

# The Political Economy of Major Infrastructure in the UK

Miguel Castro Coelho, Institute for Government and Sebastian Dellepiane, University of Strathclyde

---

## Abstract

Evidence has been accumulating that UK infrastructure is under enormous pressure and is holding back economic growth. Although these problems have been receiving increasing attention from media and political commentators, there has been little effort to understand systematically their policy and institutional roots. This paper fills this gap by examining the political economy of infrastructure policy and presenting a series of case studies to illustrate our theoretical predictions. We find evidence that the British political system amplifies the risk of policy failure around infrastructure in the form of short-sightedness, policy instability, a weak evidence base and a lack of public consent.

## Introduction

Infrastructure<sup>1</sup> plays an important role in facilitating economic growth and there is substantive evidence that suggests the UK economy is being held back by lack of investment, mainly in the transport and energy sectors (e.g. Novella *et al.* 2012). London, for example, has some of Europe's most congested roads, with the average driver in 2014 spending about 96 hours stuck in traffic<sup>2</sup>. Airport capacity constraints, especially in the South East of England, causes delays, cancellations and unreliability for passengers, driving up air fares, and damaging the UK's connectivity (Airports Commission, 2015). In the energy sector, the capacity margin has been declining, triggering a rush of costly policy initiatives and emergency regulatory measures designed to ensure the lights stay on (e.g. Helm, 2013, Ofgem, 2015). Shale oil/gas extraction through hydraulic fracturing<sup>3</sup>, which ministers and industry were hopeful might spark a revolution in Britain's energy market, has been seriously held back by local community opposition.

There is *prima facie* evidence that these problems are intrinsically related to distortions in policymaking. For example, in the past decade and a half, energy policy has been notorious for failing to anticipate investment needs and providing a sound regulatory framework for private investors. Perennial controversies surrounding some of the most expensive infrastructure projects for the UK taxpayer, such as the planned, £50bn HS2 high-speed railway between London, the West Midlands, and the North of England are symptomatic of serious weaknesses in the way policymaking is grounded in technical evidence. The tortuous debate about aviation capacity in the South East of England which spans across more than four decades, and is yet to produce an effective way of tackling congestion in the UK's main international gateways, is a tale of the struggle of the British political system to successfully reconcile the widespread economic benefits of a large-scale infrastructure project with the perceived costs they bring

---

<sup>1</sup> Broadly defined as capital intensive projects in energy, transport, water, digital communications, waste disposal networks, and strategic flood defences.

<sup>2</sup> Based on data from <http://inrix.com/scorecard/>.

<sup>3</sup> A technique in which water and chemicals are pumped into shale at high pressure to extract gas and oil.

to local communities. Local opposition to shale oil/gas extraction is another case in point. The best laid plans have often crumbled because of a lack of local community consent, and have led to an increasingly litigious environment, where judicial reviews and other legal challenges often play a decisive role.

The paradox is that, despite the mounting evidence that points to pervasive policy failures, there has been little academic effort to connect these problems to the inner working of policymaking around infrastructure, and ultimately to the institutional architecture within which they operate. The few studies that come close to taking this approach have concentrated more on developing normative proposals for policy and institutional reform rather than offering a thorough examination of the pitfalls of current policymaking processes and their interplay with the UK's macro polity (e.g. Helm, 2013; Aghion *et al.* 2013; Armitt, 2013).

This article aims to help fill this gap. Our key research aim is to provide a better understanding of the *institutional* roots of apparent policy failures in the area of infrastructure investment in the UK. To that end, we combine theoretical analysis and empirical evidence. At the theoretical level, we bridge literatures across academic disciplines to provide a new account of the political economy of infrastructure. At the empirical level, we present a series of case studies of recent, high-profile infrastructure investment decisions in the energy, transport and water sectors. Although these cases do not formally test our theoretical claims, they offer useful heuristics for illustrating how the identified mechanisms work in practice. Moreover, we are confident that, taken together, these paradigmatic examples offer a credible 'plausibility probe' (George and Bennett, 2005) of the validity of our theoretical expectations.

To anticipate the key arguments, our work shows that the British (and Scottish) polity is associated with important deficiencies in policymaking around infrastructure, mostly in the form of short-sightedness, instability, a poor evidence base and fragile public consent. The mechanisms driving this behaviour are threefold. Firstly, while in theory the UK Westminster model is expected to deliver stable, decisive government, in practice, the lack of consensus-building capabilities undermines policy effectiveness where long-term commitment and credibility is crucial. Secondly, an adversarial political culture creates incentives for parties and interest groups to use information in ways that damage the quality of policymaking. Finally, electoral incentives expose decisions to the disproportionate influence of marginal constituencies. Our core argument is that at the heart of these problems is a gap in the institutional architecture around infrastructure investment; that the UK lacks effective forums where politicians, experts, interest groups, and local communities can engage in structured, informed deliberation and negotiation around policy options.

Our ultimate ambition is to lead a new generation of research into the 'politics of policy' in the UK. The idea is to identify problems in the structure of incentives that underlie policy failures with an eye to frame a debate about possible institutional innovations and solutions. This is a critical contribution in its own right. As a case in point, the LSE Growth Commission called for the further investigation of the institutional constraints of the UK economy (Aghion *et al.*, 2013). That said, our study may have

analytical and comparative merits beyond the British case. For one thing, it offers a micro perspective into the link between institutions and economic performance. Existing scholarship on the political sources of growth and equality focuses mainly on the effects of macro, monetary and fiscal affairs (e.g. Persson and Tabellini, 2003). Yet, micro policy areas such as infrastructure policy are relatively neglected. Our contribution stresses the importance of allowing for the effects of a more finely-graded range of policy dimensions of economic prosperity. For another, this study may stimulate research into the interface between political economy (e.g. Besley, 2007) and political institutions (e.g. Lijphart, 1999, 2012). Building bridges between these literatures is crucial for developing a more nuanced account of the incentives structure shaping public choices.

The article is organised as follows. The next section examines the key economic and political constraints surrounding the formulation of infrastructure policy. Section two examines the political economy around infrastructure in the UK, reflecting on how we might expect the political system to perform in this area. Section three presents a number of case studies which illustrate our core arguments. Section four outlines key findings and policy implications, charting a way forward for reforming the governance of infrastructure investment.

## **I. The economics and politics of infrastructure**

Investment in infrastructure usually involves the creation of long-lived assets and high sunk costs, which in turn generate problems of time inconsistency/credible commitment. In other words, private investors will only be prepared to commit to financing these projects if future customers agree, in a long-term contract, to cover average costs and refrain from behaving opportunistically (e.g. Jamison *et al.*, 2005; Trillas, 2010). In practice, such long-term contracts require governments, usually through regulators, to guarantee that future consumers will pay a price that reflects average costs. Government intervention is also required to handle a wide range of externalities that are typically associated with large-scale infrastructure projects, from environmental impacts to disruption and congestion imposed on local communities where projects are sited.

Making informed decisions about infrastructure investment is very challenging. It often involves long-term commitments with potential to 'lock in' the economy in unsuitable infrastructure systems for many years, seriously harming future economic prosperity (e.g. Bottini *et al.*, 2013). Avoiding such an outcome requires robust analysis of the long-term effects of alternative infrastructure systems across a wide range of uncertain future scenarios. It entails understanding the drivers of demand for infrastructure services in the future, and how different infrastructure configurations might be able to meet that demand (e.g. Tran *et al.*, 2014). It needs to consider the ways in which existing economic activities are likely to respond to new infrastructure investments, as well as how these investments may facilitate the emergence of new, potentially quite different, activities. This requires a strategic, network-oriented approach that goes well beyond a project-by-project analysis of specific investment proposals (e.g. Grimes, 2008, 2010).

Unsurprisingly, therefore, most of the publicly available information about the (predicted) effects of large infrastructure projects on the economy and on specific groups is highly controversial. The assumptions and methodologies that influence the evaluation of policy options are almost invariably highly contestable and contested (e.g. Pindyck, 2015). The goals that projects seek to achieve and the interests they serve involve clear trade-offs, and as a result, are often subject to dispute (Douglas and Wildavsky, 1983; Kalra *et al.*, 2014).

