Sub-national government responses to reducing the climate impact of cars

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“The one who adapts his policy to the times prospers, and likewise that the one whose policy clashes with the demands of the times does not.”

Niccolò Machiavelli

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Abstract

This D.Phil. thesis is an international comparative study looking at the development and implementation stages of policies tasked to reduce emissions from transport. The substance of policy is all too often the primary focus of research, leaving the settings in which these policies are developed and implemented relatively underexplored. Examining the relationships and interplay that exists between departments responsible for climate change and transport at the sub-national (state) level and those with their local and national counterparts, this research tries to unpick the organisational intricacies that may act as barriers to delivery.

State governments have become a promising source of action to reduce emissions from other sectors for which they have legislative responsibility; however, the private road transport sector remains a challenge. This research examines the barriers preventing such progress and whether the lack of collaboration between departments and across levels of government are responsible in part for these challenges.

Taking a specific policy intervention designed to reduce transport-related emissions from four case study governments (Bavaria, California, Scotland and South Australia) this research is about organisational structures of government and policy processes. The main hypothesis of the research is that conventional environmental/climate change- and transport-policymaking practices are incompatible – and that this incompatibility is hampered by organisational structures of government. Together these factors render implementation of policies to reduce the climate impact of transport difficult. The hypothesis is guided by four research themes – scale, scope, leadership and process. Each of these themes has a distinct yet important part to play in understanding and comparing the case study contexts, in terms of the cross-departmental and cross-level interactions occurring within each of the sub-national governments.

Each of the subject case study governments have been chosen since they are self-determined 'leaders' on climate change. This research serves to highlight some of the governance issues that need to be overcome or removed for such positive political intent to be realised. It posits that without successfully linking frameworks and interested stakeholders in the process, tangible emissions reductions will be difficult to achieve.

The main objective of the research is to investigate the frameworks, interplay and dynamics at the sub-national level of government across departments and between levels of government. The relationship and collaboration with industry is also examined as a supplementary consideration. The second objective is to look at how and whether climate change policy can be more closely integrated with transport policy and the barriers to this integration.

This investigation is underpinned by cross-disciplinary governance theory, as well as notions from socio-political governance and applies the concept of institutional interplay in this context between levels of government. It develops the concept of sub-national governance which argues that relationships between levels are distinct and non-hierarchical in terms of policy development and implementation.

Abbreviations

AB 32 – Assembly Bill 32
ACEA – European Automobile Manufacturers Association
ACT – Australian Capital Territory
AGO – Australian Greenhouse Office
APS – Alternative Planning Strategy
ARB – Air Resources Board (see CARB)

BAIKA – Bayerische Innovations- und Kooperationsinitiative Automobilzulieferindustrie
BAU – Business-as-usual
BMU – Bundesministerium für Umwelt, Naturschutz and Reaktorsicherheit
BMVBS – Bundesministerium für Verkehr, Bau und Stadtentwicklung
BMW – Bayerische Motoren Werke AG
BPA – British Parking Association
BVB – Bayerische Vertretung in Brüssel

CA – California
CAA – Clean Air Act
CalEPA – California Environmental Protection Agency
Caltrans – California Department of Transportation
CARB – California Air Resources Board (see ARB)
CARS 21 – Competitive Automotive Regulatory System for the 21st century
CAT – Climate Action Team
CCC – Committee on Climate Change
CCF – Climate Challenge Fund
CD – Climate Change and Energy Directorate
CDG – cross-disciplinary governance
CDU – Christian Democratic Union
CEC – California Energy Commission
CEQA – California Environmental Quality Act
CLIMA – Directorate-General for Climate Action
CO_2 – carbon dioxide
CO_2e – carbon dioxide equivalent
COAG – Council of Australian Governments
COSLA – Convention of Scottish Local Authorities
CPRS – Carbon Pollution Reduction Scheme
CSU – Christian Social Union
CTC – California Transportation Commission
CTP – California Transportation Plan

DCC – Department of Climate Change and Energy Efficiency
DG – Directorate-General
DMITRE – Department for Manufacturing, Innovation, Trade, Resources and Energy
DOT – Department of Transport (see US DOT)
DPC – Department of Premier and Cabinet
DPLG – Department of Planning and Local Government
DPTI – Department of Planning, Transport and Infrastructure
DSEC – Department for Sustainability, Environment and Conservation
DTEI – Department for Transport, Infrastructure and Energy

ENTR – Directorate-General for Enterprise and Industry

ENV – Directorate-General for Environment
EPA – Environmental Protection Agency (see US EPA)
EU – European Union
EV – electric vehicle

GDP – gross domestic product
Gg – gigagram (see kt)
GHG – greenhouse gas

IEKP – Integriertes Energie- und Klimaprogramm
IPCC – Intergovernmental Panel on Climate Change

kt – kilotonne (thousand tonnes) (see Gg)

LA – local authority
LADWP – Los Angeles Department of Water and Power
LULUCF – land use, land use change and forestry

MLG – multi-level governance
MOVE – Directorate-General for Mobility and Transport
MPO – Metropolitan Planning Organisation
MS – Member State
Mt – megatonne (1 million tonnes – see Tg)
MTC – Metropolitan Transportation Commission

NGO – Non-Governmental Organisation
NPF – National Performance Framework
NRW – North Rhine Westphalia

OEM – Original Equipment Manufacturers
OMPI – Office of Major Projects and Infrastructure
OPR – Governor's Office of Planning and Research

PCCC – Premier's Climate Change Council
PKT – passenger kilometres travelled

RTP – Regional Transportation Partnerships (Scotland)
RTP – Regional Transportation Plan (California)

SA – South Australia
SAFETEA-LU – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SASP – South Australia Strategic Plan
SB 375 – Senate Bill 375
SC – smarter choices
SCSP – Smarter Choices Smarter Places
SG – Secretariat-General
SGC – Strategic Growth Council
SGP – Strategic Growth Plan
SIP – Strategic Infrastructure Plan
SNRWC – Senate Natural Resources and Water Committee
STAG – Strategic Transport Appraisal Guide
StMUG – Bayerisches Staatsministerium für Umwelt und Gesundheit

StMWIVT – Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie
STPR – Strategic Transport Projects Review
STT – Sustainable Travel Towns

T&E – Transport and Environment
TBD – To be determined
TD – Transport Directorate
Tg – 1 teragram = 10^{12} g = 1 megatonne (see Mt)
TS – Transport Scotland

UK – United Kingdom
UNFCCC – United Nations Framework Convention on Climate Change
USA – United States of America
US DOT – US Department of Transport
US EPA – US Environmental Protection Agency

VA – voluntary agreement
VKT – vehicle kilometres travelled
VMT – vehicle miles travelled

Glossary

- **Three-legged stool:** Term used in California refers to areas from which transport emissions can be reduced: a) vehicles; b) fuels; c) land use/vehicle miles travelled (VMT)

- **Big 5:** Term used in California to refer to an informal grouping of state lawmakers who meet in private to discuss the state's budget

- **Bully pulpit:** Public office of sufficiently high rank that it provides the holder with an opportunity to speak out and be listened to on any matter (Princeton University, 2011)

- **Eco-innovations:** In the EU context, refers to any technology new to the market, which contributes to "significant CO_2 savings" and has not already been taken into account in determining a vehicle's emissions (Euractiv, 2011)

- **Grand coalition:** Refers to a political system whereby most dominant opposing parties come to govern as part of the same regime

- **Ring-fenced funds:** In the Scottish context refers to money which is guaranteed for a particular project and cannot be spend for other means

- **Subsidiarity:** In the EU context refers to the principle of making decisions at the level closest to citizens as possible

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Chapter 1: Introduction

1.1 Introduction

Over the coming decades, the transport sector needs to be decarbonised. It is currently the only sector whose greenhouse gas (GHG) emissions are expected to continue to rise past 2020. This requires not only a fundamental shift in the way people and goods move, in vehicles and the fuel that powers them, and the way in which our communities are structured; but also unprecedented collaboration within and between levels of government, with industry and other non-public sector actors alike to deliver policy capable of meeting this demanding charge.

Much research has been carried out to assess differences in policy outcomes, but relatively little effort has gone into examining the processes of policy implementation, and the factors contributing to success or failure (Hössinger and Wolf, 2003). Therefore this research is not primarily concerned with the 'what' – the substance of policies designed to reduce transport emissions – but the 'how' – the processes from policy development to implementation – and the 'who' – the actors involved in making this happen.

This thesis examines how sub-national (state) government responses to this issue are developed and implemented and whether interaction and collaboration between departments (horizontal) and levels (vertical) of government contributes to reducing GHG emissions from transport – specifically road-based passenger transport. It posits that styles of transport and environment/climate change policymaking are very different, that there are organisational inconsistencies which perpetuate these differences, and that such diversity causes policy responses to be fragmented or disjointed. There are complex relationships between levels of

government, which can affect, influence or contribute to policy delivery at the state level. This thesis suggests that each level of government has a distinct relationship with this 'middle' tier and also that the state level has an important role to play in climate policy in its own right. The research is mindful of the fact that governments have multiple issues to address and policies to implement and therefore also examines the extent to which climate change, and more specifically, transport-related climate change, is seen as an agenda priority to case study governments – both in terms of rhetoric and action. It examines whether existing structures of government are capable of delivering policies to reduce GHG emissions from transport, or whether wholesale organisational change is necessary. The need to better understand these horizontal and vertical interactions and complexities form the main focus of this research.

The role of state government in federal democracies has been well-established; that of 'laboratories of innovation' operating at a scale small enough to take risk in policy development and influential enough to pass knowledge and experience of success or failure up to the higher echelons of government (Markwell, 1991; Harrington et al., 1998; New State Ice Co. v. Liebmann, 285 U.S. 262 (1932)). This role has been highlighted in recent years in terms of addressing climate change, often in the absence of national action, or in parallel to such effort (Snyder and Binder, 2009; Gupta et al., 2007).

The mandate for transport policy over the past century has been very clear – predict and provide – roles have been ascribed, relationships have been formal and hierarchical. Environmental/climate change policy is comparatively new, the issue is broad and some of the responses are unconventional in traditional policymaking terms. Hansen (2006) suggests that the two respectively represent the 'old' and 'new' forms of government. Much about the two policy spheres are seemingly incompatible and this research posits that these differences

contribute significantly to the difficulty in developing robust responses to decarbonising the transport sector. Indeed, such government departments have had little reason to collaborate in the past; but as needs change, processes, systems and relationships must respond. Whilst calls have been made for interaction, communication and collaboration, this thesis takes an in-depth look into four state government contexts to see if these vertical and horizontal 'silos' are breaking.

To investigate these areas, cross-disciplinary governance (CDG) theory (Chhotray and Stoker, 2008; 2009) socio-political governance (Kooiman, 1993; 1999; 2000) and institutional interplay (Young 2002; 2009) are drawn from. Elements of these notions are used to develop 'sub-national governance'.

1.2 The problem

Global carbon dioxide (CO_2) emissions were estimated to be over 30 billion tonnes in 2010 (International Energy Agency, 2011), equating to a 30% rise on 1990 levels (International Energy Agency, 2006). In 2007, the Intergovernmental Panel on Climate Change (IPCC) released its 4th Assessment Report which suggested that in order to avoid the most dangerous consequences of climate change, global average temperature rise must be limited to 2-2.4°C above the pre-industrial average. This requires emissions to peak before 2015, with 50-85% reductions on 2000 levels by 2050 (IPCC, 2007a). According to the report, in 2004 the transport sector produced six billion tonnes CO_2, 23% of the world's total energy-related emissions; road transport accounted for 74% of this figure, a significant share of which coming from passenger vehicles *(Ibid.)*. The transport sector's growth rate is highest among end-user sectors (IPCC, 2007b). Global CO_2 emissions from transport are expected to double by 2050 (Organisation for

Economic Co-operation and Development, 2008), with projections suggesting that passenger road vehicles will remain the primary source.

Much attention is paid to the difficulty in addressing transport-related GHGs; particularly from road transport (Whitelegg and Haq, 2003; Ryan and Turton, 2007; van den Bergh et al., 2007; Morrow et al., 2010), in comparison to other sectors such as energy for example. The necessity to change behaviour is often cited as one of the major reasons for this difficulty (Banister, 2008; Anable, 2005). The decarbonisation of the infrastructure is also highlighted as a significant challenge, as transportation is fundamentally a fossil fuel-based sector of the global economy (Rietveld and Stough, 2007). And financing a shift away from business-as-usual (BAU) is also potentially a significant barrier. However, the processes through which transport-related climate change policy is developed and implemented are not often examined as an additional, potentially significant barrier.

This research explores the existing systems through which policy development, implementation and management occur. It serves to identify whether: institutional/organisational structure; interaction between personnel; available policy measures; or these factors combined contribute to difficulties in implementing climate change-related transport policies. Similarly, an incompatibility in decision-making and policy implementation styles between transport and climate change professionals may also contribute to the fragmentation problems of delivering transport-related climate change policy. The role of high-level endorsement and leadership will be examined as a driver for increased dialogue and action. This research aims to explore how/whether fragmentation and a lack of communication between transport and climate change departments at the state level

and across levels of government are contributing factors to the difficulty in reducing transport emissions.

According to Biermann et al. (2009) 'fragmented' governance architectures are an increasing problem for decision-makers, particularly in climate policy. Environmental/climate change departments are fairly new on the political landscape (the oldest is probably around 40 years old); the oldest transportation departments have been around for over 100 years. The respective departments also have contrasting central objectives and different operations too. Transport departments generally have a lot of political power and authority (Hansen, 2006); climate change/environmental departments are comparative minnows (Van Der Heijden, 1997). Transport departments have had a fairly limited remit in terms of the building and maintenance of roads, with well-developed, formulaic procedures to follow. The environmental policy domain is seen more as a laboratory for political participation experiments (van Tatenhove and Leroy, 2003; Mason, 1999). The challenges associated with formulating effective policy responses to environmental problems and the need for departmental/sectoral collaboration have been frequently discussed (Carter, 2007; Marks et al., 1996; Baker; 2001; Hajer and Wagenaar, 2003).

Climate change is considered more complex than other environmental issues, needing to engage multiple sectors, often with divergent interests and roles (Andonova et al., 2009). Since transport must be decarbonised over the coming decades, a mix of contemporary/novel forms of policy and more conventional mandates and regulation are needed to achieve this. Therefore examining how well these seemingly incompatible departments/levels of government can come together to deliver these policies successfully is the main objective of this research. The primary research question of this thesis is *do organisational constraints and*

the incompatibility in policymaking styles between state government departments and across levels of government inhibit policy development and implementation in addressing transport-related GHG emissions?'

It is investigated by examining four sub-national governments (Scotland, South Australia (SA), California and Bavaria) each self-proclaimed 'leaders' on climate change. Taking one policy from each context which has been developed to, or has the co-benefit of reducing GHG emissions from cars, the research has two fundamental elements. It firstly examines the extent of interaction and collaboration between government departments at the state level tasked to implement the policy. It also examines the extent of interaction between the levels of government.

1.3 Theory

1.3.1 Governance - introduction

The idea of 'governance' is not new; it has a multitude of definitions and roots in several academic disciplines. In preparing the frame for this research many of the more specific notions of governance have been investigated; those concerned with similar subject areas to this, as much by way of methodological input as to sharpen the focus of the theoretical lens utilised here. Studying multi-level governance (Weale et al., 2000; Hooghe and Marks, 2003; Rabe, 2007a), global governance (Okereke et al., 2009), transnational governance (Djelic and Andersson, 2006), participatory governance (Lovan et al., 2004) and deliberative governance (Hansen, 2006; Hendriks, 2009), has formed a solid understanding of how amorphous, yet robust 'governance' is as a concept, but also where it should feature in this research.

Because this thesis is primarily concerned with policy development and implementation, it is unsurprising that its roots lie in political science and public policy theory. The recognition from political science that decision-making is [should be] multi-layered (Rhodes, 1996; Hooghe and Marks, 2003; Evans and Davies, 1999), is at the core of this research. An understanding of governance from a fairly normative and socio-political perspective (Kooiman, 1993; 1999; 2000) is helpful in structuring this research. Whilst this is true, Chhotray and Stoker's (2008; 2009) reasoning that a cross-disciplinary theory of governance (citing international relations, development studies, socio-legal studies theory as well as political science) is the most effective is compelling and this broader approach provides the most constructive framework in which to situate this research. Chapter 2 examines these theories and explains the analytical tools which will be used to unpack some of these ideas.

1.3.2 Sub-national governance

Sub-national governance has been developed as a concept through which to shape the understanding of the dynamics and processes at play in the interactions between the layers of government, using the state as the core of such multi-level arrangements, distinct from conventional hierarchical (top down; bottom up) approaches. This approach is not intended to solely examine the dynamics of the state level as the only player involved in policy implementation processes, but rather evolves the idea that there are very specific roles played by each level of government and each level has a distinct relationship with the 'middle' tier of government. A better understanding of these specific roles and responsibilities is important for policy development, implementation and delivery and will be developed across the case studies. The research draws on Young's (2002; 2009) institutional interplay and Kooiman's (1993; 1999; 2000) 'chains of interaction' for analysis.

1.4 Methods

Each state government case study was derived by identifying one particular policy/initiative, which has potential to deliver GHG reductions from transport through its implementation. Each policy is investigated in terms of the level of interaction and dialogue between departments and levels of government, as well as non-governmental organisations (NGOs) (civil society, industry). The policies were identified through conducting document (policy documents/strategies, reports, briefings, web-based information, newspaper articles) studies and analysis and through preliminary 'scoping' meetings with key stakeholders in each state. Four themes were developed to group the substantive findings of the research (Chapter 3).

The primary research was conducted through semi-structured interviews held with government representatives. These participants were a mix of transport and environment/climate change professionals at local, state and national government levels. Additional interviews were conducted with industry, academic and NGO actors. In the Bavarian case study context, EU representatives have also been interviewed as this research does not examine a state policy, but an EU Directive and the role of the state government in influencing the development and implementation processes of this measure.

1.5 Delimitations

As stated above, this research is not about policy type, or policy choice, but about policy process. Whilst this is true, throughout the analysis, attention has been paid to the arguments that transport and climate change sectors have different styles of policymaking, to 'lock-in' and the continued dominance of regulation in government (Jordan et al., 2005).

The case studies focus on mature, industrialised states. This was a deliberate decision since the selected systems are sufficiently evolved to have established climate change institutions and supporting organisations, with many of the major challenges faced being similar too. Indeed the governance structures are congruent enough to offer interesting comparisons. Whilst a more representative global diversity may have been thought-provoking, certain elements would have been more challenging to investigate, such as leadership.

The central focus of the research is on better understanding the systems into which policies are being introduced and their proposed evolution through implementation. It does not extend to a substantial study of potential alternative structures, or how to achieve the types of change called for to achieve integration, although specific recommendations are made where relevant in each context.

1.6 Contributions

This section provides an overview of the thesis, in terms of the research that has been conducted, and explanations for the choices made throughout the process. It outlines what the research hopes to achieve, how it is different and how it aims to contribute to the literature.

1.6.1 Theory/method choice

Governance is an amorphous term, and by definition has different meanings to different disciplines. It has also been contested as a theoretical perspective. However, there is a plethora of interesting work which utilises 'governance theory'. This research aims to support the view that governance theory is suitable and useful in political science. As this thesis is concerned with different elements of political systems (organisation, leadership, agency) and

also considers decision-making from the perspectives of professionals from multiple disciplines, utilising CDG allows the research to unpack and analyse these diverse elements in a coherent way.

Case study comparisons which answer specific research questions have been endorsed by several scholars working in political science (Young, 2009; Jordan et al., 2005). Such an approach allows for similarities and differences in policymaking practices to be explained. Peters (2000) states that comparative politics is the central source of theory testing in political science – a laboratory to judge the impact of differences arising from the natural 'experiments' conducted by political leaders. Rabe suggested that:

> *"systematic study of actual experience in policy development and implementation might help move the debate from a feckless quest for the optimal toward a more realistic exploration of what policy tools do—and do not—hold considerable promise"* (2007a, 443).

Taking four international government contexts in comparison can highlight common and context-specific obstacles faced in policy implementation. In doing so, recommendations can be made for how challenges and barriers can be removed or overcome.

1.6.2 Focus

Because transport is seen as a difficult sector from which to reduce emissions, in-depth examination of horizontal interactions in policy processes can highlight particular stages or elements which cause the problems – whether it is a lack of collaboration between different actors, or a reluctance of particular actors/organisations to change. As will be seen in the following Chapters, local government involvement is surprisingly central to the implementation of certain policies.

Vertical interactions were highlighted by Gupta as potentially significant:

> *"Few articles have examined the implementation of policy in domestic contexts, given the different political and administrative structures and the trend towards decentralization of powers to provincial and local authorities" (*2007, 131).

1.6.3 What the research hopes to achieve

- Assess the importance of cross-departmental and external communication in policy development and implementation
- Identify governance-related and broader barriers to reducing GHG emissions from cars
- Examine mechanisms for factoring climate change considerations into transport policy
- Assess the need for organisational/institutional change to address climate change
- Add to academic understanding of governance theories

1.7 Thesis outline

The thesis is ordered as follows. Chapter 2 examines the literature across all of the relevant fields to be examined in the case studies – from the theories of governance as well as institutions and actor-based theory. The theoretical framework is then outlined, examining the work of Chhotray and Stoker (2008; 2009) in particular. The development of sub-national governance is explained. Literature surrounding each of the research themes is then outlined in turn before discussing the analytical framework considering the work of Young (2002; 2008; 2009); Kooiman (1993; 1999; 2000) and Hansen (2006) amongst others. Chapter 3 outlines the research methodology including the themes developed, the interview process, analysis and other central elements. Chapters 4-7 present the case study research findings, along with detailed overviews of the organisational and institutional settings into which the policies were introduced. Chapter 8 offers a detailed comparative analysis across contexts. Chapter 9 offers a detailed conclusion of the research findings as well as recommendations relevant for the case study governments. It also highlights potential areas of future research.

Chapter 2: Literature Review and Theoretical/Analytical Frameworks

> *"Climate change is a complex policy problem which spans all levels of territorial governments. Transport is a particularly challenging policy sector as it does not respect administrative boundaries and so responsibility for action is also therefore contested across administrative frontiers."* Rye and Marsden (2010, 3)

2.1 Introduction

The thesis is guided by four major themes – **scale**, **scope, leadership and process**. Scale refers to the vertical interactions occurring across levels of government[1] and scope refers to the focus (transport/climate change); the policies and the horizontal interactions within and outside government. These are the two primary themes. Leadership/power and process are subsidiary themes offering additional insight into how case study policies were devised and are being implemented. Leadership/power refers to the role of individuals and other elements in influencing, promoting or preventing policy development and implementation. Process refers to specific details of policy development and implementation. There is a good degree of cross-over between these themes as they are all guided by the same research objective and research questions, and many responses obtained in the research cut across themes, however taken together these themes help to explain the organisational and process governance of the case studies. The development of the themes is explained in more detail in Chapter 3. The thesis also considers the barriers to policy development and implementation in each context.

This chapter embeds the thesis in wider institutional, actor-based and governance literature, as well as that about interaction and collaboration. In the first section, definitions and theories

[1] There is some discord between the terms 'scale' and 'level', which needs to be clarified. Proponents of multi-level governance (MLG) Hooghe and Marks (2003) (section 2.2.4) use the terms interchangeably, however other scholars (Cash et al., 2006) state that 'scale' and 'level' are not synonymous. They define scale as the spatial, temporal, quantitative, or analytical dimensions used to measure and study any phenomenon, and levels are analytical units located at different positions on a scale. In this context, the scale theme of this research is concerned with the vertical interactions between levels of government. These levels are not referred to as 'scales' of government, but are grouped under a common heading which relates to scale

around these areas considered, before the use of CDG theory in this thesis is expanded upon. The literature surrounding each of the research themes and around barriers is then consulted in the next section. Finally, the analytical framework of the case study research is explained.

2.2 Theoretical framework

Before examining the main disciplinary literature around institutions, actors and governance more generally; it is important to provide some information about the specific ideas of collaboration and interaction which flow through this thesis.

2.2.1 Interaction

Interaction is broadly termed here as communication between distinct actors or organisations. Flyvbjerg suggests that *"Dialogue […] is a prerequisite for informed democratic decision making"* (2001, 159). He expands by asserting that actors are analysed in relation to structures and structures in terms of agency, not so that the two stand in an external relation to each other, but so that structures are found as part of actors and vice versa (*Ibid)*. Flyvbjerg alludes to the structure-agent debate here; which social science scholars have long grappled with (Archer, 2003; Dessler, 1989; Giddens, 1984; Wendt, 1999 – as cited in Biermann et al., 2009). The dispute is whether individual agents are primarily responsible for (here) policy outcomes, or whether the organisations through which they operate determine how decision-making is conducted, and therefore the outcomes. This research does not delve into this debate extensively, however in looking both at the horizontal and vertical interactions (scale; scope) taking place in policy development, and the significance of individual action (leadership – where relevant), it does supports Flyvbjerg's argument that the two elements are inextricably linked. CDG (section 2.2.6) has some useful insights into collective decision-making and power distribution and this is one of the reasons for selecting it as a theoretical framework. This

research examines structures and actors to unpack whether these relationships contribute to the difficulty in reducing transport emissions. In terms of sustainable transport more generally, Rietveld and Stough explain that:

> *"…conflicts between departments within the same governmental body, or conflicting interests between governments operating at various levels […] may seriously contribute to government failures. Governments often find it difficult to achieve a balance between 'the general interest' and the interests of groups particularly affected by the policy measures, implying that decision making processes become lengthy and produce uncertain outcomes"* (2007, 1).

Whether such conflict is demonstrated in these case study contexts will be considered.

2.2.1 Collaboration

Collaboration in this context is understood to be willing participation between distinct actors or organisations towards a common goal. Innes and Booher (2003) state that collaborative planning and policymaking should not be seen just as a method which can solve problems when there is conflict or even paralysis in the traditional policy system, but that it is a way to establish new networks among players in the system and to increase the distribution of knowledge among them. They have coined the term *Collaborative Policy Dialogue* to address the role that collaboration can play. They state that this kind of dialogue must be diverse and interdependent in order to maximise its potential and that it has been most common at the regional and state levels (*Ibid)*. A central argument of this thesis is that increased collaboration across departments of government and between levels of government is important for delivering climate-related transport policy.

Although Bardach states that lack of coordination has been described as *"a practically universal complaint about public programs"*. He continues that better coordination is

favourable, because it costs little and requires only common sense, good will and regular conference to be successful (1977, 132-133).

However, collaboration as a way of conducting policymaking is not without its criticism. McCloskey (2000) noted that the suggested implications of using collaboration as a sole tool in developing and implementing policies is a dangerous proposition whereby government is simply another stakeholder, as opposed to the body that represents all other stakeholders. Furthermore collaboration also implies a lack of expertise in agencies and governments that the government will be disempowered to unitarily enforce a decision if it collaborates. These points about the extent to which collaboration is helpful to policy development will also be considered.

2.2.3 Institution-and Actor-based theories

The importance of institutions and actors in the policy development processes examined in this research warrant an examination of 'institutionalism' and actor-based theories. Whilst these theories have not been chosen to frame this research, they are nonetheless very important for shaping its context and for their contribution to theorising governance.

It is the researcher's intent that institutions are seen as distinct from organisations, following North's (1990) definition. The research also draws from Young's (2005) institutional interplay (section 2.6.1). Young too affirms the clear distinction between institutions (sets of rules of the game/codes of conduct; not actors in their own right) and organisations (material entities; actors in social practices) (Young, 1994).[2]

[2] Some references to institutions cited may not follow this same understanding. Efforts will be made where possible to clarify the sentiment of the cited text and of the researcher

Actor-based theories, such as behaviouralism – whereby individuals constitute the fundamental building blocks and political results are simply the aggregation of individual actions (Shepsle, 1989); public choice theory – in which politicians and government bureaucrats will act to maximise their own interests (McAnulla , 2002; Friedman, 1996); and rational choice theory – where patterns of behaviour in societies reflect the choices made by individuals as they try to maximize their benefits and minimize their costs[3] (Hargreaves-Heap et al., 1992; Morrow, 1994; Ostrom, 1998); all offer a limited view on the complex questions this research aims to address.

Institutionalism holds that individuals are constrained by either formal or informal structures – institutions – and that these structural limitations impede their ability to act in accordance with their own personal preferences (Peters, 2001). Traditional definitions of institutionalism focus solely on the structures; 'new' institutionalism however sets out a context and framework to examine the interactions between actors and institutions. According to Shepsle (1989), new institutionalism 'seeks to' explain social outcomes on the basis of agent preferences and optimising behaviour, but also on the basis of institutional features.

As the concept of 'new' and 'old' forms of policymaking and interaction is developed through this thesis, the differences between formal and informal institutions will be considered, as will the distinction between rules in use and rules on paper (Ostrom, 1990). These theories could support the development of a theoretical framework in which to situate this research because of their ability to explain the interplay between actors and the institutions and organisations through which they interact. However, 'governance' theory – particularly CDG – is appealing

[3] Rational choice theory has been criticised for failing to define 'rational behaviour'

because it is able to discuss changing dynamics of government, political contexts and emerging issues.

2.2.4 Governance - introduction

The idea of 'governance' as an alternative or complement to conventional systems of government has become increasingly popular in various academic fields, including international relations (Paterson et al., 2003); political science (Stoker, 2000; Weale et al., 2000); regime theory (Young, 2002, Ostrom, 2002); geography (Macleod and Goodwin, 1999; Liverman, 2004) and economics (Dixit, 2003). Fundamentally, the term governance allows practitioners and theorists an opportunity to break loose of traditional political thought, stimulating them to rethink governing, politics and administration against a backdrop of changing societal processes (Hajer and Wagenaar, 2003, 2).

Just as governance theories are found in disparate subject areas, there is also a diversity in semantics of its scope, nature and terminology - multi-level governance (Weale et al., 2000; Hooghe and Marks, 2003; Rabe, 2007a), global governance (Rosenau, 1995; Young, 1997; Biermann, 2002; Okereke et al., 2009), transnational governance (Djelic and Andersson, 2006; Andonova et al., 2009), participatory governance (Lovan et al., 2004), private governance (Pattberg, 2010) and deliberative governance (Hansen, 2006), to name but a few.
An understanding of governance from a fairly normative and socio-political reading (drawing on Kooiman, 1993; 1999; 2000) is helpful in structuring this research. Moreover, the recognition from political science that decision-making is [should be] multi-layered (Rhodes, 1996; Hooghe and Marks, 2003; Evans and Davies, 1999; Bache and Flinders, 2004) is at the core of this research.

TYPE I	TYPE II
general-purpose jurisdictions	task-specific jurisdictions
non-intersecting membership	intersecting memberships
jurisdictions organized in a limited number of levels	no limit to the number of jurisdictional levels
system-wide architecture	flexible design

Table 2.1: Types of MLG (Hooghe and Marks, 2003)

The two 'types' (Table 2.1) of MLG that Hooghe and Marks (2003) present are useful in beginning to shape the 'new' ways of doing things; the institutional and organisation change that is called for, especially in CDG (section 2.2.6). The characteristics outlined in Type II MLG, such as the task-specific nature and flexible design in particular are useful concepts to take forward here.

Hooghe and Marks describe as "*system of continuous negotiation among nested governments at several territorial tiers—supranational, national, regional and local"* (2003, 3). Conversely, Oberthür and Stokke see that nations and other entities act "*collectively but unilaterally within the established institutional barriers*" (2011, 336). Betsill (2011) affirms that interactions are more fluid and less formulated; that a more complex multi-level process in global climate change governance is emerging. And this research demonstrates that negotiation is often far from continuous and that there is much diversity between interactions of the different levels occurring simultaneously. This is the reason for MLG not being the primary governance theory utilised here.

Chhotray and Stoker's (2008; 2009) reasoning that CDG – as a cross-disciplinary theory of governance – (citing international relations, development studies, socio-legal studies theory as well as political science) is the most effective because it allows for a better understanding of the complexities of the practice of governance than utilising knowledge from a single field of

study. This is a compelling argument and this broader approach provides the most constructive framework in which to situate this research. The following section offers some insight into how governance is defined, and examines the broad-ranging contributions that have been made in shaping these definitions. As a cross-disciplinary approach is being utilised in this research, it is important to investigate governance across fields.

2.2.5 Defining governance

Peters (2000) asserts that governance simply offers a standard way against which to examine behaviour in the public sector and analyse what has happened. He states governance can be thought of as the carrying through of policy intentions, but doing so requires an analysis of the whole system and its internal connections. This justifies the inclusion of contextual information in Chapters 4-7; in order to situate each policy under investigation, the wider system and linkages need to be understood.

Pierre understands governance to have two meanings – it is about state adaptation to its external environment, but it is also seen as a theoretical representation of co-ordination of social systems and the role of the state in that process. He continues to highlight that governance is *"about how to maintain the 'steering' role of political institutions despite the internal and external challenges to the state"* (2003, 3). The assertion that governance in and of itself denotes a theoretical concept is useful here, as it justifies the use of governance theory (as opposed to more established schools of thought such as behaviouralism and institutionalism (section 2.2.3)) and specifically CDG in this research.

Van Tatenhove and Leroy (2003) also identify two aspects of governance:

1) shift in focus of democratic politics and policies, from hierarchical and institutionalised forms of governance
2) shift in locus of democratic politics: governance at sub-national and supranational levels is gaining importance *vis à vis* the national level.

Both aspects are discussed more in the examination of horizontal and vertical interplay (section 2.6.1). Lovan et al. (2004) see governance more as networks of engagement which attempt to embrace diversity in contemporary society – here this could be seen as a way of linking diverse sectors to resolve a common problem – namely reducing emissions from transport. All of these definitions are drawing on the notion that government (at all levels) continues to play a role in policymaking and 'steering' society, but that this role is altered because other actors and sectors also contribute to the process.

Pierre and Peters (2000) assert that government coordinates public and private resources and that it is becoming increasingly dependent on other (non-state) actors. Gupta (2005) also identifies new actors (primarily non-state); shifts in locus of governance (to national and international courts, to supranational levels, to the private sector and co-regulation). She also identifies five types of governance pattern:

- Horizontal (between countries or between local governments)
- Vertical (between different levels of hierarchy within a country)
- Diagonal (between state and non-state)
- Parallel (non-state actors alone)
- Point (influence of courts on policies)

Horizontal, in the context of this research, refers to departments within government, at each level, and vertical refers to interaction between the different levels of government, without centring on the national. There are some case study contexts here that also consider diagonal and parallel governance patterns, although Gupta's terminology is not utilised. California is the

only case study in which 'point' governance is addressed – with its discussion of the role of litigation (section 2.6.3.2).

Bäckstrand et al. (2010) note that particularly in the environmental literature new modes of governance are described as deliberative and collaborative, functional and capable of handling complex, cross-sectoral, multi-scale and longer-term temporal aspects of modern environmental problems. But also that governance relies on a mix of hierarchical and non-hierarchical forms of steering, and builds upon collaboration between government, market and civil society actors (*Ibid.).* Of significance here is the idea that these shifts do not entirely replace conventional policymaking, but that as O'Riordan (2009) suggests, a mix is required. Figure 2.1 illustrates the place of 'new' governance modes in addressing the shortcomings of conventional policymaking.

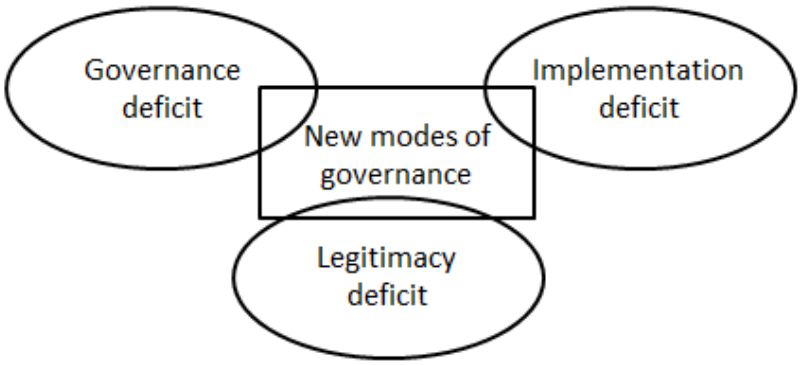


Figure 2.1: The promise of new modes of governance (Bäckstrand et al., 2010)

Taking all of these notions of governance into consideration, it is Rhodes' definition which best sets the parameters of this research. He states that governance is not synonymous with government, but rather that it signifies a change in meaning of government, referring to a *new* process of governing; or a *changed* condition of ordered rule; or the *new* method by which society is governed (1996, 652-3, emphasis in original). Rhodes' understanding fits well with

the focus of this research – the evolving relationships between departments and levels of government. This definition is relevant because it is posited here that in order to reduce transport emissions, new processes of governing are likely to be necessary.

In their understanding of governance theory Chhotray and Stoker (2008; 2009) assert that *"local, national and supranational institutions are intertwined in (often complex and over-lapping) collective decision-making challenges"* (2009; 216). Furthermore they draw attention to fragmentation of state structures and institutions – an idea on which a central pillar of the analysis for this research (around the levels of government) will be built.

2.2.6 Cross-disciplinary governance theory

The multi-disciplinary stance taken by Chhotray and Stoker is appealing, but the parameters they draw around governance theory and the concepts they seek to investigate are also useful.

> *"Governance is about the rules that guide collective decision-making. It will need to answer three questions: how should power be distributed, who should be involved in a decision and how should rules, once agreed, be enforced?"* (2009, 228)

This idea that governance can be seen as a form of collective decision-making is interesting in combination with Young's (2002; 2008; 2009) concept of institutional interplay and Kooiman's chains of interaction (1993; 1999; 2000) to examine the types of changes occurring and interaction between levels and departments of government as a result (section 2.6).

Taking elements from international relations, socio-legal studies, economics and development studies, as well as political science, Chhotray and Stoker (2009) have developed a governance theory with some centrally important characteristics.

- Appropriate governance arrangements should be developed in the context of **a particular policy challenge or problem** as opposed to particular country or system
- **Institutional forms, the behaviour of actors and the surrounding context of meaning and culture** are the building blocks of regimes of governance
- **History** matters

- Governance reforms do not start with a blank sheet but instead **require the re-design of existing institutions**
- The establishment or enhancement of a governance system is invariably a **battle of institutional change**
- Any audit of governance needs therefore to reflect on **how institutions can be changed**

Young explains that there is much evidence that sources of environmental problems derive from institutional failures or mismatches, but that "*it is easy to overestimate capacity to (re)design institutions in a purposive manner"* (2005, 173). CDG tells us that (re)design is necessary, but Young's assertion adds impetus to the argument that it is not politically possible to undertake these activities. It will be interesting to see these complex considerations play out in the case study contexts and look for examples of institutional (re)design occurring in practice to inform the literature on this matter further.

2.2.7 Sub-national governance

Sub-national governance is a concept put forward here which takes each of the elements discussed into consideration and has developed over the course of the research. It is a perspective through which to shape the understanding of the dynamics and processes at play in the interactions between the layers of government, using the sub-national as the core of such multi-level arrangements.

This approach is not intended to solely examine the dynamics of this particular level as the only player involved in policy implementation processes, but rather evolves the idea that there are very specific roles played by each level of government and distinct relationships between levels with the 'middle' tier of government. A better understanding of these specific roles and responsibilities is important for policy development, implementation and delivery.

2.3 Research themes

It is important to consider the literature around each of the particular themes in turn which are developed on top of the theoretical grounding offered above. This section focuses on the scale and scope primary themes – considerations of horizontal and vertical interplay. O'Riordan (2009) saw finding the 'right mix' between government and governance at a variety of spatial scales as an important factor in sustainable development and in drawing on Benson and Jordan (2008) stated that much is to be done in terms of identifying and experimenting with new forms of federal cooperation. The case studies investigate any such new cross-level relationships and whether efforts are being made to find the optimal 'mix' of governance (section 2.2). It is also centrally important to examine the literature relating to both transport and environmental policymaking; as well as to investigate how climate change decision-making has emerged and why it is different.

2.3.1 Scale

This section explores the literature on the sub-national level – including the role of the state[4] as a policymaking entity, federalism and devolution as well as the particular role that states have carved out as protagonist in addressing climate change.

> *"Where national governments are reluctant to take action, provincial and local governments have stepped into the vacuum to develop policies"* (Gupta et al., 2007, 143)

2.3.1.1 State governments and federalism

As Rabe (2007a) points out, states are not 'intergovernmental free agents' as impositions and constraints are imposed on them by federal structures of which they are a part. Whilst in some

[4] 'State' government refers throughout the research to sub-national government which sits under the national (or equivalent) government. Steps have been taken to minimise confusion throughout the research – most references to the states will be by name directly and at no point are national governments referred to as states (except in the context of the EU, when the abbreviation MS – for member state of the EU is used)

cases the federal government reigns supreme over sub-national entities, this is not true in all contexts, with power-sharing a common feature of many constitutional arrangements and 'cooperative federalism' increasingly seen as a more appropriate relationship between levels of government. Either way, at this level of government experimental and ground-breaking policies can be tested with less risk than if implemented nationally, and which if successful, could be rolled out or replicated on a larger scale (Markwell, 1991; Harrington et al., 1998). US Supreme Court Justice Louis Brandeis famously posited that state governments are "*laboratories of innovative government"* (New State Ice Co. V. Liebmann, 285 U.S. 262 (1932)).

State governments offer proximity to the people. Markwell (1991) identifies 'regional loyalties' that may exist with the state government due to the distance of the people from the national government. Others cite the information and knowledge of local contexts (Harrington et al., 1998) as key benefits of the existence of state governments. Moreover, Pierre (2000) contends that sub-national governments often become more assertive as a result of ethnic and cultural identification.

Wheare (1950) suggested that when states join into a federation, it is because they want to be united, but wish to retain autonomy over certain areas. In doing so, neither federal nor state government is subordinate, because all are governed under the same Constitution. Such a breakdown of authority is the central element of federalism and the one which sets it apart from other political arrangements. Lijphart (1999) recognises federalism for its ability to ensure a 'guaranteed division of power' between central and regional governments, ensuring that each level will have ultimate authority over certain issues. Cameron and Faletti (2004) define federalism as a constitutional arrangement that creates executive, legislative and judicial branches of government at the sub-national level. This definition highlights that

without recognition of the need for specific organisational form at the state level, the ability of states to carry out their prescribed roles outlined in an institutional setting is affected. For the sub-national level of government to have constitutional standing – that is, the autonomy to make rules, apply them to particular cases, and govern itself under the rule of law – it must have its own legislature, executive and judiciary. A constitution that does not create these roles and offices at both the national and sub-national levels is not federal (*Ibid.)*.

Taken collectively, the following concepts are important to the understanding of federalism that shapes this work:

- Unity and independence
- Separation of power
- Existence of institutional roles and offices at both levels

Each federation has diverse origins and distinct relationships with its sub-national parts. Kopstein and Lichbach (2000) point out, that no two [nation] states are the same. But there are some commonalities between federal states, provinces and regions which allow analysis of their place on the political spectrum as a group.

2.3.1.3 Devolution

It would not give an accurate picture of the field of study if the situation of Scotland (Chapter 4) was not also considered in its context. In the UK, devolution is a means to uphold the sovereignty and supremacy of the UK Parliament, whilst granting self-government over domestic affairs to Northern Ireland, Scotland and Wales (Bogdanor, 2001).

Since devolution took effect in 1999, the framework legislation has been supplemented by further 'soft law', in the form of Concordats, Departmental Guidance Notes, Inter-Parliamentary Agreements and Conventions which have collectively created the framework for

both the Scottish Executive and the Scottish Parliament to emerge as political institutions (Carter and McLeod, 2005).

The idea of separation of powers in this context is problematic – if supremacy is retained in Westminster, in principle it is difficult to think of the UK system as a series of independent layers (Bogdanor, 2001), even with the presence of self-government. So Scotland in this case is distinct from the other case studies, but there are sufficient similarities, in terms of its position as a 'middle' government entity, with relationships with the central and the local government, to fit into this research. In fact the distinctions that can be made in this context, versus examining four different conventional examples of a federal government, may actually lend an extra analytical dimension to the research.

2.3.1.4 States as climate policy laboratories

In recent times of complex problems, such as climate change and shifting discourse, as seen with the rise of governance (van Tatenhove and Leroy, 2003), scholars (for example Rabe, 2004, 2007a and b, 2010; Engel 2006; 2009) and bureaucrats and leaders alike have come to regard the state government as a vessel through which to implement federal policy (Germany), or to fill the policy void of federal inaction (USA and Australia).

In the last decade Australia and the USA shied away from participation in the international response to climate change. To fill this void, state governments stepped up, enacted regulation to reduce emissions, devised policies to explore effective means of achieving emissions reductions (Gupta et al., 2007) and set to meet their legally mandated targets. Scholars including Andonova et al. (2009) assert that the absence of nation-states in climate mitigation

has allowed sub-national governments, particularly in the USA and Australia, to carve out political niches.

In terms of size, it should also be noted that some states are significant contributors to global GHG emissions in their own right and therefore should be responding to the issue. If compared directly with other nations, 17 US states and two Canadian provinces would rank among the 50 largest governmental sources of GHGs in the world (Rabe, 2004). Many scholars assert that these entities are of fundamental importance and that in many cases they can be more effective than their national counterparts in achieving results. Snyder and Binder state:

> *"A silver lining of the federal inaction on climate change over the past eight years has been that it fostered the development of innovative and pioneering efforts by state and local governments to combat climate change."* (2009, 232)

Catenacci draws attention to the increasing significance of the sub-national level of government in sustainable development policy because of its *"proximity, efficiency and spatial dimension"* (2010, 43). Being close to the public and other significant players, sub-national governments can be more responsive and better link diverse policy themes. This makes regional governments *"best placed to make sustainable development a practical reality" (Ibid.)*

Sub-national governments are clearly beginning to respond to climate change and that there is much potential for this role to expand and continue. Given that a significant amount of climate change policy decisions (and in this case responsibility for transport planning and infrastructure) reside at the state/local level of government (specific responsibilities in each case study are explored in Chapters 4-7) and in light of the state's ability to innovate, policies developed and implemented at this level of government are important to the wider climate change agenda and are therefore the focal point of this research.

2.3.2 Scope

This section explores the literature on the ideas of interaction between government departments. It uncovers ideas on both transport and environmental/climate change policymaking as well as attempts to link the issue areas. In their work on "joined-up government", Kavanagh and Richards (2001) describe government departments as *"internally differentiated bodies; containing their own units and subcultures"* (2001, 15). This will be examined through the diverse government departments considered across case studies.

Mulgan (2005) offers two main shortcomings of the joined-up government approach:

1) Problem of coordination (encouraging same direction without undermining specific areas)
2) Problem of organisation and integration (alignment cuts across organisational boundaries)

To date, most 'joining-up' has referred to better coordination of existing agencies, rather than radical structure reform. Across the case study contexts, it will be investigated whether restructuring or better coordination is a more favoured approach. However, as with CDG, theorists state that joined-up government will only be successful if it involves an "*overhaul of the institutions*[5] *of the core executive*" (Kavanagh and Richards, 2001, 18). So from through the scope theme it is possible to examine whether interaction is occurring through coordination or overhaul.

2.3.2.1 Transport policymaking

Over the past century the transport of people, goods, and information has increased enormously, reflecting the clear economic and societal benefits of transport (Banister et al., 2011). Conventional transport policy over the past 100 years or so has been focused on growth; increased capacity and transport planners have focused on the tenet of 'predict and provide' (Owens, 1995). Transportation professionals are rewarded based on successful

[5] The meaning of institutions is unclear here. But the idea of reform is the critical element

capacity expansion projects, which are seen as improvements and the term 'efficient' is frequently used to mean increased vehicle traffic speeds (Litman, 1999).

As Hansen noted:

> "*…transport has often been associated with the traditional hierarchical and well-established institutions and much closed and precautious (mostly on behalf of economic growth) classical–modernist attitudes in dealing with changes in the political agenda"* (2006, 160).

Overall, the role of the transportation sector has been clear and transportation departments are often well-resourced and comparatively influential within government, in part because the sector is a major contributor to economic growth[6]. As demonstrated in several of the case studies responsibility for various areas of transport policy and infrastructure provision has been fairly well-defined. Communication between levels and distinct policy areas has been functional and only where necessary. Land use and planning have overall been the responsibility of local government.

2.3.2.2 'Sustainable' transport

Given the increase in environmental awareness over the last few decades, the prominence of 'sustainable development' – a term popularised by the "*Brundtland report*" (United Nations World Commission on Environment and Development, 1987) – coupled with the inextricable link between transport activity and environmental damage (Proost and Calthrop, 2002), the need for the sector to deliver sustainable transport infrastructure is now acknowledged.

Van den Bergh et al. (2007) suggest that the complexities for the transport sector in considering sustainability lie in its fast economic growth and considerable energy intensity. This combination may see world transport energy use growing at around 2% per year, with all transport-related carbon emissions projected to be about 80% higher than current levels by

[6] Details in Chapters 4-7 outline the respective budget of transport and climate change departments in each case study government, highlighting the disparity between resources allocated to the portfolios

2030 (IPCC, 2007b). There is however, evidence to suggest that this upward trend – in certain contexts at least – is no longer being witnessed (Millard-Ball and Schipper, 2011).

There are various measures which are commonly understood to deliver a more sustainable transport infrastructure and to redress the sector's environmental impacts. Banister (2008) groups them as follows:

- Transport policy measures—modal shift
- Land-use and planning policy measures—distance reduction
- Technological innovation—efficiency increase
- Reducing the need to travel—substitution

There is a general recognition that existing systems need to be redressed to minimise the environmental impact of the sector. Rietveld and Stough (2007) suggest that efficiency, equity and sustainability are the main objectives for the development of future transport systems. However, they continue to state that these are conflicting objectives and that mechanisms are required to address these inherent conflicts. Indeed, maybe how the transportation sector operates and addressing environmental issues are simply incontrovertible from a political perspective. This research examines whether this can be reconciled. Before the relationship between transport and climate change is explained (section 2.3.2.5) developments in environmental policymaking are explored.

2.3.2.3 Environmental Policymaking

> *"Previous attempts to address the impacts of human activities on ecosystems have traditionally been based on sector-by-sector approaches, which have ultimately resulted in fragmented actions and governance solutions"* Brown (2009, 35).

To understand this statement and how environmental policymaking has evolved in recent years, Carter (2007) explains that it took some time for policymakers to acknowledge that environmental problems may need to be dealt with differently to other policy problems. Technocratic responses, he argues, viewed these problems as a bi-product of economic growth

and most would have straightforward solutions. What was not questioned was the *"underlying commitment to economic growth or to the political-institutional structures of the modern liberal democratic state"* (2007, 174). He concludes that such mechanisms proved ineffective and a paradigm shift has been witnessed, which tries to redress these shortcomings through considering 'sustainable development'. However despite strategic commitment to environmental issues and the increased severity of the problems, much of the conventional political system endures, even where proactive environmental policies have been introduced (Carter, 2007).

This alternative paradigm is often considered to be more inclusive and innovative. It can be described as a new form of governance (section 2.2) because it is less hierarchical and often less structured than other policy areas. Tews et al. (2003) describe the shift from a sectorally-fragmented and largely legally-based regulatory approach to an integrated environmental policy characterised by 'softer' and/or more flexible mechanisms. But it is not just policy choices that are different; Okereke and Bulkeley state that:

> *"global (environmental) management itself is a much more fragmented, chaotic and loosely coordinated process than is normally implied in traditional approaches to regime analysis"* (2007, 16).

This may be partly because efforts to formalise environmental issues through the creation of environmental government departments and environmental institutions have been stunted. The new departments often lack power and the enforcement of laws has been problematic (Van Der Heijden, 1999, 203). Whilst there are many positive elements to this approach, it could be said that it has potentially been through a matter of necessity to get the issues on the agenda, that alternative means have been employed. Because as O'Riordan and Jordan state:

> *"'New' policy problems such as climate change are not considered de novo but in the context of existing institutions. […] In situations of path dependency, institutions may acquire consolidating political stability so strong, in fact, that considerable effort may be needed to move policy onto a new trajectory"* (1999, 83).

Some of the challenges, aside from power struggles and non-compliance, include the fact that environmental management needs to disregard organisational boundaries and professional competences, which can impact co-ordination and lead to inconsistencies (Marks et al., 1996). The issue is further compounded because "*the sphere of competence of authorities […] does not always match with the boundaries of the affected environment"* (Liberatore, 1997, 116). It is also important to acknowledge that environmental issues are not the only agenda item for governments; therefore environmental issues are constantly competing for resources with other social, economic and political issues and against each other.

To address these problems, Young et al.'s (2008) knowledge-action perspective is an interesting proposition, which gives weight to some of the central issues being considered in this research. This perspective holds that agency, individual leadership and the role of governance systems are fundamental to understanding environmental problems. Therefore each of these elements is considered (Chapter 3).

2.3.2.4 Climate change policymaking

The complications mentioned above also apply when dealing specifically with climate change, but they are further compounded. This is because whereas other environmental problems are usually (though not always) fairly specific in terms of cause and response, climate change is caused by the activities of multiple sectors simultaneously, and therefore they all need to be involved in the response, irrespective of their differences (Andonova et al., 2009). Gupta et al. (2007) identify the need to involve diverse stakeholders from varying levels of government and also non-government representatives to tackle the issue.

Conventional hierarchical policymaking is unlikely to deliver effective responses to climate change. The issue requires innovative decision-making and new forms of policy. Climate change policymaking needs to be collaborative, with departments across government involved to account for the cross-cutting (Carter, 2007) as well as multi-level (Addink et al., 2003; Gupta et al., 2007) nature of the issue. O'Riordan and Jordan call for *"new institutional arrangements and feasible solidarities"* (1999, 92) to address climate change effectively. Oels explains that:

> *"an advanced liberal government of climate change mobilizes actors in business sector, the non-profit sector and governments at all levels to engage in 'partnerships' to contribute in their own ways to mitigating climate change"* (2005, 199).

So in this era of transformation in political thought - whereby traditional notions of government are giving way to ideas of 'governance' (section 2.2) – climate change, as a fluid, overarching problem, which transcends boundaries and which by nature is multi-level, offers a tangible issue through which to question the limitations of rigid hierarchical governments and to examine the potential strengths of more inclusive, dynamic forms of governance.

2.3.2.5 Transport and climate change

Whilst mechanisms exist, or could be implemented, to reduce global road transport emissions, because passenger cars are mobile, and used across the globe, delivering a response to such a large, dispersed group of users is problematic and unfeasible (Ryan and Turton, 2007). Instead of contributing to a climate change response, cars have hampered it – vehicles now require more energy because they are heavier and continue to grow on average (Banister et al., 2011).

Whitelegg and Haq (2003) describe the transport sector as the least flexible because of its dependence on petroleum-based fuels, current entrenched lifestyles and lack of political will. There is general acknowledgement that the link between fossil fuel combustion and global mobility needs represents a fundamental challenge to achieving sustainable transportation.

Yet as seen in the preceding sections, these issues are compounded by incompatible policymaking styles and institutional arrangements.

Hansen (2006) posits that the transport and environmental sectors offer an interesting 'testing ground' to examine more open and networking forms of collaboration, because they respectively represent both the 'old' and 'new' spheres of politics. Whilst the environmental, particularly climate change departments of government have become synonymous with diverse forms of policy development, transport has much more institutionalised, traditional and well-established systems of control. In examining what he referred to as 'deliberative governance', Hansen called *for "more interaction, increased participation, facilitation and mediation as well as increased communication"* (178, 2006) between departments. Hansen's reading of the relationship between the two sectors is a useful starting point to examine the interaction between climate change and transport professionals across levels of government. Whether the seemingly incompatible policymaking styles and differing 'spheres of politics' are also a contributing factor to this difficulty remains relatively unknown. This study aims to examine whether this incompatibility is compounding an already very challenging task.

However, counter to the claims by scholars such as Hansen (2006) above and Liberatore (1997) that both horizontal and vertical interactions should be endorsed, Rye and Marsden (2010) suggest that a lack of clarity about where responsibility for policy lies between spatial levels exists and profusion of actors engaged in climate change policy seems to dilute rather than promote effective policymaking (*Ibid.).* This research will examine whether such interactions enable policy to address transport emissions, or whether, as Rye and Marsden (2010) posit, expanding involvement in these processes actually weaken or complicate outcomes.

Based on the information in the preceding sections, Figure 2.2 outlines the differences in transport and environmental policymaking styles, across the research themes.

Theme	Transport	Environment/climate change
Scale	- Multi-scalar - Formal roles - Systems for interaction - Acceptance	- Multi-scalar - Roles emerging - Informal - Gaps and repetition - Resistance
Scope	- Well defined/established policy areas - Specific/Multi-modal - Integrated/separated - Narrow interests - Resource/influence rich	- Multi-sector - Undefined/Broad - Fragmented - Broader societal outlook - Resource/influence poor
Leadership/ power	- Politically powerful - Hierarchical – well defined - Long-term - 'Old'	- Politically weak - Network/collaborative - Relies on 'champions' - 'New'
Process	- Established - Traditional: modelling, economic analysis - Authoritarian - Resistant	- Innovative - Pluriform - Participatory - Evolutionary

Figure 2.2: Incompatibilities between transport and environmental/climate change policymaking

This information suggests that there are very few similarities between the sectors. This supports the notion that they may be incompatible in terms of policymaking styles. It also highlights that even within the respective sectors there are some potential areas of fragmentation – including the integrated and separated characteristics of various elements of the transport system, and the gaps and repetition in climate change policymaking across government levels. These additional complexities will be considered in the case study contexts.

2.4 Supplementary research themes

Here the subsidiary themes of leadership and process are considered. Each is an important element and in their respective fields there is much literature to consult. So before outlining the analytical frameworks of the research, these elements are discussed below.

2.4.1 Leadership

Leadership is a fundamental contributing factor to the research, but there is not scope to investigate the issue fully as it is such a large area of academic thought in its own right. However, the extent to which individual leadership – as identified in Young et al.'s (2008) work – is an important element for consideration, in terms of influencing policy processes, promoting interaction between levels and departments within government, and to implementing transport-related climate change policy, will be assessed (Chapter 3).

Scholten et al.'s (2009) typology defines 'daring' decision-making as distinct from transactional and transformative styles of leadership (Table 2.2). This typology will be revisited in the case study contexts to examine whether daring decision-making is witnessed.

Pollitt called for more political analysis of interests as well as a managerial analysis of organisational structures and procedures, with regards to leaders. He states that:

> *"…having capacity to steer strategically doesn't mean that a minister or ministry will use it. On the other hand, having good intentions but no capacity will not lead to much far-sighted steering either"* (2004, 128).

This is the nature of the analysis into the leadership theme that will be employed. The link between capacity to act and initiative to act are central here. It also adds justification to examining leadership and power as part of the same theme. Power is not only about individual leadership, but also about the tensions and struggles between the 'old' and the 'new'; between 'environment' and 'transport'; between 'hierarchy' and 'fluidity'. Flyvbjerg suggests:

> *"At times direct power struggle over specific issues works best; on other occasions changing the ground rules for such struggle is necessary; which is where constitutional and institutional reform comes in […] we need to rethink and recast the projects of modernity and democracy, and of modern politics, administration and planning, in terms of not only rationality but of rationality and power, Realrationalität"* (1998, 236).

Leadership typology	Transactional	Transformational	Daring decision-making
Motivation	Conducting good and fair interactions between different actors in the decision-making process	Bringing forward issues of consequence in the form of a strong and appealing idea or policy proposal	Bringing forward issues of consequence in the form of an advertising concept to activate and motivate people to put energy into getting idea further developed
Focus of action	System maintenance, reduce conflict, making sure things happen according to the system	Pushing a proposal, convincing others	Connecting issues of consequence with daily routine through combining flexibility and deliberative process with activities of influencing and directing towards a certain policy goal/change
Betting on support	No. Focus is on creating commitment as early in process as possible	Yes. Stress on substantial strength of the vision	Yes. Try to align environment to the plan
Main repertoire	Accommodating brokerage	Advocacy	Entrepreneurial brokerage Advocacy
Form of interaction	Cooperation oriented/focused on conflict avoidance	Competition/survival of the fittest idea	Coopetition (Balanced process of competition and cooperation)
Communication strategy	Dialogue, Decide, Deliver	Decide Announce Defend Tell and sell the idea	Announce Dialogue and Adjust Mildly selling the idea
Stakeholder strategy	Regulated openness Different actors are involved subject to strict rules and procedures	Closed to stakeholders. Open only to actors who are sympathetic to the vision	Half open/half closed Success process of open and closed moments
Decision-making strategy	Discussion, debate, accommodation and compromise	Decisiveness with the possible problem of resistance and lack of support Try to convince others	Alternation Alternating process of exploration, fixation and result (consensus) and new exploration

Table 2.2: Leadership typology and characteristics (Based on Scholten et al., 2009; taken from Anderton and Pangbourne, 2012 - forthcoming)

It will be assessed throughout the case studies whether power struggles are occurring, or whether systems are being overhauled/restructured to ensure the right mix of governance and government.

2.4.2 Process

Terms used throughout the research, such as 'policy development' and 'policy implementation' are important to explain. Whilst the governance literature covers these points to an extent, it is important to acknowledge that there is a specific body of literature concerning policy processes and that this too will be drawn from.

2.4.2.1 Process v. Outcome

More attention is given in academic research to examining policy content and outcomes than factors relating to how these policies are implemented. However, the imperative to better understand policy processes has been identified by several scholars. Jänicke sees that *"conditions provided by the structural framework are more important than strategies, or individual instruments and measures"* (1992, 49). Ryan and Turton (2007) affirm the notion that the design and implementation of policies is as or more important that the choice of instrument itself. Similarly Adger et al. believe that *"greater understanding of how environmental decisions are translated into governance outcomes is important for policy purposes"* (2003, 1107).

2.4.2.2 Policy processes

The interpretation of processes covered here include initial decision-making – which includes the rationale for initiating the policy, through to the formalisation; whether signing into legislation or public announcement of intent, policy development – which includes consultation on the details and implementation mechanisms, to implementation – which includes day-to-day management of achieving policy goals and objectives, monitoring and verifying process and where relevant initiating review of the policy. Processes are considered non-linear and for each of the case studies some process elements may be missing. These

systems are likely to be both very specific and complex in context. Indeed, Sabatier highlights the *"staggering complexity"* (2007, 4) of theorising policy processes because it:

> *"…requires knowledge of the goals and perceptions of hundreds of actors throughout the country*[7] *involving possibly very technical scientific and legal issues over periods of a decade or more when most of those actors are actively seeking to propagate their specific "spin" on events"* (*Ibid.*)

According to Laffan the following factors all affect the implementation of policies: communication, information, control, adequacy of resources, the nature of the policy instrument, bureaucratic structure and the existence of feedback mechanisms (1983, 391).

Several formal theories were consulted as potential frameworks for this research: Cohen, March and Olsen's (1972) "garbage can" model; Kingdon's (1984) *Multiple Streams*; *Advocacy Coalition Framework* (Sabatier and Jenkins-Smith, 1988; 1993); Matland's (1995) *Ambiguity-Conflict Model* and ideas from *Rational Choice Institutionalism*. However, given the multiple themes to be covered, the strong focus on interaction between government levels in the context of particular policies, adopting any theory which only focuses on the process is not entirely helpful and would need to be coupled with other theories. Using governance theory (section 2.2) allows for the policy processes to be considered as a distinct research theme amongst others. Moreover, these theories are well-established and applied often. Conversely governance theory has emerged since the 1990s and numerous scholars are calling for more context-relevant case study research, which develops standalone theories and improves the understanding of governance. This research has these calls in mind.

Therefore, initially this section draws heavily on Bardach's (1977; 1998) work which offers great detail around the policy-adoption and policy-implementation processes. Whilst the work

[7] It is assumed that policy process is equally complex at other levels of government

is not current, its fundamental principles remain relevant and the concepts can easily be applied to the complex policy problems being investigated here.

> *"In many respects the policy-adoption process and the policy-implementation process are similar […]. Both can be conceived as "assembly" processes, the former entailing the aggregation of "support" for a given policy proposal from a large number of semiautonomous actors, and the latter entailing the interaction of numerous functional inputs to create an operating program, also obtained from a variety of semiautonomous actors. Both processes are "political", in the sense that persuasion and bargaining, rather than brute force or coercion, are employed to bring about the desired assembly of requisite elements […] The policy adoption process wrests with participants' verbal support for a proposal, whereas the policy implementation process demands the contribution of real resources"* (Bardach, 1977, 212)

Bardach (1977) sees the original mandate of a policy or program as a blueprint for the implementation process, which he describes as a machine that is either *"assembled from scratch"* or *"created by overhauling and reconstituting an older or pre-requisite machine".* The implementation process is about *"putting the machine together and making it run"* (1977, 36). In this context, whether there is a need to overhaul the pre-existing machine (institutional and organisational change) to address climate change is being considered.

Similarly, according to Bardach (1977) policy is often unclear or weak, but this maybe because the government was pressured into acting on a pressing social problem, but unsure about the best course of action. This particular element of the argument will be considered in the context of the state government's "doing something" to address climate change throughout the research. Bardach continues that negotiations in the policy-adoption phase are simpler and faster than the implementation phase because the participants feel it is less important to resolve uncertainties because only the minimum amount of support is required to convince relevant decision-makers to favour the proposal. This element will also be reflected on in the analysis of the case studies.

Much literature on policy processes constitutes sets of questions or themes which need to be answered as the process unfolds. Many of these questions link to the fundamental questions asked by CDG (section 2.2.6). Flyvbjerg (1998) proposes that there are four value rational questions to ask about the process:

1) Where are we going?
2) Who gains and who loses by which mechanisms of power?
3) Is the process desirable?
4) What should be done?

These questions very much draw on the power focus of his work, much less about what the processes entail, but who is steering or subordinate within them. However, in relation to environmental protection efforts Scheberle (2004) asks:

1) Who should be responsible?
2) How should further environmental protection be accomplished?

Scheberle concludes that increasingly intergovernmental partnerships help to answer both questions: the '*who'* often would be state and local governments; the '*how'* would include innovative approaches sensitive to local concerns. These findings are interesting in the light of the focus of this research, as it too examines the role of local and state governments and therefore may also deliver similar findings, which lend support to Scheberle's work in different contexts.

In considering the 'who' question, Kavanagh and Richards suggest that "joined-up government" (section 2.3.2) depends on particular people controlling the policy process as it develops rather than on any institutionalised process of policymaking. Consequently, it would appear that it is prone to failure when personnel or departmental interests change (2001, 16). Therefore the importance of individuals in developing and implementing the case study policies will be considered.

Indeed as will be seen in the subsequent Chapters, some of the primary questions centre around two distinct areas: 1) who is responsible for the delivery and success of the case study policies, but also 2) how will they be implemented – it is concerned with the specifics of the process as much as the stakeholders involved. Pollitt (2004) suggests that there are additional factors to be considered when examining how agencies deliver policy:

- Political salience of the primary task
- Financial 'weight' of the agency
- Level of scientific knowhow
- Observability and attributability of outputs and outcomes
- Previous history (cultural path)

CDG places emphasis on historical considerations (section 2.2.6). Pollitt's typology is used as a supplementary analytical tool to compare the case study policies in Chapter 8; after points for comparison that emerged from the case studies are examined.

2.5 Barriers

Whilst not a distinct theme; the concept of barriers cut across the research. This is because the hypothesis states that conventional environmental/climate change- and transport-policymaking practices are incompatible – and that this incompatibility is hampered by organisational structures of government, both combined create a barrier to successful policy implementation. Therefore, this consideration needs to be central throughout the research, but any other barriers unrelated to these organisational elements that inhibit the policy processes also need to be identified and discussed.

The existing literature on barriers to transport (Hull and Tricker, 2005; Rietveld and Stough, 2007; May and Crass, 2007) particularly relating to sustainable transport policy implementation is sparse. Commentaries have identified constraints and developed broad typologies to categorise barriers observed in given contexts. Even when relating to policy

implementation (Table 2.3) the approaches offered are weak approaches in that they have not considered how identified barriers relate to broader governance frameworks.

Institutional barriers:	**Overcoming those barriers requires:**
Split or duplicated responsibility	More coordination between the tiers of government, and between agencies at each level
Process	Consistency in planning over the long-term
Identifying objectives, specifying problems; Selecting possible solutions, appraisal, implementation	A problem-led approach to developing solutions and strategies
Political and public acceptability	Political champions and more positive involvement of the public and media
Information and skills	More effective use of data, models and appraisal methods
Financial	Financial support for strategies, without inducing policy bias
Legislative and regulatory	Legislation and regulations to support these requirements

Table 2.3: European Conference of Ministers of Transport barriers (May and Crass, 2007)

Reducing transport emissions is perceived as 'difficult', but the policy tools that would decarbonise the sector have been identified. So any examination of the barriers to transport-related climate change policy need to be framed with this in mind. Therefore the typology developed here to identify any barriers which do not relate to interaction across and between levels of government does draws on this existing literature (Chapter 3), but also categorises barriers to relate them back to this inertia. It asks if identified barriers are present, does this mean that nothing will happen? It also asks whether some barriers are more important than others. A central consideration to sub-national governance therefore is to understand barriers in the context of how decisions are made and how governments work and interact with other entities. In analysing the information collected thematically as well as in this contextual frame, a robust comparison can be made of the policy development and implementation processes in the case studies (Chapter 8).

2.6 Analytical framework

Taking the various elements in section 2.2 into consideration the research has a firm grounding in theory. But a selection of frameworks will be employed to analyse the case study data, each is explained in this section. The ideas which make up the framework are somewhat diverse, from several disciplines and some will be utilised to explain some very specific points. Some of these elements are important disciplines in their own right. But taken together, these concepts will all play an important role in the collective analysis.

2.6.1 Institutional interplay

Institutional interplay is a concept developed by Young (2002; 2008; 2009) and stems from his work in international relations' examining the relationships between national governments and international institutions. Young distinguished horizontal (at the same level) and vertical (across levels) interplay as well as functional (whereby standard activities influence operation of another entity) and political (intentional linking to pursue goals) interplay. He suggests that in most cases, the key to success lies in allocating specific tasks to the appropriate level of social organisation and then taking steps to ensure that cross-scale interactions produce complementary rather than conflicting actions. Using these ideas and applying them to the cross-issue and cross-scalar relationships being examined, the type of interaction that is occurring in each instance can be determined. Whilst Young identifies the factors of competence, compatibility and capacity to examine the international level, these are not directly transferable elements to the scope of this research. Institutional interplay is used to posit here that political interplay between transport and climate change departments and between levels of government would likely lead to a more successful policy implementation process.

Similarly Jänicke's (1997) ideas on 'capacity' – particularly in this instance, integrative and structural capacity – may offer some valuable insight. Integrative capacity refers to the political-institutional framework conditions conducive to integrating environmental interests into sectoral decision-making and Jänicke argues that open and inclusive structures of decision-making are best able to achieve improvements in environmental quality. Strategic capacity speaks of the ability to implement comprehensive and long-term objectives in a well-coordinated manner with sufficient staying power. Discussing the case studies in terms of the presence of these capacities, alongside the extent and type of interplay as explained by Young's work, offers a robust analysis of the interactions occurring in each situation.

Drawing on Hansen's (2006) idea of the 'old' and 'new' spheres of politics enables the research to examine the differences in policymaking processes between transport and climate change departments and to assess whether interaction, participation and communication at state level facilitates the successful development and implementation of effective measures to reduce emissions from cars.

2.6.2 *Chains of interaction*

Kooiman (1993; 1999; 2000) developed the idea of social-political governance and whilst it does not offer a complete model through which to conduct the research, Kooiman's reference to lengthening 'chains of interaction' which have been brought about by societal changes is useful. Kooiman suggests that these chains, which are *"increasingly institutionalized with multilevel and multisectorial dimensions"* (2000, 139) result in a proliferation of the number of actors in society and of interactions between these actors. This results in the blurring of sectoral dividing lines. Stoker (1998) also refers to blurring but suggests that it relates to the

boundaries and responsibilities for tackling issues between and within public and private sectors. Kooiman goes further:

> *"Public authority at all levels (from local to supra-national) is becoming diffused over various societal actors and their relationships have changed. […] Responses to societal problems require broader sets of instruments, and other sets of partners to solve them"* (1999, 73).

The societal change in this instance is the need to respond to climate change, which will result in the necessity to bring diverse actors together and create more interaction. Indeed actors in particular areas need each other. Each can contribute relevant knowledge or other resources. No one has all the relevant knowledge or resources to make the policy work (Rhodes, 1996). Transport and climate change professionals have decision-making styles and likely different skill sets and knowledge (Figure 2.2) that in combination will change relationships, lengthen chains of interaction and blur sectoral lines in the response to dealing with climate change. As disparate stakeholders must converge to address the issue, the number, variety and conflicting views of those involved will further complicate efforts to mitigate GHG emissions from cars (Vigar, 2002). The notion of lengthening chains of interaction from social-political governance can therefore undoubtedly offer some theoretical insight to analysing the scope theme (transport and climate change) of this research and also link it with the scale theme.

2.6.3 Additional analytical considerations

Drawing on additional descriptive terms from the political science literature in the context of climate change and transport policymaking helps to explain the complex interactions or fragmentation witnessed. Such terms include:

- Implementation deficit (Peters, 1997)
- Institutional arthritis (Olsen, 1982)
- Legislative/policy gridlock (popularised by Mayhew, 1991)
- State failure (Jänicke, 1990)

These terms are employed where relevant in the case study and analysis chapters to help explain what has been witnessed and the broader findings.

2.6.3.1 Integration

Whilst integration has become central to many areas of environmental governance, as Brown notes it: *"is rarely qualified, defined or evaluated*" (2009, 36).

To address this shortcoming, Brown identified three types of integration:
1) Linking social and ecological systems
2) Different actors, stakeholders and institutions
3) Horizontal (same level) and vertical (across levels) policy integration. *(Ibid.)*

This study is concerned with types 2 and 3 as it is focused on levels and departments within government and the policy processes underway in this arena. The following parameters have been devised to identify when integration is successful:

- Full capital costs are taken into account
- Capacity exists in government and civil society institutions
- A feasible timescale to achieve objectives is possible
- There is compatibility and no obvious conflict between objectives
- The legal and institutional frameworks supporting the response are already in place
- Relevant/timely information is at hand and extensive new data/research is not necessary

(Brown et al., 2005; cited in Brown, 2009, 39)

The case studies will be mapped in comparison with each other and against these criteria in Chapter 8 to identify the extent to which the policies can be considered integrated.

6.3.3.2 'Diagonal regulation'

'Diagonal regulation' has emerged in legal studies to investigate the increasing role of climate change-related litigation in the USA. Diagonal regulation concerns vertical (multiple levels) and horizontal (same level) divisions of governance (Osofsky, 2009). Not only because some of the case studies examine the implementation of legislation, but also because this definition matches the parameters set in the research, there is potential for this definition to be

broadened away from legal studies. It may inform the findings from the Californian context and whilst it will not form a central pillar of analysis, it will be revisited to ascertain if it is of relevance to the broader context. Further work is required to develop of 'diagonal governance' as a concept and how/whether it is useful to aid discussion.

2.7 Conclusion

The complexity of reducing the climate impact of cars is fundamental to this research. As highlighted in numerous sections above, transport is a difficult sector to decarbonise and climate change requires long-term thinking and planning which is incompatible with current political cycles. Whilst it is fundamentally important to address climate change, the issue has to compete with every other political concern for resources – financial/temporal/political – and when times are hard it is often first to drop off the agenda as 'non-essential'. These considerations are many of the potential barriers that may prevent transport-related climate policy from being implemented. This research sets out to determine if incompatible policymaking structures, relationships and practices are also contributing to this impasse.

It has become apparent that a shift in emphasis away from hierarchical government to more complex forms of governing has required change, new perspectives and courses of action. More change – both incremental and radical – is going to be needed to address climate change, a multi-level, trans-boundary, cross-sector issue.

Research on institutional change and the performance of environmental and resource regimes, is in its infancy (Young, 2010). This thesis attempts to contribute to the burgeoning field, by examining case study contexts and employing a relatively new, multi-disciplinary theoretical framework, which draws from literature within and outside political studies. But also by asking

very specific questions about very specific elements of the task in hand (Chapter 3) and conducting analysis to tie previously unconnected strands of thought together. Finally it looks at climate change from the perspective that state governments have complex links with other entities, which stretch 'across', 'up', 'down' and 'out'. States have been the only entity large enough to begin to take action with some leverage at a national level and small enough to work with local governments in implementation. Perhaps therefore, sub-national governance can inform climate change policymakers across levels and by examining four case studies in great depth, can illuminate some of the inconsistencies and barriers which are currently preventing meaningful transport emission reductions.

Chapter 3: Methodology

3.1 Introduction

In order to investigate the role of state governments in addressing climate change and whether the reduction of transport emissions is being prioritised, this research is an international comparative study, examining four state government contexts, through conducting semi-structured interviews.

The research is not primarily concerned with the 'what' – the substance of policies designed to reduce transport emissions, as substantial research is already afoot in this field. Therefore the primary focus of this research is the 'how' – the processes of policy development and implementation – and the 'who' – the actors involved in making this happen.

The case study governments – Scotland, SA, California and Bavaria – were selected because they are all self-proclaimed 'leaders' on climate change and active members of The Climate Group's states and regions network. Each had identified 'transport' as a priority focus area during the establishment of the 'Climate Leaders Alliance' in Nairobi in 2006 (Appendix 3.A). From this point, each case study was developed by identifying one particular policy, which had potential to deliver GHG reductions from transport through its implementation (Table 3.1).

Each policy was selected on the basis that it was in development or implementation stages at the time of conducting the research. They are each investigated in terms of the level of interaction and dialogue between departments and levels of government occuring in these processes. Four thematic areas (section 3.5) are identified through which the policies could be examined and the barriers (section 3.6) are also considered. Importantly, GHG reduction is the primary focus of some of the policies selected; for others it is a 'co-benefit'.

State	Policy chosen	Type of intervention	Main organisations involved
Scotland	"Smarter Choices, Smarter Places"	Behavioural change; awareness raising; active travel	Transport Scotland, Scottish Transport Directorate, Scottish Environment Directorate, local councils
SA	AU$2 billion investment rail/tram infrastructure	Public transport provision	Department for Transport, Energy Infrastructure, Department of Premier and Cabinet
California	Senate Bill 375	Land use and planning; transportation funding	California Air Resources Board, Caltrans, California Transportation Commission, local Metropolitan Planning Organisations
Bavaria[8]	EU Cars and CO_2 Directive	Vehicle efficiency standard	EU DG Enterprise, EU DG Climate Action

Table 3.1: Case study policies

This methodology is concerned with the gathering and analysis of primary research. The relevant theories and analytical tools used to develop the research design (Chapter 2) are referenced and revisited in this chapter where appropriate.

3.2 Hypothesis

The central hypothesis of this research is that conventional environmental/climate change- and transport-policymaking practices are incompatible – and that this incompatibility is hampered by the current organisational structures of government. Together these factors render implementation of policies to reduce the climate impact of transport difficult. Without successfully linking frameworks and stakeholders in the policy process, necessary emissions reductions from cars will be difficult to achieve.

The hypothesis is guided by the four research themes – scale, scope, leadership and process. Each of these themes has a distinct yet important part to play in understanding and comparing the case study contexts, in terms of the cross-departmental and cross-level interactions occurring within each of the sub-national governments (section 3.5).

[8] This case study examines Bavaria's role in influencing EU policy

3.3 Objectives

The **first objective** is to examine **the interplay between levels of government** (local, state, national, and in some cases supranational) – 'vertical' relationships**.** This relates to the scale research theme (section 3.5). The **second objective** is to investigate **the internal frameworks** and dynamics **between government departments** which construct and govern these specific policy areas – the 'horizontal' relationships. This relates to the scope research theme (section 3.5). This involves examining the broader transport and climate change landscapes in which the policy is being developed before investigating the extent of established dialogue/interaction between relevant departments. This is followed by an in-depth examination of the interaction and communication taking place to develop and implement the selected policy in each case study. The scope theme also examines **the role of non-governmental representatives** (public and non-profit) in the policymaking process, and whether these actors influence, help, or hinder internal dialogue and the development of policies to address the climate impact of cars. The role of the auto-industry in affecting policymaking is assessed in detail in Chapter 7, but is also considered in the other contexts.

There are two supplementary objectives. The first is to examine **leadership** (both political leaders and individuals playing more functional roles) to determine whether highest-level support can lead to successful policy implementation and positive results. This relates to the leadership/power research theme (section 3.5), both in terms of how leadership is presented in each case, and how/whether it contributes to the development and implementation processes. It also examines whether there are any power struggles with entities attempting to inhibit the progress of policy to reduce transport emissions.

All of these elements drawn together enables investigation of the final research theme - **process** (section 3.5). The final supplementary objective is concerned with understanding the finer details of how policy development and implementation is undertaken, in terms of who is involved, who has ultimate responsibility for the success of the policy and how the processes will be carried out.

Finally the barriers (as discussed in section 2.9) to each case study policy are examined. It is of course possible that the hypothesis is false and policymaking styles and organisational structures do not contribute significantly to policy implementation successes or failures. Or indeed that the collaboration fails due to another specific barrier(s) which would need to be removed or overcome. **The final objective is to better understand these barriers** and how they relate to governance more broadly.

3.4 Initial research questions

Using these objectives, at the outset of the research, the following groups of key questions were generated to inform the research methodology:

- Overview: How are transport and climate change currently addressed at the state level?
  - Which level of government is responsible for transport/climate change?
  - How do the levels of government interact?
  - Is there existing dialogue between government departments?
  - Has there been high-level support for policy developments?
  - What measures have been successful in connecting diverse personnel?
  - Does collaboration make policies more effective?

- Case study policies: Is the policy designed to reduce the climate impact of cars?
  - What is the policy?
  - How did it come about?
  - How is it being implemented?
  - What is the role of departmental collaboration in developing these policies?
  - What is the role of political/public-private cooperation in these?
  - Were there any unique circumstances in policy development?
  - If successful, could they be replicated?

- Barriers: What are the barriers a) to this policy, b) to achieving emissions reductions from cars generally and at the state level specifically?
    - Are these barriers political?
    - Could these barriers be removed or overcome?
    - Is there evidence of this?

These questions formulated an initial inventory of the information which was required to be derived from the case studies. These were then grouped into common areas, which formed the research themes. Inputs (interview questions, participant information etc.) and outputs (transcripts, analytical matrix, and case study chapters) were then formulated around these themes. Prior to carrying out the fieldwork, a detailed outline of the main aims for each case study and a long list of potential interviewees were prepared. This also helped inform the themes and question areas to be asked in each interview.

3.5 Themes

The themes were developed to group substantive research findings based around the areas which the initial research questions could be grouped into. Each of these themes had a distinct yet important part to play in each of the case studies contexts, in terms of their contribution to better understanding the cross-departmental and cross-level relationships and the dynamics of interaction at play within each of the sub-national governments.

Using these themes to develop specific interview questions for each case study and taking each in turn through the analysis of the case study interviews offered a means of ordering and gaining consistency across diverse contexts. Each theme helps to identify where there are successful/failed attempts at collaboration and determine the contributing factors for these.

Element of analytical framework	Theme	Key questions considered
Institutional interplay/chains of interaction/capacity	Scale	- Where does responsibility for climate change/transport lie? - At what level is the policy being implemented? - Are other levels involved in development/implementation? - How are communication links between levels/departments generally? (i.e. is this situation unique)
Institutional interplay/chains of interaction/context of policy problem integration	Scope	- Which department initiated the policy development? - What is the policy? - Is the policy transport/climate change/other area focused? - How broad is the impact; what change is expected? - Can the targets set (if any be achieved)?
Type of leader	Leadership /power	- How does climate change 'leadership' present itself? - Which department is leading implementation? - Is there an elite figurehead? - Is there a departmental champion? - Where is climate change on the agenda?
Rule enforcement Institutional/organisational change	Process	- How was/is the policy being developed/implemented? - What are the future plans for the policy?

Table 3.2: Research themes

3.6 Barriers

As well as grouping information under these themes, it is also important to investigate the potential barriers that may exist and whether/how these can improve the account of policymaking and governance that currently exist.

Identifying the barriers to successful development and implementation will determine whether a lack of interaction is responsible fully, in part or not at all. In drawing on the details in section 2.9, Table 3.3 outlines the typology through which barriers identified in the case studies can be mapped. The identified barriers are considered together in Chapter 8.

As will be demonstrated across the case studies, 'other' barriers were identified. It became apparent that there was a need to include 'operational' barriers as a category – that is, the specifics of any given case study policy – which were deemed a significant hurdle. This would have been a useful addition to this typology and as such it was included in each case study,

although the initial typology remains as it stood before analysis took place. There are further 'other' categories which emerged and these are discussed in each case study context specifically where relevant.

Type of barrier	Examples
Political	- Existing frameworks outside scope of state government prohibiting policy implementation - Multi-stakeholder dialogue weakens/alters policy objectives/measures to take account of trade-offs and compromises - Insufficient dialogue between governmental departments - Competing agendas/different interests
Legal	- Mechanisms not in place to implement legal frameworks necessary for policy development - Legal action prevents implementation of policy
Economic	- Insufficient capital to invest in policy/infrastructure - Change in economic climate - Unforeseen events
Industrial	- Opposition to policy being implemented; - Pressure on government not to develop policy; - Non-compliance with policy measures;
Public	- Opposition to policy - Lack of knowledge regarding policy - Poor uptake of policy
Other	- Any other barrier identified in the research

Table 3.3: Types of barrier

3.7. Primary research methods

3.7.1 Method choice – case studies

Before examining in depth how the research was conducted, it is important to justify the choice of writing qualitative case studies. Whilst case studies – and qualitative research more generally – have been criticised for lacking rigour and being too context-dependent, their value in political science is acknowledged and the approach is advocated by some of the discipline's leading scholars. Yin (2009) suggests that they allow us to understand complex social phenomena bu allowing investigators to retain the meaningful characteristics of real life events. This helps to contribute to our knowledge of individuals, groups, organizational, social, political and related phenomena. Moreover case studies are understood to be the best method for asking "how" and "why" questions (Remenyi et al., 2002; Yin, 2009), which makes

this a commonsense method for this reseach given that such questions form the elements of enquiry.

Young (2010) asserts that research [in political science] relies on the case study to explore 'theoretically-grounded' hypotheses. Furthermore, Rabe states that *"systematic study of actual experience in policy development and implementation"* (2007a, 442) is required to better understand these processes. Opting for comparative case studies enables in-depth examination of a number of factors which may, or may not contribute to proving or disproving the hypothesis under examination. These international comparative case studies have a number of similarities, such as 'level' of government and the central premise that the development and implementation of the policy under consideration will deliver emission reductions from transport if successful. They also have some interesting differences, such as their history, relationship with federal/national government and focus area of policy. It is therefore possible to explore these actual experiences to look for similarities and differences across the contexts and consider how findings contribute to wider governance theory.

3.7.2 Policy identification

The policies were identified through conducting document (policy documents/strategies, reports, briefings, web-based information, newspaper articles) studies and in some instances, through preliminary 'scoping interviews' with key stakeholders in each state. Each policy was chosen because it was in development or had been announced early in the course of the research and had potential to deliver emissions reductions from transport. Each focuses on a different element of the transport network, this was not a deliberate decision, but it is positive as it offers a broad examination of policy responses that can be adopted across scenarios.

The decision to investigate an EU policy in the Bavarian context was taken because it allows for investigation of the role of the state in policy development and implementation at different levels of government and also highlights the complex relationship between industry and governments at different levels.

3.7.3 Semi-structured interviews

To test the hypothesis, semi-structured interviews were conducted with diverse groups of professionals involved in or aware of the policy development process in each state. Although structured interviews, a questionnaire-based format, public consultations and Q methodology were all considered as potential research methods, the semi-structured interview method was used because it is considered *"as a means of eliciting relevant, valuable and analytically rich data"* (Barbour, 2008, 114). It allows participants to share relevant experiences and knowledge about the case study context as well as discuss the policy in question.

According to Bernard (2000) semi-structured interviews is useful in projects with managers, bureaucrats and elite community members – people who are accustomed to efficient use of their time. Equally, as a more informal methodology, it has potential to gather additional information which may not be captured using other methods. This is in part because questions could be asked or ordered in different ways for different interviewees and there were opportunities to have very general or very specific conversations with participants, depending on the individual. Semi-structured interviews follow an open-ended general script to cover a list of topics, but allows the interviewer discretion to diverge from the script to gain clarity or pursue related discussion strands (Bernard, 2000).

There were key questions considered in each theme area, but these were not exclusive (section 3.5). Using semi-structured interviews allowed for additional questions relevant to each of these themes to be added, or for certain questions to go unasked, depending on the flow of each particular interview. Moreover, semi-structured interviews allow for direct comparison across questions – although not all participants were asked all questions – and for a broad understanding of the policy landscape to be derived.

Initial participants were selected as the researcher was already in contact with them – primarily as a result of previous activity (Appendix 3.A). Research was undertaken to identify the remainder, and majority, of participants. Each invitation to participate was sent to individuals identified as relevant stakeholders in each policy, ensuring for a variety of professional backgrounds and sectoral representation. State government representatives from transport and climate change departments directly involved with the chosen policy were primary interviewees.

Additional interviews were conducted with local and national government representatives, with state government representatives not directly involved with the policy, and with academic, industry and NGO actors from constituent countries. In the Bavarian context, EU representatives have also been interviewed as this research examined an EU regulation.

Information from 20 interviews were used per case study, although whilst conducting the fieldwork in some cases more than 20 participants were interviewed, due to recommendations made by other interviewees during the data collection. In these instances, the interviews which offered the most relevant and detailed information were selected. In some interviews, more than one participant was present. In the majority of cases, each participant's views were

recorded as separate, but there are certain instances where contribution of certain participants was extremely limited and not considered in the research.

Each potential interviewee was contacted via a tailored version of a template request email (Appendix 3.B), to reference their role and organisation and any additional relevant information. Each participant was provided the same background information (Appendix 3.C) to minimise the chances of bias. This information was updated once to account for the time that passed between the first set of fieldwork and subsequent trips, but the substance of the information was not changed. Given that the success of this research was contingent upon participation of state government representatives wherever possible written agreement of collaboration was obtained from proposed participants as early on as possible.

Each participant was offered a copy of the research themes (provided in the Appendices relevant to each case study separately). This was primarily a set of questions, but because of the nature of the interviews, not all questions were covered, depending on the role/function/nature of the participant and additional questions relevant to the participant's expertise may have been asked. Where relevant this information was also used in the case study analysis (section 3.8). The majority of interviews were conducted face-to-face and in English[9]. The interviews ranged between 25 minutes and 1.5 hours – on average they were around an hour in duration. Some interviews were conducted over the telephone and a minority came in the form of emailed responses to questions.

Where possible, all interviews for each case study were conducted over a short period of time. However, certain participants had limited availability, so there may be a time lag in their

[9] Steps were taken to ensure extra time was factored into the question formulation, translation and analysis of German language interviews, transcripts and supporting documentation

participation against others in the study. In other instances, it was important to speak with participants who had assumed seminal roles within the case study, to consider their viewpoint, which meant speaking with them much later than with other case study interviewees. The Bavarian case study research was particularly challenging; participation was particularly hard to secure in some instances and significantly delayed the completion of the case study.
Each participant was offered an opportunity to edit their response once transcribed. In certain cases, significant amount of time had passed since receiving the transcript. Therefore, participants were offered (where relevant) a copy of the recording and given an opportunity to provide updated information. Most participants did not provide additional information. In some cases, significant changes had occurred and these were referenced in the relevant case study. However, most updated information was based on developments in the implementation of the project that could be expected over the time that had passed.

Whilst developments within the case study contexts were monitored, it should be stated at the outset that the interviews and the resultant case studies depict the context of the policy at the time of the interviews – a snapshot of the dialogue occurring at that time. Whilst it may have been desirable to offer a detailed account of the development of each policy over a longer period of time and to take into consideration all of the direct and indirect changes that have influenced their course, this is not possible. The case studies are nonetheless valuable depictions of each of the settings.

3.7.4 Confidentiality and neutrality

Confidentiality of participants' contributions was guaranteed and all ethical standards and requirements set by Oxford University were met through completion of the requisite documentation. All participants were aware of these standards.

Each participant was offered anonymity on a question-by-question basis, given an opportunity to state how they wished to be referred to in the research as well as withdraw from the study at any time. After each interview had been recorded, it was transcribed in full (sample transcript – Appendix 3.D). Some assistance with the transcription was sought. Any individual that worked on transcription was asked to sign a confidentiality agreement and asked to destroy copies of recordings and transcriptions once they were completed. Recordings and transcripts were password protected and backed up. Participants were guaranteed that their responses will only be used for research purposes. Consistent feedback on interviews, research and findings has been delivered to all participants.

To address the risk of subject bias, given that the researcher has a climate change background (as opposed to transport policy) and initially utilised existing contacts, a broad range of personnel was identified in each state, to allow for an adequate spread across departments/sectors. As much as possible, official government documents were utilised in developing the contextual and background landscape of each case study.

3.7.5 Additional data gathering

All relevant and publically available policy/strategy documents, legislation, government reports, briefings, web-based information and newspaper articles were used to inform the policy landscape for each of the case studies. Whilst conducting fieldwork, the researcher also attended any relevant conferences or events which would help identify or understand chosen policies (Appendix 3.E).

Throughout the course of the interviews and analysis, the researcher stayed well-informed of developments in each of the case study contexts by subscribing to state/national government

newsfeeds and establishing email-based internet searches on keywords relating to each state and selected policy. This was particularly important, because as referenced in section 2.6.4, CDG frames itself around a particular policy problem and is centrally concerned with identifying institutional change. Therefore, it was required that all potential developments and changes were understood.

Occasionally access to other sources of information – such as unpublished/restricted documentation or personal presentations – became available via the interviews. Where appropriate, these have also been used in the research. Personal observations, where relevant, have also been cited in the research.

3.8 Analysis, writing and synthesis

'Mind maps' were developed for each case study, to allow the researcher to capture thoughts about the main points arising in each set of case study interviews (Appendix 3.F). Each transcription was then used as a script from which to take relevant information about each of the themes identified above. A coding matrix (Appendix 3.G) was prepared, which cross-referenced participants with specific questions and themes for each case study. This ensured that all relevant information was captured in each relevant theme, even if it was not offered by participants in response to a particular question. The typology of barriers was also used and barriers identified were grouped accordingly.

Oftentimes particular information could have been coded against more than one theme. In these instances, it was used in the theme which was most directly relevant and referred to in the others thematic areas. Useful additional information and specific quotes for use in write-up were also separated out during analysis for ease of reference. Occasionally where quotes

given were very long, steps were taken to shorten these – by removing linking words or entire sentences. In these instances, the researcher was very mindful to not misrepresent participants, or change the meaning of the quote. These instances were marked with the following indication – […].

As far as possible, each matrix was made to be directly comparable with the others, whilst allowing room for case-specific context and nuance. Once complete, the data within these matrices formed the basis of the substantive case study chapters of the thesis. Case study chapters were written in chronological order from when the interviews were conducted. Interviews were transcribed a chapter at a time, although not necessarily in the exact order that the interviews took place.

As case study chapters were being written, areas of interest and potential discussion points were identified which were carried forward to form the basis of Chapter 8. The case studies, as will be demonstrated, are diverse in many ways, but there are also some interesting similarities. Not all discussion points compare all four case studies in turn. Instead synergies and differences are highlighted and explored further, often between two, or three of the cases, not always across all contexts (Chapter 8). The issues selected for comparison that emerge across the themes have also been selected as they are relevant to, and have potential to inform, broader theoretical considerations surrounding governance and political science more generally.

3.9 Limitations and challenges

The following section briefly outlines some of the shortcomings of the method and challenges that were faced in carrying out the research.

Not being able to record seven interviews and obtaining two written responses lessened the consistency of the research. It was difficult to directly quote from notes written during interviews and entire sentences were not noted. Similarly, where written responses were obtained, any clarification from the participant had to be sought, which entailed further time considerations; whereas clarification of meaning in an interview is given immediately. That said, some of the most 'relevant' participants to particular case studies fell into either of these categories and it was preferable to gain insight from these stakeholders even if a recording could not be made.

It is possible that by asking interviewees about what they know, responses were limited and predisposed to focusing only on their expertise. This was addressed during the interviews by allowing participants to offer thoughts on subjects with which they may not have been completely familiar – they could opt-in to answering these questions. But where they did, they may have been merely speculating, which could limit the value of these responses.

Throughout the course of the interviews the researcher developed an understanding for how interviews were best conducted. From the perspective on consistency, this did not significantly alter the process, but rather illuminated which questions the most information could be derived from and which were less useful, so that where interviews were shorter, these could be prioritised.

Several participants offered anecdotes or stories in response to some questions. Much of this information was interesting and useful; but it was challenging to know how to treat this information in analysis or where to place it within the case studies to add value.

The Bavarian case study was the most problematic in terms of data collection. Whether the language barrier, cultural differences, the subject policy, or these elements in combination caused or contributed to the issues faced remains uncertain. Whilst generally government representatives at EU, national and state level were secured as participants, industry and local government representatives were unresponsive and contributed to significant delays occurring in fieldwork completion. A valid shortcoming of this case study is therefore that some of the most relevant people have not necessarily been consulted. For example, despite car manufacturers being central to the case, only two car companies agreed to participate – one with a very limited written response and another not based in Bavaria. Many of the participants offered information about BMW, but without participation from the company, official and strategic documents were relied on to glean perspectives. Moreover, responses offered in the case study were often 'standard policy responses' or extremely rigid and formal. It was challenging to gain insight from such information.

An enduring uncertainty throughout the analysis and write up of the research was how to determine trends that warranted mention, or that could be said to be significant. In most instances, if less than half of participants responded to question, it was only discussed in findings if it was a significant point of comparison across cases. Generally, where information was directly relevant to the overarching thesis of the research and related to fragmentation or the policy process, it was referenced.

As with most process-based research, a feature of this undertaking was that throughout the course of the interviews and after fieldwork was completed, the policy landscape and case study contexts were changing. Each of the case study states had elections during the research and their outcome could (and did) significantly impact the policy processes and organisational

consideration as will be demonstrated, where relevant, throughout the case study chapters and in Chapter 8. As best as possible, the research has tried to account for and explain the most significant changes and evolutions in the case study chapters at the time of writing, but it was feasible only to briefly mention these developments, unless fundamental to outcomes.

It should be emphasised here that the research represents a snapshot of the situation at the time of the interviews and endeavours to offer detailed insight into and derive knowledge from the processes at play by taking this approach. It is inevitable, however, that as time passes between interviews, analysis and writing, and as events progress, some of the very specific information in the case studies becomes obsolete.

Chapter 4: Scotland – "Smarter Choices, Smarter Places" (SCSP)

4.1 Overview

This chapter introduces the Scottish government context, political leadership, strategy and organisation. It examines transport policy – including modal split, budget and strategy – and outlines Scottish climate change policy to date. It proceeds to present the research findings on SCSP. The main objectives are to understand the levels of government involved in delivering SCSP (scale); to ascertain whether SCSP is designed to deliver emissions reductions from transport; as well as the linkages between the Scottish climate change and transport departments (scope). Leadership issues are considered (power/leadership) as well as the specific details of delivering the programme (process). The barriers to both implementation of the programme and to reducing Scottish transport emissions are also explored.

4.2 Introduction – Scotland and Devolution

In a 1997 referendum, Scottish voters elected in favour of a devolved Parliament, which was established through the 1998 Scotland Act. The first Scottish elections in May 1999 established the Parliament that took power from July. Westminster retains responsibility over certain 'reserved matters' including the economic system, trade and some aspects of transport, including railways, safety and regulation. Devolved issues include health, local government, planning, some aspects of transport – Scottish road network, bus policy, ports/harbours – and the environment (Scottish Government, 2011b&c). Any matter not reserved under Schedule 5 of The Scotland Act is devolved.[10] The implications of this split jurisdiction are important when considering Scotland's 'available' responses to climate change and are explored in section 4.5.3.

[10] Under a 'Sewel Motion' Scottish Parliament can agree that Westminster should legislate for Scotland on devolved matters where it is considered appropriate, such as a single UK-wide regime or where the Parliament supports proposed legislation but no Parliamentary time is available because of separate Scottish priorities (Scottish Government, 2011b&c).

The Scottish National Party won the third Scottish election in May 2007 by one seat over the incumbent Scottish Labour Party to form a minority government. Subsequently the Scottish Executive was changed to the Scottish Government, led by First Minister Alex Salmond. The National Performance Framework (NPF) (Figures 4.1 and 4.2.) set by the Scottish National Party offered guiding principles for government operation and interaction with Scotland's local authorities (LAs).

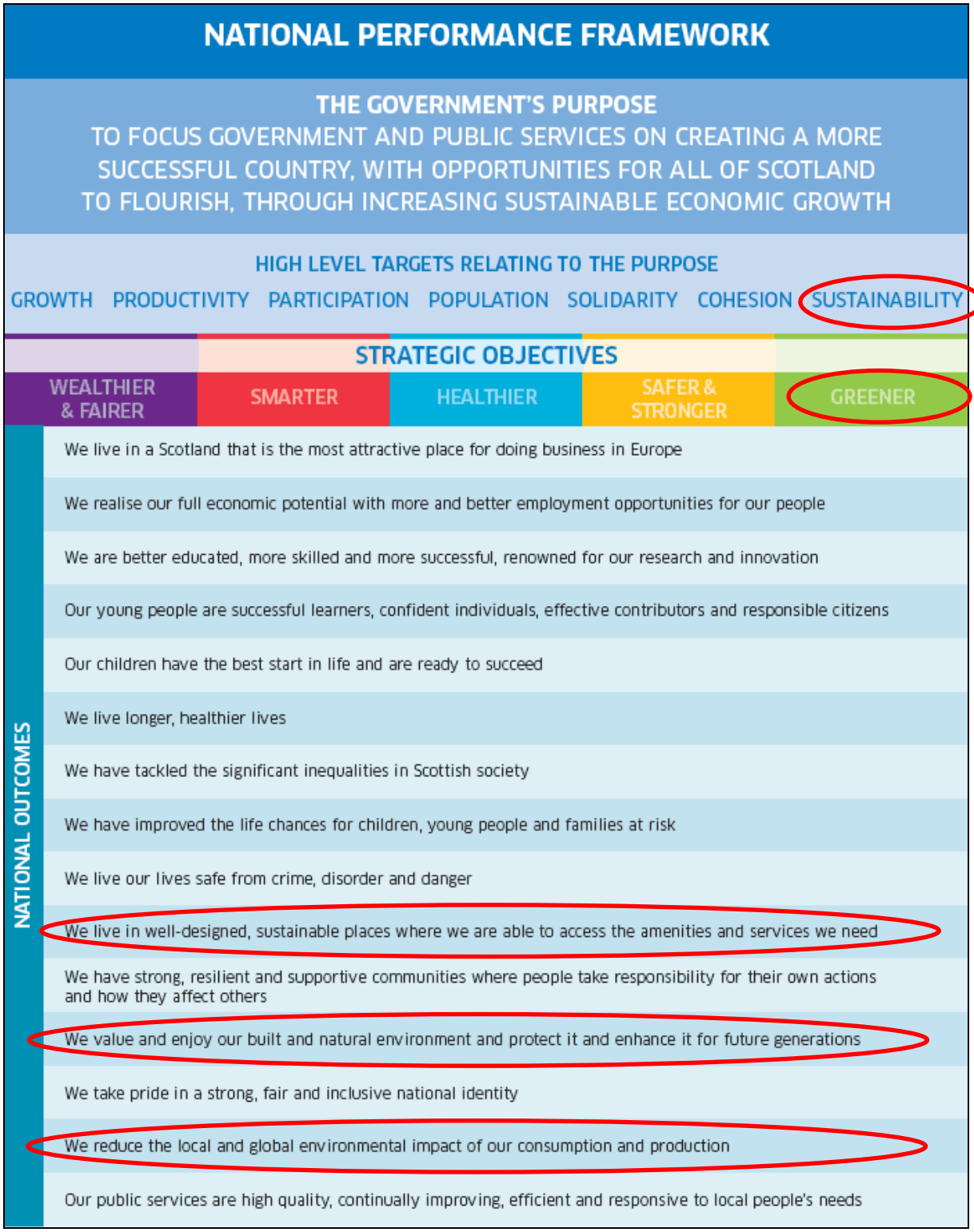


Figure 4.1: NPF structure (Scottish Government 2007a)

To support NPF delivery, a concordat delineating 'mutual respect and partnership' was established between the Scottish Government and the association representing all 32 Scottish councils – Convention of Scottish Local Authorities (COSLA) (Scottish Government, 2007b). The main principles of the concordat were the removal of ring-fenced funds for LAs, to allow councils more freedom over budget spend; and the notion of 'Single Outcome Agreements' to align Scottish and local policy direction with the NPF (*Ibid)*. In May 2011, the Scottish National Party won the Scottish election with an outright majority. They plan a referendum on Scottish independence for 2014 or 2015.

