



# Governing Climate Change Post-2012: The Role of Global Cities - Melbourne

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## Abstract

While international negotiations for a climate change policy framework post-2012 continue, there is increasing recognition that a range of activities to reduce greenhouse gas emissions are taking place 'beyond' this formal arena. This working paper contributes to the research of the Tyndall Centre programme 1 by focusing on a group of non nation-state actors - global cities – and their role in climate governance. Cities are a critical source of man-made carbon dioxide emissions – accounting for as much as 78% by some accounts (Stern 2006) – and places where vulnerability to climate change may be acute. The project includes four case-studies: London, Los Angeles, Mexico City and Melbourne. This working paper documents the experience of Melbourne. It charts the emergence and evolution of Melbourne's climate change policy in the period 1998 – 2008. It reports that across metropolitan Melbourne climate policy has become an increasingly important policy issue, marked by the development of initiatives for addressing climate change which fall into three core categories: leadership; infrastructural change; and changing practice.

In Melbourne, municipal leadership has been an important driver for action as local politicians and officials have sought to demonstrate their intention to 'get their own house in order' despite the recalcitrance of the national government to address climate change at the international level. In terms of replacing or renewing urban infrastructures, actions have also focused primarily on the municipality itself, with actions concentrated on retrofitting energy efficiency measures in municipal buildings and the development of energy efficient street lighting systems, although important secondary areas of work have been in the commercial built environment and increasingly domestic sectors. Seeking to change the ways in which energy is used has been one area in which municipal authorities and other actors within the city have gone beyond the usual boundaries of jurisdictional authority. Here we find two approaches that have been adopted: first, the development and use of data concerning energy use as an instrument to facilitate behavioural change; and second, the development of schemes for engaging communities in new forms of low-carbon practice.

These three areas of action have depended on a mixture of governing modes, or approaches, including traditional government functions of control and compliance (e.g. planning codes), providing new forms of service (e.g. home energy audits) and enabling (e.g. partnerships). This is creating innovative responses to climate change in the city, but considerable challenges have also been encountered. First, in terms of leadership, municipalities have encountered resistance to their leadership on climate change in the face of restricted budgets and other policy priorities and have risked the creation of ambitious targets on which it is difficult to deliver reductions of GHG emissions. In terms of infrastructural change, the deep-seated dependence of Australia's energy networks on coal-based energy generation has meant that developing more energy efficient systems, such as street lighting, or micro-generation technologies has been a slow and complex process. At the same time, a lack of partnership working between the local government and commercial sectors may also have slowed the pace of change with respect to both energy systems and the retrofitting of built environments. Third, as is the case elsewhere in the world, strategies that have focused on seeking behavioural change through the gathering and provision of data

on energy use have found that such information has limited purchase on daily decisions and everyday practice. Rather, it has been schemes which have sought to engage with communities on a more holistic basis that have had more success in addressing how energy is used in the home and in commercial environments.

As regards the impacts of, and influence upon, the post-2012 international climate policy framework, three conclusions from this report are particularly salient. First, as we have found in other case-studies, the specific details of any international agreement are of less importance than its general features. In short, for Melbourne as for the other global cities included in this study, any agreement will be better than none. Second, any such agreement is likely to have an *indirect* but still significant impact on Melbourne's climate policy. Historically, both the failure of the Australian government to engage with the international policy process during the past decade and its recent conversion to this cause have had significant influence over how climate change responses have developed in Melbourne. As international negotiations proceed and Australia's international and domestic position becomes clearer, there are potentially significant implications for how municipalities conduct climate policy, not least in the face of the introduction of a national emissions trading scheme. Third, Melbourne has a limited and indirect impact on the international policy framework. Through its membership of the C40 network, City of Melbourne is involved with the creation of a network that might affect the ways in which domestic climate policy is developed in several key countries over the next few years. However, its role in this network has to date been relatively marginal, and for the majority of municipalities in metropolitan Melbourne such international networks are interesting in principle but have little impact on the development of policy and action on a day to day basis, a process that relies instead on partnerships between public authorities and increasingly civil society actors.

## 1. Introduction

While negotiations towards an international framework for climate change action continue, there is increasing recognition that a range of activities to reduce greenhouse gas (GHG) emissions are taking place 'beyond' the formal arena of international negotiations. The purpose of Tyndall Programme 1 is to examine the significance of the activities of 'non (nation) state' actors in addressing climate change, and to assess how they are affecting and will be affected by the post-2012 international policy framework.

International climate change policy has developed significantly over the past twenty years. In 1992, the United Nations Framework Convention on Climate Change was agreed at Rio with countries pledging to prevent 'dangerous interference with the climate system'. In 1997, the Kyoto Protocol gave countries in the OECD and former Eastern Europe and Soviet Union mandatory targets to reduce emissions of greenhouse gases by 2008-2012, together with a range of economic instruments designed to assist with this goal. Over the past decade, negotiations have continued as the finer details of the Kyoto Protocol, the economic instruments – the Clean Development Mechanism, Emissions Trading and Joint Implementation – and issues of enforcement are hammered out. Although few countries have met their targets under the Kyoto Protocol, and the USA remains outside it, negotiations are now under way to develop a 'post-2012' agreement. To date, most analysis has focused on the role of nation-states in the design, promotion and implementation of various 'post-2012' policy architectures and instruments. This Tyndall Centre Programme suggests that there are other, non (nation) state actors who may be critical in both shaping the post-2012 climate agreement and in its implementation.

