

The Political Economy of Infrastructure in the UK

Miguel Coelho and Vigyan Ratnoo
with Sebastian Dellepiane



About the authors

Miguel Castro Coelho

Miguel is a Fellow at the Institute for Government. He leads the Institute's work on economic growth.

He is an economist with extensive experience of working and influencing policy-focused environments. He has played a variety of roles at the heart of Government (providing advice to the Treasury, the Prime Minister's Strategy Unit, and No10); in Government departments (as a strategy advisor to the Department for Education); outside Government, as a leading economist in the Institute for Public Policy Research, an advisor to foreign think tanks, and an economics commentator in the international media.

Vigyan Ratnoo

Vigyan joined the Institute for Government as a Research Assistant at the beginning of 2014 and has been working exclusively on the Political Economy of Growth & Institutional Reform project. He has a postgraduate degree in Economics from the Indian Institute of Technology, Madras and an MSc Economic History from the London School of Economics. His research interests include long run growth and education, particularly from a political economy perspective.

Sebastian Dellepiane

Sebastian Dellepiane is a Lecturer in Public Policy at the School of Government and Public Policy, University of Strathclyde. He holds a MA in Political Economy and a PhD in Government from the University of Essex. He had previously studied economics and political science in Buenos Aires, Argentina. He held research positions in several European universities, including Essex University, University College Dublin, and the University of Antwerp. He has been guest lecturer at the Essex Summer School in Social Science Data Analysis, the Institute of Development Policy and Management in Antwerp, the Maastricht Graduate School of Governance, and the German Development Institute in Bonn. Sebastian investigates and teaches in the area of political economy.

His PhD focuses on the relationship between credible commitments and institutions by examining the origins, evolution and ultimate collapse of Argentina's convertibility system (1991-2001).

Contents

Background	3
The political economy of infrastructure	5
Empirical examples.....	9
Institutional innovation	17
Conclusion	22
References.....	25

Background

The UK needs to make major strategic infrastructure decisions over the next few years (NAO, 2013a; HMT, 2013).¹ The challenges 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 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).²

In 2013, the Government presented an assessment of planned and potential infrastructure investment over the rest of the decade and beyond, allowing for large infrastructure projects with a capital value of £50 million (m) and over.³ The overall value of this so-called 'pipeline' was estimated at £375 billion (bn) of investment, updated to £383bn in the summer of 2014. Most of this planned investment was in the energy and transport sectors, over £340 billion of combined investment. Of a total of 646 projects in the pipeline, 291 projects and programmes (45%) were under construction or part of an active programme of investment.⁴ The rest were in scoping or design phases of development (HMT, 2013).

The UK is rather unusual among advanced economies in the extent to which it relies on the private sector to finance and provide infrastructure. About two thirds of investment in the pipeline 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) are expected to be financed roughly equally through public funds and public-private partnerships (HMT, 2013).

¹ Infrastructure commonly refers to capital intensive projects in energy, transport, water, digital communications, waste disposal networks, and strategic flood defences.

² Office for National Statistics, *National Population Projections: 2012-based projections*, 2013, retrieved 26 November 2014 from <http://www.ons.gov.uk/ons/rel/npp/national-population-projections/2012-based-projections/index.html>

³ The Government made it clear that 'the pipeline is not a statement of need or a commitment to undertake any of the projects shown. It provides a strategic and more credible overview of the level of public and private infrastructure investment planned over the rest of this decade and beyond (though in sectors such as energy, ports and waste, the decision to go ahead with individual projects will be determined by the market).' HM Treasury, *National Infrastructure Pipeline Spreadsheet: Summer 2014 update*, 2014, retrieved 26 November 2014 from <http://tinyurl.com/pvvtg9>

⁴ That is to say, where one or more of its component projects are in construction.

The government role varies between sectors, ranging from designing policy and regulatory frameworks to attract private investment and to protect the interests of consumers, through to direct investment decisions and co-ordination. But a certain degree of government involvement is generally necessary since large infrastructure projects tend to have important land use implications and, therefore, involve securing planning permission, which is a matter for government policy.⁵

Decisions about infrastructure involve long-term commitments. Poor investment decisions could lock the economy into inappropriate infrastructure systems for many years, with significantly harmful effects on future prosperity. Yet evidence has been accumulating of problems in the way the UK makes strategic infrastructure decisions. These include cases of short-sightedness and lack of forward-looking strategy; failure to secure cross-party agreement, translated into high political risk; serious weaknesses in the evidence base, even in the cases where there is cross-party support;⁶ and local community opposition, which often leads to political procrastination.

The evidence we review in this paper leads us to conclude that these problems stem from gaps in the current institutional architecture around infrastructure investment. In particular, the UK lacks adequate forums where politicians, experts, interest groups, and representatives of local communities may engage in structured, informed discussions about policy options for infrastructure investment. Addressing this institutional gap is not about bypassing the political process but improving it. In this respect, we draw attention to several international examples that offer interesting lessons for potential UK institutional reform.

In the next section, we examine the political economy root causes of these problems, linking theory to UK institutional practice. The third section presents examples of individual projects (HS2 and Thames Tideway) and of policy areas (energy and aviation) that illustrate vividly the nature and impact of problems in the governance of infrastructure investment in the UK. The fourth section looks at institutional innovations in other countries that have been successful in addressing problems similar to those that impede infrastructure investment in the UK. The final section draws conclusions and charts a way forward for reforming the governance of infrastructure investment in the UK.

⁵ For example, planning consent is required for compulsory purchases of land, for building roads, runways or rail links, and for connecting to electricity/water networks.