Environmental and transport-based NPF outcomes, indicators and targets are highlighted in Figure 4.2, which emphasises strategic intention to address these areas. Understanding

transport and climate change portfolios and policy developments in these areas is important to fully contextualise SCSP.



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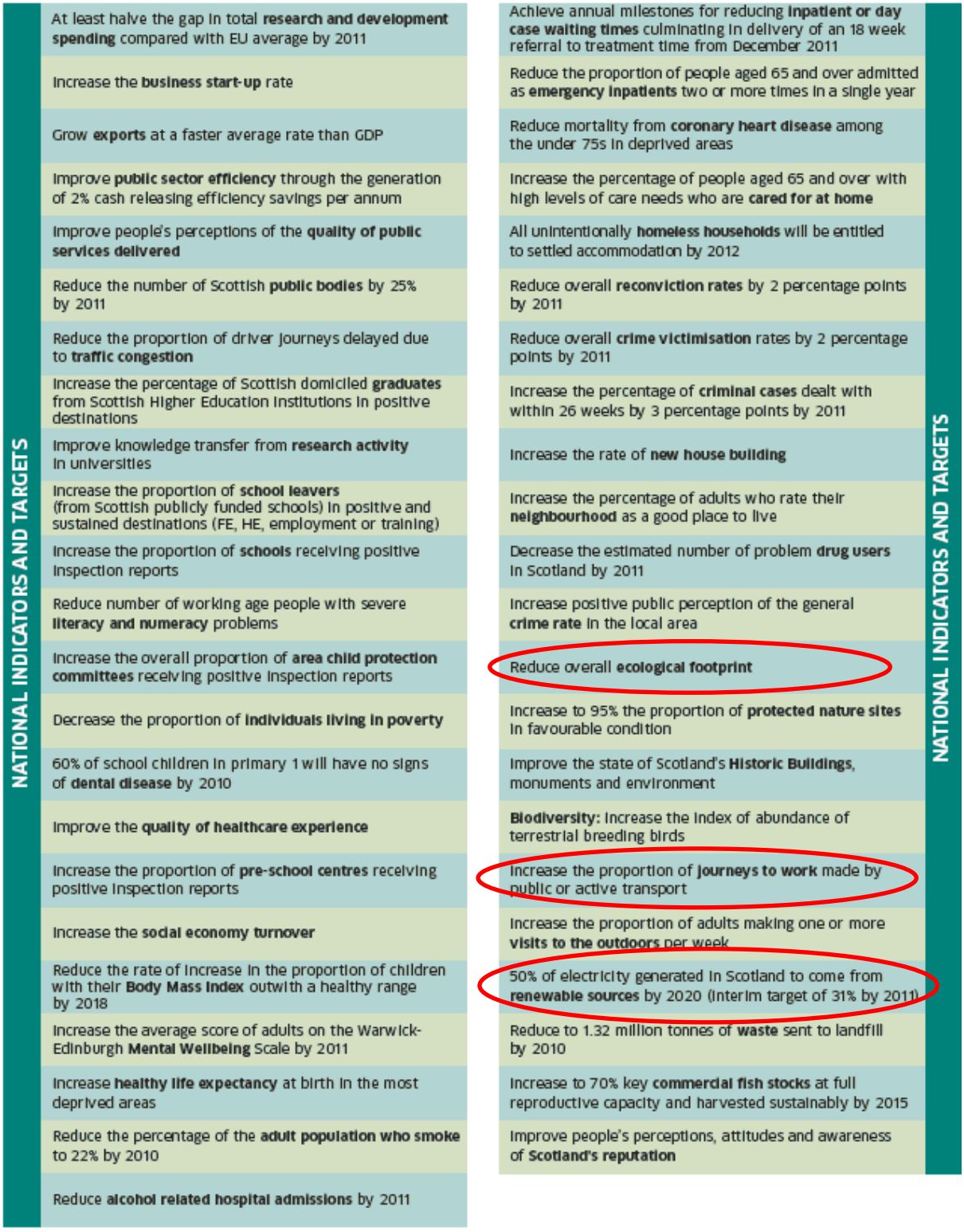


Figure 4.2: NPF targets and strategic objectives (Scottish Government, 2007a) (Emphasis added)

4.3 Scotland and Transport

4.3.1 Transport Use Landscape

Private car use dominates in Scotland, accounting for over 75% of travel in 2007/8 (Figure 4.3). Collectively other modes constituted 25% of all journeys. The NPF attempts to redress this imbalance through increasing active travel journeys to work. Furthermore one of Scotland's National Transport Strategy (NTS) (section 4.3.3) outcomes strives to *"give people the choice of public transport and real alternatives to the car"* (Scottish Government, 2006a). And there are signs that these efforts are working. Car registrations have decreased (Figure 4.4) and both public transport passenger provision, and total vehicle kilometres travelled (VKT) are increasing, albeit modestly (Figures 4.5 and 4.6).

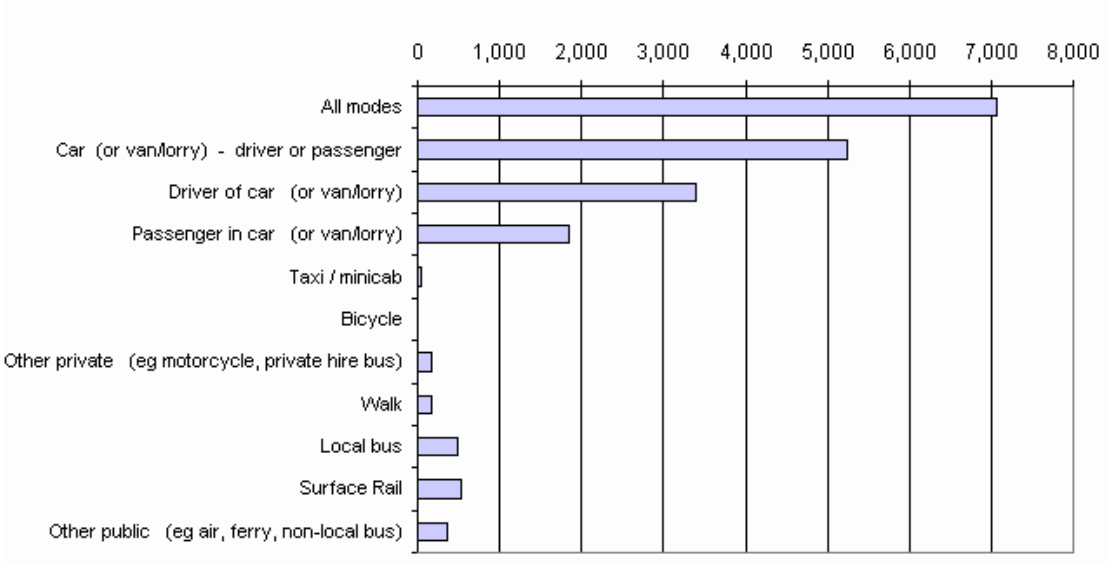


Figure 4.3: Scottish annual average per capita distance travelled (2007-08) (Scottish Transport Statistics, 2010)

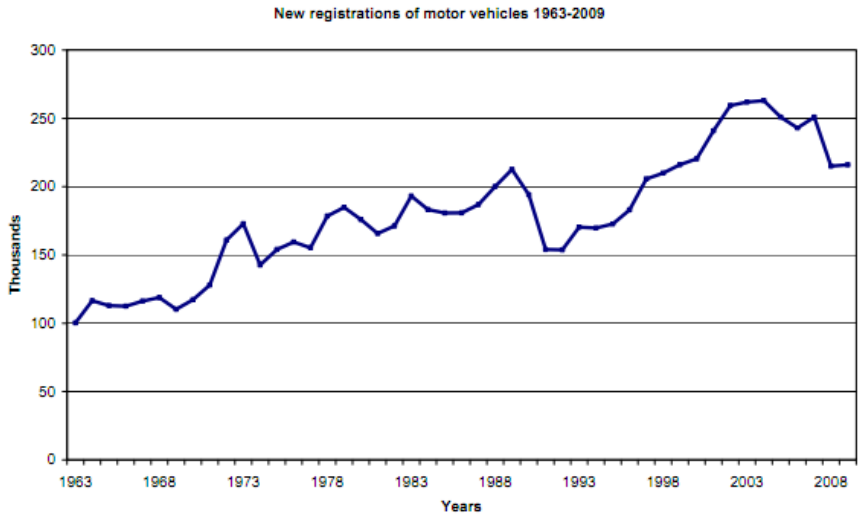
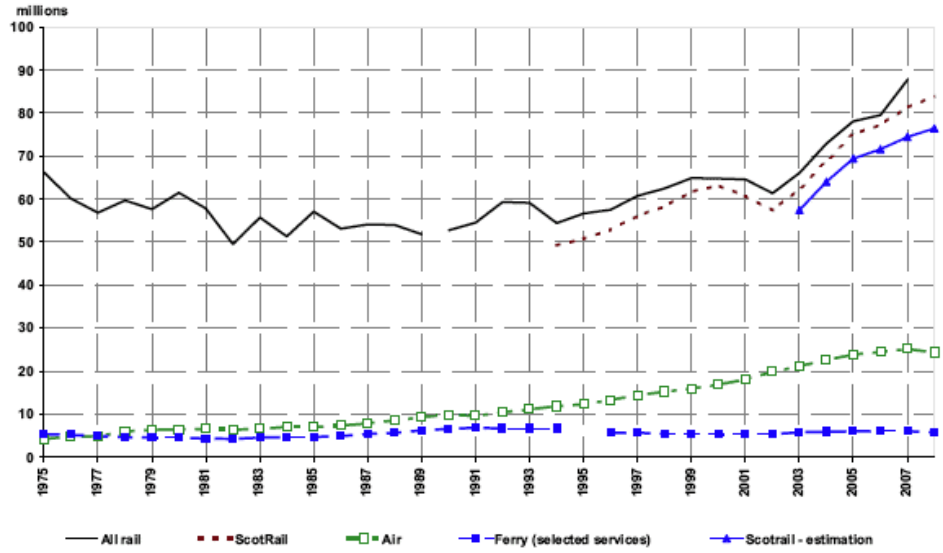


Figure 4.4: Vehicles registered in Scotland (Scottish Transport Statistics, 2010)

Figure 4.5: VKT by public transport mode in Scotland (Scottish Transport Statistics, 2009)



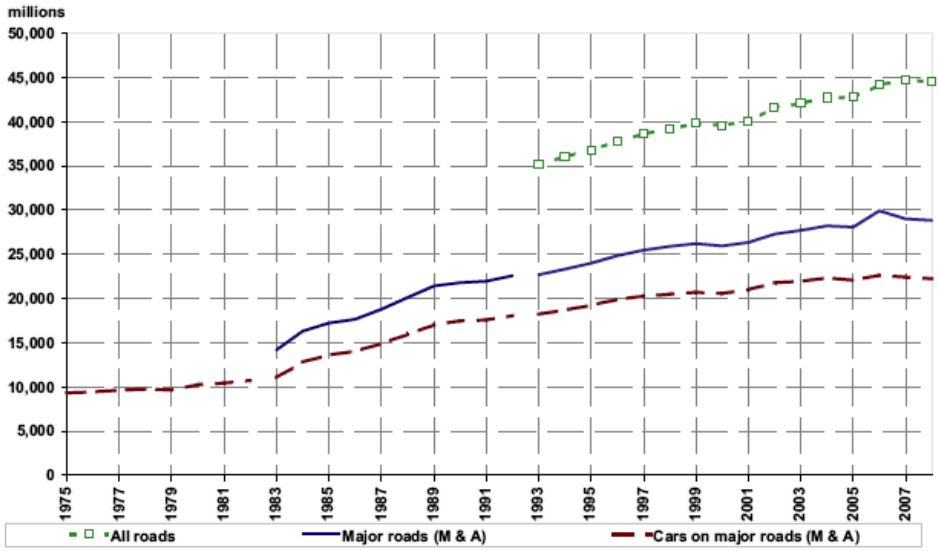


Figure 4.6: Passenger numbers: rail, air and ferry (selected services) in Scotland (Scottish Transport Statistics, 2009)

4.3.2 Organisation

Transport fell under the Finance and Sustainable Growth portfolio during this research[11]. Between the 2007 election and August 2010, transport was overseen by two government organisations; Transport Directorate (TD) – responsible for transport policy and Transport Scotland (TS) – the national transport agency, responsible for delivering transport services and large-scale transport projects. In April 2010, an internal review concluded they should be merged (into TS), to better link transport policy and delivery (Local Transport Today, 2010). This research started before the merger and therefore set in this context. But where relevant, the development will be referred to and its impact considered.

4.3.3 Strategic Direction – Transport

Released by the Scottish Executive in December 2006, the National Transport Strategy sets three strategic outcomes which now support the NPF:

- Improve journey times and connections
- Reduce emissions **to tackle climate change**
- Improve quality, accessibility and affordability **of transport**

(Scottish Government, 2006a)

These objectives may not necessarily be compatible with each other – improving road-based journey times may require additional capacity, which is likely to generate more emissions, for example. They may also counter subsequent commitments that have been made, such as those in the Strategic Transport Projects Review (STPR).

4.3.3.1 STPR

Commissioned in 2008 to evaluate Scotland's transport needs and described as the *"first nationwide, multimodal evaluation of Scotland's key strategic transport network"* (Transport

[11] After 2011 election, it was moved to Infrastructure and Capital Investment portfolio

Scotland, 2008a), STPR is intended support delivery of NTS. STPR was conducted using the Strategic Transport Appraisal Guide (STAG) methodology, which appraised options against ranging criteria, including value for money (Transport Scotland, 2008b). The 2009 STPR final report made 29 recommendations, four were highlighted as priorities:

- Forth Replacement Crossing
- Edinburgh to Glasgow Rail Improvements Program
- Highland mainline Improvements
- Aberdeen to Inverness Rail Improvements

(Transport Scotland, 2008a)

Although an ambitious undertaking to link the transport investment with strategic goals (NPF/NTS), STPR was criticised as a *"road-dominated programme that will lock Scotland into oil dependency"* (Transform Scotland, 2008). Three of these priorities will cause an increase in transport emissions, only the Edinburgh to Glasgow improvements will deliver emission reductions (see Appendix 4.A). Most controversial is the Forth Bridge, which will *"spew out 900,000 extra tonnes of pollution by 2020, jeopardising the government's targets on climate change"* (Herald Scotland, 2008). A 2003 study found that an additional bridge would cause a 55% increase in traffic on 2001 levels and that by 2031 all additional road capacity would have been exhausted (MVA et al., 2003). Yet it has been prioritised as a vital infrastructure project. This is clear evidence of the inconsistency between objectives; and between supposedly connecting elements of the same transport plan. STPR priorities do not align with NPF or NTS, or with Scotland's ambitions on climate change and indicates clear fragmentation on the strategic level. Section 4.5.4.1 highlights further strategic gaps in this area.

4.3.4 Regional Transport Partnerships

In 2005, the Scottish Executive established seven Regional Transportation Partnerships (RTPs)[12], to strengthen regional transport delivery and planning (Transport Scotland, 2005). Each RTP was tasked with producing a regional transport strategy and delivery plan explaining when and how projects would be delivered. Although based on the local government model, they are not LAs; instead all LAs are collaborative members of an RTP. RTPs are also intended to work closely with TS to ensure co-ordinated transport policy (*Ibid.*). As a result of concordat, all RTPs (except Strathclyde) are funded via LAs. This represents both a challenge about how to allocate transport investment – at the LA level, or through the RTPs – but also an opportunity to strengthen co-working between LAs and RTPs (Kerfoot, 2008).

4.3.5 Transport Budget

Roads represented the largest transport-based spend in the 2009-10 Finance and Sustainable Growth budget (Table 4.1) and was set to increase in 2010-11. The amount almost equates to combined spend across all other modes, and all modes (except the ferry) were due a budget freeze/cut in 2010-11. This highlights a strong bias towards car travel and a fundamental disconnect with the rhetoric of NPF and NTS. Table 4.1 also highlights that climate change (section 4.4) spending is modest compared to transport expenditure (and therefore perhaps less of a priority) and was also due to be cut 2010-11. Moreover, nowhere in the section 'Tackling climate change' of the budget are transport-based interventions mentioned (Scottish Government, 2009a). The Scottish Government's commitment to reducing transport emissions is not evident from its budgetary decision making.

[12] Shetland Transport Partnership (ZetTrans), Highlands and Islands Transport Partnership (HITRANS), North-East of Scotland Transport Partnership (NESTRANS), Tayside and Central Scotland Transport Partnership (TACTRAN), South-East of Scotland Transport Partnership (SESTRAN), Strathclyde Partnership for Transport (SPT) and South-West of Scotland Transport Partnership (SWestrans)

	2009-10 Budget £m	2010-11 Draft Budget £m
Scottish Public Pensions Agency	2,385.0	2,528.0
Committees, Commissions and Other Expenditure	21.2	30.8
Rail Services in Scotland	672.9	667.1
Concessionary Fares	189.5	194.0
Other Transport Agency Programmes	285.1	199.9
Motorways and Trunk Roads	1,102.2	1,153.0
Ferry Services in Scotland	104.4	105.0
Air Services in Scotland	41.1	39.3
Bus Services in Scotland	61.2	61.2
Other Transport Directorate Programmes	46.0	38.1
European Social Fund – 2007-13 Programmes	0.0	0.0
European Regional Development Fund – 2007-13 Programmes	0.0	0.0
Planning	5.1	5.0
Enterprise, Energy & Tourism	522.3	458.0
Water and Climate Change	363.8	346.2
Third Sector	32.6	35.6
General Register Office for Scotland	15.7	22.3
Registers of Scotland	0.0	0.0
Total	**5,848.1**	**5,883.5**
Central Government Grants to Local Authorities	39.1	34.1

Table 4.1: Finance and Sustainable Growth Portfolio 2009-10 Budget (Scottish Government, 2009a) (Emphasis added)

4.4 Scotland and Climate Change

4.4.1 Scotland's GHG emissions

Scotland's 2008 emissions total 56.1 $MtCO_2e$ - 3% lower than 2007 levels (57.8 $MtCO_2e$) and 20% lower than 1990 levels (Scottish Government, 2010a). Energy remains the primary source of Scotland's emissions (35% in 2008) with transport contributing the second-largest share (22%) (Figure 4.7). Whilst emissions from all other sectors have decreased in the past 20 years, the transport sector (excluding aviation and shipping) has seen a 7% rise (*Ibid.).*

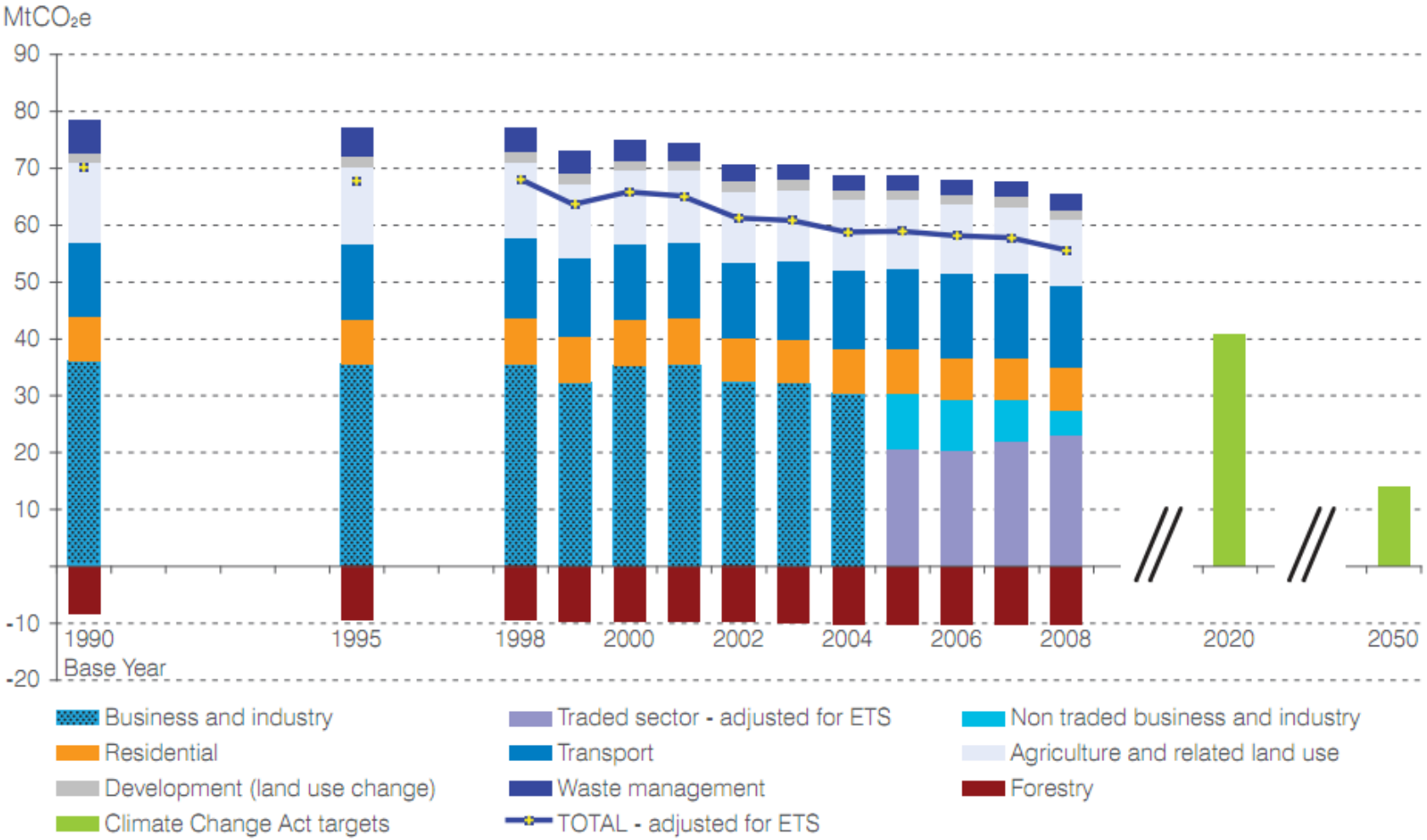


Figure 4.7: Scottish emissions by source: 1990-2008 (removals not reflected) (Scottish Government, 2010b)

4.4.2 Organisation

The Climate Change and Energy Directorate (CD) sat under the Finance and Sustainable Growth portfolio at the time of the research[13] and is responsible for Scotland's statutory commitment to reduce carbon emissions (section 4.4.3). Its core objectives are to:

- Move Scotland towards a successful low carbon economy
- Tackle climate change and implement our world leading climate change legislation
- Promote collaborative action in Scotland and abroad for our climate change, renewable energy and energy efficiency programmes

(Scottish Government, 2011e)

The Committee on Climate Change (CCC) an independent advisory board established under the UK Government's Climate Change Act (section 4.4.4) has a role to guide the devolved administrations'[14] progress on climate change. Scotland also has the option to establish its own Committee, which is has not sought to do thus far (Committee on Climate Change, 2009).

4.4.3 Strategic Direction - Climate Change

Scotland's first Climate Change Programme was produced in 2000 and updated in 2005. In 2006 'Changing Our Ways: Scotland's Climate Change Programme' stated that Scotland would become recognised as *"the best small country in the world through its actions to tackle climate change"* (Scottish Executive, 2006b). Since the 2007 elections, Scotland's climate change commitment has been well-documented and appears reasonably comprehensive. It falls in line with the NPF's 'Greener' strategic objective.

The Climate Change (Scotland) Act 2009 commits Scotland to reduce GHG 42% on 1990 levels by 2020 and at least 80% by 2050 (Scottish Government, 2009b). An ambitious target, few other jurisdictions have mandated IPCC-recommended levels into law. Scotland also committed to annual targets, which was also seen as positive. The Act required the completion of a 'carbon assessment', which was first published alongside the budget in 2009. It has been

[13] After 2011 election it was moved to the Rural Affairs and the Environment portfolio
[14] Scotland, Wales and Northern Ireland

lauded as the first such attempt by a government to allocate carbon costs against planned expenditure, but whilst carbon costs were allocated, budget priorities did not reflect the need to shift towards less carbon-intensive expenditure.

Additionally, the Scottish Government-wide Climate Change Delivery Plan was produced in June 2009 to outline immediate, short, medium and long-term strategies for achieving the targets. This was followed by 'Low Carbon Scotland: Meeting the Emissions Reduction Targets 2010-2022' in March 2011, which sets out how Scotland's annual targets to 2022 will be met. Transport-related measures are laid out in section 4.5.6.

4.4.3.1 Climate Challenge Fund (CCF)

Initially proposed in 2007 by the Scottish Greens in 2007, the £18 million CCF was adopted by the Scottish Government in 2008. Designed to help local climate change action, the scheme accepts applications for projects demonstrating significant emission reductions (Scottish Government, 2008a). By January 2011, CCF had invested over £27 million in 331 projects and was extended to 2011/12 with £10 million additional funding (Scottish Government, 2011d). CCF not only demonstrates existing commitment to and interaction between the Scottish Government, LAs and other non-state actors, but may also have repercussions on the future of SCSP (section 4.6.5.4).

4.4.4 UK Climate Change Policy

UK climate change policy is managed through the Department of Energy and Climate Change (DECC) and the UK was committed to achieving a reduction of 12.5% in emissions on 1990 levels by 2008-2012 through its Kyoto obligation. The government set an additional target of 20% by 2010 – this target was narrowly missed. By 2010, the UK's total emissions were 17%

lower than 1990 levels, although emissions rose 2.8% between 2009 and 2010 (DECC, 2011). In 2008, the government passed the UK's Climate Change Act (2008) which commits it to reducing emissions 80% by 2050, although unlike Scotland's Act it does not set an interim 2020 target. However, the UK Government opted for 5-year climate budgets – legally binding limits on the amount of emissions that may be produced – to achieve the target. The first three carbon budgets were set in law in May 2009 and require emissions to be reduced by at least 34% below base year[15] levels in 2020 (UK Government, 2011).

Although Scotland has its own legislation and strategies, the UK's 80% reduction includes the devolved administrations' emissions (Committee on Climate Change, 2009). The UK Government states that it works in partnership with devolved administrations, that they have a shared goal but that policies to achieve it vary across the administrations (UK Government, 2011). Annual progress reports are requested by CCC from each administration (*Ibid.)*.

4.5 Scotland: Transport and Climate Change

4.5.1 Scotland's Transport GHG emissions

Road transport emissions rose from 9.3 $MtCO_2e$ to 10 $MtCO_2e$ in 2008, overall transport emissions decreased. It alone accounts for some 70% of Scotland's transport-related GHG emissions (Scottish Government, 2011f). Cars account for over 60% of total transport emissions and whilst these emissions seemed to peak in 2002, they remain the most significant contributor (Figure 4.8).

[15] 1990: carbon dioxide, nitrous oxide and methane. 1995: hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride

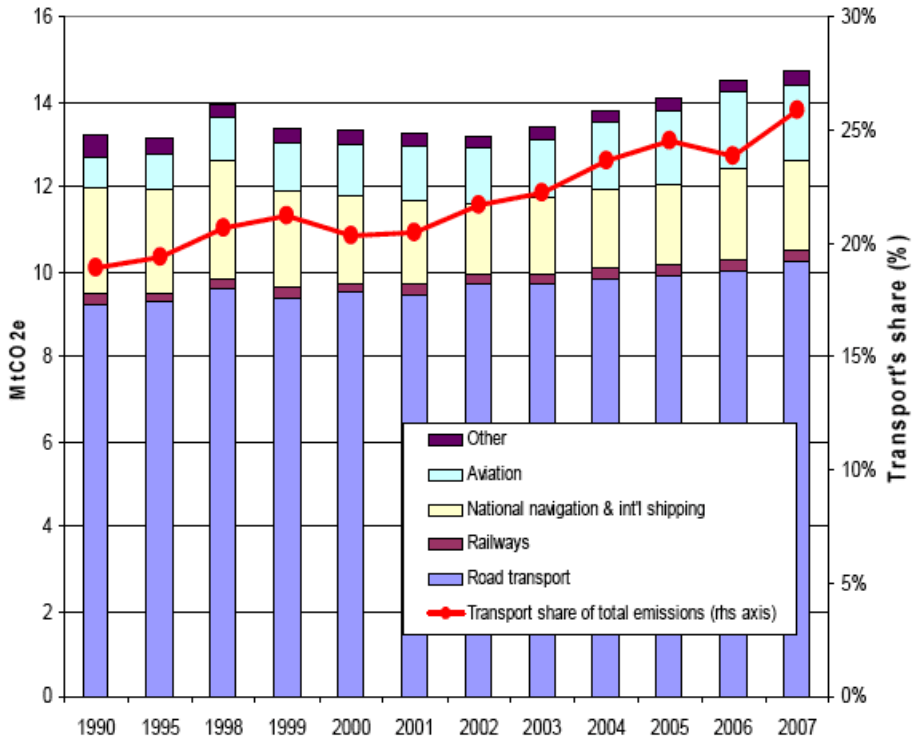


Figure 4.8: Emissions from Scottish Transport (1990-2007) (Scottish Government, 2010c)

4.5.2 Responsibility for Transport and Climate Change in Scotland

In 2007 Stewart Stevenson became Minister for Transport, Infrastructure and Climate Change, overseeing CD, TD and TS, under the Finance and Sustainable Growth portfolio, led by John Swinney MSP. A politically powerful intention, to bring the agendas closer together, its significance is examined in section 4.6.5.3. Theoretically, this arrangement should have maximised interaction between the policy areas. As of December 2010, following Stevenson's resignation[16], Keith Brown became Minister for Transport and Infrastructure, with the climate change portfolio being returned to the Rural Affairs and Environment 'fold'. This research was completed before the reshuffle; however its implications are discussed in section 4.7.

[16] In December 2010 extreme weather events caused travel chaos across Scotland, which the Minister said he could have *"done much more about"* and subsequently resigned (BBC News Scotland, 2010).

4.5.3 Reducing transport emissions – available options

Responsibility for many measures that would reduce transport emissions either reside with UK Government e.g. vehicle taxation/fuel duty or the EU e.g. vehicle emission standards/emissions trading (Scottish Government, 2008b). Therefore Scotland's available responses are limited. However, Scotland has devolved responsibility over: road network; bus policy; cycle/walking policy; enforcement of vehicle emission standards; much rail funding and policy; financing freight; and public transport arrangements (Banister, Hickman and McCartney, 2007). So progress is possible. A 2009 study mapped the emission reduction potential of all devolved transport policy areas (Table 4.2). The measure identified with most potential for emission reduction was widespread implementation of travel plans. Ambitious execution of this policy would offer reductions of 15MtCO_2 2010-2030 (Atkins, 2009).

4.5.4 Reducing transport emissions in Scotland

Following this 2009 study, the 2009 Climate Change Delivery Plan set the goal of *"almost complete decarbonisation of road transport by 2050, with significant progress by 2030 through wholesale adoption of electric vehicles and vans, and significant decarbonisation of rail by 2050"* (Scottish Government, 2009c). However, this target does not acknowledge the travel plan potential, focusing instead of techno-centric levers, like electric vehicles (EVs) and rail electrification. Even by its own calculation, the government identified travel planning, cycling and walking infrastructure investment, and buses and taxis as the three non-freight policies with the biggest transport reduction potential (Scottish Government, 2011f). Moreover, travel planning is identified as a 'top-3' cost-effective policy (*Ibid.*). This data highlights that if Scotland was maximising potential to reduce transport emissions, it would focus heavily on travel planning and promoting alternative travel (section 4.6.6.3).

Policy Option		Intensity 2022 (MtCO2 p.a*)		Annual by Year (Ambitious) (MtCO2*)				Cumulative
		Central	Ambitious	2012	2017	2022	2030	2010-2030
A) Technology								
53	Electric car technology & network development	0.08	0.16	0.00	0.04	0.16	0.16	1.89
109	Procurement of low carbon vehicles	0.00	0.01	0.01	0.01	0.01	0.01	0.16
B) Driving Style								
1	Active traffic management	0.02	0.02	0.01	0.02	0.02	0.02	0.30
98	National motoring package	0.11	0.17	0.12	0.24	0.17	0.06	2.86
143	Speed reduction on trunk roads	0.18	0.30	0.22	0.33	0.30	0.30	5.60
C) Car Demand Management (Fiscal/Infrastructure)								
15	Bus/rapid/mass transit infrastructure investment (including bus priority)	0.01	0.01	0.01	0.01	0.01	0.01	0.17
37	Cycle infrastructure investment	0.05	0.12	0.04	0.10	0.12	0.11	1.84
75	High speed Rail links	0.00	0.02	0.00	0.00	0.02	0.03	0.25
97	National network of car clubs	0.04	0.10	0.01	0.06	0.10	0.08	1.32
99	National road user charging	0.00	0.33	0.00	0.00	0.33	0.33	3.62
103	Introduction or increase in public parking charges	0.02	0.13	0.09	0.15	0.13	0.12	2.35
115	Rail investment	0.00	0.00	0.00	0.00	0.00	0.00	0.03
125	Introduction/raise in residential/private parking charges	0.02	0.02	0.01	0.02	0.02	0.02	0.33
127	Bus /LRT fares reductions	0.00	0.01	0.00	0.01	0.01	0.01	0.09
131a	Walking infrastructure investment	0.02	0.05	0.01	0.04	0.05	0.04	0.70
172	Workplace parking levy	0.22	0.22	0.00	0.25	0.22	0.22	3.61
D) Car Demand Management (Smart Measures)								
18	Bus quality contracts / statutory partnerships	0.15	0.18	0.04	0.10	0.18	0.28	3.05
173	Widespread implementation of travel plans	0.66	0.95	0.43	0.71	0.95	0.92	15.09
204	Provide community hubs	0.14	0.14	0.07	0.11	0.14	0.14	2.23
E) Freight								
63	Freight best practice	0.09	0.09	0.07	0.11	0.09	0.08	1.72
F) Land Use Planning								
158	Urban density increases	0.01	0.02	0.00	0.02	0.02	0.02	0.25
G) Aviation								
205c	Improve public transport surface access to airports	0.00	0.01	0.00	0.00	0.01	0.01	0.05

* rounded to the nearest 0.01Mt and including emissions generated by electricity required to power electric and plug-in hybrid vehicles

Table 4.2: Scottish transport abatement potential by policy option (Atkins, 2009) (Emphasis added)

4.5.4.1 Carbon Account for Transport

The Carbon Account for Transport was developed to address the 'reduce emissions' element of the NTS. It is used to indicate the emissions derived from transport projects. An abbreviated excerpt from the second account report outlines its role (Box 4.1).

> The Carbon Account for Transport helps identify transport policies and projects which are forecast to have the most significant influence on changes in emission levels.
>
> The Carbon Account for Transport is not seen as a stand-alone decision making tool on an individual project or policy level, this remains the role of STAG, with the impact on the environment being one of the five criteria considered. Importantly, the Carbon Account for Transport doesn't reject any project/policy with a negative impact upon emissions, as measures are considered in the context of Scotland's objectives to both promote economic growth and environmental quality. The Carbon Account for Transport therefore constitutes an "important element of a wider framework adopted across the Scottish Government with the aim of reducing emissions".
>
> The evidence from the full range of analysis, including the Carbon Account for Transport and NTS, the targets specified within the Climate Change (Scotland) Act, the Climate Change Delivery Plan and the draft report on Policies and Progress will help to dictate the direction of future transport policy.

Box 4.1: The Carbon Account for Transport's role in Scottish policymaking (Scottish Government, 2010c)

With passage of the 2009 Act, calls to reappraise these strategic tools to reflect the reduction targets were made. In June 2010 commitment to deliver on STPR objectives was affirmed. The cumulative result of STPR is reduction in emission growth by 1% from BAU (i.e. emissions will slow, but still rise) (Sustainable Development Commission – Scotland, 2010), which is a stark contrast to the levels of reductions needed and committed to in Scotland.

4.5.5 Progress on emissions reduction from transport

Efforts to reduce (non-freight) transport emissions were underway during this research:

- Eco-driving advice and information
- £4.3 million for low carbon vehicles and infrastructure 2010-11
- £4.4 million Scottish Green Bus Fund 2010-11
- Intelligent Transport System Action Plan
- Travel planning advice[17]
- SCSP (section 4.6)
- Cycling Action Plan
- Car clubs
- Edinburgh to Glasgow Rail Improvements Program
- Scottish Planning Policy

(Adapted from Scottish Government, 2010b)

[17] Including www.chooseanotherway.com; Sustrans – travel planning for schools; Cycle Scotland Employer Award

These are all very small scale efforts, especially compared to some STPR investment priorities which will negate any modest emission reductions delivered here. However, as guided by recommendations on emission reduction potential, emphasis is on 'soft' measures and promoting alternatives to the car. But the research called for 'ambitious' implementation of the strategies.

There is a complex mismatch here between research-based recommendations; strategies; and mandatory commitments, which needs investigation. Are these programmes – SCSP in particular – part of a comprehensive transport emission reduction strategy, or inexpensive token gestures to symbolise climate change action from the sector?

4.6 SCSP

SCSP is a 3-year joint initiative launched by the Scottish Government and COSLA in March 2008. The government provided £10 million (with £5 million match funding) to seven LAs to develop and implement projects designed to increase active travel and public transport use, to reduce GHG emissions and improve health.

4.6.1 Background

'Smarter choices' (SC) measures enable uptake of alternatives to the car – through eliminating unnecessary trips and shifting to public transport, walking and cycling. Measures include: travel plans; travel awareness promotion; IT and car clubs/sharing schemes (CCC, 2009). Such measures emerged in the UK in the 1990s, although they are a common feature of transport policy (and not formalised a distinct set of measures) across Northern Europe.

In April 2004, following the report 'Smarter Choices: Changing the Way We Travel' (Cairns et al., 2004), the UK Department for Transport funded the Sustainable Travel Towns (STT) project in Darlington, Peterborough and Worcester. The project, which ran until April 2009, was successful[18] in demonstrating the effect of a sustained package of SC measures supported by infrastructural improvements (Sloman et al, 2010). STT (and other projects) was judged sufficient to justify widespread delivery of town-based SC programmes. The Scottish Government referenced STT when announcing SCSP (Scottish Government, 2008a).

4.6.2 Rationale

The stated vision, aims and objectives of SCSP are outlined in Box 4.2. As highlighted, the programme was designed to achieve multiple policy aims and cut across transport, health and environmental issues. Emissions reductions are clearly stated in the vision.

VISION: Scottish communities have more sustainable places through increased sustainable travel choices, ***significant reductions in transport related CO_2 emissions*** and air quality pollutants, reduced levels of congestion, increased levels of physical activity, increased awareness of healthy ways of living, and community pride in their neighbourhoods.

AIM: To achieve increased proportions of active travel and public transport use as contributions to Healthier, ***Greener*** and Safer and Stronger outcomes specified in the NPF through the use of SC and associated demand management mechanisms.

OBJECTIVES:

- Achieve a sustained change in travel behaviour in the participating authorities: including increased proportions of active travel/public transport use and decreased proportion of car use (particularly single occupancy)
- Provide an opportunity for willing LAs to undertake intense activity on sustainable travel and related physical activity interventions through match funding
- Test the effectiveness of sustainable travel and other interventions against Scottish/local outcomes per the NPF (particularly Greener, Health, and Safer and Stronger)
- Share lessons learnt across disciplines and geographical boundaries
- Provide practical experience to mainstream these activities in Scotland where proven effective

Box 4.2: SCSP outline (Scottish Government, 2008b) (Emphasis added)

[18] The three STT towns together between 2004-09:
- 9% reduction in car trips
- 10-22% increase in bus trips (per person)
- 26-30% increase in cycle trips (per person)
- 10-13% increase in walking trips (per person)

Outside STT, national averages in non-car trips decreased (Department of Transport, 2010)

This was supported by rhetoric about the programme. Of SCSP, Minister Stevenson stated:

> *"With more cars on our roads, increasing levels of congestion and rising emissions, it is time for us all to look at our travel behaviour. […] Initiatives like the bike rental schemes, the development of park and choose sites, more pedestrian-only areas, and free trial bus and train tickets will help us to meet our ambitious climate change target - to reduce Scottish emissions by 80% by 2050"* (Scottish Government, 2008c).

The multi-pronged approach is also reflected in the programme's funding sources–£1.5m from the health budget, £1.5m from CD and £7m from TD–an indication of 'buy-in' from these departments. The intention for SCSP to inform future SC policy developments is clear (section 4.6.8.4). LA match funding also indicates "buy-in" at the local level and several of the LA bids included partnership with local and civil society organisations (Appendix 4.D).

4.6.3 SCSP Overview

Twenty-seven of Scotland's LAs answered the initial SCSP funding call in March 2008, with a second round of applications requested from selected LAs in July 2008. The seven successful LAs were announced in August 2008. A programme manager was seconded by TD's sustainable transport team to oversee SCSP and manage relationships with the selected LAs.

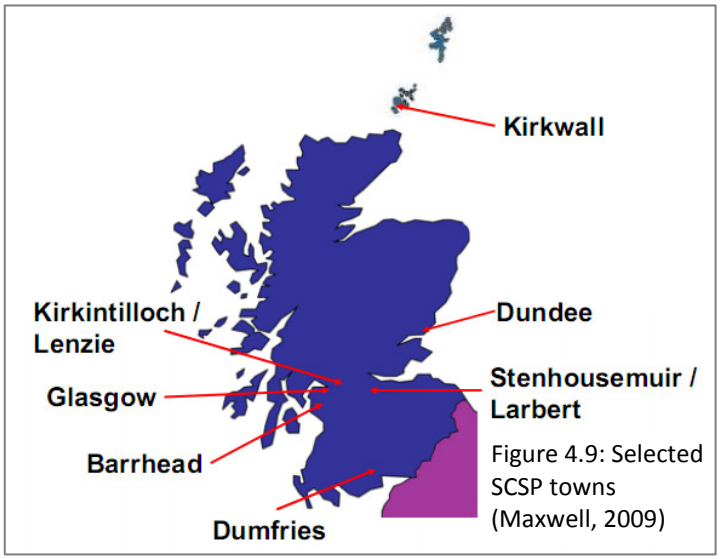


Figure 4.9: Selected SCSP towns (Maxwell, 2009)

The successful LAs (and project town areas) were: East Renfrewshire Council (Barrhead), Orkney Islands Council (Kirkwall), Dumfries and Galloway Council/SWestrans (Dumfries), Dundee City Council (Dundee), East Dunbartonshire Council (Kirkintilloch/Lenzie), Falkirk Council (Larbert/Stenhousemuir) and Glasgow City Council (Glasgow East End). Appendix 4.D outlines projects in detail. The funding can be seen in Figures 4.10 and 4.11. Baseline measuring,

planning and infrastructure improvements took place between September 2008 and April 2009. Projects ran between May 2009 and March 2011. Final reporting commenced at this point for twelve months.

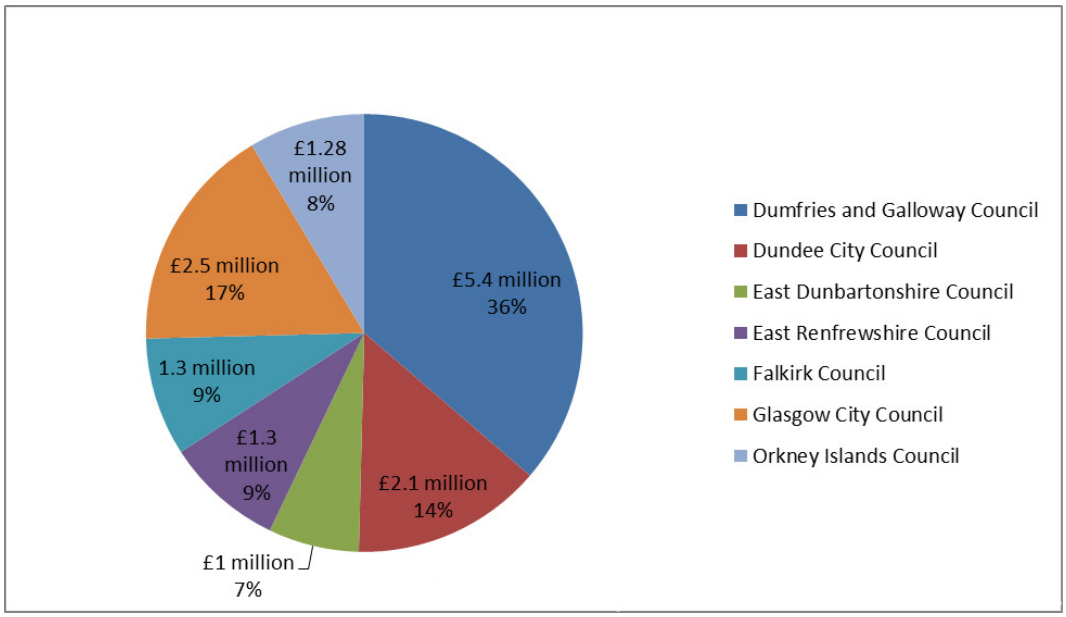


Figure 4.10: Total SCSP project funding (including match funding) by LA

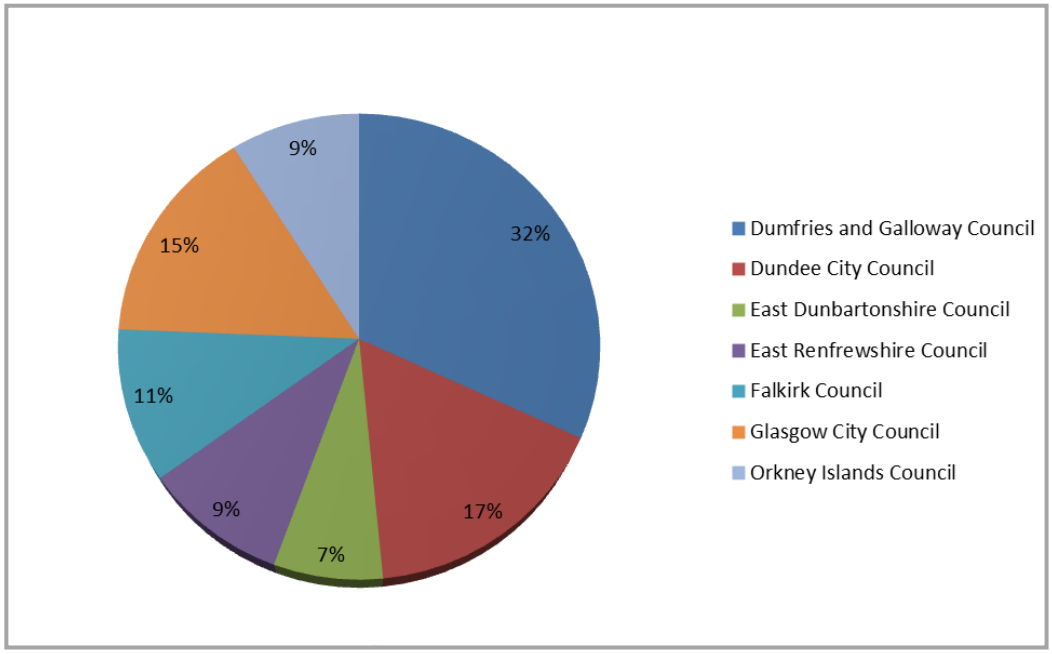


Figure 4.11: Scottish Government contribution to SCSP projects by LA

4.6.4 The research

Twenty participants were interviewed between February 2009 and September 2010. Sample questions are in Appendix 4.E. Figure 4.12 shows the breakdown of participants by sector. Of the Scottish Government participants, three were from TD, three were from TS and one was from CD. SCSP had two programme managers over its duration and both participated.[19]

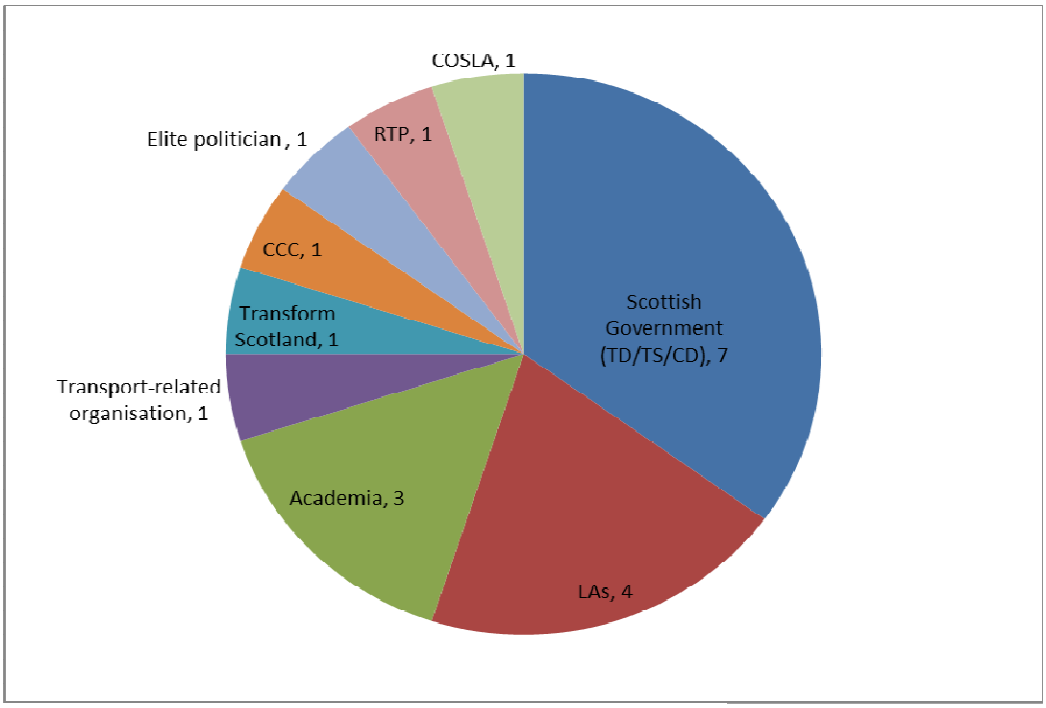


Figure 4.12: Interview participants by sector

Participants from four of the seven SCSP towns (Falkirk, Dumfries, Orkney and Kirkintilloch/Lenzie) were interviewed. This was to allow participants external to SCSP to contribute and also in part due to the clear health focus in the other towns.

Not all participants answered all questions and some were asked additional questioned– since the interviews were semi-structured (Chapter 3). All questions and responses were analysed against the four research themes. Frequently responses referred to more than one theme. Any

[19] Both based in TD, until the TS/TD merger put the role in TS shortly after the 2nd took over. These changes are reflected.

response which was associated to more than one theme was allocated against the most relevant and where possible also mentioned in the other relevant discussions.

4.6.5 Theme: Scale

> *"The climate in Scotland at the moment is very much one of partnership between national and local government, and I think that will continue as long as we have the current government."*
> Participant, SWestrans

Questions relating to scale in this context have broadly to do with the government levels at which transport and climate change policies which affect Scotland are implemented. The primary objective of asking scale-related questions was to ascertain at what level SCSP was developed and implemented. Most significantly, the research was aiming to determine where *ultimate responsibility* for the success of the policy lies.

4.6.5.1 Where does ultimate responsibility for SCSP lie?

Sixteen participants responded (Figure 4.13) with opinion split between the LA responsibility and shared responsibility between the Scottish Government and the LAs. Significantly no LA participant gave ultimate responsibility to the Scottish Government, which may indicate they perceive ownership resides at the local level, or that they (LAs) are responsible for delivering the projects. Some interesting clarifications were supplied (Table 4.3).

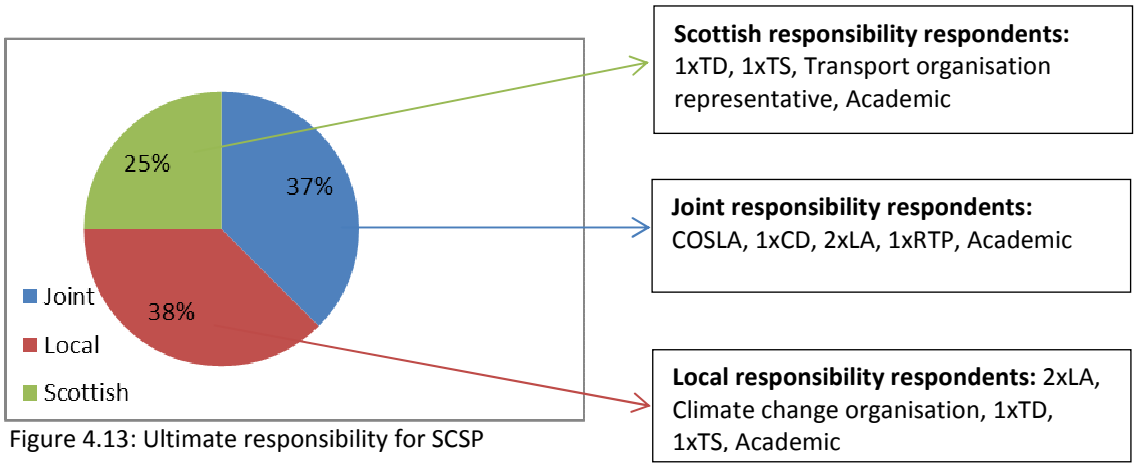


Figure 4.13: Ultimate responsibility for SCSP

Respondent	Responsibility	Specific local role	Specific Scottish role	Shared roles?
COSLA	Joint	Implementation	Support; capacity building	"It's kind of a joint thing."
LA	Joint	Delivery	Programme ownership; impetus	"They're doing it in partnership […] So it's not one or the other, I think it's got to be delivered in partnership and both sides have got to do their bit."
RTP	Joint	Delivery	Programme ownership	"I think that there is a partnership answer."
LA	Joint	Delivery	Monitoring; evaluation; support	"I think it's a very supportive team and I think we're all keen to help each other, so I think its joint responsibility."
Academic	Joint	Project management	Resource management; meeting objectives	"I think that dialogue would be important."
TS	Joint	Manage funding	Resource management	"I think there is responsibility on a variety of places in terms of achieving success."
LA	Local	Project management	Support	"It's a two way thing. Its success, I would say, relies on our team."
TD	Local	Implementation	Awareness; education; marketing; coordination	-
Academic	Local	Implementation	Funding	-
LA	Local	Engage local people	Evaluation; advice; information	-
CCC	Local	Delivery	-	-
TD	Scottish	-	Funding	-
TS	Scottish	-	Policy; strategy	"What happens locally will potentially influence regional and national and vice versa."
Transport Organisation	Scottish	Community buy-in	Encouraging local level	-
Academic	Scottish	-	Framework/strategy; funding; political leadership	-

Table 4.3: SCSP roles across government levels

The top three cited roles for the local government were: day-to-day **implementation, delivery and project management**. Similarly, the top three Scottish Government roles were deemed to be: **support, funding** and ideas of "**ownership, leadership and strategy**". The importance of specific roles is discussed further in Chapter 8.

There are definitely functional, vertical linkages here, given that "joint responsibility" was flagged by over a third of respondents. Comments about the influence of levels over each other's activities denote a reciprocal relationship.

Some of the respondents also noted the importance of the Scottish Government in bringing the towns together:

> *"There will be some capacity building going on through Ian [SCSP programme manager] and I think that's probably quite important because through speaking to some of the other towns, he can bring their experiences across."* Participant, Falkirk Council

Similarly:

> *"They are there for advice if we need it and there's various workshops and things – information on what the other towns are doing so we're not reinventing the wheel all over the place."* Graeme McLay, East Dunbartonshire Council

This indicates that SCSP is facilitating interaction and knowledge-sharing (between LAs) that may not have ordinarily occurred. This information elaborated on the local/Scottish vertical linkages, but it is important to also examine the interplay between the UK government, the Europe Union (EU) and Scotland.

4.6.5.2 Is Scotland constrained by Europe/UK in acting?

This question examined whether Scotland's work on reducing transport-related emissions was constrained by other levels, in part to reflect on whether 'reserved matters' do actually inhibit

Scotland's response (section 4.5.3). Whether Scotland influences UK/European policy was also covered with some participants. Eighteen participants responded to these questions (Table 4.4).

Respondent	Constrained by UK	Constrained by Europe	Influence over UK	Influence over Europe
TD	Yes	Yes	-	-
TS	Yes	Yes	-	-
LA	Yes	No	No	No
Academic	-	-	Yes	-
COSLA	Yes	Yes	Yes	Yes
TS	Yes	Yes	-	-
TD	Yes	Yes	No	No
TD	Yes	Yes	No	No
LA	No	No	-	-
Academic	Yes	-	Yes	-
RTP	Yes	Yes	-	-
LA	No	No	-	-
LA	Yes	Yes	-	-
Transform Scotland	Yes	Yes	Yes	No
CCC	Yes	Yes	Yes	Yes
Elite Politician	Yes	-	Yes	Yes
CD	Yes	Yes	-	-

Table 4.4: Scotland's influence over/constraint by national/EU policy?

There was significant agreement that Scotland's policymaking is to some extent constrained by the UK and Europe. Only two participants stated the UK government had no influence on Scottish policy and three stated the same of Europe. Scotland's ability to influence upwards to UK and European policymaking was identified by six of the participants. This indicates that there is a high level of vertical interplay at work in Scotland, and to some extent that this interplay is two-way.

Interestingly, none of the respondents that thought Scotland could influence policymaking were government officials, they were either from academia or from civil society – only the Elite Politician noted this importance from within government. The reasons for this are unclear, but

it may be because they have a better overview of the process, being removed from the day-to-day. It may be that internally, influence isn't very visible, with government participants focusing on their own roles, which don't have influence over other policy areas or levels. LA participants reflected that they don't have influence over these levels and that this was reciprocal – the EU/UK didn't have an impact over their work; they were too far removed. COSLA's 'access to European issues' work stream reinforces this point. This could illustrate a further functional role for sub-national government in translating EU/national strategy into more relevant contexts for its LAs.

Finally, the STTs were mentioned seven times in the interviews, which indicate the informal influence of UK policy. It was also noted that STT representatives were also enlisted to the programme board to help shape SCSP. And it was acknowledged that because Scotland has no automotive manufacturing industry, it will rely on the other levels (primarily Europe) to deliver emission reductions (alternative technologies) in this area.

4.6.5.3 Other scale-related Information

Some other scale-related points were also identified in the research:

- Scotland's size
- SCSP funding
- Post-SCSP

4.6.5.3.1 Scotland's size

Some participants also highlighted that inter-LA collaboration was enabled by Scotland's size.

> *"It's a smaller group of authorities and a shared experience. One authority can learn from another due to the much closer working relationships local authority officers have in Scotland with one another compared to English authorities. There are only 32, I think we all know each other, I know my post holder in each of all the other authorities pretty much."* Participant, Orkney Council

Similarly:

> *"We've got 32 local authorities and I think it makes it a lot easier to link things up. They're not necessarily all talking to each other all the time, but there are already quite strong links. Scotland is a relatively small place."* Ian Maxwell, SCSP Programme Manager (until 2010).

More significant was the need to maintain the sorts of joint working and defined roles that SCSP has demonstrated, and that were identified as important after the programme finishes. This was seen as challenging because of the funding structure under which SCSP operates. Local government capacity to address climate change was also explored, but is covered in section 4.6.6.3 and Chapter 8.

4.6.5.3.2 SCSP funding

Numerous participants drew attention to SCSP's 'uniqueness' in an age without ring-fenced funding, following concordat (section 4.2):

> *"One of the issues when the new government came into power and instituted a new regime of devolving a lot of the spending responsibility down to local authority level and removing the ring fencing that had been in programmes in all sorts of areas, it meant that we had to undertake negotiations with COSLA, the local government body in Scotland in order to gain agreement to have what was effectively a ring-fenced fund – in our case it was a demonstration programme."* Ian Maxwell

Participants expressed concern that without SCSP being allocated in this way, there is no guarantee that SC measures would be implemented by Scottish LAs as they would be unlikely to dedicate their own funding for such projects.

4.6.5.3.3 Post-SCSP

Because SCSP is a pilot project, continued funding is unlikely to be dispersed in the same way, so its future is uncertain:

> *"One of the problems with the single outcome agreements is that most of the money that local authorities get is not ring-fenced in any way, it's down to the local authorities*

to decide where they spend it. So unless something can be tied into an outcome agreement target, it's vulnerable." Participant, Academic

There is a strong linkage to the process theme here so this discussion is continued in more detail in section 4.6.8. Although here the relationships between the RTPs and LAs was viewed as significant, if the RTPs acknowledge SC measures and their potential role to deliver them:

> *"If it is left to the local authorities it won't continue beyond the programme time. […] A huge backward step is that the RTPs have more or less had all the money sucked away from them. I feel that they have a strong role in being able to step a bit back from political decision making in the local authorities. […] Because none of it is ring-fenced beyond the end of the funding period, I just worry that there won't be continuation."* Sheila Fletcher, Community Transport Association

Finally, the future role of SC measures in Scotland will be clearer once the SCSP evaluation is completed. Yet demand reduction measures have already been identified as a priority (section 4.5.3), so Scotland should be thinking about LA engagement on these measures in the future:

> *"We have identified that demand reduction within transport is important to contribute to the carbon budget and local authority and devolved administration action is required to achieve demand reduction. So I don't think it can be said that Scotland should not act on transport because it has relatively fewer powers."* Participant, CCC

The doubt surrounding SCSP suggests that little future planning has occurred and that the pilot was seen by the Scottish Government as a sufficient response. To what extent SCSP fits into wider climate change and transport (and other) agendas, is among the issues discussed in the next section.

4.6.6 Theme: Scope

"If the lessons gained through the programme are applied, it will make a significant contribution. The programme itself and the number of people affected by it are relatively small, but if you can use the lessons to change wider decision making and activities then it will have an impact." Ian Maxwell

Scope-related questions ascertained what the primary objective of SCSP was. Secondly, they determined how broad/significant SCSP's impact is and how it fits in Scotland's other activities to reduce transport emissions.

Scope questions were broadly grouped as follows:

- Is transport a priority for Scotland in terms of emission reduction?
- What is Scotland doing to reduce transport emissions?
- Is SCSP a policy to address climate change?
- Which SCSP measures will achieve the biggest emission reductions?

The findings on these questions will be examined before any other significant scope-related information highlighted.

4.6.6.1 Is transport a priority in terms of emission reduction in Scotland?

Twelve participants responded; five considered transport a priority for reducing emissions, one said no. The remaining five respondents had caveated answers, neither yes or no (Table 4.5). It may be significant that most respondents that did not respond affirmative or negative are either from TD or TS or a policymaker.

Respondent	**Response**
TD	I know that within transport we are undertaking a lot of work, because a colleague of mine is devoting all his time to it; our analysts are working on it.
TS	Important to Scottish Government that obviously we try and meet our targets, we in transport can help play our part by doing what we can directly on the transport networks and working with colleagues.
TD	I think personally transport has a role to play in the short-term, but it's not one of the leading roles. In the long-term, completely different. At the moment, it's almost a quarter of Scottish emissions and conceivably you could get rid of the vast majority of those.
Transform Scotland	It's got to be a priority because transport produces 24.4% of all emissions coming out of Scotland. […] so frankly if you don't tackle transport, you've got no chance of hitting the targets laid out in the Scottish Climate Change Act. Whether or not action by the government and others is currently heading in the direction of meeting these targets, well that's somewhat questionable given that Scottish emissions from transport have gone up over the last decade.
Elite Politician	It is clear that transport is particularly difficult.

Table 4.5: Is transport a priority in terms of emission reduction in Scotland?

These caveats acknowledge that transport must be prioritised, targets exist and activity on the issue within government is on-going. It is seen as a difficult, sizable sector to decarbonise, but nowhere explicitly states that government is prioritising it. However, unlike certain other

cases, there isn't a particularly strong energy discourse running through the climate change narrative to account for the lack of attention. It would appear rather that there is a strong infrastructure discourse running through Scottish transport decision making, which detracts attention away from climate change policy. These findings support the perspective that whilst targets are set, they are not being prioritised in terms of policy developments. This occurrence was identified in many contexts throughout the research and is termed as 'strategy-action deficit' (Chapter 8).

4.6.6.2 What is Scotland doing to reduce transport emissions?

To examine the assertion that policy to reduce transport emissions is not being prioritised in Scotland, participants were asked to identify primary activity occurring in this area (Figure 4.14). Fourteen participants responded; most mentioned more than one area. In total 30 separate responses were tallied. Rail electrification/investment in high speed rail was referenced most (34% of responses). This indicates either that work on STPR priority areas has commenced and is well-publicised, or that most rhetoric is offered on this area.

This could be evidence countering strategy-action deficit, but could simply be the most high profile agenda item, that most people have heard about.

SC measures were mentioned five times – the second most cited area, with SCSP referenced three times. This suggests that SCSP is not as visible as other, more tangible areas of activity, or that participant's do not necessarily see it as an intervention to address climate change (section 4.6.6.3).

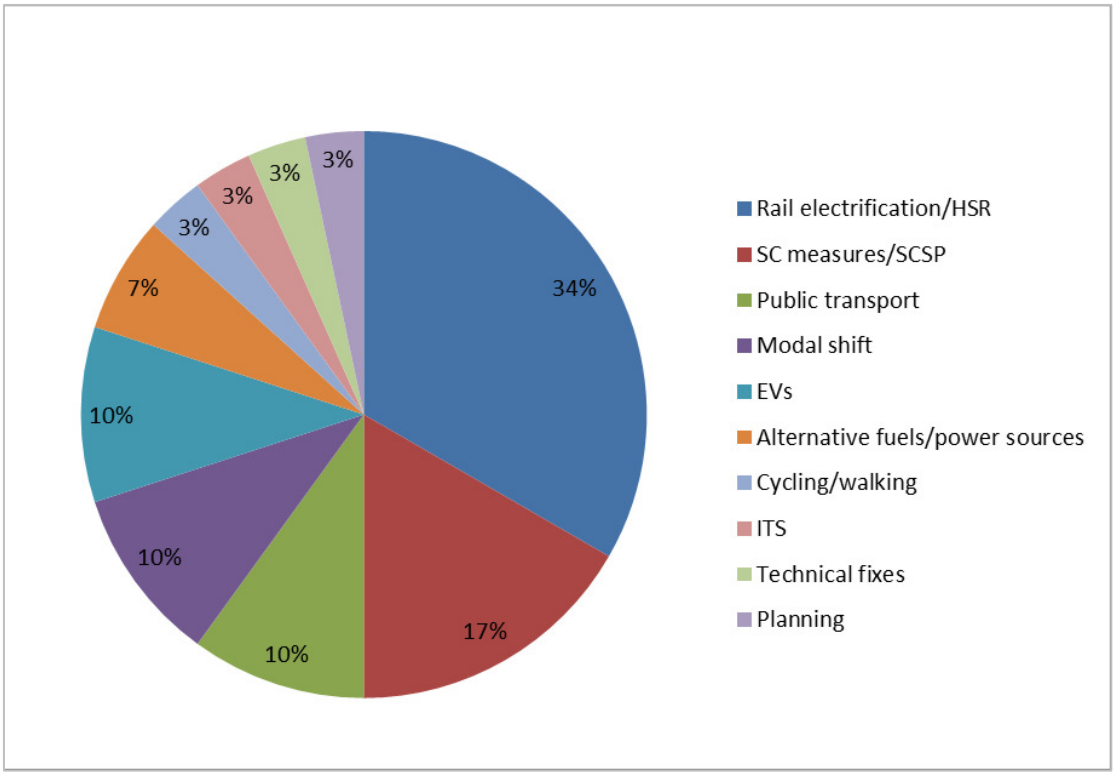


Figure 4.14: What is Scotland doing to reduce transport emissions?

Arguably some answers could be grouped further (alternative fuels/ electric vehicles); public transport, cycling/walking and soft measures, could all be counted as 'modal shift', but the split reflects the actual responses of participants. The broad range of measures identified match well the areas outlined in section 4.5.5 and suggest that Scotland's response to transport emissions is actually quite comprehensive, so whilst not prioritised, it is not being overlooked. But the extent to which SCSP is identified as a policy primarily to reduce emissions is outlined below.

4.6.6.3 Is SCSP a policy to address climate change?

The Scottish tranche of SCSP funding was provided jointly by Health, TD and CD, but it is important to understand the emphasis given to addressing health, climate and transport-related problems within the bids and subsequent projects. Figure 4.15 presents the responses

offered by participants. Many respondents saw multiple benefits to the programme; however results are presented with the primary objective stated first and foremost.

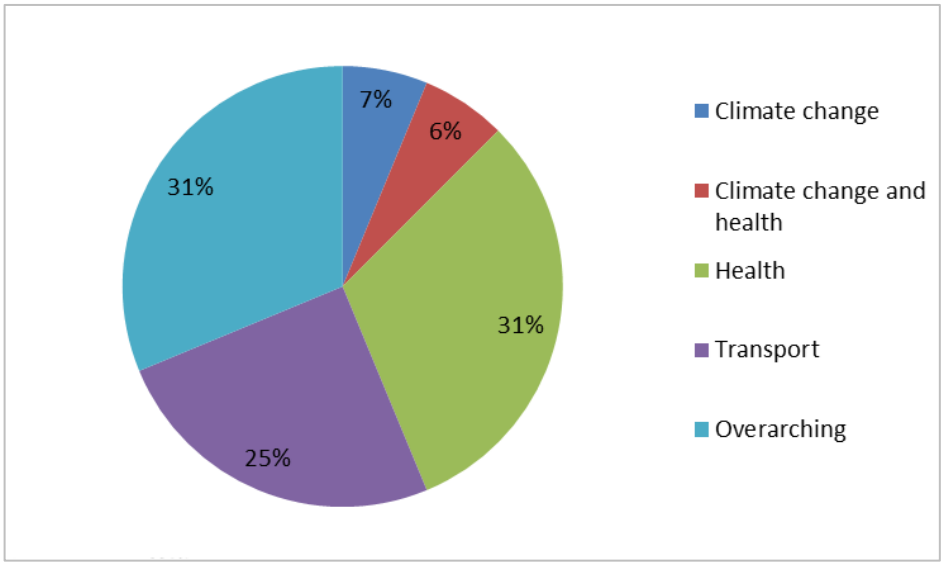


Figure 4.15: What is SCSP's primary objective?

Only one participant – the Elite Politician – saw SCSP as a climate change policy. Indeed, some participants even questioned the role of climate change:

> *"We were quite surprised that there is quite a heavy weight put on it [the climate change element of the bidding process], because we thought how on earth do you measure it?"* Participant, Falkirk Council

Not only does this highlight a potential lack of communication across levels (linking to scale issues) as the local governments seem unclear about the programme remit, but also alludes to local government capacity (Chapter 8).

SCSP's cross-issue nature was identified by almost a third of respondents. This suggests that Scotland is succeeding in its aim of achieving multiple policy objectives simultaneously.

> *"I don't think you can say it's a climate change or health or any other policy issue at all, it's just right across the board."* Participant, TD

A further third of participants highlighted the health objective. Surprisingly even though the programme manager and majority of the funding came from TD (and subsequently TS), only 25% of respondents saw SCSP as a transport policy. These responses suggest reducing emissions is seen as a co-benefit of SCSP at best. Table 4.6 outlines the three indirect responses offered.

Respondent	Primary objective	Qualification
Academic	Greener/healthier	Its green, healthier and all that sort of thing, without appearing to mention or emphasise climate change.
TD	General sustainability	-
CCC	Number of aims	I'm not properly familiar with the rationale behind it, but I suppose it does contribute to this idea of sustainable places, which the Scottish Government is very keen on.

Table 4.6: What is the primary objective of SCSP?

These comments suggest that the objectives of SCSP are actually quite vague and that its contribution will be little understood because it is ill-defined (section 4.6.8.4). Some felt that climate change was not being addressed by the programme:

> *"I don't think I really could honestly put it in the climate change category, that's what the rhetoric says, but I don't think that's why it's being done.*" Participant, Academic

> *"I personally am slightly sceptical that we'll get fantastic results out of it, from a climate change perspective. I think it's wonderful in terms of the kind of community spirit and getting people out on to their bikes and walking and stuff like that from more of a health perspective, but in terms of actually cutting emissions, I think we'll struggle to prove that there's any reduction at all. I just don't think they'll be a big enough modal shift to capture it in the monitoring."* Participant, TD

Others felt that even the presence of any co-benefits was a "bolt-on":

> *"I'd say it's a transport intervention and they thought that we'd better look at the health impacts. The health impacts are far more elevated above the carbon impacts in this instance. But even the health impacts are a bit of a bolt-on."* Jillian Anable, Aberdeen University

In attempting to deliver against multiple policy objectives, SCSP has caused confusion; there is a lack of clarity about what it is trying to achieve and why. Perhaps the projects could have better promoted more by the Scottish Government and SCSP given more exposure as a cross-

cutting programme (section. 4.6.8). Despite a lack of conviction about SCSP's climate change objectives, participants were asked which SCSP measures, if any, would deliver [the biggest] emission reductions.

4.6.6.4 Which SCSP measures will achieve the biggest emission reductions?

All seven[20] respondents (Table 4.7) were directly involved in the programme – indicating that other participants are unaware of particular project initiatives. Personalised travel planning was mentioned twice and arguably 'bus information' could be incorporated into this.

SCSP measure	**Response count**
Personalised travel planning	2
Learning	2
"Car culture" Work	1
Bus Services	1
Bus Information	1
Park and Choose	1

Table 4.7: Which SCSP measures will achieve the biggest emission reductions?

Perhaps significantly, two of respondents singled 'learning' from SCSP as more important than the actual measures being implemented in the pilots – highlighting that value could be derived from continuing to implement SC measures after SCSP (section 4.6.8.4).

> "*At this level; this kind of initiative, I don't think we'll have an effect on the climate, but if we can demonstrate there are some things that can be done, then if they're applied at that wider scale, they could have an effect on climate."* Graeme McLay

This emphasises the limited nature of SCSP and thus inability to fulfil its pledge to deliver "significant CO_2 emission reductions" in its current format.

[20] One respondent offered two measures.

4.6.6.5 Other scope-related information

Some other scope-related points were also identified in the research:

- Departmental responsibility
- Strategy-action deficit

4.6.6.5.1 Departmental interaction

The question of ultimate responsibility for SCSP (section 4.6.5.1) was scale-related. Horizontal interplay in SCSP was witnessed through the joint funding across Health, TD and CD and through the participation of representatives from each area on the project selection committee.

Perhaps the most significant horizontal linkage was the merging of TS with TD. Housing all transport considerations in one department improves the potential to better link SC policy measures with infrastructural projects. The commitment to STAG and delivering STPR projects may detract attention (and financial support) away from more modest policy-based expenditures. However, the merger and the Low Carbon Scotland report may offer renewed emphasis to the potential of such policies to reduce emissions.

4.6.6.5.2 Strategy-action deficit

Many participants stated that overarching climate change measures should/must be prioritised:

> *"There is a recognition from all working in Scottish Government whether you're in transport, or in housing or in environment, that climate change will have its part to play and should at least as a key policy of Scottish Government be recognised in anything that we take forward."* Participant, TS

Yet despite this and similar rhetoric, projects underway simply will not deliver the emission reductions necessary. However, the issue is more complex in Scotland. Here it is not simply a case of strategy-action deficit – whereby rhetoric and policy responses do not match – but rather that different strategies being implemented deliver fundamentally different outcomes – they are simply irreconcilable. Box 4.3 presents participants' summarised perspectives on this contradiction.

> *"In Scotland you've got the on-going work that the Scottish Government is doing in rail, bus, ferry and you recently had the STPR and that was meant to be an exercise in identifying the larger scale projects and prioritising of them. But that's really a 10-20 year time scale and things like the Forth Bridge replacement are going to be a major issue because it requires a very large investment compared to other projects and it will rather skew the rest of them."* Ian Maxwell
>
> *"If you compare it [SCSP] to what's spent on roads then no, but in terms of the commitment starting to be there, I would say yes it's improved vastly. I think time will tell."* Participant, Falkirk Council
>
> *"Obviously we're going to have to deliver the Forth crossing sometime in the future; and that's not really conducive to demonstrating a massive reduction in our emissions that year."* Participant, TS
>
> *"I'd just like to see more radical interventions, good as STPR was, it still biased more towards road projects than I think would be the best thing if we were really going to tackle climate change."* Participant, SWestrans
>
> *"If the government can find £2,300 million for building a new bridge over the Forth, and is issuing these huge emission reductions targets, you'd think that they could find more than £15 million for sustainable transport."* Colin Howden, Transform Scotland
>
> *"Unfortunately in the grand scheme of things – the Forth Road Bridge and parking charges coming off, everything – it's [SCSP] just noise really in the whole agenda."* Jillian Anable

Box 4.3: Comments on strategy contradiction in Scotland

Collectively this evidence suggests that climate change is not prioritised other than in target setting and rhetoric. So are Scotland's claims of being a 'climate change' leader justified?

4.6.7 Theme: Leadership/Power

> *It [Scotland] would have to have a huge change in priorities for it to be a leader in transport, it certainly could be, but we'd be talking about massively different professional priorities."* Participant, TD

The primary objective of asking leadership/power-related questions was to ascertain whether SCSP and other transport emission reductions efforts constitute 'leadership' aligning with Scotland's assertions.

Questions were broadly grouped as follows:

- How does Scotland's climate change leadership present itself?
- Where does SCSP fit into this?
- How significant is the fact that Scotland's Minister for Transport is also Minister for Climate Change?
- Where is climate change on the Scottish Agenda?

The findings on each of these questions will be examined before any other significant leadership/power-related information is highlighted.

4.6.7.1 Scotland's climate change leadership

Responses to this question were very broad (Figure 4.16).[21] Scotland's overall leadership on climate change policy was affirmed by some participants, others pinpointed certain areas where Scotland could be seen to be leading. Some said leadership was not detectable in Scotland's actions and that describing it thus was misleading.

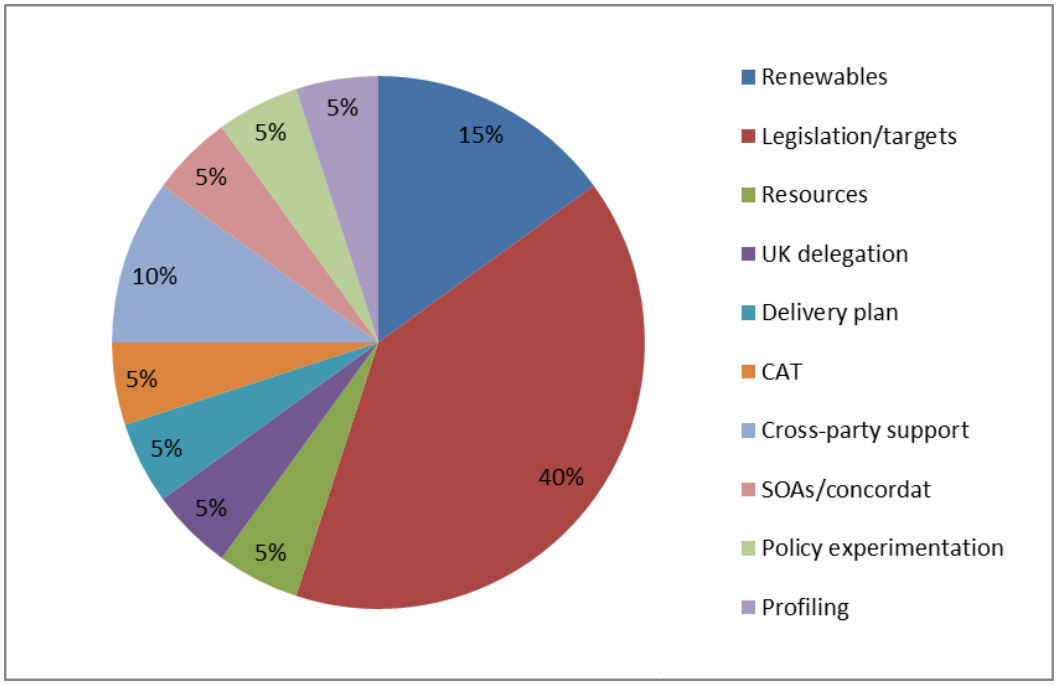


Figure 4.16: "How does Scotland's climate change leadership present itself"

[21] An important contextualisation: all respondents were interviewed before the final passage of the Climate Change Act – i.e. before the Climate Change Bill had received Royal Assent, therefore a number of responses anticipate this event.

Most respondents identified Scotland's emission reduction targets as evidence of leadership, although others stated that leading on legislation alone, without supporting policies was insufficient. Renewable energy, particularly niche areas like marine/tidal, was seen as the most prominent area of activity undertaken to promote emissions reduction. The fact that climate change appeared to have cross-party support was also identified as leadership, which highlights political and organisational collaboration is being promoted in Scotland. Numerous participants (all non-Scottish Government) stated that Scotland was not demonstrating leadership (Box 4.4).

"Leadership has become a bit limp at the moment, but it maybe that it's just waiting for this Climate Change Bill to become an Act." Participant, Academic

"It almost has a victim mentality. But that may hold its ambitions back maybe, if it could get over that then I think it could be [a leader]." Jillian Anable

"It's rhetorical; it's trying to 'Big-Up' Scotland." Participant, Academic

"I think we've a long way to go before it's going to be the case that Scotland is a leader." Participant, Orkney Council

"I think it is a very brave move by the Scottish Government to suggest that they can reduce the carbon footprint by so much, but I still think that they are posing policies that are actually going to be quite negative." Sheila Fletcher

Box 4.4: Scotland's lack of leadership

There appears to be very little leading-edge policy – in transport and more broadly - or even policies which reflect the sentiment of the legislation.

This could be because 18 months after the passage of the Climate Change Act, implementation is just beginning. As explained here, the work behind this phase has been a long time coming:

> *"We've been talking about what level of target we should have in the Bill, but all the time in the manifestos back in 2007, the policy people were really quite clear that through the delivery of these targets and delivery was where we would see true leadership. Yes, set the targets fine, we'll take the kudos for that, but it's actually being able to demonstrate that we can actually deliver this move to a low carbon economy relatively quickly. If we can do that, that's real leadership."* Philip Wright, retired civil servant (CD).

An important point raised multiple times was that even if Scotland leads in certain areas, it has little impact on mitigating global emissions. Moreover, due to the complexities of devolution, it was suggested Scotland could not truly lead, because the reserved areas of responsibility render a comprehensive regime difficult to implement.

4.6.7.2 Where does SCSP fit into Scotland's leadership on climate change?

Participants saw that SCSP's role in Scotland's climate change leadership fell into two main areas:

- new thinking
- new activities

This 'newness' – something Scotland had not done before – was not identified as leadership by some, but as evidence of Scotland 'catching up' with other jurisdictions. SC measures are commonplace in other contexts. Other participants felt that SCSP was too small to warrant leadership, one participant stated that leadership would only be demonstrated if SCSP is extended past the pilot stage (section 4.6.8.4). Another expressed the need for a transport budget review – changing spending priorities to reflect the climate change targets would show true leadership.

Interestingly, a particular leader emerged through this process – four participants separately highlighted the innovation and commitment demonstrated by Dumfries. The criteria outlined which demonstrated this leadership were:

- 'buy-in' at all levels/political backing
- proactive officers delivering the project
- good working partnership with SWestrans
- SCSP project providing solid public transport infrastructure to the community

These comments highlight the importance of leadership across government levels, not just at the top. Dumfries was awarded the largest amount of funding to deliver their project, so it may have more opportunity to 'lead', given its access to resources. Nonetheless, this is a positive observation about SCSP's ability to affect change.

4.6.7.3 How significant is the Minister's joint portfolio[22]

Participants were asked whether the Scottish Minister's joint portfolio of Transport, Infrastructure and Climate Change was significant to implementing climate change-related transport policy and promoting cross-departmental collaboration. Most of the 15 respondents saw 'theoretical' benefits of connecting portfolios under one Minister (Figure 4.17). However the majority qualified (Figure 4.18) this significance with additional information.

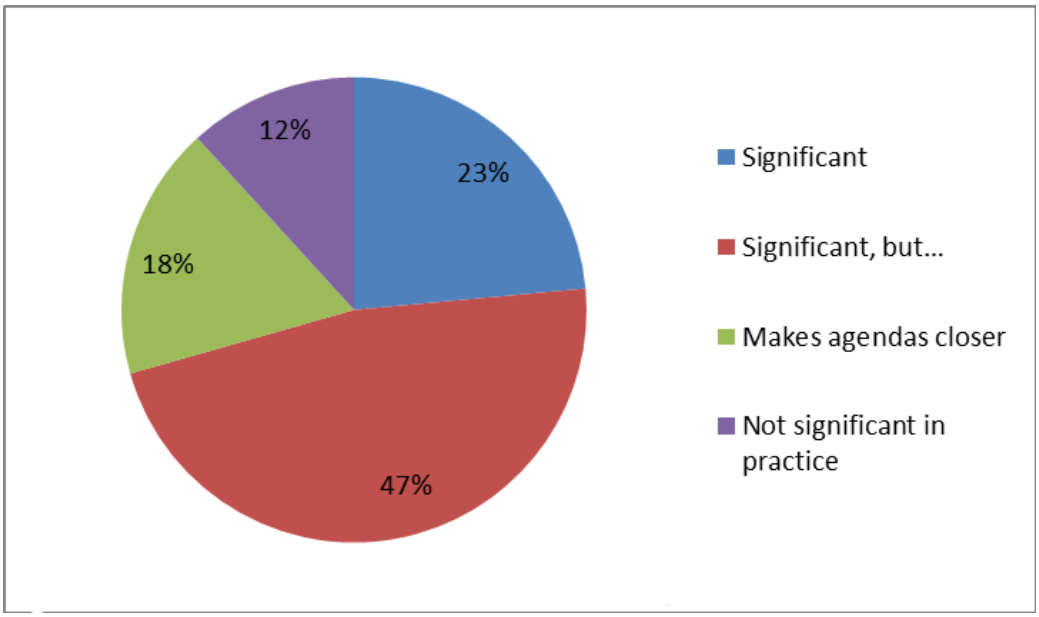


Figure 4.17: Significance of Minister Stevenson's joint portfolio

[22] As of December 2010, with the resignation of Stewart Stevenson, Scottish Minister for Transport, Infrastructure and Climate Change, the portfolios were separated. These interviews refer to Minister Stevenson's work prior to departure

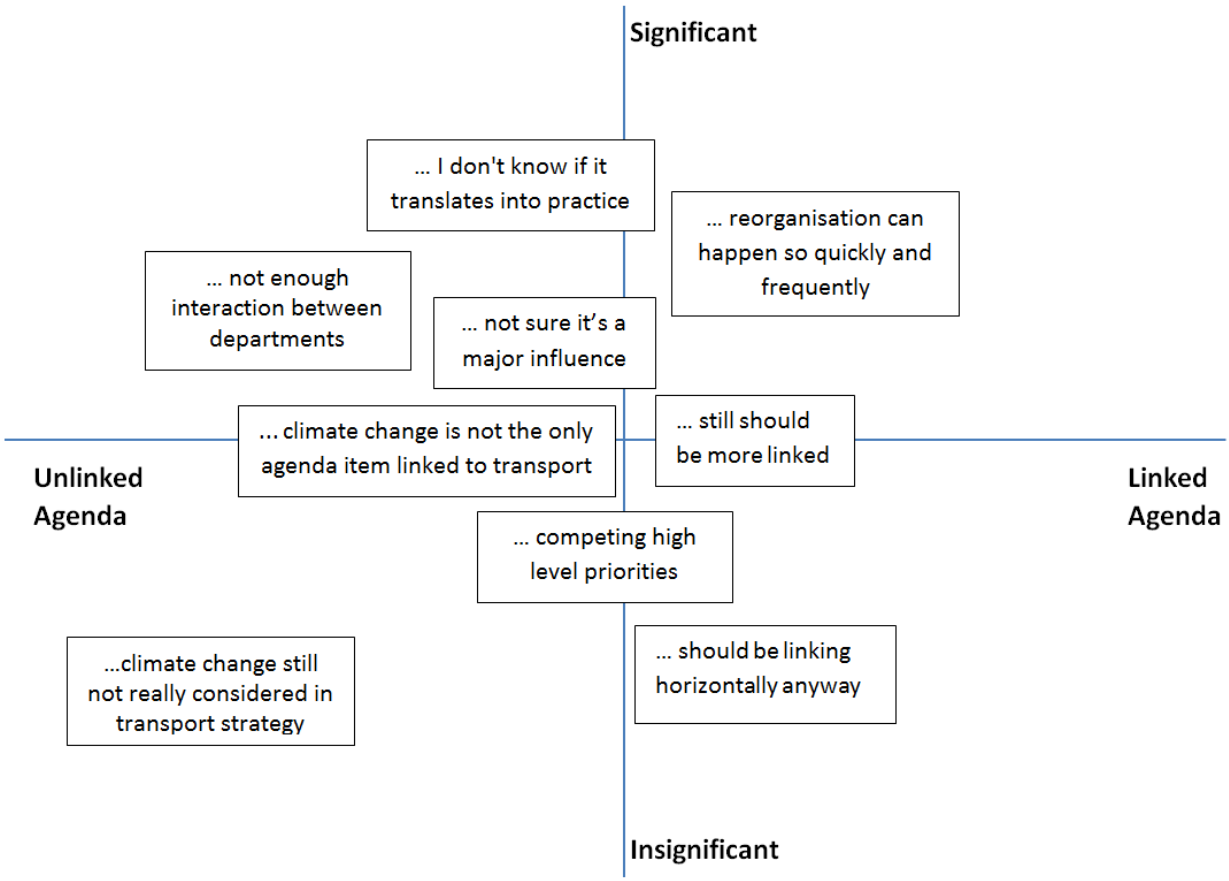


Figure 4.18: Minister Stevenson's joint portfolio – "Significant – but…"

Most participants (70%) viewed the joint portfolios as significant; both linking governmental departments and policy development. In examining these perspectives, certain commonalities emerge:

- On the ground linkages could be improved, or should exist anyway – Ministerial portfolio does not necessarily harmonise areas within the bureaucracy
- It is not a permanent fixture[23]
- There are other important linkages to be made across other agendas

These elements demonstrate that whilst horizontal interplay can be promoted by the alignment of areas under one Minister/Leader, climate change policy does not exist independent of other policy areas and there will always be trade-offs between it and other issues. A discussion on climate change mainstreaming examines this topic further in Chapter 8.

[23] Indeed the portfolios were separated after research was conducted

A further three respondents highlighted the broader significance of Transport, Infrastructure and Climate Change falling underneath the jurisdiction of the Finance and Sustainable Growth Cabinet Secretary and that the importance of linking areas into the strategy of Scotland is greater than issue-specific linkages.

> *"It's been a tremendous benefit to have the Finance Secretary as having the portfolio responsibility for climate change."* Philip Wright[24]

4.6.7.4 Where is climate change on the Scottish Agenda?

Fifteen participants responded with answers ranging from "at the top" to "pretty low", one participant stated it was "on the backburner" due to the economic crisis (Figure 4.19). The most common response was "quite high". Two respondents added that it should/must be at the top of the agenda. Several participants stated what they thought was at the top of the agenda– overwhelming the economy (Table 4.8). This demonstrates that whilst agendas may change in rhetoric, the same enduring policy priorities remain, highlighting the strategy-action deficit (section 4.6.6.5.2).

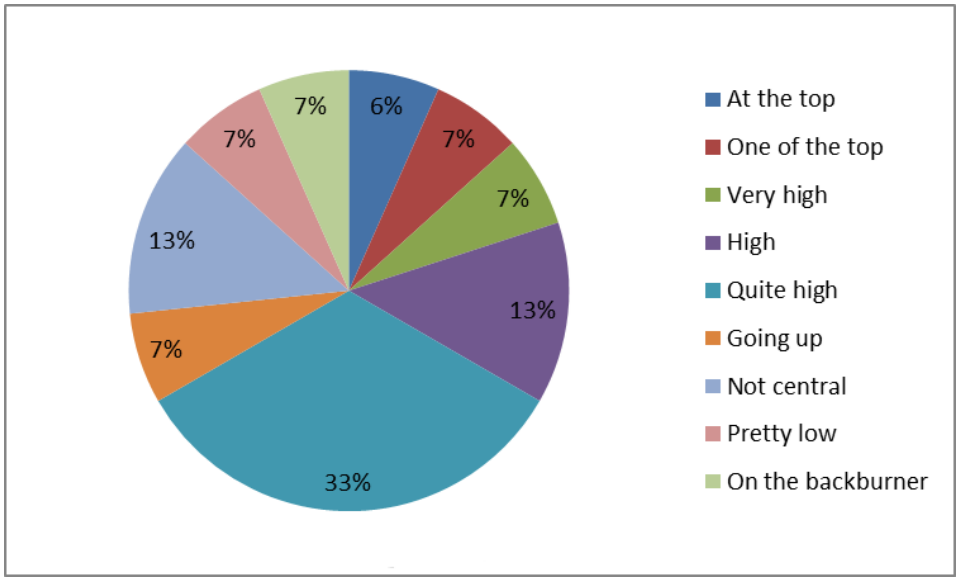


Figure 4.19: Where is climate change on the Scottish Agenda?

[24] These areas were split across other portfolios following the 2011 election

Participant	Top of the Agenda
Academic	Economy
TS	Sustainable economic growth
TD	Growth
LA	Education, social deprivation, crime, health
Academic	Energy security, economic development
Academic	Economic growth
LA	Economic issues
LA	Economy

Table 4.8: Issues at the top of the Scottish agenda

Some participants suggested that in some areas Scotland is beginning to refocus on meeting targets.

> *"It's very important that central government has set up a Climate Change Directorate and that the Climate Change Directorate talks to UK government colleagues. So I'm actually heartened by the fact that within central government there is a body of people thinking across the board, whether it's in transport, energy, housing and I think that's probably the most important part – someone is looking and trying to see the cross-field big picture."* Participant, TS

This relates to section 4.6.7.3 in terms of government-wide strategy to address climate change and is discussed in Chapter 8 in comparison to the other case studies.

Numerous participants commented that "on the ground" or "in practice" there is still some way to go. Others suggested that whilst politically climate change may be gaining traction, publically it is still met with some resistance (section 4.7) and work needs to be done in this area – an important part of a leadership effort – to push climate change further up the agenda.

4.6.8 Theme: Process

"Something can be a priority, but still not be being tackled in the most effective way." Jillian Anable

The primary objective of asking process-related questions was to better understand exactly *how* SCSP was developed and is being implemented. Any information specific to procedures undertaken was categorised under this theme. Participants were asked to explain their familiarity or involvement in SCSP and at what point (if relevant) they became involved. Some information was obtained about the selection process for the seven towns.

4.6.8.1 How did SCSP come about?

Only four directly responded: two LAs, COSLA and the original SCSP programme manager. This suggests limited knowledge about the programme exists beyond those directly involved. Only the programme manager was able to explain the strategy behind the programme (Box 4.5).

> *"The work on this had started considerably earlier, but was disrupted by the election in Scotland and the change in government. So although there was a commitment in the National Transport Strategy to undertake a demonstration programme, it took somewhat longer than planned to get it up and running. […] One of the issues when the new government came into power and instituted a new regime of devolving a lot of the spending responsibility down to local authority level and removing the ring fencing that had been in programmes in all sorts of areas, it meant that we had to undertake negotiations with COSLA in order to gain agreement to have what was effectively a ring-fenced fund.* Ian Maxwell

Box 4.5: Background on SCSP

Interestingly both LA representatives offered information solely about their particular projects, suggesting they were not familiar with the broader policy context. Orkney Council was informed of the initiative via letter from the Scottish Government and applied via proposal submission. East Dunbartonshire Council however held a meeting with the Scottish Government before the initial call:

> *"We had an inkling that the government were considering it and went to them before the initiative was announced and we went to chat with them about it and what we thought they might be doing with it, and what we thought we might do in East Dunbartonshire."* Graeme McLay

This demonstrates vertical interaction between the levels of government existed before the programme was formally announced.

4.6.8.2 What is your involvement in SCSP?

Eighteen participants discussed their role in SCSP, 13 were directly involved. Of these 13, only three expected to be involved throughout the three years. As particular individuals were considered fundamental to the success of the programme, the significance of such personnel

change should not be underestimated. Flux does not appear more at one government level than others; indeed both the first SCSP programme manager and the project manager in Orkney knew from the outset that they would not be in post for the duration of the project, highlighting that perhaps projects can withstand such disruption as it is fairly commonplace. This fluctuation and any resulting fragmentation between strategy and delivery are discussed in Chapter 8. Some participants played a role at the outset and expect to reconnect with the programme once it is finished – those on the Programme Board/Steering Groups for example – so there is a degree of continuity here. All of the participants that were not directly involved were aware that it was taking place, which is positive in terms of exposure.

4.6.8.3 The selection process

Questions relating to the selection of towns were twofold, and only directed to those involved in the programme. Firstly, participants from project LAs were asked why they thought their bid was accepted (Table 4.9), then others were asked why they thought the towns were successful.

Track record was viewed as important by certain LAs, as was a diverse set of proposed measures and delivering against multiple objectives. There is a mixture of functional and political elements here – between delivery and organisational set-up/capacity. As seen in section 4.6.6, public and political buy-in has been identified as a significant contributing factor to the success of a programme, yet this is not explicitly referenced by any LAs. Only one participant stated that the ability to make the link between the policy areas was a factor in their bid selection.

LA	Why was bid successful?
Falkirk	Enthusiasm Practical demonstration A mix [of measures] Risk-free components
Orkney 1	Range of aspirations Geography – island community with a town Different
SWestrans (Dumfries)	Unique aspects Ideal Not in the central belt – an advantage Big enough to make it worthwhile Broad spectrum of intervention Interaction of various areas
Orkney 2	Novelty Independent travel scheme Link between health, active travel and climate change
East Dunbartonshire	Quality of submission Team Clearly defined area *"We just had a whole lot of people who were willing to support our bid and we put all of that into the government and they agreed with us."*

Table 4.9: Why do you think your bid was successful?

Despite the very diverse answers on bid success provided by the LAs, responses from non-participants were much more formal, mentioning the exact assessment criteria asked for. This is an interesting distinction, which highlighting how involvement in policymaking processes is influenced by personal perspectives and vice versa.

4.6.8.4 The future?

Participants were asked a) what would happen at the end of SCSP, b) whether SCSP should be continued/expanded and c) if there was potential for replication across Scotland. There was a huge degree of uncertainty about SC measures in Scotland after SCSP ends. Many participants reflected that SCSP's outcomes should speak for themselves. If successful, they should be continued. Some projects were designed to be self-sufficient after SCSP; others have no support after the funding cycle. Ring-fenced funding (section 4.6.5.3.2) presents a challenge to

SC measures, especially given the current need for 'efficiency' in UK/Scottish government spending.

Recognition was given to Scottish towns (outside SCSP) implementing SC measures, highlighting that SCSP is not the only activity in this area. However, Scottish budget constraints make larger scale funding for such a specific programme unlikely. Combining efforts to address climate change and health measures in the future was of interest. But with the recent extension of the CCF, and even though funding for SC measures may not be applied for under CCF, it may be that the Scottish Government has already picked its 'winner' in terms of supporting local action on climate change. There is no indication that Scotland is prepared to undergo significant institutional change, as CDG calls for, to redress its infrastructure focus and deliver a lower carbon transport system.

Some participants offered thoughts on the direction change that is needed in Scotland to change focus towards the decarbonisation of the transport sector called for in the 2009 Delivery Plan.

> *"Thinking about how to do things differently, the actions needed; now if that becomes embedded in the way local authorities and indeed central government think about their programmes then it becomes less necessary to have special schemes."* Participant, Academic

> *"There's going to have to be a coming together to maximise the benefits of joint working and I see that moving into not just those individual programmes but also by public sector bodies more generally."* Sheila Fletcher

4.7 Barriers

Participants were asked to identify the main barriers to implementing SCSP. Any barriers mentioned throughout the course of the interviews were also noted and where possible

categorised, using the typology outlined in Chapter 3. This information was important to ascertaining whether a lack of dialogue and collaboration between state government departments and across levels of government is one of the major barriers identified and if not, what these were.

4.7.1 What are the main barriers to/main challenges that SCSP faces?

Public-related challenges were the most common – issues of culture change, public resistance and lack of awareness (Table 4.10). Similarly political/public buy-in (or lack of) is significant.

Respondent	**Barriers**	**Challenges**	**Type**
TD	Lack of knowledge/suitable infrastructure; cost implications of new walking/cycling infrastructure	Economic downturn	Public, Economic, Other - Infrastructure
TS	-	Buy-in all levels	Political; Public
LA	*"It's too big an issue for people to take in."* Size/resource intensity of project	Spending the money	Public; Operational; Economic
Academic	Lack of communication	Culture change	Political; Public
COSLA	Financial pressures	Buy-in (public)	Economic; Public
TS	Weather/Climate/Facilities	Incentivising behaviour change	Other - Scottish context; Public
TD	Timescale		Operational
LA	Public transport infrastructure, weather	Changing behaviour/ perceptions	Other - Infrastructure; Other Scottish context; Public
Academic	Joined-up thinking; 'anti-car' measures	Making it representative of towns; community integration; funding	Political/public; Operational; Other - Infrastructure
Academic	Measuring success; electoral cycles; programme length	On-going commitments; funding	Operational; Political; Economic
RTP	Magnitude	Public resistance	Operational; Public
LA	Timescale	Culture change	Operational; Public
Transform Scotland	Buy-in (political)	Continuity	Political; Operational
Transport organisation	Buy-in (public)	-	Public
TS	Buy-in (political) *"At a local level some places are still trying to get some senior management support and buy-in."*	-	Political

Table 4.10: Barriers and challenges to SCSP?

The programme size/timeframe was identified more than once. When the total funding is broken down across seven towns over three years, the projects are relatively small; not significant enough to achieve results. Two references were made to 'fragmentation'; suggesting that joined-up thinking and communication is a factor in policy success, although not a primary consideration.

Other barriers and challenges (type) to SCSP highlighted during the interviews include:

- Still relatively fringe (Public)
- Connection with land use planners (Political)
- Fuel prices/recession (Economic)
- Poor investment (Economic)
- Poor awareness of existing facilities (Public)
- Lock-in to road-based infrastructure (Other-Infrastructure)
- Lack of infrastructure for alternatives (Other-Infrastructure)
- Lack of understanding of the issues (Public)
- Inconvenience of alternatives (Other – Scottish context)
- Getting public engagement (Public)

Awareness, engagement and understanding are again highlighted as significant. The comment about connection to land use highlights the central argument here that fundamental connections between government organisations are missing which renders policy implementation challenging. Figure 4.20 shows a breakdown of all identified barriers by type.

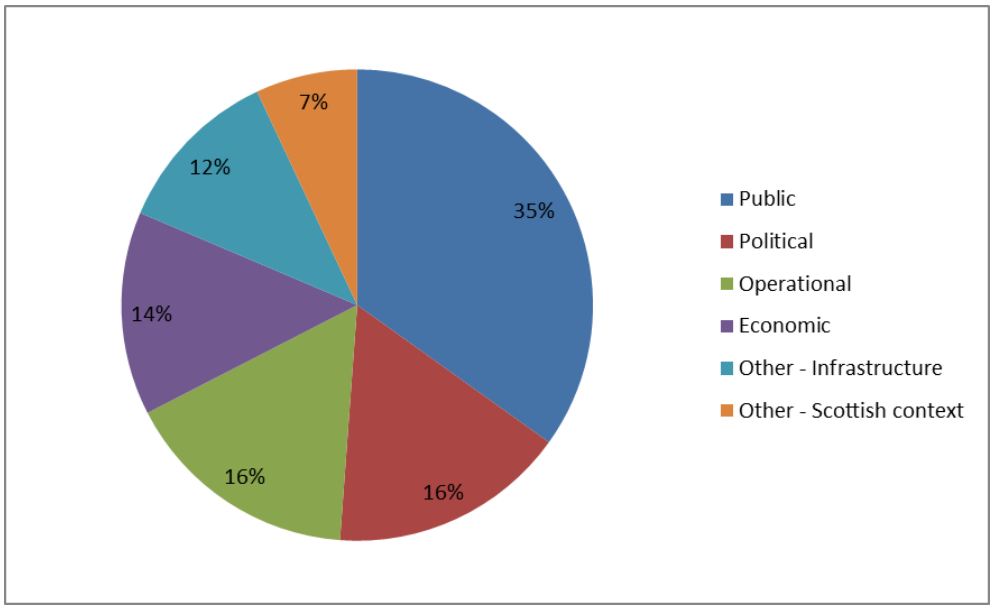


Figure 4.20: Barriers to SCSP by type

Interestingly no legal and industrial barriers were highlighted in this context. This is potentially because SCSP is a pilot policy project, there are limited legal considerations. Moreover, there was little connection in this policy with the business sector; it is focused on local government and behaviour change. And as was highlighted in section 4.6.5.2, Scotland does not have a significant car industry, which may account for the lack of industrial barriers to this policy.