This research project focuses on one such group of actors: global cities. Cities across the world have been responding to the challenge of climate change for over a decade (Betsill and Bulkeley 2007). Recent years have witnessed an increasing importance of urban responses to climate change, with the gradual involvement of urban political leaders (e.g. the US Mayors Climate Change Agreement and the Bali World Mayors and Local Governments Climate Protection Agreement) and major, global and mega-cities in climate change policy (e.g. through the networks Metropolis and C40). This shift has been accompanied by the growing recognition of cities as the predominant source of anthropogenic carbon dioxide emissions – perhaps as much as 78% by some accounts (Stern 2006) – and as places where vulnerability to climate change may be acute. For the world's major cities, climate change is therefore becoming an issue of increasing political and environmental significance. Critical questions remain, however, about how far such concerns are being translated into action and how the international policy framework facilitates or impedes action at this level of governance. As the international negotiations unfold, we have identified four areas which may be significant for urban level climate policy, and where global cities may have an impact on the implementation of future climate policy:

- Targets and timetables: the inclusion, level and nature of targets for reducing emissions of greenhouse gases

- Membership: which nation-states do or do not sign up to a new international agreement
- Carbon finance and markets: access to the CDM and/or emissions trading schemes for municipalities and/or carbon financing for urban projects
- Adaptation: access to finance for adaptation for cities in the Global South

In this context, the research project seeks to address three central questions:

1. What action is taking place in global cities on climate change and why?
2. What barriers and opportunities have been encountered?
3. How relevant is post-2012 climate policy for global cities, and how in turn might developments at the urban level affect international climate policy?

In order to address these questions, the project focuses on four case-studies: London, Los Angeles, Mexico City and Melbourne. This report documents the experience of Melbourne. It is based on the analysis of policy documents and interviews with representatives of the public and private sector in Melbourne conducted in July - August 2008.<sup>1</sup> The next section outlines the research context for Melbourne, including the national policy context and the history of climate policy in the city. It provides an overview of the action taking place and the drivers behind policy development. Section 3 provides detail on some specific initiatives and of the opportunities and challenges which they have encountered. Section 4 considers the opportunities and challenges arising from working with other public and private sector actors. Section 5 focuses on the question of the role and importance of the relation between post-2012 international climate policy and Melbourne. Section 6 provides a short conclusion.

## **2. Research Context**

### ***2.1 Climate change policy in Australia***

In the late 1980s and early 1990s, as international momentum to address climate change grew first through the 1988 Toronto Conference on the Changing Atmosphere and the subsequent process of negotiating the United Nations Framework Convention on Climate Change, the Australian Federal Government expressed its commitment to addressing the challenge of climate change by adopting a target of reducing emissions of greenhouse gases by 20% by 2005. Significantly, and in a move that was to come to characterize climate politics during the 1990s and 2000s, this was accompanied by the caveat that “in attempting to reach such targets there should be no adverse effect on the Australian economy, and upon trade competitiveness in particular, in the absence of similar action by other countries” (Bulkeley 2001a: 158). Although Australia was one of the early signatories to the UNFCCC, as negotiations towards the Kyoto Protocol began in 2005 the position adopted by the Federal

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<sup>1</sup> We are grateful to all those who gave their valuable time and insights to the study. We thank the rest of the Tyndall Programme 1 team – Chuks Okereke, Alex Haxeltine, Duncan Russell, Diana Liverman and Heather Lovell for their input into our research. The views expressed in this report are those of the authors alone.

Government changed from one of cautious support to growing opposition. Influenced by a powerful group of energy and resource-based industry representatives, who apparently labeled themselves the 'greenhouse mafia' (Pearse 2007),<sup>2</sup> and supported by industry-sponsored economic modeling that suggested that the impacts on the Australian economy of meeting common targets for reducing emissions of GHG would be substantial, the Australian government began to argue internationally that any targets agreed at Kyoto should be 'differentiated' to account for the specific circumstances of different nation-states (Bulkeley 2001a, 2001b). In the event, the withdrawal of US support for uniform targets under Kyoto, together with the political pressure to reach an agreement, led to the adoption of differentiated targets, such that Australia was one of only three countries charged with containing emissions growth (rather than achieving overall reductions) at 8% above 1990 levels by 2008-2012. Despite this favourable outcome, and the inclusion of provisions for including the prevention of land clearance as a means of avoiding future emissions within the process of accounting for emissions reductions, in 2002 the Howard Government announced its intention not to ratify the Kyoto Protocol, choosing instead to align itself with the US position opposing mandatory targets and timetables and supporting the Asia-Pacific Partnership on Clean Development and Climate as an alternative venue for pursuing its approach (Crowley 2007).

Despite this international stance, at the domestic level various programmes for addressing climate change were established. Under a rhetoric of 'no regrets' – that is measures that would have no adverse impacts on the Australian economy, and in particular regions and sectors dependent on the use of fossil fuels (Bulkeley 2001a) – the Howard government announced a series of funding and policy packages including the 1997 *Safeguarding the Future: Australia's Response to Climate Change*, the 1998 *National Greenhouse Response Strategy*, and the 2004 *Securing Australia's Energy Future* (Bulkeley 2001a; Crowley 2007). Under these policies various initiatives including, among others, voluntary programmes for industry to reduce GHG emissions, the development of the Cities for Climate Protection programme in Australia (to which we return below), a demonstration solar cities programme, a Mandatory Renewable Energy Target of requiring electricity retailers to source an additional 2% of their electricity from renewable sources (Jones 2009) and "a broad range of appliance and efficiency standards, building codes, labeling schemes, fuel quality regulations and licensing agreements mostly introduced in cooperation with the states" (Crowley 2007: 135). By the mid-2000s, however, it was clear that such initiatives were not sufficient to address growing domestic criticism of the Howard government's stance on climate change. Coalitions of non-governmental organisations, scientists and business interests were emerging seeking to challenge the Howard government's position on climate change science, and on the economic impacts of addressing climate change. For example, the Australian Business Roundtable on Climate Change (ABROCC), founded by the Australian Conservation Foundation, BP Australasia, Insurance Australia Group, Origin Energy, Swiss Re, Visy Industries and Westpac, found in their 2006 report *A Business Case for Early Action* "that delays in introducing measures to reduce GHG emissions would