⁶ For example in 2013, the National Audit Office (NAO) concluded 'Economic returns were not necessarily calculated for all [government-financed] projects and programmes that were produced for the 2010 spending review process particularly if there was already an existing policy or spending commitment. Some projects were selected as policy priorities rather than solely on the strength of their economic benefits.' (NAO, 2013b, p.24). In the same document, the NAO also noted 'The 2011 National Infrastructure Plan covers a combination of these priority government-funded projects and privately-funded proposals being considered by firms operating in the energy, water, transport, waste and communications sectors. The plan does not show the relative rankings or economic returns of its 40 priority programmes or the projects within them.' (NAO, 2013b. p.24).

The political economy of infrastructure

Making informed decisions about infrastructure investment is difficult. It requires robust analysis of the long-term effects of alternative infrastructure systems across a wide range of uncertain future scenarios. It involves understanding the drivers of demand for infrastructure services in the future, and how different infrastructure configurations might be able to meet that demand (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 (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.⁷ 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 is crucial to engage all the relevant affected groups in the development of the evidence base that is used to inform policy. The reasons are twofold. First, credible analysis requires a detailed understanding of public preferences regarding the policy trade-offs implicit in alternative investment options. Second, the methods and assumptions that underpin technical analysis need to be extensively discussed with relevant interested parties, as part of a deliberative process. Otherwise, conflicting views about data, methods, system boundaries and optimisations, are more likely to become polarised and to undermine the quality of the political debate (Bruijn and Leijten, 2008).

The lack of effective participatory institutions to assist the political process increases the risk of information wars, where interest groups⁸ and political parties^{9,10} face

⁷ For example, in aviation, Sir Howard Davies noted in his interim report 'There are major uncertainties involved in forecasting aviation demand, and any forecasts are sensitive to assumptions around how the economy and society will develop in future.' (p.10). A number of scenarios could emerge. In one of them, airline alliances, and the hub-and-spoke networks that they operate, remain central to the way the industry works. In another scenario, a wider range of airports could start operating some form of hub, even where they lack a major network carrier, by enabling passengers to 'self-connect' or by hosting new partnerships between low-cost carriers and other airlines. In yet another scenario, new aircraft with longer ranges could make more long-haul destinations viable as point-to-point routes, resulting in a decline in the importance of hubs.

⁸ In the context of UK transport policy, Glaister *et al.* (2006) argue that, while the crowded British policymaking arena gives the appearance of healthy pluralism, in practice, some groups are able to

incentives simply to draw on partial pieces of evidence to support pre-determined positions. This risk is especially relevant in the UK Westminster model, which compared to some other political models, is known to foster a relatively adversarial political culture, and where interest groups with legitimate claims on infrastructure decisions act in ways that are less co-ordinated and more competitive than in some other nations.¹¹ These arrangements stand in contrast, in particular, with those of consociational models of democracy where building political consensus is key, and where interest group corporatism is the norm – i.e. regular meetings take place between the representatives of government, labour unions, and employers' organisations to seek agreement on socio-economic policies. Switzerland, Belgium and some of the Nordic countries are often presented as examples.

The lack of strong deliberative/participatory approaches harms infrastructure investment decisions in many ways. First, it impacts directly on the quality of the decision-making process that underpins the selection of individual projects. 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.

There is an emerging body of empirical literature that sheds light on these hypotheses. Some studies link elections to cycles in corporate investment (Julio and Yook, 2012; Gulen and Ion, 2013).¹² Analysis of the US electricity industry indicates

represent their interests more effectively than others. Similarly, in the UK energy sector, Helm (2010, 2014) exposes worrying signs of policy and regulatory capture.

⁹ Eliasson *et al.* (2014) explore how benefit-cost efficiency and electoral support affect road investment decisions in Sweden and Norway. In Norway, neither benefits nor costs seem to affect project selection. In Sweden, civil servants' decisions are strongly affected by projects' benefit-cost ratios, with a stronger effect for more expensive projects, while politicians' decisions are only weakly affected, and only for small projects. In both countries, governments tend to favour investments in regions where they enjoy strong local electoral support. Similarly, Hammes (2013) studies factors affecting the choice of projects to be included in the National Transport Infrastructure Plan for 2010-21 in Sweden, controlling for the cost-benefit analysis results. The centre-right government tended to favour counties that voted for it; lobbying also matters – projects with co-financing from the local municipality have a greater probability of being included in the Plan.

¹⁰ Reflecting on the Dutch coalition agreement of 2009, Marshall (2009a) notes decisions on important issues in spatial planning, energy, and mobility were part of a balancing act that brought in concerns of the new Labour Party coalition partner, on for example not selling off Schiphol, keeping NS rail (the main passenger rail operator in the Netherlands) as a 'social enterprise', and not building any new nuclear power plants during this following term. See Priemus (2010) for a similar discussion.

¹¹ Lijphart (2012) refers to these arrangements as 'free-for-all pluralism'.

¹² Gulen and Ion (2013) estimate that approximately two-thirds of the 32% drop in corporate investments of US firms observed during the 2007-09 crisis period can be attributed to policy-related uncertainty. This effect is significantly stronger for firms with a higher degree of investment irreversibility, for firms which are more financially constrained, and for firms operating in less competitive industries. The authors link this decrease to precautionary delays induced by investment

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 (Fabrizio, 2012). More generally, there is a flourishing strand of literature that associates election periods, or other political changes, to increased stock market volatility (Bialkowski *et al.* 2008; Boutchkova *et al.*, 2011, 2012); movements in bond yields; exchange rates; and equity volatility (Bernhard and Leblang, 2006).