4.7.2 Barriers to transport emission reduction in Scotland

General barriers to achieving emissions reductions from the transport sector in Scotland were identified as follows:

- No one in the LA responsible for climate change issues (Political)
- "Climate change is so hard to measure" (Operational)
- *"The whole issue about transport, land use and what that means in term of climate change is not as widely understood and appreciated as it really should be."* (Public; Political; Other – Technical)
- Other Scottish Government actions undermine work on climate change (Political)
- Non-devolved control over speed limits[25] – is a constraint (Legal)

The important issue of local government capacity is revisited in Chapter 8. Indeed, political barriers seem to pose the most significant problems. This supports the idea that the political support for addressing climate change, despite rhetoric, is missing. There is a significant strategy-action deficit in Scotland brought about by the reticence to make fundamental institutional and organisational changes that are necessary to address the issue.

[25] In November 2010, control over speed limits was devolved to Scotland. This change is expected before 2015

4.8 Discussion and Conclusion

> *"I can understand why we're doing it – it's a way of getting activity rolling, getting activity delivered in Scotland, but I'm not sure why we're doing it because it's classed as a demonstration project and we know from other examples in England and around the world that it does work. So it's kind of a delaying tactic in actually getting this delivered nationwide."* Participant, TD

4.8.1 Scottish context

Scotland has acknowledged the importance of coordination between levels and departments of government. The NPF and the Single Outcome Agreements guide Scottish policymaking and in theory at least, are progressing towards a more sustainable society. The STPR was an ambitious undertaking that allowed Scotland to prioritise investment decisions. And its climate change targets are world-leading in terms of reduction levels required. But some evidence here suggests that action is running counter to this rhetoric. Scotland has very infrastructure-focused strategy, often at the expense of 'softer' policy measures, despite the fact that the latter have been identified to contribute to the 'almost complete decarbonisation' Scotland has challenged itself to achieve.

Furthermore whilst the promise of EVs is being promoted in Scotland – a new development since the commencement of this research – the policy direction for future SC measures remains to be seen. And with fiscal reviews and budget cuts imminent, how these elements of transport strategy will fair is unknown.

The merging of TS and TD is a positive step because it aligns Scottish transport policy with these infrastructure projects. But organisational fragmentation exists elsewhere that could potentially hamper efforts of cross-department and scale interaction. Now that climate change is no longer held in the same portfolio as transport, communication between Directorates could diminish. Since both are no longer under the Finance and Sustainable Growth umbrella,

there is still more potential for established links to be broken. SCSP was a programme which demonstrated strong horizontal and vertical interplay exists in Scotland, but its future is uncertain (see Chapter 8 for a comparison of interaction across cases).

The RTPs were identified as a potential stalwart for delivering SC measures. But with the removal of ring-fencing and budgetary discretion moved to the LAs – the potential to deliver effective policy has been diminished. The relationship between the Scottish Government and COSLA promotes vertical interplay and collaboration between the LAs. The CD remains responsible for the delivery of the climate change targets in Scotland and it needs to ensure that its role in Scottish climate change policy implementation is better understood, in terms of the influence it has over other departments – there is scope for further investigation of this issue (see Chapter 8 for a discussion on climate change mainstreaming).

4.8.2 Lessons on fragmentation, interplay and collaboration

Many interesting areas for comparison and discussion emerge from this Chapter, some of which will be used for comparison in Chapter 8.

Scale:

- Due to devolution, Scotland's available responses to reducing transport emissions are limited.
- The role of each level of government in the programme was outlined. Scotland was seen as crucial for guiding strategy and funding, the LAs for "on-the-ground" implementation. However, at the local level, climate change expertise and capacity is much more restricted and seen as less of a priority. These issues are investigated in Chapter 8.

Scope:

- SCSP represents joined-up collaborative funding and is a good example of horizontal and vertical interplay.
- Fragmentation across strategies, rather than between departments and levels of government was a significant issue. Disconnect is actually between strategic direction and policy implementation. In SCSP's vision climate change was clearly stated as an objective. But this vision does not translate through to implementation. This was identified as strategy-action deficit and is examined in Chapter 8.
- Participants saw the link between the climate change and transport portfolios as significant, so the change in organisational structure may have impacts in terms of the scope and leadership of future transport-related climate change projects in Scotland. The change in the chain of interaction in Scotland is examined in Chapter 8.

Leadership:

- There are 'inklings' of climate change leadership in Scotland, but these are related to setting targets, legislation, and niche areas of renewable energy, not transport policy.
- Elite leadership was identified as equally important as departmental championing in terms of effective implementation. This will be explored in Chapter 8.

Process:

- SCSP is unlikely to reduce emissions in its current form – and there is little certainty that the programme will be expanded/continued, although continuity was regarded as fundamental and such measures important to Scotland's transport decarbonisation.

Barriers:

- Public acceptance and political buy-in to SC measures was seen as the biggest barrier. When this is teamed with a virtually unanimous opinion that economic considerations

remain top of the Scottish agenda, the imperative to redress cultural perspectives – both public and private – is extremely clear.

"The essential message about Smarter Choices Smarter Places is a question of how this becomes embedded in the thinking of both professionals and public." Participant, Orkney Council

4.8.3 Conclusion

The reluctance to genuinely change the way things are done in Scotland, in terms of decision-making, organisational and institutional structures, has strong potential to demean the very strong climate change rhetoric in Scotland. There is significant contradiction between strategies and whilst the targets are ambitious, the policies that have thus far been introduced cannot be expected to deliver the necessary reductions. Whilst projections are made, as demonstrated by SCSP, the measures to deliver are short-term and cannot be guaranteed, which will lead to piecemeal responses.

Whilst there are indeed many issues for the government to address, the Minister's connected portfolio was considered significant by 75% of respondents, one of few areas of strong agreement across participants, but restructuring has broken this important link. Scotland has taken tentative steps towards becoming the 'best small country' on climate change, but it needs to be more consistent, bolder and much more forward thinking in order to realise this aim.

Chapter 5: South Australia (SA) –2008-09 budget AU$2 billion transport investment programme

5.1 Overview

This case study examines the SA 2008 budget decision for a "10 year, *AU*[26]$2 billion investment to upgrade, electrify and extend the metropolitan rail network" (SA Government, 2008a). It investigates the rationale for this decision as well as the broader policy landscape. It examines government structures and political leadership; considers the strategic direction of the administration at the time of the research; and the major projects surrounding transport and climate change.

The research's main objectives were to understand relationships between levels of government (scale); to ascertain whether the SA government is improving rail infrastructure to deliver emission reductions and understand the linkages between climate change and transport portfolios (scope). Political leadership issues are considered (power/leadership) and the planning, implementation and delivery processes of the investment are also investigated. Finally the barriers to delivering the investment and reducing transport emissions more generally are identified.

5.2 Introduction

Residual power in Australia lies with the states; therefore SA is accorded more control over its own affairs than the other case studies. As a 'city-state', the majority (1.2 million - 73%) of SA's 1.65 million people reside in its capital Adelaide (Australian Bureau of Statistics, 2010).

[26] Currency clarification added

Adelaide was once a '20-minute city' – travel from/to any point in the city took around 20 minutes. Today it is a microcosm of Los Angeles, topographically and in terms of sprawl – some 90km North to South. Being just over 100 years old, Adelaide was built around the car; its original tram network was removed in favour of roads.

Culturally, SA is a complex place. Four participants described SA as 'parochial'; nine as 'small' and three referred to the 'small government' (section 5.7.3). However three participants said SA was 'outward-looking', as demonstrated by its *Thinkers in Residence*[27] programme. Moreover the state strives to profile itself internationally (section 5.7.5). SA is an innovative 'place-of-firsts'. Small enough for change to be incubated until Australia/the world is ready:

> *"This place was the social conscience of Australia; has been for 140 years probably. First state that gave women the vote; they could vote in state elections in South Australia before they could in federal elections. Same with indigenous people, they could vote in South Australia, but not elsewhere. There is always a form of social democracy here."* Participant, Academia

Similarly:

> *"Historically it was the first one to give women the vote. We were the only colony set up on that wasn't founded on a conflict settlement; I guess there have been those historical things. […] We seem to be more sustainable and progressive like that."*
> Professor Barry Brook, University of Adelaide

One participant thought that this was once true, but things are now different. At the time of this research, SA's Premier was President of the Australian Labor Party and Australia's former and first Climate Change Minister Penny Wong is also from SA, highlighting that although SA is small, it exerts influence beyond its boundaries.

[27] 'Thinkers in Residence' was developed in 2003 to bring new ideas to SA and translate them into practical solutions. Nineteen residences have been completed to date, plus three current ones. These residencies have looked health, education, water, technology, climate change, transport and design. (SA Government, 2011b)

5.3 SA – Strategic Direction

Mike Rann became SA's 44th Premier in 2002. He was re-elected in 2006 and 2010 and had been Head of the SA Labor Party for over 16 years (SA Government, 2011a). Upon re-election in 2006, Rann made himself Minister for Sustainability and Climate Change (section 5.5.1). In October 2011 Rann resigned and was replaced by Jay Weatherill. This research was completed before the reshuffle and therefore it is not reflected; however its implications are discussed in Chapter 8.

The South Australia Strategic Plan (SASP) guides state policy direction. It was produced in 2004 to *"provide a framework for the whole state to follow – Government, business and the community – to make this state the best it can be"* (SA Government, 2011c). A 'dynamic, living document', the plan is updated every four years in order to reflect changing circumstances (SA Government, 2007). The original plan was updated in 2006 to form the 2007 SASP[28].

5.3.1 2007 SASP

The 2004/2007 plans had six objectives:

- Growing Prosperity
- Improving Wellbeing
- Attaining Sustainability
- Fostering Creativity and Innovation
- Building Communities
- Expanding Opportunity

The inter-related nature of the objectives and their targets was emphasised (SA Government, 2007). The *Attaining Sustainability* objective and targets are relevant here (Box 5.1). Increasing public transport passenger kilometres travelled (PKT) is listed as a climate change target, although its level of ambition is questioned (section 5.7.4.6). SASP states that *"South Australia*

[28] The next iteration of SASP, released in September 2011 was in public consultation during research analysis

is a world leader in climate change policy" and acknowledges 'local governments and the regions' in SA as 'central players to regionalising SASP' (*Ibid.).*

Objective 3: Attaining Sustainability
CLIMATE CHANGE
T3.5 Greenhouse gas emissions reduction:*
Achieve the Kyoto target by limiting the state's greenhouse gas emissions to 108% of 1990 levels during 2008-12, as a first step towards reducing emissions by 60% (to 40% of 1990 levels) by 2050.

T3.6 Use of public transport:
Increase the use of public transport to 10% of metropolitan weekday PKT travelled by 2018.

(*high order target: other targets can contribute towards its achievement.)

Box 5.1: SASP climate change targets (SA Government, 2007)

Several other documents guide SA's policy direction alongside SASP, including the Planning Strategy, particularly 30-Year Plan for Greater Adelaide (30-Year Plan), Strategic Infrastructure Plan for SA (SIP), Housing Plan for SA, and SA's Greenhouse Strategy. Each of these (except the Housing Plan) is scrutinised in the relevant following sections.

5.4 SA and Transport

Understanding SA's transport infrastructure and travel behaviour is important, in order to ascertain the relevance and significance of the 2008 public transport investment.

5.4.1 Transport Use Landscape

The majority of the population lives, and therefore most travel occurs around Adelaide, so both city and state statistics are referenced. Car use dominates in terms of modal choice (Table 5.1 and Figure 5.1).

Census year	One method only								Public transport and other method
	Public transport	Taxi	Car, as driver	Car, as passenger	Truck	Motor-bike/motor scooter	Bicycle	Walked only	
	Number of employed persons								
1981	49 234	1 740	289 771	48 814	na	10 922	10 700	25 988	na
1986	41 952	1 954	322 855	44 187	na	9 376	10 415	28 744	na
1991	33 062	1 453	322 141	41 368	na	5 600	8 662	26 514	7 033
1996	27 567	1 840	363 074	39 302	na	3 740	5 962	21 015	6 539
2001	28 282	1 475	392 511	37 455	7 298	2 904	5 889	21 553	7 837
2006	36 140	1 458	429 822	38 720	6 609	4 324	7 942	24 862	8 298

na not available.

Table 5.1: Method of travel to work – SA (BITRE, 2011)

The number of people driving to work has increased by a third in 25 years and more people are driving alone. Travel by all other modes has decreased, except those combining public transport with another method – this increased slightly. But driving is the overwhelming majority.

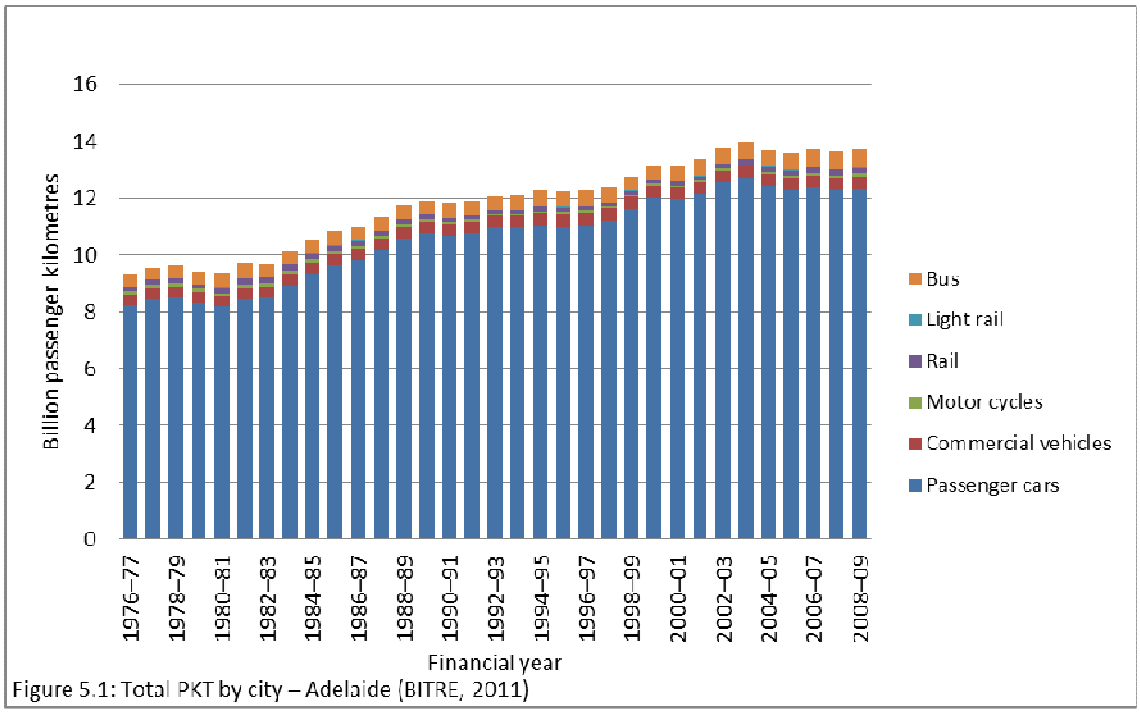


Figure 5.1: Total PKT by city – Adelaide (BITRE, 2011)

Some 90% of PKT in Adelaide in 2008-09 were by car, it is by far the dominant mode. Whilst public transport, walking, and cycling increased over the last decade, so have car drivers and passengers. Moreover, public transport ridership, walking and cycling rates are much lower

than 30 years ago. Rail has the lowest ridership of all, which may be a factor in the decision to invest in the infrastructure. There are signs that Adelaide has potential to increase public transport ridership.

Adelaide's O-Bahn – the world's longest (12km) and fastest guided busway, carries over 7 million people annually. The city's tram network was upgraded in 2007 resulting in increased levels of patronage (Adelaide Metro, 2007).

5.4.2 Organisation

The Commonwealth government has responsibility over the national highway network, states/territory governments over state networks and local authorities over local/minor roads. Public transport is more complicated. The Commonwealth government has no responsibility for public transport. Most transport matters in SA are managed by the Department for Transport, Energy and Infrastructure (DTEI)[29], but responsibility for different modes of public transport is managed by various organisations. Three DTEI divisions are relevant here –Policy and Planning Division, Public Transport Division and Office of Major Projects and Infrastructure (OMPI) (section 5.7.3). The Public Transport Division contracts train and tram services to TransAdelaide, the SA government agency, and all bus services to private companies. Adelaide Metro is a Public Transport Division body responsible for marketing and information of public transport services.

[29] Changed to Department of Planning, Transport and Infrastructure (DPTI) under Weatherill administration

5.4.3 Strategic Direction – Transport

Whilst SA is guided by two main strategies –SIP (2004-05)/30-Year Plan (2010) – no travel survey has been conducted in SA since 1999, so it is questionable how these strategies have been developed (section **5.7.6)**:

> *"The last time we did a metropolitan travel survey was back in 1999, so its ten years old now, so we don't really know the movements of people, where they'd like to go rather than how they're getting there."* Participant, DTEI

5.4.3.1 SIP

SASP identified the need for an infrastructure plan and the resultant 2004-05 SIP outlines infrastructure priorities over 5/10-year timeframes (SA Government, 2004). The 2014/5 plan is currently being developed. Encouraging a shift to rail for passenger and freight transport was identified as a strategic priority (*Ibid.)*

SIP objectives align with SASP (Table 5.2). Public transport investment is identified as a SIP priority, but is not cross-referenced with its corresponding SASP objective – Attaining Sustainability. Such inconsistency highlights strategic fragmentation.

5.4.3.2 30-Year Plan

The 30-Year Plan guides where people live, population growth and job creation. It sets transport and infrastructure priorities (SA Government, 2010a). It emphasises the importance of integrated land use and transport decisions and possible transit-oriented developments, mass transit systems and walking and cycling routes are outlined (*Ibid.*). The plan calls for a *"collaborative whole-of-government approach to the execution of policies and achievement of targets; a commitment to a continuous dialogue with local government, business, industry and the community" (Ibid.).*

A central element here is *"improved coordination across state government agencies and local government"* (*Ibid)*. The relationship between Commonwealth and state governments is not mentioned, which highlights a limited Commonwealth role in these policy areas. The plan also outlines climate change responses (section 5.5.2).

SASP Objectives / Infrastructure priorities		Growing prosperity	Improving wellbeing	Attaining sustainability	Fostering creativity	Building communities	Expanding opportunity
Invest in transport infrastructure	1 Outer Harbor & the Pt of Adel.	■				■	
	2 North-south corridor	■					
	3 Regional freight networks	■				■	
	4 Public transport		■			■	■
Invest in advanced technology	1 Defence precincts	■			■	■	
	2 ICT capability	■			■	■	■
Invest in skills and innovation	1 Education & training	■	■		■	■	
	2 Research & innovation	■	■		■	■	
Manage our built assets well	1 Efficient use of assets	■		■		■	
	2 Maintenance of assets	■		■		■	
Match our health and social services to community needs	1 Primary health care		■			■	■
	2 Maintain hospitals		■			■	■
	3 Social disadvantage		■			■	■
Ensure our energy, water and land supplies are sustainable	1 Manage water resources	■		■	■		
	2 River Murray	■		■	■		
	3 Affordable & reliable energy	■		■	■		
	4 Energy efficiency & emissions	■		■	■		
	5 Land and coastal waters	■		■	■		

Table 5.2: Infrastructure priorities to support SASP (SA Government, 2004) (Emphasis added)

5.4.4 Transport Budget

Whilst state data exists for road expenditure (Table 5.3) similar breakdowns are not provided for public transport expenditure by the Commonwealth government, or the state. The limited data available; SA's 2007 Five Yearly Report to the Council of Australian Governments (COAG) on Infrastructure, refers to total cumulative investment in rail[30] of AU$72.3 million. No bus

[30] Each project appears to be a road/rail investment. The majority of projects were freight-related

Financial year	NSW	VIC	QLD	SA	WA	TAS	NT	ACT	Total
					$ million				
1985–86	4 251.5	2 569.1	2 352.2	821.4	1 040.8	451.0	157.8	102.7	11 746.3
1986–87	4 265.0	2 528.3	2 277.9	801.0	1 035.8	420.5	195.8	106.5	11 630.9
1987–88	4 279.0	2 490.1	2 334.2	757.0	940.4	353.6	178.2	0.0	11 332.6
1988–89	4 113.4	2 588.3	2 253.4	784.7	997.1	379.6	259.9	0.0	11 376.4
1989–90	4 777.5	2 660.3	2 266.3	828.8	1 086.5	394.2	202.0	217.3	12 432.9
1990–91	4 992.3	2 376.2	2 598.2	793.1	1 034.8	331.7	190.8	162.2	12 479.1
1991–92	4 836.1	2 392.7	2 465.1	783.2	1 074.6	309.8	165.6	202.9	12 230.0
1992–93	4 564.5	2 944.7	2 744.2	896.5	1 279.8	376.9	229.9	139.0	13 175.6
1993–94	4 378.8	2 523.6	2 612.6	775.2	1 118.7	333.9	241.7	135.6	12 120.0
1994–95	4 335.6	2 677.7	2 670.9	814.2	1 202.6	336.1	170.9	62.7	12 270.8
1995–96	4 431.1	2 622.7	2 849.4	909.6	1 473.7	354.8	199.0	57.6	12 897.8
1996–97	4 668.5	2 355.8	3 415.5	826.6	1 111.3	369.0	190.1	49.4	12 986.1
1997–98	4 787.7	2 538.7	3 692.8	1 001.3	1 355.8	348.6	204.8	54.1	13 984.0
1998–99	4 626.1	1 522.6	3 224.6	659.2	1 399.6	244.7	94.1	20.0	11 790.9
1999–00	4 660.8	1 596.7	2 717.3	665.2	1 593.6	246.1	93.4	22.6	11 595.8
2000–01	3 794.9	1 901.8	3 375.8	681.3	1 556.2	225.8	117.6	78.9	11 732.2
2001–02	3 684.6	1 904.1	2 760.7	663.6	1 596.3	254.1	108.4	96.2	11 068.1
2002–03	3 638.3	2 177.4	2 618.7	635.9	1 571.0	218.7	94.3	87.7	11 042.2
2003–04	3 509.2	1 564.5	3 033.8	598.1	1 457.4	141.7	95.4	76.8	10 477.0
2004–05	4 155.3	1 957.5	2 656.4	572.0	1 666.8	206.7	93.3	70.6	11 378.5
2005–06	3 611.9	1 796.5	2 938.2	733.7	1 375.3	262.5	252.8	86.5	11 057.3
2006–07	4 241.5	1 970.6	3 636.8	473.9	1 608.8	177.0	248.9	97.4	12 455.0
2007–08	4 372.6	2 192.6	4 527.0	692.0	2 029.1	199.9	231.1	119.6	14 363.9
2008–09	5 043.4	2 376.4	5 429.8	494.1	1 935.3	189.1	282.7	35.7	15 786.6

Table 5.3: Total road expenditure by state/territory (BITRE, 2011) (Emphasis added)

investment information is available, other than a future pledge of AU$120 million for new fleet (SA Government, 2007b). A recent report calculates the 10-year average state expenditure on road v 'other'[31] infrastructure as gross state product percentage using Australian Bureau of Statistics data. SA spent over 60% on roads and less than 20% on other, highlighting the emphasis on the road infrastructure (Australian Conservation Foundation, 2011). This illustrates clear bias towards road spending – with ten times more per year invested in road infrastructure than public transport. One participant offered indicative figures on past/projected spend, which are unverifiable, but interesting:

[31] Other refers to bridges, railways and harbours

"On average capital expenditure has been something in the order of AU$ 50-60 million in a year in the past on public transport, the whole of public transport. So it's going to go from AU$50-60 million a year up to AU$100-200 million a year […] that represents a very marked change in policy." Participant, Academia

Of the almost AU$500 million invested in SA's roads in 2008-09, over 2/3 – AU$338 million – was Commonwealth-funded. Whilst AU$2 billion is significant investment in public transport, the equivalent amount would be spent on roads over a 4-year period at this rate of expenditure. Therefore, the degree to which SA is promoting alternatives to cars is questionable. Although the 2008/09 road investment was actually at its lowest for 20 years which could indicate intention to begin prioritising alternatives.

5.5 SA and Climate Change

The latest available data shows SA emitted some 30.8 $MTCO_2e$[32] in 2009, representing a 2.5% increase on 1990 levels (Figure 5.2.).

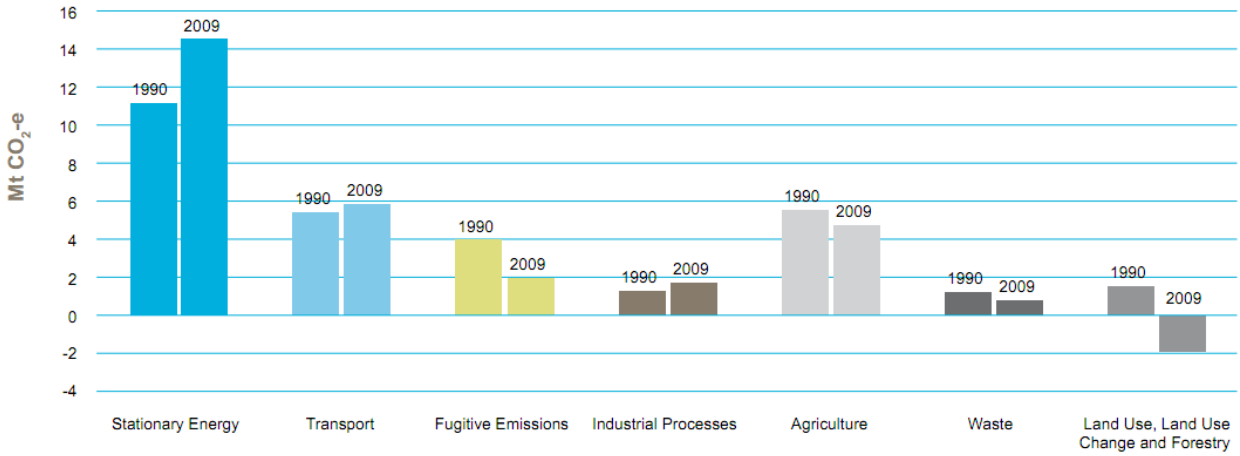


Figure 5.2: SA – emissions by sector, 2009 (DCC, 2011)

SA contributes roughly 5% to Australia's total emissions (DCC, 2011). In 1990 transport was the third largest emitting sector, after energy and agriculture. By 2009 it was ranked second, increasing to almost 6$MTCO_2e$ (20% of the total).

[32] Excluding emissions from LULUCF. With LULUCF included emissions are 28.9$MTCO_2e$ –because of SA's changes in vegetation and forestry (SA Government, 2007c)

5.5.1 Organisation

Upon re-election in 2006, Premier Mike Rann appointed himself SA's first Minister for Climate Change and Sustainability, under the portfolio of Department of Premier and Cabinet (DPC), SA's principal government agency. It leads SASP implementation and has overarching responsibility for federal-state relations (SA Government, 2011d). DPC's objectives are listed in Appendix 5.A. The significance of the Premier holding this role is examined in section 5.7.5.2. The Ministerial role was included in the *South Australia Climate Change and Greenhouse Emissions Reduction Act 2007"* (2007 Act), but Premier Weatherill did not appoint a Climate Change Minister, which may have significant repercussions (section 5.7.6).

5.5.2 Strategic Direction - Climate Change

SA climate change policy is guided by the 2007 Greenhouse Strategy and its Government Action Plan, and by state legislation, also passed in 2007. The Government Action Plan's role is to guide SA government agencies towards meeting the emissions reduction target (Box 5.1). The Leadership and Transport and Planning sections are provided in Appendix 5.B.

5.5.2.1 Greenhouse Strategy

Tackling Climate Change: South Australia's Greenhouse Strategy 2007-2020 outlines SA's long-term response to climate change (SA Government, 2011e). It frames action in six sections: Community, Industry, Energy, Transport and Planning, Buildings and Natural Resources and deals with two additional cross-cutting themes: Leadership and Adaptation (SA Government, 2007c).

It states that:

> *"South Australia's strategies to build capacity to tackle climate change will be to take a lead role in national climate change policy development and action, to form collaborative partnerships within and across sectors and jurisdictions" (Ibid.)*

This intention is examined in section 5.7.3.

5.5.2.2 Climate Change Legislation

With the 2007 Act, outlined as:

> *"An Act to provide for measures to address climate change with a view to assisting to achieve a sustainable future for the State; to set targets to achieve a reduction in greenhouse gas emissions within the State; to promote the use of renewable sources of energy; to promote business and community understanding about issues surrounding climate change; to facilitate the early development of policies and programs to address climate change; and for other purposes"* (SA Government, 2007d)

SA became the first Australian state to enact climate change legislation[33]. It made provision to establish a Premier's Climate Change Council (PCCC), to advise about matters associated with reducing GHG emissions and adaptation (*Ibid.).* Whether the new Premier will continue PCCC or even commitment to the 2007 Act is uncertain.

The Act mentions energy 15 times, however it makes no reference to the transport sector. This may indicate government intentions to focus efforts on addressing energy-related emissions (section 5.7.4.6.2). In order to fully understand the policy landscape, it is important to look at how Australian policy influences SA's activities.

[33] The legislation's precise target is: *"to reduce by 31 December 2050 GHG emissions within the state by at least 60% to an amount that is equal to or less than 40% of 1990 levels as part of a national and international response to climate change"* (SA Government, 2007d)

5.5.3 Australian Climate Change Policy

Australia's track record in addressing climate change is mixed. When Prime Minister John Howard refused to ratify Kyoto in 2002, climate change mitigation in Australia was off the cards (Anderton, 2009). Between 2002 and the 2007 election of Kevin Rudd, Commonwealth activity to reduce GHG emissions was sparse; although the Australian Greenhouse Office (AGO) initiated some positive programmes (section 5.6.3.1). The state governments, independently and collectively through COAG set about filling the gaps made by federal inaction (*Ibid.*).

Climate change was a policy priority in Kevin Rudd's election campaign (Rootes, 2008; Gascoigne, 2008) and ratifying the Kyoto Protocol was one of Kevin Rudd's first acts as Prime Minister. But his proposed policy response – the Carbon Pollution Reduction Scheme (CPRS) – was disputed from the outset, was voted down by the Australian government twice and was ultimately the cause of Rudd's resignation in 2010. Julia Gillard succeeded Rudd and her proposed carbon tax was passed through the Australian Senate in November 2011. Since CPRS was under consideration during this research, certain responses reference it and the scope/process (section 5.7.3/5.7.6) discussion contemplates what CPRS would have meant for the states. Gillard's carbon tax is not mentioned in the analysis, but its implications are referenced where relevant.

5.6 SA: Transport and Climate Change

5.6.1 SA's Transport GHG emissions

According to the Greenhouse Strategy; over 3MTCO_2e was produced by "passenger road" transport (Figure 5.3).

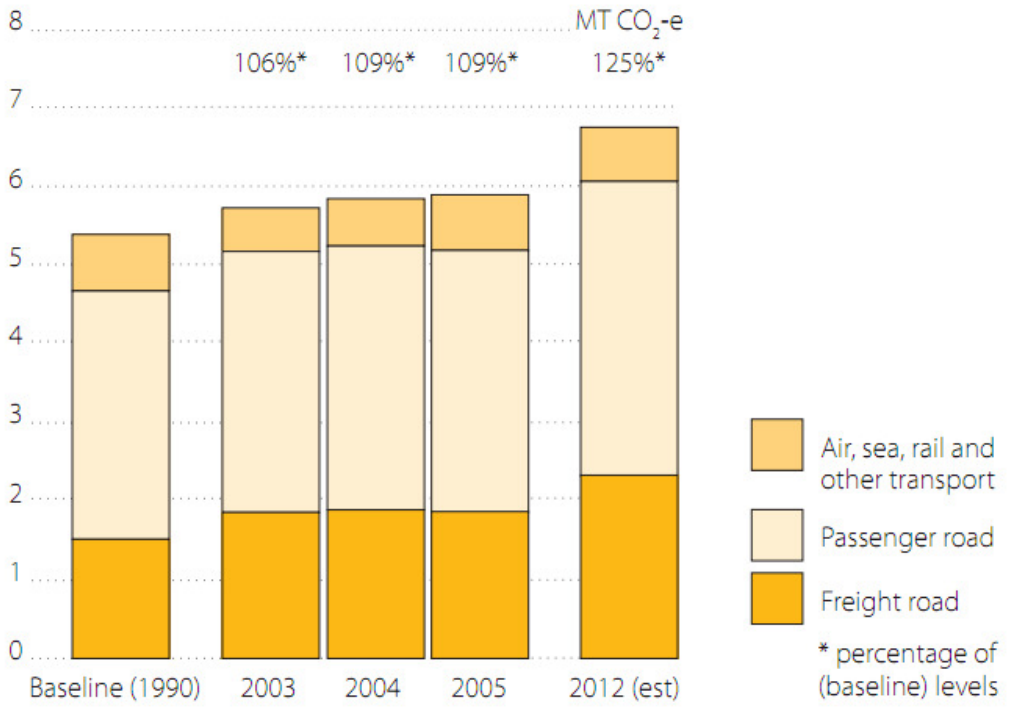


Figure 5.3: SA's transport sector GHG emissions (SA Government, 2007c)

Information in section 5.4.1 outlined that passenger cars account for 90% of PKT. It can be approximated that some 2.7MTCO_2e or 45% of SA's transport emissions (9% of all emissions) come from cars.

5.6.2 Responsibility for Transport and Climate Change

Ascertaining which SA department is responsible for delivering transport-related emission reductions is difficult. DPC clearly has jurisdiction over climate change affairs, but in the Transport and Planning section of the Government Action Plan, DPC does not appear as lead agency against any objectives – whereas DTEI's role is prominent (SA Government, 2007c). How DTEI and DPC will collaborate is unclear (section 5.7.4.1**)**. This lack of coordination highlights again that transport may not be a priority sector for SA to reduce emissions from.

5.6.3 Reducing Transport Emissions in SA

To better understand these relationships, taking a look at SA's efforts to address transport emissions is useful.

5.6.3.1 AGO and TravelSmart

In 2003 AGO, four states and one territory[34] initiated the 5-year *National Travel Behaviour Change Project –TravelSmart.* Its objective was to reduce GHG emissions by changing travel behaviour and decreasing demand for private car travel (SA Government, 2009b). For its time, it was forward-thinking, not only linking behaviour change with emission reduction, but as a programme centred on climate change:

> *"Over a five-year period, this project will see 186,000 households reduce distances travelled in Australia by over three billion car kilometres. One million tonnes of greenhouse gas emissions will be saved, which is equivalent to reducing emissions from over 250,000 cars in one year."* (Australian Government, 2008)

TravelSmart was a rare example of Commonwealth government involvement in public transport – albeit with state government implementation, and one of the few comprehensive climate change policies of the Howard administration. The link between AGO and DTEI in SA demonstrates functional interplay and innovative collaboration. It serves to highlight the inconsistency a change in government brings (Chapter 8), because AGO was disbanded after the 2007 election.

The SA scheme – "TravelSmart Households in the West" concentrated on 13% of Adelaide's population (70,000 households) in certain suburbs and over 22,000 households actively participated. Numerous measures encouraged residents to use their cars less, and promoted

[34] SA, Victoria, Queensland, Western Australia and ACT

alternatives to driving. An 18% VKT reduction and a 6% increase in bus patronage was achieved, whilst VKT outside the project increased over 6% (SA Government, 2009b). In 2008, the programme won the Premier's Award for Attaining Sustainability (*Ibid.)* – in line with the SASP objective.

Despite its success, the Rudd government discontinued support of TravelSmart. This sends mixed messages; despite Kevin Rudd's support for climate change policy, one of the only and most successful legacies of the former government halted. Given the large-scale support from AGO, many of the states (SA included) could not initially afford to continue to support behaviour change programmes without it[35]. One participant commented:

> *"There was a sense of community partnership – between AGO and the states. It was supposed to cascade and reinforce. But the government restructured and the relationship disappeared, the sense of partnership was gone and the communications broke down."* Participant, DTEI

This is strong evidence that changes in government impact policy direction and can halt momentum.

It is striking that a new government "committed" to action on climate change and collaborative federalism would choose to eliminate a programme with such potential to deliver emission reductions from such a challenging sector. It may be because of Australia's 'adversarial political culture' (Harding et al., 2009); Rudd could not be seen to support a programme endorsed by his predecessors, despite its clear success and potential. Or perhaps

[35] In August 2010, the SA government started another TravelSmart project in the City of West Torrens to run until early 2011. In addition the government is providing AU$5,000 TravelSmart community grants (SA Government, 2011f). These are positive steps, but are not widespread community initiatives capitalising on the success of TravelSmart.

Rudd's attention was focused much more on the international climate change regime and not domestic programmes (outside CPRS).

5.6.3.2 Other efforts

Aside from TravelSmart, SA has made little progress to reduce transport emissions. But the Government Action Plan has set goals for delivery against this objective (Box 5.2).

Substantially reduce transport-related greenhouse emissions while maintaining accessibility and economic development: - reduce trip lengths and the need for motorised travel - integrate land use and transport planning - achieve more sustainable travel behaviour - improve the emissions performance of vehicles and fuels - shift transport towards low greenhouse emission modes

Box 5.2: Transport and planning-related goals in SA's Greenhouse Strategy (SA Government, 2007c)

"Go Zones" – bus services in areas of Adelaide with a 15 minute maximum wait have been promoted by DTEI. Expansion of the tram line in 2007 also demonstrated SA's commitment to better public transport provision – yet it remains small scale. Adelaide city council too, has *Tindo,* a solar-powered free bus service that loops the city – but it is unconnected to the state's efforts. Section 5.7.3.3 discusses local government involvement.

SA's transport emissions continue to rise – in part due to the lack (until recently) of investment in alternatives and the continued support of road infrastructure, reinforced by planning and development patterns in the state. There are signs suggesting that SA is redressing this balance, especially the transport investment programme.[36]

[36] Although Premier Weatherill announced AU$407 million investment in additional road capacity in November 2011 (SA Government, 2011g)

5.7 2008-09 Transport Investment

5.7.1 Background

In the 2008-09 state budget, SA allocated AU$2 billion to upgrade and electrify the train network and develop new rail and tram services throughout Adelaide. As demonstrated in section 5.4.4, historically SA's rail has been underinvested and much of the infrastructure is in a state of disrepair. SIP stated that rail would be a priority investment, but only in 2007, when the tram was extended, has action to improve public transport emerged. The investment announced by Treasurer Kevin Foley in 2008, was the biggest in the state's history (Box 5.3).

> "This Budget outlines a significant transport investment program. This program will change the way people travel, redefine our city's public transport network over the next decade and help South Australia increase its public transport weekday travel to meet its Strategic Plan target of 10% by 2018. It is a program that is worth nearly *[AU]* $2 billion over the next decade and will deliver:
> - electrification of our major rail lines;
> - tram extension from the city to the Entertainment Centre;
> - extensions to West Lakes, Port Adelaide and Semaphore;
> - new rail and light rail vehicles, extra buses and a new ticketing system

Box 5.3: Excerpt from Kevin Foley's 2008-09 budget speech (SA Government, 2008b) (Currency clarification added)

Whilst the public transport target is mentioned here no reference was made to reducing emissions. The accompanying Budget Overview twice makes climate-relevant comments – the first citing reduced carbon emissions that the electric rail services will deliver, the other that "more efficient, expanded and highly‑patronised public transport reduces car use and emissions" (SA Government, 2008a). This suggests emissions reduction may have been an objective for the investment (section 5.7.4.3).

This research investigated the rationale for investing in the infrastructure, the government departments involved in delivering the improvements, how it will be tied into other efforts in this area and whether achieving climate change objectives featured in the decision to invest.

5.7.2 The research

Twenty participants were interviewed between March and June 2009 to discuss the investment (Figure 5.4).

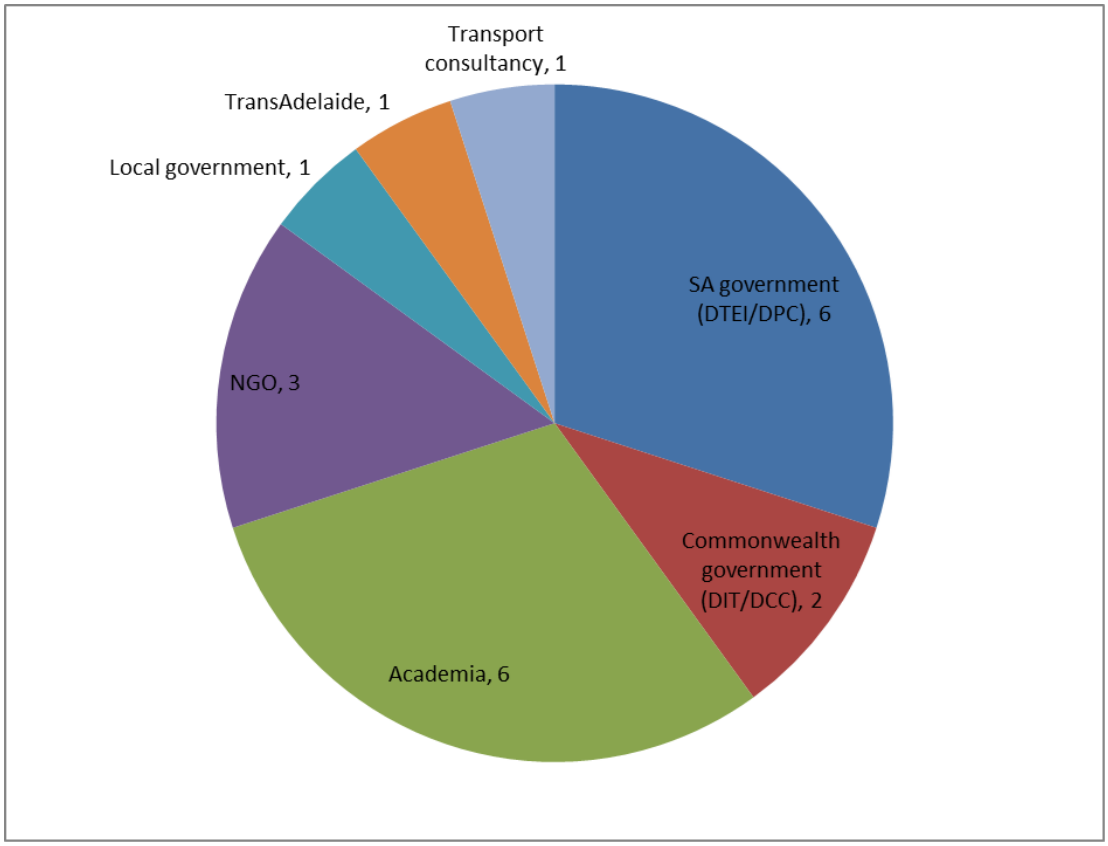


Figure 5.4: Interview participants by sector

Appendix 5.C outlines sample questions. Of the SA government participants, five were from DTEI and one was from DPC. Some participants were transitioning

between roles, those allocated here reflects their role at the time of interview. Importantly, two participants were PCCC members. Questions were grouped according to the four research themes. Not all questions were answered by all participants and some answered additional questions – since the interviews were semi-structured (Chapter 3).

5.7.3 Theme: Scale

> *"The federal government have said they want nothing to do with public transport at all, which means that whilst the division might be clear, the outcome is not necessarily successful. […] So I think there are huge areas of variability and quite a number of areas of duplication in the state and federal boundary."* Participant, DTEI

Questions relating to scale broadly fall into two areas: 1) investigating the relationship between the Commonwealth and state government in addressing transport-related climate change and 2) the relationship between state and local governments is also explored.

5.7.3.1 Where does responsibility for the transport infrastructure in Adelaide lie?

It was emphasised that much "state" transport policy refers directly to Adelaide, highlighting scale-related complexities:

> *"We tend to talk about the transport policy of the state, but it is absolutely dominated by metropolitan issues."* Derek Scrafton, University of SA.[37]

Ten participants provided responses – none from Commonwealth government – which indicates a distance or unfamiliarity with the SA context. Five confirmed that as suggested in section 5.4.1, responsibility for road infrastructure is straightforward. However one participant suggested this might not be the best approach.

Public transport is a more complex tapestry. Twelve participants outlined where responsibility for public transport lies, and answers were mixed (Figure 5.5). Over 80% thought the state played some role in delivering public transport, but half of these noted this role involved managing relationships with contractors (both private and state-agency) that actually provide the transport services. A further 17% believed that responsibility was held entirely by these contractors.

[37] Former SA Director-General of Transport (1972-97)

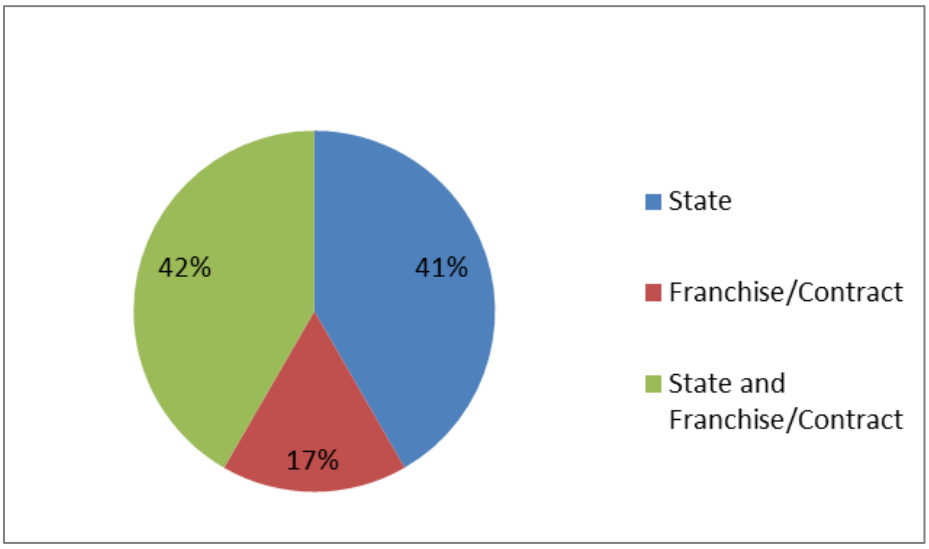


Figure 5.5: Responsibility for public transport infrastructure

The distinction between bus and rail provision was noted by six participants, suggesting that the relationship between levels of government here are actually less significant than management across public transport modes:

> *"I don't think there's been that much connection between the two systems, it's the same government department that has responsibility for a lot of timetabling-related issues and contracting out the operators for both rail and bus. The issue is that the bus services, or a lot of the routes, have developed independently of the train system and therefore don't connect necessarily as well as they could have."* Participant, NGO

Moreover, the fragmentation between the road and public transport infrastructure is also seen as a barrier to promoting alternatives to the car:

> *"One of the issues is the lack of interface between the public transport operation planning and the planning and operation of the road network."* Derek Scrafton

However it was suggested that the government is trying to redress this balance:

> *"We try to be very highly coordinated and that's where our strategic thinking for the past few years has been; to increase that coordination and optimise the networks."* Participant, DTEI

Three people explicitly mentioned the Public Transport Division; the department clearly has a role in delivering public transport. These elements are linked to scope and discussed further in section 5.7.4.1.

5.7.3.2 Responsibility for climate change?

As highlighted in Australia's most recent United Nations Framework Convention on Climate Change (UNFCCC) submission:

> *"All three levels of government share responsibility for reducing emissions of GHGs and enhancing sinks, as well as for action relating to vulnerability and adaptation."* (DCC, 2010)

This complex shared responsibility is explored here. Whilst opinion was varied, comments indicated that efforts are being made to address climate change in partnership. Although it was stated that local governments have potential to contribute to emission reductions, actual involvement is limited. COAG was highlighted as an important vehicle for Commonwealth/ state interaction. At the time of the interviews, although strategies were being developed, interactions between the state and Commonwealth departments had not been formalised. The state governments' were conducting policy reviews at the request of the Commonwealth, indicating the latter's intention to develop overarching policy, despite the state government traditionally being the most authoritative government. This dynamic will be further discussed in Chapter 8. However, generally the "whole of government" approach adopted by DCC was seen as positive.

Four references of the Australian Transport Council (ATC) – which is comprised of Commonwealth and state ministers – were also made. Whilst it has an environment sub-committee and reports to COAG, it appears to have no prominent role in addressing climate change. Under the Howard government, states carved out a role for themselves in addressing climate change. The CPRS objective and subsequent carbon tax stands to shift attention away from state and voluntary action to reduce emissions towards industry-focused,

Commonwealth-led approach. With this, the dynamic between states/territories is also affected:

> *"The constant contest between the states to outflank each other on climate change issues is in danger of being lost, and that's a worry."* Participant, DPC

Participants' comments speculating about state/Commonwealth roles under CPRS are no longer relevant given the recent passage of the Australian carbon tax. However, some insights , especially around target setting are useful.

> *"It [SA target] is obsolete now, because there's a federal target and it's a federal system so it doesn't really matter what South Australia has as its plan. It is also obsolete in another way, because of their target is ultimately going to be inadequate for what is required, but so is the federal target."* Barry Brook

> *"Well the national target is what meets our international obligation, so the SA target really ends up meaningless in that context. There is just no need for jurisdictional targets. [...] So we are encouraging the states to remove some of those sorts of targets."* Participant, DCC

This is an important element of vertical interplay (section 5.7.3.3). The customary set-up, with the states having more formal power than the Commonwealth is questioned through climate change policy, with the national government asserting increasing authority over responding to the issue in recent years. There is conflict between the way policies have been developed and implemented in Australia – through the states – and the response of the Rudd/Gillard administrations on climate change. Previous state action is likely to be superseded or disbanded; especially in SA with Premier Weatherill not actively promoting a climate change agenda for his administration (section 5.7.6).

5.7.3.3 Vertical interplay

The following quote encapsulates the relationship between the state and Commonwealth governments, although it is from a participant external to the government:

> *"I think the states are working quite well together and with the national government. There's no doubt that there is some conflict and confusion and this can lead to things being slower than they would have been otherwise. […] the nature of the federal system is that state governments can blame federal government for not doing things and vice versa and certainly in Australia's history, we've seen a lot of blame-shifting."* Participant, NGO

This highlights a complex relationship. Regarding the transport/environment nexus (closely linked to the scope theme section 5.7.4), one participant spoke of the disconnectedness and duplication between transport and environment portfolios at the state and Commonwealth levels:

> *"There's a lot of communication with the environment portfolio, but not necessarily the transport portfolio federally; although it's the transport portfolios within the states that are talking to the environment [portfolio] at a national level."*

> *"There's a transport, climate change, environment and energy working group […] looking at travel behaviour change. […] and there's another working group under environment portfolio which is also looking at travel behaviour change. Which is proving to be quite difficult having two working groups from two different ministers, two different portfolios looking at the same issues. So we're trying to resolve that, that's a current issue for us."* Participant, DTEI

The interconnectivity referenced here is explained in Figure 5.6.

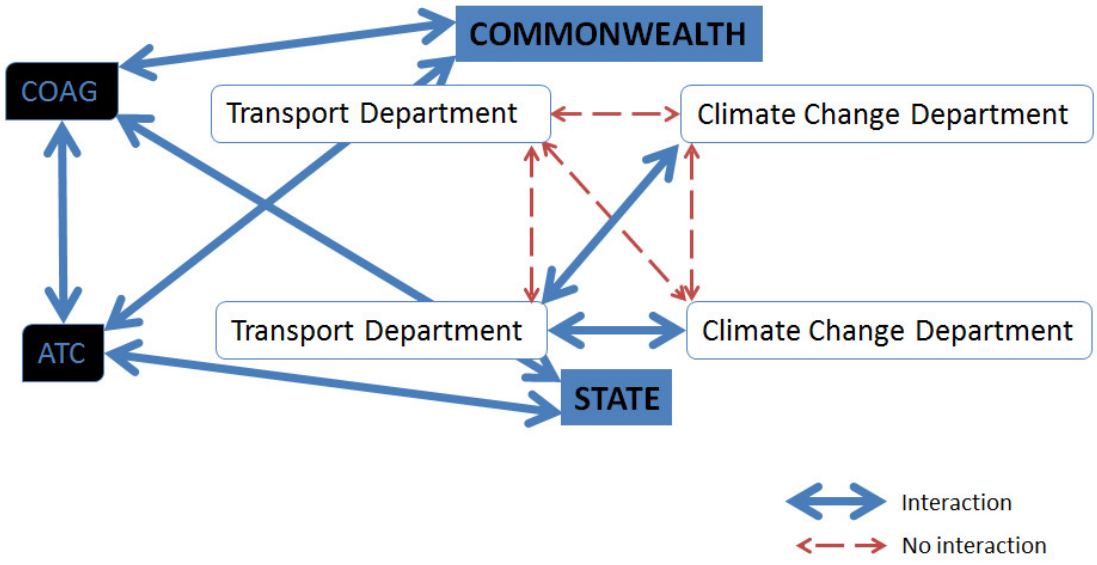


Figure 5.6: Commonwealth/state government interactions

This illustrates emerging cross-sector and level collaboration to tackle environmental issues. But as Kooiman (2000) predicted, these lengthening chains of interaction are resulting in blurring of sectoral dividing lines - as the state environment portfolios are not involved in this communication, it is clearly fragmented. Such incoherent communication was also referenced with regard to the former administration:

> *"In terms of transport, the AGO never really played a major role in transport policy at the Commonwealth level, really that has sort of always rested with the Department of Transport."* Participant, DCC

This quote highlights both the lack of clarity over roles and responsibilities in addressing emissions from the transport sector, but also highlights that although AGO was involved in transport-based activity at the state level, it was not engaging with the Commonwealth Department of Transport.

Whilst it was noted that:

> "*There is certainly an intention to work with the states in looking more closely on that issue.*"* Participant, DCC (*transport and climate change)

As highlighted by all the comments above, roles and responsibilities in addressing climate change in Australia are likely to remain ambiguous and in flux until the Commonwealth measures are actually implemented.

5.7.3.3.1 Does state have ability to influence national policy?

Almost 75% of participants thought SA could influence Commonwealth policy; however, six of the eight "yes" responses were caveated (Table 5.4). SA's size was also cited by two respondents, interestingly one saw it as a barrier, the other stated that SA could influence in spite of its size. This indicates that there are likely several other factors of influence, relative size is a contributory consideration, but not the only one.

Participant	SA influence
Academic	Yes, whether it does or not remains to be seen. It certainly has the ability.
Academic	Yes but not to a great extent. Because it's a small part of the country, at the national level it doesn't have a lot of sway.
DTEI	I think we're definitely in a position of being able to influence national direction in methodology, not necessarily policy.
DTEI	Even though we're only 6% of the population we're a fairly small state overall, I think we do have that ability.
TransAdelaide	Their policy is clearly one that has been indicated by all states for a long time, so that's been picked up.
DTEI	All states have the opportunity to influence national policy, but how much and in what areas I think is very fraught. Because while theoretically that exists I don't think it happens in a way, I think federal government sees itself as entirely independent and extremely free of policy influence from the states. So theoretically it should exist, I think practically it doesn't really.

Table 5.4: SA influence over Commonwealth policy? …*"Yes, but…"*

The most referenced area which demonstrated states' influence was through the discussions about the development of an ETS; as a forerunner to CPRS, illustrating the influence that they had collectively over Commonwealth policy direction, despite the failure of this measure nationally, the states still guided this decision.

SA's potential to influence was also stated, but the degree to which actual Commonwealth policies can/will reflect input from the state was questioned. Similar to the strategy-action deficit, these comments imply that just because states' potential influence is acknowledged, this is no guarantee that this influence will be exerted. It also suggests that interaction between the levels is more political than functional at the current time.

5.7.3.3.2 Local/state interaction

All nine respondents on the relationship between state and local government affirmed interaction. One mentioned that often interactions were made through consultants. The links were not particularly strong according to one respondent; another said they were stronger

with certain local governments. General opinion was that communication is variable. Two respondents mentioned the relative power of the state:

> *"The local councils were elected into existence by the state government and the state government will very readily override the local councils if it suits the state government."* Participant, NGO

> *"I would say they're fairly good, but the public image of them is that they're bad. At a political level they are not good; the state tends to override the city government."* Derek Scrafton

Whilst local governments have relatively little power in the Australian context, as referenced in sections 5.4.3.2/5.7.4.3, they were stated to have roles in delivering SASP and the greenhouse strategy. If these roles are not being fulfilled (section 5.7.6), it serves as further evidence of strategy-action deficit in SA.

5.7.3.3.3 Local/Commonwealth interaction

The Commonwealth government has developed an interest in partnering with local (city) governments on urban policy, which is exceptional given traditional relationships between the levels and represents a significant governance shift in Australia:

> *"The new federal government has made it clear that […] it has a role in building better cities and that it will be interested in looking at investing in metro public transport, which is a major movement forward."* Randall Barry

This new linkage between is further support that the conventional boundaries of Commonwealth government oversight is expanding.

5.7.3.4. Other scale-related information

In terms of cross-departmental collaboration (section 5.7.4), the size of SA's government was cited as a reason for collaboration to be quite good – however this is not necessarily true.

> *"Ministers' successes are measured as success of their particular portfolio and the more there's cross-portfolio linkages, you would think the more successful it would be.*

But frequently that's not the case […] the individual success of a Minister is sometimes deemed more important than the success of the group. And I think that's one of the things that we really have to address." Participant, DTEI

This raises important questions about the transport investment objectives – was it an environment-based decision to increase in transit ridership as outlined in SASP, or simply a well-needed cash injection in a neglected rail system? These questions are considered in the scope theme of this research.

5.7.4 Theme: Scope

> *"I probably feel that the environment did not drive this investment or this course of action. It's happily coincidental that more efficient transport and transport infrastructure means better environmental outcomes. […] But I think it's more consequential rather than deliberate."* Participant, Academia

The primary objective of asking scope-related questions was to ascertain why SA invested in upgrading the rail and tram network and whether emission reduction was an objective. It was also to ascertain where the transport investment fits with SA's other activities to reduce car dependency and reduce transport-related emissions. Scope questions were therefore grouped as follows:

- Where does ultimate responsibility for the transport investment lie?
- Was the transport investment an effort to address climate change?
- Why was the transport investment made? / Why trains/trams over other areas?
- Is transport a priority for SA in terms of emission reduction?
- What [else] is SA doing to reduce transport emissions?

These questions will be examined before any other scope-related information highlighted.

5.7.4.1 Delivering the transport investment programme

This question is very closely linked with process (section 5.7.6)**,** but because it concerns interactions between and within departments in implementing the measures, it is investigated

here. Although DTEI is managing the programme, questions over which divisions are involved were covered. One participant highlighted how they work together:

> *"It's run as an overarching coordination between the public transport division, our division*, planning, project delivery, service providers. The Chief Executive certainly has a key overarching view of all of that to make sure it's delivered and certainly there are collaborations. And as the project is rolled out everyone has to work in sync to make sure we've got it all […] it's a complete shift; the change in the service levels requires a lot of work."* Participant, DTEI (*refers to Policy and Planning Division)

Significantly, reference to this "complete shift" implies that there was fragmentation across divisions previously and the investment represents a new working relationship. One DTEI participant described the (integral) roles played by both the OMPI and Public Transport Division (see Table 5.5).

DTEI division	Role
OMPI	Major project deliverers Infrastructure
Public Transport Division	Implementation of services Ticketing systems Timetabling Public face Information services

Table 5.5: DTEI division roles

Throughout the interviews disconnect across the various divisions was frequently evident. A Public Transport Division participant offered the following response regarding the division's involvement in the programme:

> *"Oh it should be absolutely integral; it used to be, it's just not currently. […] The issue is that we've had savings regimes for so many years, that our staff are so preoccupied with keeping the system running they don't have enough time to plan ahead for the future – to bring projects to fruition. So we've headed into the AU$2 billion programme, without a lot of the basic planning having been completed. […] The ideal outcome would have been to do all the planning, assessment of the contribution of various modes to a successful future. To have all of those decisions based on excellent work and research […] rather than just making a decision and then working out how we're going to do it."* Participant, DTEI

As discussed in Chapter 8, the discrepancy between the important role that Public Transport Division plays in delivering Adelaide's public transport and its lack of involvement in the programme thus far, supports the idea that lack of interaction *within* departments is a significant impediment, perhaps even more significant than that between departments.

Participants were asked whether other government departments were engaged in/informed about the programme. Opinion was split between the eight participants, half thought there was cross-departmental awareness, the remainder disagreed. Two respondents cited the Department of Planning and Local Government (DPLG):

– *"our state planning agency is probably the closest link to these changes"*
– *"it has to be totally integrated with what they do"*

This respondent also mentioned the DPC, the Treasury, other "major central agencies" and TransAdelaide, implying their engagement in or awareness of the programme.

These quotes suggest that the chains of interaction within the SA government may be lengthening to support the delivery of the programme and that whilst functional horizontal interplay appears to be scarce; there is at least informal dialogue between departments.

Two participants suggested other departments were aware of the programme because they were *"jealous of the money",* with another stating that communication was mixed and informal; like an old collegiate network, that "*has to do with vested interests rather than quality of relationships"* (Participant, DTEI). Collectively, these comments indicate a degree of cynicism regarding how the SA government functions internally. As well as jealousy and cynicism, curiosity about the source of funding was also prevalent.

No participants based outside Adelaide responded, suggesting that knowledge of the programme is not widespread outside the state, despite Adelaide's propensity for being "outward-looking" (section 5.2).

5.7.4.1 AU$2 billion in electrifying and upgrading the rail network in Adelaide?

Participants were asked for preliminary thoughts on the rail and tram network investment. No real agreement was presented in the direct responses to this question, although many of the answers given here were mentioned in several of the interviews, which suggests that multiple reasons were behind the investment decision. If grouped, six responses relate to the need to renovate/increase capacity – network, services and infrastructure – of rail and tram provision in Adelaide. Reference to this was also made frequently elsewhere, as was the need to "do something". Only one participant suggested the investment was to improve the "sustainability of Adelaide".

5.7.4.2 Why were trains and trams prioritised?

Six participants responded directly (Figure 5.7), however again many more offered thoughts throughout the interviews. Although there was no real agreement, some themes emerged. Nostalgia was mentioned twice and the fact that "people like trains" was cited mentioned three times. Actual ridership statistics seem to counter this point, given that many more people use the bus. However underinvestment in the *"3rd class system"* makes the trains unusable, so it may be that people may want to use the trains, but actually cannot. One respondent suggested that bus investment would have been wiser.

A further participant remarked:

> *"A lot of suburbs have never been near a rail line and are entirely dependent on bus transport, and it's very unclear that the investment that would have been needed to integrate and expand on the public bus system would actually be forthcoming."*
> Participant, NGO

In order to achieve the sorts of integrated transport outlined in the Greenhouse Strategy, these linkages need to be made. Section 5.7.6 discusses bus network integration into the investment.

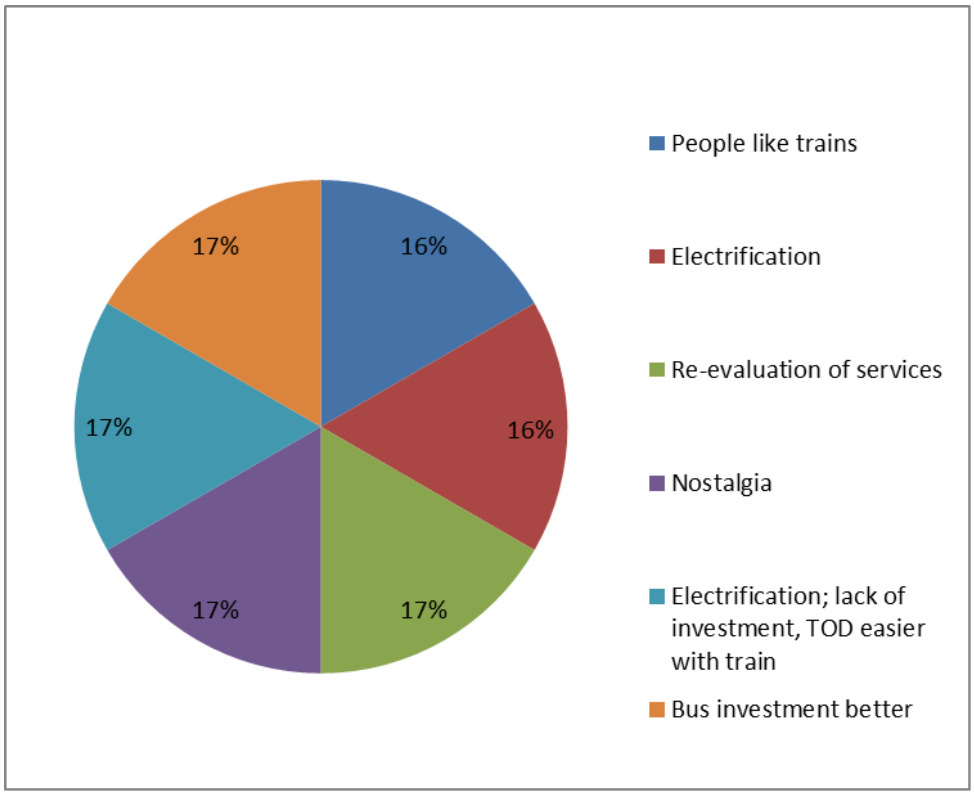


Figure 5.7: Reasons for train/tram investment prioritisation

The success of the 2007 tram upgrade was mentioned several times throughout the interviews, although never directly attributed to the move to continue and increase the upgrades further.

Interestingly, one participant stated that the investment does not match up with what studies suggest would be the most cost-effective investment. Another stated that no studies had been conducted to inform the decision, inferring that "preference" or "instinct" may have been responsible for the decision.

> *"The tram decision was not at all pragmatic […] driven by the fact that the Premier is passionate about trams and believes trams are an enormously good thing for the city".* Participant, DTEI

This argument supports the perspective that little strategic planning underpinned the investment decision. This participant also described the Transport Minister as "a powerful man who happens to like building infrastructure". This further supports the notion that preferential investment was given to the rail network. Finally, the necessity to electrify the rail network was questioned twice in terms of whether the investment can be considered innovative – given that Adelaide's is the last diesel-powered network in Australia (section 5.7.5).

Collectively this information suggests that whilst SA's rail network is dilapidated and in need of investment, little foresight was given to shaping the investment strategy with limited information feeding into the decision making processes. As suggested by Brown et al. (2005) relevant and timely information was prerequisite to ensure that new policy can be integrated into the broader political framework – this is not considered in SA.

5.7.4.3 Was the transport investment an effort to address climate change?

Of the 15 respondents, five thought that addressing climate change was a contributing factor, but no participant saw climate change as a standalone reason for investment (Figure 5.8). Ten respondents thought that addressing climate change was not the primary objective and eleven offered details about what the primary motivation was (Figure 5.9).

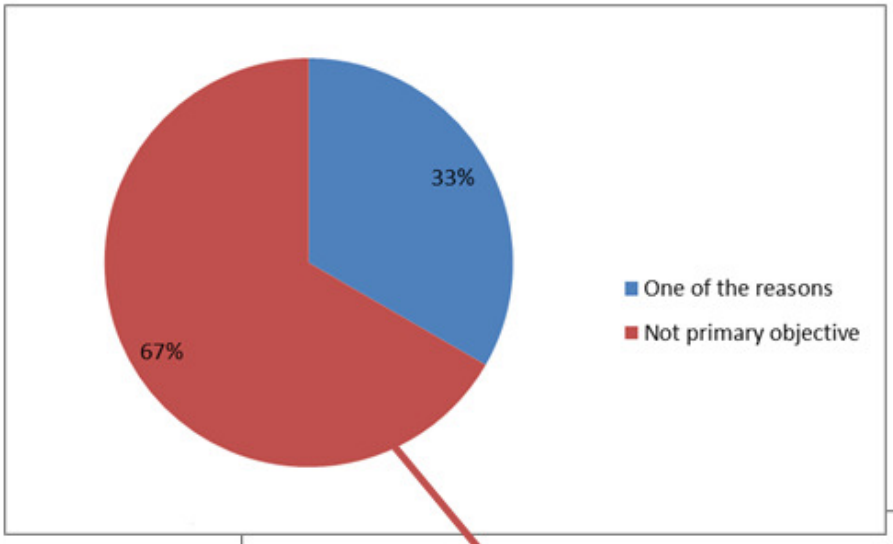


Figure 5.8: A climate change measure?

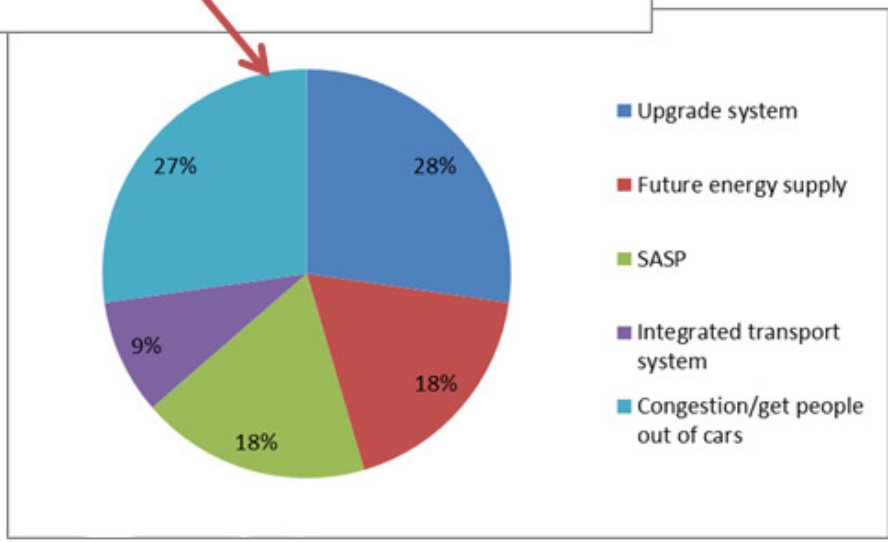


Figure 5.9: Primary objective of investment?

Upgrading the system and addressing congestion were seen as the most important drivers. Given the SASP targets are climate change driven; this highlights a strategic discrepancy, with climate change emphasis missing. Thoughts about the influence of addressing climate change on the investment were mixed:

> *"Climate change had a reasonable strong influence, but probably wasn't a key driver. It just really added that extra impetus towards the end."* Participant, Local government

> *"We want to make sure the trip length is constrained […] an electric rail service is a catalyst to do that. If you're just going to choose greenhouse emissions, we wouldn't even be thinking about it".* Participant, DTEI

Although climate change was not a key driver, participants were asked whether the investment will contribute to reducing SA's emissions. Six responses were provided (Table 5.6).

Participant	Will transport investment reduce GHGs?
Academic	Trains and trams will run on electricity from brown coal.
Academic	Certainly has a role to play. How it fits into a more general strategy about reducing GHG emissions is another matter.
Academic	It may and it may not. […] Any study that's been done looking at policy options in transport to achieve GHG [reduction] would rank improving public transport very low down the ladder. It's very expensive way to buy a tonne of CO_2.
DTEI	There's a lot of secondary benefits, it's not purely, the 'let's switch to electricity, because it saves the greenhouse', it's a very small measure anyway, it's actually minute.
DIT	I wouldn't have thought so. They are still diesel trains. Q: Is that because the electricity ultimately will be coal anyway? I'd say so yes. Even though they are converting to electric trains.
DTEI	So much of it is remedial work. Like all of rail revitalisation work, it's backlog maintenance. No doubt having a better public transport system is a very primary, early step to decreasing transport emissions, but a lot is needed over and above what we're currently planning.

Table 5.6: Will transport investment reduce GHGs?

Two participants mentioned that SA's electricity comes from brown coal, therefore electrifying the network is not going to contribute to reducing emissions. Some participants highlighted that switching diesel trains to electric will address local air pollution, perhaps not climate change. Three stated it had some role to play, but each thought this role was limited. One suggested there are better ways to reduce transport emissions than public transport investment.

Assessing this information collectively, limited emphasis was placed on emission reduction in the investment. It had a minor role to play, but the investment was in no way primarily focused towards climate change. This does not fit with a strategy whose only transport-related climate change target was to increase public transport PKT (Box 5.1). As the majority of participants thought that reducing GHG was not the primary objective for the investment, they were asked whether the transport sector was a priority area for emissions reduction.

5.7.4.4 Is transport a priority for emission reduction in SA?

Responses were mixed (Figure 5.10). The most common response was transport emission reduction is important, but not in SA. It was seen as a problem which doesn't affect the state, despite being in the Greenhouse strategy and the 2nd largest sector in terms of emissions. This has clear links to scale (section 5.7.3) and again illustrates a form of strategy-action deficit.

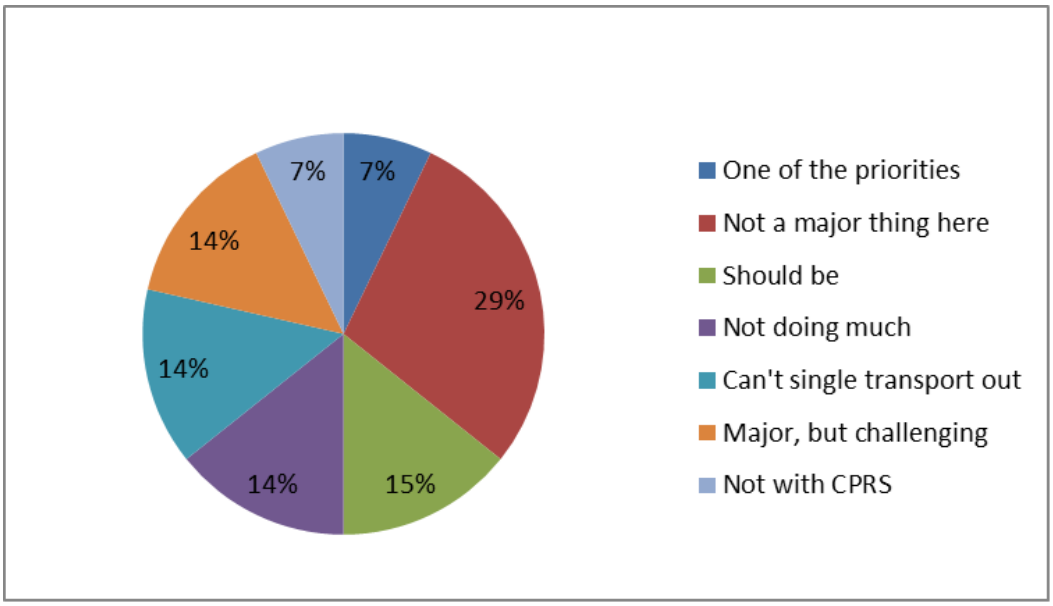


Figure 5.10: Is transport a priority for emission reduction in SA?

Two participants expressed that could not be a priority, since little was being done to address it. Collectively, there is little emphasis on the state's role or evidence that people see it as a priority issue in SA, despite the dominance of car ownership in the state. One participant commented that:

> *"Throughout the bureaucracy and a number of politicians, are quite happy to try and avoid the issue altogether. I think there is understanding about the issue but the initiatives by their very nature are often very small initiatives."* Participant, NGO

This suggests that climate change may not be considered important by the government (section 5.7.5). To investigate the extent to which this is true, participants were asked which sectors they thought SA's emissions reductions would come from.

5.7.4.5 What will be the single-most important measure to reduce emissions?

Only three participants responded; two suggested addressing energy use would deliver the biggest emission reduction (section 5.7.4.6.2). The other stated the existence of a target is the most important thing to achieve emission reductions. Evidence throughout this chapter suggests this is false – SA has a public transport target, framed as a climate change objective (Box 5.1), but the strategy-action deficit present in SA prevents this target from being realised.

Several references were made elsewhere of energy's contribution to climate change. It generates almost half of the state's emissions (DCC, 2011); therefore SA is right to prioritise it, and invest in renewable energy as it has done, but not at the expense of the bigger picture. SA's transport emissions are rising and electrifying the train network utilising brown coal-derived energy exacerbates this.

5.7.4.6 Other scope-related information

Two relevant issues emerged relating to the nature of the public transport target and to the dominance of energy in SA's climate change agenda, which are examined below.

5.7.4.6.1 SASP public transport target

Some participants discussed SASP's public transport target (Box 5.1). It was highlighted that to achieve it, patronage increases are not necessary; people could just travel further to achieve the target. Given Objective 6.1 of the Greenhouse Strategy – to reduce trip lengths – certain participants questioned the consistency of these targets with their desired outcomes.

> *"In the draft transport plan for South Australia […] the government set out […] to double mode share of public transport. They have since rearticulated to double the share of person kilometres carried by public transport. Now, a sceptic would say "what's the easiest way to do without public transport, let's try and get as many*

people to travel 40km from Gawler and 30km from Noarlunga – let's get the longest train lines we can". Participant, Academia

Other participants suggested that the target was not likely to drive significant change, especially in light of the long-range 60% emission reduction target. It seems that in spite of the investment and the targets, Adelaide will inevitably remain extremely car-centric.

5.7.4.6.2 Issue focus

The framing or discourse of sustainability and climate change in SA is a potential barrier to developing a robust, cross-sector strategy. SA is a dry place, with water issues dominating the agenda – worsening drought in SA symbolises climate change and the resilience needed in such conditions (cause). Similarly, responses have been heavily dominated by renewable energy investment (response). Such strong focus on specific areas may impede alternative ways thinking about sustainability (Dryzek, 2005). Box 5.4 highlights several participants' arguments that SA's climate change paradigm is narrow – suggesting such views are pervasive in SA. Some participants maintained that in spite of the state's investment in renewable energy, changes in how energy is used have not been forthcoming.

CAUSE:
"The water shortage really sold it to people" Derek Scrafton

"It has been brought home not so much in the transport area but more to do with water supply and the dire straits we're getting ourselves into." Participant, Academic

"We are in a real condition of drought in South Australia at the moment, in fact most of the country, and so it manifests itself as an issue not in terms of smog, not in terms of sea level rise or storms as such, although there have been a lot of unusual weather events, pretty well it's about drought, and a lot of people are attributing that to climate change." Participant, NGO

"I*t's made us be more aware of the perils involved in water shortages and climate change generally. We're in a dry state here that's really dependent on a river system."* Barry Brook

RESPONSE:
"Generally it's about stationary energy a lot of the time" Participant, DTEI

"It is on agendas across the board, but I haven't seen any policies come out of his Department as Climate Change Minister in a transport context. He has been doing stuff like setting more aggressive renewable energy targets and state greenhouse targets." Participant, Academia

"In terms of actual action […] we are the largest renewable energy producer in Australia, we have the largest investment in wind/solar" Randall Barry

"The principal answers are becoming increasingly clear - Energy efficiency and adaptation." Participant, DPC

Box 5.4: Water/energy-focused climate change discourses

5.7.5 Theme: Leadership/power

"Well I think people are kind of used to the Premier waxing lyrical about all kinds of things. But because they tend not to believe him much about X, they tend not to believe him much about Y. And if Y happens to be climate change then the level of citizen engagement is going to impact on the lessons there." Participant, NGO

This section addresses the multi-faceted theme of leadership – from the international leadership SA commits to in the SASP (section 5.3.1) to the significance of the Premier's role as Minister for Climate Change. The primary objective of asking leadership-related questions was to ascertain whether SA's efforts to address climate change are exemplary.

The questions were broadly grouped:

- How does SA's climate change leadership present itself?
- How significant is the fact that the Premier is also the Minister for Climate Change?
- Where does rail electrification fit into this leadership?
- Where is climate change on the SA agenda?

The findings on each of these questions are examined before other relevant information is highlighted.

5.7.5.1 SA's climate change leadership

Until the 1990s, SA was seen as an environmental laggard, being one of Australia's last states to introduce an environmental department (Harding et al., 2009). So where does the "world-renowned climate leadership" stem from? Participants were asked to comment on how SA's climate change leadership presented itself (Figure 5.11). The transport investment programme was not mentioned as an example of leadership; however participants were asked about it explicitly (section 5.7.5.3).

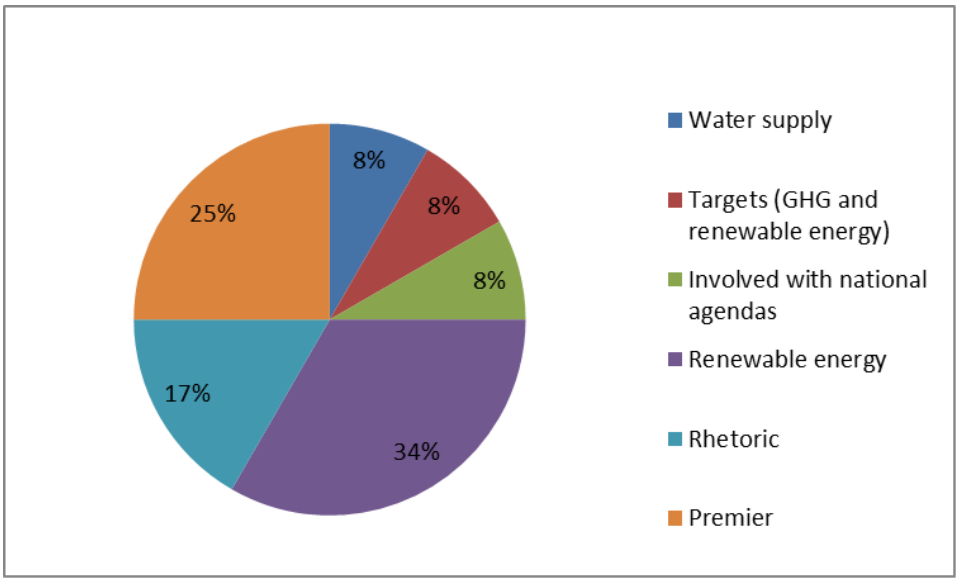


Figure 5.11: SA's climate change leadership

Although two respondents thought SA's climate change leadership was rhetorical, three others noted the importance of political leadership. One participant mentioned the state's participation in the national and international agendas and three mentioned the Premier's work on the issue specifically.

Over a third of the 12 respondents mentioned SA's work on promoting renewable energy – solar, wind and geothermal projects – another cited SA's renewable energy targets, which supports the idea that SA's climate change focus is predominantly on energy (section 5.7.4.6.2). Indeed SA does have an exemplary record in generating wind power (54% of Australia's total wind capacity) (SA Government, 2011g) – it can justifiably be considered a leader in renewables, given the early achievement of targets, investment in and comparative performance against other Australian states and internationally.

> *"I think we've made some progress in energy, we've got quite a good representation in wind energy for example."* Participant, DTEI

> *"I'm not so sure around transport policy but in other areas, definitely, especially in the energy sector where you can get some really big climate change reductions*." Participant, DTEI

However, such results stem from the government "aggressively capitalising" on Commonwealth government action to deliver renewable energy (SA Government, 2010b). This highlights again the role of the Australian government in SA's climate change response (section 5.7.3.3), but also suggests that if the Commonwealth government had not provided such a platform, SA would not be demonstrating leadership in this area – it is more economic opportunism than a climate change mitigation quest.

5.7.5.2 Significance of Premier's role

Of the 12 respondents, over half thought that the Premier appointing himself Minister for Sustainability and Climate Change was significant (Figure 5.12).

> *"He sees that as one of the most important issues for the state and he's been front and centre on those issues within and outside of government. So it has been beneficial to the area getting the focus that it's received."* Randall Barry

> *"To have the Premier as an enthusiastic supporter and advocate for the policies is certainly going to help."* Participant, NGO

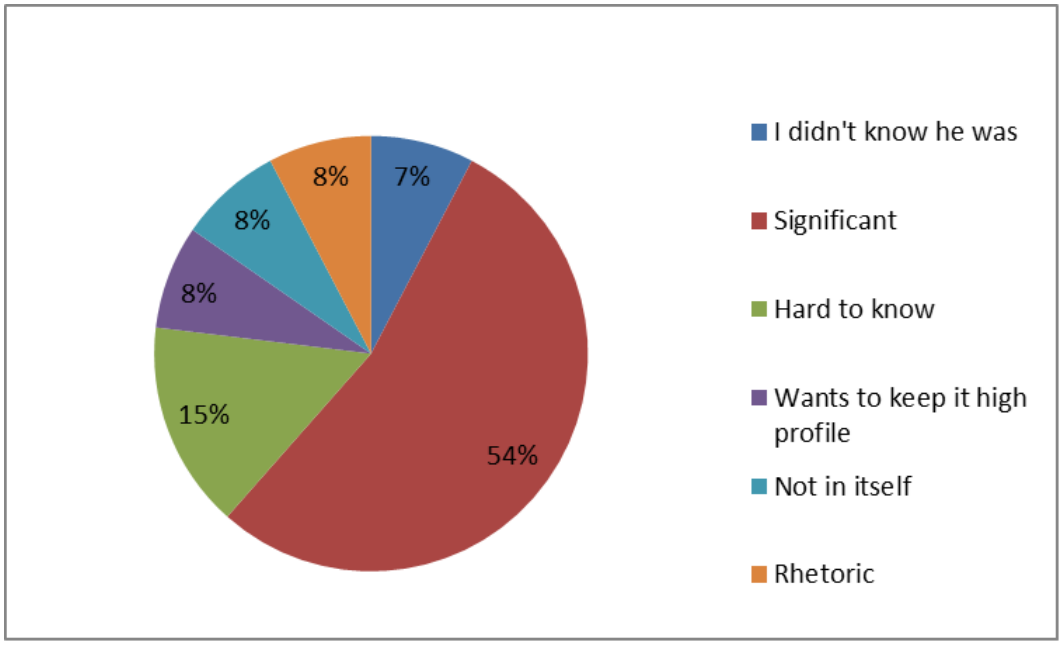


Figure 5.12: Significance of Premier's role?

Only one participant did not know the Premier had this role, indicating a high level of awareness. Two participants said quantifying significance was difficult. Many respondents offered clarification as to why the appointment was significant. Perhaps most significant was the reference made to Patrick Conlon (Transport Minister) and Kevin Foley (Treasurer); both cited three times, suggesting some strong power dynamics in SA.

> *"There's a group of Ministers – Rann, Conlon, Foley […] and it's their collective view of the world that actually determines the initiatives and what approaches the government is going to take. […]Those three individuals have enough other people behind the scenes, though you won't see it and that's what you count in terms of policy. Somebody else could be the Climate Change Minister, but Rann would still be in charge of it."* Participant, NGO

Interestingly, no participant from the Commonwealth government provided a response to the question. Despite the Premier's international role in addressing climate change (SA Government, 2011b), no response was provided from outside the state, other than by a Melbourne-based climate change organisation. This perhaps indicates that the Premier is not seen as a figurehead outside SA.

When asked if the Premier's "significant role" would deliver emission reductions, the response was no, particularly with regards to transport emissions, highlighting again that it is not a priority sector for the state. Little emphasis is placed on reducing emissions; SA's leadership is seemingly about rhetoric and motivation. This motivational leadership is discussed further in Chapter 8.

5.7.5.3 Where does rail electrification fit into this leadership?

Participants were asked to comment on how the rail electrification contributed to SA's climate change leadership, in light of the fact that electric rail services were cited in the 2008 Budget Overview as a means to reduce carbon emissions (SA Government, 2008a). Six participants responded. Three responses concerned the electrification; making things more efficient and inducing demand – both for public transport provision, and for renewable energy generation. Another respondent stated that climate change leadership did not have much to do with transport, which supports comments on the non-prioritisation of transport running through the Chapter. It was described as more of a consequence than a policy objective.

Participants were asked whether the programme was innovative – in terms of the level of investment and planned upgrades, or catching up – in terms of comparable public transport systems across Australia. All seven respondents agreed that SA was catching up. Throughout the interviews five participants cited Perth's recent public transport revitalisation as innovative; somewhere Adelaide could learn from. It would seem therefore, that SA is viewed as a renewable energy leader, but has some way to go before it leads on climate change across sectors.

5.7.5.4 Where is climate change on the SA agenda?

Ten participants offered thoughts about the place of climate change on the SA agenda. None said that it was at the top (Figure 5.13).

Importantly the comment which suggests that it 'varies' articulates the strategy-action deficit highlighted elsewhere. Indeed, a common view was that whilst climate change is discussed in SA, it is not supported by policy.

> *"On the South Australian government agenda, if you look at the policies of government its reasonably high, if you look at the activities of government it's reasonably low."* Participant, DTEI

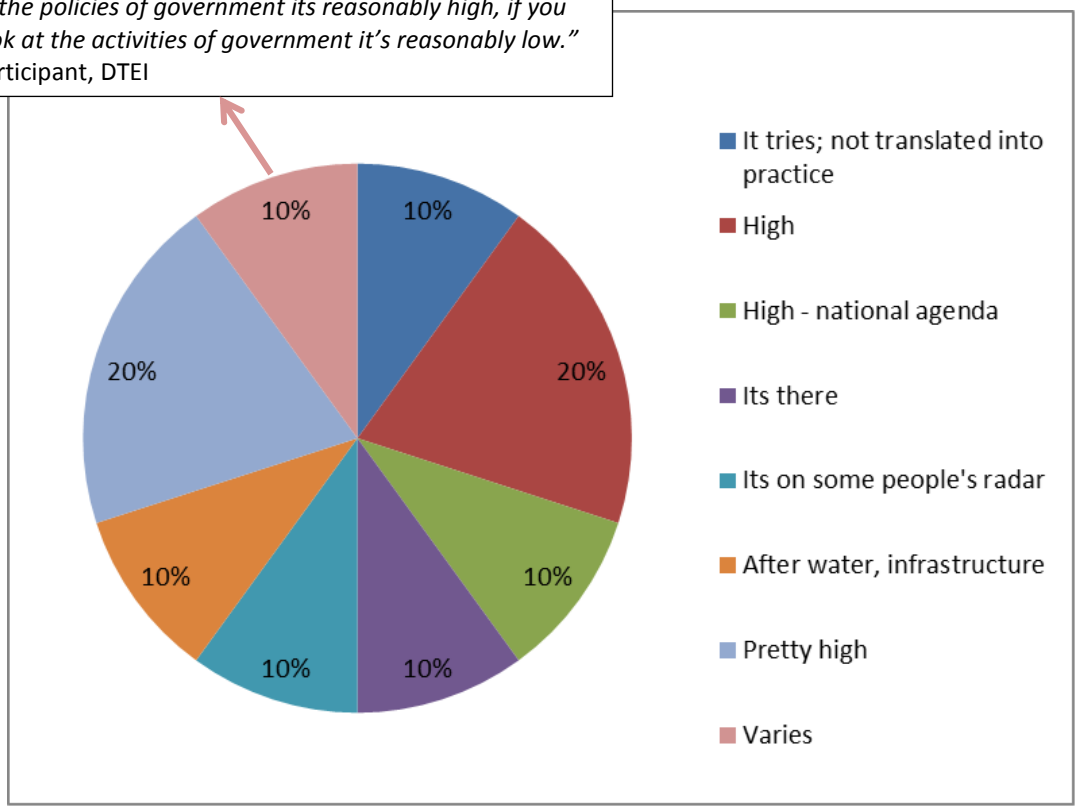


Figure 5.13: Where is climate change on SA agenda?

Again scale-related issues (section 5.7.3) were raised; with suggestions that climate change is high on the national agenda, and important questions of responsibility again emerging:

> "M*ost people would suggest it's more of a responsibility of the federal government than the state. And I think that's part of the problem, it's who owns the problem? […]*

The answer is it has to be all in order for it to succeed. It's very easy to perceive that it's somebody else's problem and that's a great danger." Participant, DTEI

One participant noted unprompted that climate change was after issues of water and infrastructure on the agenda. Others were subsequently asked what issues topped SA's agenda (Table 5.7). There is some broad agreement about where SA's focuses attention, and interestingly these areas align with the portfolios and Ministers identified in section 5.7.5.2 as influential, which suggests they are the most prominent because they are the most discussed inside and outside government.

Participant	**Top of the Agenda**
Academia	Industrial interests
NGO	Water and financial crisis
DPC	Economy, water, health
DTEI	After water, infrastructure (as above)

Table 5.7: Issues at the top of SA's agenda

5.7.5.5 Other leadership/power-related information

The additional leadership issues that were raised were the PCCC, the influence exerted over policymaking by business interests, and whether setting targets constitute leadership.

5.7.5.5.1 PCCC

The two PCCC members were asked to reflect on its function in assisting the Premier. One suggested its primary purpose was to educate/inform the business community, not the Premier. The other stated that it was not just an advice mechanism; but also that it encourages interplay across levels (section 5.7.3.3):

> *"It gives the Premier a handle on a whole range of things that are climate change-related, […] that's actually really valuable. From the council's perspective, because again we're advising him, we know that as the Minister, he has influence across departments and there'll be input from those departments as well. The Premier [...] as the President of the Labor Party until recently, also has a role in what happens at a federal level. He's actually been terrific; he has a personal interest in it, which makes a huge difference, so he's quite active."* Participant, Local government

The PCCC illustrates the Premier's intention to interact with diverse sectors and garner opinion from broad-ranging stakeholders. Personal interest is considered further in Chapter 8.

5.7.5.5.2 Business interests

> *"If the chips are down, it [the state government] wants to subsidise the car manufacturing industry – now that's gonna die. Mitsubishi died earlier this year*, it's been dying for 10 years, and it's been propped up with government money from all over. Not just in Australia of course, but the rest of the world."* Derek Scrafton (*2008)

Mitsubishi was mentioned twice throughout the interviews. There is cause to suspect that added impetus to the investment in public transport came from the removal of pressure applied by and the need to subsidise this industry, which freed up some capital. Perhaps the public transport infrastructure was underinvested in for so long because political interests were elsewhere serving the car manufacturer. Indeed, policy inertia is often the product of powerful actors who resist the necessary changes that sustainability demands (Harding et al, 2009). There is not sufficient evidence from the research to confirm these ideas, although they are revisited in Chapter 8.

5.7.5.5.3 Targets

Section 5.7.4.6.1 demonstrated that SA's public transport/emission reduction target do not realistically demonstrate leadership. SA was Australia's first state to legislate climate change targets, yet they are lower than recommended required reductions needed to tackle the impacts of climate change. Eleven participants also saw strategy-action deficit in terms of policy being developed to enable achievement of these targets; only two thought that the 2050 target was attainable. Therefore SA's ambition and commitment are debatable.

Collectively this information suggests that SA discusses climate change often; is likely to face climate change impacts and already experiences water shortages and drought on an unprecedented level and has established emission reduction targets. Aside from renewable energy, there is little action to back leadership claims. Evidence suggests climate change is not at the top of SA's agenda, and the state does not display the sort of leadership that it identifies itself through, especially with regard to tackling transport emissions.

5.7.6 Theme: Process

> *"There is no clear direction set other than these targets, so you then get the government saying "oh we'll do this big investment in revitalising our public transport system", and it's not hard to think why they might want to do that, but they can't point to how it fits into the broader urban planning. That is an issue."* Participant, Academia

The primary objective of asking process-related questions was to better understand *how* the transport investment programme was developed and is being implemented. Participants were asked to explain their familiarity with or involvement in the programme and at what point (if applicable) they became involved. Finally participants were asked to deliberate whether further investments will be made, over the 10 years and beyond.

5.7.6.1 How did the transport investment programme come about?

Seven participants noted that the government "had been talking about it for years", implying it was a matter of time before the investment would happen. This links with the underinvestment discussion in section 5.7.4.2. There was agreement that specific details of the programme were not circulated until after the announcement was made. Whilst there were various work programmes and task forces in place, consultation appeared to be relatively limited. Although the 2004-05 SIP identified investment in this area as a strategic priority, it is interesting that there didn't appear to be formalisation of plans to invest in this strategy

running up to the announcement, which suggests that there may have been uncertainty within government about when/if action in this area would materialise.

5.7.6.2 Where is investment coming from?

Understanding where the AU$2 billion investment came from and whether funding is secured is fundamental. It also has potentially interesting scalar considerations (section 5.7.3).

It appears that there is some uncertainty as to the funding source. Five respondents suggested that all funding was state-derived, with another asserting that Infrastructure Australia would also contribute. Another suggested Infrastructure Australia alone would fund the programme. Infrastructure Australia is an advice bureau, not a funding body, as a new entity, participants were clearly unfamiliar with its remit. Commonwealth government's Building Australia Fund was also mentioned. In fact, Building Australia contributed some AU$600 million to Gawler Line Modernisation and Noarlunga extension (DIT, 2011). Through this new fund, Commonwealth interest in public transport has emerged which will influence the vertical interplay dynamics in Australia (section 5.7.3.3).

5.7.6.3 What is your involvement in the programme?

Only three participants responded – all from DTEI, indicating that there is limited involvement across the state government, or with local or Commonwealth governments (section 5.7.3).

5.7.6.4 The future?

Although some improvements have been delivered (Table 5.8) (also Appendix 5.D), participants were asked whether the initial investment will be built on with subsequent

improvements. They also considered how the investment could be linked into other areas, like TravelSmart, in terms of awareness raising and promoting the alternatives.

Delivered	**Underway**	**Next steps**
- Upgraded Belair rail line: Aug 09 - Upgraded Port Adelaide Viaduct: May 10 - Additional 20 buses p/a 08-10 - Tramline extension to Adelaide Entertainment Centre - New Adelaide Entertainment Centre Park & Ride - Six new 'Euro' style trams - Refurbishment of 3000 class rail fleet (partial)	- Gawler line revitalisation - Noarlunga line revitalisation - Seaford extension - New rolling stock purchase - Upgrade of remaining fleet	- Gawler line electrification - Noarlunga line electrification - Outer Harbor line electrification - Tram line extension: West Lakes - Tram line extension – Port Adelaide - Tram line extension – Semaphore

Table 5.8: Progress of transport investment programme (SA Government, 2011h)

> *"This is where if you had a longer term plan you might say, "Well this is how it fits in; this is what we are going to do over the next 10/15/20 years" and there isn't anything like that."* Participant, Academia

Broadly grouped, the nine participants that responded to this question fall into five categories:

- Work should be extended (but probably will not be) (1)
- Depends on the success of the initial investment (1)
- There is no evidence to suggest work will be extended (2)
- It is likely that work will be extended (3)
- It is unlikely that work will be extended (2)

There is a fair degree of optimism about the investment initiating further change. Integrated transport, linking newly-electrified lines to renewable energy and behaviour change strategies have been stated as desirable, but there are no formal plans or budget allocated to deliver these in the 10-year project horizon or beyond. As with Scotland, it is suggested that the investment needs to prove itself, before additional initiatives are considered. Moreover intentions to increase public transport patronage past the 2018 target are vague:

> *"The chances of us going from 5% of people commuting in by train in somewhere like Adelaide through 50%, I don't think there's a chance."* Barry Brook

Addressing these challenges is unlikely, three participants emphasised the incompatibility of government cycles with long-term plans (Chapter 8):

"We have a three or four-year term for our governments and you've just asked me a question about ten years plus. […] It's a big question nationally and internationally that the terms of government don't align with the required investments and infrastructure that you need. They are usually much longer time horizons." Participant, Academia

5.8 Barriers

Two areas of the research related to barriers. Firstly, participants were asked to identify the main barriers/challenges to the programme. Other barriers mentioned during interviews were categorised (per the typology – Chapter 3).

5.8.1 Main barriers/challenges to the transport investment programme?

Seven participants responded (Table 5.9). The operational (relatively short-term) elements of delivery were cited most often – both the complexity of programme delivery and resulting public disruption, suggesting that such problems are perceived to outweigh the benefits.

Respondent	Barriers	Challenges	Type
Academic	Balance of feasible options; no leadership	No money	Political, Economic, Other - Infrastructure
Academic	Obsession with car ownership - land use planners contributed to problem enormously. Public transport an afterthought	-	Political; Public; Operational
Academic	Political barriers; small town sniping	People not convinced; won't use upgraded system	Political; Public; Operational
DTEI	-	Impact on traffic (during upgrade); glitches with new system	Public; Operational
Trans-Adelaide	-	Undertaking so much work at once; ensuring sufficient bus capacity	Operational
DTEI	Unrealistic timing expectations; lack of systems thinking	-	Operational
DTEI	-	Lost a lot of ground in last 30 years	Other – SA context

Table 5.9: Barriers and challenges to the transport investment programme

Although departmental/scalar fragmentation was not referenced, the lack of political leadership and holistic approach are important considerations, especially since the latter comment was made by a DTEI participant, who went on to explain:

> *"There are two paradigms in public transport. One is the piecemeal approach –the engineering approach to public transport, and that is that you cut it up into small pieces and then deliver it piece-by-piece. We need systemic thinking to plan the system holistically and all of that is driven by […] customer approach to public transport. Because people don't look at the system the way an engineer looks at the system – piece-by-piece."* Participant, DTEI

Figure 5.14 offers a breakdown of barriers. Legal and industrial barriers were not mentioned and other identified barriers were infrastructure and context-based.

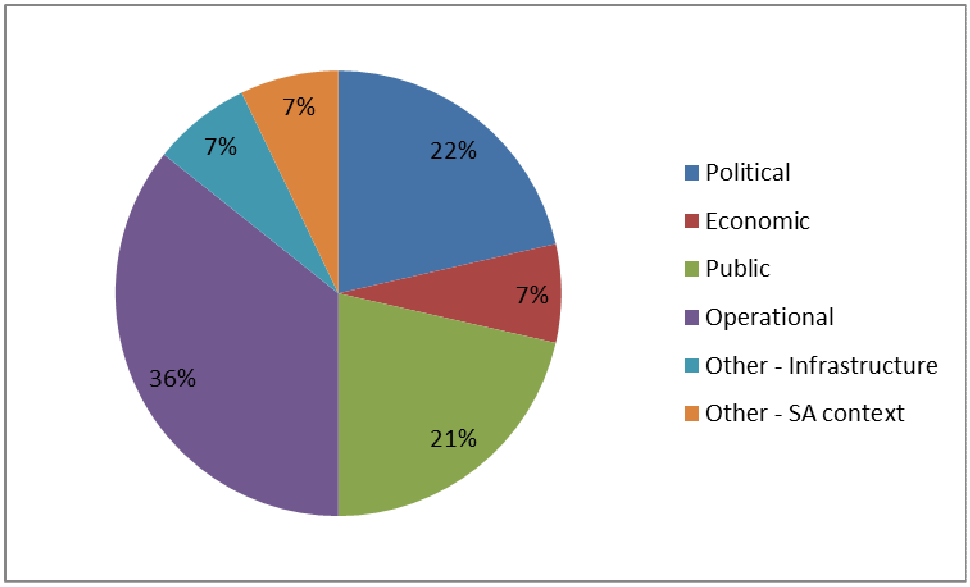


Figure 5.14: Identified barriers to the transport investment programme by type

5.8.2 General barriers to reducing SA's transport emissions

Other barriers were identified as follows:

- We need to increase population (Other – SA context)
- *"Things are going to have to change quickly, but state and federal governments both are struggling to know how you turn the battleship around"* (Political)
- How can people change their personal behaviour? (Public)
- How we get different forms of personal and public transport? (Operational)
- Communications barrier – state to public (Political; Public)

Here political and public barriers are most frequently cited. Each alludes that there is no robust response in SA and that these challenges will endure for the foreseeable future.

5.9 Discussion and Conclusion

> *"Public transport patronage has been rising in the last few years, really for the first time in any sustained way for a long time. Of course the government will claim it's all due to its good policy. […] You could take a fair bet that you could account for the bulk of the patronage growth with oil prices, congestion, foreign students and competitive tendering of bus services."* Participant, Academic

5.9.1 The SA context

Australia's states are currently centrally important to policy development. Collaboration between the states and the Commonwealth exists, but is fragmented and often exists through intermediaries like COAG, ATC and independent consultants. The Commonwealth government is engaging in new policy areas – climate change and urban affairs – this suggests that conventional areas of authority in Australia are being challenged, which has significant repercussions to states' traditional jurisdiction. However, roles and responsibilities for implementing climate change policy are blurred, which may lead to duplication and gaps in response.

There is significant strategy-action deficit in SA. Infrastructure improvements were identified as a strategic priority in 2004 and increased public transport ridership was identified as a climate change-related target. These linkages are not translated into policy development. Investment in SA's rail infrastructure was not considered innovative but necessary to refurbish the dilapidated network. It is not climate change-related. Any emission reduction arising from the investment would be coincidental.

The demise of the car manufacturing industry in SA is potentially important as removal of the industry's influence and subsidies could have made it easier for SA to invest in the rail infrastructure. Either way, the disproportionate road vs. rail investment endures.

In terms of addressing climate change whilst SASP highlights the need for interagency collaboration and DPC strives for integration and coordination of policy, strategy and implementation across government, a lack of communication between and within government departments exists. Moreover the disconnected management across modes and the perceived irrelevance of transport emissions in SA highlight that addressing transport-related climate change policy is certainly not a state priority. The prominence of water concerns and renewable energy promotion in SA has come at the expense of a comprehensive climate change strategy in SA.

