

REPORT

PAYING FOR OUR PROGRESS

HOW WILL THE NORTHERN POWERHOUSE BE FINANCED AND FUNDED?



Grace Blakeley

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Institute for Public Policy Research

ABOUT IPPR NORTH

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CONTENTS

Summary	3
1. Introduction	6
2. Background and context.....	8
2.1 Regional imbalance and the northern powerhouse	8
2.2 Brexit and national policy.....	9
2.3 Devolution.....	10
3. The case for investing in northern infrastructure.....	11
3.1 Infrastructure investment in the UK.....	11
3.2 Infrastructure and economic growth	14
3.3 Infrastructure in the North.....	16
4. Funding and financing northern infrastructure	20
4.1 Financing options	20
4.2 Who pays?.....	21
4.3 Appraisal	24
4.4 Governance	25
4.5 Capacity and procurement.....	27
5. Infrastructure for the north.....	28
5.1 International case studies	28
5.2 Illustrative case studies.....	31
6. Principles and recommendations	36
6.1 Principles for northern infrastructure investment.....	36
6.2 Recommendations.....	39
References	42

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SUMMARY

60-SECOND SUMMARY

In the autumn statement in November 2016, the government produced a northern powerhouse strategy detailing a wide range of initiatives and investments that had previously been pledged as part of attempts to rebalance the UK economy. Despite recognition of the value of infrastructure investment in stimulating the post-Brexit economy, there was, however, very little new money promised. As a consequence, the most up to date analysis of the national infrastructure pipeline shows that 35 per cent of total infrastructure spending and 54 per cent of all transport infrastructure spending in the UK will continue to take place in London.

2017 is a critical year. With significant transport spending rounds being prepared and a strategic transport plan due to be published by Transport for the North, public and businesses alike will expect to see major new commitments. Energy, flood defence and broadband will also require significant investment to meet local needs, to ensure economic competitiveness and to meet climate change obligations.

In order to facilitate the investment required to transform the northern economy, government and subnational stakeholders need to adopt a principles-based approach to infrastructure investment which recognises the importance of both finance and funding; public and private investment working together; greater subsidiarity and local autonomy; and a more sophisticated approach to appraisal.

To this end the government should: use its March budget to pledge new investment in northern powerhouse infrastructure; redraft the Treasury Green Book to better reflect the wider economic benefits of infrastructure projects; provide for greater borrowing by local authorities and Transport for the North and for a Northern Powerhouse Infrastructure Bond; and package up investment opportunities into a northern infrastructure prospectus.

ANALYSIS

There is widespread evidence that public investment in infrastructure derives both economic and social benefits, not least when much infrastructure is a public good with positive externalities. The IMF estimates that infrastructure investment has a short-term multiplier of 0.4 and a long-term multiplier of 1.4, while the OBR estimates a UK infrastructure multiplier of 1.

As regards transport infrastructure spending, the current national infrastructure pipeline shows that there is a £1,515 per capita gap in projected spending between London and the North, while Yorkshire and the Humber is set to receive less than any other English region in per capita terms. While the cost for all northern transport projects

together will be only £6.6 billion, the capital's Crossrail alone will cost £8.3 billion from 2015/16 onwards.

International evidence shows that there is a wide range of financing and funding mechanisms available to support infrastructure investment, both public and private. These include everything from tax increment finance and municipal bonds at the local level, to government guarantees and subordinated debt at the national level, to sovereign wealth funds and private finance that are global in their scope. The financing and funding of major infrastructure projects in the UK, however, remains a significant challenge.

Our research, which engaged a variety of stakeholders through a series of interviews and regional roundtables, identified four primary reasons for this.

- There is a lack of clarity both on the part of national government and in wider agencies and organisations as to the circumstances in which government, the private sector – or a combination of the two – should be expected to finance and fund infrastructure projects.
- The appraisal process by which many significant transport projects are judged is based too heavily on demand relief rather than wider economic benefit.
- Subnational bodies such as local and combined authorities and quasi-national organisations such as the National Infrastructure Commission and Transport for the North have insufficient powers and fiscal autonomy to broker infrastructure investment.
- Further secondary issues include the fact that the UK is facing some significant skills shortages in relation to infrastructure development and it has relatively inflexible procurement models which further deter potential investors.

We explore the following three case studies involving innovative financing approaches:

- Transport for New South Wales public-private partnership to finance Sydney Metro North West in Australia.
- the Aberdeen Municipal Bond which has been used for transport, housing and energy investment.
- the Portland tax increment finance initiative in Oregon, US, which was used to regenerate a number of brownfield sites.

Furthermore we investigate possible finance and funding approaches for:

- the M60 Quadrant in the North West
- Northern Powerhouse Rail (HS3)
- carbon capture and storage (CCS) schemes in Teesside.

PRINCIPLES AND RECOMMENDATIONS

Based on the challenges and case studies, we identify the following four principles which are necessary to guide infrastructure investment in the North.

1. **Funding is as critical as financing** – greater attention must be paid to the long-term funding of large-scale infrastructure projects, rather than the short-term financing to get them off the ground.

2. **Appraisal must be objective, systematic and long-term** – methods of project appraisal need to take greater account of the long-term and wider economic and social benefits of large-scale infrastructure investment, and modelling needs to be able to account for both positive externalities and induced demand.
3. **Subsidiarity, scale and trust are central to good investment** – more decision-making concerning the funding and financing of infrastructure should be devolved to subnational bodies, along with greater fiscal powers to unlock investment.
4. **Procurement, project management and capacity** should also be key considerations in unlocking major infrastructure investment. If new projects are to be built, the construction workforce will need to be expanded and upskilled.

Alongside these four guiding principles we make 5 recommendations:

- **Recommendation 1:** Government should better recognise its critical role in securing northern infrastructure projects where there are clear social and economic benefits to doing so and make **specific commitments to new investment in its March budget**.
- **Recommendation 2:** Public sector bodies charged with infrastructure appraisal should take better account of the wider economic benefits of investment as well as induced demand effects and the Treasury Green Book should be redrafted accordingly.
- **Recommendation 3:** Government should **reduce local borrowing caps** to allow local areas and subnational bodies, including Transport for the North, to borrow more freely on international capital markets, working closely with one another and with the private sector. This should be combined with further fiscal devolution.
- **Recommendation 4:** Working with the new Municipal Bonds Agency, the Treasury should take additional steps – including through reform of the tax and pensions rules – to make provision for an ambitious and wide-ranging UK municipal bonds scheme which among other features should enable individuals to make tax-free investments in UK munibonds as part of their personal pension plans. Such provision should allow for subnational schemes for particular purposes including a **Northern Powerhouse Infrastructure Bond**. This should be combined with further fiscal devolution.
- **Recommendation 5:** The northern powerhouse team within the Department for International Trade should work closely with Transport for the North and other relevant bodies, in order to develop a **more coherent infrastructure investment prospectus** that is attractive to private sector investors both at home and overseas.

1. INTRODUCTION

The country faces both uncertainty and opportunity. The UK's exit from the EU will have a significant impact, and will require a reorientation of the UK's economy. As a first step, the government has published its industrial strategy green paper which – in a reversal of previous policy – will see the government intervening in the non-financial economy in potentially bold and decisive ways (HM Government 2017).

The North has an especially important role to play in this challenging time. While its productivity lags the national average, it has a number of assets which – with targeted investment – could help drive national prosperity. Five major cities, and 15 million people, power an economy that is larger than many European economies. It has world-leading industries in advanced manufacturing, health innovation, digital and energy. The 'northern powerhouse' agenda also means that the North is increasingly in control of some of its own affairs: this year, Transport for the North is set to gain statutory status, while new mayors will soon govern in Greater Manchester, the Liverpool city-region and the Tees Valley.

However, for the North to grow, it will need new infrastructure. Infrastructure is vital for any economy but in the north of England it is more necessary than ever, with successive governments having failed to invest at the levels required and with a national infrastructure pipeline that remains skewed towards projects in the south (Cox et al 2016). Infrastructure is not all the North needs to play its part, but it is a necessary catalyst for growth alongside skills and training, R&D, innovation and business support.

There are significant new opportunities for the North to roll out a pipeline of new infrastructure. Alongside an interventionist industrial strategy, new public money may finally be released: the autumn statement set out a national productivity investment fund, which will spend £23 billion between 2017 and 2022; and from 2020 the government plans to spend between 1.0 and 1.2 per cent of GDP on infrastructure investment (HM Treasury 2016a). In addition there are pension funds, insurers and other investors who are increasingly looking for the strong, safe returns that infrastructure represents, given that there are now generally low returns and few promising sources of future growth (Ralph 2016, Wilson 2016).

This report maps a way forward to seize these new opportunities to unblock the North's infrastructure pipeline, which will benefit the whole of the UK. It does so by focusing on the issues of short-term finance and long-term funding. We ask the question: *How will the northern powerhouse be funded and financed?*

This report proceeds as follows: chapter 2 sets out the background to the report, and discusses the regional imbalances in the UK, Brexit and devolution policy. Chapter 3 outlines the case for investing in infrastructure

in the North, by assessing the current state of the North's infrastructure and outlining the economic case for infrastructure investment. In chapter 4 we identify a number of reasons as to why infrastructure for the North has not been forthcoming in recent years, looking in detail at a number of problems with the way infrastructure investment works in the UK. Chapter 5 includes a number of national and international case studies that highlight how these problems play out in practice; we also draw out some lessons from each of these case studies. These feed into the final chapter 6, where we outline our principles for infrastructure investment, as well as some more detailed recommendations.

2. BACKGROUND AND CONTEXT

This chapter highlights the economic and political context behind this report, including issues such as Brexit, the productivity gap and the northern powerhouse.

2.1 REGIONAL IMBALANCE AND THE NORTHERN POWERHOUSE

In its recent report, IPPR's Commission on Economic Justice stated that Britain is a strong and successful country with a growing economy. However, there are serious issues that are undermining the UK's growth rates, employment levels and international competitiveness over both the long and short term. While the economy may have recovered to its pre-crisis levels, it is not operating at anywhere close to its pre-crisis potential. In fact, when adjusted for population growth and capital outflows, national income per capita has barely grown at all (Jacobs et al 2016).

Furthermore, the proceeds of what little growth there has been have not been evenly shared. Some areas outside of London have not yet seen gross value added (GVA) reach pre-crisis levels, and median incomes have not improved on their 2008 levels. Perhaps most gravely, the UK productivity level is one of the lowest in the developed world, and the gap is growing (ONS 2014). Improving the productivity of the economy is the only means through which to secure improvements in long-term economic growth.

