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The realities of carbon management – why governance matters in the transport sector

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Abstract

This paper explores the development and implementation of carbon management policies in the transport sector. It draws on the framework of multi-level governance to consider the interaction between elected bodies acting at different spatial scales from the EU to the local level and between these bodies and the range of non-governmental stakeholders that influence the system. It provides insights into the strengths and limitations of carbon management in this complex sector and suggests ways in which more effective governance could be brought about.

The paper presents a case study of the UK. The data draws on a combination of documentary review surrounding the framework for carbon management and current policy proposals, interviews with 59 governmental and non-governmental stakeholders engaged in carbon management. The interviews were conducted at a local scale with two cities in England, two cities in Scotland, at a national scale in Scotland and England and at the European level. This will feed into a series of stakeholder workshops which will be underway by the time of the conference.

The research identifies a clear rationale for carbon management which derives from global environmental agreements. Beyond this however several factors combine to make the implementation of carbon management policies a complex policy problem. These include perceptions of the importance of the economy relative to the carbon management agenda, a lack of clear accountability for carbon goals and considerable uncertainty about the role and timing of technology change. Whilst institutional differences exist between the cities and countries studied, these appear secondary in explaining the limited progress made to date compared to the bigger questions of the focus on economic growth and poorly defined accountability structures.

1. Introduction

Climate change is taken to be a major global environmental challenge and, within this, CO_2 emissions from transport are a significant contributor to the problem (Ryley and Chapman, 2012). Globally, transport accounts for 23% of CO_2 (IEA, 2011). Whilst a great degree of uncertainty exists about the speed with which climate change will occur and the nature of the impacts that different degrees of warming will bring, it is held that we are already likely to experience an average temperature rise of at least 2 Celsius and, unless significant emissions reductions are achieved this could be much higher (Kahn Ribeiro et al., 2007).

The UK has, in many respects, taken the lead on developing a framework for action to reduce CO_2 emissions. A key actor in the development of the Kyoto Protocol (1997) the UK

has since gone on to become the first nation to commit itself, through the Climate Change Act 2008, to a legally binding target of at least an 80 percent cut in greenhouse gas emissions by 2050 (relative to 1990 levels). Progress is to be tracked by an interim emission reduction of 34 percent by 2020, with interim rolling five-year budgets (CCC, 2008). In Scotland, these targets have been taken further, with the Climate Change (Scotland) Act 2009 setting an 'interim target' of a 42 percent reduction in GHG emissions by 2020 (independently of any international agreement), with requirement to set annual targets.

Domestic transport emissions account for 20% of UK GHG emissions and 24% of UK CO_2 emissions. They rose by 8% over the period to 2007 and fell by 8% to 2009 due to a combination of efficiency improvements in vehicles and the recession. Emissions were unchanged in 2010 and preliminary assessments suggest they only fell slightly in 2011 (see Figure 1). To achieve an 80% reduction in carbon across the UK economy will require action across all sectors. The action does not have to be equal across all sectors or to proceed at similar rates. However, as emissions from transport represent one fifth of the UK total for domestic GHG emissions transport must play a significant role in moving to a low carbon economy (DfT, 2009a).
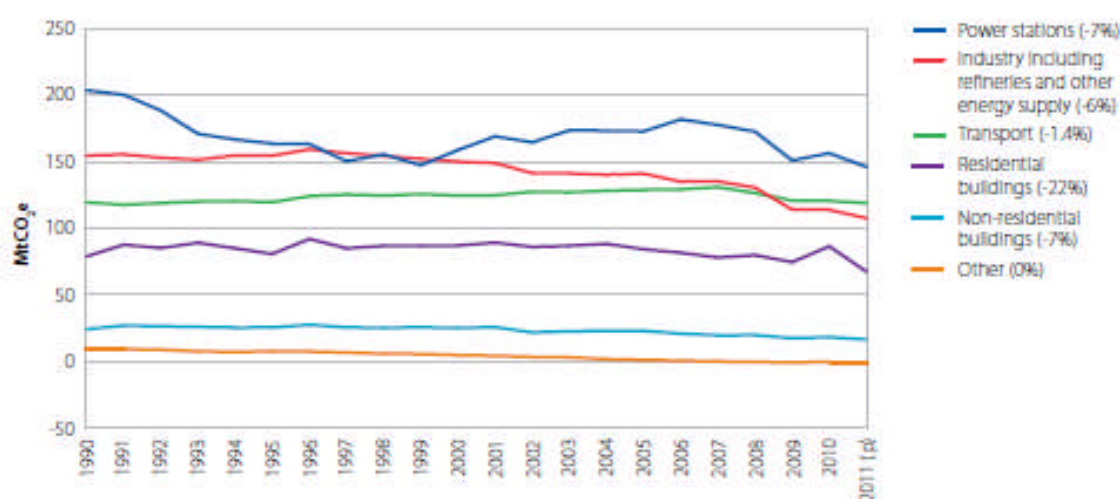
Source: DECC (2012) 2011 UK greenhouse gas emissions, provisional figures

Figure 1: UK CO_2 emissions by sector on a source basis (CCC, 2012, p55)

It is clear that solutions will involve a complex policy mix involving new technologies, new pricing structures and new forms of behaviour. There is considerable debate about what the pathways could and should be to any plausible future (Hickman & Banister, 2012). Literature on socio-technical transitions provides one account of how transition pathways might emerge, describing how innovations enter (or are rejected) the mainstream 'regime' (Geels, 2005). The mainstream regime is characterised by broad notions of interactions between suppliers, markets, science, policy, culture (what might be considered to be the current formal and informal institutions for decision-making). Banister et al. review a broad range of theoretical perspectives and conclude that the "current organisational and institutional structures may be inappropriate when it comes to addressing climate change and transport" (Banister et al., 2012, p468), i.e. the current institutional set up will not facilitate the uptake of carbon reducing policies at the intensity or rate that may be required.

