

Infrastructure as a stimulus – laying the foundations for the new normal

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Purpose of this paper

The purpose of this insights paper is to examine the role infrastructure can play post-crisis to minimise the socio-economic impact of Covid-19 and to help facilitate an effective economic recovery.

Government priorities in the short term have rightly been focused on supporting overwhelmed health systems and the millions of workers and business owners who have been affected by the pandemic. Thinking ahead, however, the response to Covid-19 offers significant opportunities to build the foundations for a more resilient and sustainable future that meets the long-term ambitions of the country.

This paper supports the call for evidence that ICE is running on behalf of the Infrastructure Client Group (and by extension the Construction Leadership Council) in order to identify how infrastructure delivery should be reinvented in the UK following Covid-19. Further details of this work are included at the end of this paper.

The paper is structured as follows:

- Infrastructure investment priorities pre-crisis
- The role of infrastructure spending during an economic slowdown
- Learning from responses to other crises.

Infrastructure investment priorities pre-crisis

The UK was already facing a number of socio-economic challenges before the advent of Covid-19. Productivity growth was weak, there was no clear plan on reaching net-zero greenhouse gas emissions by 2050 and significant regional economic disparities were becoming increasingly visible. These issues have not gone away and infrastructure is and remains key to delivering a sustainable solution.

The current government has outlined levelling up, net-zero emissions and building a post-Brexit Britain as long-term priorities, putting in place a number of policies to achieve them. Here we outline the priorities pre-crisis, what actions have been taken and ongoing challenges to address.



Climate change

The UK government has legislated to cut greenhouse gas emissions to net zero by 2050, a response to the report by the Intergovernmental Panel on Climate Change (IPCC) on limiting global warming to 1.5°C to avoid catastrophic climate change.¹

The Committee on Climate Change (CCC) has, however, warned that the UK government has delivered just one of 25 recommended policy actions for achieving the previous target of an 80% reduction in emissions by 2050.² This indicates the presence of a significant policy gap. In order to meet the even more rigorous target of net zero, enormous efforts across all parts of the UK's economy are required, with infrastructure assets and networks playing a core role.³

As well as a need to reduce emissions, another key demand driver is resilience to the impacts of climate change. The CCC has consistently forecast an increase in the risk of extreme weather events as a result of climate change, leading to more frequent occurrences of flooding and drought.⁴

The productivity puzzle

UK productivity levels have underperformed since the financial crisis of 2008. This has an impact on international competitiveness and the sustainability of real wage growth. In the decade to Q4 of 2019, UK productivity increased by an estimated annual average of just 0.5%, compared to 2% per year prior to the 2008 economic downturn.⁵

Regional inequalities

There are stark inequalities within and between regions of the UK.⁶ The economic potential of large parts of the UK is not being realised, limiting opportunities for future generations and impacting wellbeing and life expectancy, as well as fiscal sustainability.

Examining gross disposable household income, London has the highest per head: on average, each person had £27,825 available to spend or save in 2017. Wales had the lowest at £15,754 and this compares with a UK average of £19,514.⁷

¹ Department for Business, Energy and Industrial Strategy (2019) [UK Becomes First Major Economy to Pass Net Zero Emissions Law](#); Intergovernmental Panel on Climate Change (2018) [Global Warming of 1.5°C](#)

² Committee on Climate Change (2019) [Reducing UK Emissions – 2019 Progress Report to Parliament](#)

³ ICE (2019) [Civil Engineering Insights into the UK's 2050 Greenhouse Gas Emissions Net-Zero Target](#)

⁴ Committee on Climate Change (2019) [Progress in Preparing for Climate Change](#)

⁵ Office for National Statistics (2019) [Productivity Economic Commentary: October to December 2019](#)

⁶ Industrial Strategy Council (2020) [UK Regional Productivity Differences: An Evidence Review](#)

⁷ Office for National Statistics (2019) [Regional Gross Disposable Household Income, UK: 1997 to 2017](#)

The previous ambition for change through infrastructure

The latest iteration of the National Infrastructure and Construction Pipeline put combined private and public investment in all UK infrastructure at over £600 billion up to 2027/28.⁸ This includes at least £138 billion on energy generation, £68 billion on transport and £12 billion on regulated utilities.