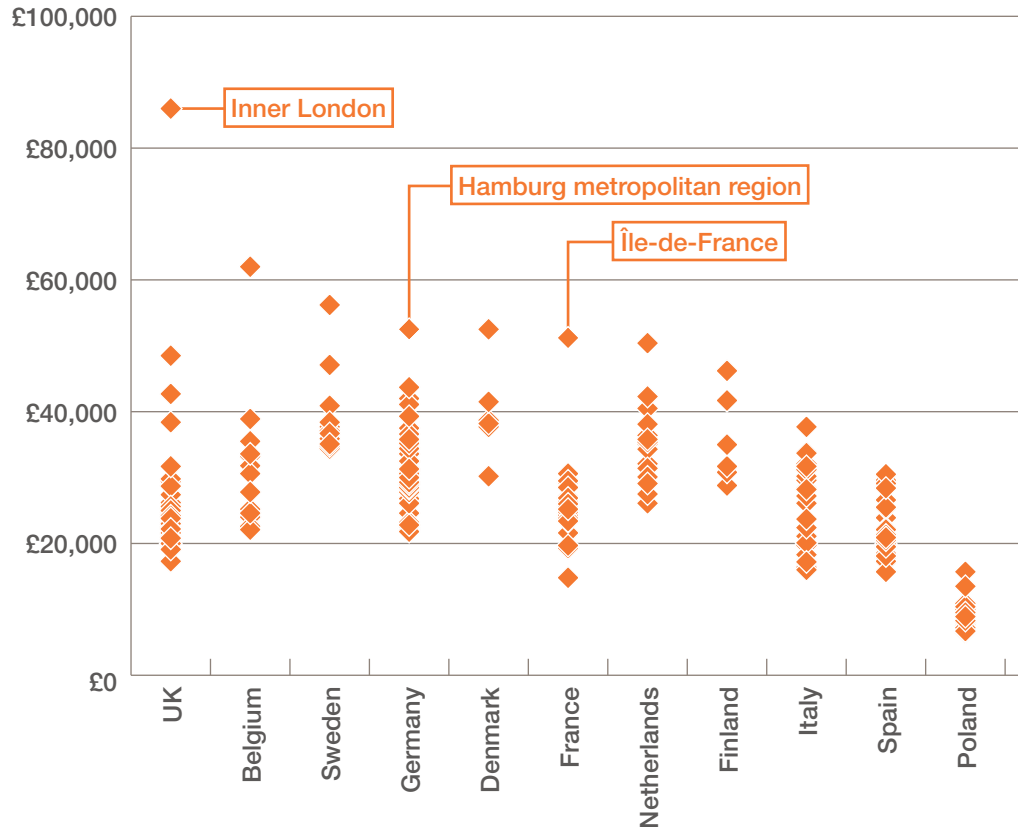
The northern powerhouse has grown steadily in recent years. The combined economic output (gross value added) of the three regions of the North – the North East, North West, and Yorkshire and the Humber – was £316 billion in 2015, 19.2 per cent of the UK economy as a whole (Cox et al 2016). This makes the northern economy larger than all of the devolved nations' economies combined. Indeed, if it were a country, the North would be the eighth-largest economy in the European Union.

However, the North suffers from entrenched disadvantages that prevent it from competing effectively with the rest of the country for businesses, talent and capital. In terms of GVA per head, the North East, the North West and Yorkshire all sit towards the bottom of the table, and GVA growth in each of these areas is also low (ONS 2016). As shown by figure 2.1, this means that the UK has the largest regional inequalities in GVA in Europe (Jacobs et al 2016). There is also a longstanding and worsening productivity gap between North and South. Workers in the North are still producing less for every hour worked than they did in 2007, in the North West they are producing 2.7 per cent less and in Yorkshire and the Humber the figure is 5.8 per cent (Tetlow 2017).

FIGURE 2.1

The UK is more economically imbalanced than other countries, even after accounting for variations in population

Output (GVA) per capita (€) by region for selected European countries, 2011



Source: Data from Eurostat, 'Gross domestic product (GDP) at current market prices by NUTS 2 regions' (Eurostat 2016)

2.2 BREXIT AND NATIONAL POLICY

Britain's vote to leave the EU will have a wide-ranging impact on the economy at a national and regional level. As IPPR North showed in our recent report *The State of the North 2016*, the North is likely to suffer more than the rest of the country from the vote to leave the EU (Cox et al 2016). The UK as a whole is more dependent on the EU than any other of its trading partners, but the regions outside London depend on EU trade between 50 and 100 per cent more than London does.

Brexit has already had significant implications for government policy. In a major departure from previous Labour and Conservative governments, the prime minister has set out her intention to use industrial strategy to support growth and innovation within British businesses, and allow them to compete effectively on a much broader international stage. The recently published green paper on industrial strategy prioritises regional growth, and the business, energy and industrial strategy secretary has repeatedly affirmed his view that industrial strategy should be place-based.

Moreover, the repatriation of powers from Brussels to the UK has important implications for devolution. The prime minister has already stated that due consideration should be given to whether repatriated powers should be returned to Westminster or to the devolved administrations. There has been little talk of English devolution in this context, but there are clearly opportunities for Brexit to empower local government and correct for decades of centralisation.

As such, Brexit carries with it both risks and opportunities for local areas in the North and these will in turn have an impact for transport and infrastructure policy (Cox et al 2016). In order to take advantage of these opportunities and mitigate the risks, it will be necessary to reverse the decades of centralisation that have created the kinds of regional economic imbalances we see today, and truly empower local areas to deliver growth and prosperity for their citizens.

2.3 DEVOLUTION

When compared to other advanced economies, England is a clear outlier when it comes to political centralisation. In other countries – notably Germany and France – local and regional governments have real economic and decision-making power, and are able to act as place-shapers for their local areas. It is not a coincidence that political centralisation is accompanied by incredibly high levels of regional inequality, and low turnout in local elections (Jacobs et al 2016). England's local authorities are simply not empowered or accountable enough to play a major role in the governance of their areas.

Devolution has therefore been a central aspect of the northern powerhouse agenda. Areas such as Greater Manchester have been given much greater economic and political power. Greater Manchester combined authority (GMCA) has gained powers over business support, health and social care, and welfare policy, and the newly elected mayor of Greater Manchester will have powers over transport, housing and strategic planning, as well as a reformed earnback deal. It has also recently been announced that the mayor of Greater Manchester will have enhanced borrowing powers (Public Sector Executive 2016). Enhanced power to borrow, combined with a new earnback deal, could have substantial implications for mayoral policy, and especially for transport.

Improving transport links, alongside energy, communications and utilities, has been at the top of the agenda for many new mayors and combined authorities. There is clearly a strong case for an economic rebalancing in the UK, and there are a number of reasons why investment in this rebalancing should be focused on infrastructure that is funded and financed in innovative ways.

3.

THE CASE FOR INVESTING IN NORTHERN INFRASTRUCTURE

This chapter highlights the state of infrastructure in the UK as a whole, and in the North in particular. Very low levels of infrastructure investment in the preceding decades have severely impacted the quality and capacity of UK infrastructure. Supply has not kept pace with demand, and in many areas transport infrastructure is outdated, uncomfortable and slow. This in itself is a strong enough case for increased investment; however, there are a number of other economic benefits associated with increased infrastructure spending. While there is some disagreement as to the scale of the effect of infrastructure spending on output and productivity, there is compelling evidence to suggest that, given certain criteria, the impact is strong and positive.

3.1 INFRASTRUCTURE INVESTMENT IN THE UK

Levels of investment in infrastructure have been flat or declining for a number of years (ICAEW 2016, Rhodes 2016). Total infrastructure investment as a share of GDP is very low in the UK, as indicated in figure 3.1, and has been steadily declining in recent years. Moreover, as shown in figure 3.2, the government has consistently failed to meet OECD targets for infrastructure spending, which, on current trends, would yield a £38 billion funding gap by 2020/21 (Rhodes 2016).

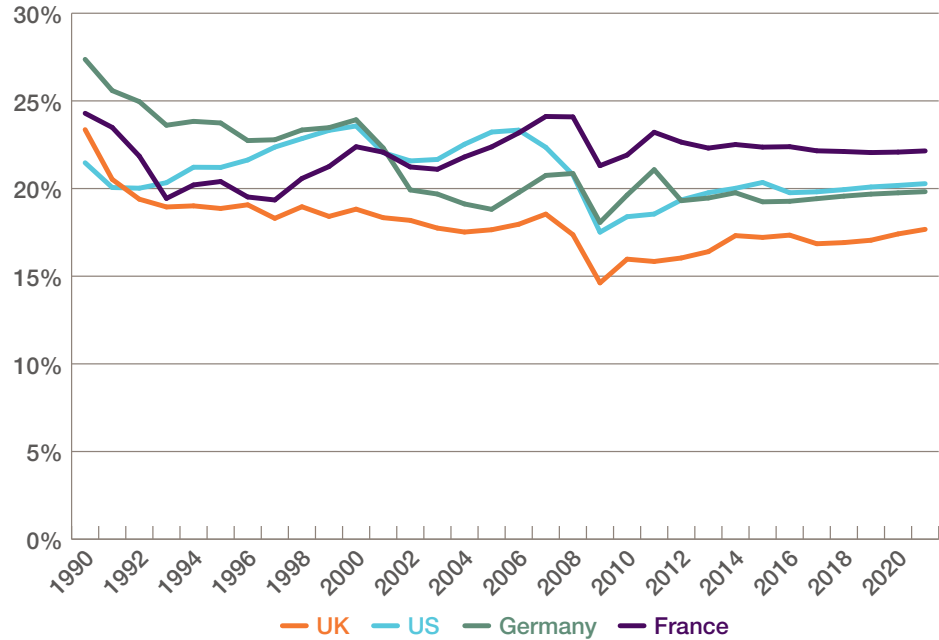
Partly as a result of this, the quality of much of the UK's transport infrastructure is much lower than most comparable countries – the World Economic Forum's *Global Competitiveness Report* ranked the UK 24th for the quality of its transport infrastructure. Britain's road density is lower than that of Germany and France, and levels of congestion are much greater (Timetric 2016). Rail density is also low, and overcrowding is endemic (ibid).

While private sector investment in infrastructure has increased over the last year, public sector investment, on the other hand, is stubbornly low (Timetric 2016, Jacobs et al 2016). The chancellor has recently announced a £23 billion national productivity investment fund, with the hope of increasing the percentage of GDP spent on infrastructure to 1–1.2 per cent by 2020 (HM Treasury 2016a). However, only a small proportion of this will actually be spent on much-needed physical infrastructure subject to historic underinvestment, such as roads and rail.