The other problem associated with weak participatory processes is that they 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.¹³ 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.¹⁴

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

irreversibility and to increases in the cost of external borrowing. Their analysis indicates that the effect holds in the UK, Canada, Germany, France and Italy.

¹³ Opposition to infrastructure projects is a major factor shaping the planning and delivery of infrastructure projects in the UK. Onshore, oil and shale gas exploration is a case in point. In 2013, the small village of Balcombe (West Sussex) became a national focal point for the campaign against hydraulic fracturing. When a private company attempted to start operations in a site just outside the village to determine how much oil and gas it contained, residents and environmental campaigners from further afield descended on the site to block the enterprise. The company insisted it was using conventional drilling techniques – it had not yet asked for or received permission to frack on the site – and that it had all the permissions required. But most of the locals were unmoved, convinced that fracking will be the end result. Days later the chief executive of company claimed that protesters had sent him death threats.

¹⁴ For example, wind farms have been found to reduce house prices in postcode areas where the turbines are visible. This drop in price is around 5% to 6% for housing with a visible wind farm of average size (11 turbines) within two kilometres (km), falling to 2.5% within four km, and to zero by 14 km which is at the limit of likely visibility. The effects are bigger and they have an impact over a greater area for larger wind farms. Wind farms with 20 or more turbines reduce prices by up to 12% within two km (Gibbons, 2014). Infrastructure projects may, however, also generate significant positive externalities for the local community. In some cases, this 'development gain' is an important source of finance for the projects. For example, it has been reported that after the first reading of the Crossrail Bill (identified as the 'announcement' of Crossrail) commercial properties within a half-mile radius experienced an increase in price of approximately eight to 15 percentage points (pp) above that seen in properties outside a half-mile catchment area. After construction began, there seems to have been a further increase in price of six to nine percentage points above properties outside this sphere of influence (Thompson, 2014). Similarly, it has been estimated that the new Wembley Stadium brought increases of up to 15% in prices for properties in its vicinity; and that the Emirates Stadium was associated with a 1.7% price increase for a 10% decrease in distance to the stadium (Ahlfeldt and Kavetson, 2014).

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.

This type of approach is not common in the UK, and there has been little progress towards it over the last few years. Active engagement of local communities in infrastructure decisions has only been promoted at smaller scales (Devine-Wright, 2011), and 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).¹⁵ Too often the results are mechanisms of dispute resolution relying on legal challenges, public campaigns, political lobbying and public protest, leading to inefficient winner-take-all outcomes.

In contrast, there have been clear signs that compensation of local communities has begun to be taken more seriously recently. For example, both Heathrow and Gatwick airports have set out plans to go beyond the legal minimum to compensate affected property owners if they are given the go ahead to build new runways.¹⁶ To help the delivery of HS2, the Government has also announced proposals to go beyond the

¹⁵ Only 15% of people surveyed 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.

¹⁶ For example, in the summer of 2014, Heathrow announced plans to spend hundreds of millions of pounds in an attempt to mitigate local opposition to a proposed third runway, including compensation to homeowners and to insulate homes and public buildings against aircraft noise. The airport announced that it would pay premium prices for properties in its path and that it would cover the costs of sound insulation. Around 750 homes would be compulsorily purchased and demolished if the scheme went ahead. Heathrow would offer 25% over the unblighted value of the houses along with legal fees and stamp duty incurred for the purchase of new homes. Heathrow would expect to spend at least £250m on soundproofing homes and schools – compared with only £30m it has spent on insulating properties in the last 20 years. After consultation with local stakeholders, the location of the proposed new runway was moved further south, and west, which reduces noise impacts and protects more homes and important heritage sites. The number of people affected by significant noise was predicted to be reduced by at least 12,000 compared to previous plans, and the number of properties requiring compulsory purchase reduced by 200. The plans also support the provision of new green spaces and flood mitigation for local communities. Heathrow Airport Limited, *Taking Britain Further: Heathrow's plan for connecting the UK to growth*, 2014, retrieved 26 November 2014 from http://www.heathrowairport.com/static/HeathrowAboutUs/Downloads/PDF/taking_britain_further.pdf

legal minimum in compensating local property owners. This includes an offer to purchase homes closest to the line at 110% of their ‘unblighted’ value plus moving expenses; a voluntary purchase scheme for those in rural areas; and a ‘need to sell’ scheme to help those unable to sell homes because of HS2. In the energy sector, new approaches to sharing the benefits of development with local communities are being developed, such as shared ownership of onshore renewable energy developments, and allowing local authorities to retain all of the business rates proceeds from hydraulic fracturing (fracking) in their areas.

Empirical examples

Having discussed the theory and the way it connects to UK institutional practice, we now turn to examples that illustrate the problems that afflict the governance of UK infrastructure decisions. As discussed above, these include cases of short-sightedness and lack of forward-looking strategy; lack of cross-party agreement and thus high political risk; problems with the evidence base underpinning projects that have cross-party support; and local community opposition leading to political procrastination.

Electricity generation

UK energy policy since privatisation in the 80s and 90s offers a good illustration of problems of short-sightedness and lack of forward-looking strategy, as well as failure to secure cross-party agreement and associated high political risk.

An important part of Britain’s energy generating capacity has been or is in the process of being decommissioned. Coal and oil 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). Last summer, 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 2011-12.¹⁷

The situation has 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 will be paid to keep their

¹⁷ ‘The risks to security of supply were expected to increase appreciably in the coming years from near-zero levels. This was 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).

plants available as back-up. And an array of government initiatives 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 have rising costs, rising emissions because of 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.¹⁸

The background to all of 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 (Pearson and Watson, 2012).¹⁹ 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.²⁰

It was not until the mid-2000s, with increasing concerns about climate change and security of supply, that these perceptions were reversed.²¹ 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.²² Yet, in practice, little progress has been made in creating conditions for the private sector to invest in new supply.