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<sup>2</sup> This term was also popularised by the Australian Broadcasting Corporation programme *Four Corners* which broadcast a programme with the same title exposing the relations between key industries and the development of Australia's climate policy in 2006. See: <http://www.abc.net.au/4corners/content/2006/s1566257.htm>

increase costs for business and the community in terms of abatement measures and energy costs” (Jones 2009: 3). At the same time, state governments were mobilizing on the issue of climate change and in particular calling for the development of a national emissions trading scheme while putting in place initial steps to develop such a scheme between the states and territories. Bowing to pressure, the Howard government “established a joint government-business task force on emissions trading, which in February 2007 supported the establishment of a domestic cap and trade scheme” (Crowley 2007: 135).

By the time of the 2007 federal election, and after some eleven years of the Howard administration, the issue of climate change had become one of widespread popular concern. In the election campaign, the commitment of the opposition Labour party led by Kevin Rudd to sign the Kyoto Protocol if elected was “was one of the few clear differences between the major parties” (Rootes 2008: 473). If not decisive in shaping the outcome of the election, clear water appeared to have been established between the outgoing Howard government and the new Rudd administration with the first official act of the new Prime Minister being to ratify the Kyoto Protocol (Rootes 2008). Even before the election, Rudd and the Labour-controlled state governments commissioned the Garnaut Review, to assess the potential impacts of climate change in Australia and the medium and long-term policy options (Curran 2009). Reporting in 2008, to significant media coverage and well-attended public meetings, central to the recommendations of the report has been the establishment of a domestic emissions trading scheme together with support for renewable energy and carbon capture and storage technologies. Following the Review, the Rudd Government announced in July 2008 its intention to implement a cap and trade scheme, the Carbon Pollution Reduction Scheme (CPRS), by 2010, and in the White Paper of the same name in December 2008 its intention to reduce emissions by 5-15% below 2000 levels by 2020. Subsequently, in the wake of concerns over the global economy the date for the introduction of the CPRS was put back to 2011, although the Government has also indicated its willingness to adopt a target of 25% reduction of GHG emissions on 2000 levels by 2020 as part of any international agreement reached at Copenhagen in December 2009.<sup>3</sup>

## **2.2 Climate change policy in Victoria**

During the 1990s, the Victorian government, a Liberal party administration under the Premiership of Kennet, undertook various reforms to privatize the energy sector and to promote economic growth with little regard for environmental consequences (Jessup and Mercer 2001). While climate change was acknowledged as a policy issue with the publication in 1998 of the *Victoria’s Greenhouse Action: Responding to a Global Warming* strategy, it was regarded by some as “little more than a public relations’ exercise” (Jessop and Mercer 2001: 23). Since 1999, the Labour administration, initially under Bracks and more recently Brumby, has developed a more comprehensive approach to climate policy. The 2002 *Victorian Greenhouse Strategy* set out a range of measures to encourage the development and use of renewable energy and reduce demand for energy, including the development of energy efficiency standards for buildings so that new developments were required to attain a 5\* rating from 2005, the

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<sup>3</sup> See: <http://www.climatechange.gov.au/emissionstrading/index.html> (accessed June 2009)



promotion of GreenPower energy, support for the Cities for Climate Protection programme in regional and rural Australia, and the formation of regional partnerships between local governments to pool efforts and resources in addressing climate change, an approach which we discuss in further detail below. In 2004, the focus turned explicitly to the energy sector with the publication of *The Greenhouse Challenge for Energy*, which introduced a further suite of policies and measures, in particular stating the support of the state government for an emissions trading scheme within Australia, developing a strategy for the promotion of renewable energy so that “10 per cent of Victoria’s electricity consumption is provided by renewable energy by 2010” (State of Victoria 2004: 13), and the development of a Victorian Energy Efficiency Strategy. In 2005, the *Victorian Greenhouse Strategy Action Plan Update* was published, containing, amongst others, further support for renewable energy technologies and measures to extend programmes for community and regional partnerships, explore the possibilities of mandatory emissions reporting by large emitters, and developing work in the area of climate impacts and adaptation (State of Victoria 2005).

By 2006, some of these measures were incorporated into state legislation, with the *Victorian Renewable Energy Act 2006* establishing the “Victorian Renewable Energy Target (VRET) scheme that mandated Victoria’s consumption of electricity from renewable sources to 10% by 2016” and which entered into force at the start of 2007 (Jones 2009: 11), and the *Victorian Energy Efficiency Target Act 2007*, which sets mandatory targets for “energy savings, initially in the residential sector, and requires energy retailers to meet their own targets through energy efficiency activities, such as providing households with energy saving products and services at little or no cost”.<sup>4</sup> In addition, at the 2006 election, the Victorian Government pledged to introduce a Climate Change Bill to “ensure that actions taken on climate change are backed by legislation and protected under Victorian law.”<sup>5</sup> However, to date this has not been forthcoming. Nonetheless, during this period the Victorian government has shown itself to be relatively progressive in the field of climate policy, and has undertaken various initiatives working with other partners – through The Climate Group internationally as well as with local governments and private actors in Victoria – to address the issue. At present, the focus of action is on the recent Climate Change Green Paper published in June 2009 in response to the development of Federal government policy discussed in Section 2.1. In effect, the Green Paper signals a new approach to Victorian climate policy in which, rather than seeking to pioneer new policies and measures, the state government is instead seeking to work within the new national policy framework, and in particular the introduction of carbon pricing, heralded by the CPRS.