In addition to challenges at the regime level, there is a further set of considerations at what is referred to as the higher 'landscape' level, defined as "aspects of the wider exogenous environment that affect socio-technical development" (Geels, 2005, p451). Whitmarsh (2012) reviews the multi-level perspective on niche and regime level transition theory and raises concern that important elements are not yet covered, particularly with respect to landscape which is treated as "something of a 'black box' in which anything that does not readily fit at lower levels is placed" (p485). This is potentially important as "global, long-term trends (e.g., in GDP) are far from separate from institutions implementing local, everyday decision making (e.g., investing, policy-making)" (Ibid.). Taken together these critiques suggest that to fully

understand how governance arrangements will facilitate or stymie a low carbon transition we need to explore the institutions, how they operate and how they influence and are influenced by the broader landscape in which policy change is enacted.

Giddens (2009) suggests that whilst there is now a wave of awareness of the need to act, there is a need to embed climate reduction policies "in our institutions and in the everyday concerns of citizens, and here,…there is a great deal of work to do" (p4). He argues that the state is an "all important actor" (p5) from a local to an international level, in setting treaties and in enacting their delivery, in supporting embryonic technologies and in working with markets and the private sector to ensure that the true costs of climate change are reflected in prices. The market, as argued by Giddens (2009), can produce results that no other agency or framework is able to – but only if steered to do so. However others including Bowers (1997) has criticised the idea of markets which reflect the 'true cost' of environmental externalities, arguing that these should understood as political problems rather than market failures. One basis for his claim is that environmental problems tend to emerge so create externalities which did not previously exist, and as such it is problematic to claim that the market had been failing to take account of them. There are further questions about how any market could be designed, steered or regulated in order to produce a price for carbon which results in sufficient reductions in emissions, particularly in contexts where emissions reduction is only one among several goals (Ellerman and Buchner 2007; Stott 2012). Whether the markets or the state are seen as key delivery agents, the state retains a critical role in steering policy.

Despite the number of commentators reflecting on the weakness of institutional structures, there have been few investigations of the detail of the governance of carbon management. Marsden and Rye (2010) reviewed progress against stated carbon reduction objectives at a national level in Scotland and England. As a review based study there are limitations to the interpretation of their findings. However, they concluded that there was little difference between the two administrations and that a lack of clarity over the carbon management framework amongst state and non-state actors was a major brake on the implementation of policies beyond the improvement to new car fuel standards. Important issues regarding carbon accounting had also not been agreed which created opportunities to shift accountability for emissions reduction (p677).

This paper addresses the lack of detailed accounts of governance of carbon management in the transport sector by reporting on a study of carbon management frameworks in four parts of the UK using interviews with local and national actors in the public, private and third sector (such as campaign charities). Britain is a multi-level polity in which policy-making and implementation involves a range of (public, private and third sector) actors and in this context a distinction can be made between *territorial* decentralisation and *functional* decentralisation. Territorial decentralisation involves the delegation of functions to broad multi-purpose tiers of sub-national governance. This has been a central dynamic of British governance since the introduction of an asymmetrical pattern of devolution to Scotland, Wales and Northern Ireland in 1998. Functional decentralisation, by contrast, emphasises the delegation of functions, both vertically and horizontally, generally to single-purpose quasi-autonomous agencies. The existence of complexity, fragmentation and significant levels of organisational autonomy within chains of delegation poses distinct questions for the central steering capacity of politicians, the scrutiny capacity of democratic arenas, and the overall efficacy of the system as a whole. It is in this context that the concept of 'multi-level governance' (MLG) (Bache and Flinders 2004; Piattoni, 2010) has been developed in order to understand the nature and structure of governing networks and their inter-relationship with issues such as control, capacity, accountability and efficiency. Of particular relevance here is the work of Marks and Hooghe on types of MLG in which they distinguish between Type I (i.e. *territorial* decentralisation and Type II (*functional* decentralisation) forms of MLG. The topography of the British state is made up of a relatively clear structure of Type I MLG around which an increasingly opaque plethora of Type II MLG organisations exists.

MLG has proved an effective framework through which to unravel and map-out the policy-making process in a range of sectors (economic policy, regional policy, environmental policy, etc.) while also delivering greater precision in relation to conceptual debates around

democratic accountability and legitimacy (Hooghe and Marks, (2001). It also invites consideration of new forms of governance where local or sub-regional government bypasses national government to become beacons of innovation (Camagni 2002; Bulkeley and Betsill, 2005; Kresl 2012). Multi-level governance is particularly useful in the context of carbon management as it is a policy problem that crosses different spatial scales of government and influences and is influenced by a myriad of private and non-governmental interests. The framework is used to help make sense of the following research questions which derive from studies of governance in other sectors and the work of Marsden and Rye (2010), Banister et al. (2012) and Whitmarsh (2012) reviewed above.