¹⁸ This debate risks creating a vicious circle, where high cost of capital, driven by high policy risk, lead 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.

¹⁹ 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.

²⁰ 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 (see, for example, Helm, 2008).

²¹ For example, in the winter of 2005-06, the Russians interrupted gas supplies to the Ukraine for a number of hours. Gas prices spiked and the UK nearly ran out of gas. The impact was felt in the electricity market as Combined Cycle Gas Turbine plants struggled to find supplies and coal power stations could not rapidly fill the gap.

²² These processes have been marked by delays and reversals. Security of supply, cost competitiveness, and environmental sustainability (the goals that are often associated with energy policy) find varying support among parties and even among the same government. For example, in the context of nuclear energy, Helm (2013, p. 60) notes, 'For 12 years governments have decided that

Furthermore, there are serious concerns regarding many aspects of the resulting policy framework: first, the nature and scale of the incentives set by the latest Energy Bill and electricity market reform process for renewables and nuclear power stations, which include, for example, relatively generous long-term contracts with guaranteed prices;²³ second, the assumptions that underpin this energy strategy, their impacts on carbon emissions and on the competitiveness of the UK economy;²⁴ and, third, affordability and public support.²⁵

Railways – HS2

Ongoing controversy regarding the case for building a high-speed railway line connecting London to the North of England is a good example of the perils of failing to build a credible evidence base and of the having public and political debates moulded by ‘information wars’.

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 (including contingency). It was supported by the Labour Government in 2009 and has had the support of the

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.’

²³ In a preliminary assessment of the Hinkley Point C nuclear power station, the European Commission raised fundamental concerns about the UK contract with French utility EDF, for Hinkley Point C nuclear power station in Somerset (European Commission, 2014). It found that the level of tax-payer support is potentially inappropriate, disproportionate, and in breach of EU law. It said that by providing a fixed, certain level of revenues over 35 years, as well as additional credit guarantees ‘it would appear to be difficult for the UK to provide a greater degree of certainty’ (European Commission, 2014, p. C 69/88). In October 2014, the European Commission announced that it approved the new nuclear power plant at Hinkley Point. The decision came after the UK Government made relatively small amendments to the contract with EDF, including tougher profit claw-back clauses to recoup unexpectedly high profits throughout the plant’s lifespan of 60 years or more. The approval followed a deeply-divided debate, with EU commissioners from at least five countries expressing a mixture of concerns and outright objections.

²⁴ Concerns have also been expressed about the underlying set of assumptions about future energy markets: the idea that oil and gas prices are likely to go upwards in the near future as their stocks are depleted (the ‘peak oil/gas’ theory); and the assumption that with enough subsidy from consumers, the current generation of renewables are likely to become cost competitive, and make a difference to global warming (Helm, 2013).

²⁵ The NAO 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 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). It is worth noting, in this context, that while the proportion of total consumer expenditure that is made up of energy costs is still relatively low in the UK, when energy costs are combined with other relatively inelastic consumer expenditure items such as housing costs, they are less affordable for UK households than those in France, Germany, Spain and Italy (Moody’s, 2013).

Conservative-Liberal Democrat Coalition Government since May 2010 (Butcher, 2014a).

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 (NAO) 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'.²⁶ (Treasury Committee, 2013, p.36.)

²⁶ 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

In the summer of 2014, while the controversy around HS2 was still ongoing, the Chancellor of the Exchequer announced plans for a high-speed rail link between Manchester and Leeds as part of creating a ‘northern powerhouse’.²⁷ 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’.²⁸

Thames Tideway

Similar to HS2, the process that led to the approval of the Thames Tideway also illustrates how deficiencies in the development of a credible evidence base leads to ongoing controversy and, ultimately, investment decisions of dubious quality.

Underneath the whole of London is a sewerage system built largely in the 1860s by Sir Joseph Bazalgette, when 2.5 million people were living in the city. It was designed with some forethought for a capacity to deal with 4 million people living in London. But it is now struggling to cope with a population of more than 8 million. Thames Water estimates that, as a result of up to 60 separate annual discharges

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, 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>.

²⁷ Greater Manchester and the Liverpool, Leeds and Sheffield city regions have a population of 9 million, a £154bn economy and almost 3 million jobs.

²⁸ Editorial, ‘Better ways to link up northern cities: Prioritise connectivity to enhance regional prosperity,’ *Financial Times*, 23 June 2014, retrieved 26 November 2014 from <http://www.ft.com/cms/s/0/b6269ad4-fae2-11e3-8959-00144feab7de.html#axzz36z8Yv4j3> These remarks echo one of the key findings of the Edington Transport Study. ‘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.’

from London's combined sewer overflows, 39 million cubic metres of untreated waste water spill into the River Thames every year²⁹.

In 2000, Thames Water funded an initiative to assess the environmental impact of sewage spills into the Thames. Chaired by Professor Chris Binnie, an independent water consultant, the Environment Agency, Department for Environment, Food & Rural Affairs (Defra), and the Greater London Authority (GLA) participated in the study. Its final report, *The Thames Tideway Strategic Study*, was issued in 2005, and concluded that the only practicable strategy to meet all environmental objectives was the interception of sewage spills before they reach the river. It took the view that a single full-length tunnel was the best option – a large sewer running under the River Thames for 25 kilometres from Acton in the West to Abbey Mills in the East (the Thames Tideway Tunnel).