FIGURE 3.1

Total infrastructure investment as a share of GDP in the UK has been steadily declining in recent years

Total investment (% GDP)

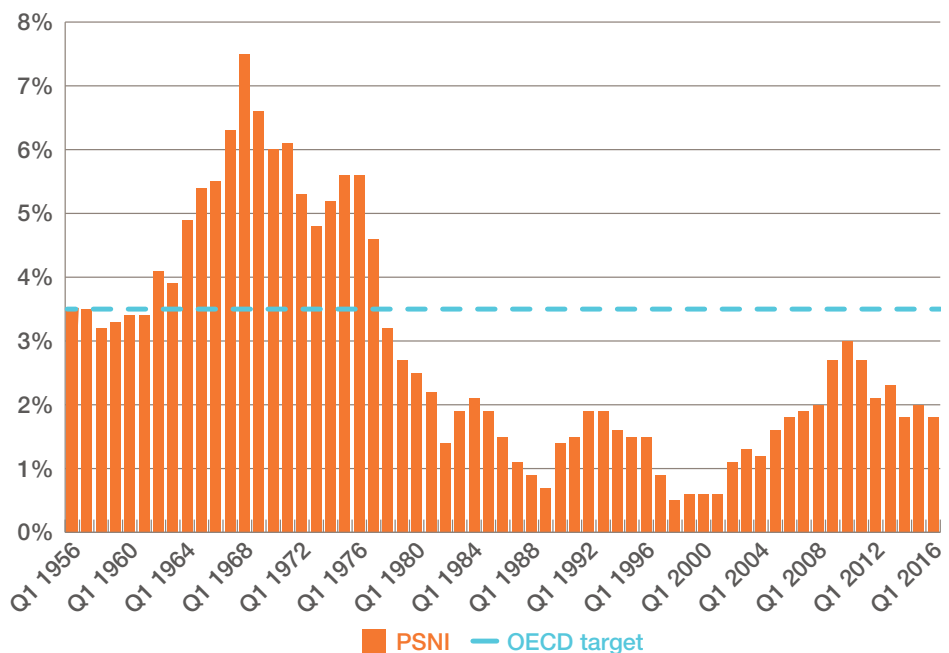


Source: IMF, 'World Economic Outlook Database' (IMF 2016)

FIGURE 3.2

The UK government has consistently failed to meet OECD targets for infrastructure spending

Public sector net investment (% GDP)



Source: ONS, 'Regional Gross Value Added' (ONS 2016)

Financing and funding infrastructure

In simple terms, *financing* refers to who provides the capital for a project upfront, while *funding* is who pays this capital back in the end.

‘The term funding ... refers to how infrastructure is paid for. Ultimately, there are only two sources of funding for infrastructure, government investment or direct user charges. This is opposed to financing which refers to the way in which debt and/or equity is raised for the delivery and operation of an infrastructure project.’

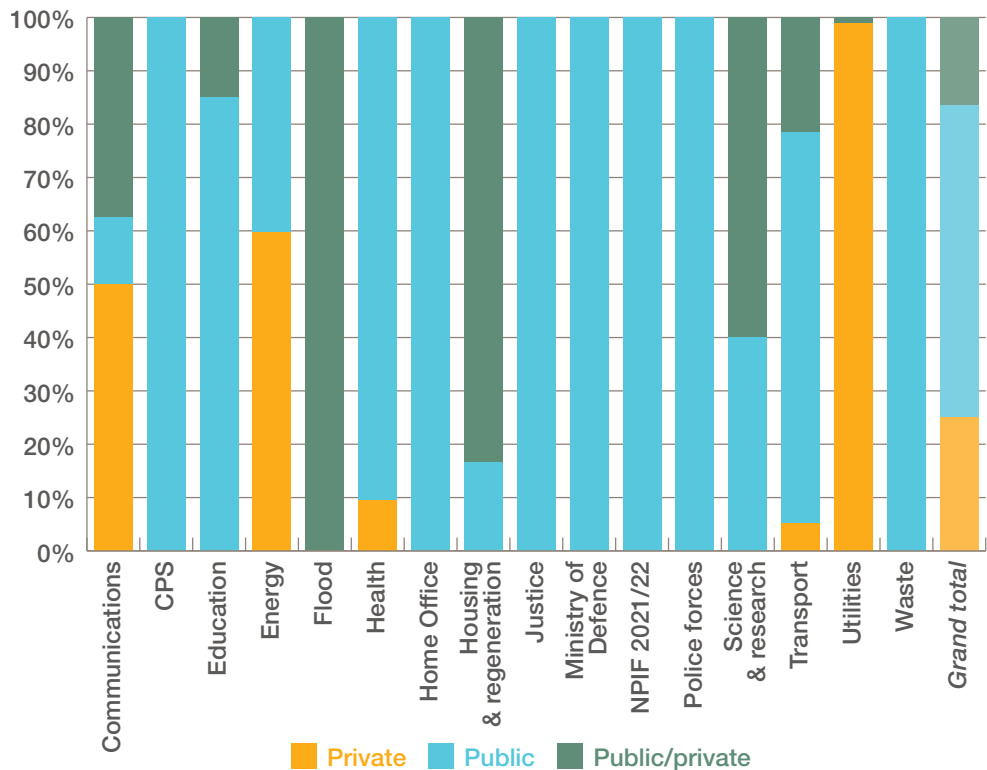
Infrastructure Australia 2012

The disparity between public and private sector investment means that certain aspects of infrastructure provision simply do not get funded. Private sector funding is essentially limited to power generation, water and sewerage – as shown in figure 3.3 (Timetric 2016). At least in part because they receive higher levels of investment than other areas, primarily from private sources, these perform better than other aspects of infrastructure (WEF 2016). These areas all have clear revenue streams, which make them attractive to private sector investment. Areas such as road and rail, however, which have large positive externalities, are chronically underfunded.

FIGURE 3.3

Private sector funding is essentially limited to power generation, water and sewerage

All infrastructure projects pipeline, by sector and funding



Source: HMT and IPA, ‘National Infrastructure Pipeline 2016’, (HMT and IPA 2016)

3.2 INFRASTRUCTURE AND ECONOMIC GROWTH

Infrastructure – comprising transport infrastructure such as roads and rail, but also utilities, communications and energy generation – is essential for sustainable economic growth. While a certain minimum level of infrastructure is required for a modern economy to function, strategic investment in infrastructure can theoretically increase the long-run economic capacity of any economy. Such investment can expand the productive potential of the economy, which in turn can increase growth while maintaining a steady rate of inflation (Mankiw 2015).

Alongside these longer-term effects, infrastructure investment can also increase demand in the economy today. The initial investment in infrastructure will in itself expand output, but it can also have a significant positive multiplier effect (ibid). The multiplier effect for infrastructure investment can be high, but it does depend upon the source of investment, the type of project and other wider economic factors (ibid).

These effects hold regardless of the source of investment. However, there are a number of arguments for public sector investment in infrastructure over private. First, much infrastructure can be classified as a ‘public good’ in that it is non-excludable and non-rivalrous (ibid). This means it has positive externalities, such as its impact on economic growth and productivity, which are not taken into account by private sector investors when deciding where to invest, leading to underinvestment. As such, it is argued that the public sector should step in when the market fails to provide substantial levels of investment in infrastructure (Samuelson 1954, IMF 2013).

Second, monetary policy is becoming less effective as a tool of economic policy (Economist 2014, Summers 2016). On the one hand, monetary policy is at or nearing the zero lower bound where nominal interest rates can no longer be reduced as they have effectively reached zero (Economist 2014). On the other hand, while there has been considerable debate about how effective the Bank of England’s quantitative easing (QE) policy has been in terms of increasing growth, it now seems to have reached the limits of its potential (Haldane et al 2016: 12, Martin and Milas 2012). Monetary policy cannot be expected to continue to prop up growth alone; the OECD recently stated that ‘stronger fiscal policy response, combined with renewed structural reforms, is needed to support growth’ (OECD 2016a).

Third, with interest rates at record lows and with inflation set to rise, government borrowing for investment has never been cheaper. There is therefore a strong case for making effective use of expansionary fiscal policy to drive growth and employment, while also improving productivity and rebalancing growth (OECD 2016b). As the Financial Times (2016) puts it, ‘[a]t today’s rates, it seems rude for the state not to ask for more’.

A number of economists have recently challenged this logic. Neoliberal economists tend to argue that investment only leads to growth when infrastructure is financed through the private purse. Their arguments rest on a number of points: first, government investment will ‘crowd out’ private investment; second, the political process will lead to poor investment

decisions being made; and third, the initial investment will create large and unsustainable levels of public debt (IEA 2016, Cato Institute 2016).

To take each argument in turn: first, while crowding out can occur in some circumstances, particularly where private capital is already forthcoming, when public investment is restricted to undersupplied public goods no such effect holds (Xu and Yan 2014). In fact, there is compelling evidence to suggest that public sector investment actually ‘crowds in’ that of the private sector by reducing the risks associated with particular projects (Alani 2006, Aschauer 1989, Bahal et al 2015, Chakraborty 2013, Eggerston and Krugman 2010, Fic and Portes 2013, OECD 2014).

The second argument clearly holds in some cases: politicians often invest in ‘white elephants’ for political purposes, without considering the long-term viability of the projects they seek to invest in. The existence of the National Infrastructure Commission (NIC) goes some way to mitigating this challenge, though its lack of statutory powers inhibits its role somewhat.

In answer to the third point, as a result of the multiplier effect most infrastructure investments can be financed by debt in the short term, and can be repaid through long-term uplifts in growth that increase tax revenues and reduce outgoings. The size of the multiplier has been the subject of considerable debate in recent years; however, there is now substantial evidence to suggest that there is a large and positive multiplier to infrastructure investment in the UK.

The International Monetary Fund (IMF) estimates that infrastructure investment has a short-term multiplier of 0.4 and a long-term multiplier of 1.4 (IMF 2012), while the Office for Budget Responsibility (OBR) estimates a UK infrastructure multiplier of 1 (OBR 2014). Standard and Poor’s (2015) claimed that the UK could claim around 2.5 times the value of an initial investment in infrastructure over a three-year period; this is twice as much as Germany or France. As such, it is possible for the government to pay off the initial investment by the increases in economic growth which will be created, especially when borrowing is relatively cheap.

In fact, the balance of evidence is strong and conclusive: a very large number of studies from all over the world have now demonstrated a clear and positive correlation between public sector infrastructure investment and economic growth, with the multiplier varying from country to country and investment to investment, but always positive (see for example Abiad et al 2015, Aschauer 1989, Costa et al 1987, Duffy-Deno and Eberts 1989, Eberts 1990, Feyrer and Sacerdote 2011, Fic and Portes 2013, Kumo 2012, LSE 2014, Lund et al 2013, Mera 1972, Munnell 1990a, Munnell 1990b, Canning and Pedroni 2004, Pereira and Andrzej 2012, Ponce and Navarro 2016, Rives and Heaney 1990, Warner 2013, Zandi 2011).