Despite the progress and innovation evident in the development of Victoria’s climate change strategy over the past decade, underlying dependence on fossil fuels for the generation of electricity and for key

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<sup>4</sup> See: <http://www.climatechange.vic.gov.au/Greenhouse/wcmn302.nsf/childdocs/-38DA600D396E2565CA2575BE001E7B2E-35B62606F3551EE2CA2575C30083032D?open> (accessed June 2009)

<sup>5</sup> See: <http://www.climatechange.vic.gov.au/Greenhouse/wcmn302.nsf/LinkView/AE81F366406C56E5CA2575C500093FDD63A847AC3FD0C6C9CA2575C40007A668> (accessed June 2009)

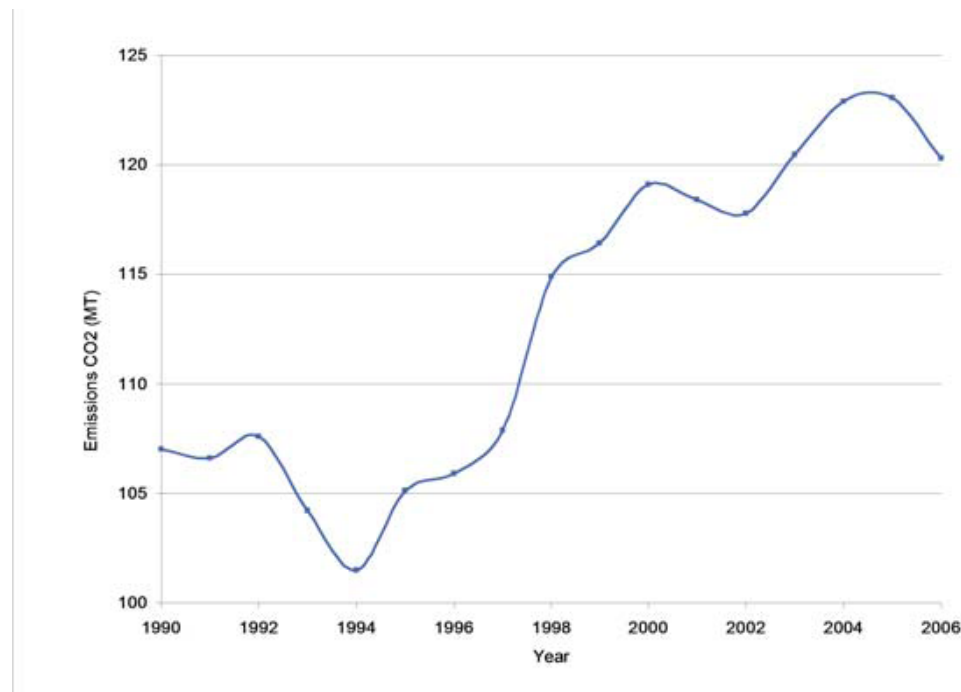
industrial sectors have continued to drive emissions of GHG upwards (Figure 1). As the recent report from the Climate Change Taskforce of the Committee for Melbourne explains:

One of the competitive advantages that has underpinned Melbourne's economic prosperity is its access to relatively low cost energy generated by the Latrobe Valley's vast brown coal reserves. As a result, Victoria generates the largest emissions nationally from stationary energy (80.5mt CO<sub>2</sub> equivalent in 2005) and carbon intensity of energy (amount of carbon burned as fossil fuel per unit of energy). The production and use of energy accounts for more than 70% of Victoria's net emissions, with electricity generation alone accounting for more than 50% of net emissions. (Climate Change Taskforce 2008: 24)

The result of this economic dependence on cheap fossil fuel energy has not only been growing GHG emissions, but a political reluctance to reduce this dependency, with continuing provision for fossil-fuel based energy infrastructure – most recently in the form of carbon capture and storage technologies – continuing to receive support at the state government level alongside new investments in renewable energy and demand management. While many of the policies adopted by the Victorian government have therefore been progressive, and provided an enabling context for local responses to climate change, continued commitment to fossil fuel infrastructures has been seen by some as unhelpful in this regard.

Figure 1: Trends in Victoria's net greenhouse gas emissions – 1990 to 2006.