The Minister of State for Climate Change and Environment announced support for the Thames Tideway Tunnel in March 2007. The newly-appointed Environment Secretary restated this support in 2010 and again in 2011. But the initiative has been embroiled in controversy, with some groups expressing concerns about the quality of analysis that presented the Tideway Tunnel as the preferred option.

In 2006, a review by consultants Jacobs Baktie for Ofwat considered alternatives, including a combination of options which combined shorter tunnels with treatment and re-oxygenation measures. Subsequent analysis by Thames Water concluded that this option would not achieve the target level for dissolved oxygen by 2020 if the effects of climate change were included. Defra decided to exclude the Jacobs Baktie option from consideration.

In 2011, a report sponsored by five of the 14 London boroughs affected by the tunnel, claimed that alternatives to the tunnel had never been adequately tested. It also argued that some of the reports and results of computer modelling that underpinned the decision had not been placed in the public domain, making their predictions hard to validate by independent sources.

In 2012, and later in 2014, the former chairman of the Thames Tideway Strategic Study, Professor Chris Binnie, published a response to Defra's 2011 cost-benefit analysis, suggesting that the benefits of the tunnel had been overstated because of unrealistic assumptions; that faulty assumptions had been used while modelling the impact of alternative solutions; and that further research was needed to determine the most cost-effective route to compliance. The NAO (2014, p. 23) noted that 'such claims emphasise the importance of independent government scrutiny and quality

²⁹ 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.

assurance over the options appraisal in order to win public confidence that value for money has been secured'.³⁰

The Environment Agency published a new review of available evidence on the feasibility and cost-effectiveness of one specific alternative approach, sustainable Drainage Solutions (SuDS), proposed by the former chairman of the Thames Tideway Strategic Study. It discarded SuDS on the grounds that there was a lack of data relating to the costs and benefits of that approach compared to the Tideway Tunnel; that available evidence showed that SuDS alone could not achieve the Thames Tideway environmental objectives and standards; and that there were institutional barriers to the delivery of SuDS because it would require co-operation by a large number of stakeholders.

The Thames Tideway Strategic Study originally estimated the cost of a single full-length tunnel at £1.7 bn (2004 prices) and the increase in Thames Water residential customer bills at £40 to £45 annually. This has since been revised by Thames Water to an estimated total cost of £4.2 bn (2011 prices) and a maximum increase in bills of between £70 to £80 annually. The chair of the Public Accounts Committee, Margaret Hodge, called it '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.)

Aviation in the south-east of England

Problems with the expansion of airport capacity in the south-east of England illustrate well the consequences of failing to promote serious engagement with local communities and to compensate them for the costs that large infrastructure projects impose on them.

The question of UK airport capacity has been considered a number of times over the last decades (Helsey and Codd, 2014). Yet, little progress has been made since those discussions began. The only new runways built in recent decades have been 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.³¹ 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,

³⁰ The scope of the NAO (2014) report was not evaluative, so it did not assess those claims.

³¹ See Airports Commission (2013) for details.

restricting access from other UK regions to Heathrow's network of international services .

The problem is intimately related to perennial controversies surrounding the impact of increased flights on noise and air pollution levels (especially nitrogen dioxide) in surrounding areas,³² and 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 case in point. In 2007, the Labour Government ran a consultation on this question, which included, among other proposals, plans by BAA for adding 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 Group³³ – an alliance of local authorities affected by Heathrow's operating activities – particularly illustrates 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:

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.^{34,35}

³² Concerns about the effects of increased greenhouse gas emissions on climate change are also relevant in this context.

³³ 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.

³⁴ 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, J., and Woolf,

The 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 has shortlisted two options at Heathrow and one at Gatwick. Ruling out a new airport in the Thames estuary has led the Mayor of London to deem it as 'short-sighted' and to argue that a future government could easily ignore the Commission. In September 2014 the Liberal Democrats announced that they would oppose, on environmental grounds, any form of airport expansion.³⁶ It remains to be seen whether the Commission's work will help clear the fog of political disagreement that has defined airport expansion in the south-east of England for decades.

Institutional innovation

These issues are not unique to the UK – indeed they are confronted in some form in many other developed countries. But some of these countries have proved more innovative in finding ways of tackling the problems and moving forward, thus offering potential lessons for the UK.³⁷ In this section we review those innovations, which range from policymaking processes designed to facilitate discussion and negotiation between groups with interests in specific infrastructure projects (with a view to reaching agreement on the delivery and operation of those projects) to institutions at arm's length from government being charged with conducting analysis of topical

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

³⁵ 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.' Environment Agency Thames Region, Response to the Department for Transport's Consultation: Adding Capacity at Heathrow, Environment Agency website, 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

³⁶ '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, *Pre-Manifesto: A stronger economy and a fairer society enabling every person to get on in life*, 2014, p.22. Retrieved 26 November 2014 from https://d3n8a8pro7vnm.cloudfront.net/libdems/pages/6272/attachments/original/1409941645/Pre-Manifesto_3_Sep_2014.pdf?1409941645

³⁷ There have also been attempts in the UK to improve the governance of infrastructure investment. Examples include the creation of National Policy Statements, designed to offer greater clarification and predictability regarding government policy; the creation of an Independent Planning Commission in 2008, which failed to gather cross-party support, and was amended in 2011 by the Coalition Government; and the creation of Infrastructure UK – a unit in the Treasury that was charged with providing advice on the UK's long-term infrastructure priorities and facilitating private sector investment over the longer term.

policy issues and engaging the public both in the formative stages of the analysis and in the dissemination of the results.