Premier Rann demonstrated ambition and innovation through introducing climate change legislation and working nationally and internationally to promote action. His role as Climate Change Minister was considered significant; but not in terms of achieving actual emission reductions. With the recent reshuffle, the future implementation of climate change legislation is unclear, as the role of Climate Change Minister is disbanded.

5.9.2 Lessons on fragmentation, interplay and collaboration

Many interesting areas for comparison and discussion emerge from this Chapter, some of which will be used for comparison in Chapter 8.

Scale:

- There are clear roles for each government level in transport policy, but evidence suggests these are changing. The Commonwealth is contributing more to public transport through the Building Australia fund, but this role remains limited to funding.

- Responsibility for climate change is disjointed across government levels and departments. The Commonwealth indicated its intention to guide policy direction through collaborative federalism, but its highly politicised response delayed progress and confused the role of the states. Collaboration or clearer roles are necessary in Australia.
- State 'control' over local affairs may be significant. Whilst SA's jurisdiction ensures policy consistency at scale, it may be at the expense of local participation and support of climate change initiatives. Moreover, schemes like transit-oriented developments, central to SA's future planning strategies, may be easier to deliver with local government backing.

Scope:

- Although participants saw linking climate change and transport portfolios as important, overall it was not identified significant in the SA context. The lack of ownership for the sector's emissions makes a robust response difficult to develop and implement.
- SA's guiding strategies contradict each other and are not translated into policy. This strategy-action deficit is explored in Chapter 8. Chosen policy seems often guided by preference over robust research and enquiry.

  > *"In a bureaucratic sense there's a very long distance between saying "this is our policy" and how it's actually manifested in action."* Participant, DTEI

- The role of DTEI in delivering the transport investment is clear, but there is a lack of communication between its divisions regarding the programme. Linkages between relevant departments are missing. Although DPC's role is clear, its remit does not appear to extend to transport emissions.

- The electrification component of the project has not been addressed and with renewable energy policy being overseen to RenewablesSA, important links are lacking. Further investigation here would be useful.
- More research and understanding is needed in SA planning – this will be considered across contexts in Chapter 8. Additionally road and other transport modes need to be considered together, in order to achieve integrated transport.

Leadership/power:

- Climate change had top-level commitment in SA, with the Premier's backing, but this leadership only extended to targets, legislation, and renewable energy – not transport. This leadership appears to be lost with the change in administration.
- Interesting power dynamics were witnessed in SA. The Premier and his government were seen as well-established; momentum on long-term policy has been realised. The links between Treasurer, Transport Minister and Premier appeared to impact policy direction (Chapter 8).

Process:

- TravelSmart highlights how government cycles can cause significant disruption to policy momentum.
- Future investment in public transport is uncertain. Investing in station facilities, information provision and linking to the wider network were seen as important for an integrated long-term approach.

Barriers:

- The main barriers to the investment were operational – disruption caused by the upgrades and challenges associated with renovating the infrastructure. These were followed by political and public buy-in. The economy and water issues were identified as priority issues on SA's agenda. The claims of international climate leadership appear to founder when considered alongside immediate problems closer to home. Reducing emissions and riding on trains remain "nice-to-haves", not policy priorities.

5.9.3 Conclusion

SA's car ownership, urban sprawl and dilapidated rail infrastructure suggest that addressing these issues would be a priority for government and public alike. Even though these areas are targeted in strategy, the policies implemented do not align and the separateness of modes and divisions within DTEI exacerbate these issues. The discourse in SA has focused on renewable energy and addressing water shortages, to the extent that reducing emissions from transport is not considered.

Australia is also witnessing a change, with the Commonwealth government much more active in areas such as climate change policy and urban planning, that uncertainty prevails over the conventional roles and responsibilities for these policy areas across levels. Institutional change at the Commonwealth level is being witnessed, as CDG suggests, but this too is framed around uncertain ultimate goals, which makes collaboration difficult. With the new government in SA and a Premier less vocal than Rann on climate change issues, it becomes even less of a policy priority. With new road building funds allocated, the dominance of cars and the reticence towards public transport in SA is likely to endure.

Chapter 6: California – Senate Bill 375/the "Anti-Sprawl Bill"

6.1 Overview

This case study examines the development/implementation processes behind the delivery of California's Senate Bill (SB 375) the "*first-in-the-nation bill to link greenhouse gas reduction to transportation and housing planning"* (California Government, 2008), passed in September 2008.

Upon signing the document, Governor Arnold Schwarzenegger stated:

> *"This landmark bill takes California's fight against global warming to a whole new level, and it creates a model that the rest of the country and world will use. When it comes to reducing greenhouse gases, California is first in tackling car emissions, first to tackle low-carbon fuels, and now with this landmark legislation, we are the first in the nation to tackle land-use planning. What this will mean is more environmentally-friendly communities, more sustainable developments, less time people spend in their cars, more alternative transportation options and neighborhoods we can safely and proudly pass on to future generations."* (*Ibid.*)

This statement suggests that California is a climate change policy leader, prepared to innovate to address transport-related emissions. This chapter examines the development and implementation of SB 375 through the four research themes, to corroborate the claims made here. The main objectives were to examine and the relationships between state, local and national government (scale); to ascertain the linkages between climate change and transport portfolios and whether SB 375 was intended as a bill to deliver emissions reductions (scope).

Political leadership issues are considered (power/leadership) and the planning and implementation processes of the bill are investigated (process), in terms of the organisations involved. Finally the barriers to implementing the bill and to addressing transport-related climate change are also examined.

6.2 Introduction

California is the most populous US state, with over 37 million inhabitants (US Census Bureau, 2010). California is an economic powerhouse; a hub of innovation and enterprise with a $1.9 trillion gross state product in 2010 (California Chamber of Commerce, 2011) – placing California amongst the top 10 economies in the world.

California's cities are synonymous with twentieth century sprawl and accordingly the automobile. The severity of the smog (to which automobiles are a significant contributor) in California over the last 40 years has resulted in the state setting environmental standards more stringent than those set in the 1970 federal Clean Air Act (CAA). California has since continually pushed the boundaries on environmental action (Anderton, 2010).

6.3 California – Strategic Direction

In 1849 California's Constitution established the duties, power structure and function of the state government. Its current constitution was ratified in 1879 (Grodin et al., 1993). The Republic of California has three government branches: Executive; Legislative and Judicial. Republican Arnold Schwarzenegger was California's 38th Governor from 2003 until January 2011. His tenure covered the entire research period in which many climate change initiatives under scrutiny were established.

Regulation through litigation is a common US trend, increasingly utilised in climate change matters (section 6.5.4). An informal grouping known as the 'Big 5' – Governor, Assembly speaker, Assembly minority leader, Senate president pro tempore, and Senate minority leader (the state 'lawmakers') meet in private to discuss the state's budget.

In 2006 California's Strategic Growth Plan (SGP), a 20-year initiative to improve state infrastructure was released (section 6.5.4). The SGP invested over $222 billion in the state's roads, schools, ports, and water supply and established the Strategic Growth Council (SGC) to:

> *"coordinate the activities of state agencies to promote sustainability and to coordinate the investment of funds in state-owned and state-funded infrastructure so that those investments can have years of lasting benefits."* (California Department of Finance, 2009)

6.4 California and Transport

California is indisputably an auto-centric state. Understanding its transport infrastructure and travel behaviour is important in contextualising SB 375.

6.4.1 Transport Use Landscape

The private automobile dominates in California (Table 6.1). Almost 75% of California's workforce commutes daily by car, with a further 12% car-pooling. Only 10% use public transportation, walked or used other means (bicycles, motorcycles and taxicabs). Californians drive more miles than all other US states (bar Texas) (Table 6.2). Rural and urban roadways experience similar levels of usage – California's auto-centric 'monoculture' (Sperling and Gordon, 2009) endures across the state.

Importantly, total VMT is higher in California than any other US state too – 327 million miles in 2008 (Bureau of Transport Statistics, 2009). Some 23.8 million driving licences were issued in California and 22 million private automobiles were registered in California by the end of 2010 (California Department of Motor Vehicles, 2011).

State	Total workers (1,000)	Percent of workers who—						Mean travel time to work (min.)
		Commuted by car, truck, or van		Used public transportation [1]	Walked	Used other means [2]	Worked at home	
		Drove alone	Car-pooled					
U.S.	**143,996**	**75.5**	**10.7**	**5.0**	**2.8**	**1.8**	**4.1**	**25.5**
AL	2,052	83.0	11.8	0.5	1.3	1.1	2.3	24.0
AK	341	66.2	14.4	1.7	7.1	4.6	5.9	18.4
AZ	2,901	75.3	13.1	2.3	1.9	2.5	4.9	25.0
AR	1,058	80.2	12.8	0.4	2.0	1.5	3.3	21.3
CA	16,809	72.7	11.9	5.3	2.8	2.5	4.8	27.0
CO	2,552	73.7	11.3	3.4	2.7	2.6	6.3	24.6
CT	1,748	78.7	8.8	4.4	2.9	1.3	4.1	25.1
DE	416	78.6	10.6	3.8	2.4	1.7	3.0	25.0
DC	303	37.2	6.6	35.7	12.1	3.7	4.7	29.5
FL	8,277	79.4	10.3	2.0	1.5	2.3	4.5	25.9
GA	4,508	77.7	11.9	2.4	1.5	1.8	4.8	27.0
HI	656	65.7	16.2	5.9	4.2	3.4	4.6	26.1
ID	714	74.1	12.9	1.0	3.2	3.6	5.3	20.2
IL	6,216	73.3	9.4	8.7	3.0	1.6	4.0	28.5
IN	3,029	81.9	10.1	1.1	2.3	1.5	3.1	23.2
IA	1,569	77.9	11.0	1.2	4.1	1.4	4.4	18.5
KS	1,436	80.9	10.3	0.5	2.6	1.5	4.2	19.1
KY	1,879	81.2	11.3	1.2	2.4	1.0	2.9	22.6
LA	1,959	81.5	10.9	1.3	2.0	1.9	2.4	25.3
ME	650	77.3	10.9	0.7	4.0	1.8	5.2	23.3
MD	2,911	73.2	10.8	8.5	2.3	1.3	3.8	31.5
MA	3,307	72.3	8.6	8.9	4.6	1.7	3.9	27.3
MI	4,461	82.2	9.4	1.4	2.2	1.2	3.5	24.0
MN	2,778	77.7	9.4	3.4	2.9	1.7	4.9	22.6
MS	1,241	81.7	12.3	0.4	1.7	1.7	2.2	24.1
MO	2,846	79.8	11.1	1.6	2.0	1.2	4.2	23.8
MT	477	72.8	11.4	1.1	5.5	2.7	6.5	17.9
NE	944	79.7	10.2	0.7	3.1	1.3	4.9	18.0
NV	1,258	76.8	12.1	3.7	2.4	2.0	3.0	24.0
NH	704	81.0	8.4	0.8	3.3	1.4	5.1	26.0
NJ	4,285	71.7	9.1	10.3	3.3	2.2	3.3	30.1
NM	891	76.6	12.7	1.2	2.6	2.4	4.5	21.9
NY	9,215	53.7	7.7	26.7	6.3	1.7	3.9	31.6
NC	4,371	80.0	11.5	1.1	1.7	1.3	4.3	23.4
ND	348	77.8	10.0	0.6	3.7	1.7	6.1	16.0
OH	5,447	82.6	8.9	1.9	2.2	1.2	3.3	22.9
OK	1,696	80.5	11.9	0.4	2.0	1.7	3.6	21.2
OR	1,796	71.7	10.8	4.5	3.9	3.2	5.9	22.5
PA	5,912	76.2	9.7	5.3	4.0	1.3	3.4	25.8
RI	509	80.8	8.0	2.7	3.1	1.7	3.7	23.1
SC	2,017	81.1	10.9	0.7	1.8	1.8	3.7	23.3
SD	420	78.2	9.8	0.5	4.6	1.6	5.2	16.4
TN	2,855	82.7	10.6	0.7	1.4	1.2	3.4	24.0
TX	11,317	78.3	12.4	1.7	1.7	2.0	3.8	25.1
UT	1,299	75.0	13.1	2.4	3.0	1.9	4.6	21.3
VT	332	73.3	11.1	0.9	6.3	1.7	6.7	21.9
VA	3,927	76.7	10.9	4.3	2.3	1.5	4.3	26.9
WA	3,201	71.5	12.2	5.5	3.6	2.2	5.0	25.4
WV	767	80.9	10.9	0.8	3.1	1.4	3.0	25.4
WI	2,913	79.3	9.8	1.9	3.3	1.9	3.8	21.7
WY	279	74.9	12.7	1.3	3.9	2.4	5.0	18.7

Table 6.1: Commuting to work by state: 2008 (US Census Bureau, 2011) (Emphasis added)

State	Total	Functional systems					Urban	Rural
		Interstate	Other freeways and expressways	Arterial	Collector	Local		
U.S.	**4,042,778**	**46,751**	**11,335**	**400,702**	**794,684**	**2,789,306**	**1,065,556**	**2,977,222**
AL	97,325	905	41	9,221	20,571	66,587	21,935	75,390
AK	15,329	1,082	–	1,518	2,807	9,922	2,341	12,988
AZ	60,440	1,168	176	5,730	8,132	45,234	22,917	37,523
AR	99,814	656	101	7,097	20,648	71,312	12,186	87,628
CA	172,511	2,460	1,537	27,367	32,158	108,989	89,029	83,482
CO	88,265	953	312	8,918	16,263	61,819	19,345	68,920
CT	21,363	346	237	2,758	3,201	14,821	15,136	6,227
DE	6,282	41	30	645	1,046	4,520	2,980	3,302
DC	1,506	13	20	266	156	1,051	1,506	–
FL	121,387	1,471	584	12,907	14,289	92,136	81,021	40,366
GA	121,873	1,242	114	14,045	22,881	83,591	38,614	83,259
HI	4,365	55	34	753	838	2,685	2,312	2,053
ID	47,790	612	–	4,197	10,458	32,523	5,662	42,128
IL	139,491	2,182	100	14,593	21,719	100,897	41,290	98,201
IN [1]	95,613	1,171	163	8,290	22,518	63,471	24,315	71,298
IA	114,223	781	–	9,748	31,558	72,136	11,307	102,916
KS	140,611	874	187	9,523	33,541	96,486	12,751	127,860
KY	78,748	762	67	5,867	16,114	55,938	12,535	66,213
LA	61,095	906	50	5,538	10,042	44,559	16,335	44,760
ME	22,828	366	20	2,177	5,937	14,328	2,991	19,837
MD	31,386	481	294	3,790	5,053	21,768	17,333	14,053
MA	36,105	573	314	6,165	4,834	24,219	28,127	7,978
MI	121,667	1,243	329	14,677	24,444	80,974	35,814	85,853
MN [2]	138,242	918	174	13,438	30,489	93,223	20,628	117,614
MS	74,887	698	67	7,522	15,537	51,063	10,958	63,929
MO	129,718	1,181	403	10,215	24,953	92,966	22,953	106,765
MT	74,173	1,192	–	6,036	16,223	50,722	3,057	71,116
NE	93,615	481	21	8,104	20,751	64,258	6,318	87,297
NV	33,907	571	69	3,082	4,995	25,190	7,167	26,740
NH	16,005	225	56	1,533	2,741	11,450	4,908	11,097
NJ	38,753	431	404	5,759	4,152	28,007	31,456	7,297
NM	68,384	1,000	5	5,111	8,535	53,733	7,998	60,386
NY	114,471	1,705	789	13,852	20,685	77,440	48,401	66,070
NC	105,104	1,125	428	9,454	17,620	76,477	33,429	71,675
ND	86,842	571	–	5,913	11,810	68,548	1,897	84,945
OH	122,973	1,574	483	10,958	22,637	87,321	44,713	78,260
OK	113,323	933	191	8,200	25,301	78,698	16,056	97,267
OR	59,252	729	58	7,026	17,669	33,770	12,992	46,260
PA	121,771	1,792	542	13,278	19,824	86,335	45,287	76,484
RI	6,403	72	90	834	882	4,525	5,191	1,212
SC	66,255	843	84	7,146	15,088	43,094	16,422	49,833
SD	82,147	679	11	6,395	19,015	56,047	2,932	79,215
TN	92,175	1,105	153	9,062	17,873	63,982	22,455	69,720
TX	306,404	3,234	1,589	31,425	65,392	204,764	93,406	212,998
UT	44,706	936	20	3,681	7,857	32,212	11,073	33,633
VT	14,421	320	20	1,302	3,113	9,666	1,456	12,965
VA	73,902	1,119	289	8,335	14,069	50,090	23,568	50,334
WA	83,526	764	375	7,758	16,762	57,867	22,743	60,783
WV	38,452	554	10	3,474	8,610	25,804	5,360	33,092
WI	114,844	743	291	12,429	21,703	79,678	22,272	92,572
WY	28,106	913	3	3,590	11,190	12,410	2,678	25,428

Table 6.2: Highway mileage by state—functional systems and urban/rural: 2008 (US Census Bureau, 2011) (Emphasis added)

6.4.2 Organisation

US transportation is managed through a complex tapestry of organisations and levels of government. California's cabinet-level Business, Housing and Transportation Agency oversee 14 offices and departments at the state-level including the state Department for

Transportation (Caltrans), the Department for Motor Vehicles and the Department for Traffic Safety. Caltrans remit includes managing the state highway infrastructure, providing inter-city rail services, and working with local agencies (Caltrans, undated).

Transportation funding in the US is complex, involving all government levels. The US Department of Transport (DOT) is responsible for the nation's transportation system, its Federal Highway Administration (FHWA) provides financial assistance to state and local governments for constructing, preserving, and improving highways through its federal-aid highway program. Metropolitan Planning Organisations (MPOs) and local governments (cities and counties) have a fundamental role to play in transportation in the US and are linked to the state and federal levels. The latter have jurisdiction over land use planning matters. SB 375 stands to alter some aspects of these conventional arrangements (section 6.7.7).

In terms of public transit, Amtrak is a government-owned corporation that provides intercity passenger rail services, state and local public transit providers also operate in California, some government-owned; some independent.

6.4.3 Strategic Direction – Transport

Of the $222 billion invested through the SGP, $107 billion was dedicated to transportation to achieve the following objectives:

– Reduce congestion
– Improve connectivity
– Improve safety
– Reduce air pollution
(Caltrans, 2008)

In addition to the SGP, in 2006 the California Transportation Plan (CTP) 2025 was released. The vision of the plan was that by 2025:

> *"California has a safe, sustainable, world-class transportation system that provides for the mobility and accessibility of people, goods, services, and information through an integrated, multimodal network that is developed through collaboration and achieves a Prosperous Economy, a Quality Environment, and Social Equity"* (Caltrans, 2006).

Two of the six CTP goals are relevant here: 'Improving Accessibility and Mobility' and 'Enhancing the Environment'. The four guiding principles to achieve this vision were:

- Collaboration
- Leadership
- Innovation
- Communication

(*Ibid.)*

A 2007 CTP Addendum was released to extend the plan to 2030 and make it compliant with federal government's SAFETEA-LU[38] (section 6.4.5). This addendum extended/broadened the strategies articulated in the CTP 2025 and provided a "roadmap" for the CTP to 2035 (Caltrans, 2007a).

6.4.4 Transport Budget

The 2008-09 budget plan includes $13.7 billion total expenditures from various sources for Caltrans. Table 6.3 shows 'mass transportation and rail' support is far outweighed by highways operation and maintenance, demonstrating preferentiality for the road infrastructure. This was compounded in the May 2008 budget. In an effort to cut California's $41 billion budget deficit, the State Transit Investment was cut to $150 million, representing a 92% reduction on previous investment (California Transit Association, 2008). This demonstrates that government commitment to public transportation promotion may be lacking.

[38] (Public Law 109-59; SAFETEA-LU) – Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users

Similarly 67% of the money given to Californian projects by the 2009 American Recovery and Reinvestment Act (ARRA) or stimulus package was spent on highway projects, and only 23% on transit (Niemeier, 2010). There was an opportunity to promote transit projects in the state, but the prioritisation of 'shovel-ready' projects, allowed road-based infrastructure dominance to endure.

Budget Line Item	**Amount invested**
Transportation Capital Outlay	*$6.2 billion*
Local Assistance	*$2.7 billion*
Capital Outlay Support	*$1.8 billion*
Highway operations and maintenance	*$1.4 billion*
Caltrans' mass transportation and rail program	*$397 million*
Transportation planning and department administration	*$890 million*

Table 6.3: California's Transportation Budget 2008-9 (Legislative Analyst's Office (LAO), 2008)

> *"…the American transport system is so profoundly dysfunctional, it's so highway-oriented, so ignorant of transit, and when it does transit, it goes and wastes enormous amounts of money in these gold-plated projects"*. David Schonbrunn, TRANSDEF

6.4.5 US Transport Policy

The 2005 SAFETEA-LU authorises federal surface transportation programs for highways, highway safety and transit between 2005 and 2009. It covers a variety of transportation-related issues including financing, congestion relief, safety, efficiency (coordinated planning and environmental streamlining), environmental stewardship, and research (Caltrans, 2007b). SAFETEA-LU provided $23.4 billion to California (Caltrans, 2007a). It expired in 2009 and has yet to be reauthorised. The implications of this on the Californian context will be discussed where relevant (sections 6.7.4 /6.7.5).

6.5 California and Climate Change

Figure 6.1 highlights the sectoral emissions breakdown provided in the ARB Scoping Plan for the implementation of Assembly Bill 32 (AB 32) (section 6.5.2.2). Much of the case study refers

to this context. The latest data available (Figure 6.2) suggests that in 2008, California's emissions totalled some 477 $MTCO_2e$ (ARB, 2010). In 2008, transportation emissions decreased on previous levels.

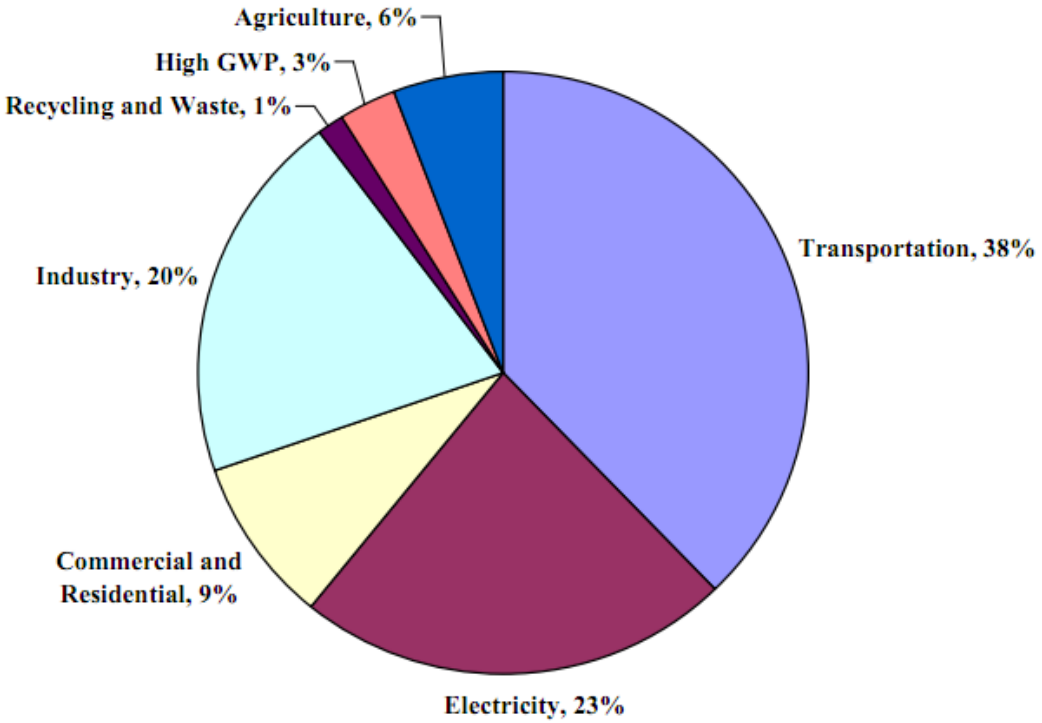


Figure 6.1: California's GHG emissions $MTCO_2e$ (2002-2004 average) (ARB, 2008)

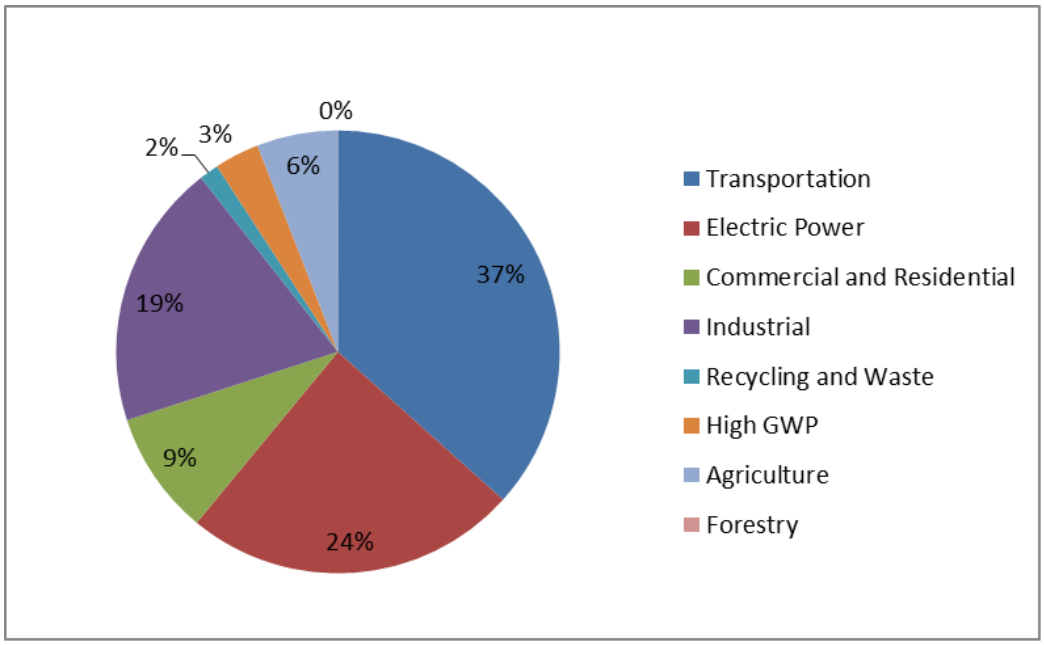


Figure 6.2: California Emission Inventory – 2008 (ARB, 2010)

6.5.1 Organisation

Much of the current architecture for addressing climate change was established after the passage of AB 32, so there is strong overlap with section 6.5.2. But it is important to contextualise the history of environmental protection in California. ARB was established in 1967, pre-dating the 1970 amendments to the 1963 US Clean Air Act. As an established entity, ARB was able to set standards above the national average, by requesting a waiver from the federal Environmental Protection Agency (EPA) to legalise state standards. No other state is permitted to establish an ARB or equivalent, but may meet California's standards over those set by the federal government (Anderton, 2010).

Since the 1970s ARB has addressed air quality issues, particularly from transportation and interacts with various levels of government. California continues to set standards more stringent than the federal standards (for example the Pavley Bill (2002) (section 6.5.5.)). Following the passage of AB 32 in 2006, ARB has been accorded responsibility for all matters relating to its implementation.

6.5.2 Strategic Direction - Climate Change

6.5.2.1 CEQA and GHG

The 1970 California Environmental Quality Act (CEQA) requires state and local agencies to identify the significant environmental impacts of their actions and to avoid/mitigate if feasible (California Natural Resources Agency[39], 2007). CEQA covers a wide range of environmental issues and was initially introduced to supplement the 1969 National Environmental Policy Act.

[39]Also known as RA

It applies to public agency 'projects'[40], which must undergo an environmental review before approval. The Governor's Office for Planning and Research (OPR) oversees CEQA guidelines. In 2007, Senate Bill 97 (SB 97) required OPR to develop amendments to CEQA guidelines for addressing GHGs. In 2009 OPR submitted these amendments which guide public agencies to address GHG and their effects in draft CEQA documents (OPR, undated). SB 375 offers certain dispensations to CEQA requirements (section 6.7.7).

6.5.2.2 AB 32

In 2006, Governor Schwarzenegger signed AB 32, which requires a state-wide emission reduction to 1990 levels by 2020. The bill designated ARB to *"begin developing discrete early actions to reduce greenhouse gases while also preparing a Scoping Plan to identify how best to reach the 2020 limit"* (ARB, undated). The Governor also signed Executive Order S-3-05 to reduce emissions 80% by 2050, and while not mandatory, many of the measures being developed consider this goal (Anderton, 2010). The Executive Order also established the Climate Action Team (CAT) (section 6.5.3).

The mandated reductions laid out in AB 32's 'Scoping Plan' (ARB, 2008) – the roadmap to achieving the targets legislated for in the Bill – rely on the implementation of a number of diverse supplementary institutions, each of which deals with a specific source of emissions (section 6.6.3 outlines transport-related institutions). The 2008-09 budget investment on AB 32 implementation highlights the main areas of expenditure for implementing the bill (Table

[40] A project is an activity undertaken by a public agency or a private activity which must receive some discretionary approval from a government agency which may cause either a direct physical change in the environment or a reasonably foreseeable indirect change in the environment (RA, 2007)

6.4) – almost $45 million in total (significantly less than highway operation and maintenance (Table 6.1)).

AB 32 Implementation

2008-09
(In Millions)

Agency	Positions	Expenditures	Fund Source	Activity
Air Resources Board	152	$31,852	Air Pollution Control Fund (APCF)[a]	Develop Low Carbon Fuel Standard (LCFS) measures, LCFS market-based program, vehicular/industrial measures, and fee structure to support AB 32 implementation.
Forestry and Fire Protection	8	6,795	Proposition 84 bond funds	Award urban forestry management grants; staff support.
General Services	5	2,846	Service Revolving Fund	Implement Green Building Initiative and Sustainability Program.
Secretary for Environmental Protection	6	1,658	General Fund, APCF, Motor Vehicle Account	Climate Action Team activities, including program oversight and coordination.
Energy Commission	5	610	Energy Resources Program Account	Develop GHG reduction measures.
Governor's Office of Planning and Research	4	537	General Fund	Develop California Environmental Quality Act guidelines for mitigation of GHG emissions, per Chapter 185, Statutes of 2007 (SB 97, Dutton).
Food and Agriculture	2	338	Food and Agriculture Fund	Develop GHG emission reduction measures.
Secretary for Resources	2	177	General Fund	Adopt GHG emissions mitigation guidelines, per SB 97.
Public Utilities Commission (PUC)	1	102	PUC Ratepayer Advocate Account	Monitor PUC implementation of AB 32.
Totals	**185**	**$44,915**		

[a] Supported by a loan from the Beverage Container Recycling Fund, to be repaid within three years.

Table 6.4: AB 32 implementation budget 2008-09 (LAO, 2008)

The Scoping Plan also outlines 'state leadership' and climate change mainstreaming (Box 6.1).

> "California is committed to once again lead and support a pioneering effort to protect the environment and improve public health while maintaining a vibrant economy**. Every agency, department and division will bring climate change considerations into its policies, planning and analysis,** building and expanding current efforts to green its fleet and buildings, and managing its water, natural resources, and infrastructure to reduce greenhouse gas emissions.
>
> In all these efforts, California is exercising a leadership role in global action to address climate change. It is exemplifying the essential role states play as the laboratories of innovation for the nation. As California has done in the past in addressing emissions that caused smog, the State will continue to develop innovative programs that benefit public health and improve our environment and quality of life" *(Ibid.).*

Box 6.1: California's climate change leadership (ARB, 2008) (Emphasis added)

6.5.2.2.1 Proposition 23

Ahead of the 2010 state election, Proposition 23 attempted to halt the implementation of AB 32 until state unemployment figures dropped to 5.5% or less for full year (California Secretary of State, 2010). Proposition 23 was successfully voted down, representing a major triumph for climate change policy in the US – and ensured implementation of the Scoping Plan would progress as planned towards meeting the 2020 and 2035 reduction targets.

6.5.3 The CAT

Because AB 32 does not affect the existing authority of other state agencies, but many agencies will be responsible for implementing components of the plan (ARB, 2008), the CAT (chaired by California's Environment Protection Agency's (CalEPA) Secretary) has been established to inform state efforts on GHG reduction through engaging key agencies (*Ibid.*) (Appendix 6.A). The Scoping Plan outlines CAT's role:

> *"AB 32 recognizes the essential role of the CAT in coordinating overall climate policy. The CAT is central to the success of AB 32,* ***which requires an unprecedented level of cooperation and coordination across State government****. The CAT provides the leadership for these efforts and helps ARB work closely with our state partners on the development and implementation of the strategies in the Scoping Plan." (Ibid. – emphasis added).*

Internal communication to deliver climate change goals is clearly advocated. However, although CAT has several sub-groups to promote interagency collaboration, it has no transportation sub-group. Given that transportation accounts for 40% of emissions and the Scoping Plan identified some 174 $MTCO_2e$ reductions from the sector by 2020, the lack of top-level group overseeing delivery of this element is surprising. In a scoping interview, it was also highlighted that ARB, whilst responsible for overseeing climate change policy, has no authority to guide CAT members, which could lead to a disconnection between CAT deliberations and ARB's work (section 6.7.7).

6.5.4 Litigation

Litigation has emerged as response to address climate change. As Viscusi (2002) states, the interaction between regulation and litigation is not a new phenomenon in the US, but in terms of responding to climate change, it has emerged as a potentially significant means of achieving progress. Osofsky (2009) refers to an *"explosion of climate change litigation"*. Numerous cases spreading across the levels of government (local-state; state-federal for example) and the public and private sectors have been brought – including landmark federal cases like Massachusetts vs. EPA (2007) – which held that GHGs are considered pollutants under CAA**.**

Litigation's role in addressing land use and VMT has also been felt. In California, prior to the passage of SB 375, cases such as People of California vs. County of San Bernardino (2007) and subsequently People of California vs. City of Pleasanton (2009), both addressed the failure of the local governments to analyse GHG impacts in their General Plan Updates (Niemeier, 2010). This confirms that the judicial branch and the Attorney-General (AG) are significant to Californian climate change policy. Five participants mentioned either the AG or lawsuits

throughout the interviews. Litigation will be revisited (section 6.7.7.1) as responsibility for policies can become blurred as litigation is used to achieve change (Viscusi, 2002).

6.5.5 US Climate Change Policy

The US has a mixed history of environmental stewardship. The 1970 CAA amendments allowed comprehensive regulation of federal and state sources of air pollution. Similarly the National Environmental Policy Act monitors the environmental impacts of federal 'projects'. In terms of addressing climate change however, US policy action to date has stalled. Climate change has been seen as a partisan issue in the US, which makes Governor Schwarzenegger's commitment to the issue as a Republican notable (section 6.7.6).

President Clinton initially signed the UNFCCC in 1997 but with the election of President George W. Bush in 2000, ratification of the Kyoto Protocol was ruled out and domestic climate change policy was absent. Such was the US government's distain for climate action, it denied California's waiver to the Pavley Bill, preventing its implementation for seven years. It was the only bill not granted a waiver in the 40 years of California's unique relationship with the CAA (Anderton, 2010).

Federal inaction is considered a contributing factor to the state 'leadership' on climate change demonstrated over the last 10 years (Rabe, 2007c; Engel, 2009). With the election of President Obama in 2008, a federal climate change responses was expected. Granting the Pavley Bill waiver was one of Obama's first acts as President. This renewed commitment opened up many

questions with regards to how the Supremacy Clause[41] of the US constitution could impact on the state climate change laws and policies which have already been passed.

The Waxman-Markey bill (American Clean Energy and Security Act- H.R. 2454) passed through the US House of Representatives in June 2009 and expectations were high. It was described as a *"comprehensive national climate and energy legislation which would establish an economy-wide, cap-and-trade system and critical complementary measures"* (Pew Center, 2009a). In October 2009, the Boxer-Kerry bill (Clean Energy Jobs and American Power Act - S. 1733) initiated its run through the Senate. Both developments have been contested and robust federal climate policy remains a victim of political wrangling in Washington D.C.. In 2010 the Senate announced it would not consider climate change legislation before the end of the legislative term (New York Times, 2010). To date, no significant federal response has emerged. The states continue pursuing climate policies whilst stalemate endures and will likely be useful to future federal policy if passed.

Within the administration however, positive collaboration is emerging. In 2009 EPA, DOT and the Department of Housing and Urban Development announced a high-level interagency partnership to better coordinate federal transportation, environmental protection and housing investments (EPA, 2009); highlighting new chains of interaction are emerging to address the issue.

[41] US Supremacy Clause states that federal law pre-empts any conflicting state law. Therefore Congress could wipe out much of the progress accomplished by the states on climate change (Engel, 2009)

6.6 California: Transport and Climate Change

Since ARB first tackled air quality issues 40 years ago, much of California's environmental work has focused on addressing the impact of transportation. Since 2002 and the Pavley Bill, California's efforts to reduce transport GHGs have been evident; although the task remains immense.

6.6.1 California's Transport GHG emissions

California's energy emissions have been comparatively low and stable for 30 years (California Energy Commission (CEC), 2011), but transportation emissions have continued to rise. Cars dominate the transportation landscape in California; on-road vehicles are the single-largest sector, accounting for more than a third of all 'demand-side' emissions, (ARB, 2008). Other transportation accounts for only 2% of emissions (*Ibid.)* (Figure 6.3).

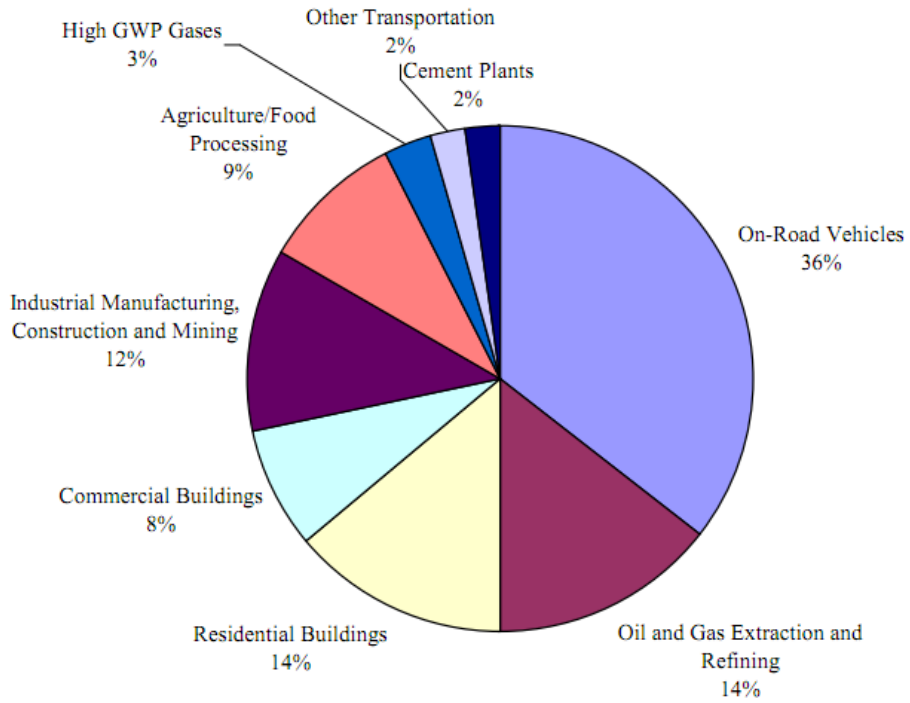


Figure 6.3: California's demand side GHG emissions ($MTCO_2e$) (ARB, 2008)

Latest data suggests that emissions are gradually decreasing – between 2006 and 2008 passenger vehicles experienced a year-on-year reduction. It cannot be confirmed that this is a longer-term trend, rather than a result of the global economic crisis, but these developments are positive.

6.6.2 Responsibility for Transport and Climate Change

Multiple agencies and levels of government contribute to reducing transport emissions in California. ARB is centrally important; it has set vehicle tailpipe standards for decades and was accorded responsibility for early actions on climate change. But buy-in and support from several agencies is fundamental. Section 6.7.7 examines these relationships in the context of SB 375.

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Transportation	171.13	173.71	180.36	178.03	181.71	184.32	184.11	183.84	174.99
On Road	*159.40*	*161.69*	*168.40*	*166.17*	*169.22*	*170.82*	*170.49*	*170.79*	*163.30*
Passenger Vehicles	126.91	129.25	135.43	132.83	134.24	134.51	133.80	133.34	128.51
Heavy Duty Trucks	32.49	32.45	32.97	33.34	34.98	36.31	36.68	37.45	34.79
Ships & Commercial Boats	*3.77*	*3.56*	*3.87*	*4.04*	*4.06*	*4.36*	*4.45*	*4.38*	*4.32*
Aviation (Intrastate)	*2.68*	*2.50*	*2.66*	*2.59*	*2.64*	*2.70*	*2.68*	*2.96*	*2.42*
Rail	*1.86*	*1.87*	*2.48*	*2.41*	*2.89*	*3.32*	*3.50*	*3.15*	*2.52*
Unspecified	*3.41*	*4.08*	*2.94*	*2.81*	*2.90*	*3.11*	*3.00*	*2.56*	*2.44*

Table 6.5: California GHG Inventory 2000-08 ($MTCO_2e$) (ARB, 2010) (Emphasis added)

6.6.3 Reducing Transport Emissions in California

Because nearly 40% of California's emissions come from transportation (74% from passenger vehicles), prioritising emission reduction from this sector is logical. A number of pre-existing institutions have been consolidated alongside new supplementary bills to enable AB 32 implementation as laid out in the Scoping Plan. Figure 6.4 outlines those related to transportation, collectively referred to as the 'three-legged stool': the distinct areas from

which transport emissions can be reduced: a) vehicles; b) fuels; c) land use/VMT. SB 375 is designed to tackle the third leg.

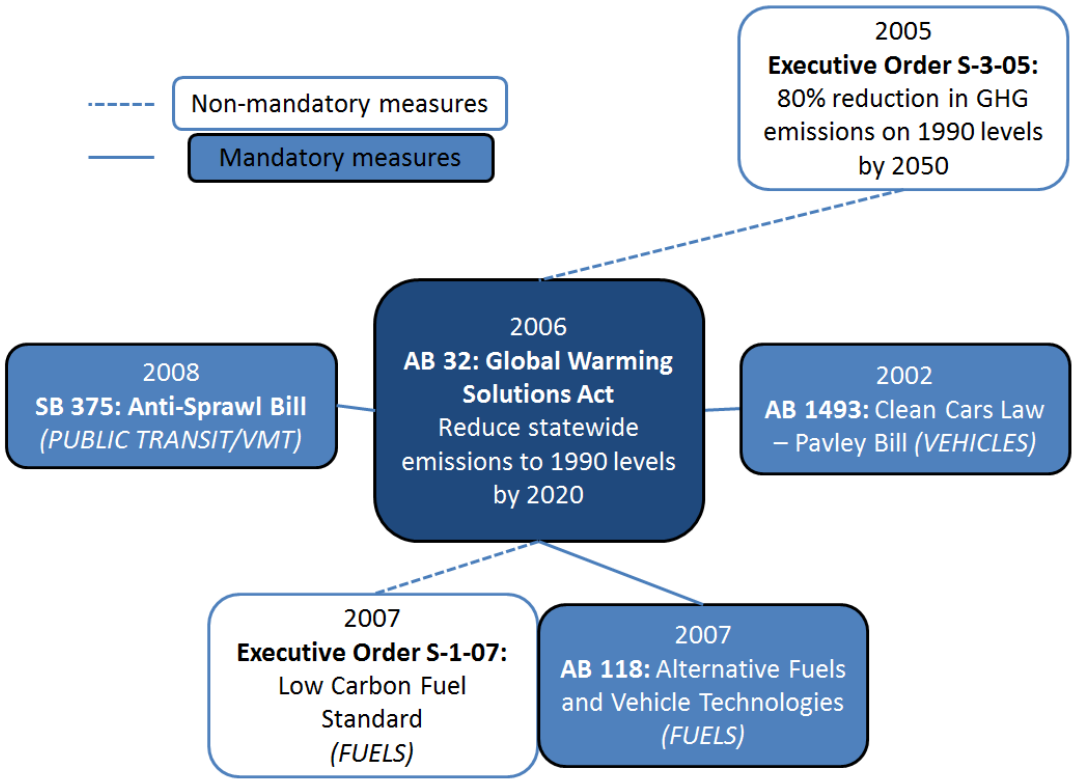


Figure 6.4: California's transport-related climate change institutions (Anderton, 2010)

6.7 SB 375

6.7.1 Background

Initiated as a co-sponsored bill by the CA League of Conservation Voters and Natural Resources Defense Council (Chapter 8), SB 375 was written by Senate president pro tempore Darrell Steinberg and passed by Governor Schwarzenegger in October 2008. Through linking climate change, transportation planning and land use, SB 375 attempts to reduce VMT, increase transit

infrastructure and transit ridership, and promote higher density growth (Office of the Governor, 2008).

SB 375 will reshape neighbourhoods to thwart California's 'car monoculture' (Sperling and Gordon, 2009) and sprawling suburbia. It will deliver five $MTCO_2e$ reductions towards AB 32's 2020 targets (ARB, 2008). Because of the long-term nature of land use planning, this 'leg' has the potential to deliver much larger reductions towards 2035, 2050 and beyond (Anderton, 2010) and through implementing these measures, compared to BAU, emissions will be some 30 $MTCO_2e$ lower in 2050 – although they would still increase on current levels (Figure 6.5).

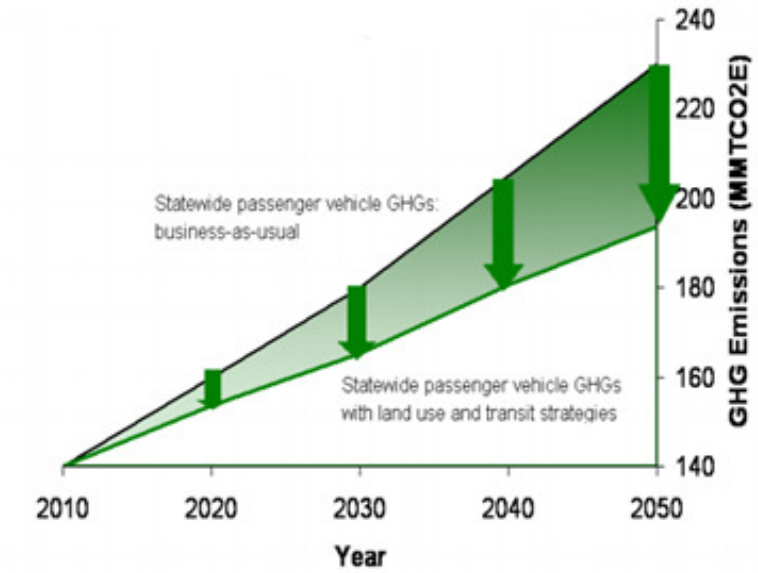


Figure 6.5: Potential impacts of land use and transit strategies on GHG emissions in California (ARB, 2008)

6.7.2 Why VMT?

US suburban sprawl is the result of the ubiquitous automobile (Metz, 2008). In US cities, home and job location are increasingly uncoupled, radial travel from suburb to city centre is less common, trip patterns are more complex and journeys (VMT) longer. Californian VMT increased by more than 3% a year between 1975 and 2004, and over the same period the

state's population grew by less than 2% (CEC, 2008). Measures to reduce VMT are necessary, because any reductions in emissions delivered by the other 'legs' (Figure 6.8) would be negated by state-wide VMT growth. When this is coupled with population increase projections, the imperative to address how people travel is clear (Anderton, 2010). SB 375 changes the mechanisms of MPO/local government transportation funding to consider GHG impacts, applications are successful if emissions reductions can be demonstrated in the duration of a transportation plan. Understanding how SB 375 will operate is fundamentally important, particularly in terms of the scope (section 6.7.5) and process (section 6.7.7) themes. But it is quite a complex arrangement. Figure 6.6 demonstrates how transportation funding is carried out under the current system. Figure 6.6 highlights the major changes to this system under SB 375.

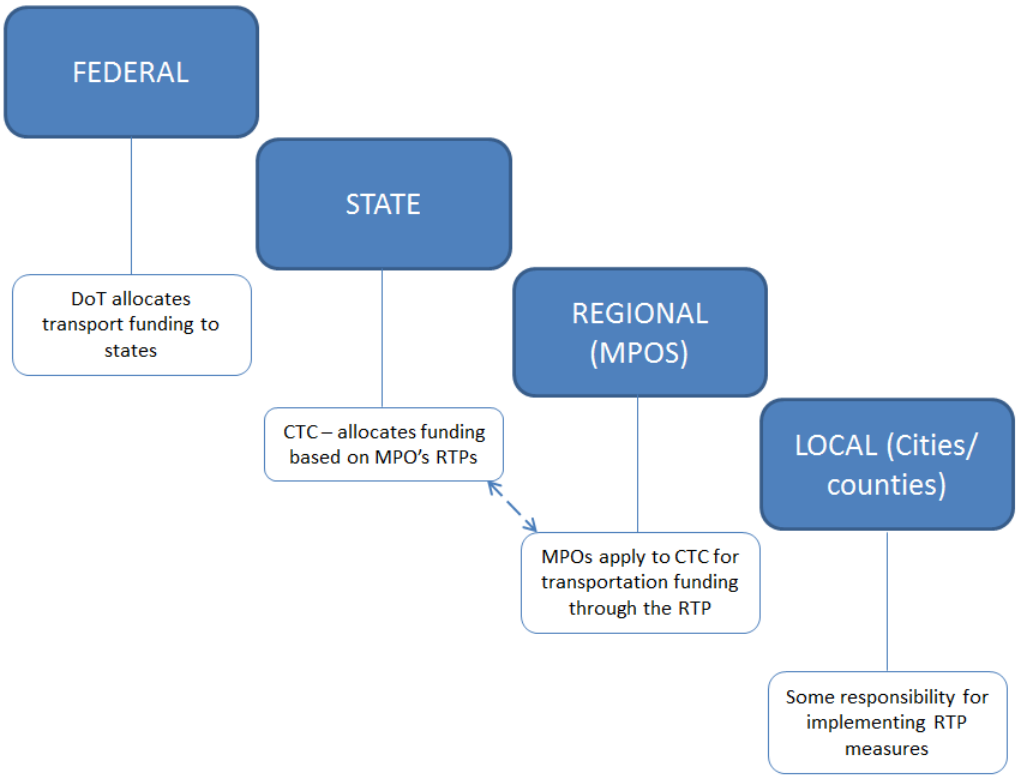


Figure 6.6: California Transportation Funding: Before SB 375 (Anderton, 2010)

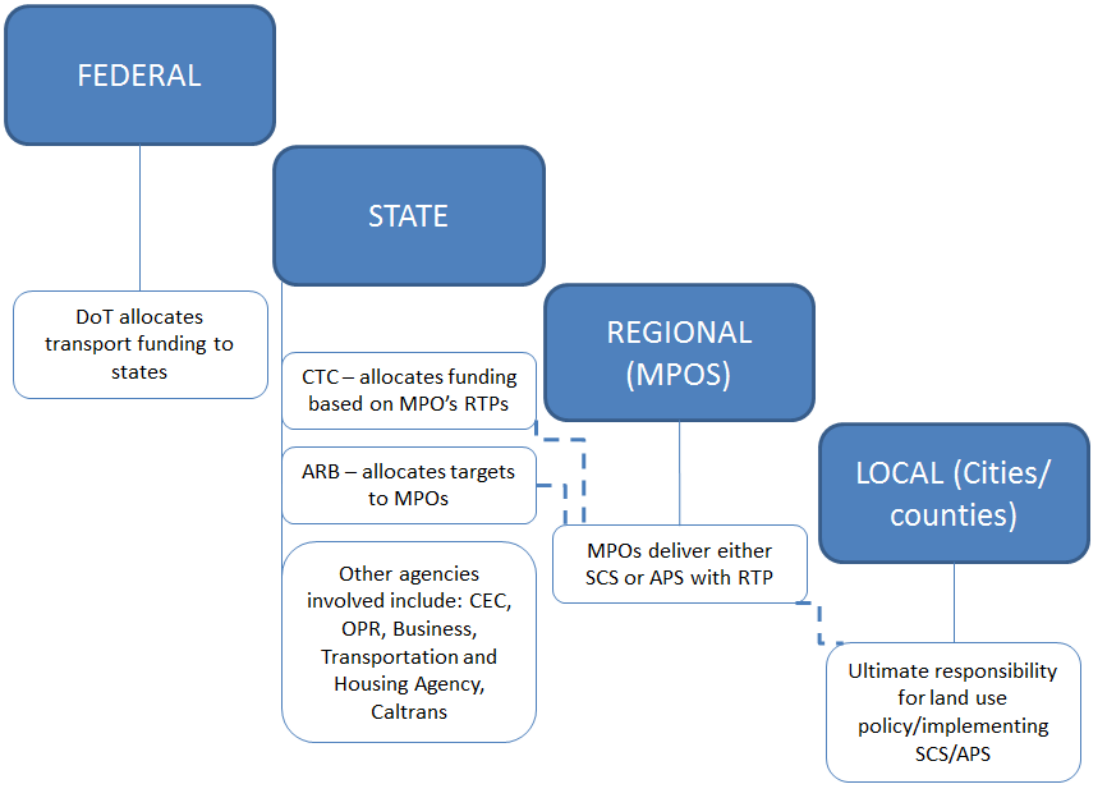


Figure 6.7: SB 375 – Roles and responsibilities (Anderton, 2010)

6.7.3 The research

Fifteen scoping interviews were conducted in November 2008 to help determine the research focus. Many participants cited SB 375 as a new, innovative and interesting development to investigate. Primary interviews were conducted between March and July 2009. Some interviewees participated in both scoping and primary interviews; others closely linked to or involved in implementing SB 375 were also selected.

More than 20 interviewees participated, but the 20 interviews offering the most relevant information were selected for analysis. Sample questions can be found in Appendix 6.B. Figure 6.8 shows the breakdown of participants by sector.

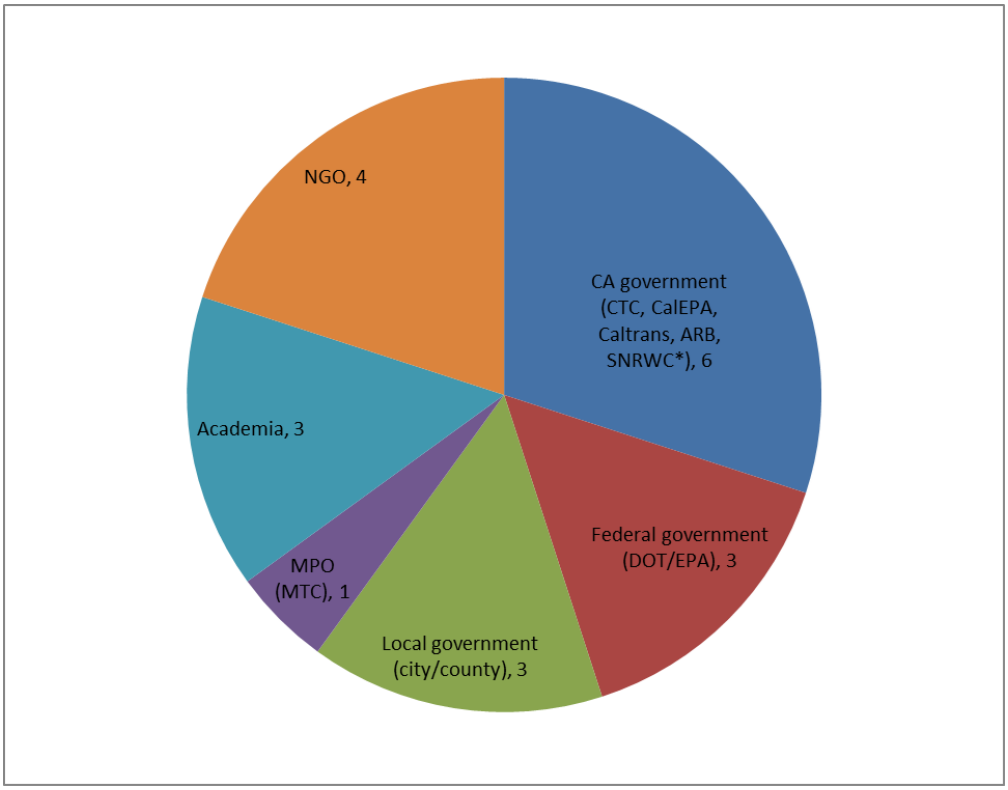


Figure 6.8: Interview participants by sector (*Senate Natural Resources and Water Committee)

Of the California government participants, two were from ARB and one interviewee from CTC, CalEPA, and Caltrans also participated. A member of Senator Steinberg's staff from SNRWC also contributed. Two MPOs – SACOG (Sacramento) and MTC (Bay Area) were initially consulted, although only MTC was used for analysis. Participants from Sonoma County, San Francisco and Los Angeles offered local government perspectives – from diverse geographic locations in the state. At the US level, two participants from EPA and one from DOT. Not all questions were answered by all participants and some answered additional questions – since the interviews were semi-structured (Chapter 3).

6.7.4 Theme: Scale

> *"There's definite infringing on local government authority. I think for a good purpose, I know the Air Resources Board is not trying to do that, just the nature of what needs to be done does intersect with local authority. And I don't know that there is another way to make it happen, because if we leave it up to each jurisdiction's discretion, we may not meet those targets. So it's somewhat out of necessity, but there is some overstepping of the traditional bounds."* Participant, Local government

Questions relating to scale broadly fall into two areas. Firstly, investigating interaction between levels of government in terms of where responsibility for transport, climate change and specifically SB 375 lies. Given the complexity of SB 375's mechanisms (Figures 6.10/6.11), specific roles of departments and levels of government in implementing the bill were examined. There is much crossover with process here, with questions relating to SB 375 implementation mechanisms under the process (section 6.7.7). Scale questions are grouped as follows:

- Where does responsibility for the transport infrastructure in California lie?
- Communication links between state/local governments?
- Are Californian interventions constrained/influenced by the federal government?
- Can California influence national policy?

6.7.4.1 Where does responsibility for the transport infrastructure lie?

Six respondents offered answers very broad in scope (Table 6.6). Most participants highlighted roles for each level of government, demonstrating interaction/interdependency across scale. Financing and road-building are activities mentioned across sectors – suggesting many participants consider transportation in its conventional predict-and-provide sense. Only two participants (both from federal level) discussed how dealing with emissions reductions from transport would be managed.

Participant	Federal	State	Regional	Local	Comments
ARB	FHWA: Interstate highway, with Caltrans	Caltrans: state highway Interstate highway with FHWA Partnerships with local government	MPOs: discretion over regionally-significant projects	Partnerships with Caltrans Local road system	Many projects funded by sources across levels: federal, state, regional and local
Academic	-	Intercity freeway	MPOs: regional budgets and planning	Propose projects to regional level Local road responsibilities: maintenance	-
NGO	Federal spending: distributed to the states	Augment federal action with additional spending	-	Augment federal action with additional spending	-
DOT	Shared: EPA – national emission reduction targets DOT – work with state DOTs and MPOs	Work with DOT and MPOs on planning and strategy – meet reduction targets	Work with federal and state DOTs on planning and strategy – meet reduction targets	-	US DOT responsibility and leadership role
EPA	DOT has Corporate Average Fuel Economy responsibilities EPA – responsibility under CAA	-	-	-	-
NGO	Provides bulk of the funding	Projects, changes, improvements	-	Projects, changes, improvements	Coordination challenges Federal government holds purse strings, control a bit how infrastructure improvement comes

Table 6.6: Where does responsibility for the transport infrastructure lie?

The majority did not see an opportunity to contemplate how low carbon transportation will be delivered; this demonstrates that reflecting the need for institutional change may not be

considered a priority in this context. Responses however demonstrate that functional interplay on transport policy exists across levels.

6.7.4.2 Communication links between state and local governments?

Participants were asked to comment generally about interaction between state and local government. Nine responded all bar one from government (federal, state, regional or local). One participant articulated that state/local interaction had been limited in the past, but that interaction was now occurring. Others that there was some potential to improve links, but that that this was happening yet:

> *"I don't think that climate change has changed our working relationship with state agencies very much. Because state agencies tend to be pretty compartmentalised, [...] now that could change in terms of the regulations that ARB is developing to implement AB 32, but that remains to be seen."* Pete Parkinson, Sonoma County

The relationships between state agencies are revisited in section 6.7.5. Whilst there was general agreement that communication links existed, there were mixed responses about their purpose and function. The most common response was that there was a 'marriage of necessity' between the governments:

> *"…the state mandates a lot of things, and the locals really feel like they're just being told what to do without being given the resources to do it."* Participant, CalEPA

Numerous participants suggested that the relationship was centred on local government reliance on the state for funding. The state was seen as reluctant for cities/counties to actively contribute to state policy processes, to listen to or involve the states.

One participant highlighted the impact that particular individuals (section 6.6.6) have in facilitating specific communication:

> *"The ARB Director, Mary Nichols, is a former Commissioner at our department and we have a good relationship with her […] She doesn't always agree with what we ask […]*

she knows the issues that we face here. And Air Resources Board staff have been quite open when we've tried to get additional information or asked for assistance."
Participant, Los Angeles Department of Water and Power (LADWP)

Additional comments were made about the importance of staff-to-staff relationships across and between local and state levels, although relationships were deemed closer between high level representatives.

This evidence suggests that whilst formal, functional links exist here between the levels of government, true collaboration is yet to be instilled across the levels. Figure 6.11 highlighted that SB 375 necessitates collaboration, so these connections need to be made. Section 6.7.7 examines this co-working in more detail.

6.7.4.3 Is California constrained by the federal government?

In the nine responses, most participants referred to climate change context. Figure 6.9 groups the main ideas. Almost half suggested the federal government's role is limited:

"the communication itself can be weak at times unless there is a push […] a lot of the push for the communications comes more from the state level" Participant, NGO

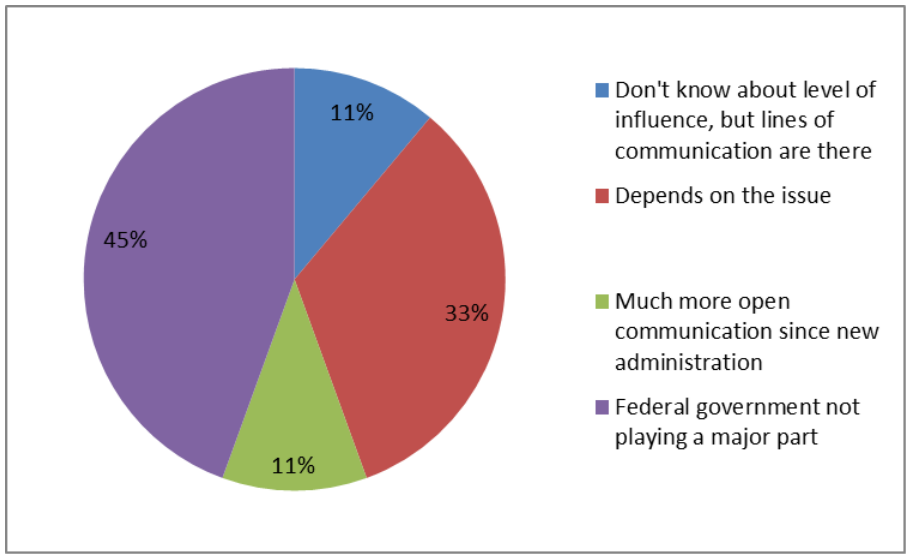


Figure 6.9: State/federal government communication links

The states' lead on climate change policy over the last decade suggests that they are not constrained by the federal government. One participant suggested that the states have *"a window of almost unlimited freedom"* (Participant, NGO) on climate change. Another stated that: *"right now the federal government is catching up on the climate issue, as opposed to dictating to the states"* (Participant, Academic). Others suggested that this 'window' is limited and that whilst the states aren't constrained presently, the federal government will eventually influence state climate change policy:

> *"On cap-and-trade, it's relatively likely the federal government will just do it and say, that's it. […] On other complementary measures and regulations, it's more likely that there'll be a role carved out for states, but it's not at all guaranteed. There are a lot of people who would just as soon say, "Ok we have one federal program and that's it""*
> Participant, ARB

6.7.4.4 Does the state have the ability to influence national policy?

Some participants saw that California's influence had been felt for some time federally (section 6.7.6). Of the nine respondents, eight said yes; most offered additional information (Table 6.7).

Participant	**Comment**
Academic	States generally [will be able to influence national policy], California more so because it's bigger
SNRWC	Given the California appointments to the Obama administration, California will be well-represented and well-served on climate and energy issues
CalEPA	There's going to be a good deal of push from a number of sides, to sort of respect states' rights on certain issues, and to give the states flexibility
NGO	California has a role to play in setting a standard upon which regulation is based in other states
NGO	The most effective national laws are the ones that have come through the states and localities because they have gone through testing and consensus building. And so the US is typically a bottom-up model for most areas. There are incredible numbers of different examples of that.
DOT	Especially on climate change, because some states have been true leaders, taken the issue seriously and been quite innovative under these constraints from the federal government
NGO	The auction process […] under the Regional Greenhouse Gas Initiative program […] used at the federal level in terms of the Waxman-Markey bill. So that's a direct example of state policy being used at the federal level

Table 6.7: California influence over national policy?

> *"I don't see it constraining, I see it influencing […] for the last decade the state and locals have been a kind of the incubators for our climate change policy. And I think the federal government is looking at all these great innovative things that happened […] saying "what can we apply on the national level?"* Participant, DOT

These comments illustrate that the states and California in particular (section 6.7.6) have an influence over federal decision making in climate change, and other policy areas. This influence is political – appointing Californian policymakers to the US government, but also functional – particular state policies framing federal responses. The remaining participant questioned whether this influence would endure in the new administration:

> *"I think that's going to change – it's going to be much more a push and a pull now, presuming that they listen to us at all."* (Participant, ARB)

So whilst political interplay exists between state and federal officials, there is no guarantee that this information and guidance will be acted upon. These comments are similar to those expressed by local governments about the state – that whilst lower levels can feed suggestions 'up', discretion lies with higher echelons to utilise such resources.

6.7.4.5 Other scale-related information

Context is important, as most interaction depends on specifics. With regard to SB 375, the capacity of certain MPOs to deliver the requirements of the bill was highlighted (section 6.7.7). Capacity to act will be compared across cases in Chapter 8. Another topic that heavily featured is the jurisdiction of local governments to deal with land use. This crucially important consideration is examined in depth in section 6.7.7.

The role (and importance) of coalitions – of state (Regional Greenhouse Gas Initiative and Western Climate Initiative were both mentioned) and local (green cities, for example) governments – to influence federal policy; but also of coalitions to facilitate collaboration

within government – in the context of SB 375 were highlighted. They appear to be effective and increasingly common and could indicate the new types of policymaking referred to in Chapter 2.

Interagency collaboration was drawn on frequently in this section. It is emerging at the state level, but needs to be recognised at all levels. Numerous participants referenced to the need for coordination at the highest level – in the White House; such collaboration needs to be driven from the top and integrated into planning practices in order to be effective.

6.7.5 Theme: Scope

> *"…This is also the first bill […] that links transportation dollars, greenhouse gas emission reductions and future housing development with a climate backdrop. Each of these areas in California and probably elsewhere are very difficult individually, and to have a bill that touches on all these issues at the same time is unbelievably difficult."* Participant, SNRWC

The first part of this theme links closely with the scale theme (section 6.7.4), examining interagency collaboration between transport and climate change portfolios in California and whether the current set-up is the most effective in the long-term. It goes on to ascertain the importance of reducing transport emissions and where SB 375 fits with other activities in this area. Lines of discussion specific to SB 375's implementation are revisited in section 6.7.7. As such, scope questions were broadly grouped as follows:

- How much cross-agency collaboration happens in California?
- Does California need a central climate change agency?
- Is transport a priority area for emission reduction in California? Should it be prioritised?
- Should transport emission reductions be proportional?
- Is SB 375 an intervention to reduce GHG emissions?

6.7.5.1 Interagency collaboration

Box 6.1 highlighted California's intentions to integrate climate change across its bureaucracy. Participants were asked whether this integration is occurring. Respondents concurred that there has always been some degree of communication between agencies in California. Several participants suggested that the interaction needed to implement AB 32/SB 375 was different and more wide-spread. Others suggested that whilst the need for collaboration was acknowledged, it was not being realised through interagency connections. Some agencies are seen to work better with others; respondents commented that transportation was a challenging area for collaboration, since traditional roles are well-established:

> *"There's a fair amount of cross-organizational coordination, it's just historically land use and transportation, and air quality and environment have all been the purview of different entities, so it's still hard to coordinate the actions that are ultimately up to elected officials who are accountable to constituents who don't always agree."* Participant, Academic

Agreement was referenced repeatedly as barrier to successful collaboration:

> *"We're effective at communicating; we're just not always effective at agreeing. Yes, there's tension."* Participant, EPA (refers to federal level)

Rhetoric of collaboration – either agencies stating that communication occurs, yet it does not, or superficial interaction, with BAU for each agency enduring – was discussed, again highlighting reluctance towards interdependence. One participant suggested unless interaction stretched to the highest (Commissioner/Board) level, it is not real collaboration. Whilst there is some evidence of functional horizontal interplay in California, commitment to changing relationships and deeper engagement is missing.

6.7.5.2 Adequate government structures?

Participants were asked whether implementing climate change policy through existing agencies and organisations was sufficient.

Although not directly posited around SB 375, some responses refer to the bill. Unlike other case studies, where there was a degree of uncertainty about where overall responsibility for climate change lies, in California ARB's role is clear. The questions discuss therefore whether this arrangement is optimal – ARB is a minnow in contrast to other agencies, like Caltrans and therefore has little authority over them. Of the 12 respondents, only one thought ARB is capable to oversee climate change policy (Figure 6.10). Three suggested structure is not the problem, with two highlighting weak incentives as a bigger barrier (section 6.8). Although changes are necessary longer-term, because California frequently adapts its existing structures, this conceived as possible. Per section 6.7.5.1, restructuring was considered unnecessary if interagency collaboration is employed.

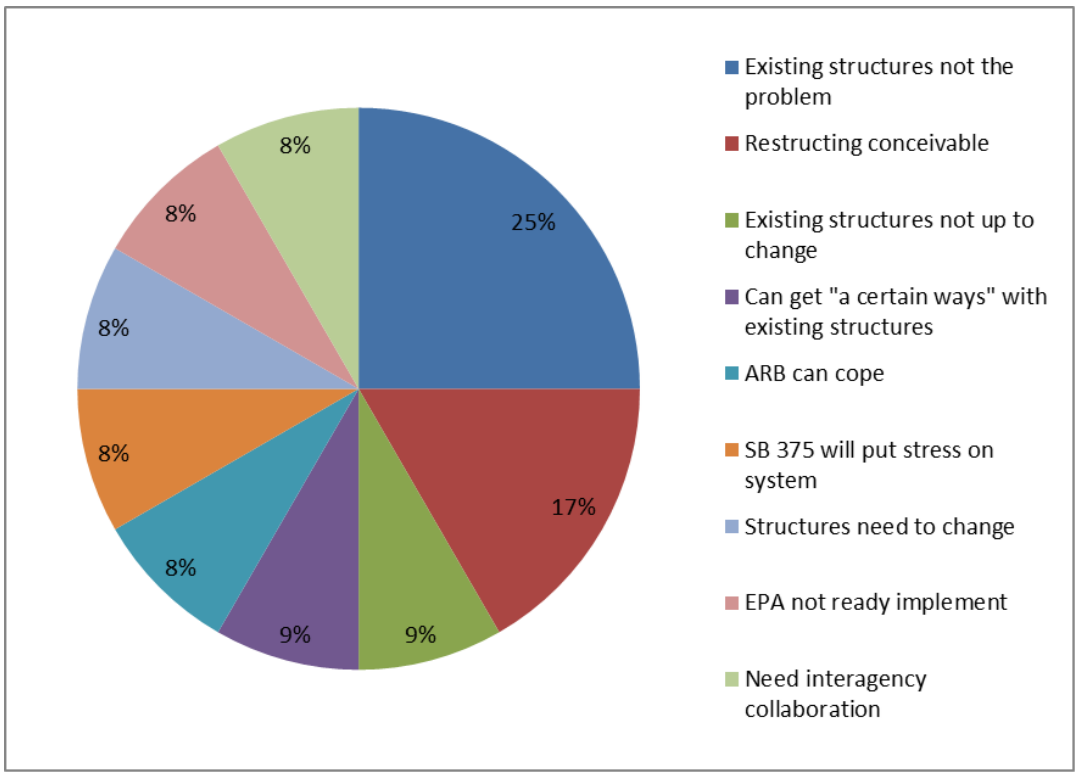


Figure 6.10: Are existing government structures adequate?

With regards specifically to SB 375 – it was commented that:

> *"The SB 375 process definitely adds stress to the system; in many parts of the state the MPOs are relatively weak […] the law puts a major burden on the MPOs."* Participant, Academia

Whilst state agencies can cope, perhaps implementing SB 375 is difficult the regions (relates to scale – section 6.7.4; also 6.7.7). Local government capacity is investigated in Chapter 8.

One interviewee stated: *"AB 32 creates dialogue - no new authority".* To examine this idea, participants were asked if California needs a central climate change agency. Nine participants responded; the most commonly-expressed view was that between CalEPA and ARB, the state already has one. SGC was seen as a means of involving the major agencies, described as a *"multi-agency approach to achieving our climate goals."* (Participant, SNRWC). SGC examines infrastructure spend and ensures expenditure in accordance with AB 32/SB 375.

As with Scotland, government budgets are being aligned with climate policy (Chapter 8). Indeed, more general interagency coordination was advocated over restructuring (Chapter 8 discusses climate change 'mainstreaming'). One participant suggested that according CAT more formal responsibility would circumvent the need for a distinct agency. Linked to the strategy-action deficit discussed in other cases, enforcement of existing measures is seen as more important than new agencies.

Two participants from the federal level saw a need for a 'central' (US) climate change agency. As ARB oversees California's climate policy, the feasibility of replication was discussed, because no other state is permitted to establish an equivalent (Chapter 8).

6.7.5.3 Is transport an important area for emission reduction in California?

All 11 respondents agreed that transport was an important area for emission reduction; although offered different reasons for this. One participant suggested that because transport

had been a focus area for ARB historically, it made sense for the organisation to continue to address it with regards to climate change. Six participants identified the sector's 40% contribution to total emissions as the reason to prioritise.

6.7.5.4 Should emissions reductions from transport be proportional?

Eleven participants offered very diverse responses (Figure 6.11). As demonstrated, whilst there was unanimous support for prioritising emissions reductions from the transport sector, there is much less clarity about the optimal approach.

Achieving emissions reductions proportional to the impact of the sector is very challenging. Several participants stated that transport emissions are likely to be tackled "later", "over time" or "in the long-term"; that because it will not be cost effective, or because it will face resistance, addressing the sector's emissions should be "put off" in order to deal with the easier challenges first. It appears that despite the commitments made in California several interviewees were uncertain about the ability and timescale to achieve the reductions laid out in the Scoping Plan (section 6.7.7).

6.7.5.5 Why is addressing land use significant in emission reduction?

Fourteen participants responded to this. Many comments referred land use being the 'root cause' of transportation emissions, that because it affects usage, better planning will ensure that reductions made in other sectors are not negated by current land use practices promoting VMT increase (section 6.7.5.6). The need for a long-term approach was acknowledged, as was the potential for other benefits to be realised through implementing the bill – solutions that will not be delivered through the other 'legs of the stool'.

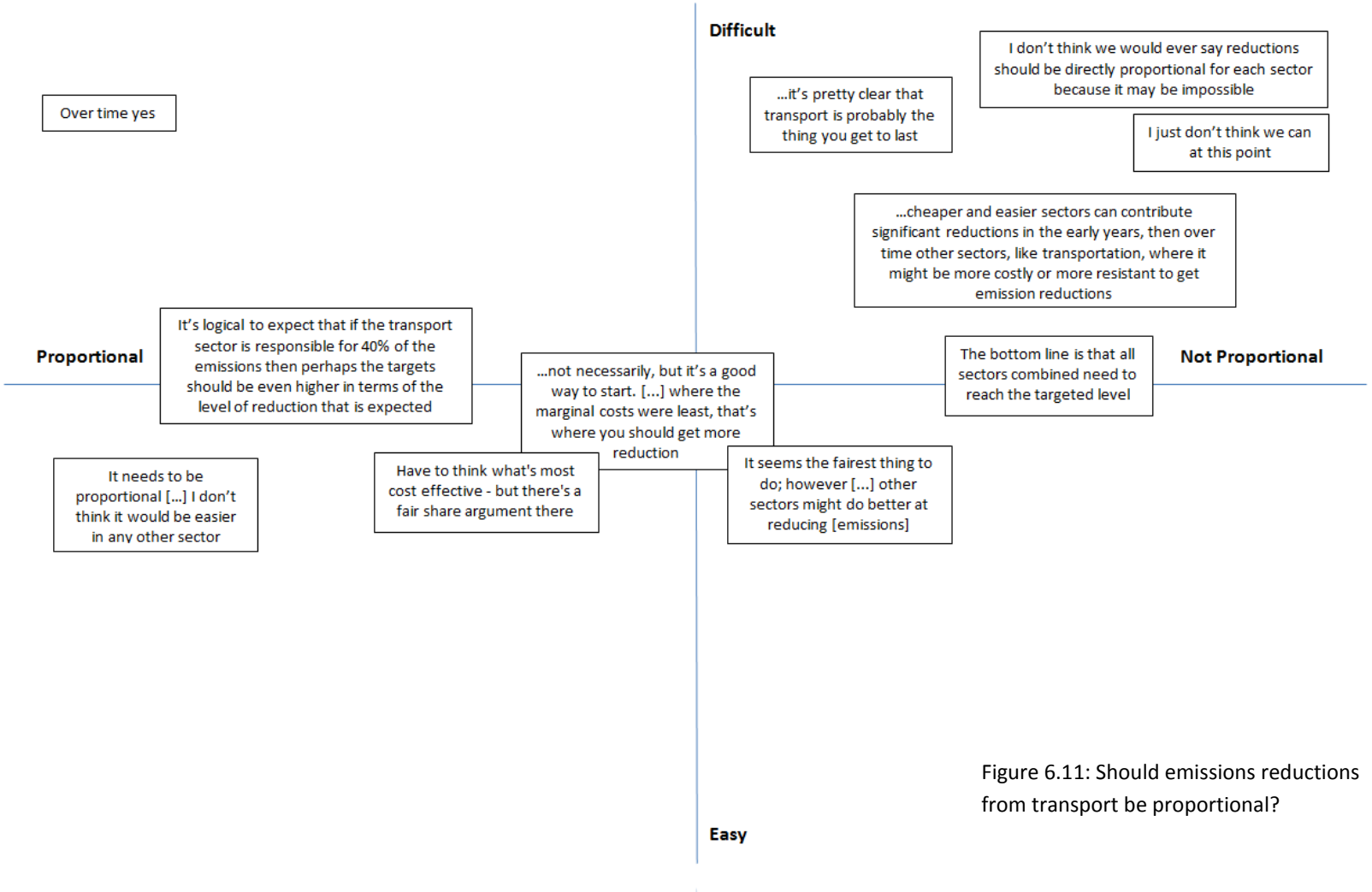


Figure 6.11: Should emissions reductions from transport be proportional?

6.7.5.6 Is SB 375 an intervention to reduce GHG emissions?

Over 75% of the 13 respondents explicitly stated SB 375 is a measure to address climate change and deliver emission reductions. The remaining respondents suggested it is measure to facilitate the implementation of AB 32 – a climate change bill – therefore implying that this is the primary objective. In addition, several participants offered details as to the co-benefits of the bill (Table 6.8).

Participant	**Co-benefits**
CTC	Changing societal perceptions
ARB	Integrate land use, transportation and air quality planning
CalEPA	Other things - sustainable communities. But it's really hanging its hat on GHG reductions
Caltrans	More compact land use will reduce sprawl; growth on […] city fringes. Health impacts; overall air quality benefits if you reduce VMT. Some ozone/ particulate matter benefits as well
Local government	Walkable communities, increased health, air quality and local economic vitality. But its whole impetus, the way you're measuring it, the way it's enforced is by emissions
NGO	Air quality, open space, economic growth/sustainable economic prosperity, quality of life
DOT	Integrate planning processes/land use strategies; housing, transportation, environmental planning processes that traditionally haven't occurred

Table 6.8: Co-benefits of SB 375

There are some common objectives cited here – air quality, improved health – but unlike some of the case studies, emission reduction and addressing climate change are clearly the central objective (Chapter 8).

6.7.5.7 Other scope-related information – targets

6.7.5.7.1 Is 2020 target achievable?

Participants were asked whether the 2020 target was achievable. No participants thought it was unattainable – 50% of participants thought that it *could* be achieved. However, some participants doubted that California *would* achieve the reduction by 2020:

> *"Achievable, yes; will it be achieved? Not at the current rate of emission reductions. [...] If we are successful in changing business as usual, we have a much better chance of hitting our 2035 target.* Participant, SNRWC

Lack of political will and competing interests were seen as barriers to achieving the target (section 6.8). It was suggested that whilst mechanisms are in place, targets will be pushed back – which indicated strategy-action deficit could also be a factor in California (Chapter 8).

Other respondents were more confident, in part because ARB may have weakened its ambition (section 6.7.6):

> *"I think CARB is intentionally maybe been somewhat conservative in its estimates of what is possible from each sector, in order that we hopefully surpass the 174. So we've got a good plan in place and I'm fairly confident that we will achieve the 2020 targets."* Participant, NGO

6.7.5.7.2 Will SB 375 contribute to the 2020 target?

As nine references were made during the interviews to the long-term nature of addressing land use and changing development patterns, it was important to ascertain whether participants saw that SB 375 would contribute to 2020 emission reductions. It is projected to achieve some 5MTCO_2e reductions by 2020, more than half of the 11 participants stated that it would likely only contribute towards the long-term target.

> *"There are certainly things within land use and transportation strategies that are not all development-focused that could begin to be seen within the 2020 timeframe. Certainly with those kinds of long-term strategies the benefits of implementing them now increase over time. So in the Scoping Plan we articulated the land use and transportation piece in 2020 could see a doubling of the benefits by 2035 and beyond."* Participant, ARB

Only three respondents suggested that emissions reductions would be seen in the next decade – parking policy, transit and new developments were cited as areas reductions could be achieved (section 6.7.6/6.7.7). Furthermore, five participants identified where the largest reductions (from the Scoping Plan) would come from:

- Energy efficiency (2)
- Gasoline prices (1)
- Pavley Bill (1)
- Multi-pronged approach (1)

The inclusion of energy efficiency may denote that even though energy emissions contribute less to California's inventory than transportation, they are still prioritised in the short-term, which supports the claim that a significant barrier to addressing transport emissions is the perceived difficulty of the task (Chapter 2). California's potential to deliver its targets has been thoroughly investigated here. The ambition of these targets is one point considered in the leadership/power theme.

6.7.6 Theme: Leadership/power

> *"*The California government and the Schwarzenegger administration have been very aggressive and very effective in their climate change policy.*"* Participant, DOT

In section 6.1 California's intention to lead was made clear by the Governor's SB 375 announcement. This section addresses the multi-faceted theme of leadership. The primary objective of asking leadership-related questions was to ascertain whether California's efforts to address climate change are exemplary. The questions were broadly grouped:

- California has committed to be a 'leader' on climate change – how does this present itself?
- Has the Governor's leadership on the issue been significant?
- Where is climate change on the Californian agenda?
- Will California continue to 'lead' if/when a federal climate change response is implemented?

6.7.6.1 California's climate change leadership

The 14 respondents had different ideas about California's climate change leadership (Figure 6.12). Some participants offered more than one idea.

> *"There is a genuine interest within the state to be a leader on the issue, both within its legislature and its executive branch. But that doesn't automatically enable it to lead everywhere. It has been able to lead in certain areas and not so much in others."* Participant, NGO

Only one person felt California was not leading. Some common areas were identified.

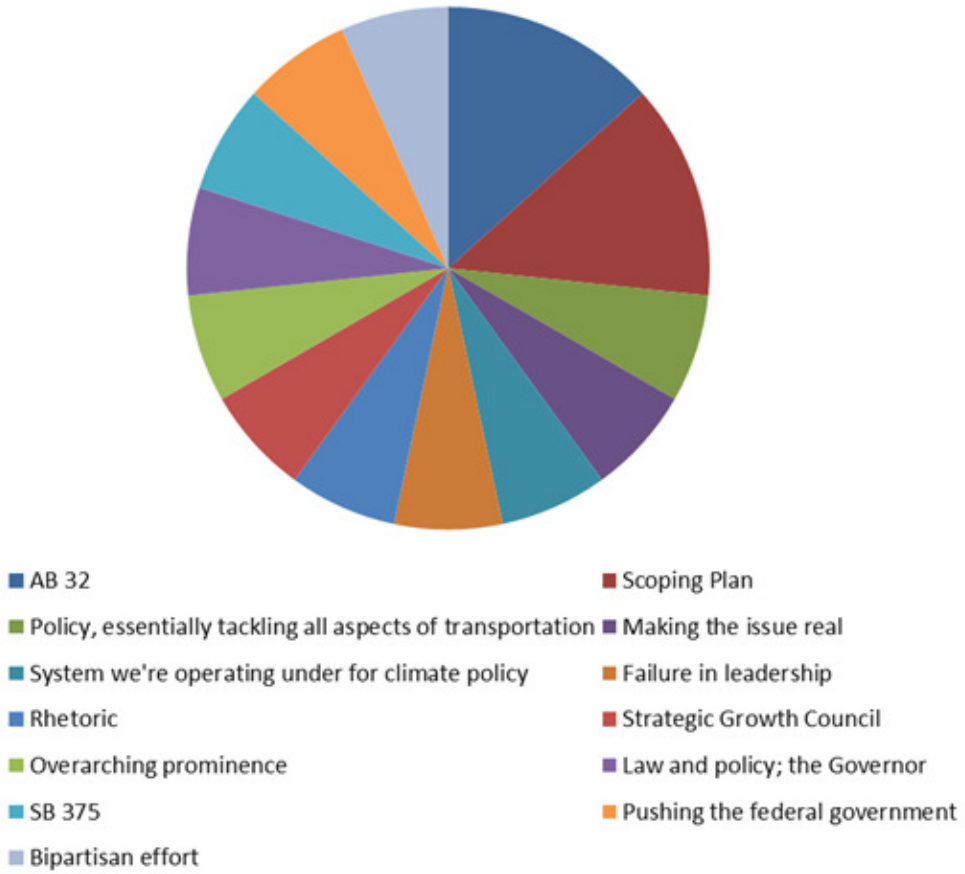


Figure 6.12: California's climate change leadership

The **law and policy** that the state has enacted was identified as a key area by five individuals (with AB 32 and the Scoping Plan accounting for 25% of responses), one participant mentioned SB 375. Similarly the **'visibility'** of the issue was referred to by three interviewees. Rhetoric in the sense used here was seen as positive, unlike its negative connotations some other cases. The **mechanisms and systems** were also highlighted. Influencing the federal government was mentioned (section 6.7.4). One person cited the Governor's leadership; another pointed out that as a Republican, he was able to promote bipartisan support for climate action, which has been challenging in other jurisdictions. Participants were subsequently asked how important the Governor's leadership has been.

6.7.6.2 Has the Governor's leadership been significant?

With statements like *"Washington is asleep at the wheel […] we know we can't count on leadership there."* (SF Gate, 2008), Governor Schwarzenegger made his intentions to lead on climate change clear. He has *"occupied the national limelight on climate change by being the boldest state politician"* (Engel, 2009). Nine respondents discussed the Governor's leadership, none considered this role insignificant and comments offered were mainly positive. One participant suggested that the Governor was pressured at times not to advance climate legislation, but his resilience demonstrated leadership:

> *"The Governor was under a lot of pressure not to sign [SB 375], but he did, so he gets a lot of credit. And I have to say; now the administration at the top ranks has fully embraced SB 375."* Participant, SNRWC

In addition two interviewees mentioned Governor Schwarzenegger's use of the "bully pulpit" to disseminate messages about climate change. However, some criticisms were levelled about specific decisions. Particularly the inconsistency between SB 375's aims and the removal of transit funding (Box 6.2) California's leadership could therefore be questioned; whilst making policy designed to reduce emissions, the Governor is removing necessary tools to deliver.

"*Here's the governor cutting transit at the same time that he is a supporter of AB32, this is nothing short of insane. You can't be both – period.*" David Schonbrunn

"*The state cannot with one hand be telling us we all need to reduce greenhouse gas emissions and then with the other withdraw transit funding or approve infrastructure projects without any regard to greenhouse gas emissions. The state's got to become a partner and not just a regulator. And they're so far from being that it's almost laughable."* Steve Heminger, MTC

"*We're going to rely heavily on public transit to provide needed alternatives, yet the state is reducing its support for public transit, that's a major concern*" Participant, NGO

"*If our economic climate was different and there was a lot of money available for transit, that could really change things more rapidly, but I just don't see that happening."* Pete Parkinson

Box 6.2: Selected reflections on the transit funding withdrawal

This area aside, there was general agreement that the Governor has progressed climate policy. In fact, the Governor's actions typify elements of the 'daring' leadership Scholten et al., (2009) postulate – and is perhaps the only example in this research (Chapters 2 and 8).

> *"The Governor has played an important symbolic role, in some places more as a bystander as opposed to a leader, but the fact that Governor Schwarzenegger has put his administration on the side of generally doing more related to climate has had a significant influence on the process."* Participant, Academia

Some participants suggest other individuals within California's regime are also playing significant roles.

6.7.6.3 Other leadership figures

Throughout the interviews, SB 375 author Darrell Steinberg was mentioned three times – described as *"very personally involved and engaged", "a very good legislator*" and *"clearly brilliant".* Similarly Mary Nichols, ARB Director was referenced twice and described as *"very indispensible".*

The researcher noticed whilst in California that Anne Hancock, leader of Sonoma County's climate protection program is frequently mentioned as a guiding force for local climate action. Sonoma is regarded as somewhat of a leader at this scale. She was also cited in the research. This evidence highlights that buy-in and encouragement from strategically-important stakeholders across levels and roles are as important as elite leadership – both necessary to maintain progress (Chapter 8).

6.7.6.4 Leading MPOs

Some participants suggested that certain regional and local governments in California are also considered leaders. Select MPOs began implementing '*Blueprints*' in the years preceding SB 375, with a view that they could build expertise and understanding of 'smart growth'. Sacramento Area Council of Governments (SACOG), in particular, was identified:

> *"Sacramento has done some really extraordinary work. […] I have a lot of respect for that outfit [SACOG] and the planning and modelling they've done."* David Schonbrunn

6.7.6.5 Where is climate change on the Californian agenda?

Participants were asked how important addressing climate change is in California. Seven participants provided responses (Figure 6.13). No interviewee placed climate change at the top of the agenda.

"When we were passing the Scoping Plan it felt like it was front and centre. That was directly before the financial crisis […] which continues to draw attention away from our program." Participant, ARB

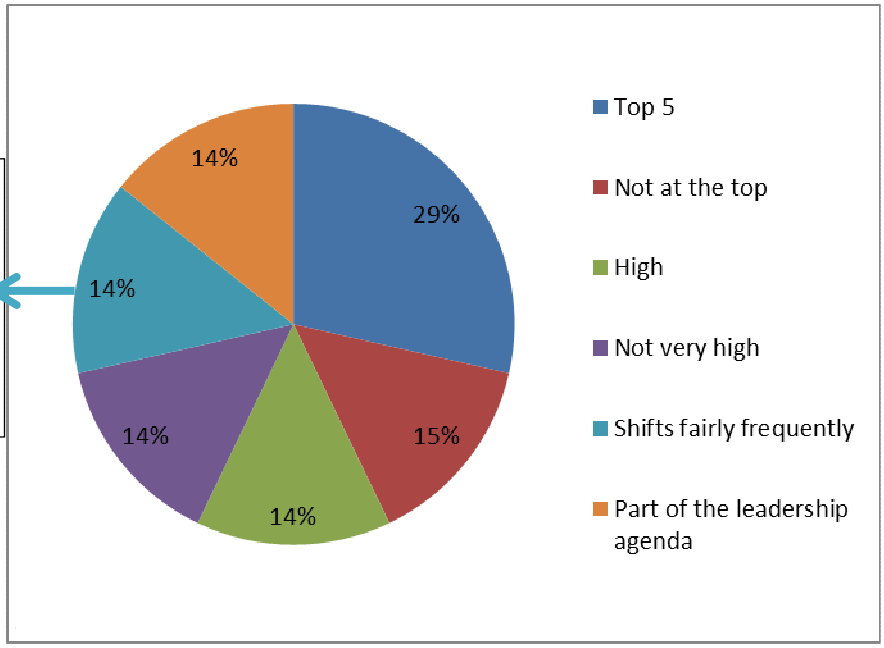


Figure 6.13: Where is climate change on the Californian agenda?

The most common response was that it was in the top five issues. Climate change was seen as the most prominent environmental issue on the agenda, but a number of other 'mainstream' issues would precede it. A distinction was also made between where it would be on the public's list vs. the political agenda, suggesting that the government needs to engage with the public more on the issue. Suggestions about issues at the top of the agenda are presented in Table 6.9, although most refer to the US, not Californian context.

Participant	**Top of the Agenda**
SNRWC	Job creation, housing, healthcare, education, prisons, budget
DOT (US perspective)	Economy, war, social security, healthcare
NGO (US perspective)	Foreign policy, healthcare
NGO (US perspective)	Healthcare

Table 6.9: Top of the agenda?

Social issues are more prominent in this case, with healthcare mentioned by all participants.[42] Economy was only mentioned twice, which is interesting because several participants suggested that climate change would be prioritised, but for the economic crisis.

6.7.6.6 Will California continue to 'lead'?

Ten interviewees discussed whether California would continue to progress on climate policy in the advent of a federal response (section 6.7.7). Some 70% confirmed that the state would continue to lead. California's reputation for ambitious policymaking is clear from these expressions.

6.7.6.7 Other leadership-related information – targets

Participants were asked whether mandating the 2050 target would have been preferable – as long-range targets could demonstrate leadership. There was no agreement, although most participants believed it would have been a positive step. AB 32 would not have passed if it included this target – i.e. politically it was not favourable and incompatible with political timelines (Chapter 8). In light of this, leadership could be called into question, as other cases have mandated 2050 targets. Some respondents stated that the current approach is better – 'getting started' is more important than target-setting (section 6.7.7).

Participants were also asked whether the 2050 target could be achieved. Only two thought it was attainable. California is acting and in some areas quicker than others, but there still seems some way to go in California to close the strategy-action deficit gap – commitment to

[42] Potentially because this was a 'big ticket' item for the Obama administration which has also experienced much contestation in Washington D.C.. But healthcare is much more visible than climate change, so receives more attention.

achieving the Executive Order target is missing, only certain policies consider it and few people think it is possible.

6.7.6.8 'Going first'

The idea that leadership is demonstrated through the act of 'going first' emerged throughout the research. This may be a valid idea, California may not take the 'best' action or achieve the most, but oftentimes, it is the first state to initiate an area of work, or policy (Chapter 8). As explained by one participant:

> *"I've heard from various state folks […] the ABC – 'Anyone But California' rule of examples. […] Part of leadership is having followers and California certainly has that and there are certainly other states that emulate in some way, if not directly, what California is doing. There are other states that want to know that someone who's not so different as California has also done something before they are interested in trying."* Participant, EPA

Conversely, the point was made that in a lot of circumstances, California was not first to act, but gained most exposure:

> *"California gets a lot of attention, and California has been an activist state, particularly under Governor Schwarzenegger, and the combination of those two; and rightfully so, get a lot of headlines. On the other hand, when you look at the actions taken by other states […]California was not first, however California stepped forward, Governor Schwarzenegger came in, and EPA secretary Terry Tamminen, and they wasted no time in wanting California to do as much as they possibly can. And they've done fairly remarkable job of that."* Participant, NGO

One participant commented that AB 32 was never designed to be implemented, but rather to 'fill-in' until a federal response was developed. No other participant voiced this idea, but it was an interesting consideration. This idea was mentioned to other participants, one responded:

> *"It was a calling card, but […] there is a lot that AB 32 requires us to do, to clean house first and get things set up and to organise – that really enables us to move forward. So it's not just a patsy for something else, there is a lot that's going on."* Participant, Local government

Finally regarding 'going first', two people referenced SANDAG, San Diego's MPO, which will be first to submit an SB 375-compliant Regional Transportation Plan (RTP (section 6.7.7).

"San Diego is the guinea pig; they're going to go first." Steve Heminger

This was seen as necessity and not regarded as 'leading' in the same sense as California going first on developing policy, which is interesting. Whilst it would be useful to further examine these ideas; whether doing something for the first time can be considered evidence of leadership and in what contexts that denotes innovation. However, they are outside the remit of this study.

6.7.7 Theme: Process

> *"SB 375 was a real step in the right direction, but there a host of unanswered detail questions about how that's going to get implemented."* Participant, Local government

When the interviews were conducted, many details of SB 375 were undecided and much of SB 375 relies on altering current processes and interactions – hence the close crossover with section 6.7.4.

To reiterate, the 'nuts and bolts' of SB 375 implementation were explained in Figure 6.11. It is evident that certain 'how' questions and 'who' questions need to be investigated. 'Who' questions are related to scale (section 6.7.4) and 'how' questions (particular details) with this process theme. As such, they are grouped below:

Relationships and structure

- How will the relationship between the MPOs and ARB work in practice?
- Where does responsibility lie for achieving the targets?
- Who will be responsible for measuring progress towards targets?
- Role of other state agencies in delivering SB 375?
- Will federal transport funding mechanisms be altered by SB 375?

Issue

- Does CTC/MPOs have necessary climate change expertise?
- How will SB 375 be consolidated with other transport-related reduction measures?
- Does ARB's broad mandate cause conflict in prioritising agenda?
- Are the CEQA incentives sufficient for MPOs to prepare SCSs?
- Is this an encroachment on local government authority (with regards to land use policy)?

6.7.7.1 Relational and structural processes

A central element SB 375 is that ARB will set targets for each MPO, who will then in turn submit an RTP to ARB. ARB and every MPO will be interacting in delivery. Participants were asked *how* this relationship would work. Responses elicited much information about the conventional role of local authorities in land use (section 6.7.7.7). Responses directly relevant to this question were as follows:

- Unclear
- A lot of give and take
- Interesting – comply or get sued
- There is some communication […] some MPOs are probably wary about ARB
- Historically ARB did not work very much with MPOs. So that's a new relationship
- Definitely some relationship building needed. Regional planning has been […]pretty top down
- Regional distinctions in the relationships. Formal target-setting agenda; informal "back and forth"

MPO works with ARB if: it can't implement Sustainable Community Strategy; Sustainable Community Strategy is not accepted, or MPO can't meet RTP target

- Relationship is a somewhat distant one […] I don't have the impression that there's a lot of day-in-day-out communication
- Because of conformity, we have a relationship with these agencies; we know each other quite well. That relationship has not always been smooth but we're not strangers and that's going to mean that SB 375 is a lot easier

Some comments reflect existing relationships between levels. Context was again identified as important – the interaction is dependent on the size/nature of each MPO (Chapter 8). Four comments suggest that MPOs/ARB need build collaborative partnerships. However, litigation was also referenced – that collaborative relationships are irrelevant; if MPOs are not compliant, they face legal action. This suggests that SB 375 does not need to be a formally powerful institution, because emerging litigation practices in California afford measures 'extra weight' to comply – much like the financial mechanisms imposed in Bavaria (Chapter 7).

6.7.7.2 Where does responsibility for SB 375 lie?

In terms of reaching the targets, participants were asked where ultimate responsibility for reaching SB 375's 'ambitious and achievable' (ARB, 2008) targets lies. Opinion was mixed (Figure 6.14).

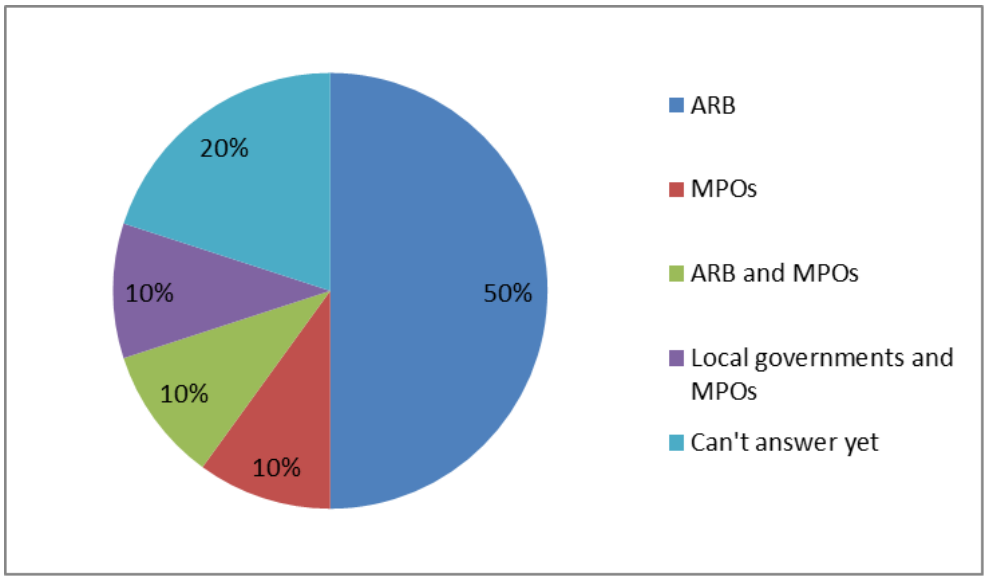


Figure 6.14: Where does ultimate responsibility for SB 375 lie?

Of 10 respondents, five stated ARB - some because it is responsible for all climate policy; others because it has to approve MPO plans. Only one saw MPOs are accountable, because they are responsible for delivering the plans. It is clearly a contentious area – two participants thought it was too soon to know who will be responsible. As another highlighted, right now, these details are *"pretty squishy"* – but perhaps one of the most fundamentally important areas to gain clarity over. It could be expected that MPO representatives would say ARB was responsible and vice versa. This is not necessarily the case; many state government representatives placed responsibility with ARB, although an ARB respondent put the onus on the MPOs.

Responsibility particularly for measuring VMT/emissions reductions and attributing these to SB 375 was also questioned. Only two people responded directly, one said ARB; the other the MPOs. This suggests that more clarity over exact roles and responsibilities are needed (Chapter 8). Furthermore the systems through which the 2020 and long-term reduction targets will be delivered either do not exist yet, or remain unclear to people involved in the processes.

6.7.7.3 Role of other agencies?

Because interagency collaboration has repeatedly been identified as significant throughout this chapter, participants were asked which Californian agencies (other than ARB) have a role in implementing SB 375. Eight participants responded (Table 6.9), some listing agencies and their likely roles, others providing broader ideas.

Participant	**Agencies involved**	**Roles**	**Further qualification**
CTC	Caltrans	Ensuring consistency; interconnectivity across state; coordination with high speed rail	-
ARB	CTC, Caltrans OPR, CEC	Ensuring subsequent guidelines consider SB 375 Not specified	-
Academic	OPR, Caltrans, CEC, Public Utilities Commission	Not specified	*"Almost all of them"*
SNRWC	Caltrans OPR	Identifying projects it works on/funds Lead agency for CEQA	-
CalEPA	SGC	-	-
Caltrans	Caltrans OPR, Department of Housing and Community Development	Update RTP with CTC Not specified	-
NGO	Department of Housing and Community Development, Caltrans, CTC, OPR	Not specified	-
Academic	Other agencies	Not specified	*"…there is recognition that ARB is lead agency on this […] the other agencies are deferring to ARB."*

Table 6.9: Additional agencies and roles in SB 375

Interestingly Caltrans was the most frequently-cited agency, despite the roles of OPR and CTC being clearer at the time of the interviews. CTC is responsible for managing the funding allocation based on submitted RTPs and OPR for CEQA – yet they were not identified as often. Indeed five participants did not mention CTC at all (although it can be assumed that the CTC participant was speaking of agencies external to them as implied in response). It is clear that RTP funding will remain with the state's transportation agencies. The reference to SGC highlights that it is viewed as an important forum within the state. It is not a state agency, but one participant noted the role of regional Air Quality Management Districts was unexplored in the context of SB 375. So whilst it is recognised that several agencies and MPOs must interact to deliver emission reductions through SB 375's processes, uncertainty about *what* these roles will be endures (Chapter 8).

6.7.7.4 Does SB 375 change federal processes?

Because participants clearly understood that transportation funding was a cornerstone to SB 375 they were asked whether federal funding structures would change, or be impacted by the bill; or if it was just state-based relationships that were impacted (Figure 6.15).