Conflicting interests, opinions and values make the politics of infrastructure investment especially difficult. To facilitate a constructive public and political debate, it becomes crucial to engage all the relevant affected groups in the development of the evidence base that is used to inform policy. Credible analysis requires a detailed understanding of public preferences regarding the policy trade-offs implicit in alternative investment options. Also, the methods and assumptions that underpin technical analysis need to be extensively discussed with relevant interested parties, as part of a deliberative process. Failure to foster this type of deliberative processes increases the potential for conflicting views about data, methods, system boundaries and optimisations to become polarised and undermine the quality of the political debate (e.g. Bruijn and Leijten, 2008). It increases, in particular, the risk of “information wars”, where interest groups and political parties face incentives simply to draw on partial pieces of evidence to support pre-determined positions.

Such a political environment of this kind creates poor incentives for the creation of successful infrastructure policy. First, it is likely to impact directly on the quality of the decision-making process that underpins the selection of individual projects (e.g. Glaister *et al.* 2006; Helm, 2010, 2014). Second, it often leads to policy risk and uncertainty which, in turn, affects the readiness of the private sector to invest, and/or the costs of capital required for investment to materialise. In particular, firms may decide to delay investments in long-lived, irreversible assets because of policy uncertainty, or as a risk mitigating strategy. They may demand a higher equity risk premium to compensate for increased risk of default and higher costs of external finance. They may also prioritise projects with shorter time horizons that offer a quicker pay-off.

Some studies link elections to cycles in corporate investment (e.g. Julio and Yook, 2012; Gulen and Ion, 2013). Analysis of the US electricity industry indicates that firms invest less in new assets in states that have previously passed and repealed legislation to restructure the electricity industry, thus corroborating the hypothesis that regulatory instability reduces new investment (e.g. Fabrizio, 2012). Similarly, Cambini and Rondi (2014) find that political interference in regulatory functions is detrimental to firms' investment. More generally, there is a flourishing strand of literature that associates election periods, or other political changes, to increased stock market volatility (e.g. Bialkowski *et al.* 2008; Boutchkova *et al.*, 2011, 2012); movements in bond yields; exchange rates; and equity volatility (e.g. Bernhard and Leblang, 2006).

Third, weak deliberative processes are also likely to fuel opposition from groups that incur, or are perceived to incur, costs during and/or following the construction of infrastructure projects – typically communities in the vicinity of infrastructure sites. This is further aggravated by a dearth of suitable

institutional mechanisms to promote negotiation and agreement on the nature and extent of externalities caused by individual projects and ways to compensate for them (e.g. Gibbons, 2014; Thompson, 2014; Ahlfeldt and Kavetson, 2014).

Existing empirical studies indicate that opposition to development is often associated with communities' perceptions about projects' risks and about the fairness of the siting processes (e.g. Schively, 2007a; O'Hare, 2010; Petrova, 2013). Objective risk assessments tend to pale next to the risk perceptions of the public. Lack of trust in government is often cited as a source of opposition to proposed projects. Suspicion between supporters and opponents of individual projects is another obstacle. Distrust of experts involved in discussions about where to place infrastructure facilities and doubts about the credibility of their evaluations are additional sources of opposition. In particular, conflicting, multiparty, communications about the effects of infrastructure facilities risk creating an 'information haze' which prompts the public to shift from asking for additional information to becoming more entrenched in pre-conceived views about those facilities.

A related literature highlights the importance of effective community participation in planning decisions. The design of participatory processes, including decisions about who participates and when, the purpose of participation, how information is provided to participants, and how the process is organised, all seem to influence the quality of project plans and their implementation (Schively, 2007b; Grimes, 2005; Innes and Booher, 2010; Schenk and Stokes, 2013). These studies place an emphasis on the merits of a 'consensus building approach' whereby stakeholders are assembled for face-to-face facilitated dialogue, to assess the various dimensions of a project, and to seek creative options that satisfy everyone's key needs and concerns.

## II. The political economy of infrastructure in the UK

The UK Westminster model has long been described as a paragon of majoritarian democracy (Lijphart, 1999, 2012). The prevailing narrative highlights a unitary and centralised state, "winner-takes-all" electoral rules, and a pluralist, competitive constellation of interest groups. Proportional representation is rejected in the name of clearly defined and easy-to-understand lines of accountability. The electoral system promotes concentration of power in single-party majority governments dominant before Parliament (Rose, 1974). The political culture often prizes confrontation over compromise (King, 2001)<sup>4</sup>. Against this background, one might be forgiven for anticipating UK governments to be defined by high organisational capacity, and decisive and coherent policymaking, possibly even geared for the long-term. A more careful examination, however, leads to an entirely different set of expectations.

In fact, the institutional architecture of strongly-majoritarian democracies involves a credibility conundrum (Majone, 1996). With a relatively small number of veto players and future governments with different partisan agendas, current policies can be easily reversed. While this implies greater adaptability to shifting public preferences (e.g. Jennings and John, 2009; John *et al.*, 2013; Soroka and Wlezien,

---

<sup>4</sup> *This narrative has been qualified and in some cases contested (e.g. Bogdanor, 2009; King, 2010; Flinders, 2010; Jordan and Carney, 2013; Judge, 2014), but it still fits rather well the practice of politics and government in the UK (e.g. John et al. 2013; King and Crewe, 2013; Fukuyama, 2014).*

2005; Bartle *et al.*, 2011), it can also undermine the consistency and predictability of policy, damaging its effectiveness, particularly in areas where long-term commitment/credibility is important. This problem is aggravated in the British political system with its ingrained tendency to a high turnover of both senior officials and Ministers in cabinet reshuffles (e.g. Kam and Indridason 2005; and Indridason and Kam 2006).

Another important feature of the British political system is its intensely-partisan, adversarial culture, and reluctance to compromise (Hood, 2013; King and Crewe, 2013; Dellepiane-Avellaneda, 2014). Together with a competitive interest group system (Lijphart, 2012), it creates perverse incentives for the use of information that can harm policymaking. This is further compounded by the peculiarities of Britain's electoral geography, and specifically the disproportionate influence on policymaking of core and marginal constituencies (Johnston, 1979; Johnston and Pattie, 1995, 2006; Ward and John, 1999; John and Ward, 2001; Besley and Preston, 2007; Ashcroft, 2010).

Furthermore, there is no strong tradition in the UK of active consultation and engagement with local communities and other relevant stakeholders in policymaking, or compensation for the costs imposed upon them (e.g. Devine-Wright, 2011; Airports Commission, 2015). In practice, those left to make the case for infrastructure to local communities – developers and government ministers – are often the least trusted to do so (CBI, 2014).<sup>5</sup> Too often the mechanisms of dispute resolution rely on legal challenges, public campaigns, political lobbying and public protest, leading to inefficient winner-take-all outcomes.

None of these features fit well with the requirements for good governance of infrastructure investments. Policy credibility/commitment through wide cross-party consensus is of the essence to fostering investment in infrastructure. Yet, the British political system is designed to deliver alternation of powerful governments and ministers in government, with little incentives to negotiate and compromise. An intensely-partisan and adversarial culture, combined with numerous, competing interest-groups does not make for an environment that encourages and rewards rigorous assessment of policy alternatives and informed debate. And a weak tradition of engagement, deliberation, and compensation often motivates local communities and other stakeholders to oppose vehemently individual infrastructure projects.

We would, therefore, expect infrastructure policymaking in the UK to be exposed to important failures in the form of policy instability, associated with lack of cross-party support and damaging incentives for private investors; inadequate consideration of policy alternatives leading to policies that are not grounded in firm empirical evidence; and failure to secure support/consent from sectors of society affected by proposed infrastructure projects.

These failures are especially relevant considering that the UK needs to make major strategic infrastructure decisions over the next few years (NAO, 2013a; HMT, 2013). The investment needs come from climate change and energy security requirements (e.g. the UK is committed to a legally binding EU target to meet 15% of its energy demand from renewable sources by 2020, and to reducing greenhouse

---

<sup>5</sup> Only 15% of people surveyed in CBI (2014) trust the companies building a project to explain its advantages and disadvantages to the local area. Ministers were the least trusted group in the survey at just 6%. The most trusted group according to the polling consists of technical experts, attracting 54% of approval.

gas emissions by at least 80% in the domestic Climate Change Act 2008); compliance with policies aimed at protecting public health and the environment (e.g. water companies are required by the EU's Water Framework Directive to meet environmental quality standards); maintenance and replacement of existing infrastructure (e.g. a fifth of the UK's existing electricity generating capacity is planned to close over the next decade); and coping with the pressure of rising population (the Office for National Statistics expects the UK population to increase to over 73 million people by 2035 – ONS, 2014).