1. To what extent does the policy environment outside of transport shape the nature of carbon policy in the transport sector?
2. Is there a clear framework of accountability for carbon reduction across the different levels and actors?
3. Do national or local differences in governance structures lead to different types of policy and policy outcomes?
4. To what extent can we expect city-regions to lead carbon reduction policy?

The paper begins by providing a brief introduction to the carbon management legislation in the UK before presenting the four case study areas and introducing the data collection. Four areas were chosen, two in England and two in Scotland, to allow a degree of within and cross-national comparison to emerge. The key findings are then presented from the interviews, organised by the research questions set out above before some conclusions are drawn about the nature of the governance problem and potential actions in the short and long-run.

2. Carbon Management in the UK

The evidence base on the impact of increasing carbon dioxide emissions on levels of global warming has changed significantly over the past two decades (IPCC (1990), King (2004), and STERN et al (2006); Kahn Ribeiro et al. 2007). The evidence has both strengthened in its confidence of the role of man-made emissions but also with respect to identifying the levels of atmospheric greenhouse gas emissions that will lead to different levels of temperature change. The changing scientific knowledge base has been followed by a changing political acceptance of the need for action as reflected by the history of carbon reduction goals in the UK set out in Table 1.

Formal international accountability for carbon reduction began through the Kyoto protocol of 1997 where the UK set a target of reducing CO_2 emissions to 12.5% below 1990 levels by 2012. In 2003 a more ambitious 60% reduction by 2050 was set (DTI, 2003) and then, following the STERN review of the economics of climate change a target of an 80% reduction below 1990 levels by 2050 was set as part of a new national Climate Change Act (DECC, 2008). The Climate Change Act also established an independent Committee on Climate Change which is tasked with setting interim targets, advising on opportunities and reporting annually to parliament on progress. Four interim targets are to be set as shown in Table 1. The Committee on Climate Change currently advises on the implementation of the Climate Change (Scotland) Act 2009, which requires secondary legislation setting annual targets between 2012 and 2050.

Table 1: Key targets set for reducing CO2 emissions in the UK (between 1990 – 2011)

Date	Target	Document	Achieved by the UK
1990	Stabilising CO_2 emissions at 1990 levels by 2005	HM Treasury (1990) White Paper- This common Inheritance	Yes
1992	Stabilising CO_2 emissions at 1990 levels by 2000	Department of Environment (1992)	Yes
1997	CO_2 emissions to 10% below 1990 levels by 2010	Labour Government	Yes
1997	CO_2 emissions to 20% below 1990 levels by 2010	Labour Government	No
1997	CO_2 emissions to 12.5% below 1990 levels by 2012	UK Kyoto Target	Yes
2003	Reducing CO_2 emissions by ~60% below 1990 levels by 2050	DTI (2003)	(Replaced)
2005	Reduce CO_2 emission to 12.5% by 2012 and move towards a 20% by 2010 (joint responsibility with DEFRA, DfT and DTI)	HM Treasury (2004)	(Replaced)
2007	Scottish National Performance Framework: 'Purpose targets': To reduce emissions over the period to 2011 To reduce emissions by 80 percent by 2050	Scottish Government	Emissions reduced between 2007-2009. 80% target formed part of 2009 Act
2008	CO2 emissions to at least 80% below 1990 levels by 2050.	DECC (2008) Climate Change Act 2008	--
2008	Reduce UK CO_2 emissions from 1990 levels by 26-32% by 2020 and by at least 60% by 2050. (Responsibility DEFRA)	HM Treasury (2007)	---
2009	CO_2 emissions to 34% below 1990 levels by 2022	Labour Government 1st Three 5 carbon budgets	--
2009	Domestic transport CO_2 cut by 14% on 2008 levels by 2020	DfT(2009) Low Carbon Transport: A Greener Future	(Replaced by the uk Low Carbon Transition Plan
2009	Low Carbon Transition Plan. DfT has responsibility for transport measures	HM Treasury (2009)	
2009	Climate Change (Scotland) Act - 80% GHG emission reduction by 2050; 42% reduction by 2020 (CO_2 baseline 1990, other GHG baseline 1990/1995)	Scottish Government	-
2011	UK CO2 emissions to be cut 50% below 1990 levels by 2027 including 34% below 1990 levels by 2022 and 50% below 1990 levels by 2027.	4th Carbon Budget	--

As noted in Section 1, the adoption of an 80% target necessitates an almost complete decarbonisation of road transport at some point before 2050. The interim targets also require transport to play a role en-route to 2050 although the speed and nature of this change is at the heart of the debates in this paper. There are multiple pathways with different balances of technological improvement and behavioural adaptation. However some pathways may not be effective in reaching the 80% reduction. The Committee on Climate Change, in its initial

report on the potential for carbon abatement across all sectors identified a range of reduction options for transport of between 5MtC (4%) and 32 MtC (25%) by 2022. As a reference point for the interviews, Table 2 sets out the key policy commitments which the Committee on Climate Change believes should be adopted. They are very heavily skewed towards a technological solution, partly because these interventions are deemed easier to estimate and evaluate despite the uncertainty over whether they will be realised.