3.3 INFRASTRUCTURE IN THE NORTH

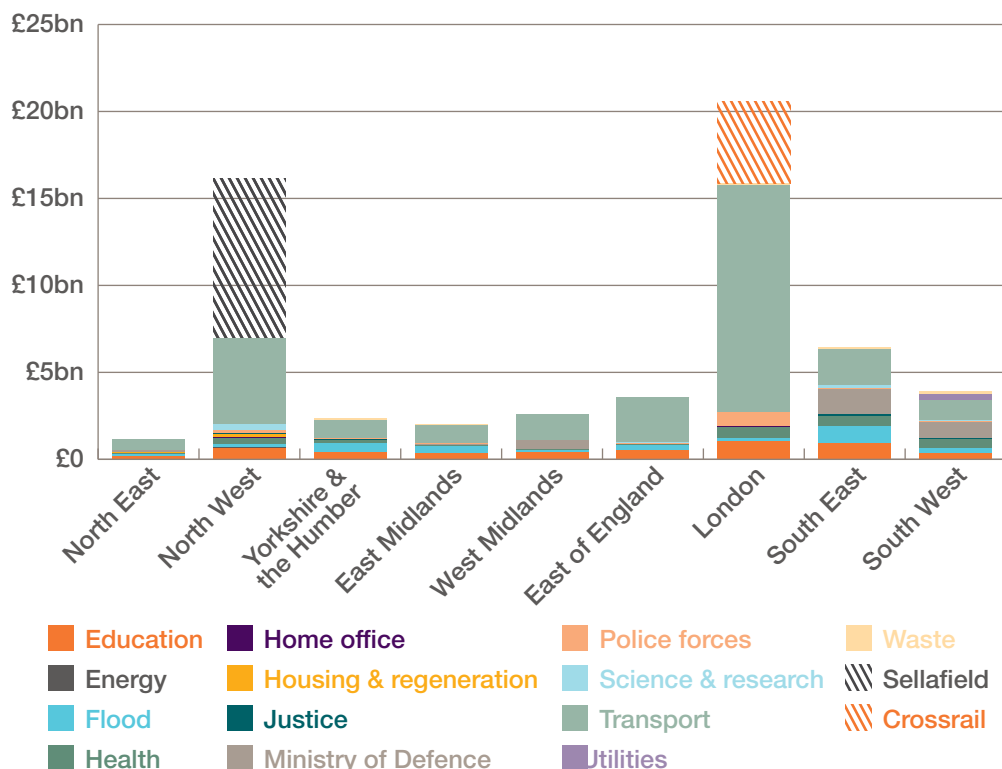
The North has experienced a chronic lack of investment in its infrastructure for many years when compared to the rest of the country. This lack of investments feeds into the large gaps in productivity, growth and job creation experienced between North and South.

The national infrastructure and construction pipeline shows that London will receive £20.6 billion of infrastructure spending from 2016/17 onwards – this is more than a third (35.1 per cent) of all spending attributable to English regions (HMT and IPA 2016).¹ The true picture, however, is even more favourable to the capital. As figure 3.4 highlights, much of this spending is on areas which aren't geared towards enhancing regional productivity – for example nuclear decommissioning (the decommissioning activity in Sellafield is set to cost £9.1 billion) – and skews this picture towards the North (see figure 3.4).

FIGURE 3.4

London is set to receive more infrastructure than the rest of the country, even including projects like Sellafield

Projected infrastructure spend 2015/16 onwards, public and public/private only



Source: HMT and IPA, 'National Infrastructure Pipeline 2016', (HMT and IPA 2016)

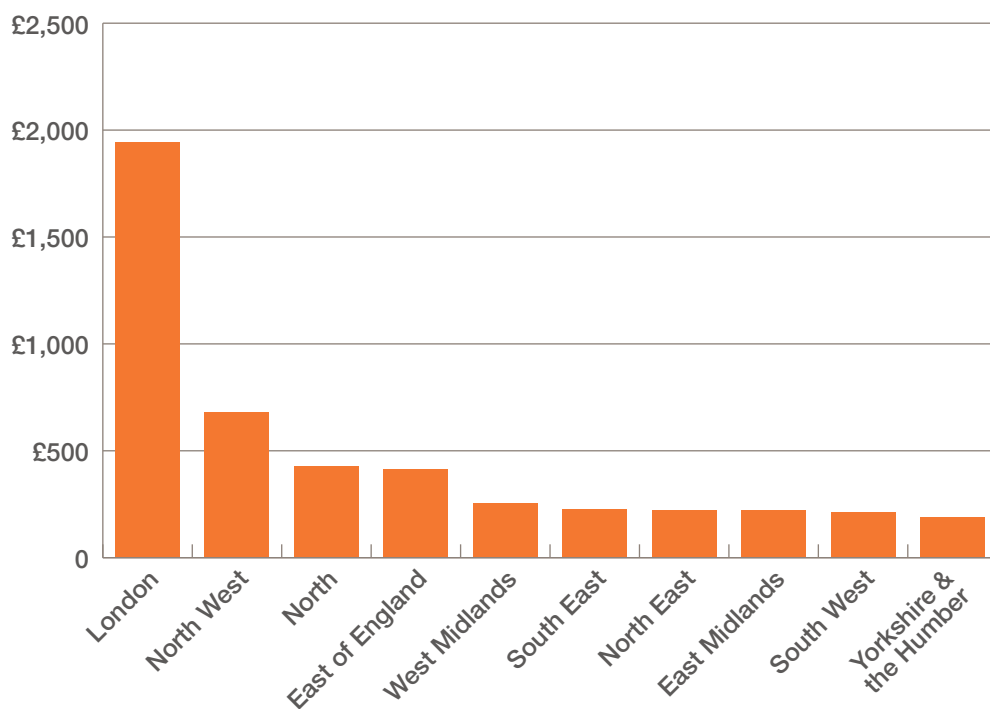
Transport infrastructure is a far better indicator of investment, and is more important for regional growth. Again the rest of the country loses out due to London's dominance. Between 2011/12 and 2015/16, public spending on transport in the capital averaged £725 per head; in the North it was just £286

¹ All figures include only projects with either public or public/private funding sources.

per head; across the country it was £352 per head (HMT and IPA 2016).² And this imbalance looks set to get even worse. The national infrastructure pipeline is set to invest £1,943 per head in London’s transport infrastructure – more than half (54.2 per cent) of transport infrastructure spending in English regions, despite being home to only 15.8 per cent of England’s population (ibid). Taken as a whole, the North fares better than other English regions, but there is a £1,515 per capita gap in spending between London and the North, and Yorkshire and the Humber is set to receive less than any other English region in per capita terms. Crossrail alone will cost £4.7 billion from 2016/17 onwards; all northern transport projects together will only cost £6.6 billion. Accounting for London’s commuters actually shows a worse picture, with London set to receive four times as much per commuter as the North (ibid).

FIGURE 3.5

Transport infrastructure is skewed dramatically towards London
Projected transport infrastructure spend, 2015/16 onwards, public and public/private only



Source: HMT and IPA, 'National Infrastructure Pipeline 2016', (HMT and IPA 2016)

Private sector investment in the North is, however, quite strong. The sectors in which private investment is strongest reflects the pattern across the country; namely, those sectors in which private investment is commercially viable because of the existence of sustainable revenue streams. Moreover, the infrastructure that arises from such investment is generally high quality. Manchester Airport, for example, is entirely privately financed and funded and has proven to be a highly successful commercial operation. Similarly, Hornsea One has been constructed

² Only includes spending attributable to regions.

entirely through the use of private finance and funding from Dong Energy, and Liverpool One was also fully financed and funded by the Peel Group. Each of these case studies also demonstrates the critical role of local authorities and local enterprise partnerships in attracting private finance; Hornsea, for example, relies on its location in the Humber enterprise zone, where it is exempt from paying business rates.

However, as mentioned above, it is not always possible to rely solely on private finance and funding, especially when looking at a public good. This is why public sector investment in the North is so critical; indeed, this chronic public underinvestment underlies some critical issues with transport infrastructure in the North – particularly regarding road and rail. Eighty-two per cent of respondents to a recent poll conducted by Ipsos Mori (2016) stated that ‘transport infrastructure investment within the North’ is the most important priority for the northern powerhouse.

Transport for the North (TfN) is a new body which has been charged with redressing this regional imbalance in infrastructure investment. As one of the only pan-northern public sector bodies in existence, TfN has a wide remit, and has made a promising start. It recently undertook an independent economic review of the North which highlighted the region’s core capabilities and enablers, as well as the challenges it is likely to face in the coming years.

TfN’s analysis has shown that, if the gap between GDP per capita nationally and locally was halved it would provide an economic boost of £34 billion, or 11.9 per cent of GDP (Cox and Raikes 2015). TfN also found that equalising the level of public investment between North and South in the freight and logistics sector, coupled with private sector investment, could deliver a £34.7 billion boost nationally and anywhere between £13–20 billion of GVA benefits in the North while creating 25,000–38,000 additional jobs by 2033 (TfN 2016a).

These effects hold for two reasons. First, the decreasing marginal returns to output outlined above mean that areas with less investment like the North will see greater returns from any increase in investment. Second, there is substantial evidence to suggest that poorer areas have higher multipliers than wealthier ones, because poorer individuals have a higher marginal propensity to consume extra income (Jappelli and Pistaferri 2014). As such, infrastructure investment in the North has a greater effect on national and regional output than the same investment in the South.

National infrastructure pipeline

The government’s national infrastructure pipeline (originally published by the coalition) is a comprehensive list of infrastructure projects that are either under construction or planned for the next decade (Rhodes 2016). The pipeline is not intended as an exhaustive list of all potential infrastructure projects in the short to medium term – it is updated annually and many infrastructure projects that do occur will not be included (ibid). It includes information on the location of the project, its cost and whether the state or the private sector is likely to pay for it (ibid).

The updated pipeline includes around £500 billion worth of planned private and public investment over the next decade, including the £23 billion announced in the autumn statement. £138.3 billion, or 28 per cent of the pipeline, will go to transport projects, while £206.3 billion (41 per cent) will go to energy and £74.8 billion (15 per cent) will go to utilities (ibid). The vast majority of this will come from private funding, reflecting the preponderance of private sector investment in the energy and utilities sectors (Timetric 2016).

4.

FUNDING AND FINANCING NORTHERN INFRASTRUCTURE

ISSUES AND CHALLENGES

Globally, there are a great many mechanisms for funding and financing infrastructure, and much has been made recently of the array of potential financing mechanisms for public infrastructure projects. The UK government has examined project bonds, infrastructure banks and pension funds and other mechanisms as a way of unlocking infrastructure investment, and has undertaken some limited initial reform in relation to these specific financing mechanisms. The UK also pioneered the use of public finance initiative (PFI), public-private partnership (PPP) structures and asset financing for the delivery of some infrastructure and associated operational assets. However, there are a number of issues that need to be addressed before any of these mechanisms can be fully utilised. This chapter looks first at some of the financing options available before addressing four key issues that often represent hurdles for attracting finance.

4.1 FINANCING OPTIONS

There are a number of different mechanisms through which infrastructure can be financed, and various sources of investment that can be leveraged to do so. First, local government can issue municipal bonds – as the name implies these are debt issuances that can be bought by institutional investors or individuals, yielding a steady rate of return over an extended period. The US currently has the largest municipal bonds market in the world, valued at \$3.7 trillion, but the vast majority of developed countries have a rigorous market for local borrowing. In the US, various organisations can issue munibonds – from states to school districts. The bonds are often exempt from tax, and can be purchased by ordinary citizens – many have them in their 401(k)s³ – as well as financial institutions.

