate climate change. Analysis of fiscal policy responses to the 2008 global financial crisis found that investment in green stimulus policies had numerous advantages over more traditional stimulus policies.²⁵

The research shows that designing Covid-19 recovery packages around investment in infrastructure such as renewable energy, energy storage, grid modernisation and carbon capture and storage technology would offer both high economic multipliers and positive climate impacts.²⁶ In summary, investment in green infrastructure projects create jobs, delivers high short term returns per pound spent, and leads to increased long term cost savings, by comparison with traditional fiscal stimulus.

In this respect, *State of the Nation 2020* put forward a number of policy interventions aimed at facilitating investment in green infrastructure in response to the net-zero challenge. In addition to reforms to HM Treasury's Green Book, the report also recommends updating regulatory models to promote the achievement of net zero and enable longer-term and more flexible strategic planning and investment decisions.²⁷ This would ensure investment in regulated infrastructure assets delivers both environmental and economic benefits in both the short and long term.

Another policy intervention recommended in the report is for the establishment of a UK Investment Bank, with a sustainability mandate to invest in net-zero-aligned infrastructure and crowd-in private finance. A potential first role for the Bank could be to support the post-pandemic economic recovery through investment in net-zero infrastructure projects that demonstrate good value (i.e. socio-economic, environmental or regional development benefit) beyond more narrowly defined considerations.

The impact of these policy interventions will also be greater if we improve the delivery of infrastructure. This is the premise of a recently published White Paper by the ICE and the Infrastructure Client Group. The White Paper includes several recommendations around improving the delivery of infrastructure; so that processes are more efficient, and the infrastructure sector is more productive as a consequence. Specifically, the paper sets out the need for the greater use of enterprise delivery models across the sector and a switch to outcomes-based procurement.²⁸

Question 6: How can the economic recovery stimulus be used to deliver green jobs at a time of potentially high unemployment?

The Office for Budget Responsibility has forecast that unemployment in the UK will peak at 12%, with a 12% fall in GDP, in 2020.²⁹ But the economic impact of Covid-19 is not necessarily being felt evenly. For

²² Committee on Climate Change (2020) [Building a Resilient Recovery from the COVID-19 Crisis](#); Committee on Climate Change (2020) [Reducing UK emissions: 2020 Progress Report to Parliament](#)

²³ ICE (2020) [State of the Nation 2020: Infrastructure and the 2050 Net-Zero Target](#); ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#); ICE (2020) [Infrastructure as a Stimulus – Laying the Foundations for the New Normal](#)

²⁴ Committee on Climate Change (2020) [Reducing UK emissions: 2020 Progress Report to Parliament](#)

²⁵ Hepburn, C., et al. (2020) [Will COVID-19 Fiscal Recovery Packages Accelerate or Retard Progress on Climate Change?](#), Oxford Review of Economic Policy 36(S1)

²⁶ Ibid

²⁷ ICE (2020) [State of the Nation 2020: Infrastructure and the 2050 Net-Zero Target](#)

²⁸ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

example, while hundreds of thousands more people have registered for unemployment benefits in England since the beginning of the lockdown, the majority of these registrations have been made in northern areas rather than in the south.³⁰ KPMG analysis of Office of National Statistics growth forecasts for 2020 also highlights that the economies in the West Midlands and East of England are likely to suffer the greatest contractions, at 10%, with London being the least impacted region, at 7%.³¹

ICE believes the government's 'levelling up' agenda continues to be vitally important in the context of the economic recovery from Covid-19 and the delivery of green jobs.³² In fact, ICE sees a real opportunity to level up regions throughout the UK, overcome regional inequalities and build new green economy skills and workforces through transforming infrastructure for net zero.³³

To return to the concept of multipliers explored above, one of the most notable effects of infrastructure investment is related to employment. We already know that the infrastructure sector is a major contributor to economic growth. In 2018 the energy sector generated £86.6 billion in economic activity,³⁴ while in 2017 the rail industry contributed £36.4 billion to GDP and employed 600,000 people.³⁵ Investing in infrastructure creates income opportunities and generates jobs, both directly through construction and maintenance, and indirectly through wider supply-chain benefits that support economic activity across the country in the short to medium term.³⁶ Past studies on the impact of infrastructure investment have found that for every 1,000 jobs which the construction sector gains directly through increased infrastructure spending, a further 2,053 jobs are added to the rest of the economy as indirect or induced effects.³⁷

Investment in infrastructure can play a significant role in stimulating economic recovery, providing green jobs and driving the government's 'levelling up' agenda. This was key a finding of *State of the Nation 2020*, which specifically recommended government develop an Infrastructure Skills Plan to ensure the UK has the capability within the sector for the net-zero transition. The Skills Plan would help to identify current skills gaps, emerging skills requirements, barriers to upskilling and retraining, and education/training requirements, as well as foster a more diverse and inclusive workforce. It would help to ensure education and industry are linked more closely at a regional level, so that training reflects local skills needs.³⁸ An Infrastructure Skills Plan would provide a framework for targeted investment so the economic recovery delivers the knowledge and skills for a net-zero infrastructure workforce and creates the green jobs of the future.