Source: State of Victoria 2009: 24

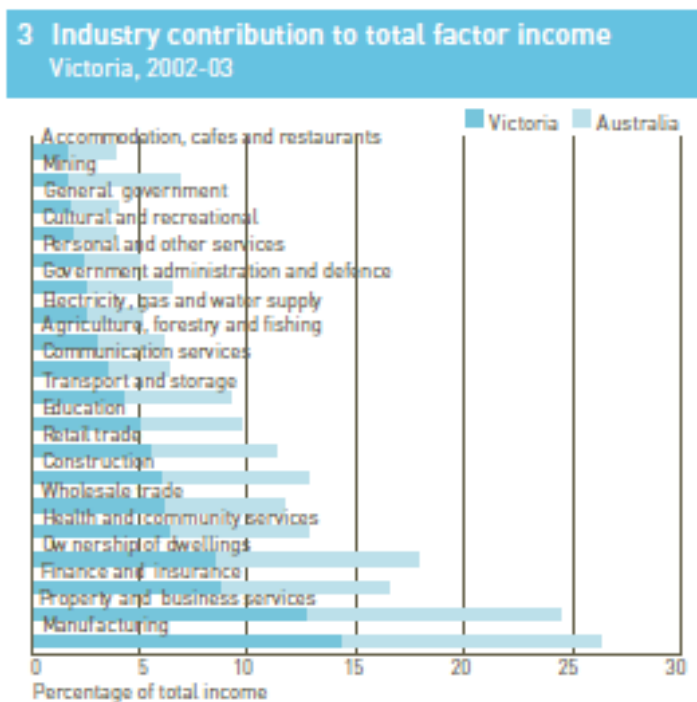


## 2.3 Metropolitan Melbourne's profile

Melbourne was founded in 1835, established as a city in 1847, and consequently became the capital of the State of Victoria. It served as the capital of the Commonwealth of Australia from its foundation in 1901 until the present day capital was established in Canberra in 1927. The Metropolitan area of Melbourne covers approximately 8,000 km<sup>2</sup> and in the 2001 census was home to 3.3 million people (now estimated to be close to 4 million), some 27% of whom speak a language other than English at home (State of Victoria 2006a)<sup>6</sup>. The Gross Regional Product of the metropolitan region is estimated at more than \$85.5 billion,<sup>7</sup> with the most important industries in terms of contribution to Melbourne's income being manufacturing and property/business services (Figure 2).

Figure 2: Industries contributing to economic development in Melbourne

Source: State of Victoria 2006b



In terms of its government, metropolitan Melbourne includes 31 local authorities (Figure 3). Local governments in Australia have traditionally been regarded as a creature of the state governments upon which their foundation and basis depends, and concerned with a limited number of functions, know proverbially as “roads, rates and rubbish” (Bulkeley and Betsill 2003: XX). However, greater direct involvement from Federal government in the form of financial assistance and a series of reforms designed to improve the efficiency and effectiveness of service delivery, as well as the self-governing status of local authorities and their democratic rationale, during the 1990s have served to change the role of local government and in particular to introduce a general competence for improving local

<sup>6</sup> See: <https://www.businessmelbourne.com.au/info.cfm?top=301&pg=2917> (accessed June 2009)

<sup>7</sup> See: <https://www.businessmelbourne.com.au/info.cfm?top=301&pg=2917> (accessed June 2009)

communities (Marshall et al. 1999). As Bulkeley and Betsill (2003: XX) suggest, although “by the 1990s, local government in Australia has established itself as a self-governing entity, its role remains dependent on the resources provided, and the requirements made, by state and federal governments.” Local governments in Melbourne are also diverse in terms of the economic resources and pressures that they face, ranging from capital city authorities where the resource base is relatively high – such as City of Melbourne – inner city authorities where business rates may be falling and the challenges of working within the existing urban infrastructure are paramount, to suburban authorities dealing with pressures of growth and development. In order to capture the diverse range of local government in metropolitan Melbourne and the ways in which this affects responses to the challenges of climate change, a group of local governments was chosen for this research that included the City of Melbourne, inner-city and suburban authorities. As mentioned above, in the mid-2000s the Victorian government sponsored the development of regional networks of local authorities working on climate change and it is on the local authorities involved in one such initiative – the Northern Alliance for Greenhouse Action (NAGA) – that this research focuses. The members of NAGA include “the Cities of Banyule, Darebin, Hume, Manningham, Melbourne, Moreland, Whittlesea, Yarra, Nillumbik Shire Council and the Moreland Energy Foundation Limited (MEFL)”<sup>8</sup> (see Figure 3), which together comprise some 25% of the population of Victoria (NAGA 2008).

**Figure 3: Local authorities in Metropolitan Melbourne.**

Source: State of Victoria 2006c

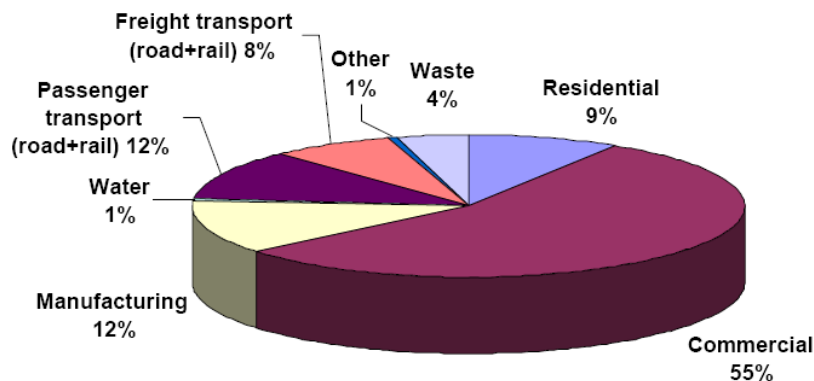


<sup>8</sup> See: <http://www.naga.org.au/naga/>

As a state, Victoria's emissions of GHG are substantial, at a total of 117.0 million tonnes more than "the total emissions of many nations, including industrialised nations with significantly higher populations such as Austria, Hungary, Portugal, Slovakia, Sweden and Switzerland" (State of Victoria 2005: 6). While figures for metropolitan Melbourne are not available, with some two-thirds of the population, the city is likely to account for a good proportion of these emissions. Emissions across the state and metropolitan area have been rising over the past decade, with the 2001 Household Utility Consumption Survey showing that "Melbourne's average household annual electricity consumption increased by 19.4% between 1996 and 2001" (State of Victoria 2006d). Furthermore, "ecological footprint analysis of Melbourne's greenhouse gas emissions from electricity shows a higher ecological footprint in the central and inner regions. While higher in the west than the east, the difference across Melbourne is quite small, with emissions ranging between 2.35-3.25% of the total" (State of Victoria 2006d). In terms of the specific case of the City of Melbourne, the emissions profile is rather different from other local authorities – where residential energy use dominates – with a large proportion of GHG emissions originating from energy use in the commercial sector, reflecting the economic make-up of the city (Figure 4). Through a combination of changes in the boundaries of the city, in-migration and growing levels of emissions per person and per employee, emissions of GHG in the City of Melbourne have increased by 59% over the period 2002 – 2008, raising particular challenges for mitigating climate change in the city.