It is also worth noting that the UK is rather unusual among advanced economies in the extent to which it relies on the private sector to finance and provide infrastructure, which exacerbates the damaging effects of the problems of credibility/commitment discussed above. Of the £375 billion (bn) that the Government estimates as planned and potential infrastructure investment for the rest of the decade and beyond, about two thirds is expected to be financed from the private sector, a fifth from public sources and the rest from a mix of public and private finance. Energy sector projects (the most significant in value among the £375 billion) are planned to be almost entirely privately financed. Transport projects (the second largest planned infrastructure investment) should be financed roughly equally through public funds and public-private partnerships (HMT, 2013).

### **III. Case studies**

#### ***Electricity generation***

An important part of Britain's energy generating capacity has been or is in the process of being decommissioned. Coal and oil-fired power stations are facing closure because of pollution control requirements associated with an EU directive on large combustion plants. Old nuclear stations are coming to the end of their cycles. At the same time, the EU renewables directive implies that around 30% of Britain's electricity generation will have to come from renewables by 2020.

As a result of low (private) investment in new power plants, security concerns have been on the rise. Ofgem, the energy regulator, first sounded the alarm in a 2009 with references to an unprecedented challenge to secure supplies to consumers (Ofgem, 2013). In 2013, Ofgem stated that the margin between peak electricity demand and available supply could drop to between 2% and 5% by the winter of 2015-16, from more than 15% in 2011-12, 'mainly due to a significant reduction in electricity supplies from coal and oil generation plant, coupled with limited investment in new plant.' (OfGem, 2013, p.4).

The situation reached a point that required the National Grid to pay companies to reduce their energy consumption during periods of peak demand – typically between 4.00 pm and 8.00 pm on winter weekdays. There is also a new 'capacity mechanism' for gas-fired power, under which generators are paid to keep their plants available as a back-up. And an array of government initiatives have been designed to bring forward new (private) investment in power generation. These have included subsidising the private sector; giving guarantees; and moving infrastructure assets into state ownership (Helm, 2013). As things stand we face rising costs, rising emissions due to increased coal use, and a greater risk of supply insecurity.

This is happening at the same time as energy prices are being drawn into a wider debate about the costs of living. This discussion has attracted a considerable amount of media attention, and has risen quickly in the political agenda, sparking references to tariff freezes, windfall taxes, and rolling-back subsidies for renewables. The result is heightened policy and regulatory uncertainty, which threatens to create a vicious circle of a high cost of capital, driven by high policy risk, leading to increases in energy prices which, in turn, lead consumers to put pressure on their political representatives to make policy changes. The prospect of policy changes raises policy risk further, and with it the cost of capital.

The background to this is one of relative neglect, for more than a decade, of the conditions required for the private sector to invest in energy generation. After privatisation in the 1980s and early 1990s, there was a perception by many that energy markets were now to be treated like those of many other goods and services, i.e. subject to safeguards, but not in need of special attention. These were years of excess supply – a legacy of the investments made in the 1970s – North Sea oil and gas, low prices and no serious climate change constraints (e.g. Pearson and Watson, 2012). Within Whitehall, energy policy was downgraded from having its own department in 1980 to being part of a wider portfolio of one junior minister in 1997. Changes introduced to the regulatory regime at the end of the 1990s mostly disregarded the need to incentivise the market to provide excess capacity and ensure security of supply. The New Electricity Trading Arrangements, later converted into the British Electricity Trading and Transmission Arrangements, are often credited for incentivising a short-run strategy based on ‘sweating existing assets’ rather catering for the long term through investment in new power-generating capacity (e.g. Helm, 2008).

It was not until the mid-2000s, with increasing concerns about climate change and security of supply, that these perceptions were reversed. Episodes such as the winter of 2005-06, when the Russians interrupted gas supplies to the Ukraine for a number of hours, leading to a spike in gas prices and the UK nearly running out of gas, contributed to the reversal of perceptions. Expectations that energy supplied by old plants would be replaced by new offshore wind farms and nuclear reactors proved unfounded. A flurry of white papers, consultations and acts of Parliament followed. Yet, these processes were marked by delays and reversals. Security of supply, cost competitiveness, and environmental sustainability (the goals that are often associated with energy policy) found varying support among parties and even among the same government. Commenting on nuclear energy, Helm (2013, p. 60) notes that ‘[f]or 12 years governments have decided that they don’t want nuclear, and then that they do, that nuclear needs no public subsidy and then that it does, and that a waste solution should be found first, and then that it is not urgent.’ In practice, little progress was made in creating conditions for the private sector to invest in new supply.

The approach that has dominated energy policy in recent years has also attracted criticism from independent experts and regulators. For example, in an interim report of an investigation into the energy market, the Competition and Markets Authority (CMA) criticised the subsidy that the Department of Energy and Climate Change (DECC) awarded to offshore wind projects through an administrative process known as “Final Investment Decision enabling for Renewables” scheme (FIDeR). The CMA’s



analysis indicated that the support cost under the FIDeR scheme was 30% to 60% higher than that of similar offshore wind projects awarded through competitive allocation a few months later. DECC's decision might have resulted in an increase in costs for consumers of approximately £250– £310 million per year for 15 years, equivalent to a 1% increase in retail prices (CMA, 2015).

Crucial assumptions that underpin the current energy strategy, its impact on carbon emissions and on the competitiveness of the UK economy, have also been criticised. Concerns have been raised, in particular, about the idea that oil and gas prices are bound to go up in incoming years as their stocks are depleted (the 'peak oil/gas' theory); and the notion that with enough subsidy from consumers, the current generation of renewables is likely to become cost competitive, and make a difference to global warming (e.g. Helm, 2013).

Furthermore, a number of independent analysts and commentators have expressed doubts about the impact of the current policy approach on costs for consumers and their willingness to support those costs. The National Audit Office, for example, has drawn attention to the fact that there has been no assessment of the overall impact of infrastructure on future bills or whether those bills will be affordable: 'Therefore government and regulators are taking decisions on behalf of consumers in the absence of full information about the situation for consumers. Affordability can only be assessed by taking into account all household bills, household incomes and wider costs of living. Gaps in analysis, and the lack of a common approach to measuring affordability, mean that the government does not have an overall picture of affordability, either for the average household or for those on low incomes.' (NAO, 2013b, p. 9).

In short, evidence has been accumulating that suggests that UK energy policy since privatisation in the 1980s has been short-sighted; that it has exposed private investors to important policy risks that might have harmed investment incentives; and that strategic policy decisions have often failed to be grounded in strong technical analysis.

### ***Railways – HS2***

HS2 is the Government's flagship transport infrastructure project to build a high-speed rail line from London to Manchester and Leeds, via Birmingham, the East Midlands, Sheffield and Crewe, to begin operation in 2026 and be completed by 2032/3. The total cost of the scheme is currently estimated at £42.6 billion for both phases with an additional £7.5 billion for rolling stock (Butcher, 2014a). It was supported by the Labour Government in 2009 and has had the support of the Conservative-Liberal Democrat Coalition Government (2010-15) and the current Conservative Government, elected in 2015. Despite this cross-party support, it has been the subject of great controversy over the last few years. There have been heated public debates focused on the value of such large, expensive schemes and their ability to foster economic growth, particularly in the north of England. These debates have also been accompanied by more technical, detailed discussions on matters related to the robustness of the data and forecasting used in the Government's business case for HS2; the impact on journey times, carbon emissions, homes, communities and habitats.

The Public Accounts Committee (PAC) criticised the Department for Transport for making decisions 'based on fragile numbers, out-of-date data and assumptions which do not reflect real life' and having a large contingency that appeared 'to be compensating for weak cost information' (PAC, 2013, p.5).