Question 7: The pause in economic activity, fall in traffic and increase in working from home during the lockdown has resulted in rapid reductions in air pollution and greenhouse gas emissions; what measures can be utilised in the recovery to continue these trends as economic activity resumes?

The Covid-19 pandemic is changing our society. But the lasting impacts of the pandemic on how we use and interact with infrastructure systems are uncertain.³⁹ Polling suggests that only 9% of people want

²⁹ Office for Budget Responsibility (July 2020) [Coronavirus Analysis](#)

³⁰ Centre for Cities (2020) [What Does the Covid-19 Crisis Mean for the Economies of British Cities and Large Towns?](#)

³¹ KPMG (2020) [Chief Economist's Note: Levelling-Up and COVID-19](#)

³² ICE (2020) ['Levelling up' and the role of infrastructure: ICE discussion paper](#)

³³ ICE (2020) [State of the Nation 2020: Infrastructure and the 2050 Net-Zero Target](#)

³⁴ Energy UK (2020) [Energy in the UK](#)

³⁵ Oxford Economics (2018) [The Economic Contribution of UK Rail](#)

³⁶ International Labour Organization (2010) [Infrastructure, Poverty Reduction and Jobs](#)

³⁷ Centre for Economics and Business Research and Civil Engineering Contractors Association (2013) [Securing our Economy: The Case for Infrastructure](#)

³⁸ ICE (2020) [State of the Nation 2020: Infrastructure and the 2050 Net-Zero Target](#)

³⁹ ICE (2020) [The Use of Infrastructure Systems – Insights into the New Normal](#)

everything to go back to how it was before the pandemic.⁴⁰ The growth in travel is predicted to slow and virtual interactions for work and play are predicted to remain widespread post-pandemic.⁴¹ These changes will likely shape the nature of investment in transport and telecommunications going forward.

ICE and the Infrastructure Client Group recently jointly published a White Paper on the future of the UK's infrastructure networks after Covid-19.⁴² The White Paper explains that in the short term, there will be an appetite among certain segments of the workforce for continued remote working and living. Investments geared at accelerating the roll-out of both full-fibre and 5G communications infrastructure will be fundamental to ensuring remote working can continue. The benefits of active travel were also laid bare during the lockdown and hence the White Paper identifies the need to improve infrastructure provision for cycling, walking and running to continue this trend in the long term.⁴³

However, the White Paper found there was also broad agreement that human interaction, be that in the workplace or in a social environment such as a café or restaurant, is an innate need. While remote living and working has been made possible by videoconferencing and other technologies, it is often regarded as a second-best option to communication and interaction in person and we need to recognise that not everyone has the space or the facilities to be able to work remotely.⁴⁴ Therefore, ongoing investment in public transport networks is still required.

However, the pandemic does provide an opportunity to reset some of the ways in which public transport operates, including restructuring of timetables and fares to accommodate more flexible working and new social habits. Likewise, and where appropriate, the prioritisation of active travel provision is needed to maintain the positive shift to healthier forms of travel that has been witnessed during the Covid-19 lockdown.⁴⁵

Generally, the uncertainty around the short- and long-term impacts of Covid-19 on the UK's infrastructure systems highlights the importance of digitalising new and existing infrastructure assets as well as planning tools such as the Digital Twin⁴⁶.

The digitalisation of infrastructure networks can offer 'in operation' improvements (e.g. lower carbon emissions or better air quality) through more efficient management of infrastructure assets. Digitalisation will also enable the more effective collection, analysis and use of data to enhance infrastructure performance in different economic circumstances.⁴⁷ This data can be used to develop new approaches to resilience and allow operators to flexibly deploy temporary solutions with greater agility in response to changing conditions (e.g. changes in demand as a result of Covid-19 or extreme weather events). There is an additional benefit from digitalisation, in that it will provide data on assets in use to inform future design, potentially delivering cost and carbon savings.⁴⁸

⁴⁰ RSA (2020) [Finding the Road to Renewal](#)

⁴¹ Automobile Association (2020) [Life After Lockdown](#); ICE (2020) [The Use of Infrastructure Systems – Insights into the New Normal](#)

⁴² ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

⁴³ Ibid

⁴⁴ Ibid

⁴⁵ Ibid

⁴⁶ A digital twin is a representation of a physical infrastructure asset in a digital format which can aid the modelling and understanding of that asset.

⁴⁷ ICE (2020) [Covid-19 and the new normal for infrastructure systems – next steps](#)

⁴⁸ ICE (2020) Ibid

About ICE

Established in 1818 and with over 95,000 members worldwide, the Institution of Civil Engineers exists to deliver insights on infrastructure for societal benefit, using the professional engineering knowledge of our global membership.

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