Table 2: Policy Options in First Report of the Committee on Climate Change (2008)

Measure	Current Ambition	Extended Ambition	Stretch Ambition
Car- powertrain- hybrid	-4.1		
Car- nonpowertrain- large cars	-0.2		
Van-powertrain- stop start (slower uptake)	-0.1		
Van-nonpowertrain (slower uptake)	-0.3		
HGV- nonpowertrain (slower uptake)	-0.3		
Total	**-5.0**		
Biofuels		-5.0	
Car- powertrain- plug-in hybrid and electric		-8.7	
Car- nonpowertrain- all cars		-2.9	
Van-powertrain- stop start		-0.3	
Van-nonpowertrain		-0.8	
HGV- powertrain- hybrid		-0.2	
HGV- nonpowertrain		-0.7	
Rail- efficiency measures		-0.6	
Demand- Smarter Choices		-2.9	
Demand- Eco driving - cars		-0.3	
Demand-Eco driving - vans		-0.1	
Demand-Eco driving -HGV		-0.9	
Total abatement		**-23.3**	
Van-powertrain- plug-in hybrid and electric			-2.4
HGV-powertrain- plug-in and electric			-0.3
HGV- nonpowertrain- incl aero and weightreduction			-0.7
Speed reduction and enforcement at 60mph			-5.2
Eco-driving cars - far reaching			-1.0
Eco-driving vans - far reaching			-0.3
Total			**-31.7**

Source: CCC (2008), p297

In England, the Department for Transport is responsible for transport's contribution to the Government's carbon plan as set out in DECC (2011), although the quantification of, and accountability for this responsibility is somewhat opaque. In Scotland, public bodies have a duty in 'exercising its functions' to 'act in the way best calculated to contribute to the delivery of the targets set out in the Act' (Climate Change (Scotland) Act 2009, Part 4). This is also unclear.

3. Study Areas and Methodology

The Climate Change Act 2008 identified that the UK's carbon management framework is acknowledged to have a "complex interplay of reserved and devolved responsibilities" (DEFRA, 2008, p12). This complexity is illustrated by the introduction of the Climate Change (Scotland) Act 2009 and the Scottish (and Welsh) governments' responsibility for transport. Our methodological approach was therefore to select two case study areas in England and two in Scotland to allow us to explore the extent to which the different institutional structures and governance arrangements that exist within England and Scotland at a national and sub-national level might explain differences in levels of carbon reduction ambition and policy choices to reach these levels.

The four case study areas selected were Leeds and Manchester City Regions in England and Edinburgh and Glasgow City Regions in Scotland. All four are major city regions and both pairs of national case studies are also relatively close neighbours connected by major motorway and rail routes within around a one hour journey time. A brief description of each case study area can be found in Table 3.

Table 3: Case Study Descriptions

City Region	Population	Context	Carbon Policy
Leeds	2,954,700[a]	Leeds City Region was not a formal administrative area but was considered a functional economic area.[d] It has recently gained certain powers including greater control over transport involving establishment of a West Yorkshire Transport Fund.[e]	The City Region includes a private sector led Green Economy Panel which has produced an agenda for actions towards a low carbon economy. In keeping with DfT guidance on the 3rd Local Transport Plans (LTP3), the West Yorkshire LTP3 includes Low Carbon among its objectives.
Manchester	2,685,400[a]	Greater Manchester has been given powers by government allowing formation of a Combined Authority and Transport for Greater Manchester which has significant control over transport in the city region.	The Greater Manchester Climate Change Strategy (GMCCS) has a target of 48% reduction in carbon emissions by 2020. The Strategy includes plans for targets for emission reduction from transport through implementation of the Greater Manchester LTO3 and national funding including the Local Sustainable Transport Funds [f]
Edinburgh	1,600,000[b]	Edinburgh City Region includes nine local authorities. The Regional Transport Partnership	The City Region Economic Review describes intentions to develop a low carbon economy. Similarly the Regional Transport Partnership includes measures to reduce emissions from transport (as required by the 2009 Act)[g]
Glasgow	1,195,200[c]	Glasgow City Region includes eight local authorities	The 'vision for the Glasgow City Region 2008-2013 includes an objective of sustainable development which in turn includes mention of 'renewable energy and reduction of pollution.'[h] The Strathclyde Partnership for Transport Regional Transport Strategy, includes carbon reduction from the transport sector as an indicator. [i]

a. ONS 2011
b. Edinburgh City Region Economic Review 2011
c. National Records of Scotland (2012
d. Leeds City Region website
e. HM Treasury (18/09/12)
f. GMCCS 2011
g. SESTRAN *Regional Transport Strategy 2008-2023*
h. Metropolitan Vision – our vision for the Glasgow City Region 2008-2013
i. Strathclyde Partnership for Transport 2008

The 51 semi structured interviews, involving 59 people, were conducted between Autumn 2011 and Autumn 2012. At European level there were two interviews with Environment

officers, one with a politician, and one with an environmental NGO. For England the national actors interviewed included two from national government, one from advisory body, and a further two organisations with responsibility for infrastructure. At the national level in England, two interviews involved those working private sector transport providers, and five interviews were conducted with members of non-governmental organisations including environmental and sustainable transport organisations and those supporting passengers' interests. In Scotland there were two interviews with people currently or formerly with the government, one a civil servant and one politician, and one with a representative of local authorities. There were a further three with officers from government agencies for transport and business, two with private sector transport providers, one with a networking body for industry, and one with a third sector environmental organisation. For each of the city-regions interviews were held with actors as follows:

- Edinburgh - an officer of the Regional Transport Partnership, an officer from Edinburgh City Council, a manager from a private sector transport provider and a member of a sustainable transport third sector organisation.
- Glasgow - an officer of the Regional Transport Partnership, an officer from Glasgow City Council and one with a partnership on sustainability, a representative of a private sector transport provider and a member of the Chamber of Commerce.
- Leeds - three with officers of the Passenger Transport Executive, an elected member of the Integrated Transport Authority, two officers of Leeds City Council and one with an environmental campaigner.
- Manchester - two with officers from Transport for Greater Manchester, two with officers from Manchester City Council, one with officers from Stockport council, a member of the Chamber of Commerce, a representative of a private sector transport provider and two with third sector organisations.

4. Findings

4.1   Macro environment
The macro political environment within which climate change policy sits has changed significantly over the past three years in three dimensions. First, all of the governmental actors made substantial reference to greatly increased focus on economic growth, tending to be framed as employment growth both in a national and local context, for example

> "the clear policy driver is economic growth"
>
> (West Yorkshire)

Accounts of this emphasis on economic growth were framed a number of different ways which may in part be explained by the professional role of the interviewee as well as by individual opinion and judgments. However, notions of delaying significant efforts to cut emissions and a sense of drift in promoting carbon reduction were prevalent across the case study areas. The changing economic environment has also created further tensions in the way in which the climate change policy debate is framed and developed. In particular, the return to notions of major infrastructure investment as a key input to stimulate economic growth was seen to be a mixed blessing. Whilst projects such as electrification of rail and public transport scheme enhancements were seen to have the potential to be supportive to a low carbon agenda, new roads, bypasses and widening schemes were seen to be short-term wins which would ultimately generate more traffic and emissions.

The changing financial environment for governments nationally and locally was also a major influencing factor. Less funding is available locally for technology grants, for public engagement exercises, to support socially necessary public transport services and for staff to promote more holistic integrated planning. In addition, decisions to rebalance the burden between the tax payer and fare payer on rail also put some pressures on making lower carbon travel choices. In summary, the actors described an environment in which some good ideas were being progressed (e.g. English Local Sustainable Travel Fund, grants for clean technology) whilst existing initiatives were diminished and new initiatives which were inconsistent with the carbon reduction agenda were being pushed through. This was seen by

some to undermine or challenge the potential to communicate a consistent low carbon strategy.

The third set of factors related to changing political agendas with the Scottish National Party and the Conservative-Liberal coalition both leading to changing narratives and priorities with respect to central-local steering. A move towards localism but away from regionalism and a move away from a target and indicators driven management regime has played out differently in Scotland and England but with broadly similar impacts on transport and climate change. Localism featured in various different ways. In Scotland, for example, the decision to remove the ring-fencing for transport spend was seen as a risk to the delivery of effective transport strategies, particularly whilst public expenditure is so constrained. Participants talked of funding levels as low as one quarter or 30 per cent of previous levels within their areas of activity in different city regions in both countries. In England, there has been a shift away from centrally imposed targets and reporting over the past five years but there is still a deference to central goals and a desire to align with national priorities to enhance the potential to capture new funding opportunities. Whilst aspects of the central-local top down thinking remain there are uncertainties present in determining who should lead on carbon reduction.

In summary, the macro environment within which policy is being created is not favourable for a number of aspects of the low carbon agenda. At the very least, it creates a number of contradictions that undermine an integrated approach.

4.2   Accountability

At the time of the Climate Change Act, the Labour administration in England was developing an approach whereby each government department would have a notional carbon target for which they would be held accountable. The current administrative arrangements for carbon governance appear more opaque and are summarised below.

At a UK level, the Secretary of State for the Department of Environment and Climate Change is accountable for the UK meeting its international obligations and for the progress against the carbon budgets agreed by Parliament. National government officials confirmed that there is no obligation for the Department for Transport to meet a specified target and that commitments in the Carbon Plan were indicative rather than prescriptive. The situation in Scotland is similar, despite the slightly more stringent interim target for 2020 in the Climate Change Act Scotland 2009:

> "there's this kind of desire to say the right things in terms of the environment
> but a reluctance to follow through..."
>
> (Glasgow)

Interestingly, actors in England and Scotland in the public and private sector commonly referred in some way to the 80% reduction target by 2050 with some interpreting this as being a general guiding goal and others as something which would ultimately also apply to transport. There was strong acceptance of this long-term goal. Some believe that the Department for Transport has a target, others know this not to be the case. There is a lack of clarity over who is responsible for what and by when. This impacts in a range of ways, for example, influencing what is expected from rail operators when bidding for train franchises. How will contract costs be treated relative to carbon?

Local governments have adopted carbon reduction targets for their own activities and while some have kept close to national guidance, others have set ambitious visions beyond this. Some authorities such as Manchester and Birmingham also include all transport emissions in their targets whilst the other three study areas have yet to make a clear commitment but are working towards establishing what this might be. However, it was suggested by national level and accepted or restated by local level stakeholders that local players do not have all of the levers and the targets which are set appear more aspirational than grounded in a sense of deliverable reality.