Commenting on the project's preparation, the National Audit Office stated that:

High Speed 2 is at a very early stage of planning and development and, as such, we cannot conclude on whether the programme is likely to deliver value for money. The cost and benefit estimates in its economic case are uncertain and will change because the programme is at an early stage. Furthermore, there have been past errors in the underlying model and some key data needs to be updated. In presenting its case for investment, the Department has poorly articulated the strategic need for a transformation in rail capacity and how High Speed 2 will help rebalance economic growth. The Department and HS2 Limited have started a lot of work recently to strengthen the evidence and analysis on which the case is based. The challenging programme timetable, however, makes delivering this work difficult and increases the risks that the programme will have a weak foundation for securing and demonstrating success in the future.

(NAO, 2013c, p.11).

The Treasury Select Committee published a report on the 2013 Spending Round and stated that the Treasury should not allow HS2 to proceed 'until it is sure the cost-benefit analysis for HS2 has been updated to address fully the concerns raised by the National Audit Office'; that the Treasury should publicly quantify the benefits for HS2 'not captured by the existing economic appraisal'; and that prior to any decision by the Treasury to proceed with HS2, it 'should publish its own comprehensive economic case supporting its decision'. (Treasury Committee, 2013, p.36.)

Commenting on the origins of High Speed 2 in the *Financial Times*, former Business Secretary, Peter Mandelson said:

'In 2010, when the then Labour government decided to back HS2, we did so based on the best estimates of what it would involve. But these were almost entirely speculative. The decision was also partly politically driven. In addition to the projected cost, we gave insufficient attention to the massive disruption to many people's lives construction would bring. Why? Not because we were indifferent but because we believed the national interest required such bold commitment to modernisation...We were focusing on the coming electoral battle, not on the detailed facts and figures of an investment that did not present us with any immediate spending choices. The vision was exciting, a lot of spadework had been done in the transport department and the cabinet adopted HS2 as a "national cause", competing with the then Conservative leadership whose enthusiasm for the project had predated our own.' (Mandelson, 2013)

In 2015, an inquiry of the House of Lords Economic Affairs Select Committee into the economics of HS2 concluded that:

'The Government has yet to make a convincing case for proceeding with the project... it is not at all clear that HS2 represents the best, most cost-effective solution to the problems it is intended to solve. The Government's two declared objectives for the project are to increase capacity on the railway to meet long-term demand and to rebalance the economy by stimulating growth in the north of England... On capacity, published statistics on current rail usage do not suggest that there is an overcrowding problem on long-distance trains, either now or in the near future. On stimulating growth, the Government has not considered whether this could be better achieved by investing in improving regional links between northern cities. The Government claims that the biggest beneficiaries of the project will be business travellers, yet the evidence used to calculate the magnitude of this benefit (an estimated £40.5 billion) is out-of-date and unconvincing. Neither are we convinced why, if business travellers were the biggest beneficiaries from the project, they should not contribute more to the cost by paying higher fares.'

In the summer of 2014, while the controversy around HS2 was well underway, the Chancellor of the Exchequer announced plans for a high-speed rail link between Manchester and Leeds as part of creating a 'northern powerhouse'.<sup>6</sup> He implied the line could either involve a big upgrade to the existing trans-Pennine route between the two cities, or a construction of a new line, and admitted there was no specific plan but that he wanted to 'start a conversation' about what has been dubbed 'HS3'.

The idea of creating a 'northern powerhouse' received wide support. It is, in fact, an idea reminiscent of the previous government's 'northern way' – a collaboration between three northern regional development agencies, which the Coalition Government abolished – that, in 2011, drew a transport strategy stretching from Liverpool to Newcastle-upon-Tyne. But the idea of addressing connectivity problems in that region through a high-speed rail line sparked more controversy. Some commentators have drawn attention to the array of bottlenecks on existing roads and railways that limit the effective size of the region's economy, claiming that HS3 'is another multibillion-pound solution in search of a problem' (FT editorial, 2014)

The remarks echo one of the key conclusions of Eddington (2006, p.6): 'Smaller projects which unblock pinch-points, variable infrastructure schemes to support public transport in urban areas and international gateway surface access projects are likely to offer the very highest returns...However, large projects with speculative benefits and relying on untested technology, are unlikely to generate attractive returns.' Long lasting controversy around the building of a high-speed railway line connecting London to the North of England is a powerful illustration of the problems that emerge from failing to build a credible evidence base through deliberative/participatory processes, and relying instead on public and political debates shaped by party-political tactics and competitions between interest groups.

---

<sup>6</sup> *Greater Manchester and the Liverpool, Leeds and Sheffield city regions have a population of 9 million, a £154bn economy and almost 3 million jobs.*

### ***Aviation in the South-East of England***

The question of UK airport capacity has been considered a number of times over the last forty years (Helsey and Codd, 2014). Yet, little progress has been made since those discussions began. The only new runways built in recent decades were at London City and Manchester airports. London airports still rely on runways that have been in place since the middle of the twentieth century. Heathrow is now effectively full. Gatwick is operating at more than 85% of its maximum capacity and completely full at peak times. The UK is reaching the limits of existing airport infrastructure (Airports Commission, 2015).

Capacity constraints at Heathrow are imposing high levels of delay and unreliability for passengers, limiting the airport's ability to respond to one-off events, and to offer predictable patterns of respite from noise for local communities. In terms of connectivity, Heathrow still has a dominant position among European hubs on routes to North America and other established aviation markets, but it has not been able to establish a similar position in routes to emerging economies. Furthermore, the number of domestic routes to the airport is declining, restricting access from other UK regions to Heathrow's network of international services.

The problem around the expansion of aviation capacity in the South East of England is intimately related to perennial controversies surrounding the impact of increased flights on noise and air pollution levels (especially nitrogen dioxide) in surrounding areas, compounded by lack of adequate compensation mechanisms. The two combined create strong incentives for the parties affected (often a relatively small, focused group) to mobilise and oppose new projects or expansion of existing infrastructure. Crucially, these groups tend to be in electorally important suburban constituencies.

Opposition to the expansion of Heathrow airport is a classic example. In 2007, the Labour Government ran a consultation on this question, which included, among other proposals, plans by BAA to add a third runway. It did not take long for this process to come under severe criticism from residents' campaign groups, local authorities affected by the plans, national campaign groups, and a group of politicians from various parties.

The response of the 2M Group – an alliance of local authorities affected by Heathrow's operating activities – illustrates particularly well the consequences of failing to develop a constructive dialogue around the facts and figures that should inform negotiations and decisions concerning infrastructure projects. It stated that its members were 'not anti-Heathrow but feel passionately that the Government consistently fails to either acknowledge or assess the airport's full environmental impact'. It went on to say (2M Group, p1):

This has been an inadequate consultation from the start. Member authorities have incurred considerable expense in commissioning specialist consultants to examine the data and arranging extensive local information exercises to make good the deficiencies of the Department for Transport's (DfT) own programme. A number of our members have submitted their own responses to the consultation. None of us feels that our submissions are complete. We have all been hampered by the inadequacy of the

information and the limited time allowed for analysis. The central issue here is one of trust. No one believes that this expansion will be the last. Stephen Nelson of BAA even admitted as much at the London Assembly Environment Committee evidentiary sessions. He could not rule out a fourth runway in the future. Our members are equally opposed to the third runway and the abandonment of runway alternation. No one believes that mixed mode is an interim measure. The history of Heathrow shows that once extra capacity is secured, it is never given up.

In March 2008, *The Sunday Times* claimed that it had obtained documents under the Freedom of Information Act, which indicated that the airports operator BAA had ‘colluded with government officials to “fix” the evidence in favour of a new third runway at Heathrow’ (Ungoed-Thomas Woolf, 2008). The Environment Agency, the environmental regulator, also raised doubts about the proposals, and in particular, ‘whether the economic analysis of options for Heathrow is robust... we wonder to what extent the analysis has taken account of the other elements of the Air Transport White Paper preferred strategy for south-east airports (e.g. a new runway at Stansted), and to what extent these elements may lead to the displacement of any of the identified benefits of expanding Heathrow.’ (EATR, 2007, p2)

The 2010 Coalition Government set up an independent review that was asked to publish its findings after the 2015 general election. The Airports Commission, led by Sir Howard Davies, was tasked with advising on options for maintaining the UK’s status as an international hub for aviation and immediate actions to improve the use of existing runway capacity in the next five years. The Commission published its findings in July 2015, recommending a new runway at Heathrow, together with a ‘significant package of measures’ to mitigate its impact on local communities and the environment, including a ban on all flights between 11.30pm and 6am, a legally binding cap on noise levels, a levy to fund a more generous compensation package for those living under the flight path, and an independent noise regulator.