Negotiated settlements in the United States and Canada

There have been recent discussions, across a number of countries, about the role of consumers in the regulatory processes. These discussions are usually related to a perception that the role of regulators has become too centralised, that it may have disengaged companies from their consumers (their preferences and concerns), and customers from their utility providers (their cost drivers, and constraints). (Littlechild, 2009.)

Consumers may participate in utility regulation in various ways from relatively passive forms of consumer involvement – such as consult-and-respond mechanisms, consumer panels and advisory committees – to more active forms, such as constructive engagement, and negotiated agreement/settlement. (Decker, 2013.)

Negotiated settlements have been used for many years in parts of North America. The traditional US approach to regulatory decisions is adversarial and trial-like in nature, consumers need to be represented in the ‘hearing’, and rate petitions are assessed according to judicially-established standards.³⁸ A backlog of some 3,000 regulatory cases in the 1960s led the US Federal Power Commission – now the Federal Energy Regulatory Commission (FERC) – to encourage utilities and consumers to settle rate cases privately. Similarly at state level, the Florida Public Service Commission (FPSC) has pushed for negotiated settlements between utilities and consumer groups since the 1970s. For example, the Office of Public Counsel was created to represent general public consumer issues.

In Canada, the National Energy Board at federal level and the Energy Utilities Board in the province of Alberta began to facilitate similar processes in the mid-1990s (Fellows, 2011). This experience suggests that that negotiated settlements are not simply a way of reducing the costs or risks of litigation, but a process that leads to innovative, mutually-preferred outcomes, which more traditional forms of regulation would struggle to deliver. (Doucet and Littlechild, 2009, Littlechild, 2011.)

Typically in these settlements, the regulatory body’s role is to facilitate discussion, negotiation and, if possible, agreement among interested parties, as opposed to arbitrating in the more-usual adversarial battle between producers and consumers. If negotiations fail, decisions on price and other terms revert back to the regulator, restricting the utility’s ability to exercise monopoly power over its customers. The aim is to promote a regulatory regime that is more flexible, and closely tailored to the

³⁸ This stands in contrast to the price-setting approaches in Australia and Europe, which are more administrative in nature. Regulators are normally required to ensure decisions are consistent with a number of statutory objectives (e.g. consumer protection, competition, environmental objectives) (Decker, 2013).

needs of particular users and customers. It seeks to achieve that by fostering a better understanding of the products and services that customers want, and of the operating costs and investment programmes required to deliver them. The results are generally less time-consuming, less costly and less uncertain than litigation, while also promoting better relationships between utilities and customers.

Building consensus in the Netherlands

The debate around the expansion of Schiphol, one of Europe's busiest airports in a tightly-packed country, has long been contentious. The intensity of the controversy reflects the complexity of conflicting interests: further development of the aviation sector; limiting noise nuisance for inhabitants; improving the quality of living for the direct surroundings of Schiphol; and efficient use of land.

In 2006, the national government published a 'white paper' setting out the Cabinet's position on Schiphol. This quickly came under heavy fire from local and regional voices opposed to the expansion of the airport. In an effort to build support for further development of Schiphol, the Government charged a consultative body with formulating advice on plans for securing future growth while protecting environmental objectives. Hans Alders, Queen's Commissioner in the Province of Groningen, chaired the round table and Theo Vermeegen, from the consultancy firm Boer & Croon, became the process director. This body became known as the 'Alders Table' (Jong, 2012).

The Alders Table delivered its first formal recommendations in 2007 concerning the development of the airport in the years leading up to 2010. One important recommendation was to pursue a more 'selective development' of Schiphol, focusing on air traffic that was important for the airport to act as a hub. The core recommendation was to limit the growth of Schiphol to 480,000 flights until the end of 2010. There are also two memorandums of understanding relating to the liveability of the airport region and about measures to restrict nuisance, including a number of experiments with new landing and departure procedures designed to reduce the air traffic noise. Medium-term recommendations were issued in 2008 and included advice of modest growth of the airport's capacity to 510,000 flights in 2020; further development of Lelystad and Eindhoven's airports; and a new system of norms and permits (Butter *et al.*, 2011). Much of the advice of 2008 was taken up by the government, and subsequently implemented.

The Alders Table is not without its critics. It has often been accused of lacking openness and representativeness (Jong and Boelens, 2014). But the balance of evidence seems to suggest that it has offered a relatively successful 'arena' where discussions and negotiations between different interests were conducted in a co-operative way. National and municipal governments, representatives of the local communities, and the parties involved in aviation (e.g. Schiphol Group, Dutch Air Traffic Control and KLM) were drawn together to discuss mutually-advantageous

solutions. That success inspired the creation of two similar consultative bodies in the context of the development of Eindhoven and Lelystad airports (Buuren, *et al.*, 2012). The efficacy of these new institutions is yet to be determined, and there are some emerging concerns that some stakeholders could learn to ‘game the system’,³⁹ suggesting that they might only be a short-term palliative rather than part of a long-term solution.

Promoting public debate in France

From the late 1940s to the mid-1970s, the French national government operated along a relatively-centralised decision-making tradition, first in the context of the reconstruction of the country after World War Two, and then to support the rapid growth of the economy. In the 1970s, this tradition came into conflict with environmental social movements and pressure from regional and local agents for greater decision-making powers to be devolved. This set the stage for the development of public participation in decision-making in France. It became more and more difficult to quietly make public decisions without negotiating with the public and with interest groups (Reuveny, 2008).

The 1980s brought a number of legislative initiatives that increased the influence of local and regional agents in political decision-making. This was followed by a sudden rise of ecological concerns which triggered an overhaul of environmental policies and institutions. Public participation played an important role in the process. Local environmental action plans and revised environmental laws were negotiated in ways that included public participation and structured negotiation between state representatives and relevant stakeholders.