Tax-increment financing (TIF) is a process in which municipalities use a portion of future tax revenue from a given area to promote development in that area. It was first adopted in California in 1952 and has since spread widely throughout the US – in the American context, states would often put up a certain amount of funding for a project, which would then be matched by the federal government and repaid through the proceeds of future tax revenues.

Another option is to create a state infrastructure bank, tasked with investing in national infrastructure projects. It could be financed through issuing bonds or equity on capital markets, through government funding, or through QE. One of the most successful infrastructure banks is

3 A 401(k) is the US equivalent of a UK personal pension plan.

Germany's KfW, originally formed after the second world war to distribute funds from the Marshall Plan. The federal government holds an 80 per cent stake, while the states of Germany hold a 20 per cent stake. The bank borrows 90 per cent of its funds through capital markets by issuing bonds that are guaranteed by the federal government, and it is exempt from corporation tax. It lends for the construction of housing, energy generation and export, and project finance, as well as lending to small and medium-sized enterprises.

There are also a variety of different investors that can be encouraged to, for example, buy municipal bonds or invest in infrastructure banks. Recently, a great deal of attention has been paid to pension funds, particularly those in the public sector (Wilson 2016). A number of local government pension funds have now been merged into six 'British Wealth Funds', each with at least £25 billion worth of assets. The intention was to attract funding for infrastructure from these funds; however, so far they have not lived up to expectations in this regard. The primary duty of the funds will always be to maximise returns, so viable projects have to be available before the funds can be used.

Foreign investment and sovereign wealth funds are also potentially attractive sources of investment. The government has recently been in conversation with the Chinese government in the hope of channelling the resources of the Chinese state into UK infrastructure. The UK-China Infrastructure Academy has now been formed to help 'train Chinese companies and officials on investment processes in the UK' (UCL 2016). The idea is that, with very high rates of domestic savings, fairly low rates of household borrowing, combined with stringent capital controls, the Chinese economy has a great deal of capital that needs to be productively invested (Knight and Ding 2009). Rather than focusing exclusively on rate of return, the Chinese government also seeks to use this capital to strengthen relationships abroad. While the relationship with China will be uncertain following Brexit, this could be a critical source of future investment. Similarly, sovereign wealth funds are also pools of capital that could be tapped, but these are generally more focused on returns than anything else; although specific funds are often interested in investing in specific things, such as green energy projects.

In order to secure private investment, the government may also need to provide guarantees to investors that they do not stand to lose substantial amounts of capital if projects overrun. The Channel Tunnel, for example, which was financed through a public-private partnership required substantial guarantees in order to secure private investment. Guarantees are especially important in the context of greenfield developments, and when repayment models are usage- rather than availability-based.

4.2 WHO PAYS?

One major issue is determining who pays for infrastructure projects. As laid out in chapter 3, there are strong arguments for making the best possible use of public sector borrowing in order to fund capital investment. However, relying solely on public funding and finance is not always feasible or desirable. Combining public and private finance to

make use of the innovative financing mechanisms outlined above has three important advantages (OECD 2015).

First, even if the government or relevant devolved authority recognises the long-term economic and other benefits of a particular project, it may not have sufficient financial capacity within public sector funding constraints to support project development, delivery and operational costs. By working with third parties such as private sector infrastructure developers and operators, pension funds, and the global infrastructure finance market, government and other infrastructure procurers can leverage private sector financing and pay this off over the long term allowing a number of benefits to be captured (Marcelo et al 2016)

Government also frequently makes two mistakes when choosing infrastructure projects to invest in: ‘that of selecting high-return projects in which the private sector would invest; and that of selecting low social-return projects’ (Warner 2013). With regards to the first of these issues, while ‘crowding out’ is generally not an issue for public goods, it does obtain in the case of private goods. Indeed, in ‘a market which already has private competition’, crowding out effects have been documented (Carew and Mandel 2014). This strengthens the case for private sector investment in infrastructure projects that count as private goods, as well as strengthening the case for public investment in those that aren’t.

Public goods, externalities and market failures

Public goods are goods that are non-excludable and non-rivalrous. When a good is non-excludable it is either impractical or overly expensive to exclude non-payers (Mankiw 2015).

Rival goods are scarce goods (ibid). If one person’s consumption of a good prevents others from consuming that good, then this is a rival good.

Externalities are costs or benefits associated with consumption or production that accrue to a third party, who has not chosen to incur that cost or benefit (ibid). When an individual smokes in a public place, there are costs (in the form of toxic smoke) to others that they have not chosen to incur. On the other hand, when individuals are vaccinated, the prevalence of diseases are reduced for the whole population, even though they have not made an active decision to receive this benefit – this is an example of a positive externality.

Non-excludable and non-rivalrous goods which have large positive externalities are generally subject to underinvestment by the private sector (ibid). This is a classic example of market failure, because the social costs of producing a good are not adequately accounted for by the private sector – in other words, externalities are not ‘priced in’. For example, the cost to the environment of driving a car is not accounted for in the production process, so cars are subject to overinvestment and people therefore consume more of them than is socially optimal. Equally, the social benefits of investing in, for example, wind and solar power are not taken into account by the private sector, so wind power is subject to underinvestment.

The government can help to correct for these market failures, either by implementing taxes and subsidies to ensure externalities are ‘priced in’, or by taxing people to directly produce a public good (ibid). Roads are a classic example of a public good, which is non-excludable, non-rivalrous and has positive (as well as negative) externalities.

With regards to the second issue of selecting low social-return projects, governments often fail to ‘pick winners’ when it comes to infrastructure projects – in other words, the issue of government failure can replace that of market failure (Mankiw 2015). In its analysis of the decision to take forward HS2, the public accounts committee (PAC) argued that the Department for Transport (DfT) was making decisions ‘based on fragile numbers, out-of-date data and assumptions which do not reflect real life’, as well as failing to adequately account for costs (PAC 2013). Relatedly, the government has often failed to procure and manage projects in the most efficient or outcomes-based way. Although never foolproof, involving the private sector in the decision-making process can reduce the risk of such inefficiency, given the different incentives that prevail in private as opposed to public organisations (PPIAF 2009, Marcelo et al 2016).

A number of approaches have been taken in recent years to combine private investment in infrastructure with public support, but so far these have not managed to solve the investment problem in the UK. The Channel Tunnel, for example, was able to leverage a great deal of private finance, which was combined with contributions from the British and French governments. However, due to large cost overruns, many investors lost money. The ICAEW points out that despite numerous attempts to finance infrastructure schemes privately, the government has found it ‘harder than initially hoped’ to raise funding, at least partly because investors are put off by examples such as the Channel Tunnel (ICAEW 2016).

This is at least partly due to the assumption that, given the large amounts of capital currently searching for viable investment opportunities in the context of record low interest rates, sluggish global growth and overvalued equity markets, there must be plenty of investors looking to invest in infrastructure projects. However, pension fund managers, like all those who manage other people’s money, have a fiduciary responsibility to protect their clients’ capital and maximise their returns. As such, no matter how much underutilised capital these funds have at their disposal, they will not risk investing in projects that do not look viable in the long run. Unlike clear commercial opportunities such as Hornsea One, the vast majority of the UK’s critical infrastructure projects are not immediately commercially attractive. As described above, many road and rail projects have large positive externalities that mean they are not profitable, even if they are critical for wider social and economic reasons.

4.3 APPRAISAL

The second challenge facing the financing and funding of big infrastructure projects is the way they are appraised to guide public investment decisions. There are two issues with current appraisal processes: first, their inability

to account for induced demand and positive externalities; and second, the influence of politics on the decision-making process.

The main issue is that models used for appraisal of costs and benefits are often inadequate for taking into account the potentially transformational effects of infrastructure projects (Cox and Davies 2013, WWG 2015). Best practice would suggest that these models should take account of positive externalities and the impact of induced demand (TfNSW 2013). Indeed, there is an implicit assumption within government assessments that the aim of infrastructure projects should be demand relief (RTPI 2014). This assumption means that these assessments are biased in favour of the South East, where demand is typically higher.

Induced demand

For any price, it is assumed that there is a constant level of demand which can be satiated at a particular level of supply – where price is zero, as is the case for most roads, supply needs to rise to meet demand at this level. However, infrastructure investment often operates according to the logic of ‘induced demand’ – a phenomenon whereby an increase in the supply of a good or service increases the demand for that good or service. In other words, building more infrastructure increases overall demand for infrastructure.

Seemingly endless expansions of the M25 are a clear example of this phenomenon. As the road becomes less congested, more people opt to use it, and in the long run as infrastructure in an area improves, more people may move to that area in order to make use of this infrastructure.

However, assessing projects in terms of their ability to relieve demand, or through narrow benefit–cost ratios (BCRs) means that assessments fail to account for positive externalities and induced demand. The kind of dynamic, long-term modelling required to price in externalities and account for induced demand is simply not used in many government departments, despite its being available in the private sector (Brown and Robertson 2014). Instead, the DfT and Treasury produce ‘value-for-money estimates’ based on a ratio of costs and benefits, both of which are narrowly defined (Cox and Davies 2013, Cox and Davies 2014).

A further issue is that politicians in central government often make infrastructure decisions for the wrong reasons, or by using the wrong information. First, politicians may choose ‘white elephants’ that are expensive and unnecessary, for political reasons (Prasser 2007). The National Infrastructure Commission (NIC) (see box) is clearly critical in this regard. The role of the NIC is, however, unclear (CECA 2016). It does not have statutory powers and it is not entirely clear when and how NIC decisions are supposed to feed into the decision-making process. In ideal circumstances, the NIC should be able to operate as a safeguard, preventing ill-advised decisions from being implemented; but to do so would require legislative change (Norris 2015).

Second, because determination of the importance of projects is ‘locally differentiated, value-laden, and reliant on preferences’, local knowledge may lead decision-makers to prioritise infrastructure projects closer to home than ones about which they are not aware (Marcelo et al 2015, WWG 2015). This may mean that infrastructure projects go ahead in London, even when the benefit–cost ratios don’t stack up – as in the case of the Jubilee Line. The same cannot be said of the North, where local problems aren’t well known by decision-makers in Westminster. As argued by the OECD (2013), ‘it is critical that sub-national governments have the capacity to work collaboratively in designing and implementing investment projects’. As we argue in chapter 5, this requires devolution of powers over decision-making, taxation and spending.

National Infrastructure Commission

Launched in 2015, the National Infrastructure Commission (NIC) is meant to provide ‘unbiased analysis of the UK’s long term infrastructure needs’ (Rhodes 2016). The government has to act on the recommendations made by the NIC, either by enacting them or by suggesting alternatives (ibid). The recommendations are made in reports delivered by the NIC at the beginning of each parliament, and updated throughout; the incoming government issues the parameters for the NIC’s research, including limits on cost (ibid).

To date, the NIC has published three reports – one on the North’s transport infrastructure, one on London’s transport infrastructure, and one on modern solutions to energy storage across the UK (ibid). Following debate about whether or not the NIC should have statutory powers, in the end it was decided that such powers should not be given. Some have, however, criticised this configuration on the basis that too much power remains with elected politicians and therefore may be subject to issues related to electoral cycles rather than objective need.