Figure 4: Greenhouse gas emissions by sector for the City of Melbourne 2005–06.

Source: City of Melbourne 2008: 11.



#### ***2.4. The evolution of climate policy in North Metropolitan Melbourne***

While some municipalities across Melbourne had been involved in issues of energy efficiency and renewable energy during the 1980s and 1990s, it was the foundation of the Cities for Climate Protection programme in Australia in 1997/1998 that gave impetus to the direct involvement of local authorities in the city with the climate change agenda. Led by a group of councils with previous experience in energy issues and/or policy officers/politicians with particular commitment to the climate change issue, during the period 1997-2002, all of the councils involved in this study joined the CCP programme. In the wake of the 2002 *Victorian Greenhouse Strategy*, NAGA was formed as an informal network for sharing information and developing new projects amongst six of these pioneering authorities. Having completed the 'milestones' involved in the CCP programme, by the mid-2000s municipalities in the north of Metropolitan Melbourne, and in particular those who had adopted the CCP programme early on, began to develop more ambitious targets and innovative approaches. In 2002, the City of Melbourne adopted a target of reaching 'zero net emissions' by 2020, followed in 2007 by Moreland. On this basis, NAGA has recently developed a research project to ascertain the potential for achieving zero-net emissions across the region (NAGA 2008). Despite the recent recognition by the City of Melbourne in its Update of the 2002 strategy that the target of reaching 'zero net' emissions will not be realized, the policy ambition to achieve significant cuts in GHG emissions has been reiterated and appears to be spreading across the NAGA councils.

Figure 5: Climate Change policy Milestones for Metropolitan Melbourne

Milestone	Goal	Approach
1997/1998 Darebin, Manningham, Melbourne, and Moreland join Australia CCP	To reduce emissions within the council and/or community of the order of 20-30% by 2010	Milestone programme run by CCP of emissions inventories, targets, plans and implementation, along with financial assistance from Federal government
1999-2002 Banyule, Hulme, Nillumbuk, Whittlesea and Yarra join CCP Australia	To reduce emissions within the council and/or community of the order of 20-30% by 2010	Milestone programme run by CCP of emissions inventories, targets, plans and implementation, along with financial assistance from Federal government
2001 Moreland Energy Foundation Ltd. founded	To reduce greenhouse gas emissions across Moreland	A not-for-profit company established by Moreland City Council after the sale of the Brunswick Electricity Company. With core funding from the council until 2010, it runs a series of community programmes addressing GHG emissions reductions and other issues of energy poverty and security.
2002 Darebin Resource Efficiency Fund established	To provide funding for energy efficient schemes within the council	A fund designed for investments in the council buildings and facilities.

2002 Community Power scheme established	To provide access to green power products for households	A partnership between Darebin, Whitehorse and Moreland City Councils and the Moreland Energy Foundation, most recently with Origin Energy, to provide accredited green power products together with information and advice to local households
2002 Victorian Greenhouse Strategy	To develop a framework for addressing climate change across the state; to work with local governments to reduce emissions of GHG	Amongst many other measures, establishes funding for co-ordinators of regional partnerships of local authorities in Victoria.
2002 NAGA established	To achieve significant greenhouse abatement by delivering effective programs and leveraging council, community and business action	Established as an informal network between six northern municipalities in metropolitan Melbourne.
2002 City of Melbourne ZeroNet Emissions by 2020 Strategy	Aims to reduce the contribution of the City of Melbourne to GHG emissions by 2020.	Combination of measures focused on energy efficiency in the built environment, renewable energy supplies and carbon offsetting.
2005 Victorian Greenhouse Strategy Action Plan Update	To consolidate and extend climate change policy in the state, including to expand the regional partnership initiative.	Provided funding for NAGA and its expansion to the current membership.
2007 Moreland Climate Action Plan 2007-2012	Adopts a zero-net emissions target by 2020 for the council and 2030 for the community	Combination of measures including engaging the community in reducing emissions, switching to renewable energy sources, and offsetting.
2007 Commission for Melbourne Climate Change Taskforce	To assess the impacts of climate change on Melbourne, the potential for mitigation, and opportunities for Melbourne.	A coalition of eighty private and public actors commissioned and reviewed research, leading to the publication of <i>FutureMap</i> in 2008. The Taskforce has since developed a range of specific initiatives (e.g. green roofs competition, staff travel policy) and action groups (e.g. on retrofitting, clean coal technologies).
2008 City of Melbourne Zero Net Emissions by 2020 –	Aim to achieve zero-net emissions for the council by 2020, and a reduction	Combination of measures focusing on the commercial and residential sectors, passenger transport and decarbonising energy supply

Strategy Update	of 50-60% across the community	
2008 Towards Zero Net Emissions project	To quantify regional emissions and assess the options for achieving zero net emissions	Research project sponsored by the Victorian Sustainability Fund and undertaken by Arup Ltd, due to be completed in autumn 2009.
2008 Moreland Solar City initiative	To develop a sustainable community focused on reducing emissions of GHG and the development of renewable energy	A partnership between MEFL, Moreland City Council, the Brotherhood of St Lawrence, Sustainability Victoria to retrofit low income homes, redevelop a brownfield site, engage communities in reducing energy use, and establish an energy services company. One of seven solar cities projects sponsored by the Federal Government solar cities programme, it will receive AU\$ 4.9 million in funding.