There were also experiments with alternative methods to foster debate on large technology or development projects, namely through the creation in 1995 of a commission for public debate – the Commission Nationale du Débat Public National Public (CNDP). The CNDP, a state-funded, independent body,⁴⁰ has been charged with ensuring the public participates effectively in decision-making processes of projects⁴¹ that have major effects on the environment or on land planning⁴² (CNDP, 2012). The debate is open to citizens from all walks of life, and gives them an opportunity to investigate whether a project is worthwhile, to reflect on its objectives

³⁹ These concerns were expressed by a Dutch policy expert in a private roundtable discussion on ‘public support for infrastructure projects’ held at the Institute for Government on 9 July 2014.

⁴⁰ Since February 2002, the CNDP has neither been subordinate to government nor answerable to a ministerial authority. It is financially autonomous, its members have permanent seats for the duration of their mandate, and its work cannot be oriented or censured (except by a magistrate). The CNDP’s independence and representativeness are also supported by its tripartite nature, including members of Parliament and local elected officials, magistrates, and people representing associations and civil society.

⁴¹ The Commission has not confined its work to individual projects. It has organised public debates on wider issues such as nuclear waste policy, transport developments in the Rhone corridor, and nanotechnologies (Marshall, 2009b).

⁴² These projects can be sponsored by the government, local authorities, state-owned companies or the private sector.

and main features, and to express their opinions. The CNDP is not responsible for making decisions regarding individual projects. It is a stage in the process of decision-making. The power to decide stills rests is in the hands of the authorities elected by the public.⁴³

Of a total of 69 public debates organised by the CNDP since 2002, about one-third of the underlying projects have been abandoned or deeply modified; another third have been significantly modified; and yet another third have remained unchanged.⁴⁴

Arm's-length policymaking in Australia

The Productivity Commission is an arm's-length body which acts as the Australian Government's principal advisory body on microeconomic policy and regulation. The Commission's role is to provide independent, evidence-based advice and information to government and the wider community. It does so through public inquiries at the request of the Australian government; performance monitoring and benchmarking; self-initiated research; and by playing a 'watchdog' role on regulatory practice. Its remit is purely advisory, having no judicial, executive or administrative functions. Final reports are presented to Parliament, but it is up to governments to respond to the Commission's findings and recommendations (Banks and Carmichael, 2007).

The institution had its origins in the Tariff Board, which mainly performed a protectionist role until near the end of its life.⁴⁵ In the mid-1960s – under the combined influence of a new Chairman, Alf Rattigan, a separate high-profile public inquiry into Australia's economic policies, the Vernon Committee, and the work of Australian academics on the effects of protectionism – the Board began to question the effects on the wider economy of its longstanding, needs-based approach to tariff advice. It also began to make transparent the protection levels that its measures granted different industries. The election of a new government in 1972 brought decisive changes to the Tariff Board and to Australian tariff policy. It laid the foundations for the Productivity Commission through three key operating principles: independence,⁴⁶ transparency,⁴⁷ and an economy-wide mandate⁴⁸ (Banks, 2013; Prasser, 2007).

⁴³ Similar organisations in other countries include the Bureau d'audiences publiques sur l'environnement and the Office de Consultation Publique (both in Canada), as well as the Danish Board of Technology Foundation.

⁴⁴ From a private roundtable discussion on 'public support for infrastructure projects' held at the Institute for Government on 9 July 2014.

⁴⁵ The Commission was formed in 1998. It is the direct descendent of the Industry Commission (1990-1998), the Industries Assistance Commission (1974-1990), and the Tariff Board (founded in 1921).

⁴⁶ The Productivity Commission operates under the protection and guidelines of its own legislation. Members are appointed for fixed (renewable) terms and cannot be removed by the government of the day.

⁴⁷ The terms of reference of inquiries are made public. The Commission's statute requires it to hold public hearings and release draft reports before finalising its recommendations to government.

⁴⁸ Legislation requires that the Commission be concerned with economic efficiency and to take account of the wider interests of consumers and users of products affected by its proposals.

The Commission's public inquiries tend to focus on policy issues that have significant impacts on different groups in society, or are otherwise contentious or complex to assess – typically cross-sectoral, infrastructure, social and environmental policy issues. This puts a premium on good process and effective engagement with potentially-affected sections of the community. But it also allows the Commission to explore options that the government might find too sensitive to explore internally – thus widening the scope of public debate and potential action.

Ensuring adequate opportunity for public participation and allowing that feedback to be incorporated in findings is central to the Commission's processes. It is active in identifying those potentially interested in the inquiry and all individuals and organisations with an interest can participate. It organises face-to-face visits or roundtable discussions with major interest groups. Important aspects of submissions and views provided at hearings are made public. Arguments advanced by interest groups are subject to rigorous scrutiny. The Commission's preliminary analysis and conclusions are themselves exposed to public scrutiny before advice to government is finalised.⁴⁹

To promote public understanding of the trade-offs involved in different policy approaches, the Commission can undertake research on its own initiative. This has helped pave the way for subsequent references from government by raising public consciousness of certain issues, and offering governments an opportunity to gauge, at arm's length, the likely reactions of those affected by different policy approaches.

In the case of inquiries into industry protection or assistance, the great bulk of the Commission's recommendations have been implemented either fully or in part, which attests the impact of the Commission's work. So does the fact that successive governments from both the major political parties have renewed and expanded the institution's mandate over the last three decades.