4.4 GOVERNANCE

The issue of governance underlies many of the other challenges the North faces in attempting to redress the North–South divide. In particular, limited levels of fiscal devolution and caps on local government borrowing are preventing local areas and subregional bodies from funding infrastructure projects themselves, increasing regional inequality and creating serious accountability issues (CLGC 2014).

Local government is allowed to borrow money for the ‘prudential management of its affairs; they must set out limits for their borrowing, but they are in theory allowed to borrow money to finance capital expenditure. They can borrow from the PWLB (soon to be replaced by the Municipal Bonds Agency), on markets or through municipal bond issuances; they may also use TIF-style financing options.

There are, however, two issues with the regulation in this arrangement. First, there are stringent and fairly low limits on the amount local authorities are allowed to borrow. Local government is simply not able

to borrow enough to finance local infrastructure projects. Schemes such as Greater Manchester's earnback deal require lengthy negotiations with government; it is rarely, if ever, possible for local government to just 'get on and do it' as a number of our interviewees advocated.

Second, the absence of any meaningful fiscal devolution means that local government's ability to capture the local revenues created by this borrowing through local taxation are severely limited. This means local government may not be able to pay off the loans in the long run even if they are issued. Further fiscal devolution would be necessary to make municipal bonds, TIF and other such financing mechanisms attractive.

While devolution of business rates appears to be a step in the right direction, it looks unlikely that the government's current preferred funding formula will adequately reward all areas for increases in economic growth (Stirling and Thompson 2016). Similarly, the creation of a Municipal Bonds Agency to replace the Public Works Loans Board is an encouraging step. This process is, however, still in its infancy, and there are still unanswered questions about how the agency will work; without further fiscal devolution, and with continued restrictions on borrowing, the agency can only have a limited effect (Sandford 2016).

The combination of these issues have made experimentation with innovative borrowing mechanisms unattractive to local government, and in 2014/15 only around £70 billion was borrowed, of which £11 billion was accounted for by the Greater London authority and TfN, making the UK a clear outlier when compared to other advanced economies (DCLG 2015). Given the relatively high credit ratings of the majority of local authorities, this is clearly a severe limitation that is playing a role in exacerbating interregional growth and productivity gaps.

These issues are exacerbated by the absence of any powerful decision-making body that is capable of appraising strategic infrastructure projects for the North as a whole. The category of nationally significant infrastructure projects (NSIPs) was recently introduced, but this just means that a gap has opened up between small local projects which can be decided on by local authorities, and large national ones, which are decided upon in Westminster (Cox and Davies 2014). There is no one body that is capable of taking a regional view; and this is critical given the interconnected nature of the economy of the North as a whole (ibid). Transport for the North should be playing a much greater role in this process, but it is constrained by the limited nature of its powers.

Nationally significant infrastructure projects

A distinction was introduced in the Planning Act 2008 between local and major infrastructure projects, the latter being known as 'nationally significant infrastructure projects' (NSIPs). This was supposed to provide a 'clear strategic policy framework for decision making on nationally significant infrastructure' (Atkins 2015). NSIPs are subject to greater scrutiny from government, as well as the public more generally, and have to pass much more significant sustainability and environmental assessments.

Specific guidelines vary depending on the type of project; for example, 'power stations meet the criteria if capacity exceeds 100 megawatts; airport expansions must cover 10 million passengers per annum or 10,000 air transport movements' (Cox and Davies 2014).

4.5 CAPACITY AND PROCUREMENT

Even if all of these issues were solved immediately, the UK's ability to deliver infrastructure projects successfully would be limited by issues associated with skills and procurement. Currently the workforce is not large or skilled enough to implement desired investments. Moreover, public sector procurement processes are bureaucratic and inflexible, and often fail to get the best deal for the taxpayer.

Skills shortages are rife within the construction industry, and this has been driving up prices for many years (CITB 2016). A recent poll conducted by the Royal Institute of Chartered Surveyors (RICS) found a large majority of respondents stating that skills shortages are a constraint on growth (Evans and Plimmer 2016). Moreover, skills shortages are set to be exacerbated in the wake of Brexit. A large number of the UK's skilled contractors come from overseas, particularly eastern Europe. In fact, over 100,000 construction workers from other EU countries were working in the UK in 2014 (ibid).

Furthermore, stringent procurement arrangements for the public sector often mean that, even if a local area has a longstanding relationship with a particular contractor, proposals often have to go through a centralised tendering process which is costly and inefficient. While centralised tendering within local government has clear benefits in terms of efficiency, failing to give local areas sufficient control over procurement can stifle innovation (Uyarra 2010, Uyarra et al 2014). Local areas also often find themselves unable to positively discriminate towards firms that use local supply chains and labour. This contrasts with the much more flexible US system, where private contractors are able to approach municipalities with proposals for infrastructure projects.

There are also concerns about how projects are packaged and presented. Several of our roundtable participants mentioned that there is an opportunity for both local areas and TfN to package up smaller projects into a balanced portfolio that looks more attractive to investors. There is then a case to be made for a clear and coherent marketing campaign in order to highlight the potential benefits of investing in this portfolio, to both domestic and international investors (Caniëls and Gelderman 2007). Transport for London is a clear example of best practice in this area.

5. INFRASTRUCTURE FOR THE NORTH

In this chapter, we evaluate several case studies in order to identify lessons for the funding and financing of projects in the North. First, we identify examples of best practice from around the world, drawing out lessons from each. Second, we look in detail at three examples of critical northern infrastructure projects that have yet to be taken forward. We analyse how these projects could be financed, funded and project managed in order to highlight some of the problems we have outlined and provide practical solutions for change. This is not intended as a fully detailed end-to-end map of the projects under analysis, but it is supposed to illustrate how adhering to the principles outlined in chapter 6 can make financing and funding large infrastructure projects easier, cheaper and fairer.

5.1 INTERNATIONAL CASE STUDIES

New South Wales, Australia: public-private partnership

In 2011, Transport for New South Wales (TfNSW) brought proposals for what was originally called ‘North West Rail Link’ and is now known as ‘Sydney Metro Northwest’. The project, which is projected to cost AU\$8.3 billion, is being financed and delivered through a public-private partnership, including the design, build and financing of the network. A new company will be formed for the purposes of construction, and equity investment will be provided by a number of different firms. Public investment comes from the New South Wales (NSW) government after a cost-benefit analysis revealed the huge potential economic uplift that the project could bring.

The NSW government also appealed to Infrastructure Australia (IA), a central government body, for AU\$2.1 billion-worth of funding, but this was rejected as IA claimed the project was ‘not the highest priority’ transport project for Sydney. The state government, with a clear proposal, willing financiers and the conviction that the project would yield results, stated that it would go ahead anyway. The private sector has clearly shown its support for this decision by willingly stepping forward to work with the NSW government to finance the project.

Since its launch, the project has received a number of awards for the way in which it has been designed, financed and contracted, including a Bank Asia award and an award for outstanding community consultation. None of this would have been possible had the NSW government not had the fiscal and decision-making power to go ahead with the project, despite central unwillingness to provide funding.

Lessons learned

Some of the lessons from this case study for central government are:

- the right level of fiscal and political devolution can reduce the dependence of local government on central government, as well as allowing the former to take on much of the costs and many of the risks associated with infrastructure projects
- local areas are much better places than central bodies to appraise local infrastructure schemes
- local governments want to ‘get on and do it’, and with the right experience and support, can execute projects professionally and efficiently.

Some of the lessons for local government are:

- ask for forgiveness, not for permission – local government should, where possible, ‘get on and do it’ when it comes to infrastructure projects
- public-private partnerships can yield results – but only when the buyer pays very close attention to procurement, contracting and project management arrangements
- ‘community consultation’, or stakeholder engagement, is important for any project to be seen to be a success.

Aberdeen, Scotland: municipal bonds

Aberdeen city council (ACC) recently issued a corporate index-linked bond, with a par value of around £370 million, based on a credit rating of Aa2 awarded by Moody’s – only one notch below that of the UK government. The issuance has generated proceedings significantly over the par value.

ACC plans on using the funding they have gained from this process as part of a mixed funding strategy to support their economic development plans. These include £1 billion-worth of developments, including:

- Aberdeen Western Peripheral Route
- construction of an energy from waste (EfW) facility
- 1,000 new affordable homes
- new school developments
- city centre regeneration
- Aberdeen Exhibition and Conference Centre.

The selection of an index-linked bond, in this case with the bond linked to the RPI inflation measure, is a novel feature that allows ACC to hedge against the possibility of future inflation. Alongside the revenues from the assets themselves, this means that income-generating capital projects can be self-financing (that is, bond interest and repayment will be covered by income from the assets in every period). As such, index-linked bonds can be a particularly appealing method of financing revenue-generating assets.

Lessons learned

Some of the lessons from this case study for central government are:

- increasing or removing borrowing caps, combined with fiscal devolution, can have a significant effect on local growth

- capital markets are keen to buy the debt of many local authorities.

Some of the lessons for local government are:

- working with the private sector can facilitate innovation and allow for the sharing of best practice
- given the right guidance through the debt-issuing process, local authorities may find that they can borrow on very favourable terms
- it is important to tread carefully in this area, ensuring that debt is structured in such a way as to yield the best returns – working with the private sector can also be instructive in this area.

Portland, Oregon: tax increment financing

Tax increment financing (TIF) is a process in which municipalities use a portion of future tax revenue from a given area to promote development in that area. In the American context, states put up a certain amount of funding for a project, which is then matched by the federal government and repaid through the proceeds of future tax revenues.

In 1994, the US city of Portland in Oregon adopted an ambitious TIF scheme in order to regenerate its downtown area, which was, at that point, a fairly rundown area. A number of brownfield sites were identified as part of a strategic spatial plan, and it was decided that these areas would be regenerated and connected to the main city via a tram network. \$22 million of the \$103 million tram network project was raised through TIF, and this initial borrowing from the federal government has more than paid for itself.

The service launched in 2001, and there are now around 12,000 people using the tram service each week. Property values in the area have risen substantially, and private sector money has flooded in, with \$3.5 billion-worth of new developments having been built on the route (Steer Davis Gleave 2010). The changes have spurred economic growth in the city, with tax revenues rising and spending falling, allowing the city to pay back the TIF loan very easily, and creating a cycle of positive feedback that has turned a rundown downtown into a thriving enterprise zone.

Lessons learned

Some of the lessons from this case study for central government are:

- local regeneration can work best at a local level – but only with the right levels of fiscal and political devolution, which can allow local government to release the full potential of their local areas
- central government needs to support local areas where they are investing in public goods, and where they have demonstrated due diligence when appraising and scoping a project
- a fairly moderate initial investment can create transformational change in an area through induced demand – if that investment also happens to be in a public good, the changes are even more substantial due to large positive externalities.