In addition to the development of climate change strategies at the municipal level, key milestones in the evolution of policy in metropolitan Melbourne have involved the establishment of new institutional structures and partnerships – such as MEFL, NAGA and the Climate Change Taskforce – as well as new sources of funding – including those provided by state and federal government. Across this group of municipalities, it is therefore possible to identify four key drivers underpinning the emergence of climate change policy in the metropolitan area: the presence of key individuals in particular municipal authorities; the role of intermediary organizations in providing policy frameworks and means of linking activities across different municipalities; resources, particularly funding including both external funding from federal and state governments as well as internal schemes such as the Resource Efficiency Fund established by Darebin City Council in which financial savings generated from energy efficiency schemes are reinvested in new schemes and infrastructures which “has been in operation since 2002 and has achieved cumulative savings of around 600 tonnes a year” (Darebin City Council 2007: 26); and private sector partners. Of these factors, the importance of intermediary organizations and funding schemes cannot be underestimated. On the basis of these drivers, across metropolitan Melbourne there is evidence for a growing momentum behind the development of policies and initiatives to address climate change, although the underlying trends of growing levels of per capita and total emissions remain a significant challenge.

Figure 6: Drivers and motivations for Melbourne’s climate change policy

Driver/motivation	Examples
Critical individuals	Policy officers and political champions
Intermediary	CCP Australia, NAGA, MEFL, Climate Change Taskforce



organisations	
Resources	State and Federal government funding; internal funding mechanisms (e.g. MEFL, Darebin revolving energy fund)
Partners	e.g. Origin Energy in the Community Power scheme, Brotherhood of St Lawrence in Moreland Solar City

### 3. Climate Change Policy and Action

The drivers and motivations identified above have contributed to the development of a strong policy agenda on climate policy in the municipal authorities in north metropolitan Melbourne, primarily focused on issues of mitigation. In seeking to fulfil these strategies and their objectives, a number of goals, measures and initiatives have been put into place to reduce emissions of greenhouse gases (Research Question 1; Figure 5). Previous research suggests that municipalities deploy a range of modes, or ways, governing are deployed in cities to address climate change (Bulkeley and Kern 2006; Bulkeley et al. 2009). Four modes are particularly significant in terms of the roles that local government plays: *self-governing*, the capacity of local government to govern its own activities; *provision*, the shaping of practice through the delivery of particular forms of service and resource; *regulation*, the use of traditional forms of authority such as regulation and planning law; and *enabling*, the role of local government in facilitating, co-ordinating and encouraging action through partnership with private and voluntary sector agencies, and to various forms of community engagement. In addition, it is increasingly common to find private actors undertaking actions to address climate change in cities across the world, either independently or in partnership with other public actors (Bulkeley et al. 2009). Such private actors also engage in forms of self-regulation, the development of voluntary regulation schemes for particular sectors, the provision of services, especially through the implementation of projects, and various forms of enabling action by others, such as education campaigns and the sharing of best practice. In our previous case-studies, London and Los Angeles, we found that the actions deployed through these different modes of governing were concentrated in three main areas, and for the sake of comparison we divide our analysis here into the same categories: leadership activities; attempts to reconfigure energy infrastructures within the city; and a focus on changing the practices of individuals and corporations. Below we consider the initiatives in Figure 7 in more detail under each of these categories in order to examine the barriers and opportunities that they have encountered (Research Question 2).

Figure 7: Policy measures and initiatives in north metropolitan Melbourne

Policy initiatives (date)	Collaborating organisations	Goals and opportunities	Challenges
Internal – CH2 Building (2006)	City of Melbourne	6* Green Star Rated City of Melbourne Council House 2	Developing an inner-city site; ensuring behavioural change to maximise building design

Internal – Hulme Council Office (2007)	Hulme City Council	5* Green Star rated administrative centre	Ensuring behavioural change to maximise building design
Internal - City of Melbourne Green (2006)	City of Melbourne	Green guardians within the organisation, a Wiki interface for information exchange and ideas, and incentive for reaching internal target of 0.5% performance related pay	
Energy – Queen Victoria Market Solar Energy (2003)	City of Melbourne	The largest grid-connected solar system in the southern hemisphere, can provide electricity for 46 average homes	Financial payback is limited
Energy – Public Lighting Action Program (2006)	NAGA with funding from Victorian Government	Build capacity and awareness within NAGA local councils to improve energy efficiency of public lighting	Resistance from commercial organisations; time limited opportunity for intervention (switch over point)
Energy – Green Electricians programme (2005)	NAGA with funding from the Australian Greenhouse Office	Information sessions on climate change and energy efficiency services training for electrical contractors and related services across the NAGA region.	
Energy – Community Power	Banyule City Council, Darebin City Council, Moreland City Council and MEFL	Provision of renewable energy to householders at a discount rate for one year	Withdrawal of initial commercial partner; take-up slowing as message on availability of green power options is now widely known
Commercial – Savings in the City (2005)	City of Melbourne, Sustainability Victoria, Smart Water Fund, EC3 Global	Involvement of thirty city hotels in a milestone and reward programme to reduce energy and water use	Lack of support from industry associations who have their own voluntary green label scheme
Commercial – C60 planning amendment (2005)	City of Melbourne	Mandatory energy performance requirement of 4.5* for office developments greater than 2,500m <sup>2</sup>	Needed approval from the state government
Commercial – Building Improvement Partnership Program	City of Melbourne, Sustainable Melbourne Fund, Victorian Government	Improve energy, water and waste performance of buildings through assessment and assistance with retrofit options	Split incentives for investing in retrofitting between building owners and lease holders