There is also a lack of consistency over what constitutes the carbon footprint of a particular locality. No standard tool or methodology appears to be in play. Arguments persist about whether through traffic counts and the extent to which airports or ports should be attributed to a particular authority. Coupled with this is a concern that the carbon impacts of specific interventions (such as a quality bus corridor) appear too small to measure. There appears to be comparatively little joining up of the sum of the parts to understand what progress is really being made. Different approaches to this have been adopted with, for example, West Yorkshire looking at measures such as mode share as a proxy for carbon reduction, although here too it is acknowledged that this could mask growth in absolute terms or rather limited progress in reductions. We suggest that the methodological uncertainty is a facet of the governance framework being vague and the priority for action being elsewhere. The lack of measurement standardisation apparently provides a mechanism by which to avoid the difficulties that working towards a target might create.

Local actors have been left to reach their own conclusions about the contribution they should propose to the reduction in the national carbon budget. Within this, they have to make assumptions about the rate of technological change and the extent to which reductions in travel activity through behaviour change programmes should play a role. Given the mixed messages that exist in the macro policy environment it seems that none of the four case study areas had adopted a clear approach to carbon reduction in the short-run. None of the authority areas was able to demonstrate a clear and/or strong line of accountability internally for carbon reduction that appeared to command action. The requirements are not clear and/or not clearly communicated from a national level. It can be of little surprise therefore that they are interpreted differently or are not influential at a local level.

4.3 Governance structures

Thus far, the discussion has focussed on macro issues which seem to have beset all of the case study areas. The case studies were chosen as they exhibit a variety of governance structures (Table 3).

At a national level there were some differences in the flavour of national policy or in the timing of specific initiatives such as cleaner fuel grants. Notwithstanding the different make up of the English and Scottish administrations, there appeared to be little evidence that these structures made a difference to the focus on the economy, the cloudy carbon governance framework or the limited resources in local government.

At a local level however some potentially more significant differences began to emerge. It is important to state however that these differences appear relatively small in importance compared with the issues addressed under 4.1 and 4.2.

Greater Manchester has recently reformed its governance structures to create a new integrated transport delivery arm as well as a new political decision-making body to accompany it (GM Combined Authority Order 2011, Part 3). Whilst the participants there described it as early days in the process, they identified potential opportunities to tackle climate change in a more integrated manner. The 10 authorities would now produce one combined climate change action plan, the Greater Manchester Climate Change Strategy for the area. The pooling of resources between the 10 authorities changes the potential borrowing capacity for the region which could deliver more sustainable solutions. While the West Yorkshire 3rd Local Transport Plan includes carbon reduction among its objectives, this appears a direct reflection of national guidance (DfT 2009b). Moreover, even though Leeds City Region has relatively recently gained additional powers over transport, including some pooling of Funds for the Local Transport Fund, it is unclear whether this has prompted a further shift to interventions intended to have a substantial impact on transport emissions. Indeed the complaint of third sector actors was that carbon reduction had begun to be largely ignored regional transport planning.

Edinburgh City Council has a significant stake in Lothian buses, one of two local operators, and both identified this as an important factor in securing investment to improve the technology of Lothian's bus fleet, particularly notable relative to the other major operator in

the city. Whilst other areas have very limited control over the bus fleet, which was perceived to be a major constraint in tackling travel behaviour, there is also evidence of greening the fleet in parts of West Yorkshire for example so it may be the presence of progressive individuals in both the operators and authorities and the opportunity space offered by national funding rather than necessarily the ownership structure which explains progress.

Organisational culture and the path dependency of policy appeared as an interesting potential dynamic within the discourse. Edinburgh reflected on a heavy engineering culture within the organisation which was not conducive to accelerated behaviour change initiatives although could support public realm improvements. Greater Manchester recognised that it was comparatively new to a holistic behaviour change agenda compared to Merseyside for example. In West Yorkshire the transition from a public transport authority and executive to an integrated transport authority and executive reflected its relative infancy, with a very strong public transport focus still from some of the interviewees. These differences should not be over interpreted as they can be strongly shaped by an individual's world view. Nonetheless, it appears that there is a need to consider the extent to which communities of practice are capable of adjusting to radically different policy agendas.

Although aware of issues such as the treatment of aviation at a European level (e.g. in the context of emissions from Manchester Airport) there was little mention of the role of the EU in climate emissions reduction. The key legislation and act was the UK and Scottish Climate Change Acts. By contrast, most authorities were talking very actively of the role of the European Union air quality directive. This directive applies directly to measurable problems which they can be held directly accountable for. The study did not seek to explore the different ways in which authorities responded to this legislation but it is important to highlight the different dynamic that clear accountability appeared to create.

Local governance structures and past practices seem likely to matter in the manner in which policy change is and will be enacted. However, they appear to offer little influence on making carbon policy matter and the voice of NGO groups does not appear to be as strong at a local compared to national level. In the light of these findings it is perhaps unsurprising that there was comparatively little evidence of local authorities seeking to adopt a position as policy innovators and supporting these aims by accessing resources beyond the state through greater Europeanization. Whilst examples of European project working were cited by some participants, there was a far stronger pull provided by the resources and expertise typically available at the Scottish or English national government level.