Some of the lessons for local government are:

- with the right levels of fiscal and political devolution, local government can act as place-shapers, using strategic planning to improve economic and social outcomes for their local area

- these improved outcomes can be leveraged to fund infrastructure projects over the long term.

Taking risks with infrastructure projects often pays off in the long run – local areas must make the best use of their local knowledge to take risks on projects that they, and their residents, think are likely to succeed.

5.2 ILLUSTRATIVE CASE STUDIES

M60 North West Quadrant

Strategic investment case

The M60 provides Greater Manchester with a vital orbital route, connecting with strategic east–west routes across the Pennines and, providing a critical local distribution channel for the city-region. It is also an essential part of the east–west freight road corridor. This variety of functions has an impact on capacity, which causes considerable issues with congestion throughout the day, particularly obvious at intersections that channel both local and national traffic.

Some sections of the M60 are in the worst 10 per cent of England’s motorway network for vehicle delays (TfN 2016b). Incidents and accidents are common, and the lack of capacity means that these often cause severe delays, and long recovery times. These issues also impact on the air quality and noise pollution in the area, both critical public health issues. Taking into account GM’s ambitious growth plans, for an additional 350,000 jobs and population growth of around 28 per cent to 2040, an extra 800,000 annual trips on the M60 are predicted by 2040. Without swift and coordinated action, this will severely impact upon not only the economy of Manchester, but of the North and the country as a whole.

TABLE 5.1

‘Manchester North-West Quadrant study intervention specific objectives’

Intervention specific objectives	Category
To facilitate and support the delivery of the northern powerhouse by ensuring that the Manchester North-West Quadrant enables transformational growth in the employment, housing and economic output of the North	Growth
To improve journey times, reliability, safety and resilience across the study area	Network performance
To improve connectivity for all users so they are able to access education, employment, business and leisure opportunities	Connectivity
Minimise adverse impacts on the environment and to maximise opportunities for a net improvement to the environment, particularly air quality and noise, across the study area	Environment

Adapted from Transport for the North, ‘Manchester North-West Quadrant Study Stage 3 Report’ (TfN 2016b)

TfN is considering several different options for tackling congestion on the M60, including a Northern Corridor, an Outer Orbital Corridor, and an In-Corridor. The routes' journey time savings range from 5 minutes and 3 minutes to 12 minutes and 5 minutes for long distance and local travellers respectively (ibid). All have significant benefits when it comes to growth, connectivity and environmental objectives. The costs range from £5,675–£7,356 million (ibid).

Funding and financing options

In this section we look into how it might be possible to finance this project through a gain share agreement, as well as pointing out the reasons why, under current arrangements, this cannot be made to work in practice.

Given the potential benefits to local areas, the largest portion of the funding could come from a TIF-style loan to TfN. Local areas could then pay back this funding through upticks in their tax revenues. This would not, however, account for the entire cost of the project, and the government would have to cover the shortfall. This would be more than affordable given that many economic benefits will accrue to central government as a result of the scheme.

Mechanisms for leveraging private finance up front could also be considered, so that the project can be kept off balance sheets in the short term. In particular, government could use its close relationship with global investors to encourage them to provide some upfront financing for the project. Government could use its ability to borrow cheaply to make available a pot of funding over the long term that can be used to repay any private finance that is leveraged up front.

However, there are currently a number of barriers to this arrangement:

- In order to make a TIF arrangement work in this context, either local authorities or TfN (or both) would need to have greater access to the proceeds of growth. This would require further fiscal devolution. Under current arrangements, the vast majority of the economic benefits of this scheme would accrue to central government, so there is no possibility that local areas would be able to pay back the loan through upticks in tax revenues.
- TfN also does not have the power to borrow money under current arrangements. This is likely to include any borrowing from government for the purposes of a TIF loan. As such, for this arrangement to work legislation would have to be changed in order to give TfN borrowing powers.
- The particular relationship between TfN and local authorities would also have to be worked out ahead of time. If legislation were changed and a loan granted to TfN, and if greater fiscal devolution were agreed so that local authorities were able to reap the economic benefits of the scheme, some arrangement between local authorities and TfN would have to be worked out to enable the latter to pay back the loan by accessing the revenues of the former. The only alternative to this would be for TfN to have direct access to tax revenues.

Northern Powerhouse Rail: HS3

Strategic investment case

According to the National Infrastructure Commission, it takes longer to get from Liverpool to Hull by train than to travel from London to Paris. The fastest possible journey time between Leeds and Manchester is 49 minutes, and some services take upwards of an hour (NIC 2015). There are frequent delays on this service, which is poorly scheduled at the best of times, and travellers find the carriages out of date, and uncomfortable.

The ambition of Northern Powerhouse Rail is to tackle these and other issues in order to reduce journey times, improve scheduling, reduce congestion and improve the quality of rail transport across the North. Northern Powerhouse Rail (otherwise known as HS3) is a ‘transformed east–west network from Liverpool in the west to Hull and Newcastle in the East’, which will be delivered in phases with the Leeds–Manchester section coming first (ibid).

This first phase of HS3 is estimated to have agglomeration benefits of around £60 million per year in total aggregate earnings (ibid). Manchester and Leeds are the two largest cities on the line, they have larger economies than others and they are relatively close to each other, meaning the costs will be minimised and economic benefits from agglomeration will be maximised. The greatest benefits are seen when an integrated, North-wide strategy is delivered, with road and other infrastructure improvements alongside the whole of the HS3 network, but it is critical that the ‘quick wins’ are delivered up front in the shortest possible time (ibid).

Funding and financing options

The potential economic benefits of this project are very large – the estimated benefits of agglomeration of around £60 million per year do not take into account wider positive externalities that will result from this economic growth. As such, this is a clear case for investment that could be financed through municipal bonds. This is premised on fiscal devolution and a reduction or removal of caps on local government borrowing.

Local authorities could come together with TfN to assess the potential economic impact of the project, and could then agree to fund it through the upticks in revenues that will result from it. Finance could then be gained either through the local authorities themselves, or through TfN, issuing municipal bonds. The private sector could help the local authorities through the credit rating process, in order to ensure they get the best deal. And they could also help the authorities to decide how the bond is structured, in order to leverage the maximum amount of income from the bonds. Marketing and branding of the municipal bonds will also be important. The private sector could be used in this branding process, to ensure that local authorities are able to leverage as much value as possible from the northern powerhouse brand.

Pension funds and global investors could then be approached. Recent reforms to local government pension funds mean that these can now be used to buy bonds to finance infrastructure; the government has not yet gained as much as was initially hoped from this process, so it could help

local authorities to gain access to this resource. The government should also use its close relationship with global investors to encourage them to buy up some of the bonds.

Over the long term, the exchequer is also likely to gain significantly from the project. As such, there is a short fall which cannot be covered by municipal bonds issuances, this should be covered by DfT.

Current barriers to this arrangement include the following.

- As for the above case study, if the municipal bonds are to be repaid in the long term, either local authorities or TfN (or both) would require greater access to the proceeds of growth. This would require further fiscal devolution. Under current arrangements, the vast majority of the economic benefits of this scheme would accrue to central government, so there is no possibility that local areas would be able to pay back the bonds through upticks in tax revenues.
- TfN also does not have the power to borrow money under current arrangements, and there are strict limits on local government's ability to borrow. These limits would have to be removed through legislative change before any municipal bonds could be issued.
- As with the M60, the relationship between TfN and local authorities would have to be decided before the process began. If the borrowing restrictions were removed, and fiscal devolution was agreed, then an arrangement between local authorities and TfN would have to be worked out to enable the latter to pay back the loan by accessing the revenues of the former. The only alternative to this would be for TfN to have direct access to tax revenues.

Teesside carbon capture and storage

Strategic investment case

Carbon capture and storage (CCS) is a new and developing technology that is used to capture CO₂ emissions produced in certain industrial processes. The carbon that is captured can then be transported via a pipeline for storage in a safe place – often in underground oil and gas fields that are now depleted.

CCS is a fairly new technology, but its potential benefits are clear. Over the long run, revenues from the operation of the scheme could be large, and it is also likely to attract many more businesses to the UK (Parliamentary Advisory Group on Carbon Capture and Storage 2016). The potential for exporting the technology could also yield substantial economic benefits. Over the long term, in a least-cost scenario, a Canadian research organisation estimates that CCS could account for 40 per cent of the reduction of greenhouse gases needed up to 2050. Inversely, the cost of inaction on CCS has been estimated at between £1–2 billion to UK consumers per year up to 2020 (ibid).

In 2015, the UK government launched a competition to reward any company that could present commercially viable plans for the creation of a CCS plant in the UK. A number of areas applied, including the Teesside Collective, a cluster of energy-intensive industries aiming to develop CCS in the North East. However, just days before the

competition was set to finish, it was cancelled, with the government alleging concerns over the potential costs of the project.

Teesside Collective has not, however, been deterred by this set back. Its proposal includes plans to reduce the emissions of a leading chemicals company in the area by up to 90 per cent (Teesside Collective 2015). Lotte Chemical UK makes the materials needed to produce recyclable drinks bottles; it is a leading employer in the area, and a good example of the strong manufacturing base in the North East. CCS makes the plant viable in the long term, while also contributing to the UK's emissions targets, and improving the air quality in the area (ibid).

Funding and financing options

CCS is an example of a project which carries substantial amounts of risk because it has not been tested. As such, if government decides it is a priority and wishes to take the scheme forward, it would need to fund the initial building works, either keeping the project as a state-owned entity and attracting private investment to cover operating costs, or selling the project on once it has been completed.

Having said this, it should be possible to engage the private sector. Many carbon-intensive industries are concerned about long-running trends towards emissions taxation, especially given the increasing consensus on man-made global warming. The government too is concerned that it might fail to reach its decarbonisation goals. As such, there are clear mutual interests for both the public and private sectors to take forward CCS.

Given the high-levels of upfront risk, there is a strong case for the UK government to act as an 'entrepreneurial state' by providing the funding to get the project off the ground, based on the expectation that private funding will 'crowd in'. In particular, if the government takes forward the initial development of the project, working with local government to put in place the necessary infrastructure for the project to become viable, then, if it provides appropriate long-term guarantees, it should be able to attract investment to cover the operational costs of the project.

However, there is currently a barrier that makes this arrangement impossible to put into place.

- Under current legislation, this arrangement is feasible. However, the previous government's decision to include capital spending as part of the current account deficit figures has led to substantial underinvestment, particularly as, in the current economic climate, government's economic competence is now judged based on current account deficit figures. As mentioned above, there are many clear benefits of government investment in infrastructure, and the current thinking around investment is preventing these benefits from being realised.

6. PRINCIPLES AND RECOMMENDATIONS

Even in benign circumstances, the UK would have a long way to go to compete with its peers. The whole country has long suffered from a non-interventionist industrial strategy, centralised economic policy and, as a consequence, lacks sufficient infrastructure. However, these are not benign circumstances, and the UK now needs an interventionist strategy to tackle the additional challenges of Brexit.