Further to this, the Chancellor made infrastructure investment one of the central pillars of the Budget in March 2020, with over £27 billion allocated to strategic roads between 2020 and 2025, £5.2 billion for flood defences, £5 billion for gigabit broadband and a £4.2 billion devolved transport fund for the UK's combined authorities.⁹

The demand drivers behind these investments include a growing, ageing and increasingly urbanised population (predicted to reach 75 million people by 2050); the net-zero greenhouse gas emissions target; a need to develop the next generation of internet connectivity for the country to remain economically competitive; economic growth in all parts of the country; and improved resilience to the impacts of climate change.¹⁰

Existing policies and spending plans will undoubtedly be reassessed in light of Covid-19, with effects on other significant policy documents, such as the National Infrastructure Strategy and the Energy White Paper.

Recent announcements

In recent weeks, the Government has announced a number of infrastructure investment packages for both the short and medium term. This includes £2 billion in support of active travel options such as cycling and walking, with £250 million of emergency spending already underway.¹¹ £283 million of funding to increase the frequency and capacity of bus, tram and light rail services has also been distributed in order to allow critical workers to access their place of work safely and quickly within social distancing guidelines.¹²

In the medium term, £2 billion has been allocated to upgrade roads and railways, including £1.7 billion for local roads and a commitment to build a network of rapid charging stations for electric cars.¹³

⁸ Infrastructure and Projects Authority (2018) [Analysis of the National Infrastructure and Construction Pipeline](#)

⁹ HM Treasury (2020) [Budget 2020](#)

¹⁰ ICE (2016) [National Needs Assessment](#)

¹¹ Department for Transport (2020) [£2 billion Package to Create New Era for Cycling and Walking](#)

¹² Department for Transport (2020) [Transport Secretary Announces New Measures to "Keep Passengers Safe Now and Level Up for the Future"](#)

¹³ Department for Transport (2020) [Transport Secretary's Statement on Coronavirus \(COVID-19\): 14 May 2020](#)

The role of infrastructure spending during an economic slowdown

Covid-19 will leave socio-economic scars, with the Office for Budget Responsibility (OBR) forecasting unemployment in the UK to rise to 10%, amid a 12.8% fall in GDP in 2020.¹⁴ On a global scale, the International Monetary Fund (IMF) expects GDP growth for 2020 to be negative, with ‘a recession at least as bad as during the global financial crisis or worse’.¹⁵

While unprecedented emergency measures and fiscal policies have been put in place, there is little doubt that additional stimulus packages will be required.¹⁶

Where and how that money is spent is vital. The decisions taken by ministers will impact on the pace and strength of economic recovery; they can address longstanding issues that required action pre-crisis, and they will start to define what the ‘new normal’ will be.

Spending on infrastructure can be used to stimulate the economy in three broad areas:

- the development of infrastructure schemes
- enabling ‘shovel-ready’ projects to go ahead
- the operation, maintenance and repair of infrastructure assets.¹⁷

Analysis by the IMF has shown that, in a sample of advanced economies, a one percentage point of GDP increase in infrastructure investment increases the level of output by 0.4% in the same year and by 1.5% four years after.¹⁸ Infrastructure spending therefore provides the government with one of the greatest returns on its investments.

Multiplier effects

Infrastructure already plays an important role in meeting economic, social and environment goals. In the context of economic recovery, infrastructure investment acts as a potent stimulus tool in both the short and medium term, while it can also help governments achieve their longer-term aims. The stimulus effect applies to all stages of an asset’s life cycle, including its planning and design, construction and operation. This creates a range of demand multiplier effects.

¹⁴ Office for Budget Responsibility (2020) [Coronavirus Analysis](#)

¹⁵ IMF (2020) [The Great Lockdown: Worst Economic Downturn Since the Great Depression](#)

¹⁶ AECOM (2020) [The Future of Infrastructure](#)

¹⁷ Analysis conducted by Oxera on behalf of ICE (2020)

¹⁸ IMF (2014) [World Economic Outlook: Legacies, Clouds, Uncertainties](#)

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 (ONS) 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 (see Figure 1).¹⁹

Tangible examples include investment in faster digital connectivity, which can result in an increase of between 0.4% and 3.2% in the number of businesses operating in an area.²⁰