The offering of grant income for new technology or the arrangements for new rail franchises are still matters which the national governments have a significant role in, albeit within a context of broader European regulation. It was to the Department for Transport, Scottish Government, Committee on Climate Change or technical advice funded by national governments that the participants turned to in developing their carbon strategies. Indeed, the continued importance of national project appraisal guidelines for new projects and investments seems to be extremely important in keeping the national government advice as primary.

The Committee on Climate Change saw itself as taking a role of scanning for best practices and urging government to promote such policies. There is therefore some degree of cross-national fertilization taking place but this is second hand, centralized and quite high-level. Whilst local structures do matter, there is a strong influence still from national governments in incentivising and setting the framework for policy.

5. Discussion

This paper began by highlighting the apparent imperative of a better understanding of institutional structures to better understand the carbon management arrangements for transport. Institutions undoubtedly matter, as do the governance relationships, networks and resource distributions amongst them. The overwhelming conclusion of this research however is that the broader policy environment matters and, in the current context matters more than the details of the delivery structures at a local level. Whilst changes in political emphasis on

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central-local level dynamics have had an impact, it is difficult to identify the importance of a particular party-political divide relative to the imperative for economic growth and the thinning out of local government resources.

Whitmarsh raised concerns over the location of difficult macro-level issues in some form of black box which, we argue, is marked 'too difficult' or 'not transport studies'. This critique appears valid as the absence of any powerful narratives which were able to bring together the economic and environmental imperatives. This has brought forward further conflicts and inconsistencies which are acknowledged at a technical level and which, in turn, would surely undermine any form of ambitious public engagement (i.e. "travel less but here are some more roads to stimulate economic growth and travel").

How is it possible to avoid the environmental imperative given the apparent commitment of the UK government to carbon reduction targets at the very highest level? We hypothesise that the failure to establish clear accountability for progress across sectors or spatial scales suits all parties as there is no need to commit to anything that is not readily deliverable (Flinders et al., 2013). The recession and limited growth in the economy is a perfect smokescreen to hide limited progress in addressing the structural drivers of emissions such as road traffic levels.

It can be argued that the degree of uncertainty in technological and policy change is so great as to render target setting potentially distortive (Hood, 2006). Muddling through without a clear set of policy goals is not an unworkable solution but the evidence gathered here suggests it will be insufficiently effective and slow, certainly if early gains from the transport sector implied in Table 2 are to be realised (Marsden et al., 2013).

The Committee on Climate Change has recently recommended that rather than adopting holistic carbon targets "local authorities should draw up low-carbon plans which include a high level ambition for emissions reduction ...but focus on drivers of emissions over which they have influence (e.g. number of homes insulated, car miles travelled[1])." (CCC. 2012, p9). There was significant opposition in this research, on economic grounds, to restraint measures and potential reductions in car travel. In the absence of a model of economic growth which does not go hand in hand with traffic growth it is difficult to see this position changing.

Climate change is a long-term policy objective with little local payback for action, certainly in the transport sector. This is a policy problem that requires collective action for the collective good. The incentives provided and accountability structures that are negotiated or imposed (or otherwise) from the nation state or EU therefore seem likely to matter. In a period of diminished local funding and significant hollowing out of local government capacity, we see little sign of bottom up innovation emerging which will set the pace for national government in the UK, certainly outside of London. There are also important long-term private sector investment decisions that require a certainty that cuts across many local authority areas and which may therefore best be steered by national government. This is not a call for the problem of carbon emissions reduction to be solved by national governments. However, there remains much to be done to demonstrate that this really should matter to other delivery agencies (public and private) and to provide a steering framework that rewards innovation and action.

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[1] Is this simply the recreation of the Road Traffic Reduction Act of 1998 which has been quietly buried in the midst of time with little or no impact?

References

Bache, I and Flinders, M (2004) Multi-level Governance, Oxford: Oxford University Press

Banister, D., Scwhanen, T. and Anable, J. (2012) Introduction to the special section on theoretical perspectives on climate change mitigation in transport, *Journal of Transport Geography*, **24**, 467–470

Bowers, J. (1997) *Sustainability and Environmental Economics; An Alternative Text.* Longman.

Bulkeley, H. and Betshill, M., (2005) Rethinking Sustainable Cities: Multilevel Governance and the 'Urban' Politics of Climate Change. Environmental Politics 14(1), 42-63.

Camagni, R. (2002) On the Concept of Territorial Competitiveness: Sound or Misleading? *Urban Studies*, 39 (13), pp. 2395–2411

CCC (2008) Building a low-carbon economy – The UK's contribution to tackling climate change, The First Report of the Committee on Climate Change, London.

CCC (2012) How local authorities can reduce emissions and manage climate risk, Committee on Climate Change, London.

DECC, 2008. Climate Change Bill - key provisions. Department for Food, Environment and Rural Affairs, London.

DECC (2011) Carbon Plan, March 2011, http://www.decc.gov.uk/en/content/cms/what_we_do/lc_uk/carbon_plan/carbon_plan.aspx [Accessed 12th May 2011]

DfT (2009a) Low Carbon Transport: A Greener Future. A carbon reduction strategy for transport, July 2009, Cm 7682, Department for Transport, London

DfT. (2009b) *Guidance on Local Transport Plans*. London: HMSO

DTI(2003) Energy White Paper. Our energy future – creating a low carbon future. Department for Trade and Industry http://www.berr.gov.uk

Edinburgh City Region Economic Review 2011 (Edinburgh City Region)

Ellerman A. D, Buchner B.K. (2007) The European Union Emissions Trading Scheme: Origins, Allocation, and Early Results *Rev Environ Econ Policy 1, 1, 66-87.*

Flinders, M., Bache, I., Bartle, I. and Marsden, G. et al., (2013) Blame Games and Climate Change: Accountability, multi-level governance and carbon management, draft working paper.