These responses illustrate that SB 375 implementation is mindful to prevent impacting on federal transportation funding, but may have unforeseen impacts or be altered as a result of reauthorisation. Integrating the bill into the existing funding mechanisms is a complex undertaking. Secondly, participants were asked whether SB 375 implementation would usurp any other measures in California. The six respondents did not see significant changes to any current state or local proceedings other than the transportation funding it was designed to alter:

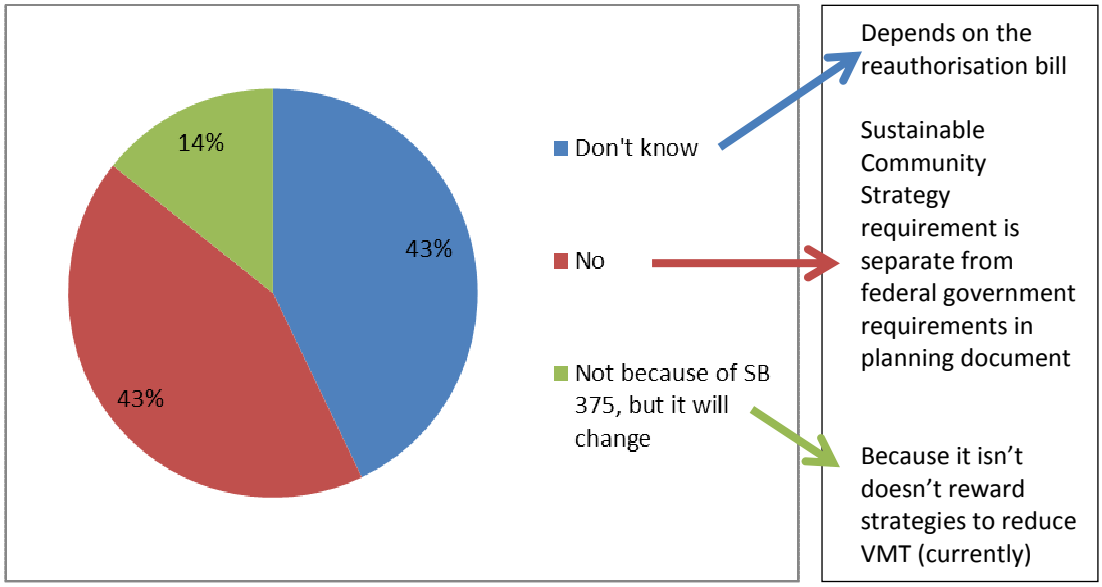


Figure 6.15: Will SB 375 change the federal funding process?

> *"One of the reasons that they picked the RTP process is first of all, because the RTP process is fairly well-funded. It's a process that's in place, you're not inventing anything and it's updated every four or five years. […]So SB 375 is kind of built in to that existing process. I don't think it's really replacing any existing, it's just adding to current federal and state requirements for the development of the RTP."* Participant, Caltrans

6.7.7.5 Capacity

Participants were asked whether the MPOs have the internal expertise necessary to prepare and submit SCSs as part of their RTP (Figure 6.16 – Chapter 8 examines local government capacity).

Context was once again highlighted; over two thirds of participants commented on the differences between MPOs as a major factor. The ability to hire consultants to address any in-house shortfalls was mentioned, suggesting that lack of capacity is not viewed as an insurmountable barrier to completing the plans. Interestingly many of the responses refer to the technical modelling necessary to complete current RTPs and air quality plans, likening SCSs to these activities. These technocratic reactions highlight that the 'new' way of thinking/working associated with addressing climate change has not filtered to the lower

levels, but given MPOs are required to respond to reducing emissions through existing mechanisms, it is perhaps not surprising that it is not seen as an innovative area of work.

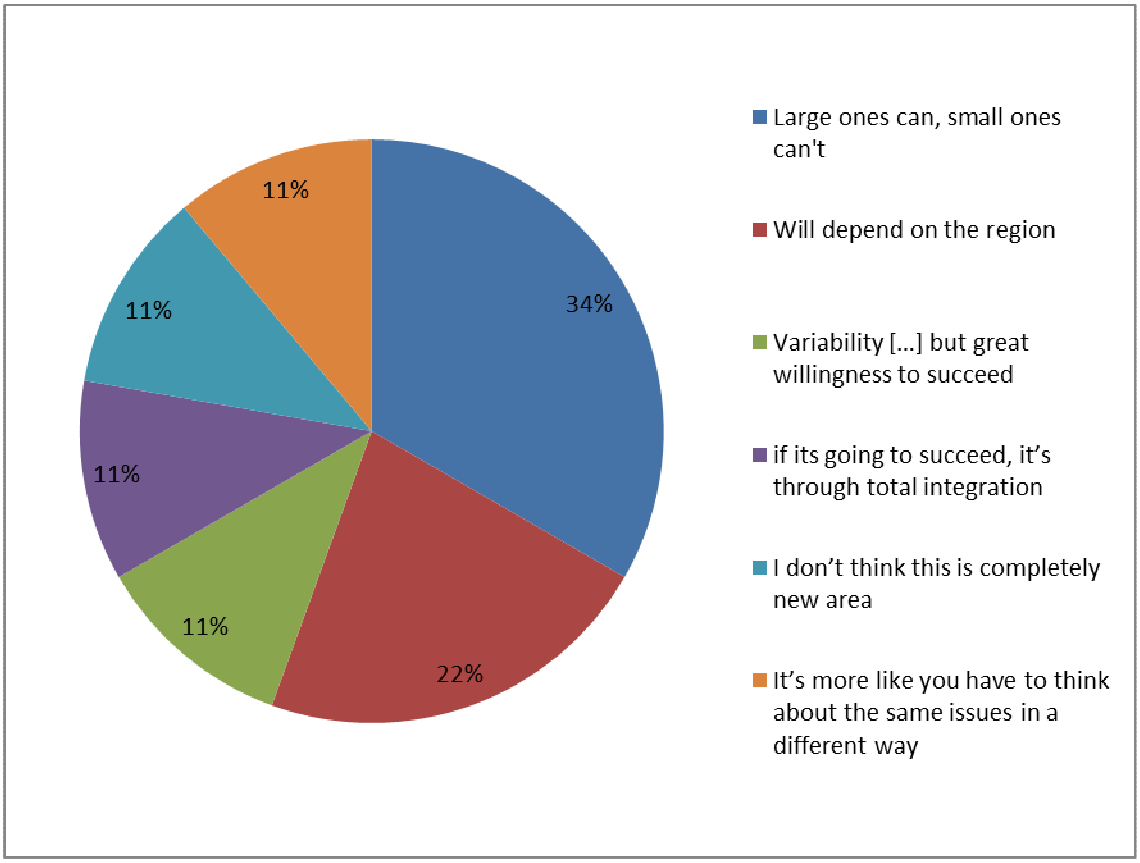


Figure 6.16: Do MPOs have necessary expertise?

6.7.7.6 Linking SB 375 to the other 'legs'

Interagency collaboration and innovation is going to be necessary to consolidate all transportation-based responses under AB 32 together. Responses about whether (and at what stage) land use-based responses will be linked to the other 'legs' were mixed (Box 6.3).

There are long-term land use issues that will impact how future fuels and vehicles will function, so it is important that these areas remain at least peripherally connected to ensure that fragmentation is not 'built-in' at this stage. Moreover, in order to record emissions

reductions and allocate them against the targets, clarity over the areas and relationships between them need to be well-defined. The views expressed suggest that this is not an immediate priority, more of a long-term consideration. Having each area overseen by different parts of ARB is seen as sufficient.

> *"They each have a dedicated group at ARB focused on each part of the three-legged stool – they're all being covered and coordination comes from the Executive Office and […] Office of Climate Change. But […] they are pretty self-sufficient; moving forward with their programs without too much interaction with us really."* Participant, ARB
>
> *"The vehicles and fuels need to come together, but it doesn't necessarily have to come together with the VMT reduction."* Participant, Academic
>
> *"They are kind of now, in that the Air Board is the main agency that's working on all these together."* Participant, SNRWC
>
> *"I think at least at this point it works better to have them handled separately."* Participant, CalEPA
>
> *"…it wouldn't be the agency with jurisdiction over cleaner cars that would be overseeing land use planning – that doesn't make sense, so I don't see how those would be naturally consolidated into one process, but you need one agency overseeing to make sure your numbers add up – and that's CARB."* Participant, NGO
>
> *"People are talking about it. Whether it's coalesced in really meaningful ways that will actually bring about change is something that's harder to say"* Pete Parkinson

Box 6.3: Will land use responses be consolidated with the other legs of the stool?

6.7.7.7 Does ARB's broad mandate cause conflict?

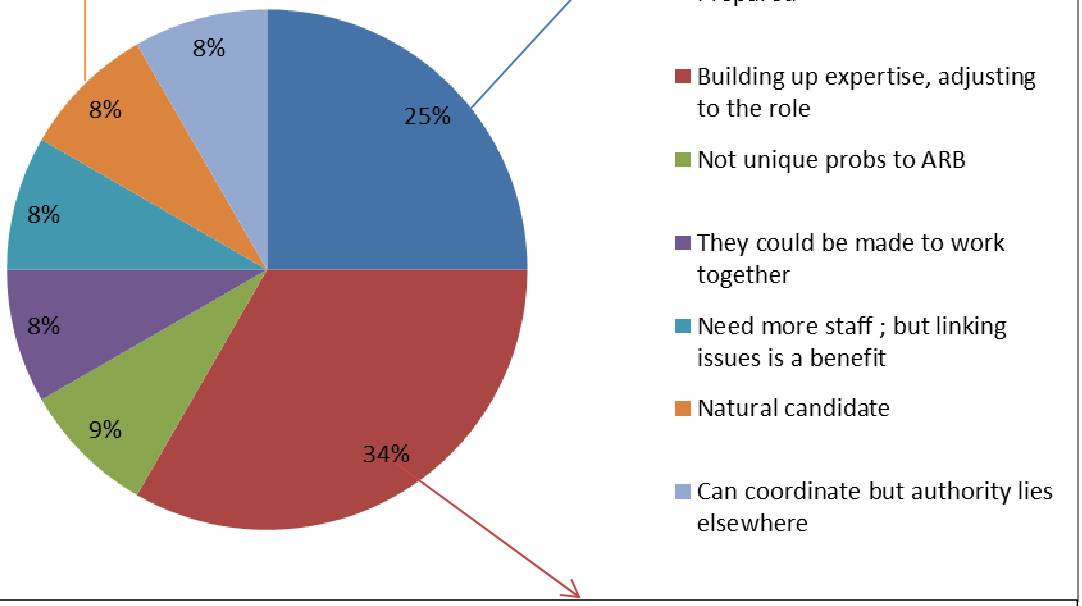
Given ARB's very broad, and significantly increased mandate to address climate change, participants were asked if ARB's work and traditional focus on air quality were in conflict (Figure 6.17).

Results highlight the need for change. This change needs to cover existing external relationships and those within ARB, which is positive. Some participants expressed concerns that situating climate change oversight with ARB may not be the best approach, because it lacks the authority needed to drive the agenda. Similarly, that later in the process unforeseen problems may complicate ARB's ability to act. But more than a third of responses

reflected that ARB had already built capacity to increase climate change expertise; evidence that it is aware and accepting of the challenge.

"CARB is an enormously competent organisation in terms of air quality science […] On the other hand […] they do the engines, they do the fuels…when they get into politics CARB has trouble. Because they are a regulator and they often use the phrase 'technology-forcing regulation that's ambitious and achievable'. That model doesn't always work when you try to apply it in a planning or a funding context." Steve Heminger

"CARB is a very strong organisation, it has some very strong leadership and will be able to carry out anything […] or most of what it's tasked with. There is a lot of influence and political will." Participant, DOT



"ARB has been asked to play a huge oversight role and it really is a pretty monumental task because it requires a whole bunch of new specialisations that haven't been the primary focus of the agency in the past. [...] There are just some people internally at ARB who prioritise things a different way maybe, there's no real conflict." Participant, ARB

"It's a little bit more of a stretch to integrate those things into what they're doing. They have capacity to deal with it […] but it requires some shifts on their part." Pete Parkinson

Figure 6.17: Does ARB's broad mandate cause conflict?

Planning is clearly a departure for ARB. SB 375 relies on land use planning change to deliver emission reductions. As has been stated in several previous sections, local governments have had exclusive jurisdiction over land use policy in California and a state bill regulating provisions in this area has posed several unanswered questions.

Two such questions examined here are:

1) Does SB 375 encroach on local government authority? (Box 6.4)
2) Is CEQA dispensation incentive enough to encourage Sustainable Community Strategy submission? (Box 6.5)

Examining comments here, suggests that most concerns that were voiced about local land use authority have been addressed in SB 375, provisions were made to maintain conventional jurisdictions and in theory at least, local authority is preserved. Several participants highlighted the fact that local authority associations were involved in drafting the bill which indicates that it was a participatory process. Although it was suggested that this weakened the ultimate outcome – getting it passed was more important than what it sets out to achieve (Chapter 8).

> *"It's a fairly modest measure, it was amended multiple times; it's the classic written-by-committee piece of law, and what it sets out to do is fairly modest."* Steve Heminger

"*SB 375 attempts some of this […] but until a city or county has some reason to not approve sprawl, there are enormous forces that are going to push them to do that.*" David Schonbrunn

"*Traditionally land use has been always the purview of the city or county, and that's somewhat sacred here, at least in our state, and so the bill is very specific not to allow either the state or the MPO, to weigh in on land use decisions*." Participant, Caltrans

"*…There is a specific savings clause within the bill that says nothing in this bill will interfere with the local agencies control over land use […] the concerns were addressed in the final version of the bill*." Participant, NGO

"*You've got a state bill that looks to reshape the way land use planning is done […] and it's done it without any new state mandates for how local governments are to redo their land use planning. So the local compliance with the sustainable community strategies […] is voluntary at this point*." Pete Parkinson

"*The MPOs will play a very dominant role in terms of crafting plans which will explain how each region will attempt to achieve their target. So I think that there was more concern earlier, at least in Southern California that they would be in a relatively weak position. But I think that the MPOs are actually in a relatively strong position."* Participant, Academic

"*There will definitely be tensions and history has been that the local government has controlled land use issues. I don't really see that control changing. […] So there has to be some sort of connectivity that will shape the overall picture of how we are going to get to our reduction target.*" Participant, DOT

"*Generally speaking land use authority is exercised locally, and the regional institutions that do exist tend to be single-focus […] When you look at what SB 375 […] its really asking us to assemble a comprehensive plan. That's what's got a lot of people pretty nervous."* Steve Heminger

Box 6.4: Does SB 375 encroach on local government authority?

"…there is no penalty for an MPO to either prepare an Sustainable Community Strategy or APS, in my view the only penalty would be for a group to sue the MPO […] there's no financial penalty." Participant, Caltrans

"*Well, we don't need the incentives, as I said. This is something that we believe in and we've been doing, so whether the law required us to do it or not, we're doing it.*" Steve Heminger

"Any time there is a loophole, people take the loophole, unless they want to do the right thing in which case, it wasn't an incentive, it was a political choice […] it allows people to get out of it then it makes us harder for the rest of us who are doing it, and it ultimately weakens the policy." Participant, Local government

"*I'm not sure that there is enough incentive for some."* Participant, Local government

"The CEQA incentives in SB 375 are probably not enough by themselves." Pete Parkinson

"*The incentives may be weak. At least from the staff of SCAG I have heard the complaints that the incentives are insufficient, both in terms of the lack of funding provided to support planning at the MPO and local government level, as well as lack of other incentives, for example the CEQA exemption may not be a strong enough incentive to generate interest from local governments.*" Participant, Academic

"*Probably not. It probably needs more, but […] there's a sense that it wouldn't have been passed if it was mandatory."* Participant, NGO

Box 6.5: Are CEQA incentives are 'enough' to encourage MPOs to act?

This supports what Bardach (1977) stated, that stakeholders will have a further opportunity to deliberate on implementation, therefore passing general provisions is more acceptable. Importantly, as one participant highlighted, SB 375 was endorsed by the major local government associations, suggested that most tensions have been alleviated:

> "*In the end both agencies – League of Cities and California State Association of Counties both supported the bill." Participant, NGO*

One comment in Box 6.4 emphasises that MPOS are only incentivised to submit an SCS, it is not a mandatory requirement. Therefore the second question regarding unresolved SB 375 issues concerned whether this was a sufficient mechanism.

Six comments suggested that there is very little incentive to follow the bill, that loopholes and the voluntary nature are not strong levers to encourage action – at least not alone. Conversely, some participants restated that certain MPOs "were doing this anyway", they either do not need the CEQA incentives, or this is not the driver for them. But once again, this 'one size fits all' approach highlights that there are strong regional distinctions.

One participant highlighted the impact that support for SB 375 provisions from non-state actors (environmental/development) might add further incentives for MPOs to submit an SCS, outside of the CEQA provisions:

> "*That exemption could save builders $100,000's maybe more, and more importantly to the development community, it provides some degree of certainty, […] So the development community could be a strong force lobbying the agencies to do an SCS, because they see an opportunity to build a certain type of housing, they want the transportation pattern to be consistent with that land use pattern. […] The environmental community will clearly advocate strongly with the regional agencies to have the SCS.* Participant, NGO

Giving MPOs an alternative option – the APS, also received mixed responses. If they can't deliver transportation plans to reduce emissions, the APS needs to be submitted. It was suggested that SB 375 is flawed because many MPOs may opt for the alternative strategy:

> *"We're going to see a fair amount of these APSs […] Funding's going to be a huge issue. How do these MPOs with their given amount of funding for transportation; how do they deal with congestion? How do they deal with these environmental issues at the same time? SB 375 just adds on to the layer of complexity of how they're going to program their transportation money. Do they throw all their money towards transit, to deal with climate change issues, or do they put more on streets and roads to deal with congestion?"* Participant, Caltrans

This comment highlights that SB 375's co-benefits (section 6.7.5.6) are not acknowledged by all Californian stakeholders, this indicates that Caltrans has not reconciled transit provision with reducing congestion. The predict-and-provide mentality is seen to endure in parts of the state.

Finally, it is important to note that MPOs are not solely reliant on state funding for transportation projects, with an increasing proportion of funding coming from the private sector. In due course, there may be a larger shift away from conventional funding mechanisms to circumvent increasingly stringent standards, which is a concern. The voluntary nature of SB 375 signifies that in fact actual emission reductions cannot be guaranteed from the measure, despite its potential.

6.7.7.8 Other process-related information

As land use is a 'long-term' consideration, with development pattern and urban structure changes likely to take several years if not decades to emerge, participants were asked whether SB 375's future could be secured in an environment of electoral cycles and short-term interests (Figure 6.18). Almost 60% of the seven participants thought that SB 375 had a fairly assured future. The quote highlighted illustrates that even with formal institutions in place, action on climate change is not certain to be delivered (Chapter 8).

There is no doubt that SB 375 and all of California's climate change institutions are ambitious to the extent that they are linking previously unconnected areas, in collaboration and with top-level support. However, they are not perfect as will be highlighted in the closing stages of this chapter, and they also face certain barriers, as highlighted below.

"Some of the legislation and the targets are set, but you never know with another or a new administration how things are likely to change." Participant, DOT

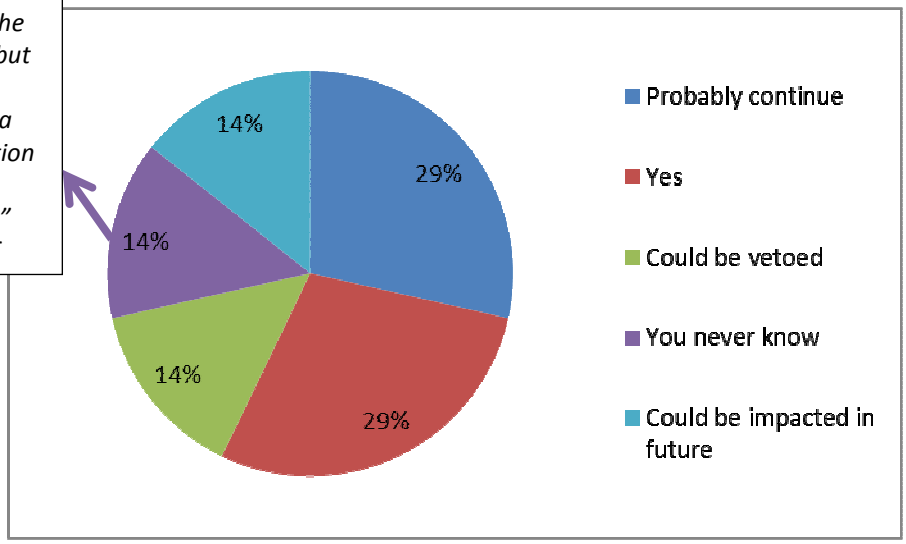


Figure 6.18: Can SB 375's future be guaranteed?

6.8 Barriers

Participants were asked to identify the main barriers to implementing SB 375 (Table 6.11). Any barriers mentioned throughout the course of the interviews were also noted and categorised,

using the typology outlined in Chapter 3. This information was important to ascertaining whether a lack of dialogue and collaboration between state government departments and across levels of government is one of the major barriers identified and if not, what these were.

Participant	Barriers	Challenges	Type
CTC	Money	-	Economic
ARB	-	Metrics and methodologies; Balancing the Diversity of the coalition, their interests and the ambitious/achievable targets	Operational; Political
Academic	Weakness of the law	The targets are not hard targets. They [MPOs] can ignore the targets if they want	Operational
SNRWC	Inertia to change the BAU, both for individuals, housing developers, local governments	Funding planning at local and regional levels	Public; Political; Operational; Economic
Caltrans	Reaching the targets	-	Operational
MTC	Targets	Transit funding	Operational; Political
Local government	Huge technical barriers: metrics/ tracking system	Measuring goal progress	Operational
Local government	Enforcement/tracking of progress	Education; communication	Operational; Public
NGO	Local government conformity	Financial situation	Operational; Political; Economic
Local government	Culture and development patterns	Nature of climate change (scope)	Other-CA context; Other- issue
Academic	Conformity; funding; institutional landscape	-	Operational, Economic, Political
Academic	Unfamiliar territory	Weak economy	Operational; Economic
DOT	Funding; staff resources	Coordination; collaboration and integration of processes	Economic; Operational

Table 6.11: Barriers and challenges to SB 375

In addition, the following barriers were also identified throughout the research:

- State funding may only be supplementary (due to sales tax) (Operational)
- Economic crisis (Economic)
- Caltrans disconnect* (Operational)
- Political careers and big egos (Political)
- Southern California too big for transit (Other – CA context)
- Integration not happening (Operational)
- Location specific barriers (Other – CA context)

*"There's a big disconnect up in that building. And it's not a new one – they talk out of both sides of their mouths all the time. […] Where on the one hand its do this, on the other hand it's we'll keep taking the tools away." Steve Heminger

Collectively, these responses can be grouped to ascertain the major issues faced by California in implementing SB 375 (Figure 6.19).

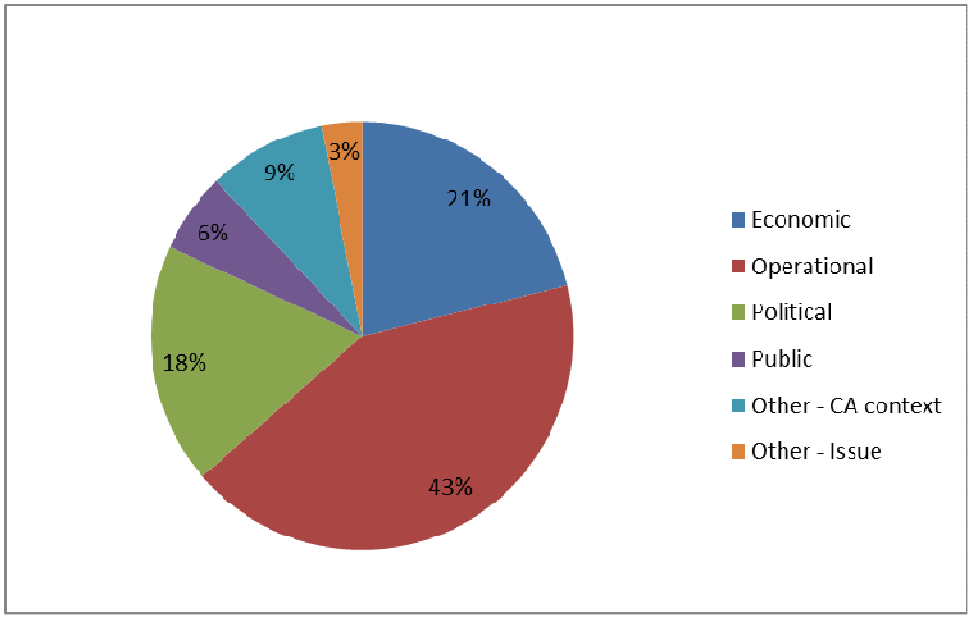


Figure 6.19: Barriers to SB 375 by type

A diverse range of barriers were identified, many of which related to the implementation of the bill. Competing interests and integrating processes were identified here, demonstrating that these are contributing factor to policy processes in the Californian context, but the operational complexity was most often identified as a barrier. Despite the often-cited public opposition to change or reducing emissions in the state, a limited amount of participants identified this as a primary barrier. Indeed, Proposition 23 was a major test here, and Californians voted in favour of keeping AB 32, which shows public support for the direction being taken. Political barriers were identified, which is interesting given the comments earlier about political leadership. With a change in administration, these types of barrier may be overcome, or worsened, as is the nature of the political system. This is examined further in Chapter 8.

6.9 Discussion and Conclusion

> *"It's so progressive for California to link land use planning with climate change, I don't know that anyone else has really come out and said that. […] to say you're not going to get state funding for your road if you don't plan in such a way that its sustainable is really progressive."* Participant, Local government

6.9.1 The Californian context

Climate change is considered an important policy problem for California, but strategy-action deficit is still present, in terms of the level of change identified in the scoping plan and the necessary reductions needed. But also due to the disconnect between what SB 375 asks of MPOs and its decision to cut transit funding. Furthermore, despite it contributing some 40% of total emissions in the state, there is a sense that reductions from the transportation sector can wait.

There is still a degree of uncertainty about the future of SB 375; as a long-term strategy it is incompatible with political cycles (Chapter 8). But just as federal climate policy could supersede AB 32, so too could the federal reauthorisation bill significantly impact SB 375 and California's other transport-related measures. The reauthorisation is already some two years late however, so California should not be deterred to progress, it should continue to implement SB 375 and learn valuable lessons which will be of use in the state and wider.

6.9.2 Lessons on fragmentation, interplay and collaboration

Many interesting areas for comparison and discussion emerge from this Chapter, some of which will be used for comparison in Chapter 8.

Scale:

- Local government capacity was identified several times, in terms of climate change expertise and resources to deliver on SB 375. This issue is revisited in Chapter 8.

- Through implementing CAA and the National Environmental Policy Act/CEQA some interaction between the levels of government already exist to address air quality issues and other environmental impacts. California's climate change institutions could be seen as an extension of these. Although words like "unprecedented; 'whole new level' of interaction" abound. And within the state SB 375 certainly makes new connections between disparate organisations and agencies that have not existed prior to its passage.

Scope:

- "Buy-in" across departments/levels of government is evident, willing to implement the bill was identified and 'interagency collaboration' is somewhat of a new 'buzzword' in the state. However there are many unanswered questions about specific roles to be played and a number of quite significant elements that remain unclear.
- ARB is now central to delivering Californian climate change policy, whether this was the right approach and it has the necessary levers to collaborate, manage, monitor and deliver against the Scoping Plan targets remains unknown. But there is agreement that it has accepted the challenge and is moving towards implementation with new partners across the state.
- Developments like the SGC and AB 32 are clearly linked; California is taking steps to redress the way in which decisions are made to reflect the need for emissions reductions. However the lack of formal linkage between them (the SGP does not reference the need to deliver against AB 32 targets) undermines their ability to deliver.
- Context was identified as significant. California has been presented as a complex state with much variation in terms of geography, economy, planning priorities, which makes SB 375 delivery potentially problematic. Whilst SB 375 has been a bold move which reflects the large-scale nature of the problem – the broad-brush approach does not necessarily

reflect the sorts of institutional change that CDG tells us may be necessary for successful implementation.

Leadership/power:

- In terms of leadership, steering collaboration and promoting action, the Governor has been significant. Individuals such as Steinberg have also been significant. But symbolism and rhetoric need to transform into emission reductions, and this was seen to be something that leadership can't actually help to achieve. The biggest challenge to Schwarzenegger's leadership was the decision to cut transportation funding – whole-of-government approaches need to deliver in policy as well as strategy, and eliminate major inconsistencies such as these.

Process:

> *"…on climate change things are changing quite a bit; […] we've gone from having this sort of antagonistic relationship where we're always saying, "We can do this, we can do this, why aren't you…" and now, they want to do it, we're trying to figure out what our role is. Now we've got what we asked for and we need to figure out it all."*
> Participant, CalEPA

- Whilst CAT has developed a 'steering' role to guide climate policy it is not intended to be a long-term body once implementation gets underway. There would be benefit in a longer-term, potentially staff-based grouping to continue to maintain and promote collaboration. Similarly, the power relations between CAT and ARB are incompatible. ARB cannot feed into the CAT negotiating processes despite being central agency for climate change, but CAT, as a group of non-experts leads strategy development– therefore the climate policy direction in California is perhaps not optimally guided
- The willing of local governments to act is important. What is questioned is whether SB 375's actual approach and proposed mechanisms will offer sufficient incentive for those not already engaged in 'smart growth' to do so. The voluntary nature of the bill

made it politically acceptable enough to get passed, but is a significant flaw in design in terms of implementation and achieving reductions.

Barriers:

- The mechanisms to implement SB 375 were identified as a major barrier by almost half of respondents, both in terms of the unprecedented linkages required between levels and departments, but also because it uses existing mechanisms and methods in implementation. Institutional change is not promoted in California and this may be a significant barrier.

6.9.3 Conclusion

Like in Scotland – California is leading on policy. In SA there is funding for transit, but no real driving force; perhaps both are required to implement policy (Chapter 8). California is regarded by other states as progressive, and is ahead of or part of the leading curve on environmental policy in terms of thinking about the interagency links and the connections to federal policy that will need to be made. But there are several unanswered questions about how California moves from policy development to implementation and where responsibility for measures will reside. These need to be resolved for California to continue to lead.

SB 375 represents a 'new' type of response; linking transportation funding with land use planning to address climate change, but it uses an 'old' framework – funding and hierarchy. Whether regulation was the right approach could also be held to question and will be examined more in Chapter 8.

Chapter 7: Bavaria's influence over the EU Cars and CO_2 Directive

7.1 Overview

This chapter examines the vertical and horizontal interaction in developing and implementing the EU Cars and CO_2 Directive. It explores whether Bavaria – an economically- and politically-powerful German state, with distinct political characteristics and a commanding auto-industry – influenced these processes. It contextualises the sub-national role in regulation created by another government level to understand the complex interactions occurring between levels of government and industry in Europe. Certain elements of this case study are distinct, but because the underlying research themes are consistent, it offers ample material for comparison (Chapter 8).

Although Germany and Bavaria both have a history of environmental stewardship (section 7.8.5), they also have a powerful industrial lobby and influential luxury car market which contributes significantly to state, national and EU economies. How these factors impacted the development of Cars and CO_2 is considered here.

The main objectives are to understand the interactions between levels of government (EU, Germany, Bavaria) in formulating Cars and CO_2 (scale); to ascertain whether the regulation is designed to deliver emissions reductions from transport; and to examine the linkages between European Directorate-Generals (DGs) and car companies (scope). Political and business leadership is also considered (power/leadership), in terms of promoting emission reductions from cars and lobbying against such measures. The specific details of delivering the regulation are also investigated (process) alongside barriers to delivering the Directive.

7.2 Introduction

Road transport accounts for 20% of EU-27 CO_2 emissions – 94% of this is from road transport (with 60% from passenger cars) (European Environment Agency, 2011a). The transport sector experienced the largest emission increase of all sectors – 24%[43] (1990-2008) (*Ibid.*). In Bavaria, transport emissions contribute to 38% of all emissions (Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie (StMWIVT), 2010) road transport accounts for 83% (2008) (Bayerisches Landesamt für Umwelt, 2011). As it is responsible for over a third of all sectoral GHGs, reducing transport emissions should be prioritised (section 7.8.4.4).

The sector certainly contributes to EU, German and Bavarian economies. In 2010, 15.1 million passenger cars were produced in the EU-27; 26% of worldwide total. The tax revenue from motor vehicles was €413.7 billion or 3.4% GDP (EU-15 in 2010) (European Automobile Manufacturers Association (ACEA), 2011a). The European car industry is responsible for 2.3 million direct jobs and 10.4 million in directly-related manufacturing and other sectors – together equating to 6% of total EU-27 employment *(Ibid.).*

Germany has the largest (in terms of production and demand) automotive market in Europe, with industry revenues of over €263 billion in 2009. 5.5 million vehicles were manufactured in Germany in 2010 – a third of total EU-27 output (ACEA, 2011b). France and Italy are also powerful players in Europe's automotive industry. Germany exported over 3 million passenger cars in 2009 and the sector provided 725,000 jobs (Bundesministerium für Wirtschaft und Technologie, undated). Bavaria is one of the largest car manufacturing hubs in Germany, providing 23% of car industry-based jobs and almost a third of industry sales. Car manufacturing provides almost 30% of Bavaria's economic output (€92.8 billion), making it the

[43] +34% including international aviation and shipping

state's most profitable sector. Bavaria's automotive industry exports almost 40% of its output (StMWIVT, 2011), so a significant proportion (60%) of vehicles remain in the state/country, contributing to local/domestic emissions throughout lifecycle use.[44]

7.3 Strategic Direction

This section briefly describes the EU, German and Bavarian contexts.

7.3.1 EU

After World War Two, there were calls for closer integration between European countries. In 1957 the Treaties of Rome[45] created the European Economic Community.[46] Since then membership has expanded and in 1993 the EU was created through the Maastricht Treaty (Treaty on European Union). In 2004, EU membership expanded to 27 MS.[47] The 2009 Lisbon Treaty updates the Rome/Maastricht Treaties and makes other key provisions.[48] There are three main institutions involved in EU legislation:

- European Parliament represents EU citizens and is directly elected by them;
- EU Council represents MS governments. Council Presidency is rotated between MS;
- European Commission represents EU interests

(Europa, undated-b)

Typically, the Council is responsible for setting policy direction, but does not have powers to pass law.[49] In principle, the Commission proposes new law, with Parliament and Council adopting it. The Commission and MS implement law and Commission should ensure it is

[44] Vehicle use contributes the largest share of GHG emissions during a car's lifetime; therefore if the state/country was exporting a significant share, focusing on limiting production-related emissions could be understood. As a significant share of vehicles are not exported, efforts to address the whole lifecycle are needed

[45] European Coal and Steel Community and European Atomic Energy Community were also established

[46] Founding MS: Belgium, France, Italy, Luxembourg, Netherlands, West Germany

[47] Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

[48] Through Lisbon Treaty, voting rights were changed and European Council became an EU institution. Comprising MS government heads and Commission President, it meets at least four times annually. President elected for two and a half years (Europa, undated-c)

[49] The Council consists of MS government heads and Commission President. It convenes every six months and meets in different configurations (nine in all), bringing together competent MS ministers *(Ibid.*)

applied properly (*Ibid.*). Significantly Cars and CO_2 is different from this common rulemaking in that the regulation is imposed directly on industry, not on the MS (section 7.8.6).

Institutional powers and responsibilities, and EU institution rules and procedures were established in the Treaties. Treaties are agreed by MS Presidents and/or Prime Ministers and ratified by their Parliaments (*Ibid.*). Although these law and policymaking procedures have been formalised and are well-documented, section 7.8.3 highlights that these procedures diverge in practice. The principle of subsidiarity, established in 1992 is intended to ensure that decision-making occurs:

> *"…as closely as possible to the citizen and that constant checks are made as to whether action at Community level is justified in the light of the possibilities available at national, regional or local level."* (Europa, undated-a)

Therefore the EU does not act if more effective measures can be taken at national, regional or local levels (*Ibid*.).

Although initially concerned with establishing a single market to foster economic cooperation, over the past 50 years, the remit of the EU has broadened to address many policy areas - including environmental policy. Early in the regime, any environmental policy was subsidiary; primarily to remove market barriers. After 1972, Hildebrand (1995) attributes public protest and high-profile environmental disasters to increased prominence of environmental policy on the EU agenda. MS may favour this approach, as it diverts difficult decision-making away from their agenda. The EU's role in environmental policy was formalised through the Rome Treaty (*Ibid*.). The EU has since become a forum through which coordinated climate policy has emerged and is regarded as a leader internationally, driving progress towards the post-2012 global response (AFP, 2011). The EU now has the *"most ambitious emission reductions targets for fighting climate change"* (Europa, undated-b) (section 7.8.5).

However, criticism has been levelled at EU environmental policy, partly because MS have poorly implemented EU measures domestically, but also because environmental policy has not been integrated into other decision-making processes within the EU (Lenschow, 1995). Measures have been introduced to redress this shortfall and 'climate change mainstreaming' (Chapter 8) is promoted to ensure this horizontal integration occurs.

The Commission has 40 DGs, each headed by a Commissioner and covering a specific policy area/service. The Secretariat-General (SG) is responsible for ensuring overall coherence of the Commission's work (Europa, 2011a).Particularly relevant here are DG Climate Action (CLIMA), DG Enterprise and Industry (ENTR) and DG Environment (ENV).

7.3.2 Germany

Although Germany has long federal tradition dating back to the middle ages (Bendel and Sturm, 2010), when East and West Germany were reunited in 1990, the Bundesrepublik Deutschland (German Federal Republic) was expanded from 11 to 16 states (Länder) incorporating those from East Germany. With a population of 81.8 million; it is the most populated MS. With a GDP of over €3 trillion (International Monetary Fund, 2011) – the largest EU economy – it is 5th largest globally. In 1949, the Grundgesetz (Basic Law) became the foundation of West Germany's democratic system and subsequently the constitution of unified Germany (Bendel and Sturm, 2010).

The Grundgesetz denotes the division of ruling authorities between the states (Länder) and the central government (Bundesregierung, 2011) and proclaims that federal law overrides state law. The Länder can implement federal law to suit their individual circumstances as long as the Grundgesetz does not specify a solution (Müller-Graff, 2005). The constitution gives the Länder

a guaranteed right to participate in federal legislation through the Bundesrat. No constitutional amendments abolishing the federal structure or this participation are permitted (*Ibid.).* Germany has three branches of government:

- Executive: Chief of state: President Christian Wulff (since 30 June 2010), Head of government: Chancellor Angela Merkel (since 22 November 2005) and Cabinet (Bundesministers)
- Legislative: Federal Diet (Bundestag) and Federal Council (Bundesrat) - state representatives sit in the Council
- Judicial: Federal Constitutional Court (Bundesverfassungsgericht); Federal Court of Justice; Federal Administrative Court

(CIA World Factbook, 2011)

In addition, all states have Landesvertretung in Berlin – similar to an embassy – and many also have offices in Brussels. Since 1949 two major parties have formed the democratic political system in Germany – the Christian Democratic Union (CDU) and the Social Democratic Party. Between 2005 and 2009, these major parties (and the Christian Social Union of Bavaria (CSU) – (section 7.3.3.) ruled in "grand coalition". In 2009, Merkel retained her position as Chancellor, through a CDU/CSU and Free Democratic Party coalition.

7.3.3 Bavaria

7.3.3.1 Political arrangements

Germany's 16 Länder have a Constitution, a Parliament (Landtag) and a government (Regierung) (Müller-Graff, 2005) and are led by a Minister-President. Each state delegates participants to the Bundesrat. The Kingdom of Bavaria existed from 1806-1918. In 1946 the Free State of Bavaria's constitution was approved (Bayerische Staatsregierung, undated). Although there are multiple political parties in Bavaria, the state is unique because its CSU, shares a special political relationship with the federal CDU, which is not replicated elsewhere in Germany. CSU has dominated Bavarian politics since 1957, winning all subsequent elections. Since the 2008 state election CSU and Free Democratic Party have been in coalition.

7.3.3.2 Cultural considerations

Bavaria is often regarded as distinct from the rest of Germany (section 7.8.5.1). Mintzel (1993) refers to this as the 'Bavaria effect'. James describes it as a "*system within a system*" (1995, 1). The CSU is just one indication of Bavaria's cultural and political difference. Hepburn (2008) suggests that Bavaria and the CSU in particular – with its conservative social and cultural values – identify with concepts of 'Heimat' (homeland) and see the state as a nation. She cites that certain Bavarians compare it with Scotland *(Ibid.).*

In this research participants referred to Bavaria as 'big'; 'important'; as 'a special place' of 'special importance' and 'well-recognised' in federal policy. Generally, Bavaria's diversity can be attributed to historical developments over the last century, which saw it change from a largely agricultural-based economy, with small areas of industrial activity, to emerge as a hub of high-technology industries in the post-war period (Mintzel, 1993). Bavaria has managed to maintain the political principles of its agrarian system whilst establishing *"a tool-making, engineering culture"* (Geoghegan, 2010, 7), along with the rest of Germany, which makes it competitive and importantly rich (*Ibid*.).

Bavaria's economy is amongst the largest and healthiest in Germany; and Europe. GDP in 2010 exceeded €422 billion, second only to North Rhine-Westphalia (NRW) (Statistische Ämter des Bundes und der Länder, 2011). The large companies headquartered in Bavaria include vehicle manufacturers BMW and Audi and many automotive industry suppliers including Siemens and Continental.

7.4 Vertical Interplay

The role of sub-national governments (like Länder) in EU policymaking is contested. Certain sub-national entities have higher populations and economic output than some MS and therefore their participation could be justified. In Germany certain areas of policymaking reside with the states, but may also be considered in the EU, which creates tension, and may ultimately render implementation difficult if responsibility is unclear or contested. Moreover, the presence of permanent sub-national offices in Brussels highlights that these entities have assumed an informal role in negotiation and policy development. And through interacting with these offices, this role is reinforced by the EU. Weatherill highlights the *"sophisticated models of involvement (on paper at least)"* (2005, 27) used by German states to shape 'their' Minister's stance in (EU) Council. Such models are external to formal procedures.

Indeed the formal mechanisms and boundaries to manage relationship between EU, MS and states (and businesses/other non-state actors) are established in strategy, however the 'blurring of the lines' abounds in practice with lobbying, negotiation and informal means of influencing proceedings commonplace. Much EU decision-making, especially environmental policymaking, is now occurring within policy networks (Peterson, 1997). Baker (2001) sees the EU as policymaker, leaving implementation to the lower levels. This assertion will be tested in the context of Cars and CO_2 – where implementation relies on industry (section 7.8.6).

7.5 Transport

7.5.1 Transport Use Landscape

European inland transport is dominated by passenger cars and road-based freight[50] (Table 7.1). As well as leading global production of passenger vehicles, Europe's car fleet is also largest internationally (Figure 7.1). Broken down by MS, Germany holds almost 18% of European cars (Figure 7.2), more than the other main car manufacturing nations: Italy, France and the UK.

Almost 84% of EU-27 PKT are car-based, and 76% of freight moves by road. Germany's car use is above EU average (85% PKT), but it is not the highest.

	(% of total inland passenger-km) (1)			(% of total inland tonne-km) (2)		
	Passenger cars	Buses	Railways, trams and metros	Railways	Roads	Inland waterways
EU-27	*83.4*	*9.5*	*7.1*	*17.9*	*76.5*	*5.6*
Belgium	80.1	13.3	6.7	13.2	71.1	15.7
Bulgaria	*71.3*	*23.6*	*5.1*	25.1	70.0	4.8
Czech Republic	75.7	17.0	7.3	25.3	74.7	0.1
Denmark	80.2	10.8	8.9	7.8	92.2	-
Germany	85.8	6.4	7.8	21.9	65.7	12.4
Estonia	*77.2*	*20.7*	*2.1*	56.8	43.2	0.0
Ireland	*76.3*	*18.6*	*5.1*	0.7	99.3	-
Greece	*77.0*	*21.2*	*1.9*	2.9	97.1	-
Spain	80.9	13.9	5.2	3.9	96.1	-
France	84.9	5.5	9.6	*15.2*	*81.4*	*3.4*
Italy	*82.4*	*11.9*	5.7	*11.6*	*88.3*	*0.0*
Cyprus	:	:	0.0	-	100.0	-
Latvia	*79.5*	*15.0*	*5.5*	58.1	41.9	0.0
Lithuania	90.7	8.4	0.9	41.5	58.5	0.0
Luxembourg	*84.9*	*11.1*	*4.1*	4.1	92.5	3.3
Hungary	61.8	25.2	13.1	21.0	74.4	4.6
Malta	:	:	0.0	-	100.0	-
Netherlands	*86.7*	*3.8*	*9.5*	5.7	61.4	33.0
Austria (3)	79.2	10.8	10.1	34.8	60.9	4.2
Poland	83.6	9.6	6.8	26.4	73.5	0.1
Portugal	*83.3*	*12.2*	*4.5*	5.3	94.7	-
Romania	*75.3*	*15.3*	*9.4*	18.9	71.3	9.8
Slovenia	85.1	11.9	3.0	20.8	79.2	-
Slovakia	72.4	21.6	6.0	25.5	71.8	2.7
Finland	84.9	10.0	5.0	25.9	73.9	0.3
Sweden	84.1	7.2	8.7	36.4	63.6	-
United Kingdom	87.3	6.3	6.4	*13.3*	*86.6*	0.1
Croatia	*82.9*	*12.1*	*5.0*	25.2	74.0	0.8
FYR of Macedonia	:	:	:	11.5	88.5	-
Turkey	*51.9*	*45.5*	*2.5*	5.1	94.9	-
Iceland	88.6	11.4	0.0	-	100.0	-
Norway	88.0	7.0	4.9	15.1	84.9	-

(2) Excluding pipelines.
(3) The railway in Liechtenstein is owned and operated by the Austrian ÖBB and included in their statistics.

Table 7.1: Modal split of inland passenger/freight transport 2007 (Eurostat, 2009[51]) (Emphasis added)

[50] Germany is an important transit area, with significant through-flow of European passenger and freight (road and rail) transport

[51] 2009 data is available; however total modal split data was not gathered, so earlier data is utilised

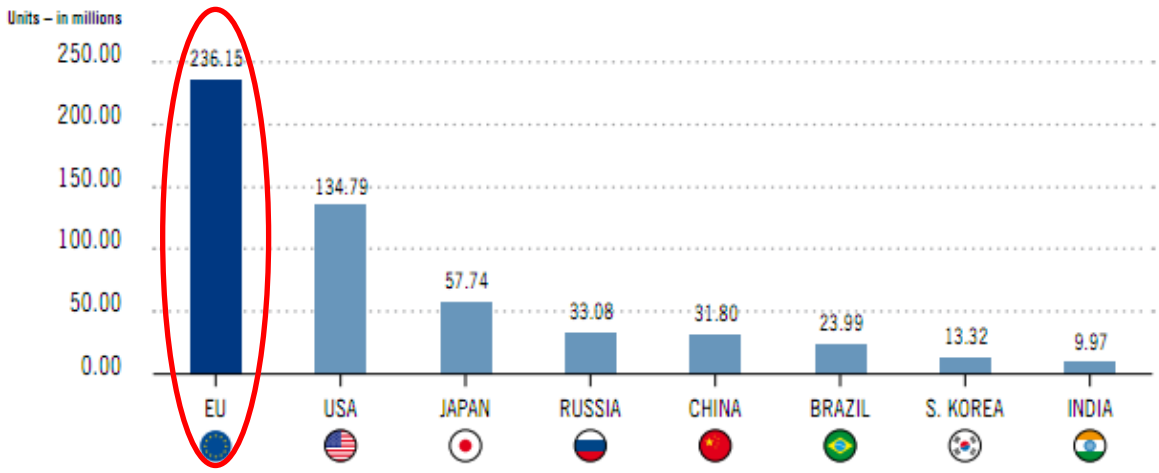


Figure 7.1: International comparison (car fleet by country, 2009) (ACEA, 2011a) (Emphasis added)

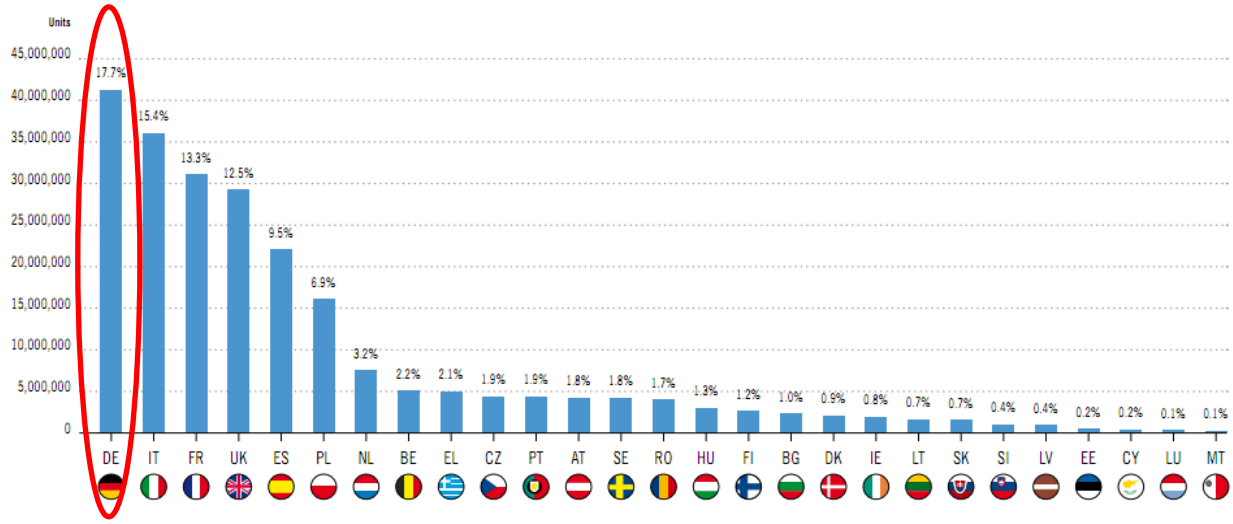


Figure 7.2: Car Fleet by country (units and % share, 2009) (ACEA, 2011a) (Emphasis added)

Some 16% of Germany's automotive suppliers are based in Bavaria. The industry accounts for 25% of all Bavarian manufacturing activity (Invest in Bavaria, 2011) (Appendix 7.A offers detailed information on BMW's production and CO_2 emissions).

7.5.2 Organisation

DG Mobility and Transport (MOVE) is responsible for European transportation affairs. However DG ENTR is responsible for the automotive industry. Despite DG ENTR's role, Cars and CO_2 implementation is overseen by DG CLIMA (section 7.8.6). In Germany the Bundesministerium

für Verkehr, Bau und Stadtentwicklung (BMVBS) is responsible for the transportation sector and in Bavaria StMWIVT oversees the area.

7.5.3 Strategic direction – transport

The 2001 'White Paper' and 'Keep Europe Moving' (2006) set the EU's main transport strategy. In 2008 'Greening Transport' highlighted the EU's intention to redress the sector's environmental impact and in 2009 the 'Future of Transport' document was released ahead of the 2011 'White Paper', which pre-empted a "Roadmap to a Single European Transport Area" (DG Move, 2011). German federal transport plans (Bundesverkehrswegeplan) are drawn up for 15 years. The current version runs 2001-2015 (BMVBS, 2011). In Bavaria, the Gesamtverkehrsplan (2002) sets current transport strategy (StMWIVT, 2002).

7.5.4 Transport budget

Over €1.54 billion was committed to transport policy expenditure in Europe in 2011, up from €1.40 billion in 2010 (Europa, 2011b) (Table 7.2). The majority of funding was allocated to building Trans-European Networks. By comparison, climate action expenditure in Europe in 2011 was set at €470 million – less than a third, which highlights the prioritisation of the transport agenda, over climate change. The EU government has however committed to raise the budget to "more than three times the current level" 2014-2020 to mainstream climate action into the entire budget (Europa, 2011c). And more was allocated to DG CLIMA's policy area (€94 million) than to DG MOVE (€66 million). DG ENTR was allocated (€124 million) (Europa, 2011b).

Title Chapter	Heading	FF	Budget 2011		Appropriations 2010		Outturn 2009	
			Commitments	Payments	Commitments	Payments	Commitments	Payments
06 01	Administrative expenditure of 'Mobility and transport' policy area		66 401 381	66 401 381	77 359 540	77 359 540	126 900 638,53	126 900 638,53
	40 01 40		25 609 66 426 990	25 609 66 426 990	119 318 77 478 858	119 318 77 478 858		
06 02	Inland, air and maritime transport	1	190 521 970	154 321 562	188 529 360	159 809 910	187 976 285,55	146 872 532,46
06 03	Trans-European networks	1	1 228 200 000	856 961 098	1 048 846 000	900 000 000	927 890 764,60	822 847 021,23
06 06	Research related to transport	1	61 560 000	64 119 734	92 662 154	86 872 280	104 434 434,61	79 899 913,38
	Title 06 — Total		**1 546 683 351**	**1 141 803 775**	**1 407 397 054**	**1 224 041 730**	**1 347 202 123,29**	**1 176 520 105,60**
	40 01 40		**25 609** **1 546 708 960**	**25 609** **1 141 829 384**	**119 318** **1 407 516 372**	**119 318** **1 224 161 048**		

Title Chapter	Heading	FF	Budget 2011		Appropriations 2010		Outturn 2009	
			Commitments	Payments	Commitments	Payments	Commitments	Payments
07 01	Administrative expenditure of 'Environment and Climate Action' policy area		93 845 213	93 845 213	90 128 504	90 128 504	90 162 181,74	90 162 181,74
	40 01 40		44 853 93 890 066	44 853 93 890 066	164 898 90 293 402	164 898 90 293 402		
07 02	Global environmental affairs	4	3 150 000	3 785 230	4 300 000	6 100 000	2 833 370,48	6 072 096,16
07 03	Development and implementation of EU environmental policy and legislation	2	349 105 327	274 350 327	325 643 000	239 218 000	335 692 435,44	240 684 608,53
07 11	Global climate action affairs	4	850 000	809 352	700 000	955 000	678 095,93	748 427,83
07 12	Implementation of EU policy and legislation on climate action	2	17 600 000	15 000 000	10 970 000	9 000 000	9 082 417,85	6 185 048,31
07 13	Climate mainstreaming and innovation	2	6 000 000	2 500 000	p.m.	p.m.		
	40 02 41				15 000 000 15 000 000	5 000 000 5 000 000		
	Title 07 — Total		**470 550 540**	**390 290 122**	**431 741 504**	**345 401 504**	**438 448 501,44**	**343 852 362,57**
	40 01 40, 40 02 41		**44 853** **470 595 393**	**44 853** **390 334 975**	**15 164 898** **446 906 402**	**5 164 898** **350 566 402**		

Table 7.2: Transport, Environment and Climate Action activity-based expenditure 2011 EU general budget (Europa, 2011b)

For 2012, Germany allocated over €25 billion to transport, building and urban development (Figure 7.3); the third largest allocation after social security and defence. Conversely, the Environment budget is the second smallest area, with around 1/15 of this figure (€1.5 billion).

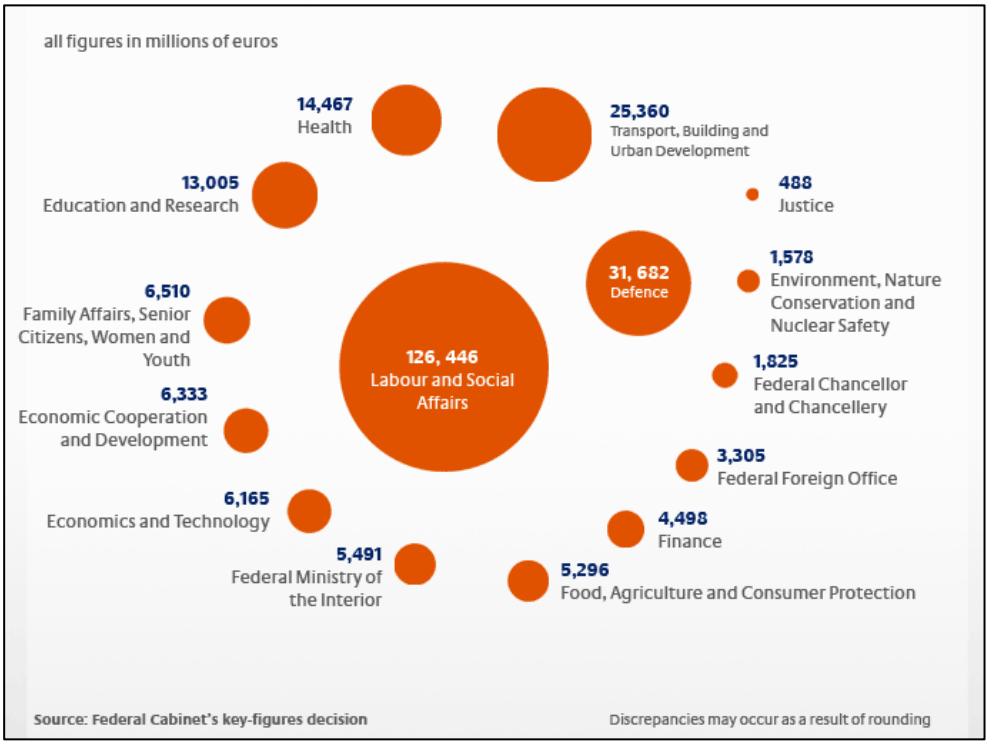


Figure 7.3: 2012 German federal budget (Bundesministerium der Finanzen, 2011)

In 2011 Bavaria invested over €2.4 billion in transport and communication. Environmental protection received less than 10% of this (€215 million) (Table 7.3). The discrepancy between (road) transport and environmental investment across levels highlights that significantly more emphasis is placed on maintaining 'predict-and-provide'/BAU than addressing environmental issues. Aside from the EU's proposed ramp-up in funding, there is little evidence that environment/climate are becoming policy priorities.

Aufgabenbereich	2011 Mio. EUR
1. Allgemeine Dienste (u.a. Polizei u. Rechtsschutz)	7.829,3
2. Bildungswesen, Wissenschaft, Forschung, kulturelle Angelegenheiten	15.984,1
darunter: *Bildung*	*(15.356,3)*
3. Soziale Sicherung, soziale Kriegsfolgeaufgaben, Wiedergutmachung	3.085,5
4. Gesundheit, Sport und Erholung	1.137,0
darunter: *a) Einrichtungen und Maßnahmen des Gesundheitswesens*	*(855,9)*
b) Umwelt- und Naturschutz	*(215,3)*
5. Wohnungswesen, Städtebau, Raumordnung und kommunale Gemeinschaftsdienste	494,0
6. Ernährung, Landwirtschaft und Forsten	900,8
davon: *a) Gemeinschaftsaufgabe "Verbesserung der Agrarstruktur und des Küstenschutzes"*	*(176,3)*
b) übrige Bereiche	*(724,5)*
7. Energie- und Wasserwirtschaft, Gewerbe, Dienstleistungen	716,4
8. Verkehrs- und Nachrichtenwesen	2.397,3
9. Wirtschaftsunternehmen, Allgemeines Grund- und Kapitalvermögen	81,9
10. Allgemeine Finanzwirtschaft	9.864,8
Ausgaben insgesamt	42.491,1

Table 7.3: Bavarian state budget FY2011 (Bayerisches Staatministerium der Finanzen, 2011) (Emphasis added)

7.6 Climate change

7.6.1 Emissions

At the EU level, EU-15[52] emissions fell 13% 1990-2009 (Figure 7.4) (exceeding the target).

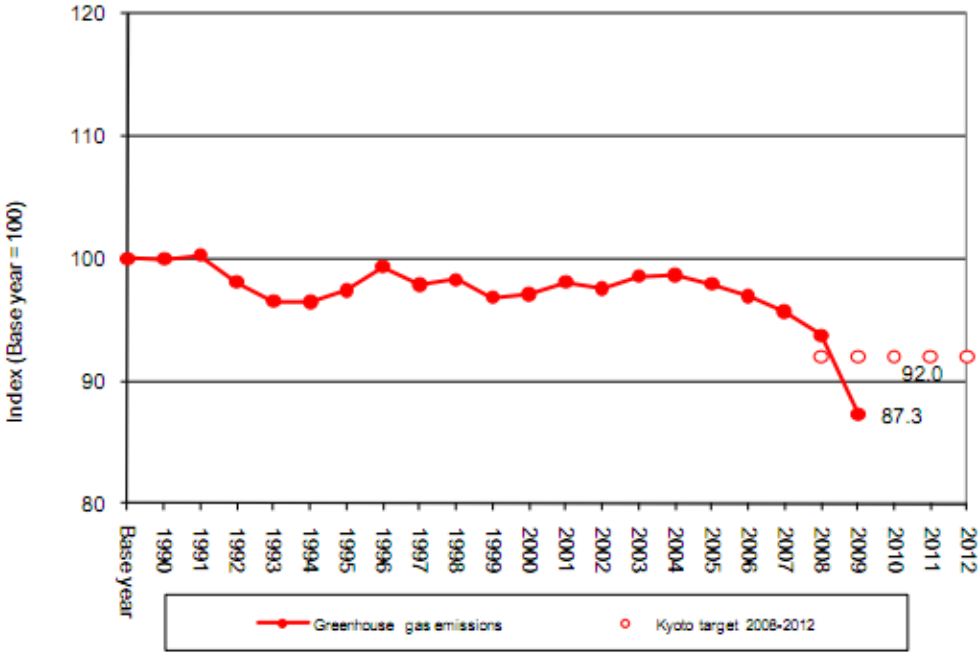


Figure 7.4: EU-15 GHG emissions 1990-2009 (excluding LULUCF) (European Environment Agency, 2011b)

[52] Those MS committed to the EU Kyoto target of 8% reduction on 1990 levels by 2008-2012

Whilst most sectors' emissions have fallen over the past two decades, road transportation has seen the second largest rise – over 100MTCO_2 since 1990 – and as of 2009 was responsible for 23% of emissions (EU-15)[53]– the second largest sector (Figure 7.5).

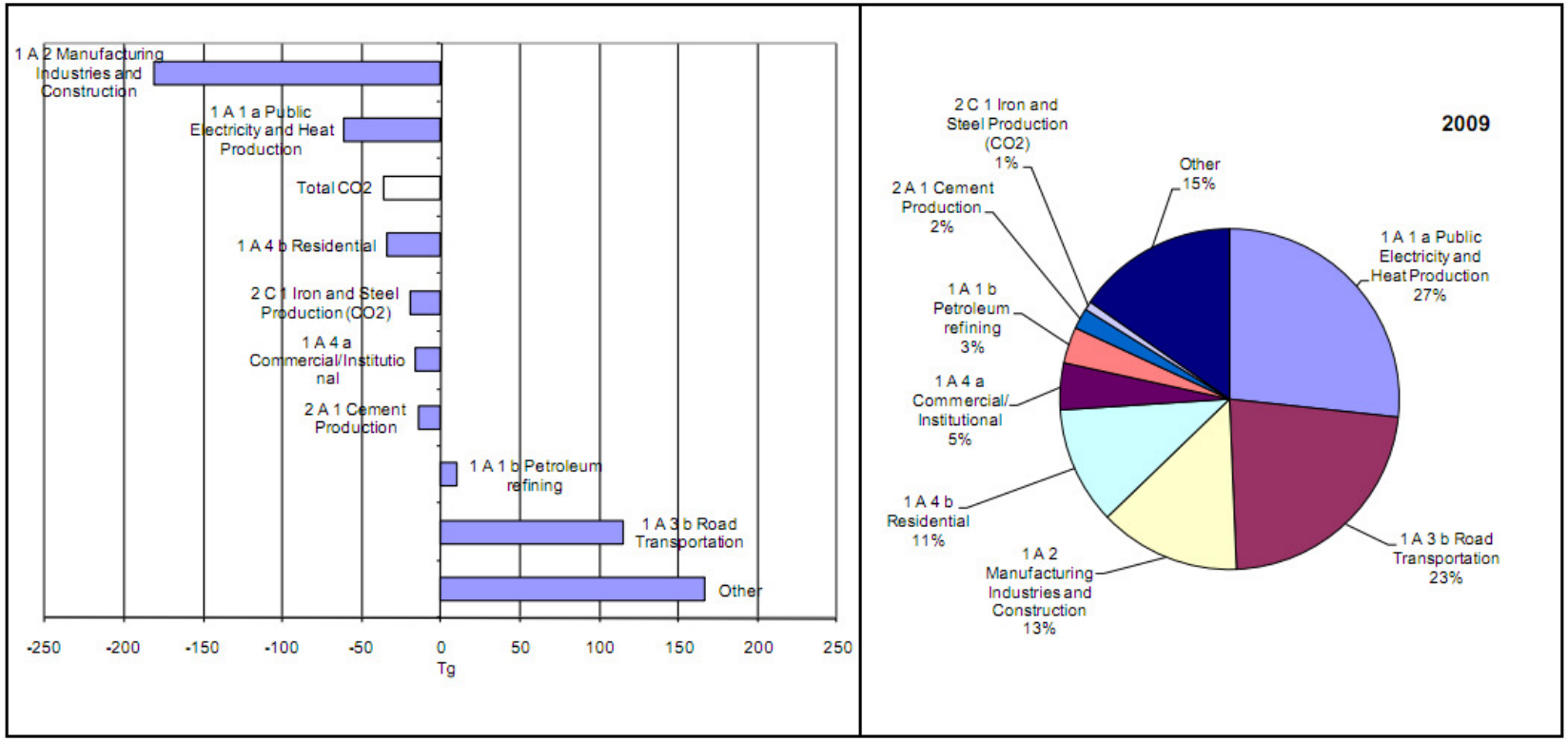


Figure 7.5: Absolute change in EU-15 CO_2 emissions by key source categories 1990-2009 ($TgCO_2e$) and share of key source categories in 2009 for EU-15 (European Environment Agency, 2011)

[53] The disparity between this statistic and the statistic on page 2 is because the first considers the current formation of the EU (27 MS) and this figure refers to the change from the EU-15, who are covered by the targets set through the Kyoto Protocol

In Germany, emissions have fallen by over 20% between 1990 and 2009, well over 200 $MtCO_2e$ (Figure 7.6). And whilst transport emissions initially continued to increase, the sector has also experienced a reduction in emissions since 2005 (Figure 7.7).

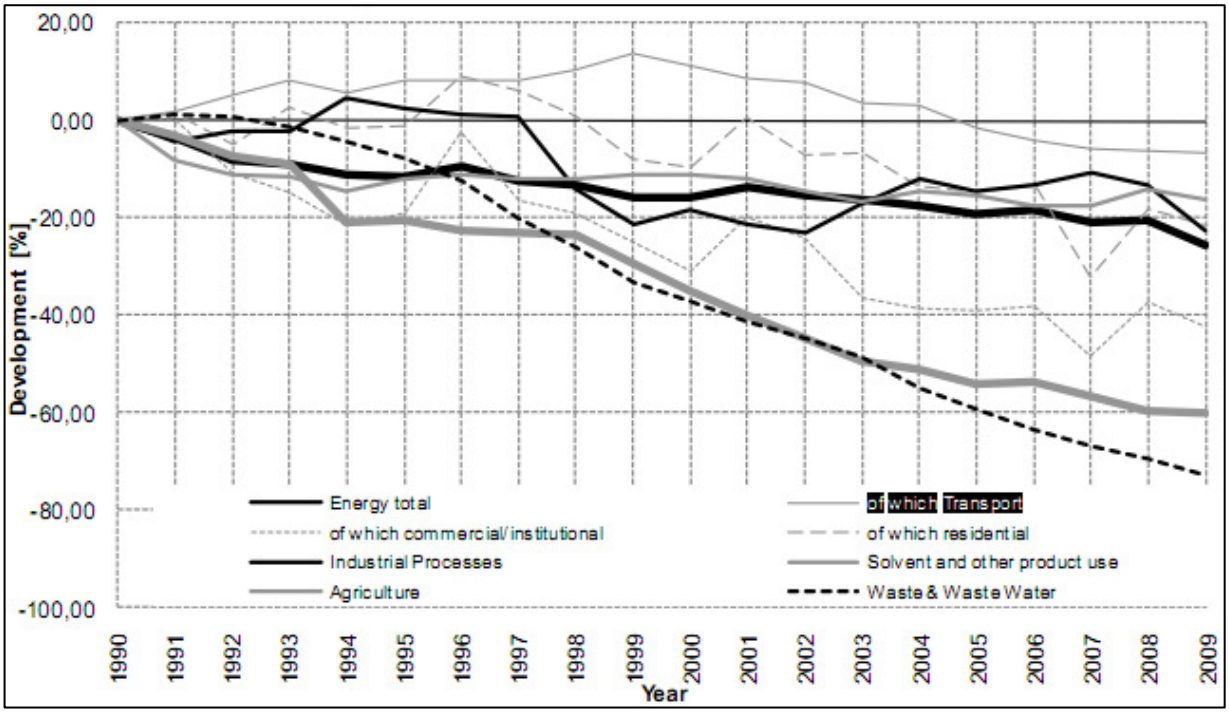


Figure 7.6: GHG emissions in Germany (Umweltbundesamt, 2011)

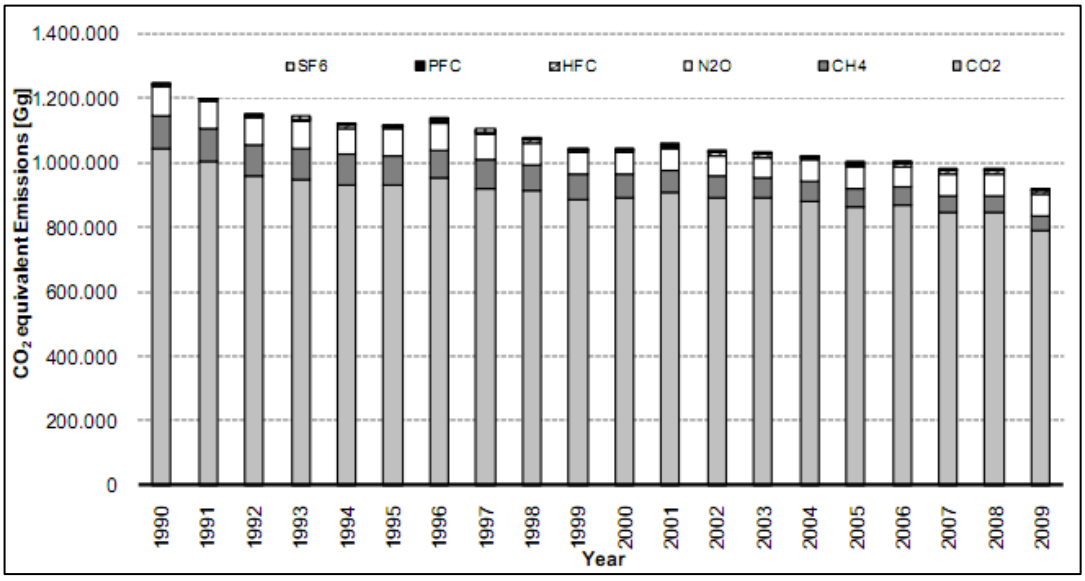


Figure 7.7: Development of GHG emissions in Germany since 1990, by source categories (Umweltbundesamt, 2011)

By 2008 Bavaria's energy-related emissions were some 5% lower than 1990 levels in spite of the fact that energy use has risen over the same time. Since 2001 emissions have fallen steadily (Table 7.4), due to investment in energy conservation and renewable energy.

Jahr	Bayern[1]					Deutschland[2]				
	CO_2-Ausstoß in 1000 t	Primärenergie-verbrauch in PJ	Einwohner in 1000 EW	CO_2-Intensität in 1000 t/PJ	CO_2-Ausstoß in t/Einwohner	CO_2-Ausstoß in 1000 t	Primärenergie-verbrauch in PJ	Einwohner in 1000 EW	CO_2-Intensität in 1000 t/PJ	CO_2-Ausstoß in t/Einwohner
1990	84.544	1.783	11.343	47,4	7,5	948.089	14.905	79.365	63,6	11,9
1991	88.972	1.877	11.526	47,4	7,7	914.962	14.610	79.984	62,6	11,4
1992	87.041	1.862	11.676	46,8	7,5	869.981	14.319	80.594	60,8	10,8
1993	90.335	1.882	11.818	48,0	7,6	862.100	14.309	81.179	60,2	10,6
1994	87.871	1.875	11.890	46,9	7,4	842.550	14.185	81.422	59,4	10,3
1995	88.307	1.953	11.954	45,2	7,4	839.117	14.269	81.661	58,8	10,3
1996	92.265	2.021	12.016	45,7	7,7	865.631	14.746	81.896	58,7	10,6
1997	89.837	2.008	12.056	44,7	7,5	829.868	14.614	82.052	56,8	10,1
1998	92.707	2.043	12.069	45,4	7,7	823.551	14.521	82.029	56,7	10,0
1999	90.590	2.027	12.117	44,7	7,5	799.749	14.323	82.087	55,8	9,7
2000	88.705	2.037	12.188	43,5	7,3	798.378	14.402	82.188	55,4	9,7
2001	90.377	2.090	12.280	43,2	7,4	820.433	14.679	82.340	55,9	10,0
2002	84.578	2.027	12.358	41,7	6,8	806.012	14.427	82.482	55,9	9,8
2003	83.783	2.002	12.398	41,8	6,8	808.012	14.600	82.520	55,3	9,8
2004	83.190	2.004	12.429	41,5	6,7	797.125	14.591	82.501	54,6	9,7
2005	80.541	2.008	12.455	40,1	6,5	771.688	14.537	82.464	53,1	9,4
2006	81.879	2.075	12.479	39,5	6,6	784.026	14.786	82.366	53,0	9,5
2007	74.972	1.978	12.505	37,9	6,0	755.322	14.128	82.263	53,5	9,2
2008	80.430	2.040	12.521	39,4	6,4	752.300	14.216	82.120	52,9	9,2

[1] Quelle: Länderarbeitskreis Energiebilanzen. Gemäß der geänderten Methodik des Länderarbeitskreises Energiebilanzen wird nur noch ein Teil des Mülls (biogener Anteil) als regenerativ betrachtet und der nicht-biogene Anteil entsprechend in der CO_2-Bilanz berücksichtigt. Dies kann zu Abweichungen gegenüber früheren Veröffentlichungen führen.

[2] Quelle: Energie Daten des BMWi (Stand 01.04.2010), eigene Berechnungen.

Table 7.4: Energy-related CO_2 emissions in Bavaria and Germany since 1990 (StMWIVT), 2010)

Transport is the largest source of all emissions in Bavaria (Table 7.5).

Energieträger Emissionssektoren	*Zeile* [2]	*Durch*					
		Steinkohlen	*Braunkohlen*	*Mineralöle*	*Gase*	*Abfälle*	*Energieträger insgesamt*
		verursachte Emissionen					
Öffentliche Wärmekraftwerke (ohne KWK: nur Strom)	8	2 937	0	944	1 084	551	5 516
Öffentliche Wärmekraftwerke (nur KWK)	9	.	0	.	2 556	343	4 084
Industriewärmekraftwerke	10	213	0	270	1 078	31	1 593
Heizwerke (nur Wärme)	14	4	1	.	.	80	471
Sonstige Energieerzeuger	16	0	0	.	.	0	95
Umwandlungseinsatz insgesamt	17	.	**1**	.	**5 114**	**1 005**	**11 759**
Erdöl- und Erdgasgewinnung	29	0	0	0	.	0	.
Raffinerien	30	0	0	.	.	0	3 117
Sonstige Energieerzeuger	31	0	0	0	.	0	.
E.-Verbrauch im Umwandlungsbereich insg.	32	**0**	**0**	.	.	**0**	**3 148**
Fackelverluste	33	**0**	**0**	**0**	**1**	**0**	**1**
Endenergieverbrauch[3]	37	.	**499**	**47 259**	.	**541**	**65 522**
davon Verarbeitendes Gewerbe	50		318	2 012		541	9 397
Verkehr	55	0	0	30 184	61	0	30 246
Haushalte und übrige Verbraucher	56	19	182	15 064	10 615	0	25 879
Insgesamt		**5 449**	**500**	**51 444**	**21 491**	**1 546**	**80 430**

[1] Bilanzerstellung gemäß Vereinbarung des Länderarbeitskreises Energiebilanzen auf Basis der vom Umweltbundesamt verwendeten CO_2-Faktoren

[2] Nummerierung entspricht Energiebilanzschema

[3] Ohne anteilige Zurechnung der jeweils vorgelagerten Emissionen im Umwandlungsbereich

Table 7.5: Bavaria's energy-related CO_2 emissions by sector 2008 (StMWIVT, 2010) (Emphasis added)

7.6.2 Organisation

Climate change policy was formerly overseen by DG ENV. In February 2010, DG CLIMA was established and assumed responsibility (section 7.8.6.2). In Germany the Bundesministerium für Umwelt, Naturschutz and Reaktorsicherheit (BMU) deals with climate protection, although the Integriertes Energie- und Klimaprogramm (IEKP) (section 7.6.3.2) engages other government departments in emission reduction. Bavaria's climate policy is managed by Bayerisches Staatsministerium für Umwelt und Gesundheit (StMUG), although the state's Klimaprogramm involves several other ministries.[54]

7.6.3 Strategic direction – climate change

7.6.3.1 Europe

Europe's first Climate Change Programme – established in 2000 – explored appropriate policies to achieve the EU Kyoto target. In 2005 the second iteration reframed responses around the Lisbon strategy for increasing economic growth and job creation (DG Clima, 2011a). In 2007, the "20-20-20" climate and energy package was announced to deliver 20% reduction in energy consumption through efficiency measures; 20% renewable energy generation across Europe and 20% GHG reduction on 1990 levels[55] by 2020. The targets became law in 2009. In 2011 the *"Roadmap for moving to a low-carbon economy in 2050"* established longer-term plans. Centrally important in EU policy processes is the idea of *climate policy mainstreaming* (Chapter 8), which:

> *"…means that actors whose main tasks are not directly concerned with […] climate change also work to attain these goals."* (DG CLIMA, 2010b)

Horizontal links need to be much improved to achieve this aim (section 7.8.4).

[54] StMWIVT, Bayerisches Staatsministerium des Innern, Bayerisches Staatsministerium für Landwirtschaft und Forsten, Bayerisches Staatsministerium für Wissenschaft, Forschung und Kunst, Bayerisches Staatsministerium der Finanzen

[55] If an international agreement was reached, Europe pledged to increase this target to 30%

7.6.3.2 Germany

The 2007 IEKP defines Germany's basic climate goals for 2020. These include:

- 40% reduction in GHG on 1990 levels
- At least 30% of energy generated from renewables
- 14% of heat generation from renewables
- Expansion of biofuels, without threatening ecosystems/food security
- Doubling of energy productivity on 1990 levels

These targets are absolute reductions (not per capita), taking population increase into consideration makes them harder to achieve. This ambition indicates forward-thinking leadership (section 7.8.5). The programme contained 29 points under headings of energy efficiency; renewable energy; transport and wider measures, to complement work in existing areas such as emissions trading and to enable Germany to deliver on its aims as a climate policy pioneer (BMU, 2009).

7.6.3.3 Bavaria

In six years, Bavaria reduced its energy-related GHG emissions 10% – (91.8MTCO_2 in 1998 to 82.8MTCO_2 in 2004) – through state-wide investment in energy efficiency and alternative energy sources (StMUG, 2007). In 2000 the 'Klimaschutzkonzept' was introduced. It has been succeeded by other concepts and in 2009 'Klimaprogramm 2020' was released (StMUG, undated-a). It aims to expand Bavaria's climate leadership and sets targets including:

- Reduce annual energy-related CO_2 emissions to well below six tonnes per capita
- 30% increase in energy productivity
- Double renewables in final energy consumption to 20%
- Increase renewables in electricity production to 30%
- Reduce fossil fuels in power generation

(*Ibid.)*

Additionally, in May 2011 StMWIVT launched Energie Innovativ. Bavaria's response is clearly energy-focused, although the 2020 programme highlights traffic management, intelligent transport systems, 'requirement-based road development' and public transport as measures to reduce transport emissions. The programme explicitly supports Cars and CO_2 and states that

"greater priority will be awarded to climate protection by the Bayerische Innovations- und Kooperations-initiative Automobilzulieferindustrie (BAIKA)" (Bayerisches Staatsregierung, 2009, 15-16) (section 7.8.3.4.2).

7.7 Europe's responses to transport emissions

7.7.1 Euro standards

Since 1992, the EU has been regulating pollutant emissions[56] from new vehicles.[57] Euro 5 (2008/9) is the current standard for passenger vehicles and light commercial vehicles. Euro 6 is expected in 2014. Non-compliant vehicles cannot be sold, but standards do not cover vehicles already on the road. Unlike Cars and CO_2, the EU sets the standard and MS have discretion over implementation. Additionally a 2001 Directive required that 5.75% of fuels be replaced by biofuels by 2010. This target was reconsidered due to sustainability concerns (DG ENV, 2011).

7.7.2 Competitive Automotive Regulatory System for the 21st century (CARS 21)

DG ENTR Commissioner Verheugen established a high-level group in 2005 to make short, medium and long-term recommendations for the European automotive industry (DG ENTR, 2006). The CARS 21 group suggested an "integrated approach" to reduce CO_2 emissions, to involve all relevant stakeholders (manufacturers, fuel suppliers, drivers, governments etc.). The integrated approach also implies building links with other policy areas (*Ibid.*). Whether Cars and CO_2 was developed through such an approach can be questioned (section 7.8.6.2).

[56] Nitrogen oxides (NO_x), total hydrocarbon (THC), non-methane hydrocarbons (NMHC), carbon monoxide (CO) and particulate matter (PM)

[57] Passenger cars, light commercial vehicles, lorries, buses, trains, tractors (and similar machinery) and large goods vehicles

7.7.3 Voluntary Agreements (VAs)

In 1998, ACEA members committed through Directive (93/116/EC) to reduce tailpipe emissions of new passenger vehicles sold to an average 140gCO_2/km by 2008. By the mid-2000s, it was clear the target were not going to be achieved. By 2004 average emissions had fallen from 186gCO_2/km in 1995 to just over 160gCO_2/km. Given this failure, in 2007 the Commission decided that binding legislation was needed to achieve the level of emission reduction necessary (Euractiv, 2008; 2011) (section 7.8.1). Communication (2007) 19 to the Council and Parliament outlined plans to pursue a 120gCO_2/km by 2012 target. The formulation of these plans, subsequent developments and eventual regulation are examined in detail here, in terms of the interactions between levels of government, the transport industry and civil society.

7.8 Cars and CO_2

7.8.1 Background

The Commission's proposal to introduce binding legislation met with much lobbying, from the car industry – particularly the German car industry – and civil society[58] alike. According to Hey, Germany's opposition – particularly the targets and timetable – was so strong and effective, that the political agreement achieved on 1st December 2008 "*mainly reflects German industrial policy interests*" (2010, 211). The following timeline highlights the various stages the proposal went through before it became binding legislation:

- 19 Dec. 2007: Commission presented draft
- 1 Sept. 2008: Parliament's industry committee voted to water down Commission proposals
- 25 Sept. 2008: Parliament's environment committee voted down industry committee amendments offering carmakers more flexibility
- 1 Dec. 2008: A compromise was reached between MS and European Parliament representatives
- 17 Dec. 2008: Parliament adopted compromise agreement during first dossier reading (Euractiv, 2008; 2011)
- 23 April 2009: Regulation (EC) No 443/2009 (Cars and CO_2) entered force (Euractiv, 2009)

[58] The environment lobby was pushing for more stringent standards

The standard says 100% of new cars sold in 2015 should emit 130gCO_2/km and 95gCO_2/km by 2020 (T&E, 2011), but allows for an 'integrated approach' whereby emissions are reduced to 130gCO_2/km by fuel efficiency improvements, with the additional 10gCO_2/km being achieved by 'complementary measures'. These measures and how they will be monitored have been left open for discussion (section 7.8.6). Crucially the regulation considered EVs (section 7.8.3.4.1) as zero emission vehicles. This decision has been criticised because it does not consider 'upstream' emissions from (non-renewable) electricity generation, but also because 'supercredits'[59] allow carmakers to sell 3.5 high-emitting vehicles for every EV sold and still reach their designated target. This will likely cause emissions to rise, not decline (T&E, 2009).

Other features of the legislation include:

- Phasing-in: 65% of new cars must reach target in 2012; 2013:75%; 2014:80%; 2015:100%
- Limit value curve: heavier cars can emit more than lighter cars and preserve fleet average
- Lower penalty for excess emissions until 2018: €5 for first g/km in excess, €15-second g/km, €25-third g/km, €95 for each subsequent g/km. From 2019 €95 for all excess g/km
- Long-term target: 95g/km in 2020. Details outlined by 2013
- Eco-innovations: manufacturers granted a maximum 7g/km emission credit on fleet average for equipping vehicles with innovative technologies
- Pooling: Manufacturers can group together to jointly meet a target

(DG CLIMA, 2010c)

This research examines the negotiation and development stages of the regulation. Then it investigates how relationships within the EU and between the EU and manufacturers will work in fulfilling the regulation targets.

7.8.2 The research

Twenty participants were interviewed between March 2010 and March 2011 to examine their role in and perspectives about the Cars and CO_2 regulation (Figure 7.8). Sample questions are outlined in Appendix 7.B. A diverse selection of government officials from EU, federal and state levels agreed to participate, as well as participants from academia, industrial organisations and

[59] The legislation encourages development of 'breakthrough' technologies (electric battery/hydrogen etc.), by giving cars that emit <50gCO_2/km 'supercredits' until 2015. (ACEA, undated)

civil society. Representatives from car companies were less inclined to participate and securing interviewees was a difficult and protracted process. Industry input was eventually secured, through an email response from one Bavaria-based company and an interview with a representative from another German car company (outside Bavaria). Therefore the perspectives of other relevant companies – prominent luxury brands like BMW – were not considered. Official company perspectives were gathered from published resources to supplement this lack of primary research material.

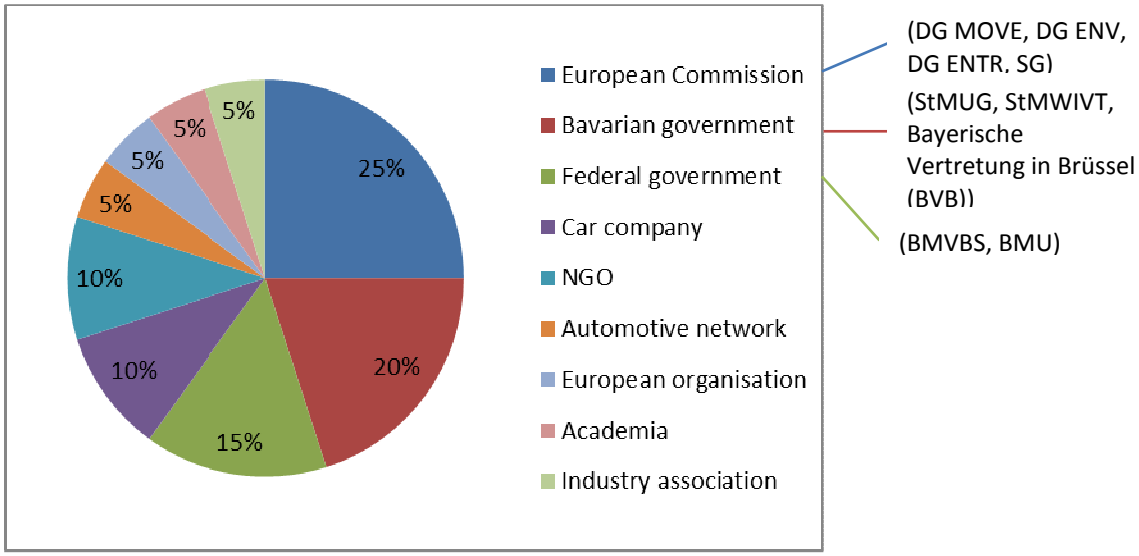


Figure 7.8: Cars and CO_2 interview participants by sector

Additionally many responses offered were very closed –'standard-line'/official rhetoric and seldom were participants (from business and all government levels particularly) comfortable expressing opinion or reflection. More candid participants were eager to ensure anonymity. These are useful insights into how European entities function, which are drawn on in analysis (Chapter 8/9). Boundaries between research themes here are less clear-cut; there is a large degree of crossover. Findings are presented in the most logical manner and linkages between themes are highlighted.

7.8.3 Theme: Scale

> *"If you are a big industry then you have an absolutely enormous influence. […] No legislation can pass really strictly against industry. So if industry is opposed to something and there are no other forces in play then it won't happen. The only thing that makes things different is public perception/press coverage and politicians' interest as a result. […] And then industry switches from blocking mode, into shaping mode and trying to influence what is going on."* Participant, DG ENV

There is a degree of cross-over between questions relating to scale and process (section 7.8.6), in terms of interactions between levels of government and specific responsibility for implementation. The focal point is the interaction between all involved entities, particularly the car industry and other lobbies that fed into the EU negotiations. This is to understand whether Bavaria played an influencing role in the negotiation of the Cars and CO_2 regulation. Primary scale questions were therefore broadly grouped as follows:

- How are relationships between the EU, MS and car industry managed?
- Does Bavaria influence national and EU policymaking?
- Does the auto-manufacturing industry have a good relationship with the Bavarian government?

7.8.3.1 How are relationships between the EU, MS and car industry managed?

It is clear that car companies have a strong influence over policies which stand to impact the sector. Some 10 participants directly referenced its lobbying role, which is either done collectively through ACEA, directly by company representatives, or through company/national associations and MS. The diverse selection of stakeholders involved in the development of EU policy highlights the blurring that Stoker (1998) spoke of in terms of public/private sector boundaries in policymaking (Figure 7.9). Solid lines refer to direct relationships, dotted lines to indirect – whereby outcomes are influenced, but they are not directly involved in formal policymaking.

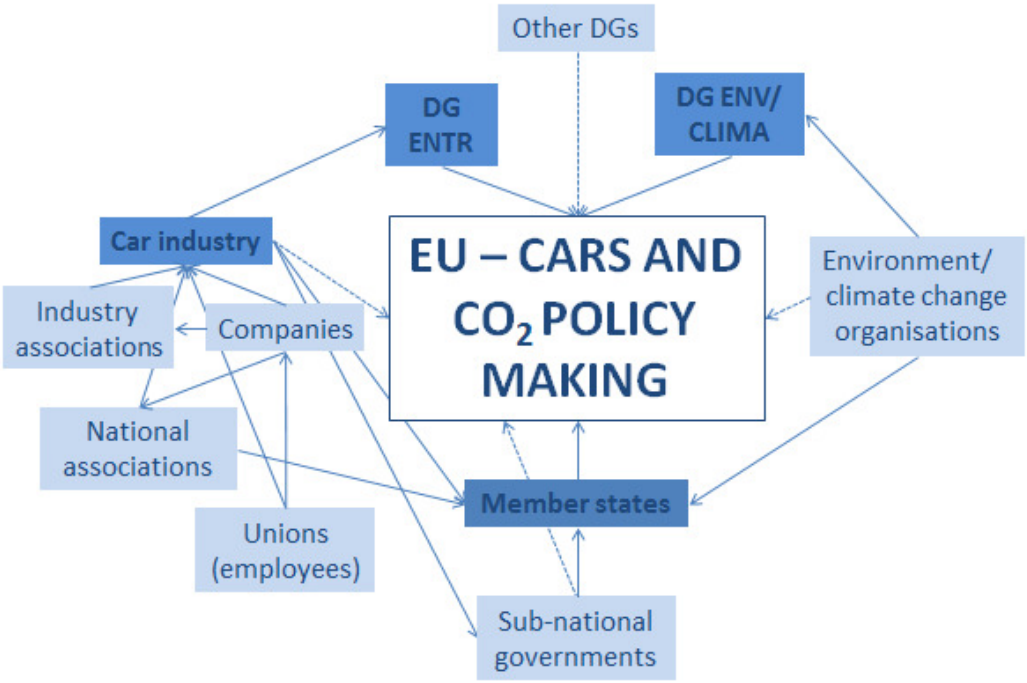


Figure 7.9: Stakeholders involved in Cars and CO_2 policymaking process

Through government lobbying across levels, the role of industry appears to have extended beyond consultative stakeholder, to linchpin in policy success/failure. It is also clear that the industrial stakeholders outweigh the environmental stakeholders (in number and probably economic influence – although this is not proven here), which lends support to the idea that the transport sector is 'entrenched' in the system due to its more established links to formal policymaking. Therefore it can be inferred that they will have more influence over the process (section 7.8.5).

The EU systems in place to manage interaction across levels of government and sectors are formal and well-established. Figure 7.10 captures participants' explanations of how interactions between the levels of government and the car industry play out around a particular policy or initiative. It appears that the industry has a variety of approaches to cause

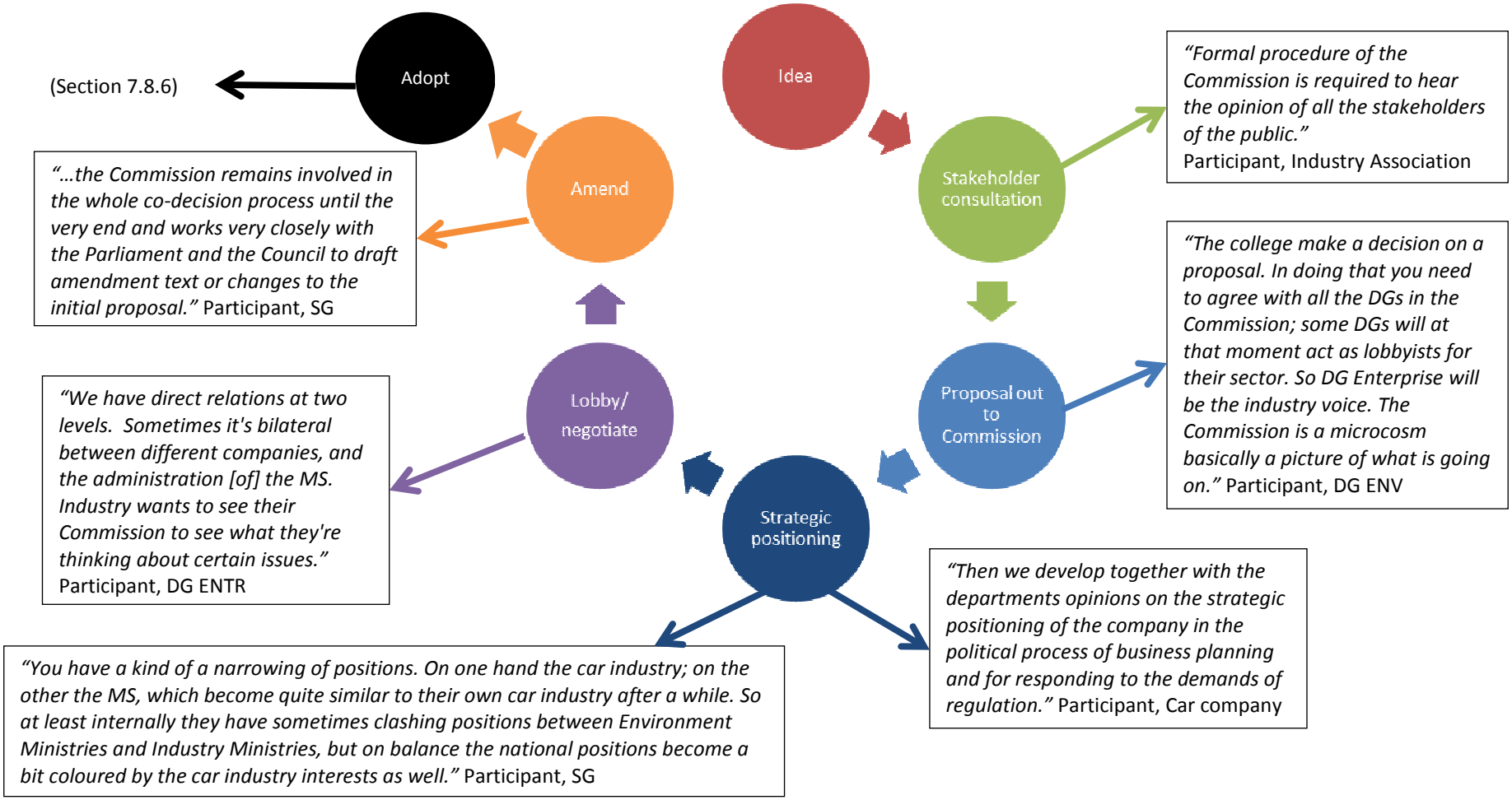


Figure 7.10: Interactions between stakeholders in developing EU policy/regulation

confusion and therefore disrupt and delay effective action. Such tactics would not work if they played a formal role.

Whilst *"no two cases are the same"* (Participant, DG ENV), formal processes are linear and follow the standard format of EU policymaking procedure. However, when asked how interactions contribute more formally to policymaking, there was much less agreement, which highlights the use of more informal, less regimented procedures. In the context of Cars and CO_2, disagreement was so intense that bilateral negotiation between France and Germany (significant players in the automotive sector – section 7.5) was the mechanism through which the issues were resolved and compromise reached (section 7.8.6).[60]

Disagreement between DGs was highlighted by participants. There is a large incompatibility between how they are perceived externally and the reality of internal wrangling. Some put this down to the personalities of individuals working within the EU system, in terms of their professionalism, or self-interest in some cases (Box 7.1), but also due to wider organisational issues like budget.

> *"…individuals in charge also have their own ambitions. You have Commissioners who want to be visible to the outside. […] They don't want to be seen as just part of a collective institution, but individual politicians, the same for DGs. They have their own stakeholder community and therefore different interests to defend. Therefore you will never have an outcome where everybody is singing from exactly the same hymn sheet."*
>
> *"Formally they are equal. Each Commissioner has the same vote. […] there may be Commissioners who have more influence than others. But it is very much similar to what happens in national governments with the ministers. If there's a very competent Commissioner, or a very competent minister, then this one will have a bigger standing than another one who's potentially weaker."*

Box 7.1: Collaboration and personalities (Participant, SG)

[60] As demonstrated in 2011, this Merkel/Sarkozy negotiation platform has dealt with other pressing issues (Eurozone crisis)

Some descriptions highlight a complex political system. Contrast:

> *"We work closely with colleagues […] who launch activities/policies, who prepare legislation on the basis of their main mandates […] The Commission always acts with one single face and one single voice; irrespective of where a proposal has been prepared within the Commission".* Participant, DG MOVE

With:

> *"So it's working in a rather unstable environment; any coordination work – it will never be a perfect outcome. What herein we are doing is to try to avoid any severe serious inconsistencies, or serious frictions. […] Little fights between Commissioners or DGs need to take place because people are paid to have actually different focus of action also."* Participant, SG

Certain participants view the interaction between the DGs as very effective and mainstream, others as a least-best means of compromise. Mechanisms allow for consultation and collaboration, however, the portfolios of the DGs appear to remain rigid in much the same way as national government departments would. Co-working is needed because of the cross-cutting nature of many issues that the EU has jurisdiction over; however the current silo-ed approach means that narrow, often economic interests prevail (section 7.8.6).

7.8.3.2 Does Bavaria influence national and EU policymaking?

Participants were asked whether Bavaria influences policymaking at other government levels (Table 7.6). The information here illuminates formal and informal mechanisms used by Bavaria (and others) to influence both national and EU policy. Interestingly, more participants saw that the state influences the EU than the German government. There are several reasons why this may be the case. Mechanisms exist for formal state involvement in federal policymaking – the Landesvertretung and the Bundesrat. The 'German position' is formulated after negotiations in this forum have been undertaken, with input from each of the states – therefore it can be considered less as influence, and more as procedure. Although participants did see that Bavaria had a 'special role' in this system – in part because of the CSU and in part because of its industrial interests.

Participant	Bav > Ger	Bav > EU	Comments
NGO		x	German Länder are really strong at influencing the European Parliament. […] In Germany there are bodies to reflect the Länder position when the government position is being formed, yet they all have offices here, and they are actively lobbying their national MEPs
StMUG	x	x	Bavarian monitors what's happening on the European level. […] Information is really important, what's happening, so that you can influence it only at a really early stage and that's why we're watching the developments. The influence which the Länder on the federal level is possible through the Bundesrat. Because in the Bundesrat there are the Länder Vertreter
StMWIVT	x		This is special for Bavaria, you have this subunit for the conservative party and also what the state of Bavaria says in the Bundesrat has some special importance
BMU	x	x	It has a much stronger position than the other states on a political level (due to CSU). Also active at the National and European level. Lobbying for its own interests (given its manufacturing – BMW – and its agricultural interests.) Some [Bavarians] would say that influencing Brussels is more important than influencing Berlin. German government is careful in not acting against them
DG MOVE		x	So far, until the Lisbon treaty went into force, local government was not very explicitly recognised in the EU multi-level governance framework. That has now changed a bit. Local government is a stakeholder in the debate
BVB		x	Yes but the liaison is a rather informal one […] of course we influence but not on the European scale – we would run into troubles because of negotiations and the Council. A formal German point is formulated in Berlin […] If we want to influence the position we have to influence the German position and that would be done not via Brussels but via Munich
SG		x	They organise a lot of useful events including stakeholders conferences, seminars where there's an exchange of information, a debate on the various policies. And it happened quite a lot also on the cars at the time. As regards formal negotiations, it's always led by the German federal government. […] their role in amongst that as a kind of forum to bring together different views, and they have quite a big budget for that, so they can also make sure that there's a high level involvement of all the stakeholders around the table. But in terms of formal negotiations and formal processes, they are not in the picture […] they're like a lobbyist, they're not speaking as a MS
Academic	-	-	Bavarian policy is not influenced too much by the European level. They look at what is happening on the European level and try to adjust their way forward. But most of these activities are in line but we are a little bit ahead of what is coming from the Commission

Table 7.6: Does Bavaria influence national and EU policymaking

However, the mechanisms available to influence EU policy are more peripheral and informal. The physical presence (BVB) in Brussels was highly valued by participants as an influencing tool, due to the events, bilateral meetings and the 'visibility' of these activities. One participant suggested that there is potential for the Lisbon Treaty to allow sub-national governments more

formal recognition for their input into EU policymaking processes, although this remains to be seen. That Bavaria takes steps over and above the formal mechanisms provided in Germany, illustrates the complexities of vertical interplay and lends support to the claim in sub-national governance that states can and do have distinct relationships with different levels of government (Chapter 8). Moreover relationships are complex, a mix of formal and informal.

> *"Bavaria has a special role to play if you consider our economic impetus and our sheer size. […] We are not better than others but we have a very prominent role here and our representation and the people who work here underline that. […] Bavaria invests in the European future in sending people like me here to do this work and to provide the expertise. Other German Länder; their representation is four/five people, we've about thirty people."* Participant, BVB

> *"The Bavarian representation here in Brussels was hosting debates on these car issues, they had both Commissioners Dimas and Verheugen attend an event which is unheard of. Normally the Commission sends one person not two. They have been very present in influencing, trying to shape the debate and [in my understanding], the 2014 phase-in target is 80% for the simple reason that BMW couldn't meet any other target."* Participant, NGO

Many put the influence down to its industrial activity and economic weight. It is important therefore to consider the relationship between the state and its auto-industry.

7.8.3.3 Does the auto-manufacturing industry have a good working relationship with the Bavarian government?

Seven participants commented on the relationship, all of which stated that there was a working relationship of some description. Two mentioned that StMWIVT is the primary point of communication for the auto-industry (due to the sector's economic input but also because it is responsible for transport). The linking of economic and transport agendas through StMWIVT may be significant. BMW and Audi were mentioned in relation to StMUG because they are members of Umweltpakt Bayern.[61]

[61] Voluntary agreement between state and industry based on the belief that the environment can be better protected through voluntary/reliable cooperation than with regulations (StMUG, undated-b).

One participant stated the relationship was primarily focused on research, with collaboration around innovation clusters (section 7.8.3.4.2). Two referred to the state government as an intermediary, promoting dialogue between manufacturers and associations and 'various institutions'. One industry representative confirmed that their company had contracts with various governmental organisations but did not elaborate on their nature. Taken collectively, this information suggests that the relationship is somewhat functional between the industry and the government, there is interaction around core business activity, but also that industry is demonstrating voluntary commitment (political interplay) to address its environmental impact. Limited information was collected from car companies on this area, so it is not possible to examine how they perceive this working relationship.

It is clear that EU policymaking is more detailed and multifarious than formal procedures suggest, there is extensive informal input to the processes (section 7.8.6) and much tension across MS and between DGs – despite the 'single face' that is promoted externally. With Cars and CO_2, industrial stakeholders are seemingly more involved in the processes than environmental actors, suggesting that existing established relationships contribute to influence. Moreover, Bavaria clearly plays a role EU and German policymaking processes, through formal and informal means.