The Government pledged to consider the commission’s findings and give a detailed response by the end of the year. There is no guarantee that it will implement its recommendations. Senior figures in the Conservative party, such as Boris Johnson, mayor of London, Philip Hammond, the foreign secretary, and Zac Goldsmith, MP for Richmond Park (and prospective Conservative mayoral candidate), all of whose constituencies sit under the airport’s flight path, have come out strongly opposing Heathrow’s expansion. The Liberal Democrats announced, in September 2014, before the Airports Commission published its analysis and recommendations that they would oppose, on environmental grounds, any form of airport expansion: ‘We remain opposed to any expansion of Heathrow, Stansted or Gatwick and any new airport in the Thames Estuary, because of local issues of air and noise pollution. We will ensure no net increase in runways across the UK as a whole by prohibiting the opening of any new runways unless others are closed elsewhere.’ (Liberal Democrats, 2014, p.22)

Problems with the expansion of airport capacity in the south-east of England offer a strong illustration of the consequences of failing to promote serious, interactive engagement with local communities and to compensate them for the local costs that large infrastructure projects often involve.

## **Sewerage - Thames Tideway**

Underneath the whole of London is a sewerage system designed by Sir Joseph Bazalgette and built largely in the 1860s. Large quantities of sewage had been flushing directly into the river Thames destroying its ecosystem. Increasing population levels aggravated the problem. A sewerage network of about 21,000km was then built underneath London between 1859 and 1875. It served the 2.5 million people who were living in the city, and it was designed to accommodate an extra 1.5 million people living in London. Lately, it has been struggling to cope with a population of more than 8 million<sup>7</sup>.

Hoping to resolve this problem, successive governments have, since 2007, supported the construction of a £4.2bn “super sewer” – a 25km long tunnel designed to boost the capacity of the London’s sewerage network and prevent tens of millions of tonnes of sewage that every year overflow into the Thames. The project was granted planning consent in 2014. The Water Services Regulation Authority (Ofwat) approved its financing in August 2015. Construction is planned to start in 2016 and is meant to last for seven years. It will be the second largest infrastructure project in the UK and one of the biggest in Europe.

The idea of building the tunnel dates back to 2005, when a study commissioned by Thames Water reported on potential solutions for the lack of sewerage capacity in London. The study concluded that the only practicable strategy to meet all environmental objectives was the interception of sewage spills before they reached the river. For that purpose, it proposed the construction of a 25km tunnel, running from Acton in the west of London through to Abbey Mills in the east (the so-called ‘Thames Tideway Tunnel’) as part of a broader investment program which included plans for another tunnel (a 6.9km long tunnel for taking overflows away from the river Lee), and upgrades to five existing sewage treatment plants.

The proposal has been embroiled in controversy ever since it was announced. In 2005, Philip Fletcher, Director General of Ofwat at the time, argued that further study should be carried out before any commitment was made to the proposal. In 2006, he advised ministers that there was scope for improvement options that would offer better value for money<sup>8</sup>, and on the following year, insisted the Thames Tideway project was not cost-effective and that other options should be explored:

"All the work done to consider yet further improvements to the Tideway demonstrates that it would not achieve value for money. Indeed, the evidence strongly suggests that the benefits would be very limited from the proposed sewer interceptor, whether in terms of health improvement, nuisance reduction, or environmental improvements. Any such improvements would not in any way be proportionate to the very high cost – well over £2 billion."<sup>9</sup>

---

<sup>7</sup> E.g. in October 2012, the Court of Justice of the European Union ruled that the UK was in breach of the European Urban Waste Water Treatment Directive. This has raised the prospect of a large lump-sum fine and daily fines being levied on the UK until it complies with the Directive.

<sup>8</sup> Letters from Philip Fletcher to Elliot Morley, 7th December 2005 and 14 February 2006.

<sup>9</sup> Letter from Philip Fletcher to Ian Pearson 31st January 2007.

Professor Chris Binnie, former chairman of the 2005 study that proposed the Thames Tideway solution, admitted years later that technical progress in sewage management had undermined the case for the project, and that alternatives should be considered. He challenged the cost-benefit calculations presented by the Department for Environment, Food and Rural Affairs, arguing that faulty assumptions were both overstating the benefits of the tunnel and underestimating the effects of alternative solutions. His latest analysis contends that the upgrade of the sewage treatment works together with the construction of the Lee tunnel, on their own, should be enough to fulfil the objective of protecting the environment from the adverse effects of water discharges (Binnie, 2014).

Sir Ian Byatt, head of Ofwat between 1989 and 2000, has also stated publicly that the tunnel is not necessary and called it 'a real disaster' (Plimmer, 2015). According to Sir Ian, 'neither Ministers nor regulators have set out the underlying analysis behind the Ministerial decision to opt for this solution. In the absence of this information, it looks as though alternatives have been brushed aside by Ministers, and that regulators have accepted this as a *fait accompli*.' (Byatt, 2013, p.14)

In an 'early review of potential risks to value for money', the NAO (2014) acknowledged the controversy around the Thames Tideway project and stressed that 'such claims emphasise the importance of independent government scrutiny and quality assurance over the options appraisal in order to win public confidence that value for money has been secured' (p.23). The chair of the Public Accounts Committee, Margaret Hodge, called the project 'a gold-plated solution that will lumber London water tax-payers with an £80-a-year extra bill just for this'. (PAC, 2014, p. 23)

Lately, critics have turned to the tunnel's unusual financing arrangements. About one-third of the project is expected to be funded by Thames Water, with the remaining £2.8bn cost to be met by a consortium composed of German insurer Allianz, Swiss Life Capital and Dalmore Capital. There were only two bids to finance and build the project, which has raised concerns about lack of competition in the selection of that consortium. They will own, manage and finance the project during construction, and will later supply sewerage services to Thames Water on a 125-year concession. The investment will generate an income stream from day one, paid for by Thames Water's customers. Meanwhile, the risks of construction, including cost overruns, accidents or other incidents at the project's 42 sites, together with a range of financial risks (e.g. another global collapse in credit) will be borne by taxpayers as government is acting as guarantor (Plimmer, 2015; Ofwat, 2015a).

The Thames Tideway Strategic Study originally estimated the cost of a single full-length tunnel at £1.7bn (2004 prices) and the increase in Thames Water residential customer bills at £40 to £45 annually. This was later revised by Thames Water to an estimated total cost of £4.2bn (2011 prices) and a maximum increase in bills of between £70 and £80 annually (NAO, 2014). In 2015, Ofwat announced that it expected the tunnel to have an impact on bills between £20 and £25 (Ofwat, 2015b).

In summary, the process that led to the approval of the Thames Tideway Tunnel offers a powerful illustration of how deficiencies in building a credible evidence base through active engagement of a wide range of stakeholders can give rise to conflicting analysis, continuous controversy, and eventually policy

decisions of dubious quality. Indeed, when it comes to infrastructure policymaking, the British political system appears to struggle even with those projects that have cross-party support.

#### IV. Key findings and policy implications

Important challenges lie ahead for UK infrastructure. Energy security, compliance with environmental regulation, maintenance and replacement of existing infrastructure, and increasing population, are only a few examples from a wide range of pressures that will impact on UK infrastructure for decades to come. Successfully addressing these challenges will require large-scale investment. In contrast to most other developed countries, the UK relies extensively on the private sector to finance and provide infrastructure. Government still plays a pivotal role, however, both by designing policy and regulatory frameworks and by investing directly in individual projects, alone or in partnership with the private sector. Poor policy decisions could lock the economy into inadequate and/or overly-costly infrastructure systems for many years to come, placing a heavy burden on future prosperity.