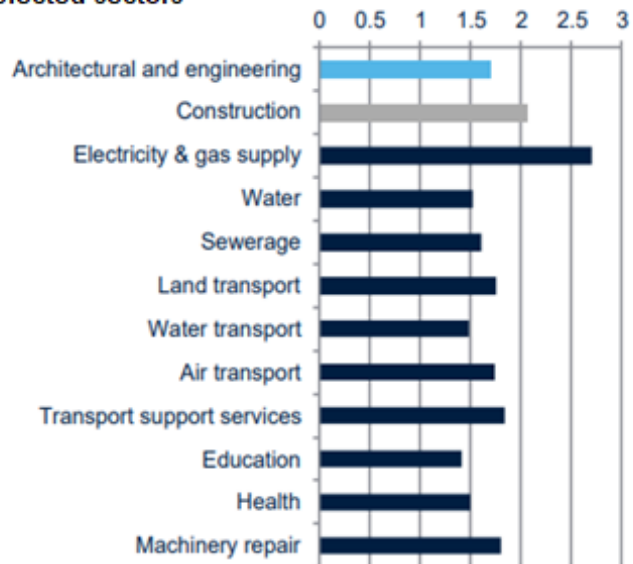
Projects funded under the first Road Investment Strategy were estimated to generate £22 billion of economic benefits over their lifetimes, at a cost of £5 billion,²¹ while in 2014 the Environment Agency estimated that every £1 of capital spending in flood management schemes resulted in £8 of benefits from prevented flood damage.²²

In an economy that is operating at capacity, multiplier effects would have little or no impact on net output. This is because businesses have less capacity to expand production in order to meet increases in demand. However, when there is spare capacity in the economy, such as during an economic slowdown, additional demand could play a role in increasing the overall output of the economy.²³

Job creation

One of the most notable multiplier effects is related to employment. Investing in infrastructure creates income opportunities and generates jobs, both directly through construction and maintenance, and indirectly through

Figure 1: Demand multiplier effects for selected sectors



Source: ONS

¹⁹ Analysis conducted by Oxera on behalf of ICE (2020)

²⁰ Hasbi, M. (2017) [Impact of Very High-Speed Broadband on Local Economic Growth: Empirical Evidence](#)

²¹ Department for Transport (2015) [Road Investment Strategy: Economic Analysis of the Investment Plan](#)

²² National Audit Office (2014) [Strategic Flood Risk Management](#)

²³ Analysis conducted by Oxera on behalf of ICE (2020)

wider supply chain benefits that support economic activity across the country in the short to medium term.²⁴ Additionally, infrastructure assets themselves improve access to income and employment opportunities and provide further indirect employment opportunities.²⁵

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.²⁶

Learning from responses to other crises

Responding to Covid-19 in a way that secures the UK's long-term social, economic and environmental requirements will necessitate a quick response to address the near-term impacts of the pandemic. As well as investment in infrastructure itself through fiscal stimulus policies, governments globally are likely to demand efficiencies in how that infrastructure is delivered.

This section outlines some of the lessons that can be learnt from other crises historically, to operationalise the planning and delivery of new capital investment differently and more effectively in the future.

Precedents

The post-war period offers the closest-to-home economic comparison to the current crisis. A dislocated economy and risk of mass unemployment needed to be alleviated by public spending programmes, reconstruction aid and reskilling of the workforce. Across the UK and the rest of Europe, many outdated types of infrastructure were rebuilt – albeit often out of necessity – and new technologies utilised.

While the current crisis has no association with the devastation of physical infrastructure that followed the Second World War, the UK most certainly has infrastructure that is not meeting current and future needs.²⁷

A Smith School analysis of 196 fiscal policy responses to the 2008 global financial crisis found that investment in green stimulus policies had numerous advantages over more traditional stimulus policies.²⁸ Investment in renewable energy generated more employment in the short term due to a higher job multiplier effect; in the long term, renewable energy required less labour for operation and maintenance, as well as providing savings on fuel.²⁹ The analysis found that designing Covid-19 recovery packages around investment in infrastructure

²⁴ International Labour Organization (2010) [Infrastructure, Poverty Reduction and Jobs](#)

²⁵ Ibid

²⁶ Centre for Economics and Business Research and Civil Engineering Contractors Association (2013) [Securing our Economy: The Case for Infrastructure](#)

²⁷ ICE (2016) [National Needs Assessment](#)

²⁸ Oxford Smith School of Enterprise and the Environment (2020) [Building Back Better: A Net-Zero Emissions Recovery](#)

²⁹ Ibid

such as renewable energy, energy storage, grid modernisation and carbon capture and storage technology would offer both high economic multipliers and positive climate impacts.³⁰

The focus on a 'green recovery' from Covid-19 has also been promoted by the OECD, with Secretary-General Angel Gurría calling for stimulus packages to be aligned with policies that tackle climate change, alleviate environmental impacts and improve resilience.³¹

Efficiencies in delivery

Following New Zealand's 2011 Christchurch earthquake, the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) alliance was formed, with a focus on networked infrastructure.³² This was a multi-client, multi-contractor programme alliance formed to deliver multiple small projects quickly as part of a wider programme. At the heart was an alliance board, made up of construction firms, the local council, central government and the transport agency.