7.8.3.4 Other scale-related information

7.8.3.4.1 EVs

EVs have been accorded a prominent role in delivering Cars and CO_2 (section 7.8.1); their subsequent promotion has triggered some interesting interaction between levels of government. EVs seemed to permeate across the research because work being undertaken around 'e-mobility' has been met with optimism at all levels and across industry, academia and

civil society. It not only seems to be a common area of promise, but is an area in which actors are keen to collaborate, regardless of their sector. This is an example of new interactions and changing relationships across levels and with government and business, but it may also represent another delaying tactic, whereby actors discuss new, different initiatives, rather than focusing on how to address the real, big problems; another example of maintaining the status quo. There is not capacity to delve into this interesting area more fully, but it is an area with much potential for further investigation.

E-mobility/EVs were mentioned over 50 times in the research and have undeniably become an important focal point for research and development in the European Union, particularly German car sector. The new relationships across levels and between sectors emerging through initiatives to introduce EVs to the fleet were one of the most interesting findings of this research. Not only have EVs been seen as a potential investment for the industry to meet its Cars and CO_2 obligations (in spite of criticisms that with current provisions, this is false potential), but also by governments within Germany as a means of delivering the transport tranche of IKEP. Discussing EV initiatives currently underway in Germany one participant said:

> *"…this is an excellent process to bring all those completely different industry sectors together; the same with the ministries. It's the first time that the ministries try to co-operate and put money together to […] support all those activities."* Participant, Car company

Another participant outlined the levels at which action was occurring:

> *"We have 17 different field tests in Germany on EVs, three are happening with states – NRW/BW[62]. But most of the money is coming from and the most important decisions are made at the federal level. […] In terms of infrastructure, the role of local governments is more important. First test beds will be in cities for EVs and it is the business of (more important for) local administrations to roll out infrastructure."* Participant, BMU

[62] BW – Baden-Württemberg. Interestingly both are large-scale states, also with significant auto industries

This insight highlights an emerging relationship between the federal and local levels working in collaboration with industry to trial the new technologies. The role of the local level is not examined thoroughly in this case study, but it is interesting that the implementer role is outlined here as in the other cases (Chapter 8). Moreover, as was outlined by the same participant, such increased activity can promote competition between governments:

> *"At the regional level, over the next couple of years, we will need to see more clusters developing – states need to be competing to ensure that federal money comes to them rather than to others. Each wants to become a model region: Bavaria v NRW."* Participant, BMU

Finally, in terms of internal federal government collaboration one participant highlights that there is much co-working around EV promotion:

> *"Electric vehicles are an issue between the Environment Ministry, the Transport Ministry, the Research Ministry and the Finance and Economic Affairs Ministry. So those Ministries joined together, they have a joint office, […] there is also a national plan being drawn up at the moment."* Participant, NGO

> *"It's the first time that on one topic different ministries or Directorates are really working together; it has not been the case in the past. This is the first time […] you are able to bring four ministers on one table which is normally not so easy."* Participant, Car company

EVs can also be considered in terms of process (section 7.8.6) – because whilst industry has responsibility for achieving the targets set by the regulation, this one particular response (EV) is being promoted by various levels of government through provision of funding and pilot projects, so there government has a clear role in supporting the attainment of the targets, even if indirect. The 'complementary measures' to Cars and CO_2 may carve out a more formal government role, but this remains unknown.

Although EVs cannot guarantee a reduction in emissions under the current regulation, they have a prominent role and are promoting collaboration on technology development not seen by any other technology or effort to reduce emissions. The reasons for this are unclear, but it is

interesting to see its emergence as a 'policy winner' which promotes interaction across departments, levels of government and sectors of society.

7.8.3.4.2 Research and innovation

Research, development and innovation were identified as areas which illustrate state government and industry collaboration. Bayern Innovativ was seen to promote collaboration between business, government and academia in Bavaria (Box 7.2).

> *"Bayern Innovativ was established on the initiative of the Bavarian Ministry for Economic Affairs and Trade […] in 1995. The intention of establishing Bayern Innovativ was to promote cooperation and technology transfer between companies and also research institutes, both universities and funding, and to gain more value creation within Bavaria using the know-how that was already present, within our region, and different kinds of industries."* Participant, Automotive network
>
> *We are in constant dialogue with the Ministry […] The Economics Ministry is driving the cluster initiative […] but there is also close cooperation with the Ministry of Science. The Ministers of the Economics and Science Departments are from the same party which helps a lot."* Participant, Automotive network
>
> *"[…] we founded these clusters to create initiative and dialogue between actors of the economy and research and so on and also without earning too much money on our side. And that's also one reason why we want to strengthen the technological competence of Bavaria so that this cannot have an effect on the competitiveness and the business of Bavarian companies."* Participant, StMWIVT

Box 7.2: Bayern Innovativ /BAIKA

These comments indicate that Bayern Innovativ plays a prominent role in connecting government, business (of all sizes and sectors), research and academic communities through its clusters. Also interesting is that political party affiliations contribute to the success of such initiatives. This highlights the strategic importance (in a coalition government at least) of personal relationships (section 7.8.5).

The need for companies to retain their competitiveness throughout collaboration was identified as a priority. These economic framings are a fundamental consideration in delivering Cars and CO_2 as well and this relates to the scope theme. Given that the luxury cars manufactured in Bavaria have a higher profit margin, it is important to examine to whether

emission reduction targets (green image) are actually prioritised over maximising shareholder profit (BAU; core business activity).

7.8.4 Theme: Scope

> *"Competitiveness is an absolutely necessary condition for any industry – for them to survive and be marketable […] Now to deliver, there is a legal obligation […] all signs are very good, the numbers we have seen on the output of the industry over the last two years show considerable progress compared with the last two years in decreasing CO_2 emissions of fleet averages, so there is a good chance that the targets will be met by industry."* Participant, DG MOVE

The primary objective of asking scope-related questions was to understand how important car manufacturing activities are to Bavaria/Germany (and EU) and consequently how reducing transport emissions fit into state/federal activities and identity as a leading car-manufacturing area. Furthermore how important are targets to manufacturers? As such, scope questions were broadly grouped as follows:

- How significant is auto-manufacturing to Bavaria's/the EU employment and economy?
- How many cars produced in Bavaria stay there?[63]
- What is the share of 'efficient vehicles' produced?

These questions were designed to ascertain the 'vested interests' of various government levels in terms of the economic contribution of car manufacturing and therefore willingness to disrupt activity. The following questions focused on whether transport-related action was taking place in sectors with less direct impact on car manufacturing, and if transport was seen as policy priority.

- Bavaria has successfully reduced energy emissions, why was this a priority sector?
- What is Bavaria (Germany/EU) doing to reduce road transport emissions?
- What policies should be prioritised in order to address transport emissions?

These questions will be considered before any additional scope-related information is discussed.

[63] As per 2: cars bought in Bavaria contribute more to state total emissions over their lifetime; cars exported do not (section 7.2)

7.8.4.1 How significant is auto-manufacturing to Bavaria's economy?

Car making, was seen as a significant contributor to Bavaria's economic output (Table 7.7).

Despite the low number of respondents, some participants offered very specific accounts.

Participant	Economic significance	Employment significance	Additional information
StMUG	€75 billion turnover per year	- 180,000 people work in the automobile sector. - Ratio of experts – 64%[64]	…we have BMW and Audi, which are big global players. And then we have a lot of suppliers Siemens, VDO Automotive, INA, Brose, ZF Sachs, Webasto…
StMWIVT	-	-	It's the second-most important sector
Automotive network	In charge of 24.6% of the annual turnover of Bavaria's economy	On the employee side it is the second-most industry after machinery	we [have] these three OEMs so there is BMW […] and MAN – lorry fabrication is also taking place in Bavaria
Academic	Audi; BMW are very important for Bavaria, for the economy. Not only themselves but also the supporting small and medium enterprises.	-	BMW and Audi in Ingolstadt are two of the premium manufacturers in Germany, and are also quite strong in the European context. And they are driving very strongly automotive innovation in Germany.

Table 7.7 Significance of auto-manufacturing industry in Bavaria

This information shows how embedded the industry is in Bavarian society, not just the economic output of its own activities, but also with regard to associated industries and intellectual property – well over half of all 'experts' in the state are employed by the industry. The sector's contribution to furthering research and expertise highlights potential reliance on the industry by the academic/government communities (section 7.8.3.4.2).

An additional participant highlighted employment impact:

> *"If you look at employees – indirect employees 12 million in the EU – sure this impacts on the policy because the members states usually want to keep this industry, they pay taxes, they give employment. […] If you take Germany as one of the economic powerhouses of Europe and the [automotive] industry creates the most turnover in this region, of course, it has an impact on the whole of the country's economy."* Participant, Automotive network

[64] This is taken to mean the number of the state's total 'experts' who are employed in the automobile sector

Given this significance, it is probable that the government will act in the industries interest and ensure that policy implemented is not to the detriment of the sector's economic output.

7.8.4.2 How many cars produced in Bavaria stay there?

No respondent provided a direct answer, but secondary information obtained suggests that it warrants mention. By far the largest contributor to BMW's[65] emissions are scope 3[66] (Appendix 7.A) and of BMW's six major markets, Germany is only fourth largest. This information suggests that the environmental impact of the company in this regard is being exported, so the impetus to limit 'luxury vehicles' emissions (section 7.8.5) is potentially less than it would be if these vehicles were to remain in the state/country.

7.8.4.3 What is the current market share of 'efficient' vehicles?

This question was designed to ascertain whether efforts were made (through the VAs) to introduce energy efficient vehicles to market (to let customers choose) to mainstream these niche vehicles and consequently reduce emissions. Eleven participants responded (Figure 7.11), with three suggesting that market share had improved and one suggesting the VAs contributed to this. One only stated that consumer demand could initiate an appetite for efficient vehicles (but that this was not occurring); another that responsibility to promote such vehicles lies with car companies (but again that this wasn't occurring).

These responses indicate that there was no real commitment to delivering efficient vehicles through the VAs and car companies (especially high-value manufacturers) do not yet see efficient vehicles as a viable product. Since consumer demand can only drive change if

[65] BMW data is utilised here as it is one of Bavaria's largest auto manufacturer and therefore offers indicative statistics. It does not reflect the entire sector

[66] Scope 3 refers to indirect emissions – i.e. those involved in the use of the company's products

products exist, car company assertions regarding the lack of consumer demand are somewhat misleading and there is something of a 'catch-22 situation' at play.

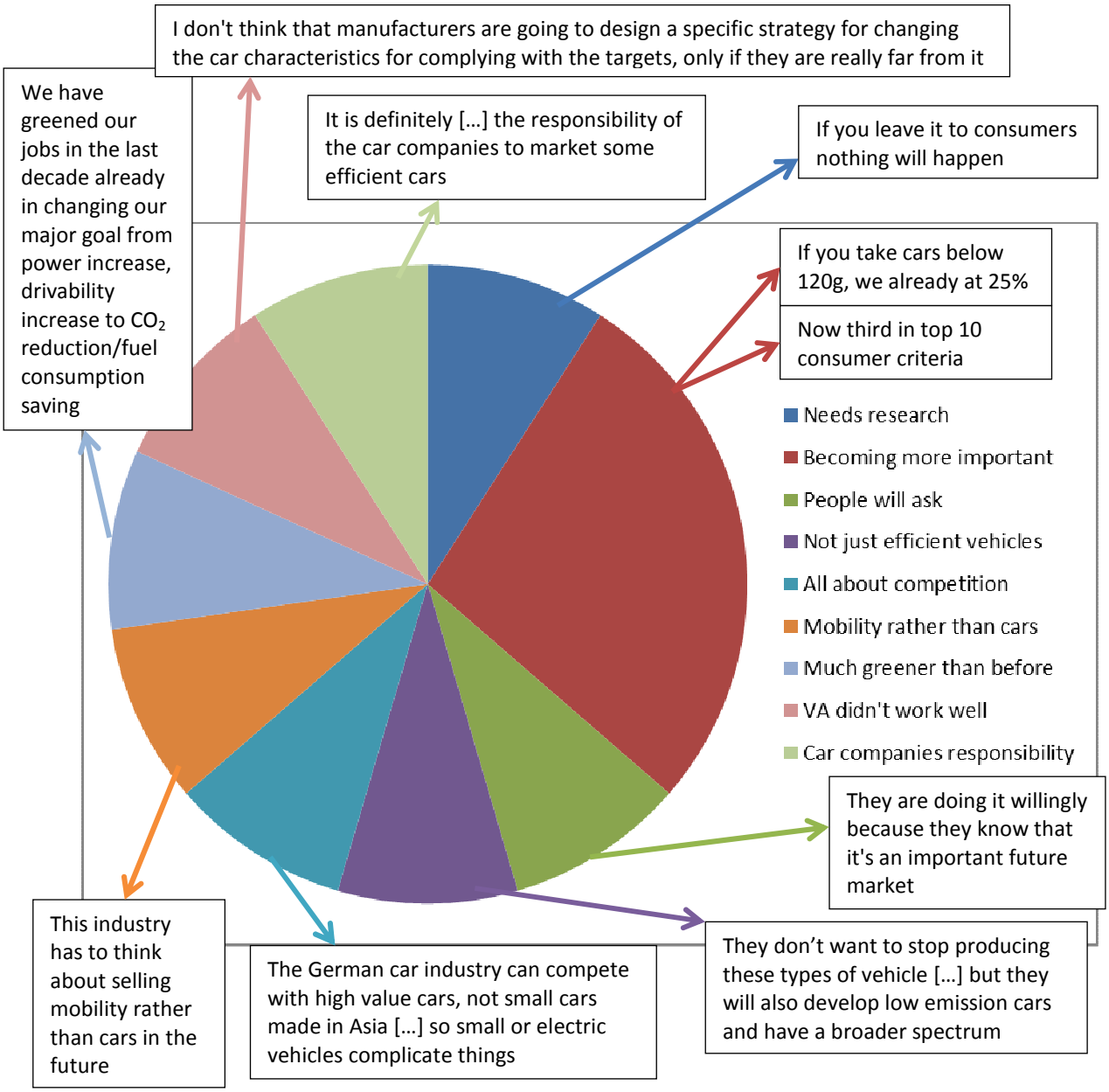


Figure 7.11: Promotion of efficient vehicles

The companies need to invest more heavily in these areas to achieve the regulation targets. Almost half of the respondents spontaneously mentioned fuel prices as the main driver for increased vehicle efficiency, as opposed to regulation or climate/environmental issues. This offers an indication that economic rationale is prioritised over other considerations.

7.8.4.4 Why has energy-related emission reduction been prioritised?

Energy-related measures have received much more attention than transport-focused efforts (section 7.6.3). Participants offered potential reasons for this (Table 7.8).

Participant	Rationale for prioritising energy
StMUG	One of the most economical possibilities to contribute to climate change and save costs
StMWIVT	We started climate policy in 2000 because we are very concerned about the changes in the Alps
StMWIVT	You can influence energy policy because there are factors, suppliers for energy and industrial plants which now have to respect the rules from the European level […] concerning transport, maybe it's a bit more difficult to regulate in this sector
BVB	You mustn't focus on transport because as I explained - an engineer always starts to work on *"where can I get out most of the effect with the least effort and the cheapest way"*
NGO	It is definitely the case that energy has been the priority area where policies were targeted at. Focus is changing a little bit also with the rise of electric vehicle debate, kind of very strong link with energy policies and transport policies, or what were conventional transport policies
Academic	Activities that take effect very fast. The influence of the transport sector takes some time to take effect because a lot of parties and even individual behaviour has to be influenced by that

Table 7.8: Why has energy-related emission reduction been prioritised?

Having more influence over the outcome, being quicker, cheaper and more effective were all suggested. One participant believed that focus was shifting more towards transport, and combining action on energy with transport in the guise of EVs. The response regarding the cheapest and easiest option highlights the cultural elements (section 7.3.3.2); that the Bavarian/German mind-set is very pragmatic/technocratic and therefore it is illogical to address transport emissions until less complicated (less economically-disruptive) measures have been exhausted (Chapter 8). One suggested that:

> *"…transport always emerges as one of the main problem that needs to be tackled […] the actions totally don't match these analyses. Everybody is aware of that fact, but the problem is so much more complex; […] in the energy sector it is relatively clear and you have much fewer utilities than in the transport sector if you take all the agents […] it gets very complicated."* Participant, NGO

This supports statements made Chapter 2 and across case studies about the difficulty in addressing transport emissions and the disparate actors involved in the sector acting as a barrier to response (section 7.9). Yet, the complex interactions witnessed through Bayern Innovativ, for example, suggests that collaboration is possible and that change can be affected.

This suggests that unlike California, in the European context, willingness to act to reduce emissions is missing (Chapter 8). Only two participants thought reducing transport emissions should be prioritised. One stated:

> *"They are very important. Because they are the only ones which are not yet under control somehow. And they have not yet a clear picture on how to reduce transport emissions sufficiently to comply with the 2050 target."* Participant, SG

In spite of the limited validation for the need to address transport, more information was gathered on what action is currently taking place. This was to ascertain how significant a contribution Cars and CO_2 is to overall efforts to decarbonise – and in the EU context to 'mainstream' climate change – in the transport sector.

7.8.4.5 What is Bavaria doing to reduce transport emissions?

Although only three respondents offered suggestions, they all cited e-mobility as the most significant effort in this area (section 7.8.3.4.1). One participant also mentioned traffic management and public transport information provision, although they suggested that Munich was promoting these initiatives, not Bavaria. Participants were also asked what measures *should be* prioritised to reduce transport emissions.

An 'integrated approach' – which connects fuels, vehicles and use – was highlighted by a third of respondents to address the transport sector's emissions. Although such an approach would be difficult to deliver in the current EU context given the fragmentation across DGs for different elements of the transport system (section 7.5.3). Efficient vehicle technology and public transport were also seen as potential responses.

Interestingly, none of the participants highlighted behaviour change as a means to achieve reductions. This is interesting in comparison to the other case studies, where behaviour

change approaches (however small) are all featured. Again this is evidence of the technocratic framing of the Bavarian/German/European response, it may also be because of the perceived difficulty in achieving change – so technical approaches are favoured. There is no indication in this case study that things need to be 'done differently' that CDG expects, or that was witnessed in the other case studies.

7.8.4.6 Other scope-related information

7.8.4.6.1 How far can fuel efficiency get us in reducing GHG emissions from transport?

Given the largely technocratic perspectives towards emission reductions offered, participants were asked how much emission reduction fuel efficiency measures could deliver. There was no agreement between participants; this was an area with extensive difference of opinion.

One participant saw that much more progress could be made through additional efficiency efforts, another that the response's contribution would be limited. Interestingly, meeting the targets and no more was seen as sufficient by another participant. Calls again were made for responses to be more integrated and consider more than just efficiency alone. The final participant stated that responses in this area would not contribute at all, because increase in use and demand would negate efficiency gains. People will continue to drive cars further and more if policy measures are not promoted to address these trends. This highlights incompatibly between current government strategy and approaches that may be more efficient.

Given that no responses propose that fuel efficiency will offer large scale reductions, Cars and CO_2 alone is not a sufficient approach to decarbonise road transport in the long-term and a more integrated approach is required.

None of these responses speak to the urgency of dealing with the sector reflected in the other chapters (Chapter 8). This seems to be somewhat of an incompatibility. In the international regime, the EU has long been considered an environmental leader, especially on climate change. Just as Germany and Bavaria are considered economically influential, within Europe, Germany is seen as one of the most proactive and influential MS on environmental issues. Likewise, Bavaria, traditionally a conservative and frugal state, is renowned for energy saving and conservation and environmentally-conscious decision-making. Participants were asked to consider why this awareness does not extend to addressing the impact of the transport sector.

7.8.4.6.2 Love of cars

The seemingly intractable incompatibility between being an environmental leader (section 7.8.5) and having a 'love affair' with the car – in cultural and economic terms –was examined in both Bavarian and German contexts. This idea was posited as a potential reason for limited action to addressing transport emissions and for the techno-centric framing of proposed responses. Even though Germany has intentions to become a low carbon economy and will redress the balance between economic activity and GHG emissions, was addressing the impact of the car a step too far? Participants were therefore asked to speak about whether affinity to the car and the reputation as an environmental policy innovator could be reconciled (Figure 7.12).

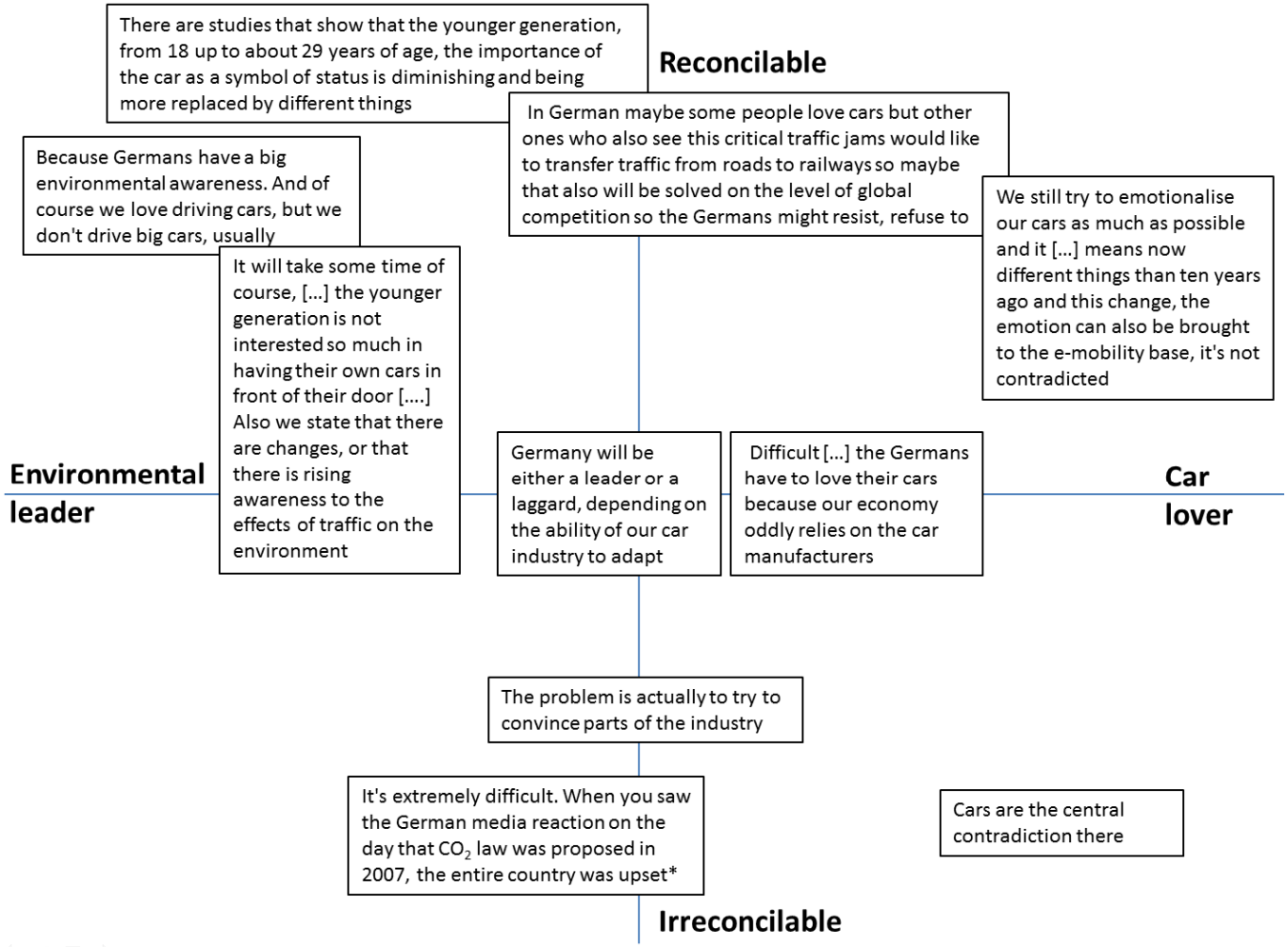


Figure 7.12: Can the love affair with cars and environmental leadership in Germany be reconciled?*[-67]

[67] Remainder of text: *[…] And the feeling was really that this is totally unfair to our industry. […] So the car industry and Germany are connected. People think what is good for the car industry is good for the country basically. Many people, not everyone of course, but the perception is very strong. […] people have high environmental awareness, but there is also a perception that the car industry is extremely important for the economy*

Opinion again was mixed. Some participants suggested that the love affair stems from the significant economic contributions the industry makes (section 7.8.4.1). Others emphasised that the industry has a role to play in redressing this issue (section 7.8.4.3). An important cultural consideration highlighted was that the younger generation in Germany/Bavaria are more environmentally aware and do not place the value on car ownership as older people do. This infers that over the coming years, a shift away from large, heavy luxury vehicles, or driving generally, may occur – which may have significant industrial repercussions, but it may be necessary to initiate lower carbon transport choices and may see Germany and Bavaria also take the lead on a greener transport agenda as well.

7.8.5 Theme: Leadership/power

> *"Bavaria is very ambitious. This is also why we have good knowledge; good people; good stuff."*
> Participant, StMWIVT

This section addresses the multi-faceted theme of leadership – it examines climate leadership demonstrated across government levels and the role of selected individuals in delivering the Cars and CO_2 regulation. The primary objective of asking leadership-related questions was to ascertain whether the efforts to address climate change at each of the government levels are exemplary and whether lobbying activities undertaken with regard to the regulation undermine the stated environmental leadership. The questions were broadly grouped:

- How does Bavarian /German/EU climate change 'leadership' present itself?
- Significance of individuals in the development processes of the Cars and CO_2 regulation
- Where is climate change on the Bavarian agenda?

These questions are considered before any additional leadership/power-related information.

7.8.5.1 Bavarian/German/EU 'leadership'

Responses were limited and referred only to Bavaria's leadership (Table 7.9).

Participant	Evidence of leadership	Leader(s)
StMUG	Investment in climate change is larger than any other states "Our CO_2 emissions are about 30% lower than on federal level, even if we are a high developed economy"	It's always up to the political leaders and actually in a democratic state the will of the population what happens, and how it happens
StMWIVT	Umweltallianz and Klimatag (Environmental Alliance and Climate Day). Bavaria is very ambitious. We have good knowledge, good people, good stuff	The Bavarian administration is well recognised within the Federal system and also with the other states so in many fields other states look at Bavaria […] It also has to do with our strong party CSU
StMWIVT	Bavaria had a chance after the Second World War because it was not very developed so it could invest in new types of energy supply, infrastructure	Environmental Ministry […] the Ministry for Science is concerned with research on climate policy; the Educational Ministry is involved in education, our [transport] Ministry's is responsible for energy, for traffic and technology
BVB	More photovoltaic systems installed than in the total of Spain. We have also 40% of the whole solar capacity of Germany	

Table 7.9: Climate change leadership in Bavaria

There were different categories suggested. Investments in climate initiatives and renewable energy were mentioned, as was the state's ambition – although this cannot be verified or quantified.

But the most striking response was that Bavaria's emissions are lower than most states and the national average, despite experiencing economic growth. Bavaria is considered a leader on climate change because it has actually delivered emission reductions. One participant suggested that indeed the other states look to Bavaria for guidance, as was seen in California (Chapter 8). Another stated that political stability and collaboration with industry in Bavaria contributes to the proactive response:

> "*In Bavaria we have had a government which is under the conservative regime without having a very strong opposition; this makes government easy; you can work on longer-term perspectives. And there is a good relationship with industry. So they come, to some extent, to quite a good consensus about how to go on."* Participant, Academia

One respondent stated that Bavaria's action to date is positive, if it is properly contextualised:

> *"For a global role Bavaria is much too small and unimportant […] But our climate change and energy saving policy in Germany, in Bavaria especially, is not only a forerunner for good policy in the world but it also helps us to save resources and make our economy more fit and susceptible for future developments."* Participant, BVB

This comment suggests, as indicated previously, that Bavaria is addressing environmental concerns, climate change included, because it is in its economic and societal interest. The same participant reflected on Germany's global leadership in much the same way, suggesting that this mind-set extends across the country.

> *"…you have to have a leader who is taking the lead initiatives and decisions in favour of a sound development of the country, […] the decisions taken from Chancellor Merkel in terms of world climate change will not prevent the Maldives from getting into trouble or Tuvalu to sink, but it will help the German economy and society to be more fit for the future."* Participant, BVB

Two participants discussed the EU's leadership position in the international climate regime:

> *"It will continue pushing and the EU will probably maintain, how should I put this, conceptual leadership, because it is most involved in the politics."* Participant, DG ENV

However, if delivered successfully (section 7.8.6), Cars and CO_2 was seen as an area where the EU can lead globally in implementation, not just conceptually and in policy negotiation:

> *"The environmental measures could lead this industry to a global leadership position, not only in Europe but in the rest of the world. And I would say that the car industry is considered as really a strategic sector."* Participant, DG ENTR

Now that regulation is in place, there is an opportunity to showcase innovation in and leadership of the sector (section 7.8.5.4). The automotive industry – one of the most carbon-intensive – has potential with Cars and CO_2 to remodel and become an example of environmental stewardship. This was not a commonly-held perspective, but as it was offered by an industry-focused participant, it is nonetheless important to highlight.

7.8.5.2: Significant individuals in developing Cars and CO_2

Although closely related to process (section 7.8.6), participants highlighted that Commissioner Verheugen was the [sole] factor behind halting the proposed partnership between DG ENV (subsequently DG CLIMA) and DG ENTR to oversee implementation of the regulation:

> *"…one of the big unanswered questions when the strategy in Cars came out, who would be responsible; Mr Verheugen or Mr Dimas? President Barroso avoided that decision and instead tasked DG Environment and DG Enterprise jointly to develop this under supervision and coordination of the Secretariat-General. It was only at the very end that basically Mr Verheugen let go of the file, for reasons I do not entirely understand. And Dimas was since then in charge."* Participant, DG ENV

> *"It was at the time a decision obviously by Vice-President Verheugen, not to be in the lead any more. […] It was to some extent maybe a form of protest. It was probably known that he did not like the cars regulation. And for that reason he probably said OK I don't like it, so I don't want to be responsible for it."* Participant, SG

Commissioner Verheugen is no longer head of DG ENTR, but nonetheless Cars and CO_2 remains under the jurisdiction of DG CLIMA and the connection and existing relationships with the manufacturers that DG ENTR brought are lost. This highlights the significance personal preference has on policy processes and the importance of leaders in promoting, or devaluing agenda items.

Finally, several participants noted the important roles played by Chancellor Merkel and President Sarkozy (section 7.8.3.1) in developing the agreed targets in the regulation, highlighting a circumvention of (or perhaps a change in) EU procedures.

> *"France for example had a big point in discussion, being a big manufacturer of cars, as was of course Germany and especially Bavaria with our two main brands, BMW and Audi. But when France is having a problem with the German position stated in the Council, and of course as it was the case with this dossier, it was so important that it was considered to be a 'boss' affair so Sarkozy cared himself about it and he liaised directly with Chancellor Merkel."* Participant, BVB

7.8.5.3 Where is climate change on the agenda?

Five respondents considered whether climate change was a political priority (Figure 7.13).



Figure 7.13: Where is climate change on the agenda?

Two suggested that it was on the European agenda, one said it was a 'top 3' policy, but the other saw limitations to how it could be addressed. As was seen in the other cases, one participant suggested that the economic situation had pushed it down the agenda, which disagrees with suggestions that it is higher than previously. This level of agreement is comparable with statements made in other cases; it is not the top priority (Chapter 8).

One participant highlighted strategy-action deficit in terms of Maastricht Treaty provisions and the extent of integration of climate policy into other DGs (Chapter 8):

> *"Article 6, says that environmental concerns need to be integrated into all the other policies. You can lead a horse to the water, but you can't make him drink. […] All the sectoral DG, their policy areas and stakeholders have other stronger, short-term interests. If you put them in charge of climate as well it will be encapsulated and reduced to some symbolic action […] you need to sit at the top table with the topic."* DG ENV

This outlines a pragmatic approach to 'mainstreaming' climate change – placing it at the highest level to ensure it overarches policy areas (Chapter 8).

7.8.5.4 Other leadership-related information: Corporate leadership

Car companies did not actively promote efficient vehicles to consumers through the VAs (section 7.8.4.3). Luxury cars are heavy and fuel intensive, but also have a higher profit margin than lighter more efficient or alternatively-fuelled vehicles. Claims made by car companies, through initiatives like 'Efficient Dynamics' (BMW) or 'BlueMotion' (VW) suggest that they are actively promoting greener vehicles, but the extent to which this is core business activity is unclear. The level of opposition expressed to the regulation suggests that companies are more resistant to addressing climate change than proactive in reducing emissions:

> *"The ones that were obviously most concerned were Bavaria and Baden-Württemberg. One is BMW, the other is Porsche and Audi and Mercedes; those two were very vocal. […] It was seen generally as an attack on the German industry and in order to understand why people are so emotional about this, you need to understand that in the car market we have today – Germany builds the most prestigious cars and that is not just like that, that is the result of decades of struggling among manufacturers about who would be in that position and the Germans won. And now they are in a vulnerable position for that reason, because they build the highest-emitting cars. […] There was a lot of very hard fighting. This is a very competitive industry; a lot of the conflict comes down to that."* Participant, DG ENV

This quote highlights competition and that much is at stake in changing the make-up of a fleet or using new technologies. Another participant however suggested that the lobbying may not reflect the effort put into increase fuel efficiency:

> *"Bavarian MEPS were very tough on this issue […] even though BMW is doing very well compared to other German carmakers. So there is actually a difference between what cars companies sometimes do and how they act or react to the legislation."* Participant, WWF

Additional participants singled BMW out in terms of efforts to redress the impact of their cars:

> *"When BMW launched Efficient Dynamics, it puts the pressure on other companies […] otherwise they lose in the market. And so it means this is the best driver. […] BMW has not only implemented Efficient Dynamics in the upper segment but in their smaller cars as well."* Participant, ACEA

> *"BMW has a certain niche it has carved out for itself and a certain brand image. And they cannot easily move away from it. But they certainly had a very impressive series of improvements there."* Participant, DG ENV

This issue is clearly a complex one. Car companies are in a polluting industry. This has been acknowledged and regulation exists to redress this environmental impact. Whilst vehemently protecting business interests suggests that this isn't a priority for the car companies, shareholder interests need to remain the primary concern for the business to function. Fuel efficiency increases year-on-year and commitment to EVs (despite the flawed incentives these offer) is at an all-time high. It is however difficult to consider BMW a leader because of the type of cars it produces and its opposition to the standards.

7.8.6 Theme: Process

> *"The regulation is in place, the companies know their target. […] This is such a competing industry that you can discuss general issues here, you can analyse proposals from the Commission, but when the legislation is in force and it's how to comply with the legislation, there is no discussion at ACEA anymore."* Participant, ACEA

The primary objective of asking process-related questions was to understand *how* Cars and CO_2 will be delivered and *who* is responsible for implementation. Several elements of the regulation were 'left open' for later discussion, such as Eco-innovations, 'complementary measures' and how the 95g target would be achieved. Similarly, DG CLIMA's introduction and the interplay between DG ENTR and ENV create uncertainty over ultimate responsibility (section 7.8.6.2). As such, questions are grouped as follows:

- Which DG is responsible for overseeing the regulation?
- Who is responsible for monitoring, compliance and achieving the Cars and CO_2 targets?

7.8.6.1 Which DG is responsible for overseeing the regulation?

Limited participants offered comments on which DG was responsible (Table 7.10).

Participant	DG responsible	Comments
DG ENV	DG CLIMA	It is an extremely inefficient way of handling things
NGO	DG CLIMA - implementation of this particular law	Depends how narrowly you define this. There is also policy debate and various initiatives related to electric cars. Some of them are **DG ENTR**-led
DG MOVE	I'm not aware enough of this file	I don't know if it has been formally allocated to **DG CLIMA**. In the past, before 1st February it was **DG ENV** who was working on this topic very closely with **DG ENTR**, because it is responsible for standardisation and basically this is a standard. So I am not well informed enough, I don't know how this standard will be dealt with in the future
SG	DG CLIMA	Doesn't meant that **DG ENTR** is out of the picture
DG ENTR	DG CLIMA	**We** are responsible for that approval. For vehicles, from the point of view of everything, but mainly safety and environment. Sometimes what **DG CLIMA** approves has an influence on that approval […] that's why we stay in close contact.

Table 7.10: Lead DG on Cars and CO_2 (Emphasis added)

DG CLIMA's oversight of the regulation is well-understood and although this isn't a joint lead with DG ENTR, several participants stated that DG ENTR would still be involved. The internal wrangling over Cars and CO_2 and subsequent decision by Commissioner Verheugen to step away from the partnership (section 7.8.5.2) highlights the perceived inferiority of the climate portfolio. Measures, even familiar industry-wide regulatory standards, to address climate change are side-lined; there is reluctance to 'mainstream' the issue into the recognised industry-focused department. The regulation therefore lacks authority that would have existed with joint ENTR/CLIMA oversight.

This poses questions about whether compliance mechanisms will have enough authority in DG CLIMA, when it comes to imposing fines on non-compliant manufacturers. Similarly, as Baker (2001) explains, MSs are usually relied on to monitor/enforce; with Cars and CO_2 companies are expected to report back to DG CLIMA. This is why the role of supplementary measures

complicates matters, as these are likely to come from outside or in partnership with the industry. These appear to be fundamental flaws (and barriers) to implementing the regulation. Baker (2001) and Sbragia (2000) note that policy networks have been centrally important to addressing the 'implementation deficit' of environmental legislation at the EU level. The existence of such networks can be questioned. It is therefore very important to understand whether a policy network (with state government and MSs) to assist the carmakers in monitoring and reporting and implementing the additional measures is likely to be established.

7.8.6.2 Ultimate responsibility

The majority of respondents saw that the car manufacturers have ultimate responsibility for achieving the Cars and CO_2 targets. One participant suggested the success of the regulation was the primary responsibility of DG CLIMA. One commented on the role of MS in Eco-innovations, but saw the mechanisms as ill-defined. As Bardach (1977) suggested, the EU is still 'hammering out the details' of Cars and CO_2 (Chapter 8). It set the framework on which all mechanisms would be built, but it remains unclear what the involvement of others will be:

> *"Eco-innovations […] should be considered in the compliance of the CO_2 target, but it's not mentioned how to assess Eco-innovations. […] Regulation is setting a framework, but the next step is OK we need a lot of detail how a real procedure could be established […] there are three or four items for the CO_2 regulation which needs to be further discussed. Its Eco-innovations, the monitoring rules, how to monitor the CO_2 compliance of the OEM, in particular how to improve the monitoring of the member states."* Participant, ACEA

It is appropriate to surmise that the onus for delivering reductions currently lies with the companies, but it is unclear whether other stakeholders will have a role in other elements of the regulation and what these will be.

7.8.6.3 Other process-related information

7.8.6.3.1 Compliance

Participants were asked to reflect on the compliance mechanism; the fines levelled if manufacturers do not meet their target. It was posed as "what happened is no companies reach their target?" – i.e. would they all be fined (Table 7.11).

Participant	**Response**
DG ENV	Overkill. Even €5 is sufficient nuisance to make carmaker avoid it if they are at all capable
NGO	So the whole question is of monitoring and reporting, the Commission has to get it right, because otherwise the manufacturers are going to be very unhappy if they're fined on the basis of same data which isn't correct
SG	Well if you apply the law, it would be all of them. But we don't expect that this will happen. Because the car manufacturers know very well what they have to do. And in addition the phase-in is a very soft one. So it would not … from 2012 to 2015 they only have to comply with a certain percentage of their fleet, so no penalties are expected there.
DG MOVE	That is a very hypothetical question; it is completely unrealistic; the terms are set in the regulation for non-compliance. There is a process; I don't see any particular difference to this regulation compared to other regulations
European Organisation	I don't think we will be in that situation
Car company	Complying with current laws is a matter of course
Car company	According to our plans and what I know from our competitors that we can follow that line which has been given by the European Commission, it will be not easy
NGO	They leave a lot of room. I think most of the manufacturers will meet the targets just because there are so many loopholes in the regulation

Table 7.11: Comments on compliance

Statements here suggest that the car companies are aware of the targets and what is required of them and as best as they can, will strive to meet them. Comments from the car companies themselves suggest that the targets are demanding to meet. Civil society expects the use of loopholes and for 'zero emission' EVs to be prominent. But these points illustrate that there is a need for clarity over the mechanisms in order that the companies have the best chance of meeting the targets.

7.8.6.3.1 Long-term target

Numerous participants reflected on the 2020 95gCO_2/km target. Details on this element of the regulation are quite limited. Most participants that commented took issue with the target. One because it came as a surprise to certain stakeholders:

> *"People were very unhappy with the long-term target basically because Merkel agreed with Sarkozy that the target would be set maybe up to 110g, and then the EU set a target of 95g. The very fact that the EU could do something against what Germany wanted was completely baffling to some politicians. […] So German industry is lobbying against this long-term target from the very day of the adoption of the law."* Participant, NGO

This suggests that whilst there are prominent stakeholders within negotiations ultimately decision-making resides with the EU over regulation. Another participant suggested the EU assumptions in setting the target were flawed:

> *"They make cost assumptions about technologies – assumptions about the market penetration of technologies – look we don't know exactly; we can only estimate a development – the market penetration. But you can't expect that each car in every country will have full hybrid – unrealistic."* Participant, ACEA

Despite these problems, one participant commented that *"95 is pretty ingrained"* (Participant, DG ENV). Despite being contested, the 95g target is in the regulation and companies need to think longer-term about how it can be achieved. This shows ambition on behalf of the EU, however there is a risk, as with other EU environmental regulation, it will not be implemented.

7.9 Barriers

Unlike other case studies, limited responses were offered about barriers (Table 7.12). But economic barriers were again seen as the biggest hurdle to achieving the targets – primarily in terms of the costs of the new technologies. This links to the second-most referenced problem that technology and the technicalities of making more efficient vehicles will stand in the way of attainment (Figure 7.14).

Participant	Barriers	Challenges	Type
StMUG	Lobbyism; political will of leaders	Situation can only be changed by consumer behaviour	Political; Economic
Car company	Technical side – battery technology; battery price	Public procurement	Other – Technical; Public
SG	Cost efficiency of different technologies	-	Other – Technical, Economic
BVB	Increasing traffic (passenger and freight) on the roads		Other – Bavaria context
NGO	Type of car industry; company car subsidies	-	Political; Economic
Academic	Money	-	Economic

Table 7.12: Barriers and challenges to Cars and CO_2

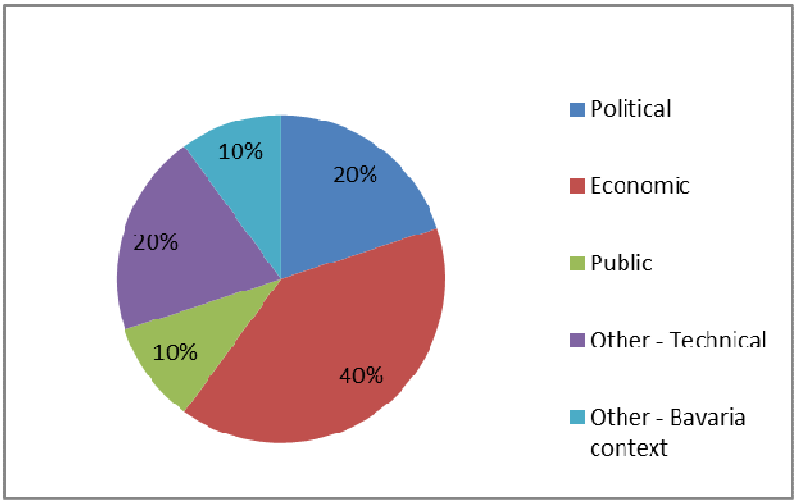


Figure 7.14: Barriers to Cars and CO_2 by type

By placing emphasis on technology, it could be said that participants are using the 'too difficult/not possible' rationale for justifying inaction. If economic and technical barriers are deemed insurmountable, it could be suggested that the government could take steps to promote action to address these areas. In Germany, this is happening to an extent with the model regions, but this is peripheral. Government has the opportunity to reframe industry to take account for the prohibitively expensive technology, but these economic signals are

currently not being sent, which suggests that this area is not a political priority, or that Cars and CO_2 does not have sufficient political weight behind it.

Only one participant mentioned political leaders as a potential barrier and whilst Commissioner Verheugen did not stop the passage of Cars and CO_2, he demonstrated the influence that political leaders can have over measures and therefore this barrier should be seen as significant.

Similarly, although only identified by one participant, a potential barrier identified in literature is the subsidies given in Germany for company car fleets and the models that exist to promote and sustain the luxury vehicle market (Shiftan et al., 2012). This area would be interesting for further research – in terms of how these subsidies could be used to promote more efficient vehicles.

7.10 Discussion and Conclusion

> "Transport policy is about things that transport ministries do, about infrastructure, about road charging, about the internal market and freight services, all that kind of stuff that is transport policy. The characteristics of vehicles, that is industrial policy, because that is regulating products. And therefore it's in DG ENTR." Participant, DG ENV

7.10.1 The Bavarian context

The influence of Bavaria over policymaking at other levels of government is clear. As an economically powerful state, steps are taken in Europe and Germany to ensure its industries interests are preserved. Bavaria has the luxury of a fairly stable political system, which means that the uncertainties of regime change do not affect the state, so it is able to pursue a steady agenda. This agenda over the past decade has included emission reduction, but as in SA, it has been energy-focused. The rationale for this is that it makes most economic sense to address

energy first. Indeed all of Bavaria's decision-making is pragmatic, economy-led and as Weale et al. suggest, this is unlikely to change in Bavaria, or Europe:

> *"No standard is ever set solely by reference to environmental considerations without considering its economic effects"* (2000, 79)

So whilst references are made to climate change mainstreaming and integrated approaches in the European context, it is worth noting that all efforts are caveated with *"so long as it makes economic sense"*. Whether this will be sufficient remains to be seen.

7.10.2 Lessons on fragmentation, interplay and collaboration

Many interesting areas for comparison and discussion emerge from this Chapter, some of which will be used for comparison in Chapter 8.

Scale:

- The relationships in the European context are more defined than in other cases. The interactions between government (across levels) and industry are more embedded and well-established. The disconnect – despite rhetoric to the contrary – between environment and transport stakeholders is pronounced. This fragmentation is seen both within government between departments and with external stakeholders (Chapter 8).
- Disagreement and conflict appear to be a prominent and effective policymaking tool in Europe, with fierce contest to preserve economic interests. Both formal and informal procedures and unconventional methods of negotiation are seen throughout the case study.
- Despite not being formally recognised, the sub-national government clearly has a role to play in EU decision-making and a different relationship with the national and supra-national levels.

- EVs are creating new interactions across levels not witnessed previously, so despite flaws in the regulation regarding their promotion, they are encouraging collaboration, which is positive to reducing fragmentation.

Scope:

- Strategy-action deficit exists in this case as calls for an integrated approach in both the CARS 21 report and the Maastricht treaty to address environmental issues and transport emissions more specifically are not being acted upon.
- By allowing 'supercredits', the regulation has potentially enabled emissions to increase, which suggests that emission reduction potential was compromised to ensure business interests were accounted for.
- Little effort is being made to mainstream climate change into transport, across levels. It remains on the periphery and with the 'climate change department'. This is demonstrated by the unsuccessful partnership between DG ENV and DG ENTR. The IKEP is ambitious and has potential to deliver integration in Germany. But because efficient vehicles remain fairly niche, it is clear that industry is also not taking steps to mainstream climate change into production decisions. The regulation may change this over time (Chapter 8).
- Market conditions and economic considerations were attributed to Germany's car culture, yet there are indications that this is a generational mind-set, which may be redressed as younger, more environmentally-minded citizens change trends towards less driving and smaller, lighter cars. The market should be mindful of this and respond accordingly.

Leadership/power:

- Individual leadership played an important role, but unlike in other cases where it has promoted action, here it was to get the best outcome for industry or to hamper positive developments (Chapter 8).
- Industry continues to have a relationship with DG ENTR which isn't framed around climate change, DG CLIMA is a new entity with few established connections internally or externally, therefore it may be considered a 'weaker' DG comparatively.

Process:

- The mechanisms to implement Cars and CO_2 are still in development, but are likely to be the most significant elements of the regulation.
- Whilst DG CLIMA's role is clear, how other DGs/levels of government will interact with industry on monitoring progress towards achieving the targets is a significant area which will determine whether Cars and CO_2, unlike other European policy, is implemented.

Barriers:

- Economic and technical barriers were cited as the most prominent in this context, but broader political considerations, as proven by the findings here, are perhaps more fundamental hurdles to successful policy development and implementation.

7.10.3 Conclusion

Weale et al. (2000) suggested that securing prioritisation for environmental measures would always be an uphill struggle. This case study demonstrated that indeed, economic factors are still prioritised above environmental imperatives in Europe. Whilst portrayed as a world leader in addressing climate change, the EU is still making decisions based on market interest and economic stability. Whilst regulating fuel efficiency is seen as a positive step, the intense

bargaining on the standards set and the loopholes available to companies weakens the mechanism and does not actually guarantee that absolute emissions will be reduced.

Bavaria is clearly influential in decision-making across levels and regarded as a leader by respective state governments. If Bavaria could utilise its political stability, frugal mind-set and technical expertise and focus attention towards decarbonising the automobile industry it has been instrumental in developing, emission reduction would surely follow.

Chapter 8: Comparative Analysis

8.1 Introduction

A key element of this research was investigating fragmentation in policymaking between levels of and portfolios within government. This was done by examining the interaction and collaboration between diverse actors in transport-related climate change policymaking. It was focused on the sub-national level to establish whether interplay across governmental levels and portfolios exists, and if such relationships contribute to a joint climate change response. Here the most insightful findings from each of the case study chapters are compared and contrasted to highlight common themes and contextual nuances, which all contribute to understanding existing and emerging relationships and organisational structures. The chapter discusses case study findings by research theme, before contextualising them within the broader field and discussing what they can contribute to understandings of governance and the sub-national level of government.

8.2 Scale

This section discusses research findings through the scale-related analytical framings identified in Chapter 2, including interplay (here vertical) and chains of interaction. It subsequently explores the areas of comparison identified throughout the case studies:

- Local government capacity
- Influence over national policy
- Available policy levers
- Non-state actors

Finally additional scale-related elements that warrant mention will be identified and discussed.

8.2.1 Vertical interplay

General communication and interaction was acknowledged throughout the research as occurring across levels of government, and being both political and functional in nature. Additionally interaction with and between the private sector and civil society was also observed (Figure 8.1).

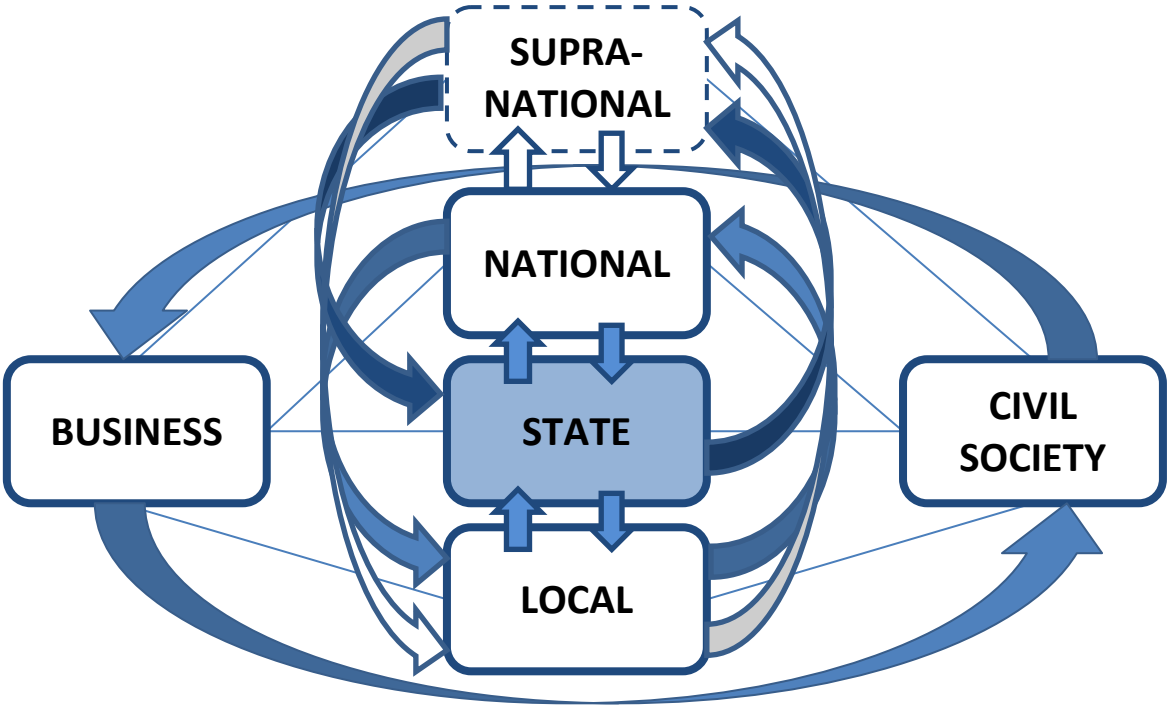


Figure 8.1: Matrix of observed vertical interplay (supra-national not relevant to all case studies)

However, closer examination of case study policies reveals that interplay, as defined by Young (2002), is nuanced in relationships. California is the only example where vertical interplay between state and national government plays a role in the delivery of the case study policy – through the provision of transportation funding. This could demonstrate evidence of an active involvement of the US government in SB 375. However as an existing interaction concerning the allocation of transportation funding, the US government's role is actually passive. It has very little to do with land use planning, the central element of SB 375.

In all other instances, the national government has no role or involvement in delivery of the specific policy[68].

In Bavaria, the links 'down' from the DGs extend to the national and sub-national state level, and then indirectly to the local level through interactions described in the research between the regulated car companies. The pilot projects to deliver lower emissions vehicles are being run by the local governments. There is very little local government involvement in implementing the transport investment in SA. Only California and Scotland witness active 'downward' interplay – between state and local governments – to deliver the case study policies (section 8.2.2). In these instances, roles for each level have been identified, with interactions occurring to complement these assigned tasks. Generally, the state set policy objectives and played an oversight role **– support, funding and strategy**, whilst the local government acted as **implementer** – this could also be said to be the case in Bavaria, where the local governments are providing infrastructure for efficient vehicles. As Young (2002) suggested, assigning such tasks is the key to successful delivery of outcomes.

However, there are certain tensions here, in terms of conventionally-understood roles at these levels (section 8.2.2.3) and in terms of allocating ultimate responsibility for particular policies, across not just levels, but also departments of government (section 8.3.4). Horizontal interplay is closely linked, but is more issue-related and therefore scope-focused (section 8.3.1).

To recap, it would seem that whilst political and functional interplay exists across government levels, it occurs on a case-by-case or policy-by-policy basis and therefore limited concerted

[68] German lobbying in shaping Cars and CO_2, and its development of a national e-mobility programme could be considered here, but because the regulation states that the targets are to be achieved by the car companies alone, the role of government is considered passive until the details state otherwise

'cross-level' collaboration to address transport emissions was demonstrated in these particular case studies.

8.2.2 Local government

Three key matters relating to local governments emerged throughout the case studies 1) local government involvement in state-led case study policy, 2) local government capacity to take on new policy challenges like climate change, and 3) the extent to which state government action (on particular policy) questions or undermines existing local authority. Table 8.1 provides an overview of the interaction occurring in each case study[69]. In all cases except SA, local government has a role. In Scotland and California, it is integral. In Bavaria until Eco Innovation mechanisms are clear, local governments play an informal role in EV pilots emerging across Germany.

State	**Policy/ regulation**	**Local role in policy/regulation**	**Level of involvement**	**Resources to deliver**	**Expertise needed**	**Current expertise**
Scotland	SCSP	Project implementation	High	Moderate	Moderate	Low
SA	Public transport investment	Limited	Low	Low	Low	Moderate
California	SB 375	Submitting RTPs; implementing land use policy	High	Low/ Moderate	High	Land use – high Climate change - low
Bavaria	Cars and CO_2 regulation	Pilot projects with car companies	Low-Moderate	Project-dependant	Project-dependant	Project-dependant

Table 8.1: Aspects of local government involvement in case study policies

[69] In the context of this table High is considered to be integral to the implementation of the policy and being matched by adequate resources to do so. Moderate means that there is some involvement in the policy and at least some capability/resources available for implementation. Low means there is little participation in the policy or limited capability/resources available for implementation

8.2.2.1 Involvement

In all cases except SA, the role of the local government as 'implementer' of case study policy was seen as centrally important to delivery. SA is the exception mainly because of the state government's ability to give/take away local government power. Also because SA's size and population distribution means that city affairs dominate the state government agenda. Although the 30-Year Plan calls for a *"continuous dialogue with local government",* this is clearly lacking (section 8.3.2). Subsequently local government roles are marginalised. Local government potential to facilitate climate change policy was identified during the research, but is not being utilised in SA. Aside from PCCC representation, there is little local government participation in shaping the agenda. Roles remain poorly defined and weak. In terms of the public transport investment, whilst many of the proposed upgrades run through several local government areas, there is little involvement of these entities in the process, with DTEI and DPLG identified as the only bodies engaged in the programme. It is likely that there would be more buy-in and willingness to change transportation mode if local governments were engaged in the process.

In the Bavarian context an interesting dynamic is emerging between the German federal government, 'model regions' (local governments) – Munich being one – and industry. There is not scope to examine this emerging relationship further here, but it would be an interesting area for future research efforts. With these model regions, the state's role is fairly modest; it is circumvented to some degree, which supports the notion in sub-national governance that in certain contexts vertical interplay is complex, not hierarchical.

SCSP and SB 375 both require local governments to play a very active role in delivery; they depend on them for success. In California, the interaction extends to all MPOs, cities and

counties, so there is a very broad base for vertical interaction. In Scotland, SCSP is more of a partnership model between departments of government and participating local authorities, but crucially, SCSP is a pilot project and one which has been set up through 'ring-fenced' funding, something which is no longer common practice in Scotland, so interaction between local and Scottish government in this context is not reflective of normal practice. Moreover the range of interaction is limited to participating local authorities. Therefore, the novelty or difference of this particular initiative lends support to the idea that in Scotland at least transport-related climate change policy has not been 'mainstreamed' (section 8.3.3) but remains niche. Similarly in Scotland, local level climate change expertise and capacity was seen as restricted and less of a priority, so these should also be examined.

8.2.2.2 Capacity

Following Jänicke's (1997) distinction between integrative (political-institutional framework to integrate environmental considerations into decision-making) and strategic (ability to implement objectives) capacity, the case studies have demonstrated that integrative capacity between state and local levels exists. However, the extent to which it can be described as open and inclusive varies across cases. Contrasting SA with California; in SA capacity was identified, but is not utilised and in California, the local capacity is not present, but the state law requires interaction to implement the law – despite the encroachment of local government authority that SB 375 calls for (section 8.2.2.3). Scotland is providing resources to improve local governments' integrative capacity, although this support only extends to participating LAs, so the ability of other LAs to address transport-related climate change remains limited.

Local governments are being increasingly utilised to implement transport-related climate change policy, but local strategic capacity is lacking. The main areas lacking strategic capacity

were financial/human resources and climate change expertise. At the state level climate change departments have expanded, expertise has been enlisted to address climate change and financial resources have been allocated to delivering such policy (section 8.3). At the local level, there is a cyclical challenge which perpetuates the capacity shortage – the 'strategic capacity gap' (Figure 8.2).



Figure 8.2: The 'strategic capacity gap' faced by local governments in addressing climate change

Acknowledging the fundamental role of local government as 'implementers' in delivering policies to address transport GHG emissions is critical in order to redress this gap and provide local governments with the requisite capacity to play this role. Without additional capacity provision at the local level, it is likely that the planned policy interventions will fail.

8.2.2.3 Authority

Finally the third consideration highlighted above – the encroachment of state action on local authority – is particularly relevant in Scotland, SA and California. Although the Scottish government is facilitating local government policy with SCSP funding, in California, SB 375

actually regulates an area of local government jurisdiction – land use policy. This is compounded by the fact that SB 375 provisions for local authorities are voluntary (section 8.5).

Whilst CDG calls for institutional change, the ability for state government to legislate an area for which they do not have responsibility is contentious. However, in Chapter 6 respondents were fairly confident that because local government associations were involved in the development and successful passage of the state bill, this encroachment does not pose a significant barrier to the implementation of SB 375. More research is needed here, in terms of the types of jurisdictional changes that may be necessary to deliver emission reductions. The 'specific tasks' argument Young (2002) advocated is compelling; however the level at which these tasks are assigned varies and is little-understood. As Kooiman (2000) proposed, a blurring of lines between conventional areas of jurisdiction across levels and the roles emerging through the case study policies was witnessed – which serve as an indication of the institutional change to be expected in CDG.

The relationship between levels of government in addressing climate change is indeed complex. The state clearly has an impact on the local level – it is not entirely autonomous. As implementers, local governments need to have active and functional roles and relationships with other levels. But they need to have the necessary capacity to fulfil this role and as facilitators, state and national governments need to help to provide this. At the current time, the importance of the local level in delivering case study policies and more broadly is not necessarily recognised and impact that the local level will have in terms of delivering emissions reductions is potentially underestimated.

8.2.3 Influence over national policy

State government influence over national and supranational policy differs in each case and across the contexts different types influences/constraints were identified (Table 8.2).

State	Constrained by national[/EU]	Influence over national[/EU]	Type of influence
Scotland	X	x	Strategic
SA	TBD	x	Political
California	TBD	x	Operational/Strategic
Bavaria	-	x	Political/Financial

Table 8.2: Constraint by/influence over national and supranational policy

The potential to influence national policy was referenced across the interviews. However some necessary communication linkages between portfolios are missing, which makes these interactions less operational. Moreover, it was noted by one participant in the Californian context, that whilst these channels may be open, there is no guarantee that the national government will listen to the state and this could be equally true across the cases. Finally, an interesting question was raised in terms of the extent to which government officials recognised their own influence. It appeared that there were a high proportion of non-governmental or non-state participants commenting on the extent of influence and less from the state government themselves. It cannot be proven that this is statistically significant, but it may highlight is that there is acknowledgement of this function externally, but less agreement that in practice this influence is actually taking place.

It was suggested that the ambitious Scottish emission reduction target played a role in influencing the UK to subsequently adopt the same target, and therefore that Scotland had influence over UK government climate policy. There was a strong indication that this influence was reciprocal. With regard to SCSP, many people noted that the Scottish initiative learned some important lessons from the English STTs. Nonetheless, in terms of constraint, much attention was focused on the limited policy levers available to the government (section 8.2.4).

In both SA and California, the state's role was clearly established, but remains uncertain with regard to climate change policy. Similar in the fact that state action emerged as a result of federal inaction, and later federal difficulty in gaining consensus on an appropriate national climate change response; their roles have been prominent and endured. In the USA, California is likely to continue to lead, innovate and go further than the national government. It was described as having a *"window of limitless freedom"* to act on climate change, without federal government interference, but this says little of the influence it exerts over federal policy. But because of California's unique relationship to CAA and its ARB, the US government is likely to continue to rely on California to push the envelope on issues too complex for it to address. And there is evidence to suggest that this can be extended to SB 375-type policy as other states are also considering the role that land use plays in reducing emissions and VMT.

In Australia, after the failure of the Rudd administration to establish a cap on emissions, and the subsequent double dissolution election, incumbent Julia Gillard successfully negotiated the Clean Energy Act. The carbon tax, in force from July 1st 2012 signals Australia's intention to address the impact of its most heavily-polluting industry. Conversely, in October 2011, Premier Mike Rann resigned from office. His incumbent Jay Weatherill has reshuffled government and made announcements that suggest climate change is to be less of a personal priority than it was for his predecessor. Whilst mechanisms such as the PCCC were written into the 2007 legislation, there is little indication that these will be utilised by Premier Weatherill, or even that the legislation will remain. Given Mike Rann's political influence within the Australian Labor Party and his personal involvement in climate change policymaking, this emphasises the significance of personal leadership (section 8.4.2.1) in maintaining momentum on policy objectives. Both recent developments highlight that SA's role in influencing national climate policy is uncertain.

Bavaria has demonstrated political and economic influence within Europe and Germany, both formally and informally. It contributes significantly to the German economy and industry interests in Bavaria are considered in policy which may impact it. Moreover, because of the provisions of the Grundgesetz, this role in policymaking is assured. Culturally too, Bavaria plays a strong role in shaping Germany's external identity and is also home to some of the world's most iconic brands. In Germany, with CSU's strong political ties to CDU, Bavaria's influence is undoubtedly considered in German policymaking. But Bavaria is one of several powerful states in Germany; it is not unique in this sense. On the EU level, whilst Bavaria and other sub-national entities have no formal role in policymaking, it was nonetheless identified as an influential stakeholder in terms of lobbying prowess and ability to bring decision-makers together. Given the limited mechanisms for formal engagement, this role is centrally important. This lack of a formal role highlights an issue common across the case studies; restrictions on policy levers available to sub-national governments.

8.2.4 Available policy levers

SA is the only case study whereby enduring power lies with the state government. Although in Australia responsibility for climate change policy has not formally been accorded to any level. This no doubt contributes to fragmentation in approach, duplication of effort or gaps which ensue. In all other contexts, the states are bounded by some national government constraints, which limit responses to addressing climate change, and particularly transport emissions.

Scotland has perhaps the least room for manoeuvre. Of all possible policy responses to reduce Scotland's emissions, only a third exist at the Scottish level, a third are reserved by the UK and a third by the EU – this highlights the necessity for effective vertical interplay to respond to climate change. Moreover, as most fiscal policy is reserved at the UK level and without a

significant car manufacturing industry, Scotland is reliant on so-called soft policy responses to address the climate impact of its cars. The other states, as part of federations, have many more options to draw from. California has the most expansive policy options which is positive; given that here transport emissions account for over 40% of the total. Federal policy does have potential to contravene progress made in California, for example through the Supremacy Clause of the Constitution. Whilst this is not a certainty, it could be significant. In addition, the expected reauthorisation of SAFETEA-LU could also disrupt the implementation of California's transport-related climate change policies, but these specific measures and timeframe remain unknown.

And whilst policy responses are available, that this does not automatically ensure that governments will seek to utilise them. SA has a good deal of autonomy to address the climate impact of its road-based infrastructure and redress the balance from cars to alternative modes. However, these areas are not policy priorities, so they have not been utilised to any significant degree. Similarly, whilst Bavaria has much competency and a good history of public transport investment, it is hampered in efforts to address other transport areas due to the strong economic input of carmakers and associated industry and what is deemed viable politically and publically. This demonstrates that restriction does not only apply to available policy levers based with other levels of government. Other factors must be considered.

There is no evidence stemming from the research to suggest that significant competency changes will be made across the specific policies under scrutiny. Other broader climate change competencies may evolve and as has been witnessed, some states have had much more opportunity to date to take action than others, California and SA as a result of federal inaction, Scotland to try and drive overall UK action further. Bavaria and Germany have pursued a

similar green agenda, with complementary policy tools, but with regard to motor vehicles, they have collectively lobbied action and been resistant to changing the status quo, or change which does not impinge on industry too starkly. Business and other non-state actor roles are examined below.

8.2.5 Non-state actors

The influence of business and civil society was evident across case studies. The importance of associated but previously unengaged stakeholders in climate change policy was highlighted, in particular private developers in California[70], links to academia for expertise in all case studies to some degree, particularly in Scotland, and battery and technology companies in Bavaria. In SA, the importance of contractors and franchises to service delivery was noted. The need to engage parking and other car-related industries was also noted across the case studies in order to implement robust transport-related climate change policy. Here attention is paid particularly to the auto manufacturing industry and to environmental non- profit organisations, as both instigated the need for further discussion in the case study contexts.

8.2.5.1 Auto industry

Bavaria's auto industry played a confrontational role in shaping Cars and CO_2, through direct lobbying and working with the German and Bavarian governments to negotiate an acceptable emission standard that would not restrict too severely its ability to continue to create luxury vehicles.

Yet interestingly, the *absence* of a significant auto industry in the other case studies can also highlight the sector's influence over transport-related climate change policy. In Scotland, there

[70] Although some developers are circumventing SB 375 instead of facilitating its implementation by providing funds to local governments to save them from entering the federal RTP funding process

has not ever really been a significant car manufacturing industry, so Scotland is accepting of the fact that this is not a policy area over which it can do much to redress the impact – it is seen as one of the unavailable policy levers (section 8.2.4).

California has a fairly modest sector contributing only 2.4% of the state's manufacturing base in 2008 (Platzer and Harrison, 2009). Much of this activity comes from foreign OEMs, which specialise in compact vehicle manufacturing. Taking this into consideration alongside the ubiquitous car use that California confronts, perhaps California has been able to achieve more than other states in terms of tackling emissions from vehicles not solely because of its unique ARB and ability to surpass national standards. Perhaps the absence of strong industry lobby preventing it from adopting the most stringent of standards has been significant. If California's economic base was more dependent on vehicle manufacturing, and/or more domestic OEMS, the level of ambition it has demonstrated to date could potentially be called to question.

Finally in SA, Mitsubishi was a strong voice for the promotion of increased use of motor vehicles until the company left Tonsley Park in 2008. This departure coincided with an unprecedented investment in public transport infrastructure on a scale previously not witnessed in the state's history. It also freed up the area to develop a 'sustainable technology employment hub'. It was argued by respondents that this investment and subsequent developments could not have occurred whilst Mitsubishi was present in the state, which is indicative of the power the auto industry has over political responses to reduced car use.

This influence should not be hidden, it should be acknowledged. The industry is such a powerful stakeholder with an ability to shape the degree to which transport emissions can be stabilised and reduced over the next few decades. Governments should prioritise engagement

with the sector to limit fierce opposition to decarbonising the infrastructure and to maintaining the status quo.

8.2.5.2 Environmental NGOs

In California, 'sponsored' bills have become commonplace in law-making. SB 375 was co-sponsored by the CA League of Conservation Voters and the Natural Resources Defense Council. An innovative idea, which is generally not recognised outside the state, sponsorship of bills has been a mechanism through which over half of bills entered Senate. Some 65% of Assembly bills were sponsored in the state in 2007-8, for example (Mercury News, 2010). This is just one means through which environmental organisations have exerted influence.

In the case of Cars and CO_2, the Brussels climate lobby was an important counter to the car industry, pushing for ambitious standards and organisations including T&E have been very vocal in ensuring that climate change interests are considered in the intense bargaining that occurs within Europe. Similarly, Germany also has a very active environmental NGO network, made up of several organisations, which works with the national government. However, in both instances, the environmental lobby is still considered to be considerably weaker than industry, which supports the notion that 'old' and 'new'/'weak' and 'strong' political influences still exist, and that the environment and transport sectors are not yet on an even playing field. These considerations will be examined below.

8.3 Scope

This section will examine those areas identified in the case study chapters as relevant for comparison, these include the following:

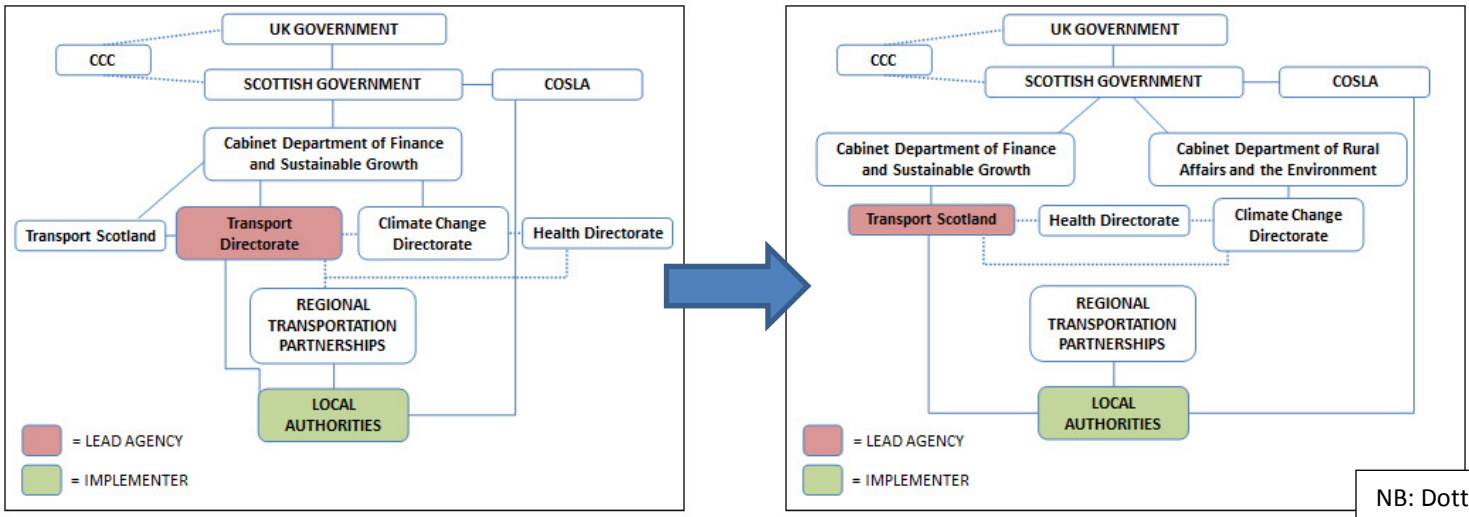
- Horizontal interplay
- Strategy-action deficit
- Climate change mainstreaming
- Ultimate responsibility

These will be addressed before other more general areas of scope-relevant synergy/difference across the case study contexts will be identified and discussed.

8.3.1 Horizontal interplay

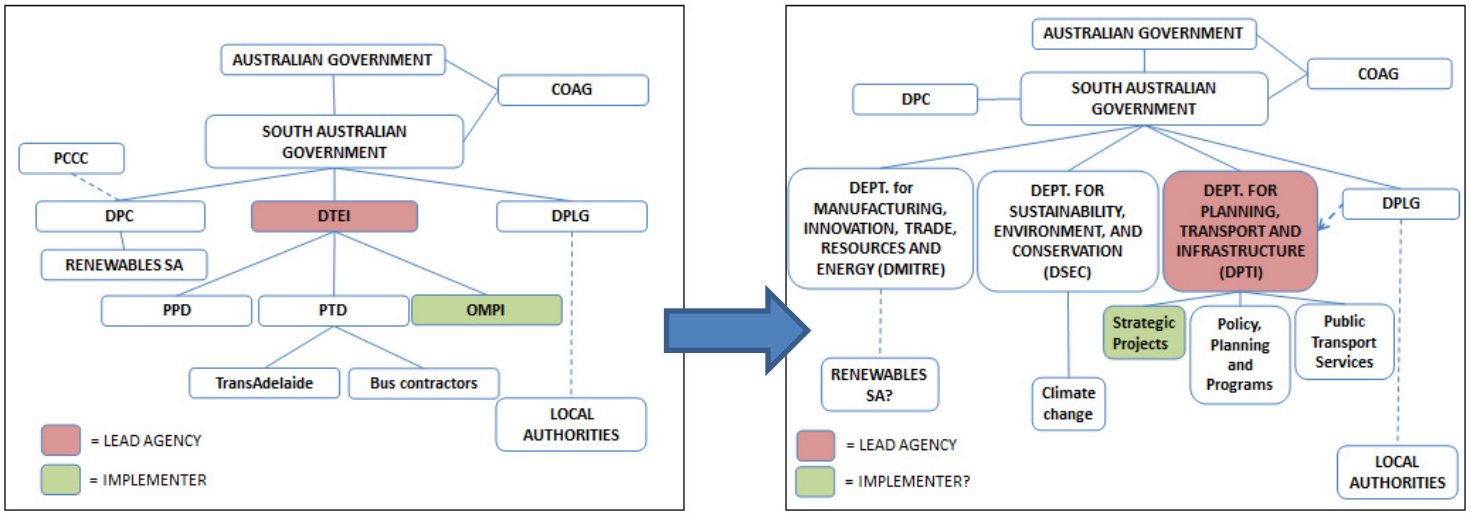
Examining the relationships between portfolios within levels of government, alongside the information from section 8.2.1 delineates each case study's 'chains of interaction' (Figure 8.3), as well as any changes these chains have experienced throughout the research. In Scotland and SA chains have not necessarily lengthened, but have been altered. These changes however, have done little to promote increased interaction between disparate portfolios and lack of communication across departments endures.

In California and Bavaria lengthening of the chain has occurred, with an expansion of sectors, stakeholders, government levels and portfolios and the interactions between these entities occurring as a result of the policy intervention, as Kooiman (2000) suggested would be witnessed. Whilst there are a number of peripheral entities involved in or informed of progress of the case study policies, the degree to which they are involved in political interplay can be called to question. SB 375's chain of interaction is very complex and its long-term nature may require additional or different organisations to become involved in the future. The evidence

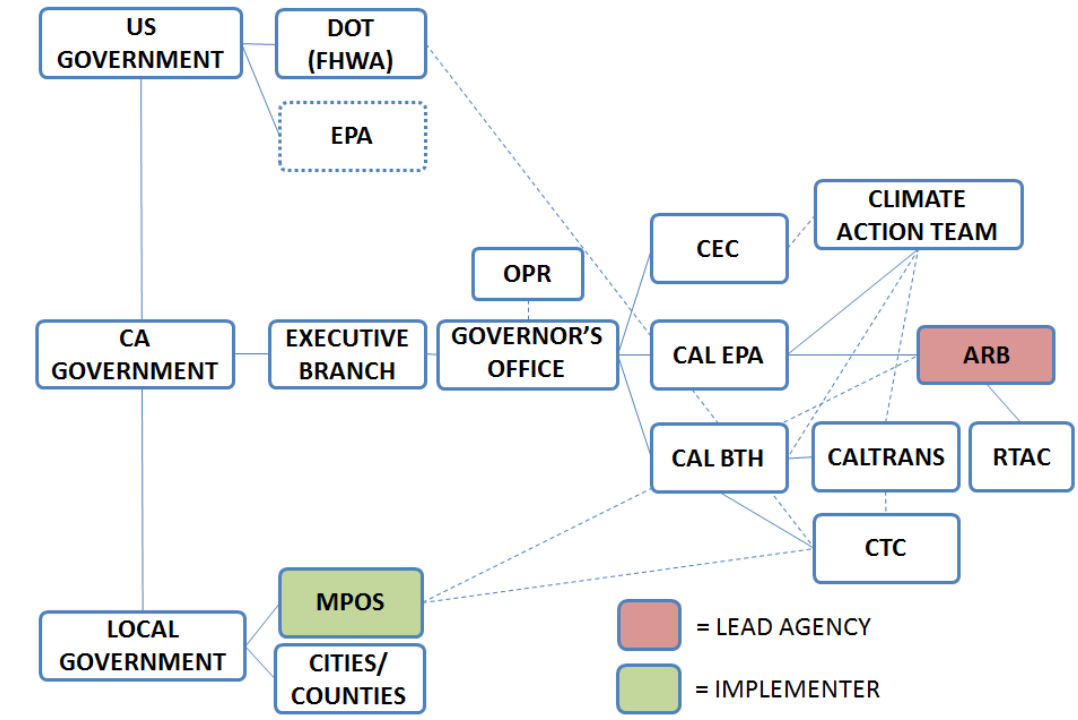


NB: Dotted boxes or lines denote tentative, informal or policy-specific interactions.

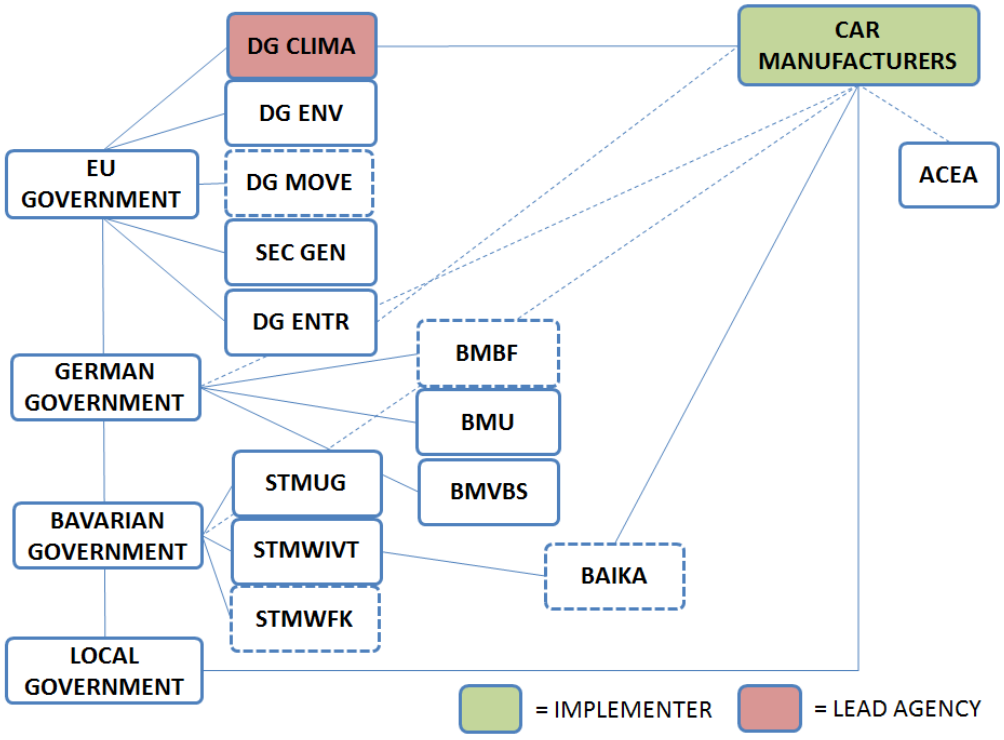
SCOTLAND CHAIN OF INTERACTION (OUTSET AND END OF RESEARCH)



SA CHAIN OF INTERACTION (OUTSET AND END OF RESEARCH)



CALIFORNIA CHAIN OF INTERACTION (THROUGHOUT RESEARCH)



BAVARIA CHAIN OF INTERACTION (THROUGHOUT RESEARCH)

Figure 8.3: Case study chains of interaction

here suggests that longer chains are involved in implementing policies with higher emission reduction potential (section 8.3.5).

New interactions between previously unconnected agencies are occurring and at the current time, this complexity does not seem to prevent roles from being fairly well-defined. What can be questioned is whether these roles are actually given to the right entities (section 8.5). Similarly, the delivery of Cars and CO_2 is actually fairly straightforward, in terms of the necessary interaction between DG CLIMA and the car companies. However, because of the extent of informal input from all levels of government and contentious areas of the regulation still to be addressed, these interactions are complicated.

With regard to the 'blurring of sectoral dividing lines' (*Ibid.)*, it appears that conventional portfolios endure. Transport departments remain responsible for transport policy, and climate change departments or equivalent are responsible for climate change. In Scotland, there was evidence of a linking of portfolios, when the Minister had joint responsibility for transport and climate and there was also evidence that departments are working together to achieve multiple policy objectives. However the conventional policy divides remain and the delinking of these ministerial portfolios weakened the responses considerably. However, a positive step in removing fragmentation was seen by merging TS and TD – although perhaps this only serves to make transport interests more prominent. Either way these points highlight that with continued flux in terms of responsibility it becomes difficult to deliver policy consistently.

In SA, the DPC was responsible for climate change; with the arrival of the new Premier in October 2011, this role is unclear. And although DTEI is listed as responsible for transport-related climate change policy, this role was not acknowledged by participants. The exception is

California, where an established (although non-regulatory) organisation has assumed climate change responsibility, which can be seen as a blurring of responsibility, as it is an extension of traditional jurisdiction.

And in Bavaria and SA, we see the sort of blurring described by Stoker (1998), in terms of lines between public and private sectors; in SA through the dominant role played by contractors in transport service provision, and in Bavaria through the EU directly regulating car companies to act to reduce emissions.

Whilst evidence of blurring is limited, there is contention over ownership of transport-related climate change policy – there was a great deal of uncertainty across research participants as to which department had 'ultimate responsibility' for climate change (section 8.3.4). This does not indicate a blurring or merging of sectoral lines, but more a lack of clarity about where accountability for climate policy resides.

Also uncovered, particularly at the EU level and in SA, is a lack of horizontal interplay across divisions of the transport department or equivalent, or between departments responsible for dealing with different parts of the transport infrastructure. DG MOVE is responsible for infrastructure and 'transport policy', but has little involvement with the affairs of the auto sector, which is overseen by DG ENTR. Whilst the 2011 White Paper offers a holistic vision for long-term transportation, it doesn't address this fragmentation, therefore embedding these divisions to ensure that transport policy remains compartmentalised.

One SA respondent stated that the transportation investment signalled *"a complete shift"* in the relationships between divisions of DTEI, other interviewees however discussed the lack of

communication between the divisions, suggesting that this shift had not taken place. This lack of interaction was identified as a problem in Scotland, and redressed with the merging of TD and TS, which can be seen as a positive step towards improving horizontal interplay across sector portfolios. Throughout the research however, transport departments were often considered to be very large, with clearly defined areas of responsibility internally and little cause to interact – especially between policy and infrastructure provision.

In California, fragmentation across transportation departments was less prominent, but many respondents were uncertain how/whether the different 'legs' of the state's transport-related climate change responses could be connected/consolidated. Whilst departments were not central to this question, it highlights that fragmentation across areas complicates transport-based responses to climate change. Each of these examples highlight that transport is a more established, 'old' areas of policymaking, which may even be more resistant to working together or compromising on areas of authority, than to integrating 'new' ideas, such as climate change considerations into their remit. This is perhaps a demonstration of institutional arthritis (Olson, 1982); the older organisations have become too entrenched to collaborate with each other, but are equally ill-equipped to address current problems, such as climate change through maintaining the status quo, meaning that policy responses are inadequate. It also highlights lock-in to the system and path dependency. Even in California, where environmental problems have been integrated into the system over the past 40 years, this change has been dealt with by a new entity – ARB – so Caltrans did not refocus attention. California has addressed environmental challenges, but not through changing how the transport sector operates.

Finally complexities of horizontal interplay in the Bavarian case study were displayed through the dynamics between DG ENTR and DG ENV and subsequently DG CLIMA. DG ENTR had established relationships with the European auto sector and was a natural partner with DG ENV to oversee Cars and CO_2. Due to challenges (mainly the personal preference of Commissioner Verheugen (section 8.4.2.1)), DG CLIMA, a new DG with no direct relationships or experience dealing with the car companies was furnished with full responsibility for administering the regulation – a clear indication that climate change considerations are not being 'integrated' into wider policymaking considerations. As was mentioned in Chapter 7, historically the weak links between DGs has made it easy to achieve commitment to environmental policy, but not to deliver it. Here, the weak interplay between DG CLIMA and DG ENTR is likely to make it very difficult to implement Cars and CO_2, with the crucial established link of the latter to the car industry missing. It is not just implementation deficit which is a significant problem, but also that between strategy and policy (section 8.3.2).

Across the case studies more departments/agencies have become involved in development and implementation processes. This indicates that policymaking has become more inclusive; more vertical interplay is taking place. But as these chains of interaction lengthen, policymaking may become more complex.

8.3.2 Strategy-action deficit

Another issue which emerged several times in the research concerned inconsistencies between commitments made in government strategy and government action through policy implementation – referred to here as 'strategy-action deficit'. Similar to implementation deficit (Peters, 1997) strategy-action deficit is distinct because it does not refer to implementation difficulties once policies have been established, but more that the ambition laid out in

government strategy is not translated into the policies developed to deliver against these objectives. Ostrom (1990) suggested that there was a difference between rules in practice and rules on paper. It is embodied here as strategy-action deficit. Substantial statements are often made in government strategy rhetoric about the need to address climate change and reduce emissions, but case study findings show that claims are not backed up by the policy developed.

Similarly, inconsistency across portfolios and sector-specific strategy was also evident, such as the STAG in Scotland, implementation of which would lead to substantial increases in emissions. Similar examples across case studies support the argument that 'climate change mainstreaming' is not being achieved (section 8.3.3). Table 8.3 outlines the major government strategies in each of the case studies and pinpoints the principal climate change 'pledge' made. References to transport in climate change strategies and transport strategies which mention climate change also pinpoint inconsistencies in strategic direction between the two portfolios.

Mismatches between overarching statements and policy delivery are seen in Scotland and SA in announcing increased public transport ridership, as one of the only measures to reduce transport emissions in overarching government strategy. However, in SA the budget investment was not framed as a climate change response (Table 8.4), nor was transport seen as a priority area. There is a dominant energy-focused climate change discourse in Bavaria and in SA transport emissions are barely referenced, despite the headline objective of increased transit ridership. Similarly in Scotland, the NPF highlighted an increase of public/active transport as a key objective to address climate change, yet SCSP was designed as a one-off, short-term pilot project with limited scope and was in no way representative of the transport emission reductions necessary to deliver against Scottish climate change targets. Here we

State	Government Strategy	Climate change => Transport	Transport => Climate change
Scotland	**NPF:** (Greener) Increase proportion of journeys to work by public/active transport	**Climate Change Delivery Plan:** - Almost complete decarbonisation of road transport by 2050 **Report on draft policies and proposals:** - Driving more efficiently, widening travel choices, reducing the need to travel	**NTS:** -Reduce emissions to tackle climate change -Give real alternatives to the car
SA	**SASP:** (Attaining sustainability) - Greenhouse gas emissions reduction - Use of public transport	**Greenhouse Strategy and the Government Action Plan:** - Substantially reduce transport-related greenhouse emissions while maintaining accessibility and economic development *NO MENTION OF TRANSPORT IN CLIMATE CHANGE LEGISLATION*	**30-year plan, SIP:** -Public transport *NOT* identified as 'Attaining sustainability' objective
California	**SGP:** The creation of a SGC to coordinate the activities of state agencies to promote sustainability	**AB 32/Scoping plan:** - Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve these	**CTP:** -Enhancing the environment
Bavaria	(EU): **Maastricht Treaty:** Environmental protection requirements must be integrated into the definition and implementation of other Community policies	(EU): **2011-2050 Low Carbon Economy Roadmap:** Innovative solutions are required to mobilise investments in energy, transport, industry, ICT (Germany) **IEKP:** Create a reliable framework for business and consumer research focused on efforts in the field of battery technology and vehicle technology (Bavaria): **Climate Programme 2020** - Climate-friendly development of transport - Increase public transport share	(EU): **2008 – Greening Transport strategy:** Ensure prices of transport better reflect their real cost to society in terms of environmental damage and congestion **2009 – A sustainable future for transport:** Undesired environmental consequences of transport activity require further action on […] greenhouse gas emissions **2011– White Paper:** - Ensure that EU-funded transport infrastructure takes into account energy efficiency needs and climate change challenges - Promote policy targeted at the energy efficiency and climate change goals of this White Paper (Germany): **Bundesverkehrswegeplan** - Reduction of noise, pollutants and climate gases (primarily CO_2) (Bavaria): **Gesamtverkehrsplan (2002)** - Vehicle manufacturers have a very important contribution to environmental improvement of transport

Table 8.3: Transport/climate change strategic linkages across case studies

State	Case study policy: Climate change-related claims made	Transport objective	Climate change objective	Multiple objectives
Scotland	Significant reductions in transport-related CO_2 emissions			x
SA	- Reduced carbon emissions that the electric rail services will deliver - *"more efficient, expanded and highly -patronised public transport reduces car use and emissions"*	x		
California	- *"first-in-the-nation bill to link greenhouse gas reduction to transportation and housing planning"*		x	
Bavaria	- Setting emission performance standards for new passenger cars as part of the [European] Community's integrated approach to reduce CO_2 emissions		x	

Table 8.4: Climate change objectives and related-claims made in case study policies

begin to see the gap in terms of what climate change strategy sets out to achieve, and the shortfall of policy being implemented to achieve said targets – the strategy-action deficit.

Similarly, a further deficit can be seen when comparing the importance placed on transport emissions in climate change strategy with the imperative to address climate change in literature originating within the transport portfolio. In both California and Bavaria, with mature car-based infrastructure, climate change rhetoric barely features; reference is primarily made to environment and sustainability themes, as opposed to actual emission reductions. This highlights that whilst interaction between government departments is not an overwhelming contributor to fragmentation, policy semantics and strategic direction is. Consistency between overarching government strategy and departmental strategy is as issue, as are sector-specific strategies. Moreover, the level of ambition strived for in government strategy is by no means demonstrated in the policy outputs delivered by case study governments to date.

If the actual strategies of the particular case study policies are considered (as opposed to whole-of-government or departmental strategy), the strategy-action deficit appears to be less, except in the case of SA. Table 8.4 highlights that at the outset of each case study policy;

climate change was referenced as a contributory objective to be achieved. Emission reduction is the central aim of both the Cars and CO_2 regulation and SB 375. In Scotland, SCSP was clearly designed to achieve multiple objectives, although the limited scope of the initiative questions the 'significant' reductions expected at the outset.

As can be seen here and as was expressed by research participants, strategy-action deficit is still apparent, even if less stark. All case studies to some degree highlight that certain targets have been set without attainment in mind (section 8.3.2).

There was frequent discussion about what *should be* or *needs to be* done to tackle climate change and general 'buy-in' to ideas like interagency collaboration and co-working, 'and doing things differently' but taking all of this information into consideration – there is a clear fragmentation between strategy and practice. The rhetoric around the imperative to address climate change is not reflected in subsequent policies developed to tackle the issue.

8.3.3 Climate change mainstreaming

Just as above a disparity between strategy and policy was outlined, it is also important to highlight that reference has been made in each of the case study governments (except SA) of efforts to 'mainstream' climate change across government operations in some way. The term climate change mainstreaming is taken from the EU understanding of integrating climate change considerations into the operations of all other policy areas. Therefore use of terms integration or mainstreaming both reflect the processes under discussion.

The following statements have been made by the case study governments about aligning other policy areas with climate change:

- Every agency, department and division will bring climate change considerations into its policies, planning and analysis (California: ARB, 2008)
- Actors whose main tasks are not directly concerned with mitigation of, or adaptation to, climate change also work to attain these goals (Bavaria: DG CLIMA, 2010b)
- *Strengthened governance arrangements:* Given the statutory imperative of delivering the emissions reductions, new governance arrangements have been adopted in the Scottish Government to support the development work over the coming year (Scotland: Scottish Government, 2009b)
- SA does not take a similar approach; it instead asserts the importance of 'leading by example': Support can be provided for these actions [laid out in the Greenhouse Strategy] by using sustainable practices during all stages of the building procurement process as well as developing specific strategies for significant public sector organisations.

In the SASP the need for interagency collaboration is also highlighted. Although framed differently, the premise of each statement is to integrate considerations of climate change into other government portfolios – a shift from Figure 8.4, where climate change is one of competing policy interests to Figure 8.5, where it is considered across portfolios.

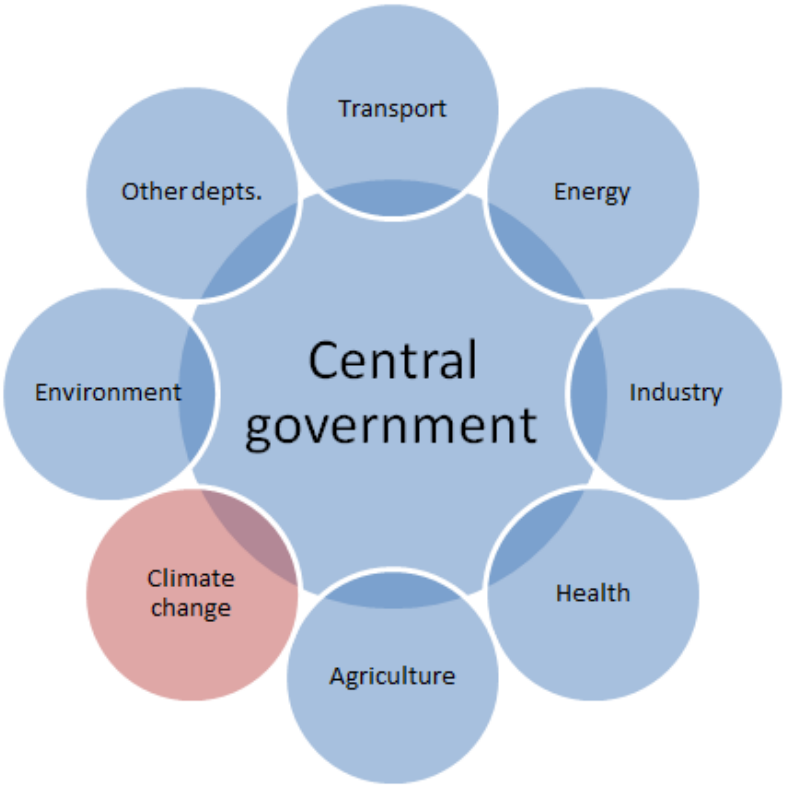


Figure 8.4: Normalised climate change policy

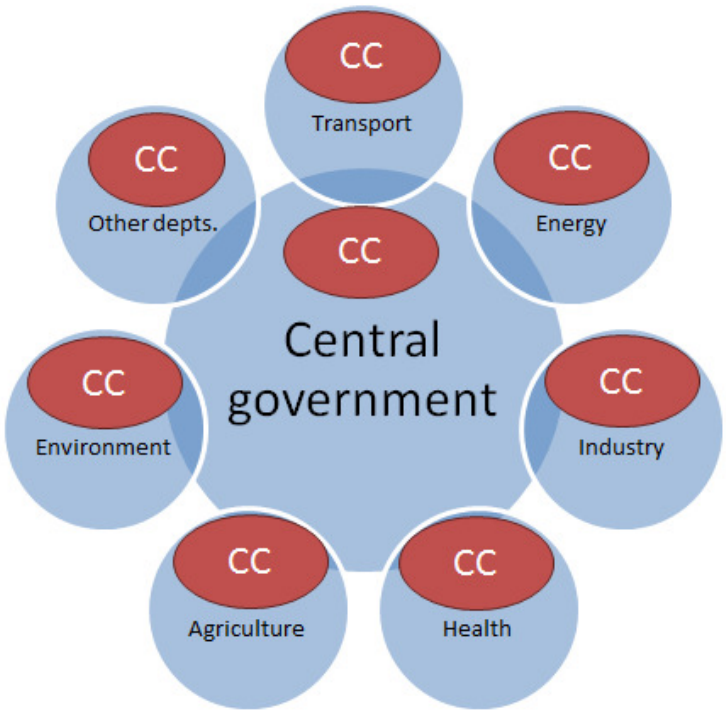


Figure 8.5: 'Mainstreamed' climate change policy

The carbon budget in Scotland and the SGC and CAT in California indicate that economic and organisational steps are being taken in these contexts to allocate costs for addressing climate change to distinct governmental departments, which are encouraging signs. Moreover, when Proposition 23 was voted down, the electorate in California sent a strong signal that it wanted climate change policy implemented, and climate change considerations mainstreamed.

However the extent to which this mainstreaming is occurring across contexts is limited. Several distinct areas across the case studies contributed to the argument that climate change mainstreaming is not occurring (Box 8.1)

1. **Where is climate change on the agenda?**

The issue's position on the agenda reveals how supplementary a policy consideration climate change is. Comparing Scotland, SA and California*, the majority of respondents in each put climate change definitely featured as 'quite high' on the agenda. But when asked which issue was top, in SA it was water and in California it was healthcare. These are both tangible issues having a current, direct impact on the state. In Scotland, the economy was top of the agenda – so its use of a carbon budget to respond does in some way highlight that climate change is being mainstreamed alongside that. In the other cases however, climate change is unlikely to be 'mainstreamed' into departmental affairs until it is perceived to be higher on the agenda or deemed to be a more pressing issue. As the research progressed more participants spoke of climate change being higher on the agenda if the global financial crisis had not occurred. It will not be 'mainstreamed' whilst priorities remain short-term and economically-focused.

2. **Is transport a priority area for emission reduction?**

Examining whether the issue is considered a priority in one sector will highlight the likelihood it is/will be mainstreamed into considerations. In all case studies it was seen as a lower priority area than energy. Many participants expressed it was somehow the 'hardest' sector to address and one where the mechanisms to do so remain uncertain. Even in California where transport emissions account for 40% total, it was still not perceived as priority. In SA, was seen as a priority, but not in the state context. So climate change considerations are more likely to be integrated into the energy sector than across other departments of government, based on these thoughts about the transport sector.

3. **Climate change 'framing'**

Certain respondents expressed the notion that framing policies or initiatives around achieving climate change objectives is actually unhelpful to policy delivery. It was argued that there would be less opposition to policy that would deliver emission reduction if climate change was a less explicit objective (Chapter 9). Here such proposals lend weight to the argument despite the existence of rhetoric calling for climate change mainstreaming, it is not without critics and is not understood across the board to be a natural progression in climate change policymaking.

4. **New and novel**

Supporting Hansen's (2006) ideas that environmental considerations are deemed 'new, certain respondents, particularly in California, offered insight that climate change is an issue in flux. With new relationships and innovative mechanisms that have not been tried before, there is a reticence to 'mainstream' climate change, until these have been tried and tested. But without mainstreaming things are likely to falter, because it is too complex an issue and constantly changing - a catch 22. Similarly, with new agencies like DG CLIMA still emerging, there is evidence that climate change is not being mainstreamed, but more normalised like other policy areas, as depicted in Figure 8.4.

* Respondents from the Bavarian case study offered insights about the European level

Box 8.1: Issues related to climate change mainstreaming

Again, the theory and rhetoric to support the idea of climate change mainstreaming is evident, but examples of this being implemented in practice, outside Scotland's carbon budget and California's SGC, are limited. Indeed, whilst developments like the SGC and AB 32 are clearly being linked, there are still gaps (the SGP does not reference the need to deliver against AB 32 targets) and this undermines their potential to deliver. Moreover, where such examples exist, they are seen as novel and climate change is still considered as a 'luxury'– an agenda item to

be cut when times are hard. A shift towards making climate change policy and practice standard is missing and therefore not being mainstreamed.

This evidence suggests that whilst there is a need to mainstream climate change considerations into sectoral considerations, this cannot be without some type of 'climate change agency' to oversee progress in all of these areas. So in fact, the optimal mechanism to achieve mainstreaming is actually a combination of approaches (Figure 8.6).

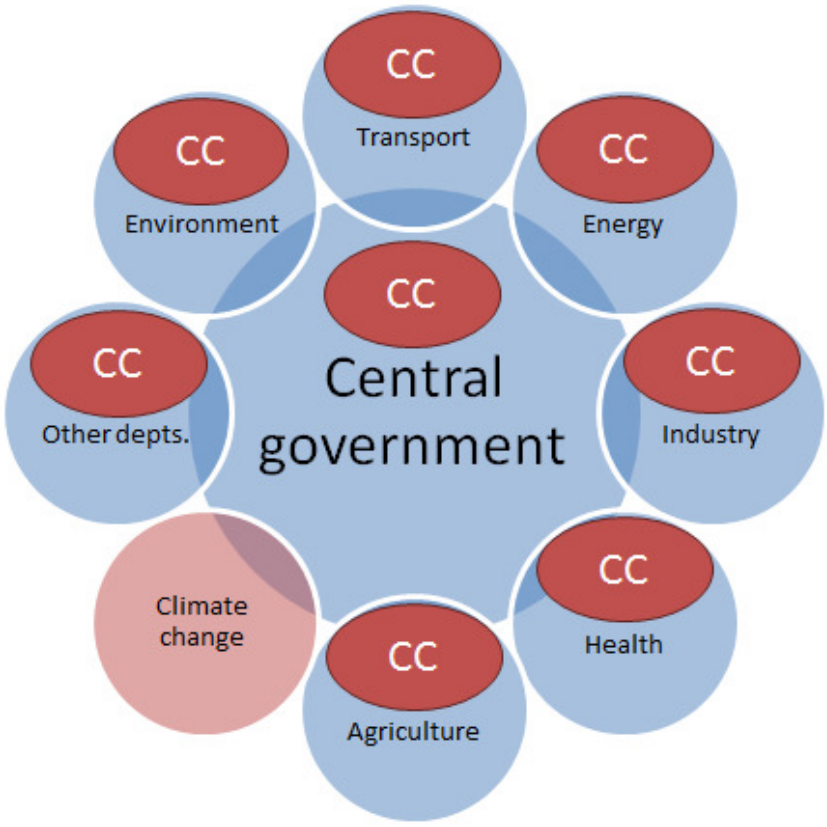


Figure 8.6: Optimal climate change mainstreaming

It could be argued that others of these issues are also cross-sectoral in nature, so theoretically, each issue should be mainstreamed across the others - this and supports the status quo and the rationale for the current bounding of policy issues. However, climate change really is complex enough to cut across all boundaries – spatial, temporal, structural, sectoral, geographical – it is a different issue and needs to be considered as such. Therefore, as CDG

suggests, organisational and institutional regimes should be redesigned and framed around this policy problem to enable an adequate response.