Conclusion

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 over the next couple of decades. 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

⁴⁹ There is a two-way interaction between the work of the Commission and feedback from the public. First, the Commission uses its analysis to help the public understand what is at stake in policy initiatives and distinguish between spin and substance in the analysis of economic and trade reforms. Second, the Commission's findings and recommendations to government are designed to reflect the extensive public feedback on its draft report.

role however, both by designing policy and regulatory frameworks and by investing directly in infrastructure projects, alone or in partnership with the private sector. Poor policy decisions could lock the economy into inadequate infrastructure systems for many years to come, placing a heavy burden on future prosperity.

The evidence reviewed in this paper suggests that the way the UK makes strategic infrastructure decisions is inefficient and often lacks public support. The most significant problems include short-sightedness and lack of a forward-looking strategy; lack of cross-party agreement with the associated political risk and uncertainty having an impact on private investment and/or the cost of capital; deficiencies in the evidence base underpinning projects that have cross-party support; and local community opposition, which often leads to political procrastination.

These problems are associated with a lack of strong deliberative institutions that effectively engage politicians, experts, interest groups and local communities in the policymaking process. This institutional gap often leaves the political process exposed to unconstructive interactions between party-political tactics, pressures from interest groups with legitimate claims on infrastructure decisions, and hostility from local communities to individual projects. This has been taking place in an increasingly litigious environment, where judicial reviews and other legal challenges become key mechanisms of dispute resolution.

To help the political process move to a more constructive space, the UK needs to create policy forums where relevant affected groups are incentivised to take part in structured, informed discussions of the evidence on the effects of alternative policy options and of the trade-offs that they involve. Our research identified several international examples that present interesting lessons for the UK. They range from policymaking processes designed to facilitate discussion and negotiation between groups with interests in specific infrastructure projects (with a view to reaching agreement on the delivery and operation of those projects) to institutions at arm's length from government being charged with conducting analysis of topical policy issues and engaging the public both in the formative stages of the analysis as well as in the dissemination of the results.

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. The regulatory body's role is to facilitate discussion, negotiation and, if possible, agreement among interested parties. Available evidence suggests this experience might not only help to reduce the costs or risks of litigation, but that it leads to a regulatory regime that is more flexible, and closely tailored to the needs of customers than more traditional forms of regulation.

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, although the effectiveness of the latter is still to be determined.

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. This has given citizens from all walks of life an opportunity to investigate whether a project is worthwhile, to reflect on its objectives and main features, and to express their opinions in ways that can influence the design and implementation of those projects.

Finally, the work of the Australian Productivity Commission has been praised for its role in fostering informed public and political debates through a mixture of solid research and public input and scrutiny. The Commission's public inquiries usually tackle complex, contentious issues that often have significant impacts on different groups in society, including infrastructure policy issues. Ensuring adequate opportunity for public participation and for feedback to be incorporated in the Commission's findings is at the heart of its process. The Commission's work has also offered governments an opportunity to gauge, at arm's length, the likely reactions of those affected by different policy approaches. This helps to reduce the prospects of policy initiatives being undermined by unanticipated responses from adversely-affected groups.

Within the confines of current constitutional architecture, these examples of institutional innovation offer the best guides for reforming the governance of infrastructure investment in the UK.

References

- 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.
- Airports Commission, *Airports Commission: Interim report*, 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.
- Bialkowski, J., Gottschalk, K., & Wisniewski, T.P., 'Stock market volatility around national elections', *Journal of Banking and Finance*, 32, 2008, p.1941-1953.
- Boutchkova, M., Doshi, H., Durnev, A., & Molchanov, A., 'Precarious politics and return volatility', *Review of Financial Studies*, 25(4), 2012, p. 1111-1154.
- Bruijn, 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.

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.

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.

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.

Eliasson, I., Biiresson, M., Odeck, J., & Welde, M., *Does benefit/cost-efficiency influence transport investment decisions?* Centre for Transport Studies – Stockholm, CTS Working Paper 2014:6, 2014, Stockholm.

European Commission, 'State aid SA.34947 (2013/C) (ex 2013/N) – Investment Contract (early Contract for Difference) for the Hinkley Point C New Nuclear Power Station: Invitation to submit comments pursuant to Article 108(2) of the Treaty on the Functioning of the European Union', *Official Journal of the European Union*, OJ C 69, 7.3.2014, 2014, p. 60–98

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.

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>.

Hammes, J., 'The political economy of infrastructure planning in Sweden', *Journal of Transport Economics and Policy*, 47(3), 2013, p. 437-452(16).

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.
- 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.
- 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.
- 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.
- 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.
- Marshall, T., *Infrastructure and Spatial Planning: Netherlands Working Paper*, Department of Planning, Oxford Brookes University, Oxford, 2009a.
- Marshall, T., *Infrastructure and Spatial Planning: France Working Paper*, Department of Planning, Oxford Brookes University, Oxford, 2009b.
- Moody's, 'Concerns About the Affordability of Energy Policy Increase Political Risk to the Detriment of Credit Quality', *Moody's Investors Service: Special comment*, London, 2013.
- 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.
- 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.
- 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.
- 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.
- Priemus, H., 'Decision-making on mega-projects: Drifting on political discontinuity and market dynamics', *European Journal of Transport and Infrastructure Research*, 10(1), 2010, p. 19-29.
- Priemus, H., 'Decision-making on large infrastructure projects: The role of the Dutch parliament', *Transportation planning and Technology*, 30(1), 2007, p. 71-93.
- 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.

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 7th Nordic Conference on Construction Economics and Organisation 2013: Green Urbanisation – Implications for Value Creation*, Akademika Publishing, 2013.

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.