The evidence reviewed in this paper suggests there are important problems in the way the UK makes strategic infrastructure decisions, these include short-sightedness; lack of cross-party agreement which exposes private investors to high levels of policy risk; deficiencies in the development of the evidence base that underpins projects with cross-party support; and failure to secure public consent, which often leads to political procrastination. Many of these problems appear to be largely associated with the absence of institutions that effectively engage politicians, experts, interest groups and local communities in the policymaking process. Without credible, participatory processes, the politics around infrastructure investments in the UK is often trapped by unconstructive interactions between party-political tactics, pressures from interest groups, and hostility from local communities.

There are several international examples of infrastructural innovation from which the UK could learn. The United States has been experimenting for several decades with ways of making consumers, or their representatives, take a more active role in the regulatory processes through constructive engagement, and negotiated agreement and settlement. In the Netherlands, the so-called *Alders Table* – a consultative body responsible specifically designed to formulate advice to government on plans for Schiphol airport – was successful in creating a forum for national and municipal governments, representatives of local communities, and parties involved in aviation to come together and discuss mutually-advantageous solutions. The success of that initiative inspired the creation of similar consultative bodies across the country. In France, the *Commission Nationale du Débat Public* – a state-funded, independent body – has been playing an important role in ensuring the public participates effectively in decision-making processes about projects that have major effects on the environment and land use. The work of the *Australian Productivity Commission* has also been praised for its role in fostering informed public and political debates through a mixture of solid research and public input and scrutiny. Within the confines of current constitutional architecture, these examples of institutional innovation may offer the best guides for reforming the governance of infrastructure investment in the UK. In October 2015, the UK Government announced the launch of a ‘National Infrastructure Commission’, an independent body that is supposed to enable long term strategic decision making to build effective



and efficient infrastructure for the UK. If the Commission manages to replicate some of the best practice of the international examples mentioned above, it could play an important role in filling the institutional gap that we discussed in this paper.

**JEL No.** D78, H54, H57, L98, O22, O43.

**Keywords:** UK infrastructure, UK energy, UK transport, political economy, policy risk, deliberative institutions.

**Acknowledgements:** We are grateful to the Economic and Social Research Council for providing financial support to this study.

## References

- 2M Group, *Letter to Right Honourable Ruth Kelly MP, Secretary of State for Transport*, 27 February 2008, retrieved 26 November 2014 from [http://www.wandsworth.gov.uk/download/downloads/id/1283/2m\\_response\\_to\\_the\\_dft\\_consultation](http://www.wandsworth.gov.uk/download/downloads/id/1283/2m_response_to_the_dft_consultation).
- Aghion, P., Besley, T., Browne, J., Caselli, F., Lambert, R., Lomax, R., Pissarides, C., Stern, N., and van Reenen, J., *Investing for Prosperity: Skills, Infrastructure and Innovation*, London School of Economics Growth Commission, 2013, London.
- Ahlfeldt, G., & Kavetsos, G., 'Form or function? The effect of new sports stadia on property prices in London', *Journal of the Royal Statistical Society, Series A (Statistics in Society)*, 177(1), 2014, p. 169-190.
- Ashcroft, M., *Minority Verdict*, Biteback Publishing, London, 2010, retrieved 9 January 2015 from <http://www.lordashcroft.com/pdf/minorityverdict.pdf>
- Airports Commission, *Airports Commission: final report*, 2015, London.
- Armitt, J., 'The Armitt Review An independent review of long term infrastructure planning commissioned for Labour's Policy Review', 2013, London.
- Banks, G., *Public Inquiries in Policy Formulation: Australia's Productivity Commission*, Address to the International Workshop: Australia's Public Inquiry Experience and Economic System Reform in China, China-Australia Governance Program, Beijing, 2007.
- Banks, G., *Return of the Rent-Seeking Society*, Stan Kelly Lecture 2013, The Economic Society of Australia, Victorian Branch, Melbourne, 2013.
- Banks, G., & Carmichael, B., *Domestic Transparency in Australia's Economic and Trade Reforms: The role of the Commission*, paper presented to the Lowy Institute and Tasman, 2007.
- Bernhard, W., & Leblang, D., *Democratic Processes and Financial Markets: Pricing politics*, Cambridge University Press, Cambridge, United Kingdom, 2006.
- Besley, T. & Preston, I., *Electoral Bias and Policy Choice: Theory and evidence*, Institute for Fiscal Studies, London, 2007.
- Bialkowski, J., Gottschalk, K., & Wisniewski, T.P., 'Stock market volatility around national elections', *Journal of Banking and Finance*, 32, 2008, p.1941-1953.
- Binnie, C., 'Thames Tideway – Review of Tideway spills and their environmental impact', December 2014.
- Bogdanor, V., *The New British Constitution*, Hart Publishing, Oxford, 2009.
- Bottini, N, Coelho, M, Kao, J., 'Infrastructure and Growth', 2013, London School of Economics Growth Commission.
- Boutchkova, M., Doshi, H., Durnev, A., & Molchanov, A., 'Precarious politics and return volatility', *Review of Financial Studies*, 25(4), 2012, p. 1111-1154.
- Brujin, H. & Leijten, M., 'Cost-benefit analysis and the wider economic benefits from mega-projects', in Priemus, H., Flyvbjerg, B. & Wee, B. (eds) *Decision-Making on Mega-Projects: Cost-benefit analysis, planning and innovation*, Edward Elgar, 2008, chapter 5.
- Buckland, R., & Fraser, P., 'Political and regulatory risk in UK electricity distribution', *Journal of Regulatory Economics*, 19(1), 2001, pp. 5-25.
- Butcher, L., *High Speed Rail (London-West Midlands) Bill: Bill no 132-I & 132-II, 2013-14*, House of Commons Library, Research Paper 14/24, 2014a.

- Butcher, L., *Railways: High speed rail (HS2)*, House of Commons Library, standard note SN316, 2014b.
- Butter, F., & Wolde, S., *The Institutional Economics of Stakeholder Consultation: Reducing implementations costs through "Matching Zones"*, Tinbergen Institute Discussion Paper, No. 11-162/3, 2011.
- Buuren, A., Boon, F., & Teisman, G., 'Collaborative problem-solving in a complex governance system: Amsterdam Airport Schiphol and the challenge to break path dependency', *Systems Research and Behavioural Science*, 29, 2012, p. 116-130.
- Byatt, I., 'Thames Tunnel; A Critique of a Flawed Project', August 2013.
- CAA, *Airport Regulation looking to the future: Learning from the past*, Civil Aviation Authority, 2004, London.
- CAA, *Airport Regulation: The process for constructive engagement*, Civil Aviation Authority, 2005, London.
- CAA, *CP3 Price Control Review for NERL: CAA consultation*, Civil Aviation Authority, 2008, London.
- CAA, *Airport Regulation: Lessons learnt from Q5 price control process and improvements for Q6*, Civil Aviation Authority, 2010, London.
- CBI, *Building Trust: Making the public case for infrastructure*, Confederation of British Industry, 2014, London.
- CMA, *Energy market investigation: summary of provisional findings report*, Competition and Markets Authority, 2015, London.
- CNDP, *Background and mandate*, Commission Nationale du Débat Public", 2012, Paris.
- Decker, C., 'The consumer knows best: Involving consumers in regulatory processes and decision-making', 49, *Network*, 2013, p. 1-10.
- Devine-Wright, P., 'Public engagement with large-scale renewable energy technologies: Breaking the cycle of NIMBYism', *Wiley Interdisciplinary Reviews: Climate Change*, 2(1), 2011, p. 19-26.
- Dellepiane-Avellaneda, S., 'The Political Power of Economic Ideas: The case of expansionary fiscal contractions', *British Journal of Politics & International Relations*, 2014.
- Doucet, J., & Littlechild, S., 'Negotiated settlements and the National Energy Board in Canada', *Energy Policy*, 37, 2009, p. 4633-4644.
- Douglas, M. & Widavsky, A., *Risk and Culture: An Essay on the selection of technological and environmental dangers*, University of California Press, Berkeley, CA, 1983.
- Eddington Review, *The Eddington Transport Study: The case for action – Sir Rod Eddington's advice to government*, HM Stationery Office, 2006, London.
- EATR, *Response to the Department for Transport's Consultation: Adding Capacity at Heathrow*, 2007, Environment Agency Thames Region, 22 November 2007, retrieved 26 November 2014 from [http://collections.europarchive.org/tna/20090205022244/http://www.environment-agency.gov.uk/static/documents/Research/heathrow\\_1980743.pdf](http://collections.europarchive.org/tna/20090205022244/http://www.environment-agency.gov.uk/static/documents/Research/heathrow_1980743.pdf)
- Fabrizio, K., 'The effect of regulatory uncertainty on investment: Evidence from renewable energy generation', *The Journal of Law, Economics, and Organisation*, 29(4), 2012, p. 765-798.
- Fellows, G., 'Negotiated settlements with a cost of service backstop: The consequences for depreciation', *Energy Policy*, 39, 2011, p. 1505-1513.
- Flinders, M., *Democratic Drift*, Oxford University Press, Oxford, 2010.
- Flyvbjerg, B., ed., *Megaproject Planning and Management: Essential Readings*, vols 1-2, 2014, Cheltenham, UK and Northampton, MA, USA: Edward Elgar.
- FT Editorial, 'Better ways to link up northern cities: Prioritise connectivity to enhance regional prosperity', *Financial Times*, 2014, 23 June, retrieved 26 November 2014 from <http://www.ft.com/cms/s/0/b6269ad4-fae2-11e3-8959-00144feab7de.html#axzz36z8Yv4j3>
- Fukuyama, F., 'America in Decay', *Foreign Affairs*, 2014, retrieved 29 January 2015 from <https://www.foreignaffairs.com/articles/united-states/2014-08-18/america-decay>
- Gibbons, S., *Gone with the wind: valuing the visual impacts of wind turbines through house prices*, Spatial Economics Research Centre Discussion Paper 159, London School of Economics, 2014.
- Glaister, S., Burnham, J., & Travers, T., *Transport Policy in Britain*, second edition, Palgrave Macmillan, 2006.