8.3.4 Ultimate responsibility for case study policies

If climate change is not being mainstreamed across government portfolios, then it could be assumed that climate change departments have ultimate responsibility for the implementation of policies related to emission reductions. However, one of the most surprising findings of the research, which cuts across research themes (particularly scope, scale and process), is that there is much disagreement about this responsibility in terms of the case study policies.

In the Scottish context, the majority of respondents thought that ultimate responsibility was with LAs, and with the transportation departments, since most of the LAs have no established climate change 'department'. In California, responsibility was thought to lie with ARB. Given the nature of the projects, these responses are interesting. SCSP is reliant on Scotland for funding – many respondents said that projects would not have happened without Scottish support – and similarly in California, given the nature of the Bill, in terms of its link to land use – it relies on the cities and counties to implement the measures in the SCSs – there is somewhat of a skew between what the policy says and who is thought to be delivering.

In the Bavarian case study, only one respondent saw ultimate responsibility for the success of Cars and CO_2 lying with DG CLIMA. The majority placed this with the car companies, although the inclusion of Eco Innovations also denotes that the national governments have a role to play in delivering this additional proportion of the target, although the mechanisms for this are yet undefined. Indeed in each case study, a number of quite significant elements of the implementation process remain unclear. This reflects what Bardach (1977) suggested about

using stages after a bill is passed as opportunities to renegotiate elements and 'hammer out' the details (section 8.5.1).

It is evident that there is a mutual need for vertical and horizontal interplay in these relationships, but that a clear distinction exists between supervisory and implementation roles (section 8.2.2). Whilst roles appear to be clearly defined, there is significant disagreement or uncertainty across the case studies about whether authority over or execution of policy is the determinant for success and which of these roles can be held accountable for this success.

8.3.5 Emission reduction potential

One final point of note with regards to the scope theme is the diversity between the case study policies examined in terms of their potential to contribute emissions reductions – the *scope* of these transport-focused policies to address climate change. As demonstrated in Table 8.5[71], the potential is intricately linked to the process theme (section 8.5) – *how* these policies are implemented will be the key determinant of the extent to which they can reduce emissions.

SB 375 and Cars and CO_2 in particular have the most potential to achieve paradigm shift in terms of dealing with transport-related climate change. The EU regulation could significantly reduce the impact of the European car fleet. California, linking land use, transportation and climate change has the potential to drastically alter the landscape and the scope of SB 375 to contribute to decarbonising the transport infrastructure in the state is huge. If other states

[71] Here Large refers to substantial cuts in emissions. High refers to a substantial risk in the policy failing through non-implementation. Moderate refers to some emission reduction potential or risk of non-implementation, but neither can be seen as significant.

follow California's lead in this policy area, as has happened previously, the effect could be all the greater.

State	Policy	Emission reduction potential	Factors for success	Risk of non-implementation
Scotland	SCSP	Moderate-Large	- Successful pilot - Roll-out/funding - Public buy-in - LA collaboration	Moderate
SA	Transport investment	Moderate	- Linking up transport network - Investment in awareness raising/promotion - Additional investment in station facilities - Decrease in road building	Moderate
California	SB 375	Large	- Buy in from MPOs/cities and counties - Long-term political support - Investment in awareness raising/promotion of alternatives	High
Bavaria	Cars and CO_2	Large	- Car company compliance - Monitoring mechanisms - Ambition and willing - Infrastructure support	High

Table 8.5: Reduction potential and determinants for success

Yet whilst these laws have the most potential, they are also the highest risk. Much depends in these instances on the actions of other stakeholders – in Europe the industry and in California the local authorities. They involve intricate networks of diverse stakeholders all contributing towards the same aim, and have both been highly political. Getting both regulations passed demonstrates unprecedented innovation and collaboration and signals that new policy responses are being developed, but the institutional changes to reflect these are still missing.

And there are other fundamental threats. In California it is the long-term nature of the changes SB 375 proposes and the lack of guaranteed political support over this time horizon. And in Bavaria, it is assuring car company compliance and also that the proposed mechanisms – like Eco-innovations – can be well-defined and integrated. Finally, there is no guarantee that the targets will not be allowed to slip as under the VAs or renegotiated up, if none of the

companies are able to comply. How/whether Cars and CO_2 will link to new EU emissions legislation also needs to be considered.

There is almost less at stake in Scotland and SA, because they have a smaller scope. The common factor between these policies is that they should be regarded as a first-phase exercise. If the current plans are taken in isolation, they both have a fairly modest emission reduction potential. If reinvested and rolled out, both policies could achieve much more. SCSP and SC measures have the most emission reduction potential of all policy levers available to Scotland – they need to be rolled out at scale to maximise this potential. In SA, upgrades and electrification need to be better integrated across the network, utilities need to be engaged in order for the newly-electrified rails to run on renewable energy to further reduce emissions, and investment is needed in awareness raising and facilities to encourage people out of their cars. The AU$2 billion was investment in a dilapidated system, not improvement – this funding needs to be supported with further investment to progress the system further. Funding in many cases still seems skewed towards road-building, which is also a major hurdle that needs to be overcome to break the cycle of fossil fuel-powered transportation systems.

The recommendations for maximising the scope of emission reductions here link back to the strategy-action deficit to a degree. Ambitious policy to match ambitious rhetoric and strategy is required. Each of these policies can do much to limit transport emissions, if prioritised and financed adequately. Leadership is crucial to realising this ambition.

8.4 Leadership/power

This section will examine those areas identified in the case study chapters as relevant for comparison:

- Self-proclaimed leadership
- Individual actors
- Power struggles

These are addressed before more general issues under the leadership/power theme are discussed.

8.4.1 Self-proclaimed leadership

The starting point for selection of case studies at the outset of this research was that each of these sub-national governments have proclaimed themselves to be 'leaders' on addressing climate change. Box 8.2 displays rhetoric from each government on tackling climate change.

Scotland:
"We know that Scotland's emissions are a tiny fraction of world emissions and that no one country can resolve climate change alone, but we recognise our responsibility to play our part like every nation and our responsibility as a developed nation to lead by example and inspire others." Scotland's Climate Change Programme: Annual Report 2007 (Scottish Government, 2007c)

SA:
"The Government of South Australia accepts that it has a responsibility to lead in responding to climate change. Internationally, South Australia is recognised for its pioneering role in responding to climate change generally and, in particular, for being one of only a few governments in the world to legislate its greenhouse targets." Tackling Climate Change: South Australia's Greenhouse Strategy 2007-2020

California:
"California has long been a national and international leader on energy conservation and environmental stewardship efforts […] The program established by this division will continue this tradition of environmental leadership by placing California at the forefront of national and international efforts to reduce emissions of greenhouse gases" AB 32 Text, 2006

Bavaria:
"Even though Bavaria's share of global greenhouse-gas emissions is low, it must live up to its role model function."
"With the "Climate Programme Bavaria 2020" the Free State intends to expand its leadership role further"
Climate Programme Bavaria 2020, 2009

Box 8.2: Climate change leadership statements from case study governments

The role of The Climate Group's states and regions alliance is cited by all as evidence of their leadership, but is committing to an Alliance of 'leaders' testament alone to this leadership –

what backs this claim up? Does mutual recognition and encouragement actually lead to results in terms of the ultimate objective of reducing emissions? Setting targets, strategic directions and pooling rhetoric with counterparts sends positive messages that climate change is important, and needs to be addressed. However, there appears to be a culture of promoting specific events or achievements which detracts focus from consistent, multi-sector action to address the issue. Absolute emission reduction *demonstrates* that this is the case.

In each instance except Bavaria, economy-wide legislation has been developed. Bavaria has had an overarching climate change programme in place since 2000. By way of actual emission reductions, Scotland had reduced emissions by 20% of 1990 levels by 2008 and Bavaria's emissions were lowered 5% in the same time frame. Whereas California's emissions were 9% higher in 2008 of 1990 levels and SA's emissions are also expected to be some 9% higher in 2012 than 1990 levels. California, Bavaria and SA all emphasise that their per-capita emissions are much lower than counterpart states in their respective countries, which suggests they may be more forward-thinking in comparison to other sub-national governments. Moreover, in both the Bavarian and Californian contexts, it was understood that these states are looked to by others when they set strategic direction, which is another indication that they are consider to 'lead'.

The states have indeed been proactive in certain areas, however in all but California; this does seem to be biased towards energy generation (section 8.5.4). But linking back to transport, between 1990 and 2008, transport emissions have risen in each case study state. The ultimate question is whether 'leaders' would take steps to address all sectors (section 8.4.2.1)

8.4.2 Individual leadership

The extent to which single people can promote and drive progress on emissions reductions emerged as an important point for consideration in the research. Such people generally fell into two categories – 1) Elite politicians (political leadership) and 2) Staff-level (functional leadership).

8.4.2.1 Elite leaders

This section pays particular attention to California and SA, as their leaders have been the most dynamic, vocal and active in promoting climate change rhetoric and the significance of this role is examined here. Both leaders also seem to have a personal interest in the agenda, which has been seen to be a significant contributor in climate change policy promotion.

Well over 50% of SA respondents thought that the Premier's role as Minister for Climate Change was significant in promoting action on the issue, and all CA respondents said that the Governor had played an important role. The fact that he was a Republican Governor who managed to gain widespread support for climate action across the political spectrum, removing some powerful partisan barriers was extraordinary – he can be considered the sole example of a 'daring' leader in this research (after Scholten et al., 2009). Therefore the importance of these individuals should not be underestimated. However, when asked if the Premier's 'significant role' would deliver emission reductions, the response was no. And Governor Schwarzenegger's removal of transit funding has been cited, as a direct contradiction to his commitment to tackle climate change – which was damaging. Leadership on climate change is therefore complex. In comparison to other Governors, or even leaders at other levels of government, this 'vocal' leadership causes the governments making leadership claims to be heavily scrutinised and held to account. But this leadership is voluntary and occurred at a time

when symbolic leadership was all but missing on addressing the issue. 'Going first' and getting climate change onto the political agenda was seen as enough, making it a policy priority was a significant step. It could be argued that it has played an important role, but emphasis needs to be shifted from rhetoric to action as more governments – across scale – start to acknowledge and embrace the need for climate action.

Whilst this leadership has most likely been crucial to get climate change on the agenda and legislation in place, the nature of the electoral cycles means that neither of these pivotal leaders is in power any longer. Implementation successes are dependent on clear roles and long-term political support. Maintaining the momentum generated by these leaders through the implementation stages of climate change policy may be difficult without equally committed individuals in positions of leadership. Whilst Governor Brown confirmed his commitment to continuing climate change action before he was successfully elected, Premier Weatherill has so far not indicated it will be such a policy priority during his tenure. In order to deliver tangible, long-term emission reductions, such leadership needs to be derived from somewhere, in the case of SA, it may be that the Commonwealth government has taken the reins and the state no longer needs to play this role (sections 8.2.1 and 8.4).

Chapter 5 highlighted that policy inertia is sometimes brought about by resistance from powerful actors (Harding et al., 2009). The intense lobbying witnessed before the passage of the Cars and CO_2 regulation could be seen as a contributory force to the policy inertia it experienced – which culminated in Commissioner Verheugen's withdrawal from the proposed partnership with DG CLIMA. Conversely, it was the negotiation between President Sarkozy and Chancellor Merkel that ultimately delivered the final iteration of the regulation, ensuring that both the French and German automotive sector's interests were served. Elite leadership has

indeed played a role across all of the case study contexts, in this instance, it was promoting the most acceptable standards for industry than the most ambitious action to maximise emission reduction. This indicates that power struggles (section 8.4.3) are in play in certain contexts. And as was seen in Scotland, where the elite leadership has been vocal but less pivotal, it is actually leadership across portfolios on the issue of climate change that is going to be crucial to deliver the necessary emission reductions.

8.4.2.2 Functional leaders

Individuals in operational roles were also identified throughout these case studies in all phases, not just implementation. Staff-level stakeholders were cited as important in getting the issue on the agenda and spearheading the development of specific policies, and this function appeared to be particularly important at the local level. It could be asserted that such proactivity is necessary where capacity to act is limited. These particular individuals-in the case particularly of Sonoma County in California and Dumfries in Scotland appeared to work tirelessly, often out of portfolio and with no extra resources to get buy-in from political leaders at that level of government and once initiated continue to play an active part in implementation. Formal recognition for this leadership may encourage additional capacity to support these leaders improve their limited reach and support them in their goals.

8.4.3. Power struggles

In the case study contexts, power struggles can be identified. In SA the triad of Treasurer, Transport Minister and Premier was cited by respondents as wielding a lot of power within the state and that most concepts need to be run past these individuals to get passed. Rann's personal interests in the tram network and on climate change have enable progress in these areas, despite opposition.

In the Bavarian and German contexts, there is a huge discord between industrial – particularly the automotive sector – and environmental concerns, with the governments claiming to be committed to both. There are strong cultural forces at play in Germany, given the car's symbolic place as part of lifestyle, linked with the dominant economic contribution made by the auto manufacturers, which makes the struggle more embedded in society. These elements contribute to the energy-based focus on mitigating climate change, but leads to intense competition between the two groups, with the industrial interests often being closer linked to government and better able to influence outcomes through lobbying, negotiation and political pressure than environmental stakeholders.

Similarly, the struggles in California are seen less internally within the government and more with industrial groups concerned that AB 32 and associated measures like SB 375 will negatively impact their operations and subsequent profitability by basing business in California, given that it is the only state imposing such measures. But as was demonstrated by the failure of Proposition 23, there is public buy-in to the measures and a political willingness to address climate change.

These considerations demonstrate that leadership promoting progress on addressing climate change can only contribute to a limited degree. Economic concerns continue to outweigh climate change concerns and seemingly continue to exert more influence over political proceedings.

8.5 Process

This section will examine those areas identified in the case study chapters as relevant for comparison:

- Hammering out the details
- Long-term uncertainty
- New approaches
- Addressing transport emissions

These are addressed before more general issues under the process theme are discussed.

8.5.1 'Hammering out the details'

An important consideration under the process theme is that after policy development, but before implementation, there is a period set aside to determine particular elements of 'how' the policy will be implemented. Bardach (1977) said it is common to use such tactics as a way of enabling renegotiation on the terms of the policy, and in the cases of SA, California and Bavaria, this has been demonstrated.

SB 375 and Cars and CO_2 were identified in (section 8.3.5) as the most high impact, high risk strategies. They are both legal mechanisms whose central objective is the reduction of GHG emissions. California has been seen to take innovative, ambitious steps to reducing sprawl and tackling climate change at the same time. The EU has similarly taken steps to regulate an industry that failed to act without being regulated. However, both were severely contested and had to consider multiple stakeholder interests to secure the passage of legislation. This was achieved in both instances, but only through 'weakening' proposals and leaving crucial details to be decided upon once the law had passed. In California and Europe, compensation, special dispensations, flexibility in targets were required in order for the respective legislations to pass.

SB 375 was passed with agreement from local governments, the development community and the state – all key stakeholders that needed to buy into the idea. However, at the time of its passage, the process of MPO target-setting was left to the Regional Targets Advisory Committee to determine and guide ARB on. Similarly, for Cars and CO_2 the relationship between DG CLIMA and DG ENTR was left open, whilst for the current time the latter will play no role in implementation. The term 'Eco Innovations' was included but not defined in the regulation, and the role of governments in delivering policy that fell under this category was also not specified. Given that the regulation relies on these measures to deliver the final 10g/CO_2 towards attainment of the targets, it is fundamentally important to determine how these elements will tie into the car company reductions and how reductions can be attributed.

Progress would likely have been stalled if these details had been considered at the time, and the complexity of implementation may have dissuaded certain stakeholders not to agree to the terms of the legislation. However, the converse is also true. Passing regulation in which the implementation mechanisms are ill-defined may lead to alteration or weakening of the original intention of the measure, or a new set of wrangling between stakeholders who feel like their interests can be better served by another opportunity of negotiation. So there is a clear trade-off that policymakers must consider in taking measures through development to implementation, between getting the most ambitious policy in place and ensuring that measures and mechanisms are determined before implementation.

What is evident in terms of the processes at play is that the EU has a fairly straightforward (if complex) negotiating framework, through which legislation is agreed upon, but that challenges come from implementation. In California, on the other hand, obtaining approval and support

for a piece of legislation is the major stumbling block, but implementation processes are comparably easier to initiate and progress.

In Scotland and SA, the measures were fairly specific and smaller in terms of the types of intervention planned and the number of stakeholders involved. However, numerous of the LAs in Scotland did not plan in too much detail the specifics of implementation as many projects were contingent upon obtaining Scottish match funding. There was limited reference to projects being completed if the LAs had not won the funding. Similarly in SA, the budget investment was fairly broad, but the major upgrades were identified before implementation. However, in both of these instances, the details for continuation of funding after respective project phases have not been decided upon. The potential (section 8.3.5) of these projects to deliver emission reductions relies on second phase or longer-term investment, so these sorts of details should be considered earlier in subsequent initiatives to ensure longevity.

8.5.2 Long-term uncertainty

A common element /across all of the case studies was that long-term continuation or support could not be guaranteed. The uncertainty across contexts broadly fell into two categories which will be examined below.

8.5.2.1 Political and personnel change

All case studies have witnessed organisational and political changes throughout the duration of this research, as highlighted in Figure 8.3. Such is the nature of climate change, that policies implemented now will deliver results in the next decade, twenty years or longer. Whilst this was acknowledged by research participants, so was the difficulty in appreciating these time frames, especially considering the electoral cycles which permeated politics and policymaking

in all contexts. It is a common problem in policymaking and not one with an easy solution, cycles of office will endure and leaders with different political interests and networks will assume power. Similarly civil servants will be reassigned or leave roles and institutional knowledge will be lost. Perhaps most importantly, the new interactions which are being established through more collaboration relies on key individuals, if these particular parties are taken out of the process, this may have significant impact on policy outcomes. Such disruption to the continuation in policy implementation is harmful.

Moreover, federal and national elections also stand to significantly impact state policy. With pre-emption in the USA and the increasing power shift between state and Commonwealth in Australia, state policy is not guaranteed. The long tenure of the CSU in Bavaria coupled with its close alliance with CDU in Germany is a powerful force. Furthermore the Grundgesetz keeps the relationships between Bavaria and Germany fairly stable. However, the EU's role in policymaking shifts this balance and has potential to change the role of the state government, especially in light of developments emerging with the Lisbon Treaty. With Scotland moving towards an independence agenda, the influence of the UK government may also alter, but whilst the fundamental policy levers remain in Westminster, Scotland's responses remain limited.

The constant alteration in where the climate change portfolio sits is also disruptive. It was seen as a positive move by respondents to link transport and climate change in Scotland, but was very abruptly moved following severe weather which caused transport disruptions in December 2010. It became a highly politicised portfolio and was thus separated; similarly with DG ENV and DG CLIMA at the EU level. In SA, the role of Climate Change Minister, formerly

held by the highest political officer – the Premier – has disappeared. And it is this high politicisation of the climate change issue in these case studies that needs to be addressed.

The 'choice' to address climate change needs to be removed from policymaking. It needs to be seen as an imperative; the same way governments strive for economic growth and rising health standards, so too should they seek emissions reductions as a measure of success. Until the partisan nature of the issue is lost and the perceived link between low carbon development and restricted economic growth is broken, climate change policy will be threatened by changing government cycles and short-termism.

8.5.2.2 External factors

Many respondents across case study contexts stated that climate change would be higher up the agenda if the financial crisis had not occurred; that it detracted attention and focus from the issue. Climate change remains a problem that can be addressed if things are going well, and is one of the first policy items to fall off the agenda when other political problems take precedent. This supports the earlier arguments in section 8.3.3, that whilst climate change needs to be mainstreamed, and that this can realistically only be achieved through institutional change, these processes are not taking place in the case study contexts, with perhaps the exception of California, to any significant degree. Without mainstreaming climate change considerations into the political spectrum, long-term policy support or implementation cannot be guaranteed.

8.5.3 New approaches

It would appear that the new modes of governance described by Bäckstand et al. (2010) have not emerged across the case study contexts. Whilst there is more collaboration and

consultation in terms of policy development, and evidence of functional relationships which are multi-scale and cross-sectoral; as described in the section above, they have no proven resilience to the 'longer-term temporal aspects' (*Ibid.).* Furthermore hierarchical relationships still abound, as demonstrated by SA's power over local governments and the informal role that Bavaria finds itself in, obtaining no formal recognition from the EU as a stakeholder in policy development.

Whilst SB 375 represents a 'new' type of response; linking transportation funding with land use planning to address climate change, it uses an 'old' framework – legislation around transportation funding which relies on hierarchy. Opting for infrastructure investment, as in SA, could also be considered an 'older' or at least a more conventional approach. This suggests that regulation is likely to achieve more than 'softer' policy initiatives, like SCSP, because as was demonstrated above, through opting for legislation both SB 375 and Cars and CO_2 are likely to achieve more emission reduction, if successfully implemented. They also require much denser networks and new interactions. This does not necessarily mean, as Jordan et al (2005) state that we will continue to see the 'lock-in' of regulation as a response, but rather that at the current time it is likely to continue to be a more effective mechanism than newer approaches. But more complex interactions are being witnessed to tackle new policy problems, through using tried-and-tested regulatory mechanisms, suggesting perhaps the 'mix' of approaches referenced by Bäckstrand et al. (2010) and O'Riordan (2009) is best being utilised in policy development.

8.5.4 Addressing transport emissions

A trend emerged in participants' responses across case studies; that it is optimal to reduce emissions from other sectors before addressing transport emissions; that steps should be

taken to decarbonise the energy sector and promote low carbon development across society, and then 'back-load' the introduction of low carbon transport measures closer towards the 2050 target deadlines. This links back to the inability to set long-term goals, because they cannot be assured. But it could also represent a delaying tactic, to legitimise the lack of transport-related climate change policy being implemented. Despite the deluge of analysis which shows that the rise in transport emissions will negate reductions accrued across other sectors, this argument was frequently cited. It was deemed easier to deal with the other sectors first. Despite the emergence of an economy-wide response – AB 32 – in California and the fact that in the state transport emissions represent 40% of all emissions, this was still seen as a viable approach, even though SB 375, the Pavley Bill and the Low Carbon Fuel Standard are all currently being implemented. This finding reveals that there are embedded paradoxes at play in the case study contexts. Transport was acknowledged as a priority area for emission reductions, but also as the hardest and the one that should be left for last. Such contradictions clearly contribute to the fragmentation between rhetoric and implementation and will be difficult to reconcile.

8.5.5 Pollitt's factors

As highlighted in Chapter 2, Pollitt (2004) suggested a typology to assess how agencies would fair through implementation, based on the key attributes of the organisations assigned to deliver. This links very closely to the considerations analysed in section 8.3.4 with regards to the ultimate responsibility for the policy area, but here considers process elements as well. Table 8.6 considers these attributes for case study policies only – these answers would likely be different if referring to addressing climate change more broadly.[72]

[72] High here is substantial evidence, Moderate relates to some evidence of a particular trait and Low refers to very limited evidence.

State	Political salience of the task	Financial weight of the agency	Level of scientific knowhow	Observability/ attributability of outputs/ outcomes	Previous history (cultural path)
Scotland	Moderate	TS - high	Needed: low Present: low	Change in travel behaviour reported at end of project – difficult to attribute to SCSP directly	Little experience / practice with smarter choices measures
SA	Low – although in SA context was unprecedented level of investment	DTEI - high	Needed: low Present: moderate	Ridership increases; more investment in public transport. Reported as upgrades come on line. Moderately easy to attribute to budget investment	Low investment in public transport infrastructure, auto-dependency. Recent investment in bus/tram
California	High	ARB – moderate	Needed: high (ARB and MPOs) Present: ARB - moderate/high MPOs - low	Change in land use patterns and VMT. Long-term policy –difficult to observe and attribute to policy.	Sprawled development, auto dependency. AQ problems – environmental measures to address
Bavaria	High	DG CLIMA – low *(DG ENTR – high)*	Needed: high (Car companies) Present: high	Reduction in g/CO_2 emitted by vehicle fleet. Easy to report/observe. Difficult to attribute to regulation. More difficult to observe / attribute 'Eco Innovations'	VAs failed – difficulty to achieve targets previously. In Germany, Good public transport infrastructure but high car usage.

Table 8.6: Case study process considerations (after Pollitt, 2004)

Once again California and Bavaria are similar, this time in terms of political salience. SA is perhaps the easiest case study to attribute the outcomes to, and California is perhaps the most difficult. Taking the cultural historical paths into consideration is useful as it ties to CDG and claims that history matters. Indeed here, the history of underinvestment is a causal link to the investment in SA, the failure of the VAs – to the regulation in the EU and the auto-dependency

and sprawl in California to SB 375. Know how is present in some cases where it is needed and not in others. In Bavaria, this is due to the car companies enlisting support to ensure they meet the compliance targets. In California, it is perhaps still missing at city/county level because the specifics of what exactly they will be required to know is still uncertain. Overall, Pollitt's typology is a useful tool to consider specific aspects and compare across diverse case studies.

8.6 Barriers

The barriers experienced across case study contexts were surprisingly consistent. Operational barriers were added to the typology early on as it became clear that specifics of particular case studies presented obstacles to successful implementation. Similarly, other barriers, generally context-specific problems, were more common than anticipated. Box 8.3 outlines the top three identified barriers in each context.

Scotland – Public, Political, Operational
SA – Operational, Political, Public
California – Operational, Political, Economic
Bavaria* – Other: Technical, Economic, Political

Box 8.3: Top three barriers in each case study context
(*Responses from Bavarian case study were extremely limited)

As demonstrated here, Operational barriers were seen as the most pressing in both SA and California, with Political and Operational barriers cited most often across the contexts. In the Bavarian case study the technical complexities involved in delivering fuel efficient vehicles was seen as the most challenging problem to be overcome, but Economic and Political challenges were also identified. Public buy-in or acceptability of the measures was seen as most important in the Scottish context – which is logical given its behaviour change focus. It was also referenced in SA, where ridership will be the ultimate measure of the policy's success. Interestingly, it was not one of the top issues in California, which is surprising given the extent

of public changes SB 375 is likely to deliver. It was only mentioned by two participants. Legal and Industrial barriers were not cited, even in Bavaria, where industry was closely involved. These findings support the argument that lessons learned in a particular context may be of use to similar entities. Political, Operational, Public and Economic were cited across the board as barriers – all linked to the policymaking and delivery phases. Therefore steps could be taken in the future to address these concerns early in the process. Even those barriers which were seen as context-specific were surprisingly similar across contexts – such as the particular nature of the existing infrastructure and culture, were actually cited in all cases but Bavaria, so there are even lessons to learn which may relate to a certain location. This lends support to the argument that these sub-national governments could indeed be considered as '*international leaders'* as they have an important role to play in policy diffusion[73]. This consideration is outside scope of this research, but there is potential for future investigation of this idea.

This element also lends support to Chhotray and Stoker's (2008) argument that history matters. Indeed, the situation into which each of these policies are being implemented are undoubtedly affected by what is in place at the current time within the state and the new policy has to bear these elements in mind. They need not necessarily act as barriers, however, if they can be considered during the policy formulation stages, these 'barriers' can be taken into account and resolved or overcome where possible.

The research has identified a series of common governance-based barriers to highlight that it is not just lack of interaction and fragmentation which prevent policy implementation. Occurrences like capacity action gap and strategy-action deficit –demonstrates that past

[73] Tews (2005) sees policy diffusion as the spreading process of policy innovations among countries in the international system which is driven by a variety of sub-mechanisms comprising all voluntary types of policy adoptions ranging from policy-learning to copying or mimetic emulation. […] Diffusion is spreading of innovations through communication instead of hierarchy/collective decision-making within international institutions

approaches to addressing barriers through highlighting common areas and themes does not go far enough. Relationships, structures and processes in which these barriers are nested need to be investigated. If barriers are contextualised in more detail, perhaps they can be overcome or prevented.

8.7 Concluding Remarks: Integration

To return to Brown et al.'s (2005) attempt to ascertain if *Integration* has been achieved in the case study contexts, Table 8.7 outlines the details with regard to each policy. Each consideration identified by Brown et al. has been cross-referenced with research themes for consistency. This information offers an overall picture of the major findings of the research, in terms of fragmentation in decision making, policy development and delivery.

Gaps in local government capacity (in Scotland and California) and the compatibility with other government objectives (in Scotland, SA and California) are the major sources of fragmentation (sections 8.1 and 8.2).

Across all case studies, institutional (here considered as organisational) frameworks are missing or inadequate. This proves to a degree that whilst there is not a lack of interplay between stakeholders across levels and departments of government, there are insufficient structures in place to cope with the new policy challenges these emerging collaborations are seeking to address. As Chhotray and Stoker (2008) stated with CDG, we need to see these institutional changes to be able to effectively integrate new policy, through new partnerships, but this is not currently occurring, as demonstrated below.

State	Full capital costs considered [PROCESS]	Capacity exists [SCALE / SCOPE]	Feasible timescale [PROCESS]	Compatibility; no conflict in objectives [SCOPE]	Legal / institutional* framework [ALL]	Relevant information available; research not necessary [PROCESS]
Scotland	Yes	Scotland – Yes LAs – No	No – needs to be longer	No – STAG objectives conflict	Legal – yes Institutional – no: Linkage between climate change and transport broken	Yes – Atkins/Aberdeen study solid framing. Though not used in policy development
SA	Yes	Yes	Yes	No – road building objectives conflict No – SASP objectives and Infrastructure priorities conflict	Legal – no: Climate Change Act does not mention transport Institutional – no: Connect with LAs missing, transport and climate change not connected	No - no travel survey has been conducted in SA since 1999
California	Yes	California – Yes MPOs/Cities/Counties – No	Yes	No – transit funding removal conflict	Legal – yes Institutional – no: overarching responsibility with non-regulatory body, not connected with transportation	Yes – Scoping plan
Bavaria	N/A	Yes	Yes	Yes	Legal – yes Institutional – no: Linkage between CLIMA and ENTR broken, connect between transport policy and auto industry missing	Lessons from VAs; CARS 21 report

Table 8.7: Case study policy integration (after Brown et al., 2005) *Here considered as organisational

Moreover, the strategy-action deficit needs to be overcome at the same time. Climate change policy is best served if a 'mix' of approaches is adopted, whereby it is integrated into distinct portfolios of government and has a body capable of overseeing progress (section 8.3.2).

Leaders are needed across government levels to keep the climate change agenda progressing, but these figureheads should not be relied on solely, as the process needs to be able to withstand political and operational shocks, with change of personnel and regime. Expanding networks and chains of interaction (Kooiman, 2000) do not appear to make outcomes more complicated or weaker (Rye and Marsden, 2010), but institutional change, or redesign will be necessary (and in some cases is already overdue) as more of the types of policies here emerge.

Partnerships across levels and sectors (public, private and non-profit) will be fundamental as policy heads from development through to implementation. Defining roles across levels, departments of government and sectors of society is crucial, but processes to monitor progress and attribute outcomes against action are needed. Finally, there needs to be clear understanding as to where responsibility for policy areas reside. This may indeed be different entities for oversight and implementation, but these areas need to be defined explicitly for policy implementation to occur and succeed.

Chapter 9: Conclusion

9.1 Introduction

The imperative to decarbonise the transport sector has been acknowledged by scholars and policymakers alike, but responses to reduce emissions to date have been slow. It will be a significant task, to halt the steadily increasing trajectory of transport emissions and shift track towards reduction. Current practices need to change, there needs to be a move away from BAU and all elements of the transportation infrastructure need to be considered in the response. New connections are needed between disparate stakeholder to ensure that the 21st century transportation network redresses the environmental and social shortcomings embedded in the current system.

This research set out to establish whether a lack of interaction and dialogue between levels and departments of government was a contributing factor towards the difficulty expressed by policymakers in delivering the necessary emissions reductions from transport. Sub-national government settings were chosen as the focal point of the research to enable examination of the vertical interplay between government levels. By examining the compatibility between environmental and transport policymaking styles, horizontal interplay was also investigated.

CDG was utilised as the major theoretical framework and was supported by supplementary conceptual ideas such as institutional interplay and elements of socio-political governance. Sub-national governance was developed as a concept through which to shape the understanding of the dynamics and processes at play in the interactions between the layers of government. Its main presupposition was that relationships are much more complex than the conventional hierarchy dominant in political thought (top down; bottom up) suggest. Whilst the multi-level nature of governance architectures is commonly referenced, sub-national

governance evolves the idea that there are very specific roles played by each level of government and that each level has a distinct relationship with the 'middle' tier of government. These case studies were intended to develop understanding of these specific roles and responsibilities.

Consistency across cases was ensured by developing and utilising four research themes. Scale and scope examined features of these horizontal and vertical interplays. They are supported by leadership/power and process themes, which examined both the role of individual leaders in promoting action to reduce transport emissions and the leadership claims made by case study governments on climate change, as well as the specifics of the development and implementation of case study policies, for example where responsibility for the success of particular policies lie. Finally research participants were asked to state any barriers to reducing transport emissions, which were then categorised using the typology developed in Chapter 3.

This chapter outlines what the research has uncovered, why this is important and how it relates back to wider governance literature. It comments on the research and methodologies, in terms of surprises and limitations that have been identified. Finally, it offers recommendations for governments to address some of the challenges outlined by the findings and potential future research in this area.

9.2 Reflections on research approach

Using a theoretical framework based around ideas of governance was useful because it enabled an understanding of broad factors and complex interactions within case study governments that other theories would not have allowed for. CDG has some strong central underpinnings that it was possible to draw out in each of the research themes across the case

studies to understand the extent to which the organisational structures and relationships across and outside government were contributing to policy processes. Whilst it was identified that the final question within CDG namely "*how should rules, once agreed, be enforced?"* (Chhotray and Stoker, 2009, 228) is further away from being understood than the other questions, the importance of roles and of hammering out the details has been acknowledged although more work in this area would be useful.

Analysis of the case studies would not have been possible were it not for the consistency in narrative provided by the research themes. These were an exceptionally useful tool to examine the diverse case studies. They helped to keep the interviews and the subsequent analysis and write up structured and manageable. However, the degree of cross-over between themes sometimes complicated these processes.

Finally the analytical tools provided by Young (2002;2008;2009), Kooiman (1993; 1999; 2000) and Brown et al (2005) amongst others, allowed for the primary themes of scale and scope to be examined together – through institutional interplay and the chains of interaction. Particularly the latter providing a means of demonstrating complex relationships and organisational structures in an easy to understand format.

The key benefits of this approach was that it offers an original governance framework through which to examine the sub-national level and is capable of considering diverse factors such the organisational structures, relationships and policymaking processes in combination. It is a fairly normative approach that could well be applied to other contexts.

9.3 Research overview

Scotland, SA, California and Bavaria have all pronounced that they are leaders at the forefront of efforts to address climate change. Motivated by dissatisfaction in federal responses, or political opportunism, these sub-national governments have espoused messages about the imperative for action and set to promote climate change on political agendas. They have demonstrated that the sub-national level can contribute to developments or work alongside other government levels (section 9.4.2). Some have had vocal, charismatic leaders heading up the charge, others rely on cultural trends – saving energy makes good economic sense, therefore it is promoted. And indeed, in certain areas, each case study government has taken steps towards a lower carbon future. SA and Bavaria are focusing the majority of efforts into renewable energy generation; Scotland has led through ambitious target setting and realignment of government spending to consider the carbon impact of all expenditure – getting its house in order. California has taken the boldest steps, with AB 32, the state has a broad-ranging multi-sector strategy as a basis from which to develop and implement sector-specific, detailed policies to deliver reductions.

This research was intended to map out to what extent this leadership could be witnessed through the case study governments' responses to transport emissions. In most contexts examined here, it was the second largest sector in terms of emissions, in California it was the first. Through considering government strategy, targets and law, it was possible to understand the strategy underpinning climate change policy. A particular policy was then selected in each context which if implemented successfully, would contribute to reducing transport emissions. The case studies explored how it was being implemented and who was involved in the development and implementation phases. This was to ascertain whether lack of communication between departments and levels of government contributes to the difficulty in

implementing climate change-related transport policy. Communication and existing and new interactions between public, private and non-profit sectors were also examined to ascertain the significance of cross-sectoral relationships in delivering policy. In Bavaria, the influence of the sub-national level over policy processes at other government levels was also investigated. Participants were also asked to identify the major barriers they understood would prevent successful policy implementation, this was to ascertain to what degree policy processes/interaction across levels is readily identified as a barrier.

9.4 Research summary

This section briefly outlines the major findings from each research theme before summarising the final outcomes from the study.

9.4.1 Scale

This research emphasises that there are complex interactions occurring between levels of government and that the extent of this interaction varies across contexts. State-to-national government linkages were identified, although these ties were broad; there were pockets of involvement on particular areas of strategy, some indications of cooperative federalism. There was marginal national government involvement in specific case study policies. There were instances where vertical interaction occurred across portfolios – where transport departments were communicating with climate change departments across levels, but the respective transport-transport and climate-climate linkages were missing. This proves that fragmentation across levels and portfolios exists.

The identification of specific roles in policy processes emerged as an important element of the scale theme. State governments were identified as agenda-setters and strategy designers, with

the local government identified as implementers, and in the cases of Scotland and California, they were fundamental to success of the state policy. Although the importance of local government was identified in this research, this role needs to be more formally recognised in actual policy processes. There are several reasons for this, not least because local governments currently suffer from the cyclical challenge of the strategy-capacity gap. They do not have adequate resources to address climate change, but without access to the necessary expertise to understand the impact of the problem and identify solutions, they also cannot access resources needed to formulate a response.

Sub-national governments can clearly influence national policy, they are experimenting with new policies and approaches to tackle climate change and these do extend to addressing transport emissions (Section 9.4.2). However in certain circumstances their actions are threatened by the potential for national policy to supersede state approaches (such as SAFETEA-LU in the USA), or for changes in national regimes to alter existing organisational and institutional contexts in the state (such as CPRS/carbon tax in Australia). To this extent, hierarchy is still present and stands to threaten state efforts to tackle climate change. Change is inherent in modern democratic systems – through electoral cycles and personnel moves, these characteristics of all government regimes perpetuate the difficulty in securing the type of institutional and organisational change needed to allow governance systems to address complex issues like climate change.

Similarly, whilst sub-national policy can teach national government, there is no guarantee that lessons will be heeded and implemented into national policy. This highlights that whilst chains of communication are available and open, the extent to which they are utilised is entirely optional; at the discretion of the national government. In terms of the available policy options,

sub-national governments continue to have access to a limited suite of policy tools. In all cases, even SA, where the state is supposed to have ultimate authority, it is increasingly at the mercy of federal government and their responses to change.

Many non-state actors are involved in policymaking processes in all case study contexts, business – particularly the auto-industry and property development community – were seen to influence or participate in policy processes in both formal and informal ways. Links with academia were also present, through joint or government/business-funded research projects. The non-profit environmental community was identified as a stakeholder in the research. However it was perceived as weaker than industry, with less established links to government and therefore not able to exert as much influence over proceedings. This also supports the view that economic considerations continue to be prioritised ahead of other agenda items and that environment and transport can be considered old (embedded) and new (detached) (section 9.4.3/9.4.5).

9.4.2 Scope

Interaction between departments of government was also witnessed. In Scotland particularly, where SCSP was developed in partnership to achieve multiple policy objectives were these linkages most pronounced. But even there, the governmental structure was altered to remove the formal portfolio connection. Yet this connection was identified as significant by the majority of participants. In California links are emerging to implement SB 375, but most responses suggested that ARB's role will be more prominent than a partnership approach. Similarly in the EU context, DG CLIMA assumed sole responsibility when partnership with DG ENTR became untenable (section 9.4.4)

Taking horizontal and vertical interplay together to examine the chains of interaction that have developed for each case study policy, it is evident that more departments/agencies have become involved in development and implementation processes than have been previously. Some participants described the interplay as unprecedented. Many attributed this to the complex nature of climate change. This indicates that policymaking has become more inclusive; more interplay is taking place. But as these chains of interaction lengthen, policymaking may actually become more complex. Governments need to acknowledge the more fluid dynamics of policymaking and better define the roles and responsibilities to be played by each stakeholder to ensure that policy does not fail due to poor understanding of the components involved in delivery (section 9.4.4).

Interestingly, those policies that are framed solely around climate change and emission reduction (SB 375 and Cars and CO_2) are the most high-risk and met with the most resistance. Yet they have the most potential to deliver large-scale emission reduction. There are multiple calls for integrated approaches which deliver against more than one policy objective, or for the optimal mainstreaming of climate policy in decision-making. Therefore further study to compare the effectiveness of policies framed around climate change with those that would achieve emission reductions, but not framed as a climate change policy would be interesting.

Additionally, both cases (SB 375 and Cars and CO_2) are regulatory – 'old, formal, rigid' types of policy response – not fluid and dynamic. This in itself is interesting; they are the most innovative measures in terms of the explicit centrality of emission reduction objectives, but both have chosen conventional policymaking tools to deliver. There is still a place for 'old' tools, in very modern environment-based contexts, indeed Jordan et al.'s (2005) statement that regulation continues to dominate holds weight. But this finding also lends support to both

Bäckstrand et al. (2010) and O'Riordan's (2009) ideas that a 'mix' of new and old approaches and of government and governance is optimal to address climate change. Whilst this is true, the element missing from both cases is institutional change. There is a package of broad engagement of stakeholders, collaboration across sectors and levels, framing around an environmental problem, but both are being delivered through conventional and established means and via climate change agencies (ARB and DG CLIMA – although DG CLIMA is new). This is an issue because it highlights the problem that whilst transport emissions are being regulated climate change is not being mainstreamed across government; it remains marginalised.

One of the most stark and surprising outcomes of this research, which could be attributed to all cases, was that ambitious statements of intent made by governments often do not make it into policy. Ostrom (1990) posited that there would be a difference between rules on paper and in practice, but what was demonstrated across all case studies was abundant strategy-action deficit. This needs to be addressed in order for goals to be achieved and for governments to be considered accountable. This deficit could be occurring for multiple reasons, and they may be different across contexts. Based on the evidence presented here, it would appear to be a failure to consult or consider overarching strategy when developing particular policies– despite these strategies often referenced in the supporting rhetoric. Moreover, as seen often, implementation details are often 'hammered out' after the policy has been approved, so links to overarching strategies could be lost between approval and realisation of the policy. There is also a case that lack of leadership may weaken the original strategy objectives, which is why they are not brought into fruition by specific policies. This is perhaps a starker example of fragmentation than the lack of collaboration on policy, which is an interesting finding.

Finally, one of the biggest challenges experienced across cases was ascertaining where ultimate responsibility for the success of the policy lies. This was especially true in the cases where roles of strategic direction and implementation are at different levels of government (or between levels of government and industry – as in Bavaria). This issue is linked with both interplay, in terms of the importance of establishing roles (section 9.4.1), but also in terms of process and working out the finer details (section 9.4.4). Perhaps better functional and political leadership would promote clarity over where responsibility lies as policy moves from development to implementation.

9.4.3 Leadership/power

Efforts to reduce transport emissions have had limited success to date; in each context 2008 levels were higher than in 1990. It can be inferred therefore that despite leadership in other areas, climate change leadership does not extend to addressing the transport sector. Elite leaders were identified as important across the research, but as policy developments across contexts move from agenda and target-setting through to implementation, elite political, rhetorical and oratorical leadership needs to evolve to become functional. Functional leadership cannot exist solely in the bureaucracy; or at the working, local level; it is needed across the board. Especially as case study governments, particularly Bavaria and California have an acknowledged ability to diffuse policy across contexts; they are not just leaders in driving their own policy, but also in promoting action elsewhere.

With the departure of Premier Rann in SA and Governor Schwarzenegger in California, the impact that such charismatic leaders who take personal interest in the agenda is emphasised. Similarly Commissioner Verheugen highlighted the influence of individual opposition to an agenda also. These examples highlight the complexity involved in individual political agendas

and the shocks that occur with leadership/regime change. There were some notable power relationships in the research – the Big 5 in California and the triad of Treasurer, Transport Minister and Premier in SA – these informal groupings clearly have an impact over decision-making and should be acknowledged. These findings also contribute to the structure-agency debate in terms of highlighting the impact certain agents have regardless of the political structure.

Climate change was placed 'quite high' on the agenda. There were more pressing or context-specific priorities in each of the case studies and oftentimes participants suggested that climate change would be more of a political priority if the global economic crisis had not occurred. These considerations demonstrate that leadership promoting progress on addressing climate change can only contribute to a limited degree. Economic concerns continue to outweigh climate change concerns and seemingly continue to exert more influence over political proceedings.

This serves to highlight the short-termism and dominant financial discourse within political regimes. This finding should not be underestimated. In the Bavarian context particularly, economic considerations were fundamental to decision-making and highlighted the integral role that industrial lobbying plays in policy development. The car industry's influence was noted particularly where it was absent, through the standards passed in California and Scotland's acceptance that it can have no influence over this particular element of emissions reduction. Rietveld and Stough (2007) suggest that general interest should be balanced with the interests of the affected groups. And in California efforts are being made to work alongside the influential development community to ensure SB 375 is delivered in partnership, but this is not guaranteed.

Climate change is a long-term problem that requires sustained political attention and robust responses to withstand governmental regime change. But as demonstrated here, it is difficult to respond to a global, complex problem such as climate change without the types of 'daring' decision-making Scholten et al. (2009) identified and without the institutional change that CDG conveys.

9.4.4 Process

How to ensure policies will endure such changes was an important consideration in this research. Personnel and leadership changes will continue to be an inherent part of how the public sector functions, so contingency/succession planning is a must in order to ensure that established climate change policies can be implemented. But as was demonstrated by the Californian and SA case studies, changes at other levels of government also stand to impact policy. Bavaria has had the luxury of fairly sustained, stable political rule, but it too is not entirely immune to the shocks. There needs to be recognition that as multi-level policy gets implemented, there will be knock-on effects of changes across scale. It is less easy to mitigate against these, but this is one of the reasons why increased dialogue and less fragmentation is necessary. External shocks like the economic crisis are less easily guarded against. More long-term planning would be advisable, and although unlikely, a shift away from economic framing would help to address some the major environmental issues, climate change included. But the underlying commitment to economic growth (Carter, 2007) should not be underestimated.

To return to Bardach (1977), the process of agreeing on policy/passing legislation commonly occurs without the details of implementation being addressed. This contributes to fragmentation as roles and responsibilities are not well-defined. This practice also leaves open the potential for renegotiation of terms, which stands to delay or significantly alter the

provisions of a given policy. More clarity over implementation terms at the agreement stage would enable more policy stability and help to prevent/anticipate longer-term shocks. Lessons can be drawn from different case studies at different stages of the policy development and implementation process. The EU's negotiation, whilst somewhat convoluted and imperfect with its formal and informal mechanisms is actually fairly effective at getting compromise, but implementation is harder to deliver. In California, getting a bill passed is an arduous task, but once delivered, implementation mechanisms appear to be well-defined and implementable. By deconstructing these elements in more detail, it may be possible to ascertain where, potentially cultural, differences exist and how they could be combined to ensure that the whole policy process was successful.

Reducing transport emissions was commonly seen to be a policy response to be delayed, 'back-loaded' closer towards 2050 or left until more expedient/less complicated responses had been exhausted. Practically, as highlighted by all case studies, policy development and implementation takes time and considering some of the longer-term complexities in addressing the transport sector (altering urban form takes time; behaviour change needs to be sustained), action needs to commence now. The results of current efforts may not be seen for some time, but nonetheless these policies still need to be initiated, because the sector's emissions are still growing and addressing this impact is likely to become more expensive and less likely to succeed if delayed.

9.4.5 Barriers

Identifying the limitations of work on governance/political barriers to date was beneficial to this study, because it has allowed for a move away from focusing solely on categorising barriers towards thinking about barriers in terms of how they relate to governance. Possible

responses to reducing transport emissions are well-documented and what *should/needs to be* done was referenced across the case studies, but policies still face significant implementation challenges and their success cannot be guaranteed.

By examining policy processes through the research themes, it was possible to pinpoint the issues identified here (strategy-action deficit; strategy-capacity gap; leadership/regime changes; ill-defined implementation details; unclear responsibilities) as the significant governance barriers which are preventing/hindering policy implementation. As suggested in Chapter 8, if these issues are acknowledged, they can be considered during the policy formulation stages and potential very easily overcome. This is where integration could play a key role. If such broad-ranging issues were considered at the outset, more integrated, cross-sector, cross-level policy could be implemented. By considering governance barriers alongside a typology developed to examine additional factors, this research offers detailed understanding of what inhibits policy implementation and how such hurdles can be removed or overcome.

It can be said that participants saw interaction and fragmentation across levels/departments as a potentially significant barrier, but far from the only one. Because this area has had little investigation previously, the fact that it is seen to contribute potentially warrants additional study, perhaps looking at more/different cases, or particularly at the local level where capacity (financial and expertise) is lacking. This may be beneficial to understand the broader implications. Importantly however, certain barriers in each case study were seen to be context-specific. It would be useful for governments to acknowledge that each policy area is unique and will invariably come with specific barriers – this should not dissuade government from tackling a policy problem, but should alert them to the fact that additional resources

should be considered to reflect the fact that this is the case and that particular elements will need to be overcome.

9.5 Research limitations

For the researcher, one of the most critical challenges was to maintain a balance between research styles across the contexts. The cultural differences between the case studies had not been fully acknowledged before the interviews commenced and this was a major surprise. The approach needed between different case study participants was stark, as was the interview technique. As a result, it made securing participants and obtaining information from interviews much more demanding in certain cases than others.

Californian responses were on the whole very formal and open regarding particular processes and political elements, but respondents were open to additional questioning. Conversely, whilst Bavarian case study participants also followed the letter of the processes, answers were generally very guarded and reserved; it was difficult to glean additional information. There were also a very low number of responses per question in this case study; therefore for some cross-cutting questions, the opportunity for valuable comparison was restricted. SA and Scottish participants were both much more 'open' about political processes and suggestions as to why elements are certain ways. But in SA participants were much more cynical about the way things are done. These experiences highlight the importance of understanding cultural contexts and using these as a tool. Questions need to be tailored to specifics more.

Perhaps it could be said that the methodology adopted was not without its limits. It was difficult to conduct semi-structured interviews with participants who were uncomfortable to stray from the questions and similarly, a lot of superfluous information was obtained from

participants more at ease with the free-flowing format. The converse is also true, in that some of the most valuable information came through utilising the semi-structured format and it is important to note that common themes emerged regardless of the differences. Therefore context should be considered in future research before methodology is selected.

9.6 Recommendations

9.6.1 Recommendations for governments

One key recommendation has emerged from each research theme. If governments could address each of these, their responses to reducing transport emissions would likely be much more successful and robust in the long-term.

1. **Acknowledge the potential of and facilitate local government capacity**: Local governments need strategic capacity support (financial and expertise) to fulfil their identified role as the implementer of policy. This should be facilitated by sub-national and federal government. In many cases, their ability to implement is the key determinant of policy success
2. **Address strategy-action deficit:** Ensure consistency between overarching strategy and specific policy delivery. Climate change policy needs to incorporate transport considerations and transport needs to consider climate change – this is identified as a major reason for fragmentation
3. **Engage industry proactively:** Industrial influence has been demonstrated across the board, but given the imperative to reduce emissions, government has an obligation to bring industrial interests around and facilitate a lower carbon future. It should not allow industry to continue to dictate economic interest and least-cost options
4. **Define roles:** Interplay across departments and government can only be successful if roles are clear and understood by all stakeholders and if ultimate responsibility is defined and acknowledged
5. **Move from planning to implementation:** Voluntary target-setting and policy preparation helped establish climate change on the agenda and make the issue a visible priority, but the same commitment needs to be continued through to more perhaps more mandatory action, but definitely through to implementation – details need to be hammered out earlier and resources secured for delivery
6. **Do not underestimate the value of leadership:** Whether individual, elite, departmental of an entire sub-national entity, leadership has been identified as a key determinant for keeping momentum up for climate change policy. This now needs to drive emission reductions and diffusion of successful policy to other contexts

9.6.2 Recommendations for future research

Some interesting and very important areas for further study have emerged from the research:

1. **New vertical interactions:** The 'model regions' and pilot EV projects in progress across Germany and the stimulus funding in the USA which was delivered to local governments direct from federal funds, highlight that there are potentially interesting vertical interactions occurring which have not been seen before. Investigating these interactions further would be interesting. More investigation could also be undertaken to understand the jurisdictional changes (as in local land use) that would be necessary to address transport emissions
2. **Climate change policy 'framing':** A comparison of the effectiveness of policies framed around climate change with those that would achieve emission reductions, but not framed as a climate change policy, to establish if there is resistance to climate change policy
3. **Diagonal regulation:** An examination to ascertain how/whether diagonal regulation exists outside the US context
4. **Barriers:** Expand investigation of how barriers relate to governance and how political barriers can be overcome. Additionally, investigating the reasons why different parts of the policy process are more challenging for different entities
5. **International policy diffusion:** Understanding the role of sub-national governments as '*international leaders*'
6. **Strategy-action deficit:** An examination of strategy-action deficit in other contexts would be useful, to see if it is a phenomenon outside climate change policy
7. **RenewablesSA:** In light of recent changes in SA, further understanding of the role of RenewablesSA now that the state is without a Climate Change Minster would be useful
8. **Car company subsidies:** Exploring the potential for German corporate car subsidies to promote efficient vehicles over luxury models and the political barriers to this
9. **Other applications for CDG:** CDG has been a most useful theoretical framework, further research utilising the approach would be interesting to undertake
10. **Types of leadership:** More exploration of the types of leaders that promote policy development and implementation wold be interesting and useful

Specifically as a first step for furthering this research, the researcher is particularly interested in examining the strategy-action deficit in other contexts and applied to other issues as well as to understanding the emerging vertical interactions occurring in policy development.

The framework could also be applied it to other transport modes, or used to examine forthcoming legislation around similar transportation areas which is being developed to inform some of the processes – for example the legislation on LCVs in the EU context.

9.7 Conclusion

This research has demonstrated that policy responses to addressing transport emissions are emerging and that multiple departments within and levels of government are involved in

developing and implementing this policy. Sub-national governance has been used to demonstrate that these relationships are complex, not linear and that the relationship with each level of government and the middle is diverse and contributes different elements to the overall policy process, regardless of the level at which the policy was initiated. Chains of interaction are indeed lengthening and processes are becoming more complex, but more representative. Fragmentation is seen through a lack of definition in how roles are formulated and played out and where responsibility lies for policy success; it has less to do with a lack of communication between entities. Indeed in some cases fragmentation is worse between divisions of the same entity as opposed to across entities and this shortcoming was interesting to observe and is significant as more integrated transport approaches are called for.

With regard to roles, the state and national governments need to acknowledge the fundamentally important role of the local government as the 'implementer' of policy developed at different levels and provide financial and strategic support to remove the strategy-capacity gap and enable this government level to fulfil its role. Both formal and informal interactions are witnessed in shaping policy across public and private sectors, and whilst more representation is promising, there remains a disproportionate influence being played by transport-based industries utilising long-established links to government. The fairly recent emergence of the environment lobby cannot compete as governments remain wedded to promoting economically-favourable policy, even if this does not reflect the necessity to reduce emissions. Indeed policy often does not match up with the grandiose strategic statements made by governments and this strategy-action deficit is one of the most prominent findings across the case studies.

The need for institutional change as suggested by CDG was acknowledged by research participants, but so was the reluctance to do anything differently. Such are the complex governance barriers often not discussed when considering why action is difficult. These sorts of inconsistencies must be addressed both in the literature but also in practice. Perhaps a start here would be to move away from talking of climate change as an explicit policy objective, and more about a political discourse framing, whereby all policy decisions consider the GHG impact in much the same way the economic implications are always considered. This sort of institutional change could mainstream climate change in a way so as not to shift it above or insert it into all other political issues, but see it more as a modus operandi, which is to some extent apolitical. Such a change is unlikely to occur, as climate change remains a partisan issue. Although Governor Schwarzenegger was a Republican leader and Bavaria's conservative leanings suggest that it may not always need to be such a divisive issue.

Policy processes – understanding the '*how'* and the '*who'* has been proven in this research to be fundamentally important to the successful delivery of emission reductions from transport. Indeed, given the oft-acknowledged difficulty in addressing transport, considering the reasons why and the barriers through a governance framing illuminates common, though not insurmountable, challenges that must be acknowledged and addressed. The specifics of implementation processes need to be thought through before policies reach this stage. Bardach (1977) was right in his observation that stakeholders see this as a second phase for negotiation, but if it was a more explicit objective of the development process, roles could be decided upon, political interplay could be promoted and in working out specific details, policymaking could become more expedient and relationships between levels and departments improved.

References

ACEA, *Frequently Asked Questions on CO_2 Legislation,* undated, http://www.acea.be/news/news_detail/faq_on_co2_legislation/

ACEA, *The Automobile Industry Pocket Guide 2010,* 2010, http://www.acea.be/images/uploads/files/2010924_Pocket_Guide_2nd_edition.pdf

ACEA, *The Automobile Industry Pocket Guide 2011,* 2011a, http://www.acea.be/images/uploads/files/20110921_Pocket_Guide_3rd_edition.pdf

ACEA, *Motor Vehicle Production in Europe by Country, Economic Report – European Union*, 2011b, http://www.acea.be/images/uploads/files/20111011_Production_EU27_1105_IV_PC.pdf

Addink, H., B. Arts, and A.P.J. Mol, *Climate Change Policy in Changing Contexts: Globalization, Political Modernization and Legal innovation* in M. Kok, J. Gupta and E. van Ierland (eds.), *Issues in International Climate Policy*, (Cheltenham: Edward Elgar, 2003)

Adelaide Metro, *The Adelaide O-Bahn*, (2007), http://www.adelaidemetro.com.au/guides/obahn

Adger, W. Neil, Katrina Brown, Jenny Fairbrass, Andrew Jordan, Jouni Paavola, Sergio Rosendo and Gill Seyfang, "*Governance for sustainability: towards a `thick' analysis of environmental decision making",* Environment and Planning A, 35, 2003, 1095-1110

AFP, "*Brazil hails Europe leadership in climate talks",* December 15th 2011, http://www.google.com/hostednews/afp/article/ALeqM5gPWO5DUl2nlUrj3obwQw78GXq5Fg?docId=CNG.903f8dc21dad4620c0e41129a8b95585.371

American Recovery and Reinvestment Act of 2009, abbreviated ARRA (Pub.L. 111-5)

Anable, Jillian, *"Complacent Car Addicts' or 'Aspiring Environmentalists? Identifying travel behaviour segments using attitude theory"*, Transport Policy, 12, 2005, 65-78

Anderton, Karen, *The Future of Sub-national Climate Change Governance: First Mover Advantage or End of the Road?* Conference Paper, Earth Systems Governance Conference, December 2009. Amsterdam, The Netherlands

Anderton, Karen, *The need for integrated institutions and organisations in transport policy - the case of transport and climate change*, in, D. Banister and M. Givoni (eds.) *Integrated Transport: From Policy to Practice* (London: Taylor and Francis, 2010)

Anderton, K. and K. Pangbourne, *The significance of individual leadership in complex governance arenas: the case of transportation and climate change,* in D.R. Gallagher (ed.), *Environmental Leadership: A Reference Handbook,* (Thousand Oaks, CA: Sage Publications, 2012, forthcoming)

Andonova, L.B., M.M. Betsill and H. Bulkeley, "*Transnational climate governance"*, Global Environmental Politics 2, 2009, 52-73

ARB, *Assembly Bill 32: Global Warming Solutions Act,* undated, http://www.arb.ca.gov/cc/ab32/ab32.htm

ARB *Climate Change Scoping Plan: a Framework for Change,* December 2008, http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

ARB, *California Greenhouse Gas Inventory for 2000-2008 — by Category as Defined in the Scoping Plan*, 2010,http://www.arb.ca.gov/cc/inventory/data/tables/ghg_inventory_scopingplan_00-08_2010-05-12.pdf

Archer, M. S., *Structure, Agency and the Internal Conversation*, (Cambridge: Cambridge University Press, 2003)

Arksey, Hilary and Peter Knight, *Interviewing for Social Scientists*, (London: SAGE Publications, 1999)

Assembly of European Regions, *Subsidiarity Principle ,*undated, http://www.aer.eu/main-issues/subsidiarity.html

Atkins, *Mitigating Transport's Climate Change Impact in Scotland: Assessment of Policy Options,* (2009), Scottish Government Transport Directorate-commissioned report from Atkins Transport Planning with University of Aberdeen

The Australian, *"Kevin Rudd launches planning takeover",* October 28, 2009 http://www.theaustralian.com.au/news/nation/kevin-rudd-launches-planning-takeover/story-e6frg6nf-1225791914308

Australian Bureau of Statistics, *3101.0 - Australian Demographic Statistics,* Dec 2010, http://www.abs.gov.au/ausstats/abs@.nsf/mf/3101.0/

Australian Conservation Foundation, *Australia's Public Transport: Investment For a Clean Transport Future,* (2011), http://www.acfonline.org.au/uploads/res/ACF_transport_funding_report_27-4-11.pdf

Australian Government, *TravelSmart,* (2008), *http://www.travelsmart.gov.au/government/index.html*

Australian Government Department of Climate Change, *Australia's Fifth National Communication on Climate Change,* (DCC, 2010), http://unfccc.int/resource/docs/natc/aus_nc5.pdf

Australian Government, Department of Infrastructure, and Transport, Bureau of Infrastructure, Transport and Regional Economics, *Australian infrastructure statistics: Yearbook 2011*, (BITRE, 2011), http://www.bitre.gov.au/publications/92/Files/BITRE_Yearbook_16Mar2011.pdf

Australian Government, Department of Climate Change and Energy Efficiency, *Australia's National Greenhouse Gas Accounts: State and Territory Greenhouse Gas Inventories 2009,* (DCC, 2011), http://www.climatechange.gov.au/~/media/publications/greenhouse-acctg/state-territory-inventory-2009.pdf

Australian Government, Department of Infrastructure and Transport, *Building Australia Fund Projects* (DIT, 2011), http://www.infrastructure.gov.au/infrastructure/baf/baf_projects.aspx

Bache, Ian and Matthew V. Flinders (eds.), *Multi-level governance,* (Oxford: Oxford University Press, 2004)

Bäckstrand, Karin, Jamil Khan, Annica Kronsell and Eva Lövbrand (eds.), *Environmental Politics and Deliberative Democracy,* (Cheltenham: Edward Elgar Publishing Ltd., 2010)

Baker, Susan, *Environmental Governance in the EU,* Cardiff University School of Social Sciences Working Paper Series: Paper 12, May 2001

Banister, David, *"The sustainable mobility paradigm",* Transport Policy 15, 2008, 73–80

Banister, David, Robin Hickman and Paul McCartney, *'Transport and Global Warming: What is the Potential for Carbon Reduction in Scotland?',* Transport Studies Unit, University of Oxford, Working paper N° 1025, 2007

Banister, David, Karen Anderton, David Bonilla, Moshe Givoni, and Tim Schwanen, "*Transportation and the Environment",* Annual Review of Environment and Resources, 36, 2011, 247-270

Barbour, Rosaline, *Introducing Qualitative Research: A Student's Guide to the Craft of Doing Qualitative Research,* (London: Sage Publications, 2008)

Bardach, Eugene, *The Implementation Game: What Happens After a Bill Becomes a Law,* (Cambridge, MA: The MIT Press, 1977)

Bardach, Eugene, *Getting Agencies to Work Together: The Practice and Theory of Managerial Craftsmanship,* (Washington DC: Brookings Institution Press, 1998)

Barton, Jim, *'CLIMATE CHANGE: The National Perspective',* Transport Scotland presentation delivered at the Roads and Climate Change Seminar, Hampden Park, Glasgow, 2nd October 2008, http://www.transportscotland.gov.uk/files/documents/roads/road_and_climate_change_seminar_-_Jim_Barton_presentation_-_2_October_2008_v2.pdf

Bayerisches Landesamt für Umwelt, *Kohlendioxidemissionen des Verkehrs,* 2011, http://www.lfu.bayern.de/umweltqualitaet/umweltbewertung/klima/co2_emissionen_verkehr/index.htm

Bayerisches Staatministerium der Finanzen, *Der Bayerische Staatshaushalt Doppelhaushalt 2011/2012,* April 2011, http://www.verwaltung.bayern.de/egov-

portlets/xview/Anlage/1846890/Der%20Bayerische%20Staatshaushalt%20-%20Doppelhaushalt%202011-2012.pdf

Bayerisches Staatsministerium für Umwelt und Gesundheit, *Energiebedingte CO_2-Emissionen in Bayern (in 1000 t),* 2007, http://www.stmugv.bayern.de/umwelt/daten/doc/co2tab.pdf

Bayerisches Staatsministerium für Umwelt und Gesundheit, *Klimaschutz in Bayern,* (undated-a), http://www.stmug.bayern.de/umwelt/klimaschutz/klimaprogramm/index.htm

Bayerisches Staatsministerium für Umwelt und Gesundheit, *Umweltpakt Bayern,* (undated-b), http://stmug.bayern.de/umwelt/wirtschaft/umweltpakt/index.htm

Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie, *Industriebericht Bayern 2011,* 2011, http://www.verwaltung.bayern.de/egov-portlets/xview/Anlage/4028371/Industriebericht%20Bayern%202011.pdf.

Bayerisches Staatsministerium für Wirtschaft, Infrastruktur, Verkehr und Technologie, *Energiebilanz Bayern: Daten, Fakten, Tabellen*, June 2010, http://www.stmwivt.bayern.de/uploads/energiebilanz/Energiebilanz_gesamt.pdf?PHPSESSID=610cdb5d4971469464f469562904c60c

Bayerisches Staatsministerium für Wirtschaft, Verkehr und Technologie (2002), *Gesamtverkehrsplan Bayern 2002*, http://www.stmwivt.bayern.de/fileadmin/Web-Dateien/Dokumente/verkehr/Gesamtverkehrsplan_Bayern_2002.pdf

Bayerisches Staatsregierung, *The State and its Inhabitants: History and Historic Figures,* undated, http://www.bayern.de/History-and-Historic-Figures-.631/index.htm

Bayerische Staatsregierung, *Klimaprogramm Bayern 2020,* September 2009

BBC News, "*Holyrood to get new budget powers under Scotland Bill*", 30th November 2010, http://www.bbc.co.uk/news/uk-scotland-11863388

BBC News Scotland, "*Scottish Transport Minister Stewart Stevenson resigns*"**,** 11 December 2010**,** http://www.bbc.co.uk/news/uk-scotland-11976328

Bendel, Petra and Roland Sturm, *Federal Republic of Germany,* in Luis Moreno and César Colino (eds.), *A Global Dialogue on Federalism, Volume 7: Diversity and Unity in Federal Countries,* (London: McGill-Queens's University Press, 2010)

Benson, D. and A. Jordan, *"Understanding task allocation in the European Union: exploring the value of federal theory",* Journal of European Public Policy, 15, 2008, 1-20

Bernard, H. Russell, *Social Research Methods: Qualitative and Quantitative Approaches,* (London: SAGE Publications, 2000)

Betsill, Michelle, *International Climate Change Policy: Toward the Multilevel Governance of Global Warming,* in Regina S. Axelrod, Stacy D. Vanderveer and David Leonard Downie (eds.),

The Global Environment: Institutions, Law and Policy (Third Edition), (Washington DC: CQ Press, 2011)

Biermann, Frank, "*Strengthening Green Global Governance in a Disparate World Society: Would a World Environment Organisation Benefit the South?"* International Environmental Agreements: Politics, Law and Economics, 4, 2, 2002, 297-315

Biermann, Frank., Michele M. Betsill, Joyeeta Gupta, Norichika Kanie, Louis Lebel, Diana Liverman, Heike Schroeder and Bernd Siebenhüner, *Earth System Governance: People, Places and the Planet. Science and Implementation Plan of the Earth System Governance Project*, Earth System Governance Report 1, IHDP Report 20, (Bonn, IHDP: The Earth System Governance Project, 2009)

BMW Group, *The Sustainability of the BMW Group: Sustainable Value Report 2010,* 2010, http://www.bmwgroup.com/bmwgroup_prod/e/nav/index.html?http://www.bmwgroup.com/bmwgroup_prod/e/0_0_www_bmwgroup_com/home/home.html

Brown, Katrina, *Human development and environmental governance: a reality check*, in W. Neil Adger and Andrew Jordan (eds.), *Governing Sustainability*, (Cambridge: Cambridge University Press, 2009)

Brown, K., J. Mackensen and S. Rosendo, *Integrated responses*, in K. Chopra, R. Leemans, P. Kumar and H. Simons (eds.), *Ecosystems and Human Well-being: Policy Responses (Volume 3),* (Washington D.C: Millennium Assessment and Island Press, 2005)

Bulkeley, Harriet and Kristine Kern, *"Local Government and the Governing of Climate Change in Germany and the UK"* , Urban Studies, 43, 12, 2006, 2237-2259

"bully pulpit" WordNet® 3.0. Princeton University, 17 Aug 2011, http://dictionary.reference.com/browse/bully pulpit>

Bundesministerium der Finanzen, K*ey figures for the 2012 federal budget - (Federal Ministries and Federal Chancellery)*, 06 October 2011, http://www.bundesfinanzministerium.de/nn_122342/EN/Press-and-publications/Media-Center/Graphics/Infographics-special-Germany/Infographics-special-Germany-Standardartikel.html?__nnn=true

Bundesministerium für Umwelt, Naturschutz und Reaktorsicherheit, *Das Integrierte Energie- und Klimaschutzprogramm,* June 2009, http://www.bmu.de/klimaschutz/nationale_klimapolitik/doc/44497.php

Bundesministerium für Verkehr, Bau und Stadtentwicklung, *Bundesverkehrswegeplan,* undated, http://www.bmvbs.de/SharedDocs/DE/Artikel/UI/bundesverkehrswegeplan.html

Bundesministerium für Wirtschaft und Technologie, German Business Portal, *Automotive Industry: Our Industry in Numbers,* undated , http://www.german-business-portal.info/GBP/Navigation/en/Business-Location/Manufacturing%20Industries/automotive-industry,did=325944.html

Bureau of Transport Statistics, *State Transportation Statistics 2009, Table 5-3: Highway VMT: 2003, 2008,* 2010, http://www.bts.gov/publications/state_transportation_statistics/state_transportation_statistics_2009/html/table_05_03.html

Cairns, S., L. Sloman, C. Newson, J. Anable, A. Kirkbride and P. Goodwin, *Smarter choices - changing the way we travel,* (London: UK Department for Transport, 2004)

California Chamber of Commerce, *Trade Statistics,* 2011, http://www.calchamber.com/international/trade/pages/tradestatistics.aspx

California Department of Finance, *Governor's Budget Summary 2008-9: The California Strategic Growth Plan,* 2009, http://www.dof.ca.gov/budget/historical/2008-09/governors/summary/documents/SCSG.pdf

California Department of Motor Vehicles, *Statistics for Publication, January through December 2010,* March 2011, http://dmv.ca.gov/about/profile/official.pdf

California Government, *Governor Schwarzenegger Signs Sweeping Legislation to Reduce Greenhouse Gas Emissions Through Land-Use,* September 2008, http://gov.ca.gov/news.php?id=10697

California Natural Resources Agency, *Frequently Asked Questions About CEQA,* (RA, 2007), http://ceres.ca.gov/ceqa/more/faq.html#what

California Secretary of State, California Statewide General Election, Tuesday November 2nd: Official Voter Information Guide, Prop 23, 2010, http://www.voterguide.sos.ca.gov/propositions/23/

California Transit Association, *Good News and Bad in Democratic Budget Package,* (December 18, 2008), http://www.caltransit.org/node/609

Caltrans, *About Caltrans,* undated, http://www.dot.ca.gov/aboutcaltrans.htm

Caltrans, *California Transportation Plan (CTP) 2025*, 2006, http://www.dot.ca.gov/hq/tpp/offices/osp/ctp2025.html

Caltrans, *California Transportation Plan 2030*, (2007a), http://www.dot.ca.gov/hq/tpp/index_files/ctp_2030_oct_2007.pdf

Caltrans, *What is SAFETEA-LU?* (2007b), http://www.dot.ca.gov/fedliaison/safetealu.shtml

Caltrans, *California's Strategic Growth Plan,* Presentation by Will Kempton, Director, 2008, http://www.transportation.org/meetings/presentations/springmeeting2008/California%20Strategic%20Growth%20Plan.pdf

Carbon Disclosure Project, *Appendix I: Table of emissions, scores and sector information by company,* CDP Global 500 Report 2011: Accelerating Low Carbon Growth, 2011, https://www.cdproject.net/en-US/Results/Pages/CDP-Global-500-Report-2011.aspx?PageID=8

Carter, Neil, *The Politics of the Environment: Ideas, Activism, Policy (Second Edition)*, (Cambridge: Cambridge University Press, 2007)

Carter, C. and A. McLeod, *The Scottish Parliament and the European Union: Analysing Regional Parliamentary Engagement* in S. Weatherill and U. Bernitz (eds.), *The Role of the Regions and Sub-National Actors in Europe,* (Oxford: Hart Publishing, 2005)

Cash, D. W., W. Adger, F. Berkes, P. Garden, L. Lebel, P. Olsson, L. Pritchard and O. Young, *"Scale and cross-scale dynamics: governance and information in a multilevel world*", Ecology and Society, 11, 2, 2006, 8

Catenacci, Michela, *Environmental Policy Integration at the Regional and Local Levels: Setting the Problem into Context* in Alessandra Goria, Alessandra Sgobbi and Ingmar von Homeyer (eds.), *Governance for the Environment: A Comparative Analysis of Environmental Policy Integration*, (Cheltenham: Edward Elgar Publishing Ltd., 2010)

CEC, *California Leadership on Land Use and Climate Change.* Presentation delivered by Panama Bartholomy, Advisor to the Chairman, California Energy Commission at New Partners for Smart Growth, Washington, DC., 2008, http://www.energy.ca.gov/2008publications/CEC- 999–2008–014/CEC- 999–2008–014.PDF

CEC, *What is your home energy rating? Updated for 2011,* 2011, http://www.energy.ca.gov/2009publications/CEC-400-2009-008/CEC-400-2009-008-BR-REV1.PDF

Chhotray, Vasudha and Gerry Stoker, *Investigating Governance Practice: the value of a cross-disciplinary approach*, Paper 1 for Euroloc – Summer School in Local Government Studies 2008 UPRC, Ghent University Association, 23 June – 1 July 2008, Ghent, Belgium

Chhotray, Vasudha and Gerry Stoker, *Governance Theory and Practice: A Cross-Disciplinary Approach*, (New York, NY: Palgrave Macmillan, 2009)

CIA World Factbook 2011, *EUROPE: GERMANY,* (Washington, DC: Central Intelligence Agency, 2011), https://www.cia.gov/library/publications/the-world-factbook/geos/gm.html

Clean Air Act Extension of 1970, 84 Stat. 1676, Pub.L. 91-604, 1970-12-31

Cohen, Michael D., James G. March and Johan P. Olsen, "*A Garbage Can Model of Organizational Choice"*, Administrative Science Quarterly, 17, 1, (Mar 1972), 1-25

Committee on Climate Change, *Meeting Carbon Budgets - the need for a step change* - 12 October 2009, http://theccc.org.uk/reports/1st-progress-report

Confidential Settlement Agreement, People v. County of San Bernardino, No. 07 Civ. 329 (Cal. Super. Ct. Aug. 28, 2007)

Davies, Phil*, "Doing Politics: Spies as Informants: Triangulation and the Interpretation of Elite Interview Data in the Study of the Intelligence and Security Services"*, Politics, 21, 1, 2001, 73-80

Department for Transport (UK), *Summary of Sustainable Travel Town results evaluation*, 22nd February 2010, http://www2.dft.gov.uk/pgr/sustainable/ltp3planning/travelguide/sttresults/

Dessler, David, *"What's at stake in the agent-structure debate?"* International Organization 43, 3, 1989, 441-473

DG Clima, *The EU climate and energy package* , October 2010 (2010a), http://ec.europa.eu/clima/policies/package/index_en.htm

DG Clima, *Climate policy mainstreaming*, February 2010 (2010b), http://ec.europa.eu/clima/policies/brief/mainstreaming/index_en.htm

DG Clima, *Reducing CO_2 emissions from passenger cars*, December 2010 (2010c), http://ec.europa.eu/clima/policies/transport/vehicles/cars/index_en.htm

DG Clima, *Second European Climate Change Programme*, April 2011 (2011a), http://ec.europa.eu/clima/policies/eccp/second/index_en.htm

DG Clima, *Roadmap for moving to a low-carbon economy in 2050,* March 2011 (2011b), http://ec.europa.eu/clima/policies/roadmap/index_en.htm

DG Energy, *EUROPE 2020 initiative - Energy Efficiency Plan 2011,* March 2011, http://ec.europa.eu/energy/efficiency/action_plan/action_plan_en.htm

DG Enterprise and Industry, *CARS 21 A Competitive Automotive Regulatory System for the 21st century: Final Report,*2006, http://ec.europa.eu/enterprise/sectors/automotive/files/pagesbackground/competitiveness/cars21finalreport_en.pdf

DG Enterprise and Industry, *Automotive Industry,* 2011, http://ec.europa.eu/enterprise/sectors/automotive/index_en.htm

DG Environment, *Transport and* Environment, 2011, http://ec.europa.eu/environment/air/transport/index.htm

DG Move, *European Strategies: White paper 2011,* June 2011, http://ec.europa.eu/transport/strategies/2001_white_paper_en.htm)

Dixit, Avinash, *"On Modes of Economic Governance"* Econometrica, 71, 2, March 2003, 449-481

Djelic, Marie-Laure and Kerstin Sahlin-Andersson (eds.), *Transnational Governance: Institutional Dynamics of Regulation,* (Cambridge: Cambridge University Press, 2006)

Dryzek, John S., *The Politics of the Earth: Environmental Discourses (Second Edition),* (Oxford: Oxford University Press, 2005)

Engel, Kirsten, *"State and Local Climate Change Initiatives: What Is Motivating State and Local Governments to Address a Global Problem and What Does This Say about Federalism and*

Environmental Law," Arizona Legal Studies Discussion Paper No 06-36, Urban Lawyer, 38, 2006, 1015

Engel, Kirsten H., *"Whither Subnational Climate Change Initiatives in the Wake of Federal Climate Legislation?"* Publius: The Journal of Federalism, 39, 3, 2009, 432-454

EPA, *HUD, DOT and EPA Partnership: Sustainable Communities: June 19th 2009,* 2009, http://www.epa.gov/smartgrowth/pdf/dot-hud-epa-partnership-agreement.pdf

Euractiv, *Carmakers to get carbon credits for 'eco-innovation',* 2011, http://www.euractiv.com/climate-environment/carmakers-get-carbon-credits-eco-innovation-news-506760

Europa, *Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO_2 emissions from light-duty vehicles Text with EEA relevance,* 2009, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0001:01:EN:HTML

Europa, *Subsidiarity,* (undated-a), http://europa.eu/legislation_summaries/institutional_affairs/treaties/amsterdam_treaty/a27000_en.htm

Europa, *Basic information on the European Union,* (undated-b), http://europa.eu/about-eu/basic-information/index_en.htm

Europa, *EU institutions and other bodies,* (undated-c), http://europa.eu/about-eu/institutions-bodies/index_en.htm,

Europa, *Welcome to the Secretariat-General of the European Commission,* (2011a), http://ec.europa.eu/dgs/secretariat_general/what_we_do/index_en.htm

Europa, *Commission General Budget 2011,* (2011b), http://eur-lex.europa.eu/budget/data/LBL2011/EN/SEC03.pdf

Europa, *Connie Hedegaard, Member of the European Commission Climate Action: Mainstreaming Climate Action into the EU Policies and Budget,* (2011c), http://ec.europa.eu/commission_2010-2014/hedegaard/headlines/topics/mainstreaming_en.htm

European Environment Agency, *Greenhouse gas emissions in Europe: a retrospective trend analysis for the period 1990-2008, EEA Report No 6/2011,* (2011a) http://www.eea.europa.eu/publications/ghg-retrospective-trend-analysis-1990-2008

European Environment Agency, *Annual European Union greenhouse gas inventory 1990–2009 and inventory report 2011 – Submission to the UNFCCC Secretariat*, Technical report No.2/2011, 27 May 2011, (2011b), http://www.eea.europa.eu/publications/european-union-greenhouse-gas-inventory-2011/greenhouse-gas-inventory

European Parliament, *Fact Sheets on the European Union: TAXATION OF ENERGY,* May 2006, http://www.europarl.europa.eu/parliament/expert/displayFtu.do?language=en&id=74&ftuId=FTU_4.18.4.html

Eurostat, *Modal split of inland passenger and freight transport, 2007 (1) Excluding powered two-wheelers*, September 2009, http://epp.eurostat.ec.europa.eu/statistics_explained/index.php?title=File:Modal_split_of_inland_passenger_and_freight_transport,_2007_(1)_Excluding_powered_two-wheelers..PNG&filetimestamp=20100329090048

Evans, Mark and Jonathan Davies, *"Understanding Policy Transfer: A Multi-Level, Multi-Disciplinary Perspective",* Public Administration, 77, 2, 1999, 361-385

Flyvbjerg, Bent, *Rationality and Power: Democracy in Practice,* (Chicago, IL: University of Chicago Press, 1998)

Flyvbjerg, Bent, *Making Social Science Matter: Why Social Inquiry Fails and How It Can Succeed Again,* (Cambridge: Cambridge University Press, 2001)

Friedman, Jeffrey (ed.), *The Rational Choice Controversy,* (New Haven, CT: Yale University Press: 1996)

Garnaut, Ross, *The Garnaut Climate Change Review - Final Report,* 2008, http://www.garnautreview.org.au/domino/Web_Notes/Garnaut/garnautweb.nsf

Gascoigne, Toss, "*Climate Change: "The" Issue in the Australian National Election 2007?"*, Science Communication, 29, 4, 2008, 522-531

Geoghegan, Thomas, *"Notebook: Consider the Germans",* Harper's Magazine, March 2010

Giddens, A., *The Constitution of Society: Outline of the Theory of Structuration*, (Berkeley, CA: University of California Press, 1984)

Grodin, Joseph et al., *The California State Constitution: A Reference Guide,* (Westport, CT: Greenwood Press, 1993)

Gupta, Joyeeta, "*Non-State Actors in International Governance and Law: A Challenge or a Blessing?"* ILSA Journal of International and Comparative Law, 2005, 11, 497-517

Gupta, Joyeeta, *"Editorial: The Multi-Level Governance Challenge of Climate Change",* Environmental Sciences, 4, 3, September 2007, 131-137

Gupta, Joyeeta, Kim Van Der Leeuw and Hans De Moel*, "Climate Change: A 'Glocal' Problem Requiring 'Glocal' Action"*, Environmental Sciences 4, 3, September 2007, 139-148

Hajer, Maarten A. and Hendrik Wagenaar (eds.), *Deliberative Policy Analysis: Understanding Governance in the Network Society*, (Cambridge: Cambridge University Press, 2003)

Hansen, Carsten Jahn*, "Urban Transport, The Environment and Deliberative Governance: The Role of Interdependence and Trust'"* Journal of Environmental Policy & Planning, 2006, 8, 2, 159-179

Harding, Ronnie, Carolyn Hendriks, Mehreen Faruqi, *Environmental Decision-Making: Exploring Complexity and Context,* (Annandale: NSW, Federation Press, 2009)

Hargreaves-Heap, Shaun, Bruce Lyons, Martin Hollis, Robert Sugden and Albert Weale, *The Theory of Choice: A Critical Guide*, (London: Wiley-Blackwell, 1992)

Harrington, Winston, Virginia McConnell and Margaret Walls, *Who's in the driver's seat? Mobile source policy on the US federal system,* in Stef Proost and John B. Braden (eds.), *Climate Change, Transport and Environmental Policy,* (Cheltenham: Edward Elgar Publishing Ltd., 1998)

Heinzerling, Lisa, *Climate Change, Human Health and the Post-Cautionary Principle,* in David M. Driesen (ed.), *Economic Thought and U.S. Climate Change Policy,* (London: The MIT Press, 2010)

Hendriks, Carolyn M*. "Deliberative governance in the context of power",* Policy and Society 28, 2009, 173-184

Hepburn, Eve, *"The Neglected Nation: The CSU and theTerritorial Cleavage in Bavarian Party Politics"*, German Politics, 17, 2, 2008, 184-202

Hepburn, Eve, "*Small Worlds in Canada and Europe: A Comparison of Regional Party Systems in Quebec, Bavaria and Scotland*", Regional & Federal Studies: Special Issue: Why Regions Matter: Sub-state Polities as Small Worlds, 20, 4-5, 2010, 527 – 54

Herald Scotland, *"Warning on pollution targets",* 13 Dec 2008, http://www.heraldscotland.com/warning-on-pollution-targets-1.826766

Hey, Christian, *The German Paradox: Climate Leader and Green Car Laggard,* in Sebastian Oberthür and Marc Pallemaerts (eds.), *The New Climate Policies of the European Union: Internal Legislation and Climate Diplomacy*, (Brussels: Brussels University Press, 2010)

Hildebrand, Philip M., *The European Community's Environmental Policy, 1957 to '1992': From Incidental Measures to International Regime,* in Andrew Jordan (ed.), *Environmental Policy in the European Union: Actors Institutions and Processes,* (London: Earthscan Publications Ltd, 2005)

Hooghe, Liesbet and Gary Marks, "*Unravelling The Central State, But How? Types of Multi-Level Governance",* American Political Science Review, 97, 2, May 2003, 233-243

Hössinger, R., and A. Wolf, *Overcoming barriers to implement sustainable transport policies,* POLIS European Cities and Regions Networking Conference, 4-5 December 2003, Cologne

H.R.2454 - American Clean Energy and Security Act of 2009

Hull, A. D. and R. C. Tricker, *"Assessing barriers to sustainable UK urban transport solutions*", Proceedings-Institution of Civil Engineers Engineering Sustainability, 2005, 158; 3, 171-180

International Monetary Fund, *World Economic Outlook Database,* April 2011, http://www.imf.org/external/pubs/ft/weo/2011/01/weodata/weorept.aspx?sy=2008&ey=2011&scsm=1&ssd=1&sort=country&ds=.&br=1&c=134&s=NGDPD%2CNGDPDPC%2CPPPGDP%2CPPPPC%2CLP&grp=0&a=&pr.x=52&pr.y=0.

Innes, Judith E. and David E. Booher, *Collaborative Policymaking: Governance through Dialogue,* in Maarten A. Hajer and Hendrik Wagenaar (eds.), *Deliberative Policy Analysis: Understanding Governance in the Network Society*, (Cambridge: Cambridge University Press, 2003)

Invest in Bavaria, *Automotive engineering,* 2011, http://www.invest-in-bavaria.de/en/bavarias-clusters/mobility/automotive-engineering/

IPCC, *Methodological and Technological Issues in Technology Transfer,* (Cambridge: Cambridge University Press, 2000)

IPCC, *Fourth Assessment Report,* (2007a) http://www.ipcc.ch/pdf/assessment-report/ar4/syr/ar4_syr_spm.pdf

IPCC, *Fourth Assessment Report, Working Group 3 - Mitigation, Chapter 5, 'Transport and its Infrastructure, (*2007b), http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-Chapter5.pdf-

International Energy Agency, "*IEA exhorts Ministers to "bridge the gap" between current policies and the new measures that will empower a more secure, environmentally acceptable energy system"*, 14th November 2006, http://www.iea.org/textbase/press/pressdetail.asp?PRESS_REL_ID=189

International Energy Agency, *World Energy Outlook 2006 Edition,* http://www.iea.org/weo/2006.asp

International Energy Agency, "*Prospect of limiting the global increase in temperature to 2ºC is getting bleaker",* 30th May 2011, http://www.iea.org/LatestInformation.asp?offset=15

James, P., *The Politics of Bavaria*, (Aldershot: Avebury, 1995)

Jänicke, Martin, *State failure: the impotence of politics in industrial society,* (Cambridge: Polity Press, 1990)

Jänicke, Martin, "*Conditions for environmental policy success: An international comparison*", The Environmentalist, 12, 1, 1992, 47-58

Jänicke, Martin, *The Political Systems Capacity for Environmental Policy* in Martin Jänicke and Helmut Weidner (eds.), *National Environmental Policies. A Comparative Study of Capacity-Building* (Berlin: Springer Verlag, 1997)

Jordan, Andrew (ed.), *Environmental Policy in the European Union: Actors Institutions and Processes,* (London: Earthscan Publications Ltd, 2005)

Jordan, A., R. Wurzel and A. Zito*, Environmental Governance… or Government? The International Politics of Environmental Instruments,* in P. Dauvergne (ed.), *The International Handbook of Global Environmental Politics*, (Cheltenham: Edward Elgar Publishing Ltd., 2005)

Jordan, Andrew, Adriaan Schout and Martin Unfried, *The European Union,* in Andrew J. Jordan and Andrea Lenschow (eds.), *Innovation in Environmental Policy? Integrating the Environment for Sustainability,* (Cheltenham: Edward Elgar Publishing Ltd., 2008)

Kaswan, Alice, *"A Cooperative Federalism Proposal for Climate Legislation: The Value of State Autonomy in a Federal System",* Denver University Law Review, 85, 4, 2008; University of San Francisco Law Research Paper No. 2009-10

Kavanagh, D. and D. Richards, "*Departmentalism and joined-up government"*, Parliamentary Affairs 54, 1, 2001, 1-18

Kerfoot, Ben, *"Implications for Regional Transport Partnerships of the Scottish Budget and Local Government Concordat",* Scottish Transport Review, 39, 2008, 6

Kingdon, J., *Agendas, Alternatives and Public Policies,* (New York, NY: Harper Collins, 1984)

Kooiman, Jan, *Modern governance: new government-society interactions*, (London: SAGE Publications, 1993)

Kooiman, Jan, "*Social-Political Governance: Overview, reflections and design"*, Public Management Review, 1, 1, 1999, 67-92

Kooiman, Jan, *Societal Governance: Levels, Modes and Orders of Social-Political Interaction* in Jon Pierre (ed.), *Debating governance: Authority, steering and democracy,* (Oxford: Oxford University Press, 2000)

Laffan, Brigid, *"Policy Implementation in the European Community: The European Social Fund as a Case study",* Journal of Common Market Studies, XXI, 4, 1983, 389-408

Legislative Analyst's Office - Mac Taylor, Legislative Analyst,
California Spending Plan 2008-9: Budget Act and Related Decisions, November 2008, http://www.lao.ca.gov/2008/spend_plan/spending_plan_08-09.pdf,

Lenschow, Andrea, *New Regulatory Approaches in 'Greening' EU Policies,* in Andrew Jordan (ed.), *Environmental Policy in the European Union: Actors Institutions and Processes,* (London: Earthscan Publications Ltd, 2005)

Liberatore, A., *The integration of sustainable development objectives into EU policymaking: barriers and prospect,* in S. Baker, M. Kousis, D. Richardson and S. Young (eds.), *The Politics of Sustainable Development,* (London: Routledge, 1997)

Lindlof, T.R. and B.C. Taylor, *Qualitative Communication Research Methods (Second Edition),* (Thousand Oaks, CA: Sage Publications, 2002)

Litman, Todd, "*Reinventing Transportation Exploring the Paradigm Shift Needed to Reconcile Transportation and Sustainability Objectives",* Transportation Research Record 1670, Transportation Research Board, 1999, 8-12

Liverman, Diana, "*Who Governs, at What Scale and at What Price? Geography, Environmental Governance, and the Commodification of Nature*", Annals of the Association of American Geographers, 94, 4, 2004, 734-738

Local Transport Today, '*Transport Scotland takes over Government's transport directorate',* 545, 14th May 2010, http://www.transportxtra.com/magazines/local_transport_today/news/?ID=22645

Lovan, Robert W., Michael Murray and Ron Schaffer (eds.), *Participatory Governance: Planning, Conflict Mediation and Public Decision-Making in Civil Society*, (Aldershot: Ashgate Publications Ltd., 2004)

Lyster, Rosemary, "*Australian Carbon Pollution Reduction Scheme: What Role for Complementary Emissions Reduction Regulatory Measures",* The Forum: Climate Change Law in Australia, University of New South Wales Law Journal, 31, 3, 2008, 881-894

Machiavelli, Niccolò, *The prince,* (Chicago, IL: University of Chicago Press, 1998)

Macleod, Gordon and Mark Goodwin, *"Space, scale and state strategy: rethinking urban and regional governance",* Progress in Human Geography, 23, 4, 1999, 503-527

Marks, G., L. Hooghe and K. Blank, *"European Integration in the 1980s: state-centric v multi-level governance"*, Journal of Common Market Studies, 34, 1996, 341-78

Markwell, D.J., "*The Federal State: Lessons from North American and European Experience",* Ditchley Foundation Conference Report No. D91/11, 1991

Marsh, David and Gerry Stoker (eds.), *Theory and Methods in Political Science (Second Edition),* (London: Palgrave Macmillan, 2002)

Mason, Michael, *Environmental Democracy,* (London: Earthscan Publications Ltd., 1999)

Massachusetts v EPA, 7 S. Ct. 1438 (2007)

Matland, Richard E., "*Synthesizing the Implementation Literature: The Ambiguity-Conflict Model of Policy Implementation",* Journal of Public Administration Research and Theory, 5, 2, 1995, 145-174

May, Tony and Mary Crass*, "Sustainability in Transport: Implications for Policymakers",* Transportation Research Record 2017, Transportation Research Board, 2007, 1-9

Mayhew, David R., *Divided we Govern: Party Control, Lawmaking, and Investigations 1946–1990,* (New Haven, CT: Yale University Press, 1991)

Maxwell, Ian, "*Smarter Choices Smarter Places",* 2009 Powerpoint Presentation, http://www.abdn.ac.uk/~wpg051/documents/ian-maxwell-tdm2009-final.pdf

Mazmanian, Daniel A., John Jurewitz and Hal Nelson, *"California's Climate Change Policy: The Case of a Subnational State Actor Tackling a Global Challenge",* Journal of Environment Development, 17, 2008, 401-423

McAnulla, S.D., *Structure and Agency* in David Marsh and Gerry Stoker (eds.), *Theory and methods in political science*, (London: Palgrave Macmillan, 2002)

McGuinness, Meghan and A. Denny Ellerman, *The Effects of Interactions between Federal and State Climate Policies*, Center for Energy and Environmental Policy Research, Massachusetts Institute of Technology, MIT-CEEPR (Series) ; 08-004WP, 2008

McCloskey, Michael, *"Problems with Using Collaboration to Shape Environmental Public Policy"*, Valparaiso University Law Review, 34, 1999-2000, 423-435

Mercury News, *Mercury News Analysis of California legislation,* in Karen de Sá, *How our laws in California are really made,* 07/10/2010 (updated 08/19/2011), 2011, http://www.mercurynews.com/politics-government/ci_15452125

Millard-Ball, Adam and Lee Schipper, *"Are We Reaching Peak Travel? Trends in Passenger Transport in Eight Industrialized Countries",* Transport Reviews 31, 3, 2011, 357-378

Mintzel, Alf, *Specificities of Bavarian Political Culture,* in Dirk Berg-Schlosser and Ralf Rytlewski (eds.), *Political Culture in Germany,* (New York: NY, St. Martin's Press Inc., 1993)

The Montreal Declaration of the Federated States and Regional Governments on Climate Change, http://www.mddep.gouv.qc.ca/air/leaders/Declaration_en.pdf

Morrow, James D., *Game Theory for Political Scientists,* (Princeton, NJ: Princeton University Press, 1994)

Morrow, W. Ross, Kelly Sims Gallagher, Gustavo Collantes and Henry Lee, "*Analysis of policies to reduce oil consumption and greenhouse-gas emissions from the US transportation sector*", Energy Policy 38, 2010, 1305-1320

Mulgan, Geoff, *Joined-Up Government: Past, Present and Future,* in Vernon Bogdanor (ed.), *Joined-Up Government,* British Academy Occasional Paper 5, (Oxford: Oxford University Press/British Academy, 2005)

Müller-Graff, Peter-Christian, *The German Länder: Involvement in EC/EU Law and Policy Making,* in Stephen Weatherill and Ulf Bernitz (eds.), *The role of regions and sub-national actors in Europe* (Oxford: Hart Publishing, 2005)

MVA et al., *SESTRAN Integrated Transport Corridor Studies – SITCoS: Queensferry Cross Forth Corridor: Corridor Report,* 2003, http://www.sestran.gov.uk/files/Executive%20Summary.pdf

National Emissions Trading Taskforce, *Possible design for a national greenhouse gas emissions trading scheme: Final framework report on scheme design*, (2007), http://www.garnautreview.org.au/CA25734E0016A131/WebObj/NETTReportfromStateandTerritoryOfficials_Finalreceived14March2008/$File/NETT%20Report%20from%20State%20and%20Territory%20Officials_Final%20received%2014%20March%202008.pdf

New State Ice Co. v. Liebmann, 285 U.S. 262 (1932)

The New York Times, *Democrats Call Off Climate Bill Effort,* Carl Hulse and David M. Herszenhorn, July 22, 2010, http://www.nytimes.com/2010/07/23/us/politics/23cong.html

Niemeier, Deb, *Diminishing transit budgets in an economic crisis: what is the tradeoff with quality?* (2010a), NECTAR Cluster Meeting 2, Rome, 22-23 October 2010

Niemeier, Deb, *California and climate change: Bellwether or bust?* (2010b), TSU Seminar Series, 20th January 2010, Oxford, UK

North, Douglass, *Institutions, institutional change, and economic performance,* (Cambridge: Cambridge University Press, 1990)

Oberthür, Sebastian and Olav Schram Stokke, *Conclusions: Decentralized Interplay Management in an Evolving Interinstitutional Order,* in Sebastian Oberthür and Olav Schram Stokke, *Managing Institutional Complexity: Regime Interplay and Global Environmental Change,* (London: The MIT Press, 2011)

Oels, Angela, *"Rendering Climate Change Governable: From Biopower to Advanced Liberal Government?"* Journal of Environmental Policy & Planning, 7, 3, 2005, 185-207

Office of the Governor *Senate Bill 375: Redesigning Communities to Reduce Greenhouse Gases,* 2008, http://gov.ca.gov/fact- sheet/10707

Okereke, Chukwumerije and Harriet Bulkeley *"Conceptualizing climate change governance beyond the international regime: a review of four theoretical approaches"* Tyndall Centre for Climate Change Research, Working Paper 112, October 2007, http://www.tyndall.ac.uk/sites/default/files/wp112.pdf

Okereke, C., H. Bulkeley and H. Schroeder, *"Conceptualizing climate governance beyond the international regime*", Global Environmental Politics, 9, 1, 2009, 58-78

Olson, M. Jr., *The Rise and Decline of Nations: Economic Growth, Stagflation, and Social Rigidities*, (New Haven, CT: Yale University Press, 1982).