The North is ready to play an important role, but will need to finance and fund new infrastructure in order to do so. This report has investigated how that can be done, and based on this research we now set out four broad principles for investment in northern infrastructure, followed by a series of policy recommendations.

6.1 PRINCIPLES FOR NORTHERN INFRASTRUCTURE INVESTMENT

1. Funding is as critical as financing

Greater attention must be paid to the long-term funding of large-scale infrastructure projects, rather than the short-term financing to get them off the ground.

The assumption that capital seeking out returns will automatically fund into infrastructure projects, regardless of their viability, is flawed. Government, in its experimentation with project bonds, pension funds and infrastructure banks, has realised this in recent months. Indeed, if private capital is not already flooding into a project, it is likely that this is because the project does not seem financially viable.

As such, if the government wants to leverage private sector capital to finance public goods, it needs to make sure that they are adequately funded. This can take a number of forms. The government can commit to repaying investors itself; or it can introduce charges and provide guarantees. Either way, government has to make it very clear to private investors how their investment will be repaid at the outset.

Clearly, government cannot and should not support every infrastructure project brought to it. There need to be more effective ways of accounting for the potential long-, medium- and short-term effects of infrastructure projects against a set of wide-ranging social and economic objectives. As such, in order to adequately prioritise projects, appraisal methodologies also need to be reformed.

2. Appraisal must be objective, systematic and long term

Methods of project appraisal need to take greater account of the long-term and wider economic and social benefits of large-scale infrastructure investment. Infrastructure planning bodies such as the NIC, TfN and others should be able to assess proposals objectively, rather than basing spending decisions on parochial interests.

Through improved modelling, the long-term transformations that can result from infrastructure projects – from economic growth to improved public health – can and should be accounted for in more expansive benefit–cost ratios. Longer-term and more inclusive models can help to account for positive externalities. Dynamic, systems-based models can help to account for the positive feedback that results from induced demand. Such techniques have come a long way in recent years, and there is no reason why attempts should not be made to include such methodologies in the government’s assessment processes.

For example, a great deal of work has been undertaken in environmental economics to assess the long-term impacts of green energy projects, in terms of environmental and economic externalities. ‘Hybrid modelling’, which is a systemic methodology that links bottom-up (engineering) with top-down (macroeconomic) effects of building green infrastructure, has come a long way in recent years (Holz et al 2016). Another approach which has been taken has been to model entire cities: SynCity, for example, uses new computational modelling frameworks and new data sources to model the effect of infrastructure projects on the local economy (Keirstead et al 2009). These are just some examples of radical new modelling techniques that demonstrate how far the discipline has come in recent years. Set against these ambitious frameworks, it is not difficult to imagine a model able to account for externalities and feedback.

Moreover, the parochialism and politicking surrounding the appraisal process strengthens the case for an empowered National Infrastructure Commission, capable of assessing the viability of different projects dispassionately, and ensuring that these projects are delivered on time and to budget. TfN should work closely with the empowered NIC to ensure that these projects are also focused on the North – either through a TfN representative sitting on the NIC, or through consultation between the two bodies. This should, however, be an NIC that is representative of the whole country to ensure that local knowledge is used appropriately, and to prevent the prioritisation of infrastructure projects in London and the South East. It should work closely with an empowered TfN, which should operate as a representative of local areas.

3. Subsidiarity, scale and trust are central to good governance

Governance and decision-making concerning the funding and financing of infrastructure should be devolved to subnational bodies, along with greater fiscal powers to unlock investment.

Further fiscal devolution would go a long way to reducing local government’s dependency on central government, which is so resented by both sides. It would allow local areas to finance and partially fund local infrastructure projects through a variety of different mechanisms, such as local borrowing or tax increment financing, that are currently

not workable locally. Devolving greater power to local politicians who know and understand the infrastructure issues in their area would help to create the same positive cycles of investment that have been apparent in London. It would also dramatically increase the accountability of local politicians with respect to their citizens.

Subsidiarity should be combined with a consideration of scale; a strategic pan-northern perspective is required for good governance and decision-making. TfN should continue to develop its role as a strategic pan-northern body, coordinating the empowered northern local authorities in order to decide which projects to progress. This coordinating role should be combined with a strategic one with regards to national government. TfN should work with a newly empowered NIC, as well as the Treasury, in order to represent the North in Westminster and to ensure fair allocations of national funding.

Relatedly, TfN should be able to borrow money. The legislation that brought TfN into being prohibited the organisation from borrowing money. Transport for London (TfL) is a good example of a public sector body that has successfully used borrowing to finance infrastructure investment (see boxed text below). While TfN would be unlikely to generate such a substantial income from fares, at least in the short term, it could finance its debt through contributions from DfT, as well as from local and combined authorities (with further fiscal devolution). The specific arrangements would have to be determined through negotiations between TfN, local authorities and central government – but the experience of TfL suggests that such a system can work extremely well, especially given today's low interest rates and increasing inflation.

Transport for London

Transport for London has an active borrowing programme, and issues various different types of bond, including a Green Bond for the purposes of financing green infrastructure. In fact, TfL is the UK's leading public sector issuer of debt after the government's Debt Management Office, with around £9.1 billion-worth of outstanding debt raised from a 'variety of sources' (TfL 2017). TfL is able to finance this debt through its fairly substantial revenues – these come from fares (40 per cent), grant funding (23 per cent) and other income from congestion charges, fines and property, as well as substantial funding from Crossrail and the Northern Line extension. TfL's grants come primarily from DfT, with some contributions from the GLA from business rates.

Finally, trust is a critical aspect of this process. As mentioned above, TfN needs to be able to bring a diverse group of stakeholders together from across the North, including newly empowered local and combined authorities, to make far-reaching decisions about infrastructure prioritisation and spending. This will not be an easy task; as one of our roundtable participants said, 'too often the North only shows the rest of the country the ugly side of its politics'. If any of the suggestions outlined in this report are to work, local authorities, public sector leaders, businesses and citizens across

the North will need to learn to cooperate, putting aside parochial politics in the best interests of the region as a whole. The forthcoming prioritisation exercise relating to the northern transport strategy will provide a litmus test for this level of political maturity.

4. Procurement, project management and capacity should be central considerations

Greater devolution requires enhanced capacity for the procurement and delivery of major infrastructure projects. Brexit has the potential to have a significant impact here, as the government will be able to change stringent rules around public procurement which could benefit local authorities and firms.

It is critical that local and central government, and public sector bodies such as TfN, are able to act as ‘intelligent clients’ during the procurement process, allowing them to set expectations, draw up appropriate contracts and reduce issues of overspend, delays and project drift. Public sector workers should have the opportunity to experience the procurement process from both sides, as this would enhance their ability to deal with private businesses in an informed way. This could take place through a secondment initiative.

In fact, the public and private sectors should be able to work together throughout the procurement cycle. The private sector should, as is the case in the US, be able to submit unsolicited bids to local areas. Under the new governance frameworks outlined above, local areas should, in principle, be able to approve these schemes. Moreover, the public sector should, within limits, be able to positively discriminate towards firms that make use of local labour and local supply chains.

Finally, some attention needs to be paid to the way in which these schemes are framed and packaged during the procurement process. Particularly if local areas want to attract large investors to small, local schemes then these will have to be repackaged into a larger portfolio. There is a strong case for local areas, and the North as a whole, investing in a marketing campaign to highlight the attractiveness of the North to an international audience. Leaving the EU arguably presents an expanded opportunity for the North’s cities to market themselves as international destinations in order to attract inward investment.

6.2 RECOMMENDATIONS

Recommendation 1: Government should recognise that it has a role to play in funding northern infrastructure projects where there are clear social and economic benefits to doing so and make specific commitments to new investment in its March budget.

We recommend that the government should, in principle, commit to providing funding for projects that can be seen as public goods. This is relevant when private funding is not forthcoming, and when the project will have substantial social benefits that will outweigh any potential costs. While private sector financing should be used where possible, this will only be forthcoming if the government guarantees that this capital will be repaid. This can take a number of forms: the government can commit to repaying investors itself; or it can introduce charges and provide

guarantees. Either way, government has to send a very clear signal to the private sector that this investment will be repaid.

Recommendation 2: Public sector bodies charged with infrastructure appraisal should take better account of the wider economic benefits of investment as well as induced demand effects and the Treasury Green Book should be redrafted accordingly.

In order to achieve our first recommendation, appraisal needs to be able to account for positive externalities and induced demand; doing so will require new modelling methods. The private sector should be engaged to harness new models based on the logic of systemic, rather than discrete and incremental, change.

The current redrafting of the Treasury Green Book should expand their appraisal mechanisms, moving from a fairly narrow focus on demand relief towards a more holistic assessment of the economic and social benefits that can be derived from key infrastructure projects.

Recommendation 3: Government should reduce local borrowing caps to allow local areas and subnational bodies, including Transport for the North, to borrow more freely on international capital markets, working closely with one another and with the private sector. This should be combined with greater fiscal devolution.

Limits on local government borrowing should be removed, or greatly decreased within the prudential framework. The government should make sustained efforts to facilitate local areas' efforts to borrow on capital markets. Reformed local government pension funds should be engaged in the bond issuing process, as should global investors and sovereign wealth funds in order to provide more opportunities for TIF-style agreements with government.

TfN should be allowed to borrow in order to fund the strategic infrastructure projects agreed upon by its members, in a similar way to TfL. This could be supported by government grants, and eventually by revenues from fares. TfN should also be able to arrange large TIF-style agreements with government, based on the principle of earnback or gain share agreements that have been undertaken previously.

Recommendation 4: Working with the new Municipal Bonds Agency, the Treasury should take additional steps – including through reform of the tax and pensions rules – to make provision for an ambitious and wide-ranging UK municipal bonds scheme which among other features should enable individuals to make tax-free investments in UK munibonds as part of their personal pension plans. Such provision should allow for subnational schemes for particular purposes including a Northern Powerhouse Infrastructure Bond.

Most other countries in the world have large and rigorous markets for municipal bonds. This should be replicated in the UK under the auspices of the new Municipal Bonds Agency. Under careful controls, combined authorities, local authorities, transport authorities and other bodies

should then be able to issue ‘munibonds’. Individual investors should be able to purchase these munibonds and include them in their personal pension plans, tax free.

The new Municipal Bonds Agency should be charged with advising local authorities through the bond issuing process and handling the issuances themselves. Local authorities should engage the private sector, so that the latter can help the former through the credit rating process, as well as advising on the structuring of the bonds before they go to market.

Recommendation 5: The northern powerhouse team within the Department for International Trade should work closely with Transport for the North and other relevant bodies, in order to develop a more coherent infrastructure investment prospectus that is attractive to private sector investors both at home and overseas.

Repackaging many different small schemes into larger portfolios makes them more attractive to private investors, and helps to spread risk. While these portfolios should be clearly issued and circulated to relevant parties by local areas and individual agencies, there should be a higher level of coordination by the Department for International Trade and a clear prospectus for infrastructure investment.

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