Grimes, A., *The Role of Infrastructure in Developing New Zealand's Economy*, Paper presented to Institute of Policy Studies Spring 2008 Lecture Series: New Zealand: Future Maker or Future Taker? Wellington, 2008.

Grimes, A., 'Infrastructure: New Findings for New Zealand', *Policy Quarterly*, 6(4), 2010, p. 3-8. Retrieved 26 November 2014 from <http://ips.ac.nz/publications/publications/show/306>.

Grimes, M., *Democracy's Infrastructure: The role of procedural fairness in fostering consent*, Doctoral Thesis, Department of Political Science, Gothenburg University, 2005, Sweden.

Gulen, H., & Ion, M., *Policy Uncertainty and Corporate Investment*, Social Science Research Network, 2013. Retrieved 26 November 2014 from <http://ssrn.com/abstract=2188090>.

Hausman, C. and Kellogg, R., 'Welfare and Distributional Implications of Shale Gas', Brookings Papers on Economic Activity, 2015, BPEA Conference Draft.

Helm, D., *Credible Energy Policy: Meeting the challenges of security of supply and climate change*, Policy Exchange report, London, 2008.

Helm, D., 'Government failure, rent-seeking, and capture: The design of climate change policy', *Oxford Review of Economic Policy*, 26(2), 2010, p. 182-196.

Helm, D., 'British infrastructure policy and the gradual return of the State', *Oxford Review of Economic Policy*, 29(2), 2013, p. 287-306.

Helm, D., 'Stumbling towards crisis', *Prospect Magazine*, April 2013, London.

Helm, D., 'The Return of the CEGB? Britain's central buyer model', *Energy Futures Network Paper*, no 4, 2014.

Helm, D., Phillips, J., & Smale, R., *Too Good to be True? The UK's 'quotes' climate change record*, 2007. Retrieved 26 November 2014 from <http://www.dieterhelm.co.uk/node/656>

Helsey, M., & Codd, F., *Aviation: Proposals for an airport in the Thames Estuary, 1945-2014*, House of Commons Library Standard Note SN/BT/4920, London, 2014.

HM Treasury, *Infrastructure Plan 2013*, London, 2013.

Hood, C., *The Blame Game: Spin, Bureaucracy, and Self-Preservation in Government*, Princeton University Press, Princeton, 2013.

HOUSE OF LORDS Economic Affairs Committee, *The Economics of High Speed 2*, 2015, The Stationery Office, London.

Ingridason, I. & Kam, C., 'Cabinet Reshuffles and Ministerial Drift', *British Journal of Political Science*, vol. 38, 2006, pp. 621-656.

Innes, J., & Booher, D., *Planning with Complexity: An introduction to collaborative rationality for public policy*, Routledge, 2010.

Innes, J., & Gruber, J., (2001), *Planning Styles in Conflict at the San Francisco Bay Area's Metropolitan Transportation Commission: Working paper 2001-09*, Institute of Urban and Regional Development, University of California at Berkeley, 2001.

Jamison, M., Lynne, H. and Berg, S., 'Measuring and Mitigating Regulatory Risk in Private Infrastructure Investment', 2005, *The Electricity Journal*, 18(6), p. 36-45.

Jennings, W. & John, P., 'The Dynamics of Political Attention: Public opinion and the Queen's speech in the United Kingdom', *American Journal of Political Science*, vol. 53, no. 4, 2009, pp. 838-54.

John, P., Bertelli, A., Jennings, W. & Bevan, S., *Policy Agendas in British Politics*, Palgrave Macmillan, 2013.

John, P. & Ward, H., 'Political Manipulation in a Majoritarian Democracy: Central government targeting of public funds to English subnational government, in space and across time', *British Journal of Politics & International Relations*, vol. 3, no. 3, 2001, pp. 308-39.

Johnston, R., *Political, Electoral and Spatial Systems*, The Clarendon Press, Oxford, 1979.

Johnston, R. & Pattie, C., 'The Impact of Spending on Party Constituency Campaigns at Recent British Elections', *Party Politics*, vol. 1, no. 2, 1995, pp. 261-73.

Johnston, R. & Pattie, C., *Putting Voters in Their Place: Geography and elections in Great Britain*, Oxford University Press, Oxford, 2006.

Jong, B., *The Airport Assembled: Rethinking planning and policy making of Amsterdam Airport Schiphol by using the Actor-Network theory*, Eburon Academic Publishers, Delft, The Netherlands, 2012.

Jong, B., & Boelens, L., 'Understanding Amsterdam Airport Schiphol through controversies', *Systems Research and Behavioural Science*, 31, 2014, p. 3-13.

Jordan, G. & Cairney, P., 'What is the "dominant model" of British policymaking? Comparing majoritarian and policy communities ideas', *British Politics*, 8(3), 2013, pp. 233-59.

Judge, D., *Democratic Incongruities: Representative democracy in Britain*, Palgrave Macmillan, Basingstoke, 2014.

Julio, B., & Yook, Y., 'Political uncertainty and corporate investment', *The Journal of Finance*, 67(1), 2012, p. 45-83.

Kalra, N., Hallegatte, S., Lempert, R., Brown, C., Gill, C., & Shah, A., 'Agreeing on robust decisions: New processes for decision-making under deep uncertainty', World Bank Policy Research Working Paper No. 6906, 2014.

Kam, C. & Indridason, I., 'The Timing of Cabinet Reshuffles in Five Westminster Parliamentary Systems', *Legislative Studies Quarterly*, 2005, pp. 327-63.

King, A., *Does the United Kingdom Still Have a Constitution?*, Sweet & Maxwell, London, 2001.

King, A., *The British Constitution*, Oxford University Press, Oxford, 2010.

King, A. & Crewe, I., *The Blunders of our Governments*, Oneworld Publications, 2013.

Liberal Democrats, *Pre-Manifesto: A stronger economy and a fairer society enabling every person to get on in life*, 2014, Retrieved 26 November 2014 from [https://d3n8a8pro7vnmx.cloudfront.net/libdems/pages/6272/attachments/original/1409941645/Pre-Manifesto\\_3\\_Sep\\_2014.pdf?1409941645](https://d3n8a8pro7vnmx.cloudfront.net/libdems/pages/6272/attachments/original/1409941645/Pre-Manifesto_3_Sep_2014.pdf?1409941645)

Lijphart, A., *Patterns of Democracy: Government forms and performance in thirty-six countries*, Yale University Press, New Haven and London, 1999.