Geels, F. (2005) The Dynamics of Transitions in Socio-technical Systems: A Multi-level Analysis of the Transition Pathway from Horse-drawn Carriages to Automobiles (1860–1930), *Technology Analysis & Strategic Management*,**17**(4), 445–476

Giddens, A. (2009) The Politics of Climate Change, Polity Press, Cambridge

Greater Manchester Climate Change Strategy (GMCCS 2011) Transformation, adaptation and a competitive advantage http://meetings.gmwda.gov.uk/mgConvert2PDF.aspx?ID=8975

Hickman, R., & Banister, D. (2012). Thinking strategically: pathways towards low carbon transport. In T. Ryley, L. Chapman (Eds.), Transport and Climate Change. Emerald.

HM Treasury (18/09/12) Government formalises Leeds City Deal Press Notice 84/12

Hooghe L. and Marks G., (2003) Unravelling the Central State, but How? Types of Multi-level Governance *American Political Science Review* 97, 2, pp. 233-243

Hood, C. (2006) Gaming in Targetworld: The Targets Approach to Managing British Public Services, *Public Administration Review*, **66**(4), 515-521

Hooghe, L., Marks, G., 2001. Types of Multi-level Governance, EioP, 5/11: http://eiop.or.at/eiop/texte/2001-011a.htm

International Energy Agency (IEA 2011) CO_2 Emissions from Fuel Combustion - Highlights. 2011 Edition. (Paris: International Energy Agency)

IPCC (1990) Climate Change: The IPCC Scientific Assessment, Report prepared for Intergovernmental Panel on Climate Change by Working Group I, J.T. Houghton, G.J. Jenkins and J.J. Ephraums (eds.). Cambridge University Press, Cambridge, Great Britain, New York, NY, USA and Melbourne, Australia 410 pp.

Kahn Ribeiro, S., Kobayashi, S., Beuthe, M., et al. (2007) Transport and its infrastructure, in B. Metz, O. R. Davidson, P.R. Bosch, R. Dave, L.A. Meyer, (Eds.) Climate Change 2007: Mitigation. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (Cambridge and New York: Cambridge University Press).

King, D. (2004) reported in "Global warming 'biggest threat'", BBC news online, 9 January, 2004, http://news.bbc.co.uk/1/hi/3381425.stm [Accessed 12th May 2011]

Kresl, P. K. (2012) 'Urban Competitiveness and US Metropolitan Centres.' *Urban Studies* 49, 2, 239-254.

Lyons, G. (2011). Technology Fix Versus Behaviour Change. In Grieco, M. and Urry, J. (eds) *Mobilities: New Perspectives on Transport and Society*, Ashgate.

Marsden, G. and Rye, T. (2010) The governance of transport and climate change, *Journal of Transport Geography*, **18**, 669-678

Marsden, G., Ferreira, A., Bache, I., Bartle, I. and Flinders, M. (2013) Muddling through climate change target setting: A multi-level governance perspective on the transport sector, draft working paper

Metropolitan Vision – our vision for the Glasgow City Region 2008-2013 http://www.glasgow.gov.uk/en/Business/Businesssupport/Research_statistics/metropolitanvision.htm

National Records of Scotland (2012) Mid-2010 Population Estimates for Settlements and Localities in Scotland

Office for National Statistics – Nomis Official Labour Market Statistics (2011) (https://www.nomisweb.co.uk/)

Piattoni, S (2010) 'The Theory of Multi-Level Governance' Oxford University Press

Ryley, T. And Chapman, L. (2012) Transport and Climate Change Issues, Emerald, ISBN 978-1-78052-440-5

SESTRAN Southeast Scotland Transport Partnership, *Regional Transport Strategy 2008-2023* http://www.sestran.gov.uk/files/1206548756.pdf

Stern, N., Peters, S., Bakhshi, V., Bowen, A., Cameron, C., Catovsky, S., Crane, D., Cruickshank, S., Dietz, S., Edmonson, N., Garbett, S-L., Hamid, L., Hoffman, G., Ingram, D., Jones, B., Patmore, N., Radcliffe, H., Sathiyarajah, R., Stock, M., Taylor, C., Vernon, T., Wanjie, H.,and Zenghelis, D., 2006. Stern Review: The Economics of Climate Change, HM Treasury, London.

Stott R. (2012) Contraction and convergence: the best possible solution to the twin problems of climate change and inequity *BMJ 344,1765*

Strathclyde Partnership for Transport (SPT) (2008) A Catalyst for Change Regional Transport Strategy 2008-2021 http://www.spt.co.uk/wmslib/Documents_RTS/catalyst_for_change.pdf

The Greater Manchester Combined Authority Order 2011 http://www.legislation.gov.uk/ukdsi/2011/9780111506318/contents

Whitmarsh, L. (2012) How useful is the Multi-Level Perspective for transport and sustainability research? *Journal of Transport Geography*, **24**, 483-487