The advantages included being able to move at speed, through collaboration, to deliver desperately needed infrastructure. The alliancing model also focused the minds of the leadership on a shared outcome and shared risk, which built trust across the alliance.³³ This model, with its clear vision and sense of direction, may serve as a useful tool as local authorities and central government look to deliver infrastructure priorities in the medium term.

A more recent example is the use of collaborative contracts to deliver the Lima 2019 Pan American and Parapan American games, which opened in July 2019. The Peruvian government had appointed the UK Department for International Trade (DIT) as its delivery partner for the games in April 2017. A consortium of UK firms provided advice, assurance and support to Peru's special project office in their use of NEC contracts. The collaborative contracting approach was used to facilitate fast-track delivery of US\$500 million (£400 million) of new and upgraded venues and facilities at 19 sites in Lima against a tight deadline.³⁴

Other responses to Covid-19

National and local government budgets will be significantly affected by the response to Covid-19. Unemployment has risen, businesses have ceased trading and government borrowing has increased, with forecasts of the deficit as a share of GDP rising to 14%.³⁵

While the focus has been on short-term economic measures and support for healthcare systems, some countries with a strong fiscal position have introduced measures to promote economic growth beyond the immediate emergency response. Norway, in a fiscal stimulus announcement on 31 March, confirmed a small

³⁰ Ibid

³¹ OECD (2020) [An Inclusive, Green Recovery is Possible: The Time to Act is Now](#)

³² Management, Procurement and Law, Volume 168, Issue MP3 (2015) [Christchurch Rebuild, New Zealand: Alliancing with a Difference](#)

³³ Management, Procurement and Law, Volume 168, Issue MP3 (2015) [Christchurch Rebuild, New Zealand: Alliancing with a Difference](#)

³⁴ NEC (2019) [Lima 2019 Pan American and Parapan American Games venues, Peru](#)

³⁵ Office for Budget Responsibility (2020) [Coronavirus Analysis](#)

component of infrastructure investment (0.03% of GDP), while Mexico has also increased spending on infrastructure during the crisis.³⁶

The IMF, in a paper outlining how best to use public investment during the Covid-19 crisis, considers that regulatory approvals could be streamlined in order to speed up project delivery of an existing pipeline of work.³⁷ However, even if there were a pipeline of pre-appraised projects before the crisis, the conditions they were approved under may well have significantly changed. This may result in a re-evaluation of projects so as to ensure that they remain economically viable.³⁸

Green Paper and call for evidence

If and when the UK begins to embark on a stimulus programme post-Covid-19, it must think carefully about the types of infrastructure that it invests in and the criteria this infrastructure should meet.

Even if investments in different types of infrastructure have similar benefits over the short term, some options will do better at promoting sustainable growth and meeting longer-term goals, such as net-zero emissions, improved productivity, regional rebalancing and more resilient infrastructure.

The demand profile for various infrastructure sectors will also be affected, influencing the existing pipeline of planned projects – this has been explored in a previous ICE insights paper on the use of infrastructure systems post-crisis.³⁹

This insights paper, as detailed at the outset, has been produced to help support a wider piece of work around future infrastructure provision in the UK that ICE is progressing on behalf of the ICG.

More specifically, a Green Paper has been published that will enable the ICG to develop a road map, as part of the Construction Leadership Council's Industry Recovery Plan, to determine how infrastructure delivery should be reinvented in the UK following Covid-19.

The Green Paper, which is accessible at this [link](#), contains a call for evidence that is being run until 14 June 2020. Representations can be made directly to policy@ice.org.uk.

The questions are as follows:

Question 1: What other factors, or combination of factors, will determine attitudes to public life as we transition to a new normal?

³⁶ IMF (2020) [Managing Public Investment Spending During the Covid-19 Crisis](#)

³⁷ Ibid

³⁸ Ibid

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

Question 2: What other systemic changes, driven by lessons learned during the lockdown period, can we expect to be important as part of the new normal?

Question 3: Are our assumptions of the new priorities for infrastructure correct?

Question 4: What other changes to infrastructure provision will be needed and what assumptions sit behind that need?

Question 5: Have we made the correct assumptions on the changes in delivery that will be required, to deliver infrastructure as part of the new normal?

Question 6: What are the intermediate steps required to move us towards these new approaches to delivery?

Question 7: What other fundamental shifts are required to deliver concrete and long-lasting change in how we operationalise to deliver infrastructure to achieve societal requirements?

About ICE

Established in 1818 and with over 96,000 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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