OPR, CEQA Guidelines and Greenhouse Gases, undated, http://opr.ca.gov/index.php?a=ceqa/index.html

O'Riordan, Tim, *Reflections on pathways to sustainability,* in W. Neil Adger and Andrew Jordan (eds.), *Governing sustainability*, (Cambridge: Cambridge University Press, 2009)

O'Riordan, Timothy and Andrew Jordan, "*Institutions, Climate Change and Cultural Theory: Towards A Common Analytical Framework",* Global Environmental Change, 9, 2, 1999, 81-93

Organisation for Economic Co-operation and Development, *Climate Change: Meeting the Challenge to 2050,* Policy Brief February 2008, http://www.oecd.org/dataoecd/6/21/39762914.pdf

Osofsky, Hari M., *"Is Climate Change "International"? Litigation's Diagonal Regulatory Role",* Virginia Journal of International Law, 49, 3, 2009, 585-649

Ostrom, Elinor, *Governing the Commons: the Evolution of Institutions for Collective Action,* (Cambridge: Cambridge University Press, 1990)

Ostrom, Elinor, *"A Behavioral Approach to the Rational Choice Theory of Collective Action: Presidential Address, American Political Science Association, 1997"*, The American Political Science Review, 92, 1, 1998, 1-22

Owens, S., "*From 'predict and provide' to 'predict and prevent'? Pricing and planning in transport policy*", Transport Policy, 2, 1995, 43-49

Painter, Martin and Jon Pierre (eds.), *Challenges to State Policy Capacity: Global Trends and Comparative Perspectives*, (Basingstoke: Palgrave Macmillan, 2004)

Parliament of Australia, *National Reviews,* Parliamentary Library, 2010, http://www.aph.gov.au/library/pubs/climatechange/governance/domestic/national/nationalReviews.htm

Paterson, Matthew, David Humphreys and Lloyd Pettiford, "*Conceptualizing Global Environmental Governance: From Interstate Regimes to Counter-Hegemonic Struggles",* Global Environmental Politics, 3, 2, May 2003, 1-10

Pattberg, P., *"Public–private partnerships in global climate governance"*, Climate Change, 1, 2010, 279-287

People of the State of California, ex rel. Attorney General Edmund G. Brown Jr., v. City of Pleasanton, Pleasanton City Council, Alameda County Superior Court, State of California, Case No. RG 09469878

Peters, B. Guy, *The Commission and Implementation in the European Union: Is There an Implementation Deficit and Why?* in Neill Nugent (ed.) *At the Heart of the Union: Studies of the European Commission,* (London: Macmillan, 1997)

Peters, B. Guy, *Governance and Public Administration* in Jon Pierre (ed.), *Debating governance: Authority, steering and democracy,* (Oxford: Oxford University Press, 2000)

Peters, B. Guy, *Institutional Theory in Political Science: The 'New' Institutionalism,* (London: Continuum, 2001)

Peters, B. Guy and Jon Pierre, *Swings and Roundabouts? Multilevel Governance as a Source of and Constraint on Policy Capacity,* in Martin Painter and Jon Pierre (eds.), *Challenges to State Policy Capacity: Global Trends and Comparative Perspectives,* (Basingstoke: Palgrave Macmillan, 2004)

Peterson, J., "*Decision-making in the European Union: Towards a Framework of Analysis",* Journal of European Public Policy, 2, 1995, 69-93

Peterson, Thomas D., "*The evolution of state climate change policy in the United States: Lessons Learned and New Directions",* Widener Law Journal, 14, 1, 2004, 81-120

Pew Center on Climate Change, *At a Glance Clean Energy Jobs and American Power Act Passed by Committee on November 5, 2009,* (2009a), http://www.pewclimate.org/short-summary/clean-energy-jobs-american-power-act-chairmans-mark

Pew Center on Climate Change *At a Glance: American Clean Energy and Security Act of 2009. As passed by the House of Representatives – June 26, 2009 (Waxman-Markey)*, (2009b), http://www.pewclimate.org/docUploads/Waxman-Markey-short-summary-revised-June26.pdf

Pierre, Jon (ed.), *Debating governance: Authority, steering and democracy,* (Oxford: Oxford University Press, 2000)

Platzer, Michaela D. and Harrison, Glennon J., *"The U.S. Automotive Industry: National and State Trends in Manufacturing Employment",* Federal Publications, Paper 666, 2009 http://digitalcommons.ilr.cornell.edu/key_workplace/666

Pollitt, Christopher, *Ministries and Agencies: Steering, Meddling, Neglect and Dependency,* in Painter, Martin and Jon Pierre (eds.), *Challenges to State Policy Capacity: Global Trends and Comparative Perspectives*, (Basingstoke: Palgrave Macmillan, 2004)

Proost, Stef and Edward Calthrop, *Environmental Pricing in Transport,* Energy, Transport and Environment Working Paper Series n° *2002-08***,** (Katholieke Universiteit Leuven, 2002)

Rabe, Barry, G. *Statehouse and Greenhouse: The Evolving Politics of American Climate Change Policy* (Washington, D.C.: Brookings Institution Press, 2004)

Rabe, Barry G., *"Beyond Kyoto: Climate Change Policy in Multilevel Governance Systems",* Governance: An International Journal of Policy, Administration and Institutions, 20, 3, (2007a), 423-444

Rabe, Barry G., *"Environmental Policy in the Bush Era: The Collision Between the Administrative Presidency and State Experimentation"*, Publius: The Journal of Federalism, 37, (2007b), 413-431

Rabe, Barry, *Governing the climate from California*, (2007c), 2007 Annual Meeting of the American Political Science Association, Chicago

Rabe, Barry G., *Racing to the Top, the Bottom, or the Middle of the Pack? The Evolving State Government Role in Environmental Protection* in Norman J. Vig and Michael E. Kraft (eds.),

Environmental Policy: New Directions for the Twenty-First Century, (Washington DC: CQ Press, 2010)

Remenyi, Dan, Arthur Money, David Price and Frank Bannister, *The Creation of Knowledge Through Case Study Research*, The Henley Working Paper Series: HWP 0218, 2002
Rhodes, R.A.W., *"The 'New' Governance: Governing without Government"*, Political Studies, XLIV, 1996, 652-667

Rietveld, Piet and Roger R. Stough (eds.), *Institutions and Sustainable Transport: Regulatory Reform in Advance Economics,* (Cheltenham: Edward Elgar Publishing Ltd., 2007)

Rootes, Christopher, "*The first climate change election? The Australian general election of 24 November 2007",* Environmental Politics, 17, 3, June 2008, 473-480

Rosenau, James N., *"Governance in the Twenty-first Century",* Global Governance 1, 1995, 13-43

Ryan, Lisa and Hal Turton, *Sustainable automobile transport: shaping climate change policy*, (Cheltenham: Edward Elgar Publishing Ltd., 2007)

Rye, Tom and Greg Marsden, *"The governance of transport and climate change"*, Journal of Transport Geography, 18, 6, November 2010, 669-678

S. 1733 - Clean Energy Jobs and American Power Act

Sabatier, Paul A. (ed.), *Theories of the policy process (Second Edition),* (Boulder, CO: Westview Press, 2007)

Sabatier, Paul, and Hank Jenkins-Smith (eds.), *"Special Issue: Policy Change and Policy-Oriented Learning: Exploring an Advocacy Coalition Framework,"* Policy Sciences, 21, 1988, 123-278

Sabatier, Paul, and Hank Jenkins-Smith (eds.) *Policy Change and Learning: An Advocacy Coalition Approach*, (Boulder, CO: Westview Press, 1993)

SA Government, *Strategic Infrastructure Plan for SA 2004/5-2014/15,* (2004), http://www.infrastructure.sa.gov.au/strategic_infrastructure_plan/sa_strategic_infrastructure_plan

SA Government, *South Australia's Strategic Plan 2007,* (2007a), http://www.stateplan.sa.gov.au/system/pdf/South_Australia_Strategic_Plan_2007.pdf

SA Government, *Infrastructure in South Australia Five Yearly Report to the Council of Australian Governments, February 2007,* (2007b), http://www.coag.gov.au/coag_meeting_outcomes/2007-04-13/docs/infrastructure_reports_sa.pdf

SA Government, *Tackling Climate Change: South Australia's Greenhouse Strategy, 2007-2020,* (2007c),

http://www.climatechange.sa.gov.au/uploads/pdf/TACKLING_CLIMATE_CHANGE_STRATEGY.pdf

SA Government, *South Australia: Climate Change and Greenhouse Emissions Reduction Act 2007,* (2007d), http://www.legislation.sa.gov.au/LZ/C/A/CLIMATE%20CHANGE%20AND%20GREENHOUSE%20EMISSIONS%20REDUCTION%20ACT%202007/CURRENT/2007.22.UN.PDF

SA Government, *2008-09 Budget Paper 1 – Budget Overview: Action Now for the Future,* (2008a), http://www.treasury.sa.gov.au/public/download.jsp?id=2739&page=/dtf/budget/publications_and_downloads/previous_budgets/state_budget_2008_09.jsp

SA Government, *2008-09 Budget Paper 2 – Budget Speech*, (2008b) http://www.treasury.sa.gov.au/public/download.jsp?id=2740&page=/dtf/budget/publications_and_downloads/previous_budgets/state_budget_2008_09.jsp

SA Government, *Department of the Premier and Cabinet: Our Future Directions* 2009-2014 (2009a), http://www.premcab.sa.gov.au/pdf/dpc_strategic_plan.pdf

SA Government*, TravelSmart: Households in the West,* (2009b), http://www.transport.sa.gov.au/pdfs/environment/travelsmart_sa/Households_in_the_West_Final_Report.pdf

SA Government, *The 30-Year Plan for Greater Adelaide,* (2010a), http://www.dplg.sa.gov.au/plan4adelaide/html/files/plan/The_30-Year_Plan_for_Greater_Adelaide.pdf

SA Government, *News Release: Carbon Limit for New Energy Production,* (2010b), http://www.renewablessa.sa.gov.au/files/101206-cancun-carbon-limit.pdf

SA Government, *Premier of South Australia Mike Rann*, (2011a), http://www.premier.sa.gov.au/index.php?option=com_content&view=article&id=12&Itemid=4

SA Government, *Adelaide Thinkers in Residence*, (2011b), http://www.thinkers.sa.gov.au/about/default.aspx

SA Government, *State Strategic Plan: Background* (2011c), http://www.stateplan.sa.gov.au/background

SA Government, *Department of Premier and Cabinet* (2011d), http://www.premcab.sa.gov.au/

SA Government, *South Australia's Greenhouse Strategy,* (2011e), http://www.climatechange.sa.gov.au/index.php?page=greenhouse-strategy

SA Government, *Community Initiatives,* (2011f), http://www.dtei.sa.gov.au/communityprograms/programs/travelsmart_households

SA Government, *News Release: Another Milestone as Two-Way Expressway Gets the Nod*, (2011g), http://www.premier.sa.gov.au/images/news_releases/11_11Nov/SXway_PWC.pdf

SA Government, *Ministerial Statement: South Australia meets 20% renewable energy target,* (2011h), http://www.renewablessa.sa.gov.au/files/110622-ministerial---renewable-energy-.pdf

SA Government, $2bn transport investment, (2011i), http://www.infrastructure.sa.gov.au/public_transport_projects/$2_billion_transport_investment

SA Government, *Rail Revitalisation,* (2011j), http://www.infrastructure.sa.gov.au/RR

Sbragia, Alberta, *The European Union as Coxswain: Governance by Steering* in Jon Pierre (ed.), *Debating Governance: Authority, Democracy and Steering*, (Oxford: Oxford University Press, 2000)

Scheberle, Denise, *Devolution,* in Robert F. Durant, Daniel J. Fiorino and Rosemary O'Leary (eds.), *Environmental Governance Reconsidered: Challenges, Choices and Opportunities*, (London: The MIT Press, 2004)

Scholten, P., J. Edelendbos, W. de Groot, S. Miejerink and G. Teisman, "*Daring decision-making: a balance between Transactional and Transformational Leadership"* Conference Paper, Earth Systems Governance Conference, December 2009. Amsterdam, The Netherlands

Scottish Government, *Scotland's Action to tackle climate change, (*2011a), http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action

Scottish Executive, *Scotland's National Transport Strategy*, December 2006 (2006a), http://www.scotland.gov.uk/Resource/Doc/157751/0042649.pdf

Scottish Executive, *Changing Our Ways: Scotland's Climate Change Programme*, March 2006 (2006b), http://www.scotland.gov.uk/Publications/2006/03/30091039/28

Scottish Government*, Scottish Budget Spending Review 2007,* November 14, 2007 (2007a), Accessed January 2011, http://www.scotland.gov.uk/Publications/2007/11/13092240/0

Scottish Government, *Concordat between the Scottish Government and local government,* 14th November 2007 (2007b), http://www.scotland.gov.uk/Publications/2007/11/13092240/concordat

Scottish Government*, Scotland's Climate Change Programme: Annual Report 2007,* (2007c), http://www.scotland.gov.uk/Publications/2007/03/08105454/0

Scottish Government, News Release: *Climate Challenge Fund, 03/06/2008* (2008a), http://www.scotland.gov.uk/News/Releases/2008/06/03101154

Scottish Government, *Scotland's Climate Change Programme: Second Annual Report, April 2007-March 2008,* (2008b), http://www.scotland.gov.uk/Publications/2008/05/20102350/3

Scottish Government, *Plans for travel demo towns*, News Release, 17th March 2008, (2008a), http://www.scotland.gov.uk/News/Releases/2008/03/17083340

Scottish Government, *Smarter Choices Smarter Places – Stage 2 Criteria and Selection Process – Annex A,* 2008 (2008b), http://www.dundeecity.gov.uk/dundeecity/uploaded_publications/publication_1129.pdf

Scottish Government, *Funding to encourage green travel,* News Release, 13th August 2008 (2008c), http://www.scotland.gov.uk/News/Releases/2008/08/13115854

Scottish Government, Scottish Budget: Draft Budget 2010-11, (2009a), http://www.scotland.gov.uk/Resource/Doc/284860/0086518.pdf

Scottish Government, *Climate Change (Scotland) Act 2009*, (2009b), http://www.opsi.gov.uk/legislation/scotland/s-acts2009a

Scottish Government, *Climate Change Delivery Plan,* (2009c), http://www.scotland.gov.uk/Publications/2009/06/18103720/0

Scottish Government, *Scottish Greenhouse Gas Emissions 2008*, (2010a), http://www.scotland.gov.uk/Resource/Doc/323523/0104169.pdf

Scottish Government, *Low Carbon Scotland: The Draft Report on Proposals and Policies - Scotland – A Low Carbon Society,* (2010b), http://www.scotland.gov.uk/Resource/Doc/331949/0107999.pdf

Scottish Government, *Carbon Account for Transport No. 2: 2010 Edition*, March 12, 2010, (2010c), http://www.scotland.gov.uk/Publications/2010/03/11091112/0

Scottish Government, *Scottish responsibilities,* (2011b), http://www.scotland.gov.uk/About/18060/11552

Scottish Government, *UK responsibilities,* (2011c), http://www.scotland.gov.uk/About/18060/11555

Scottish Government*, Scottish Government - Energy and Climate Change Directorate*, Accessed February 2011, (2011d), http://www.scotland.gov.uk/About/Directorates/Wealthier-and-Fairer/Energy-Directorate

Scottish Government, *News Release: Climate Challenge Fund,* 06/01/2011 (2011e), http://www.scotland.gov.uk/News/Releases/2011/01/06145943

Scottish Government, *Low Carbon Scotland: Meeting the Emissions Reduction Targets 2010-2022: The Report on Proposals and Policies*, (2011f), http://scotland.gov.uk/Resource/Doc/346760/0115345.pdf

Scottish Transport Statistics, *No. 28 - 2009 Edition,* http://www.scotland.gov.uk/Publications/2009/12/18095042/205

Scottish Transport Statistics, *No STS No. 29 - 2010 Edition: High Level Summary of Statistics Trends*, 2010, http://www.scotland.gov.uk/Resource/Doc/933/0109316.pdf

SF Gate, "*Governor sees greener future for state",* September 27 2008, http://articles.sfgate.com/2008-09-27/bay-area/17160078_1_warming-emissions-greenhouse

Shepsle, Kenneth A., *"Studying Institutions: Some lessons from the rational choice approach",* Journal of Theoretical Politics, 1989, 1, 2, 131-147

Shiftan, Yoram, Gila Albert and Tamar Keinan, *"The impact of company-car taxation policy on travel behaviour"*, Transport Policy, 19,1,2012, 139-146

Sloman L., S. Cairns, C. Newson, J. Anable, A. Pridmore and P. Goodwin, *The Effects of Smarter Choice Programmes in the Sustainable Travel Towns: Research Report,* (UK Government Department for Transport, 2010)

Snyder, Jared and Jonathan Binder*, "The changing climate of cooperative federalism: the dynamic role of the states in a national strategy to combat climate change",* UCLA Journal of Environmental Law & Policy, Winter 2009, 231-260

Sperling, D. and D. Gordon, *Two Billion Cars: Driving Toward Sustainability,* (Oxford: Oxford University Press, 2009)

Springer, Darren M., "*States Lead by Example on Energy Policy",* Natural Resources & Environment, 23, 2008-9, 29-33

Statistische Ämter des Bundes und der Länder, *National Accounts – Gross Domestic Product: Regional Breakdown 2010,* March 2011, http://www.statistik-portal.de/Statistik-Portal/en/en_jb27_jahrtab65.asp

Stoker, Gerry, "*Governance as theory: five propositions"*, International Journal of Social Sciences, 50, 1, 1998, 17-28

Stoker, Gerry, *The New Politics of British Local Governance,* ESRC Local Governance Programme, (London: Macmillan Press, 2000)

Sustainable Development Commission – Scotland, *Sustainable Development Fourth Annual Assessment of Progress by the Scottish Governmen*t, 2010, http://www.sd-commission.org.uk/publications/downloads/SDC_Scottish_4th_Assessment.pdf

Sydney Morning Herald, *"Carbon price to start July 2012: Gillard",* February 24, 2011, http://www.smh.com.au/business/carbon-price-to-start-july-2012-gillard-20110224-1b6ag.html

T&E, *"Electric cars likely to lead to more CO_2 because of EU legal loopholes",* 12th November 2009, http://www.transportenvironment.org/News/2009/11/Electric-cars-likely-to-lead-to-more-CO2-because-of-EU-legal-loopholes

T&E, *Cars and CO_2*, 2011, http://www.transportenvironment.org/cars-and-co2/

Tews, Kerstin, "*The Diffusion of Environmental Policy Innovations: Cornerstones of an Analytical Framework",* European Environment, 15, 2005, 63-79

Tews, Kerstin, Per-Olof Busch and Helge Jörgens, "*The diffusion of new environmental policy instruments",* European Journal of Political Research, 42, 2003, 569-600

Transform Scotland, *Strategic Transport Projects Review announcement,* 10th December 2008, http://www.transformscotland.org.uk/strategic-transport-projects-review-announcement.aspx

Transport Scotland, *Regional Transport Partnerships,* 2005 http://www.transportscotland.gov.uk/strategy-and-research/Regional-Transport-Partnerships

Transport Scotland, *Strategic Transport Projects Review,* 2008a, http://www.transportscotland.gov.uk/strategy-and-research/strategic-transport-projects-review

Transport Scotland, *Scottish Transport Appraisal Guidance*, 2008b, http://www.transportscotland.gov.uk/files/documents/reports/j9760/j9760.pdf

Transport Scotland, *Smarter Choices, Smarter Places*, undated, http://www.transportscotland.gov.uk/roads/sustainable-transport/funding-for-projects/smarter-choices-smarter-places

Treaty of Nice amending the TEU, the Treaties establishing the European Communities and certain related acts, 26 February 2001 O.J. (C 80) 1, http://eur-lex.europa.eu/en/treaties/dat/12002E/pdf/12002E_EN.pdf

Umweltbundesamt, *Submission under the United Nations Framework Convention on Climate Change and the Kyoto Protocol 2011 National Inventory Report For the German Greenhouse Gas Inventory 1990 – 2009*, Dessau, 15 April 2011, http://unfccc.int/files/national_reports/annex_i_ghg_inventories/national_inventories_submissions/application/zip/deu-2011-nir-15apr.zip

UK Government, *The Carbon Plan: Delivering our low carbon future: December 2011,* http://www.decc.gov.uk/assets/decc/11/tackling-climate-change/carbon-plan/3702-the-carbon-plan-delivering-our-low-carbon-future.pdf

United National World Commission on Environment and Development, *Our Common Future (Brundtland Report),* (Oxford: Oxford University Press, 1987)

US Census Bureau, *Resident Population Data*: *Population Change 2010,* 2010, http://2010.census.gov/2010census/data/apportionment-pop-text.php

US Census Bureau*, The 2011 Statistical Abstract: The National Data Book,* 2011, http://www.census.gov/compendia/statab/cats/transportation.html

van den Bergh, J.C.J.M., Eveline S. van Leeuwen, Frans H. Oosterhuis, Piet Rietveld, Erik T. Verhoef, *Successes and Failures in Innovations toward Sustainable Transport,* in Piet Rietveld

and Roger R. Stough (eds.), *Institutions and Sustainable Transport: Regulatory Reform in Advance Economics*, (Cheltenham: Edward Elgar Publishing Ltd., 2007)

Van Der Heijden, Hein-Anton, *"Environmental movements, ecological modernisation and political opportunity structures"*, Environmental Politics, 1999, 8, 1, 199-221

van Tatenhove, Jan P.M. and Pieter Leroy, *"Environment and Participation in a Context of Political Modernisation"*, Environmental Values, 12, 2003, 155-74

Victor, David G., *Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet,* (Cambridge: Cambridge University Press, 2011)

Vigar, Geoff, *The Politics of Mobility: Transport, the Environment and Public Policy*, (Oxford: Taylor and Francis, 2002)

Viscusi, W. Kip (ed.), *Regulation through Litigation,* (Washington D.C: Brookings Institution Press, 2002)

Weale, Albert, *Governance, government and the pursuit of sustainability*, in W. Neil Adger and Andrew Jordan (eds.), *Governing Sustainability*, (Cambridge: Cambridge University Press, 2009)

Weale, Albert, Geoffrey Pridham, Michelle Cini, Dimitrios Konstadakopoulos, Martin Porter and Brendan Flynn (eds.), *Environmental Governance in Europe: An Ever Closer Ecological Union,* (Oxford: Oxford University Press, 2000)

Weatherill, Stephen, *The Challenge of the Regional Dimensions in the European Union,* in Stephen Weatherill and Ulf Bernitz (eds.), *The role of regions and sub-national actors in Europe* (Oxford: Hart Publishing, 2005)

Wendt, A., *Social Theory of International Politics*, (Cambridge: Cambridge University Press, 1999)

Whitelegg, John and Gary Haq (eds.), *The Earthscan Reader on World Transport Policy and Practice,* (London: Earthscan Publications Ltd., 2003)

World Business Council for Sustainable Development, *Mobility 2030: Meeting the challenges to sustainability*, The Sustainable Mobility Project, Overview 2004, http://www.wbcsd.org/web/publications/mobility/overview.pdf

Yin, Robert, K., *Case Study Research: Design and Methods (Fourth Edition),* (London: SAGE Publications, 2009)

Young, Oran R., *International Governance: Protecting the Environment in a Stateless Society,* (Ithaca, NY: Cornell University Press, 1994)

Young, Oran R*., Global governance: drawing insights from the environmental experience* (Cambridge, MA: The MIT Press, 1997)

Young, Oran R*., Institutional Interplay: The Environmental Consequences of Cross-Scale Interactions,* in Elinor Ostrom (ed.), *The Drama of the Commons,* (Washington, DC: National Academy Press, 2002)

Young, Oran R., *Why is there no unified theory of environmental governance,* in Peter Dauvergne (ed.), Handbook of Global Environmental Politics, (Cheltenham: Edward Elgar Publishing Ltd., 2005)

Young, Oran R. (ed.), *Institutional interplay: biosafety and trade,* (Tokyo: United Nations University, 2008)

Young, Oran R., *Governance for sustainable development in a world of rising interdependencies*, in Magali A. Delmas and Oran R. Young (eds.), *Governance for the Environment: New Perspectives*, (Cambridge: Cambridge University Press, 2009)

Young, Oran R., *Institutional Dynamics: Emergent Patterns in International Environmental Governance,* (London: The MIT Press, 2010)

Young, O.R., L.A. King and H. Schroeder (eds.), *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers,* (Cambridge, MA: The MIT Press, 2008)

Appendices

Appendix 3.A: Details of previous work with case study states

In 2005, at the 11th Conference of the Parties (COP11) to the UNFCCC in Montreal, international NGO, The Climate Group[74], along with the Canadian provinces of Manitoba and Quebec, convened an international *Climate Leaders' Summit* of state governments to discuss collaboration on climate change mitigation. At this event, 28 representatives from state governments signed the Montreal Declaration of Federated States and Regional Governments on Climate Change. Within the Declaration, the signatories agreed to the following, amongst other things:

- Set achievable short and long-term targets and objectives for overall emission reductions through a range of solutions including, sustainable mobility;
- Develop and share communications strategies that increase public awareness of climate change issues and solutions, in order to engage citizens directly in actions that bring about change;
- Promote existing and new regional partnerships on climate change to implement these measures.

In 2006, at COP12 in Nairobi, several of the signatories reconvened for a second roundtable at which the 'Climate Leaders Alliance' was formed to take the collaborative initiative forward. At this meeting, certain signatories: Bavaria; California; Scotland and; SA included, expressly identified 'transport' as a priority focus area for the Alliance. These states are therefore the subjects of this research. In 2007, the priority to address transport was again stated at the Climate Leaders Alliance meeting at COP13 in Bali.

[74] The researcher's former employer

Appendix 3.B: Template request email: Scottish case study

Dear xx
By way of introduction, my name is Karen Anderton and I am a Ph.D Student at the University of Oxford.

My research is a comparative study of transport-related climate change policies at the sub-national government level. I am looking at the Scottish perspective because of the leadership position the government's rhetoric is taking on climate change, which is independent of national UK efforts. The work will assess the level of collaboration and interaction between transport and environmental/
climate change departments within government, and also with industry and civil society in developing and implementing policies to deliver GHG emissions reductions. This is with a view to identifying best practice policy implementation in this area. I am also working on case studies in Bavaria, California and South Australia.

Specifically, in the Scottish context, I am looking at 'Smarter Choices, Smarter Places' - in terms of how the scheme was established and is being implemented in three project areas (Dumfries, Falkirk and Orkney), with a view to examining the climate change focus of each of the projects, the collaboration between the local and national government and external actors in setting the schemes set up and also whether/how this process will feed into Scotland's wider ambitions on reducing transport emissions and achieving climate change objectives more generally.

I will be in Scotland from February 12th-20th to conduct interviews with key stakeholders involved in this process and as such I would be extremely keen to meet with you to discuss xx's role in the initiative. If you would be interested in speaking with me some time during my visit, I would be delighted to hear from you. Alternatively, if you have a colleague that may be willing to speak with me, that would also be very useful. If you/colleagues are available to participate, I will send you further specifics as to what the interview will entail in due course.

Many thanks in advance, I look forward to hearing from you.

Best wishes

Karen

Appendix 3.C: Participant background information

- **Research title**: Sub-national government responses to reducing the climate impact of cars
- **Researcher**: Karen Anderton D.Phil Student, Transport Studies Unit, University of Oxford
- **Research funding**: John Heasman Bursary, British Parking Association (BPA)/Self-Financing

Research objectives
This research is a comparative study assessing various policies implemented by a variety of sub-national state governments, in terms of their ability to reduce the climate impacts of transport - specifically cars. The main objective of the study is to investigate the internal frameworks, interplay and dynamics at the state government level, between departments which construct and govern these specific policy areas.

The principal researcher
Karen Anderton is a D.Phil (Ph.D) student at the Transport Studies Unit, University of Oxford. She is also currently a freelance consultant working on ad-hoc climate policy projects for a number of public and private organisations. She was formerly a Project Manager at The Climate Group, where she led various research and communications initiatives including the international report '*Carbon Down Profits Up'.* She also coordinated various projects as part of the organisation's States and Regions Programme. In addition, she has over seven years work experience in various international environmental organisations including the Environmental Investigation Agency and the Living Earth Foundation. She has an MSc (with Distinction) in Environment and Development from the Reading University and an LLB (Hons.) in Law and International Politics from Keele University.

Abstract *(an earlier version of the research abstract was supplied)*

Procedure
My primary research will be conducted through semi-structured interviews held with sub-national government representatives. Additional interviews will be conducted with industry and civil society actors and federal/national government representatives from constituent countries. Typically, no more than 20 interviews will be conducted per state.

It is in this context that I request your participation in this research. The procedure involves answering open questions regarding the role of yourself and your organisation in specific areas of policy development and implementation and the level of interaction with other organisations in this process. The interview should last approximately one hour.

All participants will be briefed using the same documentation and will be party to the same information. I will ensure that consistent feedback on interviews, research and findings is delivered to all participants and will take steps to deliver relevant and informative recommendations to subject states based on findings where possible.

You will have the option of either remaining anonymous or of having your comments attributed to you directly in the write-up and any subsequent publication of the research results. If you choose to remain anonymous, you may provide information as 'deep background', or you may have your statements attributed generically, for example to 'a staff member at xxx organisation' or simply to 'xxx representative.'

Please refrain from providing one-word answers and try to be as specific as you can, providing as much information as possible. You may refuse to answer any question or request that certain answers be communicated anonymously and others not. You are also completely free to withdraw from this study at any time.

You may also, if you so choose, review the transcript of your interview, which will be sent to you shortly after it has been conducted. You will have at least two weeks to respond from the date of receipt of the transcript if you would like to make any changes or additions to your comments, or to request that certain comments should only be attributed anonymously. I would also request that you confirm whether you would be willing to remain in contact for further interviews, updates or subsequent clarifications of information as required by the researcher.

All data collected (interviews, documents, notes) will be kept – password protected - in the files of the researcher for a period of ten years, to be used solely for research purposes.

Confidentiality of participants' contributions will be guaranteed and all ethical standards and requirements set by Oxford University have been met. Further information upon these standards is available upon request.

Funding information
This research is being supported in part by the BPA and therefore parking policy must be examined in some capacity within the research.

Appendix 3.D: Sample transcript – Scotland

How familiar are you with the Smarter Choices, Smarter Places (SCSP) programme?
I'm aware of it, but it wasn't something that was there when I was doing my research, so I haven't had to think about it very hard because it is something that's been introduced quite recently in Scotland.

Do you have any thoughts on it?
Well I've looked at the websites for each of the towns that are involved and they are very variable and that was the thing that struck me, very variable as to the range of interventions that they've included in it. And it struck me that I had the rather cynical thought that they were just trying to use the SCSP agenda as a way of just funding some projects that they wanted to get funded. And given the fact that they are match funded projects that may well be the case.
It doesn't mean they're not good interventions; that just might be an issue that comes into it.

Why do you think the national government is funding the programme?
Well it's quite a small budget overall for these things and I think it's just one of those things they think they need to be seen to be doing. I'm not sure how far along in the planning process that agenda was when the change of government happened in 2007, so the political aspect of it is quite difficult to untangle as to why the Scottish government decided to do anything. But I'm not close enough to the process to really have a good indication as to whether that is the case or not.

In terms of emission reduction, do you think transport is a priority area of focus for the Scottish government?
Do I think it should be, or do I think it is?

Do you think it is?
No I don't think it is actually. I think it is coming up through the agenda, I know there is work going on that I haven't been involved in to identify what possible contribution transport can make to emission reduction, but that has come about quite recently.

In terms of any interventions that are being made, what would you say is the primary area of focus?
I don't think I could pick one out on the basis of my knowledge. I think that emissions reduction is still a bolt-on extra in transport and that there are always other higher level reasons in the minds of policymakers as to why they would do an intervention. And since May 2007 economic development has been centre stage again. And I think there have been no major statements on transport policy since May 2007 as far as I am aware. But what evidence you can draw from decisions that are made about big projects or whatever, is more about either saving money or promoting economic development in certain places. If something happens to tick a climate change box at the same time, they think great as far as I can see.

But it would be coincidental?
I think it would be coincidental.

In terms of the area of economic development, where would you say that SCSP fits in there?

Probably about making better places to live or work. Healthier people, wellbeing type things and potentially where they are promoting active travel that ticks multiple boxes for them in terms of health and also even in modal shift, congestion reduction and to a certain extent having to be seen to be doing these things. Quite cynical – I'm much more cynical than I was three years ago.

If you had to pick a policy area around which SCSP was focused, would it be around transport, health, climate change?
I don't think I really could honestly put it in the climate change category, I think that's what the rhetoric says, but I don't think that's why it's being done. There are other more effective things that could be done.

What would you say would be an example of that?
Effective things? Giving out much, much stronger signals about car use in urban areas. The high percentage of journeys being so short, they must be in urban areas, because rural journeys tend not to be so short, but it strikes me that they should be a major target, which perhaps comes into some of the SCSP thinking. But I think there's a lot of things that come into that agenda, which is perhaps no bad thing actually.

If there are different things, do you think that they are adequately tied together?
Not necessarily. I think people still find it difficult to think of things as being synergistic. I think they are getting better about it, but people do still have a silo-ed perspective. I don't think that's possibly as bad at the local level actually as it is at national level. I think local government finds it much easier to see things holistically with a view to their local population; they are much closer to the results if you like.

Where do you see that ultimate responsibility for SCSP lies? Is it with the local or national governments?
Well it's clearly funded nationally, by nationally I mean Scottish. But the responsibility for the success of the programmes is the individual areas involved, is clearly local I would have said.

Obviously the funding stream is clearly important, but would you say that the national government has any other role to play in these programmes?
Not that I'm aware of but I possibly don't have enough knowledge about it to say. It is possible that they could be waiting to see how successful they are before rolling out wider policy interventions. One would hope that something comes out of it otherwise there's not much point in doing it.

Do you think there is adequate awareness of the programme?
Well I think probably in the areas where they are going to carry on, there is probably a lot more awareness of them. But the things that get funded and the initiatives that go through local government, I think there is only a very select bunch of people that get to know about them anyway.

In terms of the work that you've been doing, do you get a sense of whether there is communication within the local government?
Between local governments?

And within one.

Well they all vary enormously I think. A lot of the local authorities have reorganised themselves to reduce the number of Directorates and to tie different sectors more closely to one another, so that they've got a Director that covers Infrastructure and Transport, for example. And in that respect, assisting things like community planning has been much better because you've got the same person involved in meetings for various different things. That's something that has come out of my research that people have talked about.

And is that primarily a cost saving initiative?
It was the modernising local governments agenda. It did have a cost saving/efficiency aspect to it.

What do you think the main barriers will be to the SCSP agenda?
Well the fact that a lot of it is quite soft measures that they are using in most cases and it quite difficult to measure whether they are successful or not because they tend to take quite a long time to see results and that is always one of the problems with funding of these things. The funding is for a certain length of time, probably tied into to electoral cycles to a certain length and that is often not the time span under which these things should be judged. By the time you've generated sufficient public awareness for example of things that you are trying to encourage – more active travel – you could be nearing the end of your funding and there is always problems with on-going commitments.

Do you think the programmes should have been funded?
Well I think it's best to start off with these things and see how they go and to learn lessons from it. I think it's too early to say because they are so varied, the different towns that are taking part. Local authorities in Scotland I think are quite good at watching what one another do; they do have good networks of transport officers for example. They do have regular meetings.

Do you think it should be funded after the end of the project?
Well it will be tied into success. If they think it is something that works for them and if they're not going to lose many votes, they'll carry on with it. And if it's not time to vote and if there is no further money, and the budget is squeezed in other areas they will put the money where vital. That is one of the problems with the single outcome agreements is that most of the money that local authorities get is not ring-fenced in anyway, it's down to the local authorities to decide where they spend it. So unless something can be tied into an outcome agreement target, it's vulnerable.

In terms of reducing emissions, do you think transport is an area that should be focused on, or do you think it's more beneficial to focus on other sectors?
With transport I think it's going to be a long-term gain, it's going to take a long time, because all transport systems are so embedded in our lifestyles and the way that everything is organised, transport follows that really. I think there is plenty of evidence that people only change their transport behaviour when they need to change other things in their life – it is dependent on those other things, the whole demand thing.

So do you think that the interventions that are being delivered through SCSP may not necessarily have an impact?
I think they will make it easier for people to change their behaviour where they have a need to or where they might want to. There are always people who are ecologically minded – the

people who are receptive to change. But they don't have to make major lifestyle changes to change; they will perhaps be helped to do it. A lot of the walking stuff is very leisure oriented though. Things like the initiatives that we had for years in Scotland have all been around leisure walking, it's not about walking to get somewhere; it's about walking as a mode of transport.

Should transport be a major target? Well yes, but I don't think anyone should expect quick wins from it because I expect there are much bigger wins to be made in the domestic energy market.

Scotland has committed to be a leader on climate change
Rhetoric

In rhetoric. Do you see that it should be presenting itself as such?
No.

Does SCSP come into that at all?
No I don't think it's being presented as part of that. I'm not aware of it, I think it's more to do with energy and shouting about that.

Do you think the 80% reduction can be achieved?
I'm quite sceptical but that doesn't mean we shouldn't have that as an objective. Because if you have a strong target and fall short, that's better than having a weak target and falling short.

In term of the scale of change necessary, what's your appreciation of what a minus 80% world looks like?
Huge changes. And geographically very different. So any one size fits all solution is likely to be highly regressive on rural areas. And the deurbanised central belt in Scotland needs to understand that.

Do you feel like Scotland is constrained by Westminster and by Brussels? Do you feel like it has the ability what happens on these agendas?
It is constrained by it, like every administration is constrained now, because you have supranational bodies and international agreements, which constrain things. But there is a surprising amount that they can do, for example, aviation is reserved, but you can still influence it by not building/expanding the airports, so there are ways around it.

Do you feel like there have some benefits in from the fact that Scotland is now implementing programmes like SCSP, whose success has already been proven elsewhere?
Yes. Things should be tried, we can't just sit there and wring our hands, I do think it's positive that they do know what's going on in other places. I think that has been one of the benefits of devolution actually – it's like a controlled experiment – a slightly controlled experiment. Allows for policy experimentation to go on and what works gets rolled out more widely.

Given the devolved position that Scotland finds itself in, with certain powers, do you feel like there are areas where it could push the boundaries and lead, or do you think it will always be constrained by the structure in which it finds itself?

Well you can always push the boundaries and sometimes having boundaries is more important because it focuses your mind on where you do need to do the work I think. And if you see the boundary as preventing you then you'll be working towards overcoming that. I think it's a pity that in a way having two administrations in Scotland and the UK, I think that's a bigger constraint than reserved or devolved powers. Because they have issues with one another that lead to some non-senses. Too many vested interests.

Can you give me an example of where those sorts of tensions lie?
I can think of lots of them, but I wouldn't be able to articulate them very well. It all comes down to partly personality, but also ideology of not wanting to be cooperative. It's all about tax-raising powers and the ideology means that although the Scottish government will be trying to push at certain things, certain boundaries that are not necessarily in the best interests of people.

And do you think that is where the rhetoric towards leadership comes from?
Yes. It's trying to 'Big-Up Scotland'.

Do you think that Scotland having a Minister for Climate Change and Transport is significant?
Well it is and it isn't. It puts the rhetoric there, but it's a junior ministry that is answerable to the finance minister which I think tells you all you need to know. He's not very visible, and not as prominent as the previous transport minister.

So you feel like potentially transport has been demoted?
Yes I think transport has been demoted, I think climate change has been promoted and transport has been demoted so they are more equal. But they are both invisible. I mean I know about them because I'm in the field.

And the fact that transport has been demoted, is that a positive thing?
No. Because there is an awful lot of work that needs to be done in transport.

Do you feel that they (transport and climate change) have been brought closer together?
I would like to think so but I don't see that there's any sign of that yet. It certainly wasn't the case when the RTS's were being put together. They probably all mention it, but it's not the headline driver. And I don't think it ever really will be, because it's not why people get voted in. The impacts are too diffuse and not very tangible.

And where would you put climate change on the Scottish agenda, both in general terms but also in the context of the current financial situation?
Well I think it's there because all nations talk about it, therefore they have to talk about it. I don't get any sense from the leadership that they think it's a central issue and it's a sort of, all we need is economic growth and everything else will look after itself, but we have to make sure that we don't go too far the wrong way with climate change. I think they're looking at it as potentially a business issue in some way – i.e. Scottish companies might develop technologies that can helps mitigate climate change – knowledge economy sort of thing.

Is that a good thing?
It's not an entirely bad thing, but you shouldn't put all your eggs in one basket. I think the challenge is lack of understanding.

Appendix 3.E: Relevant conferences/public meetings attended

Scotland

- *Sustainable Scotland*, Our Dynamic Earth, 11th September, 2008, Edinburgh
- *Transport Technology and Climate Change: Building a Greener Scotland,* 29th June, 2009, Glasgow

SA

- *Cities in systems of cities: Adelaide, Australia and the world,* Professor Sir Peter Hall (UCL), 11th March 2009, Adelaide, SA

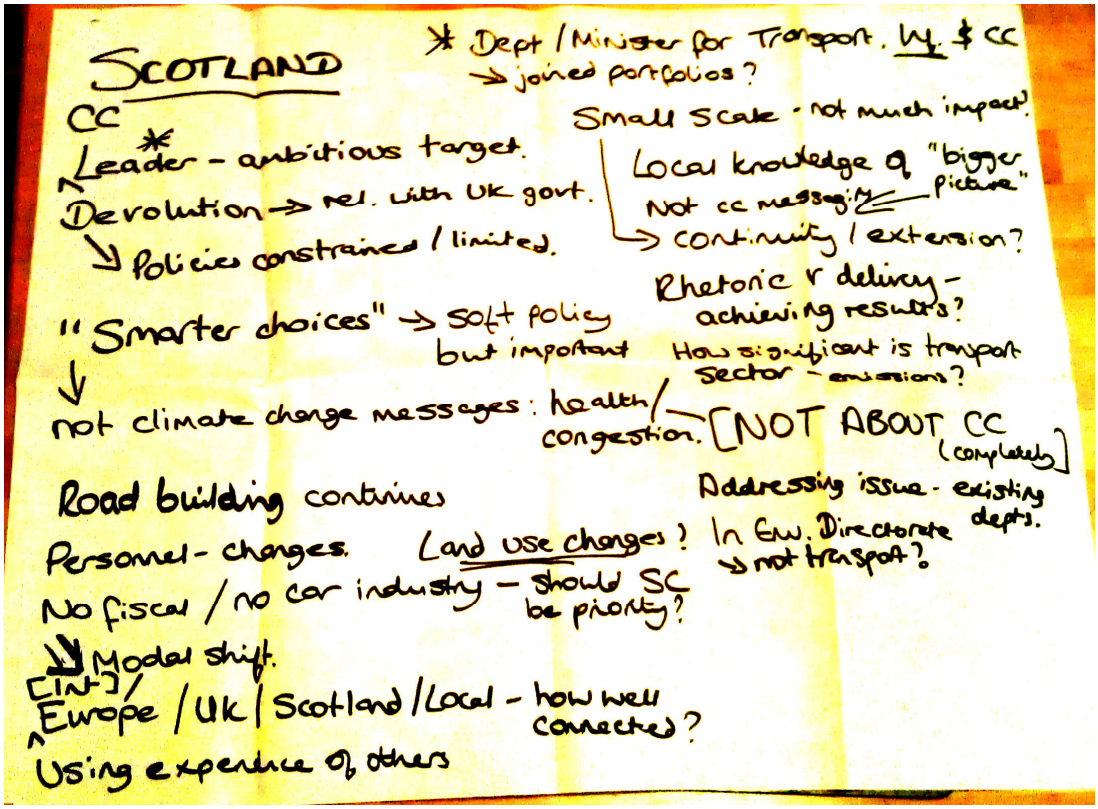
California

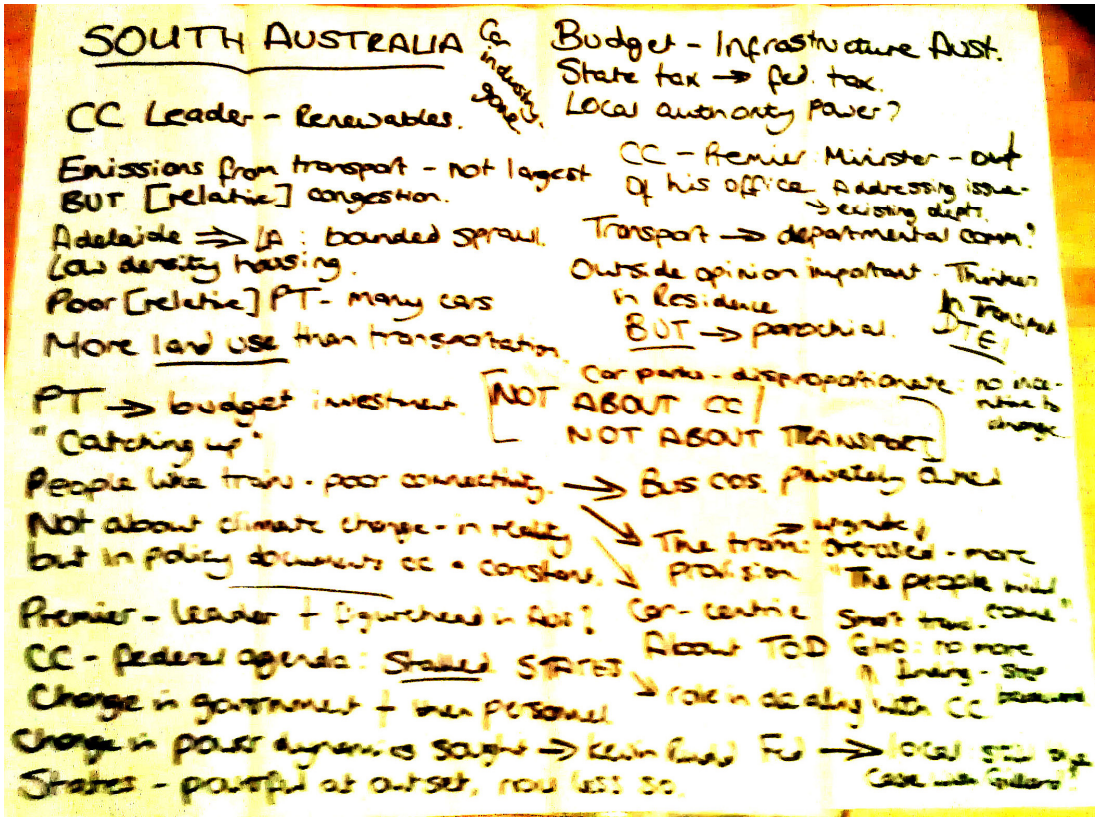
- *Hill Briefing: Plug-In Cars, Energy Security and Climate- American and European Perspectives*, 18th November 2008, Washington DC
- *California's Climate Plan,* 8th December 2008, COP14 Poznan
- *Navigating the American Carbon World*, 1-3rd April 2009, San Diego, California
- *California (ARB) Regional Targets Advisory Committee public meeting*, 7th April 2009, Sacramento, California
- *Vision California 2050: Setting the Land Use Target,* 21st April 2009, Univ. Berkeley, California

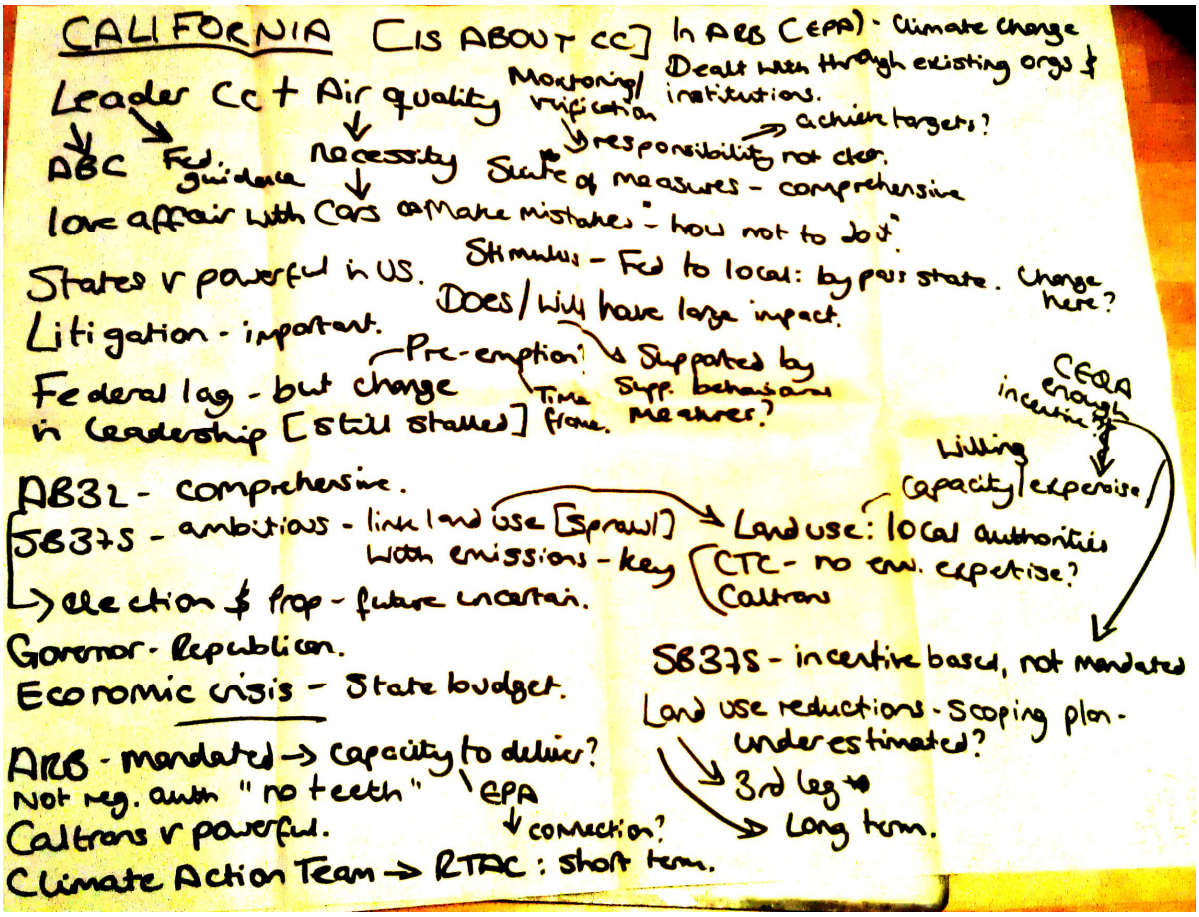
Bavaria

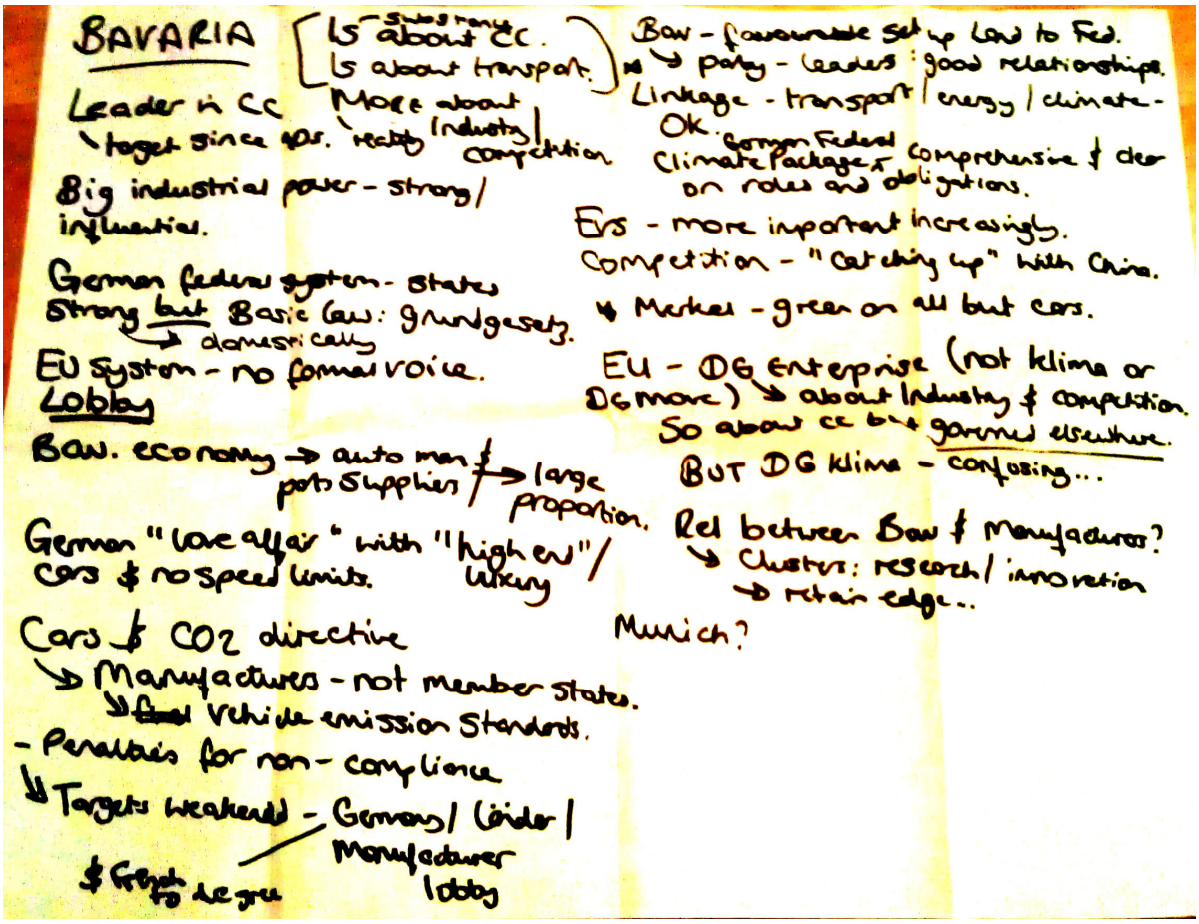
- *4th Annual Brussels Climate Change Conference 08*, 26-27th February 2008, Brussels
- *T&E 20th Anniversary Conference: Start-Stop or Full Throttle*, 18th March 2010, Brussels
- *ECarTec 2010: 2nd International Trade Fair for Electric Mobility*, 19-21st October 2010, Bavaria

Appendix 3.F: Mind maps






CALIFORNIA [IS ABOUT CC]
In ARB (EPA) - Climate change
Dealt with through existing orgs & institutions.
Leader CC + Air quality
Monitoring/ verification
ABC
Fed guidance
Necessity
Suite of measures - comprehensive
achieve targets?
responsibility not clear.
love affair with cars
"Make mistakes - how not to do it"
Stimulus - Fed to local: by pass state. Change here?
States v powerful in US.
Litigation - important.
DOES/ will have large impact.
Pre-emption?
Supported by Supp. behaviours measures?
Time frame.
Federal lag - but change in leadership [still stalled]
CEQA enough incentive?
Willing
capacity/ expertise
AB32 - comprehensive.
SB375 - ambitious - link land use [sprawl] with emissions - key
Land use: local authorities
CTC - no env. expertise?
Caltrans
election & Prop - future uncertain.
Governor - Republican.
Economic crisis - State budget.
SB375 - incentive based, not mandated
Land use reductions - Scoping plan - underestimated?
ARB - mandated → capacity to deliver?
Not reg. auth "no teeth"
EPA
connection?
3rd leg
Long term.
Caltrans v powerful.
Climate Action Team → RTAC: short term.


BAVARIA
[Is about CC.
Is about transport.]
Bav - favourable set up Land to Fed.
party - leaders: good relationships.
Leader in CC
target since 90s.
More about reality
Industry/ competition
Linkage - transport/ energy/ climate - Ok.
German Federal Climate Package - comprehensive & clear on roles and obligations.
Big industrial power - strong/ influential.
ETS - more important increasingly.
Competition - "Catching up" with China.
Merkel - green on all but cars.
German federal system - States strong but Basic Law: Grundgesetz.
domestically
EU - DG Enterprise (not klima or DG move) → about Industry & competition.
So about CC but governed elsewhere.
EU system - no formal voice.
Lobby
BUT DG klima - confusing...
Bav. economy → auto manf & parts suppliers → large proportion.
Rel between Bav & Manufacturers?
→ Clusters: research/ innovation
→ retain edge...
German "love affair" with "high end"/ cars & no speed limits.
Luxury
Munich?
Cars & CO2 directive
→ Manufactures - not member states.
→ fleet vehicle emission standards.
- Penalties for non-compliance
→ Targets weakened - Germany/ Lander/ Manufacturer lobby
$ Great degree

Appendix 3.G: Coding matrix

Research theme key:

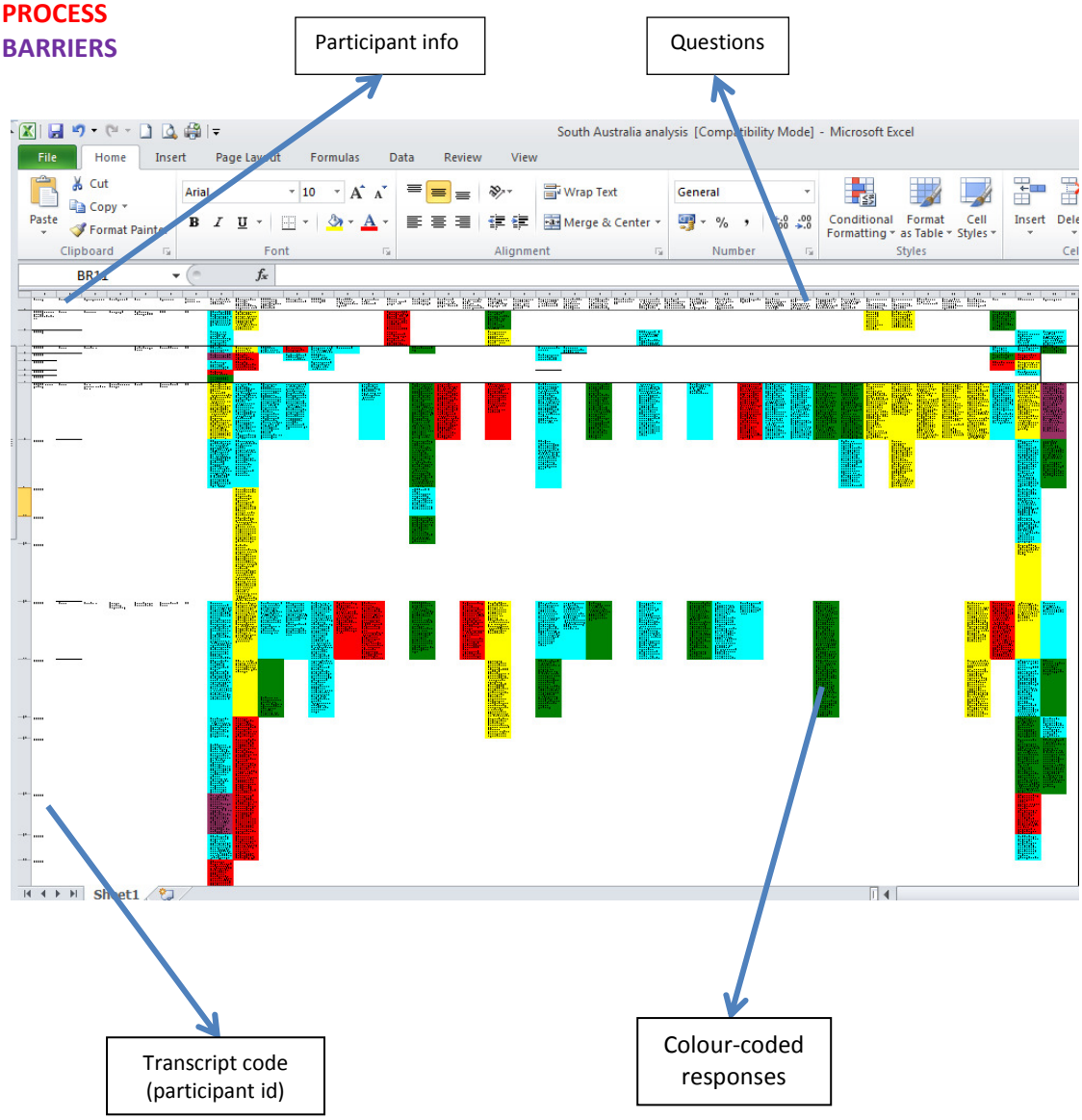
SCALE

SCOPE

LEADERSHIP

PROCESS

BARRIERS



Appendix 4.A: Emissions Impact Estimates of Planned Transport Infrastructure Projects

Project title	Published emissions estimate
A876 Upper Forth Crossing at Kincardine	+5ktCO_2 p.a. from 2009 +8ktCO_2 p.a. from 2021
M80 Stepps-Haggs	+40ktCO_2 p.a. from 2012 +40ktCO_2 p.a. from 2025
M74 Completion	+87ktCO_2 from 2012 +135ktCO_2 from 2020
A75 Dunragit Bypass	+4ktCO2 p.a. from 2022
M74 Raith Interchange	+10ktCO_2 p.a. from 2013 +10ktCO_2 p.a. from 2020
M8 Associated Network Improvements	+0ktCO_2 p.a. by 2013 +2ktCO_2 p.a. by 2020
A90 Balmedie-Tipperty	+2ktCO_2 p.a. from 2013
A90 Aberdeen Western Peripheral Road	+8ktCO_2 p.a. from 2012 +10ktCO_2 p.a. from 2027
M8 Baillieston-Newhouse	+30ktCO_2 p.a. from 2014 +30ktCO_2 p.a. from 2020
Forth Replacement Crossing	+20ktCO_2 p.a. in 2032
Stirling-Alloa-Kincardine Railway Line	+2ktCO_2 p.a. from 2009
Borders Railway	-74ktCO_2 total savings by 2030 -238ktCO_2 total savings by 2050 -415ktCO_2 total savings by 2070
Edinburgh-Glasgow (Rail) Improvements Programme	-41ktCO_2 average p.a. from 2017 -2,433kt CO_2 total savings by 2075
Edinburgh Tram Lines 1a and 1b	+90ktCO_2 p.a. from 2012 +167ktCO_2 p.a. from 2031

The emission estimates within this table are forecast increases in carbon dioxide emissions with the project compared to without the project in a given future assessment year. These estimates have been calculated using a variety of methodologies and, consequently, it is not statistically valid to aggregate the individual figures or directly compare them with one another.

All road-based projects (10/ 14) will increase emissions. Only rail-based measures decrease emissions. Edinburgh Tram and Stirling railway line also increase emissions.

(Scottish Government, 2010c)

Appendix 4.B: Estimated abatement of policies/proposals and resulting emissions by sector, $ktCO_2e$, 2010–2022

		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Transport														
	Business as usual projection	13,559	13,493	13,395	13,456	13,497	13,522	13,653	13,765	13,890	14,001	14,064	14,119	14,237
	Policies													
	EU mandatory vehicle targets	27	40	60	91	140	215	272	346	444	573	746	983	983
	EU biofuels target	0	0	0	61	121	176	228	295	382	495	640	640	640
	Total abatement from policies	**27**	**40**	**60**	**152**	**261**	**391**	**500**	**641**	**826**	**1,068**	**1,386**	**1,623**	**1,623**
	Proposals													
	Eco-driving	0	0	0	0	38	42	52	61	69	76	80	84	87
	Speed limit enforcement at 70mph	0	0	0	0	25	25	24	24	24	24	23	23	22
	Freight - HGV efficiency improvements [152]	66	75	84	93	102	102	103	103	104	103	109	119	130
	Freight - Van efficiency improvements	0	0	3	5	7	9	12	14	15	17	19	18	18
	LCV infrastructure provision and procurement	0	0	3	10	17	23	27	31	45	58	70	82	97
	Intelligent Transport Systems	0	0	4	5	7	8	10	11	11	10	10	10	10
	Travel planning	0	0	0	0	53	67	113	154	178	212	225	236	242
	Car clubs	0	0	0	8	14	20	25	30	35	39	44	47	51
	Cycling and walking infrastructure investment	0	0	0	0	44	54	64	72	80	87	94	100	104
	Buses and taxis[152]	0	27	56	83	110	136	162	187	192	197	201	208	215
	Freight - HGV modal shift	0	0	12	24	36	48	59	71	82	92	102	113	123
	Community Hubs	0	0	0	0	48	52	55	57	60	62	66	69	72
	Maritime transport	0	5	10	15	20	25	30	35	40	45	50	55	60
	Total abatement from proposals	**66**	**107**	**173**	**244**	**521**	**612**	**736**	**851**	**935**	**1,024**	**1,093**	**1,164**	**1,232**
	Total abatement from policies and proposals	**93**	**148**	**233**	**396**	**782**	**1,003**	**1,236**	**1,492**	**1,761**	**2,092**	**2,479**	**2,787**	**2,855**
	EMISSIONS AFTER ALL POLICIES AND PROPOSALS	**13,467**	**13,346**	**13,162**	**13,059**	**12,715**	**12,519**	**12,417**	**12,274**	**12,130**	**11,909**	**11,586**	**11,332**	**11,382**
	% change against 1990	*1%*	*0%*	*-1%*	*-2%*	*-4%*	*-6%*	*-7%*	*-8%*	*-9%*	*-10%*	*-13%*	*-15%*	*14%*

(Scottish Government, 2011f)

Appendix 4.C: Estimated total costs of policies and proposals (public and private), 2011-2022, and net cost-effectiveness

	Cost - effectiveness (£/tCO_2e) (discounted)	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
		£ million, undiscounted, rounded to nearest million											
Homes and Communities													
Proposals													
Fuel poverty and insulation programmes		0	0	278	344	337	304	308	308	258	258	258	258
New-build domestic energy standards for 2013		Not currently available											
Total Costs		**0**	**0**	**278**	**344**	**337**	**304**	**308**	**308**	**258**	**258**	**258**	**258**
Business and Public Sector													
Proposals													
New non-domestic buildings energy standards for 2013		Not currently available											
Transport													
Proposals													
Eco-driving	-84	0	3	3	3	2	3	5	5	5	3	4	6
Speed limit enforcement at 70mph	-119	0	0	25	3	3	3	3	3	3	3	3	3
Freight - HGV efficiency improvements	-89	4	3	2	2	7	5	4	3	3	9	6	6
Freight - Van efficiency improvements	-89	0	0	0	0	1	1	1	1	1	2	1	1
LCV infrastructure provision and procurement	48	7	5	11	11	11	11	11	20	20	20	20	21
Intelligent Transport Systems	1,211	41	44	19	19	19	20	20	13	13	13	13	13
Travel planning	-91	0	7	7	7	7	19	19	13	19	9	9	9
Car clubs	3	0	2	2	4	4	6	6	7	8	11	11	12
Cycling and walking infrastructure investment	345	0	296	207	146	81	82	83	83	84	85	86	87
Buses and taxis	305	110	130	132	134	135	137	138	138	139	139	140	141
Freight - HGV modal shift	70	15	15	15	15	15	15	15	15	15	15	15	15
Community Hubs	-107	0	2	2	2	1	1	1	1	1	1	1	1
Maritime transport	-76	2	2	2	2	2	2	2	2	2	2	2	2
Total Costs		**179**	**508**	**426**	**347**	**288**	**303**	**307**	**305**	**313**	**312**	**312**	**317**

(Scottish Government, 2011f)

Appendix 4.D: SCSP measures in detail – compiled with participating LAs factsheets (Transport Scotland, undated)

LA	Name of project	Funding breakdown	Emphasis (stated)	Main activities	Partnership
Dumfries and Galloway Council	GoSMART	£5.4 million (£2.7 million Scottish Government)	Encourage Dumfries residents to travel by bike, bus, walking and journey share instead of driving individually. (http://walkcycleconnect.org/wp-content/uploads/downloads/2010/07/Dumfries-GoSmart.pdf)	- Travel demand management: parking control and 20mph zones - Personalised travel planning - Bus network/ticketing improvements - Car Clubs - Salary sacrifice for cycle to work/season ticket purchase - Self-service cycle hire scheme - Promote journey sharing - Improve transport interchanges - Introduce park and choose sites - Develop high quality radial green commuter routes - Transport carbon footprint research	SWestrans Addt. Funding: - European Structural Funds: Lowlands and Uplands Scotland 2007–2013 Programme; NHS Dumfries and Galloway; The Crichton Development Company; Stagecoach West Scotland
Dundee City Council	Dundee Travel Active	£2.1 million (£1.4 million Scottish Government)	Encourages residents of, or visitors to, Dundee to walk or cycle to improve people's health and the environment (http://visuals.sdgworld.net/temp/dundeetravelactive/default.asp)	- Family cycle training - Personalised travel planning - Local facilities information - Bike Library - Public transport ticketing incentives/ service improvements - Identifying physical barriers - Public realm enhancements/small-scale infrastructure improvements - Working with health providers	TACTRAN, Sustrans, local bus companies, NHS Tayside; University of Dundee
East Dunbartonshire Council	Healthy Habits	£1 million (>£600,000 Scottish Government)	Promote the benefits of sustainable travel; enhance health/wellbeing of the local community	- Infrastructure improvements – new facilities and active travel links - Travel Plan Central - Healthy Habits – encouraging active travel by demonstrating the health, environmental and financial benefits	
East Renfrewshire Council	Go Barrhead!	£1.3million – (>£800,000 Scottish Government)	By walking, cycling or using the bus or train more often, we can all become healthier, make our streets safer, air cleaner and	- Personalised travel planning - Walking/cycling for health initiatives - Reducing road speeds - Increasing bus and rail travel	Sustrans, Cycling Scotland, SPT, NHS Greater Glasgow and Clyde, East

ERC (cont…)			Barrhead a nicer, healthier place to live, work and have fun!	- Bike parking at schools - Improving paths - Creation of a new country park within the greenbelt next to Barrhead - joint East Renfrewshire and Glasgow City Councils – recreational infrastructure - Smarter Barrhead schools project/travel groups - East Renfrewshire Council travel plan business pilot - Go Greener event/pilot project - Auchenback health and open space project	Renfrewshire Chamber of Commerce and Strathclyde Police
Falkirk Council	Take the Right Route	£1.3 million (>£900,000 Scottish Government)	Aiming to tackle traffic congestion and reduce car dependency in and around Larbert & Stenhousemuir. Promoting walking, cycling and the use of public transport for every day, short journeys. [Mentions climate change in fact sheet]	- Path/cycle way improvement - Personalised travel planning - Marketing/promotion - Support for active/sustainable travel	
Glasgow City Council	Glasgow East End On The Move	£2.5 million (>£1.3 million Scottish Government)	Encourage residents and visitors in Glasgow's East End to foster healthier lifestyles by adopting sustainable and active modes of travel. [Mentions climate change in fact sheet]	- Infrastructure improvements - Intensive sustainable transport marketing campaign - Practical support	Addt. Funding: - SPT; Clyde Gateway
Orkney Islands Council	Kick Start Kirkwall	£1.28 million (£760,000 Scottish Government)	Promoting a sustainable community and a healthy lifestyle [No mention of climate change in details] (http://www.kickstartkirkwall.co.uk/default.asp)	- Personalised travel planning - Improving infrastructure - Walking/cycling information - 'Travel buddies' to support people with physical/learning disabilities travel sustainably - GP active travel referrals - School cycling promotion	NHS Orkney Energy Advice Centre Paths for All Partnership Stagecoach

Appendix 4.E: Sample Interview Questions

1. Please briefly overview of your academic/professional background.
2. What is your role?
3. Is transport a priority for Scotland in terms of emission reduction?
4. What is the main focus of Scotland's effort in this area?
5. Are you familiar with SCSP? How did you hear of the programme?
6. Why do you think Scotland is investing in this programme? Do you think £15 million is sufficient investment?
7. Is SCSP a a) climate change, b) health or c) other policy intervention?
8. Where does ultimate responsibility for the programme lies – local/national government?
9. Do you think that people/organisations outside the programme are aware it is taking place?
10. What are the main barriers to this programme/main challenges the programme faces?
11. Do you think the programme should be continued/expanded?
12. Do you think there is potential for replication of the scheme across Scotland?
13. How/why is SCSP different to/separate from the broader CCF?
14. Is transport one of the most important areas for emission reduction in Scotland? Should other sectors be focused on more?
15. What else is Scotland doing to reduce passenger transport emissions? Where is most investment in this area directed?
16. Scotland has committed to be a 'leader' on climate change – how does this leadership present itself and where does SCSP fit into this?
17. Is an 80% reduction in emissions is possible? What is your appreciation of the scale of changes necessary to achieve this?
18. How much are Scottish interventions constrained by Europe/UK in acting?
19. Can Scotland be seen as 'as best a leader as possible' or a leader 'given the circumstances'?
20. How significant is the fact that Scotland has a Minister for Climate Change AND Transport? Does this have any positive implications for reducing transport emissions? Are climate change/transport agendas closer as a result?
21. Realistically, where is climate change on the Scottish agenda?
22. Should I be speaking to anyone else on this subject?

Appendix 5.A: DPC departmental objectives/Climate Change Minister functions specified in 2007 Act

DPC objectives:

1. Lead the state's long-term policy development agenda
2. Drive integration and coordination of policy, strategy and implementation across government
3. Ensure an effective and efficient cabinet system of government
4. Deliver outstanding service to our customers
5. Engage genuinely with our stakeholders
6. Enable staff through high quality and contemporary infrastructure, systems and processes

(SA Government, 2009a)

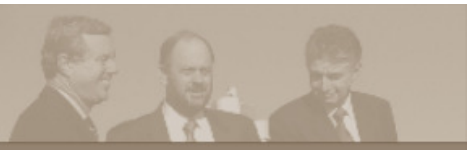
Ministerial Functions specified in 2007 Act:

- Promote the involvement of the South Australian Government in relevant State, National or International forums about climate change;
- Establish appropriate reporting frameworks across government with respect to issues relating to climate change or GHG emissions, with particular reference to the requirements of section 7[75];
- Seek to promote action to develop a coherent policy framework within the state to address issues associated with climate change;
- Seek to achieve consistency between policies or programs developed or implemented under this act and initiatives, standards, schemes or commitments at the national and international levels to address issues associated with climate change

(SA Government, 2007d)

[75] Section 7 refers to the Minister's obligation to prepare 2-yearly progress reports on the the Act

Appendix 5.B: Government Action Plan Leadership and Transport and Planning Overviews



1. Leadership

Goal: South Australia will lead the nation in tackling climate change

Setting targets

Objective 1.1 To encourage early action in reducing greenhouse gas emissions	**Strategies** 1 Set targets for reducing greenhouse emissions consistent with scientific evidence and develop cost effective strategies to achieve them 2 Monitor, review and report trends in greenhouse emissions and on progress towards the targets

Priority actions	Type of measure	Lead agencies
Introduce climate change legislation that includes the state's target to reduce greenhouse emission levels by 60% (to 40% of 1990 levels) by 2050	Policy development	**DPC**
Increase the proportion of renewable electricity generated so that it comprises at least 20% of electricity generated in South Australia by 2014	Policy development	**DTEI**
Increase the proportion of renewable electricity consumed so that it comprises at least 20% of electricity consumed in South Australia by 2014	Policy development	**DTEI**
Determine a target to reduce total greenhouse gas emissions from state government operations within an agreed timeframe	Policy development	**DPC**, DH
Purchase a minimum of 20% accredited Green Power for state government operations by 1 January 2008	Policy development	**DPC**
Establish the Premier's Climate Change Council to advise government on climate change policy development and implementation	Policy development	**DPC**
Investigate a climate change impact assessment process for major projects*	Impact assessment	**DPC**, PIRSA
Set interim and sectorally based targets in consultation with industry and the community	Policy development	**DPC**
In conjunction with other states and territories, implement a national emissions trading scheme	Policy development	**DTEI**
Supporting actions	**Type of measure**	**Lead agencies**
Undertake modelling to identify cost effective strategies that will meet the 2050 targets	Policy development	**DPC**, DTEI, PIRSA, DTED
Model baseline data to measure progress	Evaluation and review	**DPC**

Leading by example

Objective 1.2 To demonstrate best practice in reducing emissions	**Strategies** 1 Accelerate efforts to reduce energy use and greenhouse gas emissions from government activities and operations 2 Support and promote leadership on climate change action

Priority actions	Type of measure	Lead agencies
Reduce emissions from the government vehicle fleet by converting 50% of state government cars to lower emission fuels by 2010; and reduce emissions generated by government travel by applying greenhouse friendly corporate travel policies for the location of government workplaces, commuting, aircraft and taxi use, and vehicle salary packaging	Policy development	**DTF**, DPC, DTEI

Priority actions (continued)	Type of measure	Lead agencies
Develop a green procurement strategy for government to purchase 'green' energy	Policy development	**DTF**, DTEI, DPC
Implement the Government Energy Efficiency Action Plan, which supports *South Australia's Strategic Plan* target to improve energy efficiency of government buildings by 25% from 2000–01 levels by 2014	Policy development and delivery	**DTEI**, DPC
Reduce emissions from the public transport fleet through the most cost effective combination of low emission fuels, biodiesel, natural gas, biosequestration and the purchase of more efficient vehicles	Service delivery	**DTEI**, TransAdelaide
Increase the use of high efficiency lighting in all government accommodation	Policy development and delivery	**DPC**, DTEI
Establish sectoral agreements with local government that put in place measures to achieve agreed goals and targets to reduce emissions and adapt to climate change. Key priorities include joint action to reduce emissions from public lighting sources and procurement practices	Policy development	**DPC**, PIRSA
Supporting actions		
Use sustainable practices (including energy efficiency) during all stages (e.g. planning, acquisition, management and disposal) of the government building procurement process	Development	**DTEI**
Work with the tourism industry to implement the South Australian Tourism Commission's climate change policy statement that seeks to minimise greenhouse gas emissions from tourism activities, including development of green tourism packages†	Policy development	**SATC**

Foundations for action	
Objective 1.3 To build capacity to tackle climate change	**Strategies** 1 **Take a leadership role in national climate change policy development and action** 2 **Build partnerships within and across sectors and jurisdictions to identify collaborative solutions, share resources and maximise outcomes** 3 **Position the state to drive and benefit from technological research and development**

Priority actions	Type of measure	Lead agencies
Lead policy development in COAG and the Council for the Australian Federation embracing the deployment of renewable and low emission technology, the generation of relevant scientific information, effective adaptation, and efficient and comprehensive reporting of greenhouse emissions	Policy development	**DPC**, DTEI
Review government policies and strategies to ensure that climate change and greenhouse emissions reduction issues are considered‡	Policy development	**DPC**
Continue to pursue international collaborative partnerships to develop agreed policy responses to climate change§	Policy development	**DPC**
Supporting actions	**Type of measure**	**Lead agencies**
Collaborate with other sub-national jurisdictions to implement the *Declaration of the Federated States and Regional Governments on Climate Change 2005* which commits signatories to set achievable short and long-term targets for emissions reduction by, for example, market mechanisms, research and clean energy	Policy development	**DPC**

* Consistent with recommendation 3b of Professor Stephen Schneider's report, *Climate Change: Risks and Opportunities* (2007)
† ibid., recommendations 7a and 7b
‡ ibid., recommendations 10a and 10b
§ ibid., recommendation 1

6. Transport and Planning

Goal: South Australia will substantially reduce transport-related greenhouse emissions while maintaining accessibility and economic development

Integrated land use and transport planning

Objective 6.1	**Strategies**
To reduce trip lengths and the need for motorised travel through integrated land use and transport planning	1 Use the land use planning system to reduce greenhouse emissions from transport 2 Encourage more compact metropolitan and regional town development, and expand neighbourhood-level activities and services 3 Encourage higher density development around interchanges and stations 4 Plan for and maintain strategic transport corridors, infrastructure and freight inter-modal sites 5 Locate industries to maximise the proximity to road and rail corridors and markets, and encourage the co-location of complementary industries

Priority actions	Type of measure	Lead agencies
Plan for sustainable urban development that optimises previous investment in social and physical infrastructure, including existing public transport to accommodate the state government's population target of 2 million by 2050	Research and policy	**PIRSA**, DTEI
Identify transit orientated development (TOD) opportunities, prepare planning policy and utilise government-owned land to facilitate specific opportunities	Policy	**PIRSA**, DTEI, LMC
Supporting actions	**Type of measure**	**Lead agencies**
Maintain a metropolitan Adelaide urban boundary and establish urban boundaries for select towns in the outer metropolitan Adelaide region to foster efficiencies in urban development and support public transport usage	Policy	**PIRSA**
Facilitate opportunities for higher density housing in targeted locations and transit-focused neighbourhoods	Research and policy	**PIRSA**, DTEI
Encourage businesses with large numbers of employees to locate in employment or business clusters and activity centres with accessibility to public transport	Research and policy	**PIRSA**, DTED
Facilitate the development of and access to commercially viable inter-modal terminals that encourage greater use of lower emission marine and rail modes, and protect terminals and key rail/road networks from incompatible development	Policy	**DTEI,** PIRSA

Travel behaviour change

Objective 6.2	**Strategies**
To achieve more sustainable travel behaviour	1 Promote voluntary behaviour change programs to encourage more sustainable travel choices 2 Promote federal and state transport legislation, pricing and taxation that supports emission-reducing travel behaviour 3 Develop education and information programs that support more sustainable travel choices 4 Maximise the emissions efficiency of the transport network

Priority actions	Type of measure	Lead agencies
Expand the TravelSmart households, workplaces and schools voluntary behaviour change programs and link with other initiatives such as TODs, cycling programs, public transport service upgrades and urban corridors initiatives	Travel behaviour change	**DTEI**
Review state government incentives to encourage purchase of, or conversion to, lower emission vehicles and fuels*	Policy development	**DTEI**
Together with affected councils, develop a metropolitan parking policy that targets the reduction of long-term parking in activity centres across metropolitan Adelaide	Policy development	**DTEI**
Supporting actions	**Type of measure**	**Lead agencies**
Seek changes to policies that are barriers to emissions reductions such as road pricing, excise regimes for alternative fuels and fringe benefits tax; contribute to Australian Government processes to achieve these outcomes	Policy development	**DTEI**
Design new and existing road space to give greater priority to emission-efficient modes and use intelligent transport systems to improve fuel efficiency	Service and technology improvement	**DTEI**

Supporting actions (continued)	Type of measure	Lead agencies
Evaluate the benefits of 'eco-driving' programs, and if their worth is proven, expand within government and incorporate in driver training and testing	Research, regulation and behaviour change	**DTEI**
Support the introduction of car sharing in Adelaide	Policy	**DTEI**
Provide information on the full personal cost of transport and the role of vehicle maintenance in fuel efficiency	Information provision	**DTEI**
Vehicle performance		
Objective 6.3 To improve the emissions performance of vehicles and fuels	**Strategies** 1 Improve the tailpipe emissions performance of new and in-service vehicles 2 Support the research, development and introduction of emissions-reducing technology and fuels 3 Facilitate the transition towards low emission fuels	
Priority actions	**Type of measure**	**Lead agencies**
Continue to support the development of a local biofuels industry and promote compatibility of biofuels with new vehicle technology through consultation with automotive manufacturers and importers*	Research	**PIRSA,** DTEI, DTED
Seek the early and comprehensive adoption of new, tighter national fuel efficiency and emissions requirements for new vehicles	Policy	**DTEI,** EPA
Establish in-service vehicle emissions standards and legislation enforced through an on-road detection testing and correction program	Regulation	**DTEI**
Supporting actions	**Type of measure**	**Lead agencies**
Facilitate research into the potential of compressed natural gas as a medium-term, more widely used, vehicle fuel	Research	**DTEI**
Encourage the heavy and light commercial road freight industry to adopt lower emission fuels and industry in general to develop more efficient practices that lower emissions from freight	Education, information provision	**DTEI,** EPA
Mode shifting		
Objective 6.4 To shift transport towards low greenhouse emission modes	**Strategies** 1 Improve public transport services 2 Improve infrastructure, safety and facilities for pedestrians and cyclists to encourage these zero emissions modes 3 Encourage freight to shift to lower greenhouse emission modes	
Priority actions	**Type of measure**	**Lead agencies**
Increase peak hour public transport services to meet high demand	Infrastructure	**DTEI**
Improve the frequency, speed and connectivity of public transport services	Service improvement	**DTEI,** TransAdelaide
Consider investment in fixed rail infrastructure	Infrastructure	**DTEI,** TransAdelaide
Support zero emissions modes by: › implementing *Safety in Numbers, A Cycling Strategy for SA, 2006–2010*, with a particular emphasis on actions that encourage replacement of motorised trips with cycling, such as comprehensive cycling networks and workplace end of trip facilities › developing a walking strategy	Policy development, policy implementation	**DTEI**
Supporting actions	**Type of measure**	**Lead agencies**
Expand bus, train and tram fleet capacity	Infrastructure	**DTEI,** TransAdelaide
Investigate measures to improve and support public transport services in activity centres, including in regional areas	Service provision	**DTEI,** TransAdelaide
Facilitate the improvement and/or re-opening of key rail freight lines	Infrastructure	**DTEI**
Assess opportunities and obstacles to increase the role of shipping in the domestic freight task	Evaluation	**DTEI**
Consider increased interconnectivity of the state's rail network with gauge standardisation and associated network improvements	Infrastructure	**DTEI**

* Consistent with recommendation 4a of Professor Stephen Schneider's report, *Climate Change: Risks and Opportunities* (2007)
† ibid., recommendation 9d

(SA Government, 2007c)

Appendix 5.C: Sample Interview Questions

Overview

1. Brief overview of your academic/professional background
2. What is your role?

Adelaide Infrastructure

1. Transport infrastructure in Adelaide – public transport/cars
2. Responsibility – state or city government?
3. AU$2 billion in electrifying and upgrading the rail network in Adelaide?
4. Why trains/trams over other areas? Is AU$2 billion enough?
5. Where did the investment come from? Any conditions upon it?
6. Will improve the city's transport infrastructure?

Rail Electrification and Upgrade

1. Your involvement in this programme?
2. Leading/innovative or catching up?
3. Main barriers to this programme?
4. Completion of the programme - further investment elsewhere?
5. Other departments engaged in the programme?
6. People/organisations outside the programme are aware of it?
7. Policy intervention to reduce GHG emissions? If no, what is primary objective?
8. Will investment contribute to reducing SA's GHG emissions?

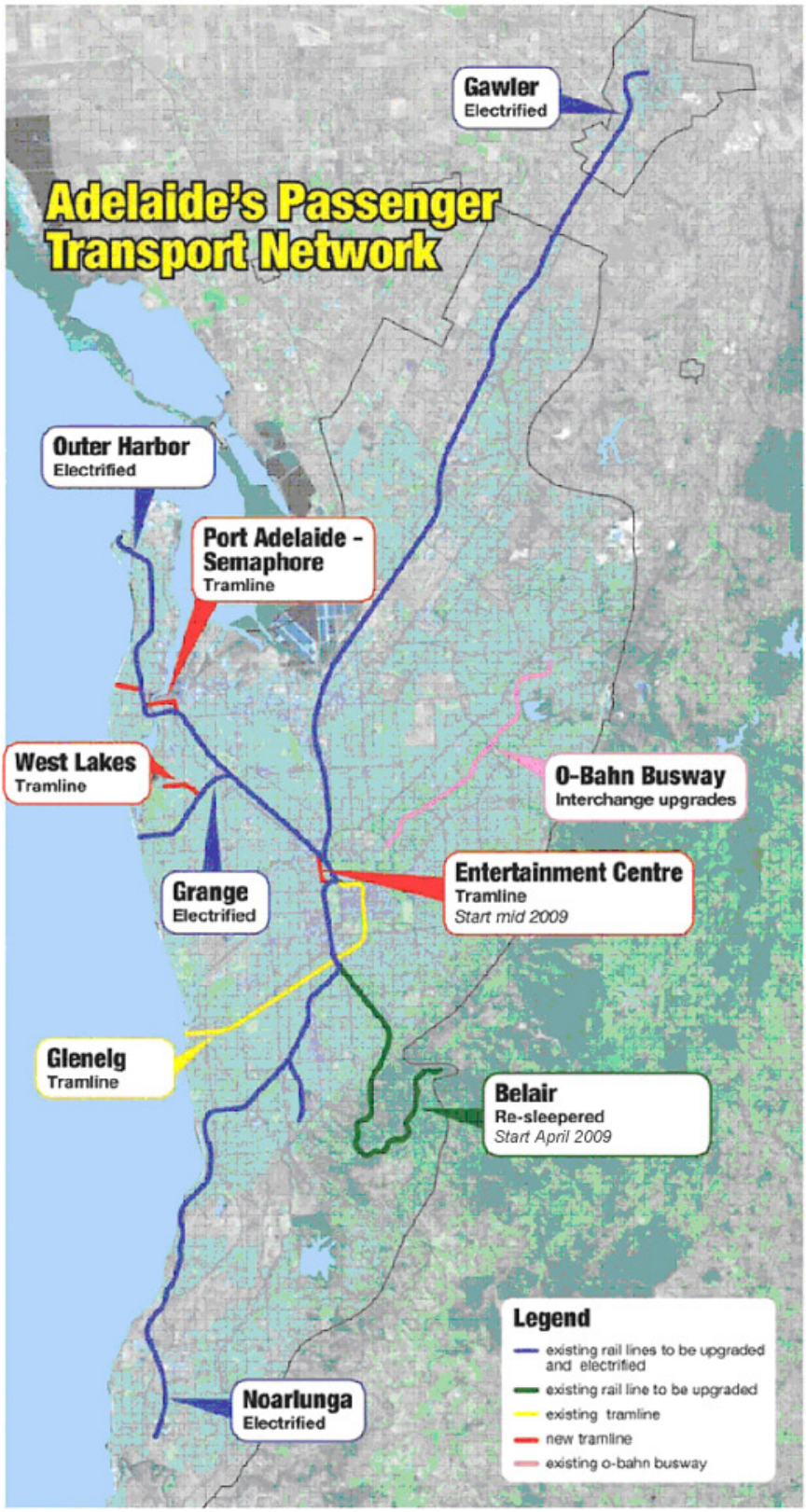
Climate change

1. How does SA's climate change leadership present itself?
2. Where does the rail electrification fit into this?
3. Is transport a priority area for emission reduction in SA? Are other sectors prioritised?
4. Is SA's emission reduction target achievable and what is your appreciation of the scale of change necessary to achieve that target?
5. What will be the single-most important measure to contribute to this reduction and why?
6. Should target be higher?
7. Can the state's population grow to 2 million without increasing GHG emissions?
8. How significant is the fact that the Premier is also the Minister for Climate Change? Does this title have any positive implications for reducing transport emissions? Is climate change on agendas across the board as a result?
9. Where is climate change on the South Australian agenda?

Interaction

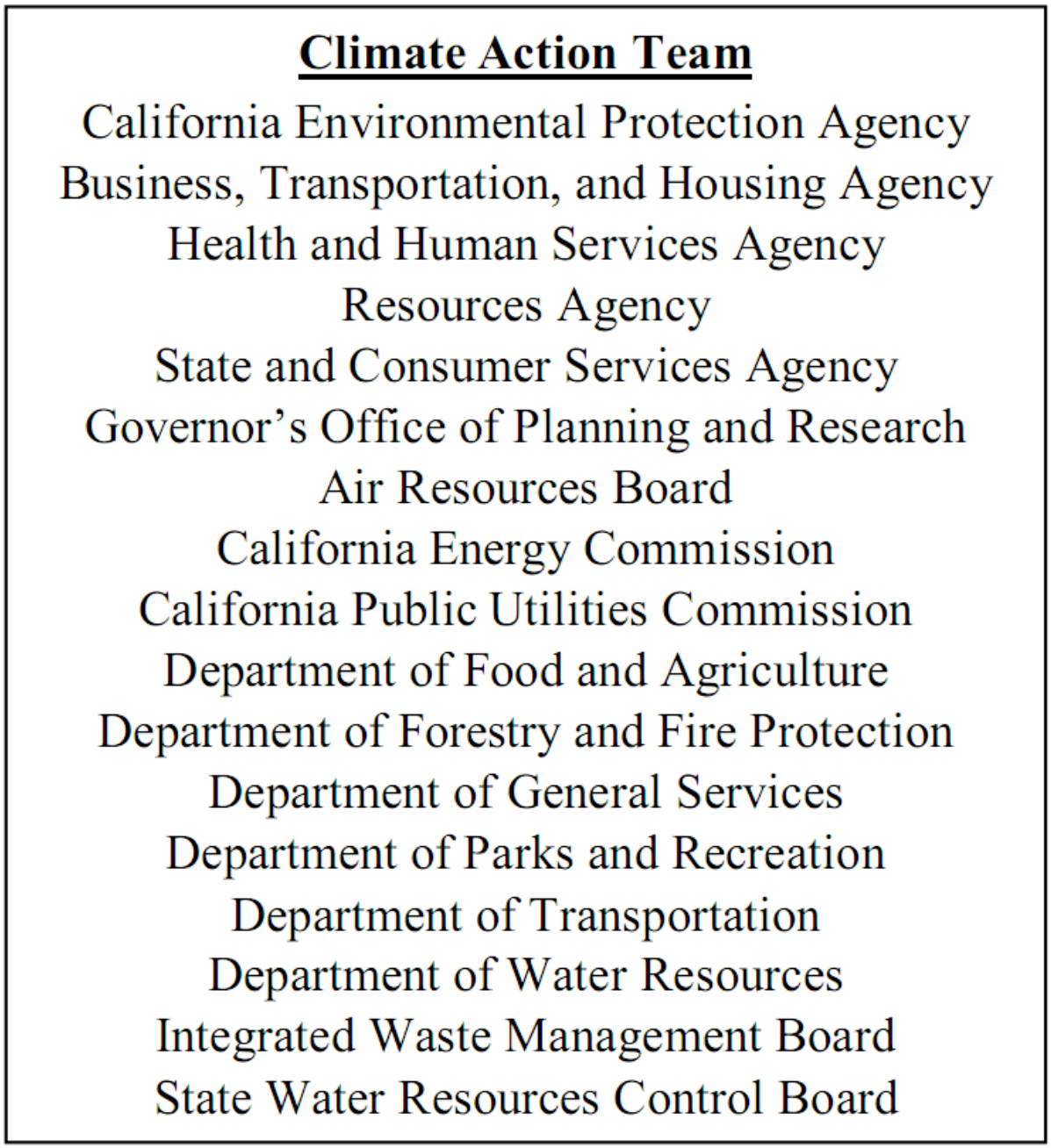
1. Communication links between the state and the city government?
2. Communication links between the state and the Commonwealth government?
3. How much are SA interventions constrained/influenced by the Commonwealth government?
4. Does the state have the ability to influence national policy?
5. Should I be speaking to anyone else on this subject?

Appendix 5.D: Map highlighting transport investment programme



(SA Government, 2011i)

Appendix 6.A: Climate Action Team



(ARB, 2008)

Appendix 6.B: Sample interview questions

Overview

1. Overview of academic/professional background
2. What is your current role?

California and climate change

1. Is California's target to reduce emissions to 1990 levels by 2020 achievable?
2. What will be the single-most important measure to contribute to this reduction and why?
3. Should the 80% target have been mandated in AB 32 too?
4. Is the 2050 target achievable? What is the scale of change necessary to achieve that target?
5. Are targets per capita? Can California's population grow without increasing GHG emissions?
6. Is climate change awareness adequate in California?
7. How does California's climate change leadership present itself?
8. Is California leading 'as best as possible' or is it a 'leader on certain areas'?
9. Has the Governor's leadership been on the issue been significant?
10. Where is climate change on the Californian agenda?

Climate change and transport

1. Where does responsibility for the transport infrastructure in California lie?
2. Is transport a priority area for emission reduction in California? Should it be prioritised?
3. Should transport emission reductions be proportional?
4. What is California doing to reduce passenger transport emissions?
5. How will SB 375, AB 32 and the other scoping plan measures deliver transport emission reductions? Will they be connected/consolidated? Responsibility for measuring reductions?
6. Why is addressing land use/reducing VMT/ significant in reducing emissions?

SB 375 – Specifics

1. Is SB 375 an intervention to reduce GHG emissions? If no, what is its primary objective?
2. Which state agencies have a role to play in delivering SB 375?
3. How will the relationship between MPOs/state agencies work in implementing SB 375?
4. Where does responsibility lie for achieving the targets?
5. How will ARB decide MPO targets?
6. How will CTC manage the distribution of funding?
7. Will federal transport funding mechanisms be altered by SB 375?
8. Will SB 375 supersede existing/non-GHG-related policies?
9. Does MPOs/CTC have necessary climate change expertise?
10. What are the main barriers to implementing the bill?
11. Will SB 375 contribute to achieving the 2020/2050 targets?
12. How will VMT reduction be measured/attributed to SB 375? Responsibility for this?
13. Can continuation of SB 375 measures be guaranteed long-term?
14. Do you think that people/organisations uninvolved are aware this bill is in place?

Governance

1. Are existing structures of government capable of delivering new policies?
2. Does California need a central climate change agency?
3. Does ARB's broad mandate cause conflict in terms of prioritising agendas?
4. Communication links between state/ local governments?
5. Are Californian interventions constrained/influenced by the federal government?
6. Can California influence national policy?
7. Do issues discussed link with problems of water supply/demand in California?

Appendix 7.A: BMW statistics: sales, CO_2 emissions, fleet fuel efficiency

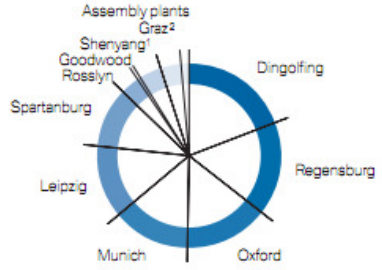
Sales volume of the BMW Group by vehicle

	2006	2007	2008	2009	**2010**
Sales volume – Automobiles					
BMW	1,185,088	1,276,793	1,202,239	1,068,770	**1,224,280**
MINI	188,077	222,875	232,425	216,538	**234,175**
Rolls-Royce	805	1,010	1,212	1,002	**2,711**
Total	**1,373,970**	**1,500,678**	**1,435,876**	**1,286,310**	**1,461,166**
Sales volume – Motorcycles					
BMW	100,064	102,467	101,685	87,306	**98,047**
Husqvarna	–	–	13,511	13,052	**12,066**
Total	**100,064**	**102,467**	**115,196**	**100,358**	**110,113**

Sales volume of all three car brands – BMW, MINI and Rolls-Royce – rose in 2010. Sales of the BMW brand increased by 14.6%, that of MINI by 8.1%. Rolls-Royce even managed to more than double its sales, with 2,711 vehicles sold (2009: 1,002). The Motorcycles segment also saw an increase of 9.7%.

Vehicle production of the BMW Group by plant in 2010

in 1,000 units



Dingolfing	287.4	Rosslyn	49.0
Regensburg	244.0	Goodwood	3.2
Oxford	216.3	Shenyang[1]	55.6
Munich	205.7	Graz (Magna Steyr)[2]	54.9
Leipzig	186.8	Assembly plants	19.1
Spartanburg	159.3		

[1] Joint venture [2] Contract production

The process of internationalising the BMW Group production network continued in 2010 with plant expansions in the USA and China. In addition, in 2009 and 2010, the company invested a total of euro 1.5 billion in its German plants. At Dingolfing, BMW's strongest production plant, manufacture of the new BMW 5 Series Sedan started at the beginning of 2010, followed by the BMW 5 Series Touring in June.

BMW Group sales volume of vehicles by region and market

in 1,000 units

	2006	2007	2008	2009	**2010**
Rest of Europe	375.0	443.6	432.2	357.3	**369.3**
North America	337.4	364.0	331.8	271.0	**298.3**
Asia	142.2	159.5	165.7	183.1	**286.3**
Germany	285.3	280.9	280.9	267.5	**267.2**
United Kingdom	154.1	173.8	151.5	137.1	**154.8**
Other markets	80.0	78.9	73.8	70.3	**85.3**
Total	**1,374.0**	**1,500.7**	**1,435.9**	**1,286.3**	**1,461.2**

In Asia in particular, markets grew very dynamically in 2010. BMW Group sales volume in this region increased year-on-year by 56.3%, with the Chinese markets (China, Hong Kong, Taiwan) making the largest contribution. Sales volume in Europe remained stable (+3.9%), while it rose by 10.1% in the US.

BMW Group CO_2 footprint

in t CO_2

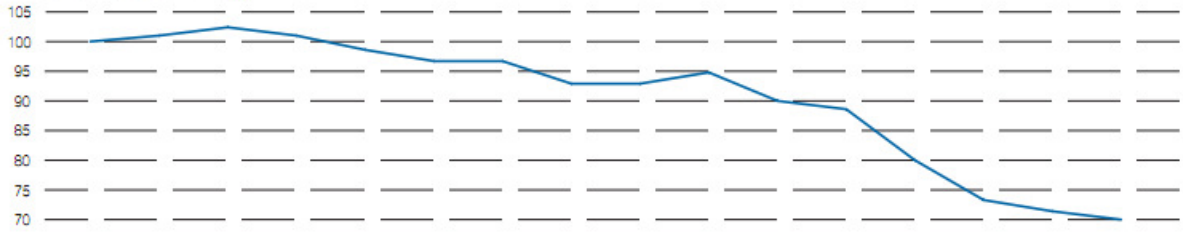
	2008	2009	**2010**
Total emissions	1,645,759	1,542,653	**1,857,485**
Emissions / employee	16.5	16.0	**19.5**
Emissions / million euro revenues	30.9	30.4	**30.7**
Scope 1			
Direct greenhouse gas emissions			
Total emissions	375,426	357,793	**409,911**
Emissions of company-owned production sites	308,605	291,562	**340,131**
Company vehicles	63,324	63,109	**65,974**
Company-owned planes	3,497	3,122	**3,806**
Scope 2			
Indirect greenhouse gas emissions			
Total emissions	875,036	847,500	**933,097**
Electricity and district heat purchased	875,036	847,500	**933,097**
Scope 3			
Indirect greenhouse gas emissions			
Total emissions	395,297	337,360	**514,477**
Logistics	360,000	307,000	**466,027**
Business trips	35,297	30,360	**48,450**

According to the GHG protocol, further emissions in CO_2 equivalent (e.g. CH_4, N_2O, SF_6, PFCs, HFCs) account for <1% of total CO_2 equivalent emissions and are therefore not listed.

The increase in energy consumption due to the rise in vehicle production after the years 2008 and 2009 also led to higher overall levels of CO_2 emissions (+20%). However, at the same time, specific savings measures and innovative production processes such as the emissions-free cleaning process at the Landshut plant resulted in a drop in overall CO_2 emissions per vehicle produced from 0.91 t/vehicle to 0.86 t/vehicle (−5.5%); this was in line with the objective of improving energy efficiency in 2012 by 30% compared to 2006.

Development of CO_2 emissions of BMW Group vehicles in Europe

(Index: 1995 = 100; basis: fleet consumption of newly registered vehicles in Europe (EU-15) measured on the basis of the New European Driving Cycle in accordance with the ACEA self-commitment)



95	96	97	98	99	00	01	02	03	04	05	06	07	08	09*	10
100.0	101.0	102.4	101.0	98.6	96.7	96.7	92.9	92.9	94.8	90.0	88.6	80.0	73.3	71.4	**70.0**

*Measured only on EU-27 basis with effect from 2009.

The main guiding principle behind the BMW Group's Efficient Dynamics Strategy is greater dynamism, less fuel consumption and fewer emissions. This strategy has enabled BMW to reduce the CO_2 emissions of newly sold cars in Europe (EU-15) by 30% between 1995 and 2010, thereby more than fulfilling the commitment given by the European automotive industry to reduce average CO_2 emissions by 25% for new fleets of cars between 1995 and 2008 (ACEA self-commitment).

Fuel efficiency and CO_2 emissions of the most efficient and best-selling models in 2010[1]

	Combined in l/100 km	CO_2 emissions in grams CO_2/km
Most efficient model worldwide:		
MINI ONE D[2]	3.8 (–)	99 (–)
Best-selling models in Germany:[3]		
1st BMW 116i	6.1 (6.6)	143 (154)
2nd BMW 320d Touring	4.8 (5.4)	128 (142)
Best-selling models in the EU:[3]		
1st BMW 118d	4.5 (5.3)	119 (140)
2nd MINI ONE[2]	5.4 (6.4)	127 (150)

[1] Values measured in accordance with the New European Driving Cycle (EU Directive 80/1268/EEC in the relevant applicable version). Valid for vehicles with a European country specification, with the exception of the "Most efficient model worldwide".

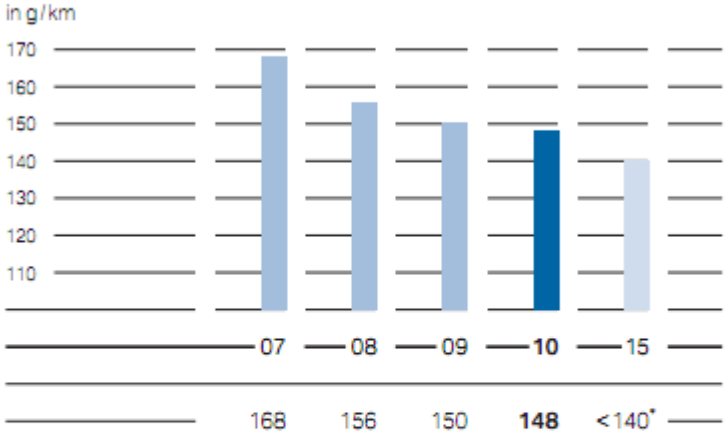
[2] Manual transmission.

[3] Figures in brackets refer to automatic transmission.

In contrast with earlier reports, the SVR 2010 shows the most efficient model worldwide, not just in Europe. Therefore, the MINI ONE D is cited here rather than the MINI Cooper D (2009: 3.9 l/100 km and 104 grams CO_2/km).

CO_2 emissions of BMW Group vehicles (EU-27)

Fleet consumption of newly registered vehicles in Europe (EU-27) in the New European Driving Cycle



*The target is based on long-term production planning. The target for the introductory period 2012 to 2014 is to meet the EU's CO_2 emissions performance standards for passenger cars.

In 2010, the BMW Group fleet achieved an average fuel consumption of 5.4 litres of diesel/100 km, 6.6 litres of petrol/100 km and average emissions of 148 g/km of CO_2 in Europe (EU-27). We also lead the field among German manufacturers with CO_2 emissions of approximately 154g/km. Our goal is to reduce the carbon dioxide emissions of our cars between 2008 and 2020 by at least a further 25%.

(BMW Group, 2011)

Company	Sector	2011 Response status	2010 Response status	Carbon disclosure score	Carbon performance band	Non-Public	Total Emissions[1]	Scope 1	Scope 2	Scope 3	Scope 3 source type	Verification/Assurance[2]	Target(s) implemented
BASF	Materials	AQ	AQ	93	A		25701000	21312000	4389000	134289000	PGS Eq Fu TI Wa Tr EC Lu In TSP USP DSP	✓	Abs Int
Baxter International	Health Care	AQ	AQ	74	C		801000	339720	461280*	2144000	Tr EC TSP USP DSP SE	✓	Abs Int
Bayer	Health Care	AQ	AQ	99	A		8500000	4800000	3700000	27009800	PGS TI Tr Lu DSP Oth	✓	Abs Int
BB&T	Financials	AQ	AQ	58	E		172066	1643	170423	-		†	
BBVA	Financials	AQ	AQ	74	B		329870	8494	321376	35232	Tr	✓	Int
BCE	Telecommunications	AQ	AQ	74	C		234529	93132	141397	4348	Tr	†	Abs
Becton, Dickinson and Co.	Health Care	AQ	AQ	43	-		530124	61975	468149	-		†	Abs Int
Belle International	Consumer Discretionary	NR	NR	-	-		-	-	-	-			
Berkshire Hathaway	Financials	NR	NR	-	-		-	-	-	-			
Best Buy	Consumer Discretionary	AQ	AQ	70	B		940696	236170	704526	-		✓	Abs
BG Group	Energy	AQ	AQ	85	A		7974747	7951198	23549	88692000	USP	✓	Abs
Bharat Heavy Electricals	Industrials	NR	NR	-	-		-	-	-	-			
Bharti Airtel	Telecommunications	NR	NR	-	-		-	-	-	-			
BHP Billiton	Materials	AQ	AQ	73	B		45731137	19591969	26139168	325311000	Fu USP	✓	Int
BM&F Bovespa	Financials	AQ	AQ	81	C		1179.67	155.57	1024.1	1746.81	TI Wa Tr EC	✓	
BMW Bayerische Motoren werke	Consumer Discretionary	AQ	AQ	96	A		1343008	409911	933097	38186203	TI Tr EC USP	✓	Abs Int

(Carbon Disclosure Project, 2011)

Appendix 7.B: Sample interview questions

Overview

1. Overview of your academic/professional background
2. What is your current role?

Transport and climate change

1. What is the role of the Länder in addressing climate change in Germany?
2. Are any Länder more active than others?
3. Is addressing emissions from transport a priority in Germany?
4. What is being done to decarbonise transport in Germany?

In Bavaria

1. Transport is the second largest contributing sector to Bavaria's GHG emissions – is it one of the most important areas for emission reduction for Bavaria?
2. What is happening in Bavaria to reduce passenger transport emissions?
3. How important are electric vehicles and the model regions to reducing GHG emissions?
4. What policies should be prioritised in order to address transport emissions?
5. What are the main barriers to achieving emissions reductions from road transport?
6. How can the German "love of the car" be reconciled with the need to reduce transport emissions?

Governance

1. How much are Bavarian policies constrained/influenced by the federal government?
2. How much are Bavarian policies constrained/influenced by Europe?
3. Does the state have the ability to influence national policy?
4. Does the state have the ability to influence EU policy?
5. Does the auto-manufacturing industry have the ability to influence state/national/European policy?
6. Does the auto-manufacturing industry have a good working relationship with the government in Bavaria?
7. How does leadership present itself in the EU/Germany/Bavaria?

Car manufacturing and the economy

1. Where does responsibility for the transport infrastructure in Bavaria lie?
2. How significant is the auto-manufacturing industry to Bavaria's economy?
3. How significant is the auto-manufacturing industry to employment in Bavaria?
4. How important is the role of research and development investment made by the auto-manufacturers to promoting innovation in Bavaria?

Cars and CO_2 legislation

1. How far can fuel efficiency get us in reducing GHG emissions from transport?
2. How are relationships managed between EU member states and with the car industry?
3. Why were the VA tailpipe emissions targets weakened in 2008?
4. How significant was car industry lobbying to the Cars and CO_2 regulation?
5. How do you see that the 2015 legislation will help move things on?