Lijphart, A., *Patterns of Democracy: Government forms and performance in thirty-six countries*, second edition, Yale University Press, New Haven, 2012.

Littlechild, S., 'Consumer-involvement, ex post regulation and customer appeal mechanisms', Ofgem RPI-X@20 Web Forum, London, 2009.

Littlechild, S., *Regulation, Customer Protection and Customer Engagement: Working paper 1119*, Electricity Policy Research Group, Cambridge University, 2011.

Majone, G., *Temporal Consistency and Policy Credibility: Why democracies need non-majoritarian institutions*, European University Institute, Florence, 1996.

Mandelson, P., 'Why I no longer support a new high-speed railway line for Britain', *Financial Times*, 2 July 2013, retrieved 26 November 2014 from <http://tinyurl.com/mscrdwc>.

NAO, *Infrastructure Investment: The impact on consumer bills*, National Audit Office, Report by Comptroller and Auditor General, HC812-I, London, 2013a.

NAO, *HM Treasury: Planning for economic infrastructure*, National Audit Office, Report by Comptroller and Auditor General, HC595, London, 2013b.

NAO, *High Speed 2: A review of early programme preparation*, National Audit Office, Report by Comptroller and Auditor General, HC124, London, 2013c.

NAO, *Thames Tideway Tunnel: Early review of potential risks to value for money*, National Audit Office, Report by Comptroller and Auditor General, HC168, London, 2014.

Nelson, J., 'Meta-analysis of airport noise and hedonic property values: problems and prospects', *Journal of Transport Economics & Policy*, 38(1), 2004, p. 1-28.

Novella, B, Coelho, M, and Kao, J., 'Infrastructure and Growth', 2012, paper prepared for the London School of Economics Growth Commission, London.

Plimmer, G., 'Critics decry costs of London's £4.2bn «super sewer»', 2015, *Financial Times*, July 26.

O'Hare, M., *Environmental and Other Co-benefits of Developing a High Speed Rail System in California: A prospective vision 2010-2050*, UCB Center for Environmental Public Policy Working Paper, December 2010.

- Ofgem, *Electricity Capacity Assessment Report: Report to the Secretary of State*, Office of Gas and Electricity Markets, 105/13, London, 2013.
- Ofgem, *Electricity Capacity Assessment Report: Report to the Secretary of State*, Office of Gas and Electricity Markets, London, 2014.
- Ofgem, *Electricity security of supply: A commentary on National Grid's Future Energy Scenarios for the next three winters*, 2015, Office of Gas and Electricity Markets, London.
- Ofwat, *Explanatory memorandum to the Project Licence issued to Bazalgette Tunnel Limited*, 2015a, The Water Services Regulation Authority, Birmingham.
- Ofwat, 'PN 02/15 Ofwat awards licence for Thames Tideway Tunnel', 2015b, 24 August, The Water Services Regulation Authority, Birmingham.
- ONS, *National Population Projections: 2012-based projections*, 2014, Office for National Statistics, retrieved 26 November 2014 from <http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2012-based-projections/index.html>
- PAC, *High Speed 2: A review of early programme preparation (22nd report of session 2013-14)*, Public Accounts Committee, HC 478, 2013.
- PAC, *Infrastructure Investment: The impact on consumer bills*, House of Commons, Oral Evidence taken before the Public Accounts Committee, HC 943-I, London, 2014.
- Pearson, P., & Watson, J., *UK Energy Policy 1980-2010: A history and lessons to be learnt*, Parliamentary Group for Energy Studies, London, 2012.
- Petrova, M., 'NIMBYism Revisited: Public acceptance of wind energy in the United States', *Wiley Interdisciplinary Reviews: Climate Change*, 4(6), 2013, p. 575–601.
- Pindyck, R., 'The Use and Misuse of Models for Climate Policy', 2015, NBER Working Paper No. 21097.
- Prasser, S., 'Overcoming the "White Elephant" Syndrome in Big and Iconic Projects in the Public and Private Sectors', in Wanna, J., (ed.) *Improving Implementation Organisational Change and Project Management*, ANU E Press, 2007, chapter 5, p. 47-68.
- Reuveny, R., 'Democracy and Environment: State of the art and future research', in Session 1, Democracy and the Environment: Defining the linkages, Conference on Environmental Governance and Democracy – Institutions, public participation and environmental sustainability: Bridging research and capacity development, Yale University, New Haven, 2008.
- Rhodes, C., *Infrastructure Policy*, House of Commons Library, Standard Note SN/EP/6594, 2013.
- Robinson, T.A., & Taylor, M.P., 'The effects of regulation and regulatory risk in the UK electricity distribution industry', *Annals of Public and Co-operative Economics*, 69(3), 1998, p. 331-346.
- Rose, R., *Politics in England: An interpretation*, Little, Brown, Boston, 1974.
- Schenk, T., & Stokes, L., 'The power of collaboration: Engaging all parties in renewable energy infrastructure development', *IEEE Power & Energy Magazine*, 2013, p. 56-65.
- Schively, C., 'Understanding the NIMBY and LULU phenomena: Reassessing our knowledge base and informing future research', *Journal of Planning Literature*, 21(3), 2007a, p. 255-266.
- Schively, C., 'A quantitative analysis of consensus building in local environmental review', *Journal of Planning Education and Research*, 27(1), 2007b, p. 82-98.
- Shiferaw, A., 'The Dutch project governance system: Weaknesses and improvements, in Klakegg, O.J., Kjølle, K.H., Mehaug, C.G., Olsson, N.O.E., Shiferaw, A.T., Woods, R., (eds) *Proceedings from 7<sup>th</sup> Nordic Conference on Construction Economics and Organisation 2013: Green Urbanisation – Implications for Value Creation*, Akademika Publishing, 2013.
- Soroka, S. & Wlezien, C., 'Opinion Policy Dynamics: Public preferences and public expenditure in the United Kingdom', *British Journal of Political Science*, vol. 35, no. 4, 2005, pp. 665-89.
- Thompson, R., *The Crossrail Effect: The Impact of the Arrival of Crossrail on Central London Commercial Property Prices*, London First, 2014.
- Tran, M., Hall, J., Hickford, A., Nicholls, R., Alderson, D., Barr, S., Baruah, P., Beavan, R., Birkin, M., Blainey, S., Byers, E., Chaudry, M., Curtis, T., Ebrahimi, R., Eyre, N., Hiteva, R., Jenkins, N., Jones, C., Kilsby, C., Leathard, A., Manning, L., Otto, A., Oughton, E., Powrie, W., Preston, J., Qadrdan, M., Thoung, C., Tyler, P., Watson, J., Watson,

G. and Zuo, C., *National Infrastructure Assessment: Analysis of options for infrastructure provision in Great Britain – Interim results*, Environmental Change Institute, University of Oxford, 2014.

Transparency Group Conference, Enhancing Transparency in the Multilateral Trading System, 4 July 2007, Sydney

Treasury Committee, *Spending Round 2013: Third report of session 2013-14*, HC 575, London, 2013.

Ungoed-Thomas, J., and Woolf, M., 'Revealed: the plot to expand Heathrow', 2008, *The Sunday Times*, 9 March, retrieved 26 November 2014 from <http://www.thesundaytimes.co.uk/sto/business/article82325.ece>.

Trillas, F., *Independent regulators: Theory, evidence and reform proposals*, IESE Business School, Barcelona, 2010.

Ward, H. & John, P., 'Targeting Benefits for Electoral Gain: Constituency marginality and the distribution of grants to English local authorities', *Political Studies*, 1999, pp. 32-52.

### Corresponding author details

Miguel Castro Coelho  
Institute for Government  
2 Carlton Gardens, London SW1Y 5AA  
[Miguel.Coelho@instituteforgovernment.org.uk](mailto:Miguel.Coelho@instituteforgovernment.org.uk)

Dr. Sebastian Dellepiane,  
School of Government and Public Policy  
University of Strathclyde  
[sebastian.dellepiane@strath.ac.uk](mailto:sebastian.dellepiane@strath.ac.uk)