	Sustainability Fund		
Commercial – energy efficiency retrofit 1200 commercial buildings (2008)	City of Melbourne, Clinton Climate Initiative	Involves approximately 5.2 million square meters of commercial office building over an eight year period to 4.5* standard. Opportunity to work with the CCI programme.	Barriers to retrofitting include split incentives and upfront capital costs. Problems of administrative capacity and capacity in the energy performance contract industry
Commercial - Vic1000 Sustainable Business Management Program	NAGA, Village Green (consultancy), Victorian Government's Sustainability Fund	Behavioural change programme for small and medium enterprises	Gathering data to provide baseline assessments and measure progress; SME is a time and resource poor sector
Domestic – energy auditing and retrofitting (2008)	City of Melbourne	Aim to develop a business case for the audit 12,000 households Facilitate retrofitting for communal areas in 75% high-rise residential developments and heating/water as appropriate and to provide a reputable point of contact for different retrofitting schemes that are available	Failure of smaller programme three years ago, challenges of co-ordinating across existing schemes and reducing up front costs to householders
Domestic – Sustainable Homes programme	Banyule City Council, Darebin CC, Whittlesea CC, with funding from Victorian Government	Programme addressing energy, water, waste, biodiversity and travel through workshops, self audits and commitments to action, and free Sustainability Starter Kits.	Sustaining the programme and following through on initial interest from householders
Domestic - Sustainability Street	NAGA with funding from Victorian Government	Northern Metropolitan Melbourne Community Greenhouse Action	Relatively small scale and impact on GHG emissions is not clear
Domestic – Greenhouse Outreach Workers	Darebin, Melbourne and Yarra, with funding from Australian Government	Attend community events and provide education about climate change, energy efficient lights and shower timers	Short term programme (February – May 2007)
Transport – decarbonising energy supply	City of Melbourne	Aim to provide low carbon or clean energy for 20% public transport system	Existing infrastructure system
Transport – cycle scheme	City of Melbourne	Integrated bike hire, facilities and infrastructure	Reliant on revenue from a proposed congestion

			charge scheme for central Melbourne over which state government has significant control
Transport – Love Living Local programme	City of Darebin and funding from Victorian Government TravelSmart	Inform communities about local service provision and encourage their use to reduce car travel	Education campaigns often faced with lack of impact on behaviour
Water – Climate Neutral Water Saving Scheme	City of Melbourne	Promotion of water saving schemes that do not contribute to increased greenhouse gas emissions	Victorian water policy focuses on the development of new forms of water supply

### 3.1 Leadership

As with the cases of London and Los Angeles, in Melbourne opportunities to provide leadership have been critical to the development of climate change policy. In particular, for a few of the authorities included in this study, notably the City of Melbourne, Darebin, Manningham and Moreland, *municipal* leadership has characterised their approach to climate policy. Municipal leadership has been demonstrated in three ways. First, by setting ambitious targets for addressing GHG emissions and undertaking early action on the issue. These four municipalities were among the first in Australia to adopt the CCP programme, and have since sought to extend their policy ambitions towards ‘zero net emissions’ targets. Second, there is a strong emphasis on ‘getting our own house in order’, of significant reductions of emissions of GHG from council operations, a leadership approach shared by all of the municipalities in this study. Third, there have been various projects to showcase or demonstrate the possibilities of acting on climate change, notably through the development of cutting edge buildings, as is the case in City of Melbourne and Hulme. For the most part, this form of leadership has been achieved through various forms of internal or self-governing, and has been an explicit rationale for taking action:

It’s always been locked in a place where we want to be seen as leaders. It amazes me at some levels is that the economic analysis behind what we’ve done is very, very poor I think. But it doesn’t seem to matter. We couldn’t show how much money we have saved in total through all of these things. We probably can’t show, I’m probably being unfair but we probably couldn’t show how much it cost us either. We know as an organization that what we’ve gained reputation ... and we know that we are making Melbourne ... a better place to be a competitive 21<sup>st</sup> century city (Interviewee, Melbourne, July 2008).

In addition to a focus on municipal leadership, there has been an emphasis on *community* leadership. This is particularly evident in Moreland, where it has been orchestrated in part through the relationship between the Council and the MEFL. This has been manifest by a particular focus on programmes to engage the community in addressing climate change, affected through the use of various enabling

modes of governing. In the case of the City of Melbourne, there has been a recent emphasis on *international* leadership, as the municipality has become part of the C40 group and the Clinton Climate Initiative. As the recent *Zero Net Emissions by 2020 – Strategy Update* (City of Melbourne 2008: 13) states, there is “growing recognition that the City of Melbourne needs to align with other like-minded climate change cities” globally. This involvement with an international coalition of cities not only provides access to information and resources, but also to the political kudos that arises as part of being part of a ‘club’ of global cities showing leadership on the issue of climate change.

Such forms of leadership are not, however, without their challenges. A first issue identified by interviewees was the challenge of working within the framework of municipal governance, where “there’s only a certain amount of money that goes around; you still have to repair the roads and sweep the streets” (Interviewee, Melbourne, July 2008) and questions are often raised as to whether municipalities should be leading on climate change issues. While climate change remains peripheral for many municipalities, as one interviewee suggested, “you’re constantly at risk of doing token changes” (Interviewee, Melbourne, July 2008). A second challenge related to the conflict between environmental and economic agendas, an issue found to be particularly pressing at the urban fringe where imperatives for economic growth and development pressures are strong, and “where councils put up barriers to development ... that extend beyond [minimum requirements] then pressure is brought to bear against ... the case for environmental protection” (Interviewee, Melbourne, July 2008). A final challenge concerned the feasibility and delivery of ambitious targets, and the need to avoid the creation of goals simply being conceived for political ends with little prospect of them being fulfilled. The dilemmas of setting realistic targets, managing expectations, and still seeming to ‘lead’ the field were evident in the discrepancy between some policy rhetoric concerning the importance of local action on climate change, the primary focus on internal emissions reductions for my councils, and growing levels of emissions in the metropolitan community.

### **3.2 Reconfiguring infrastructures**

if you look at what the cities can do there is not that much ... the city was built in the early 1900’s and we’ve got existing infrastructure, we’ve got all the problems that London has and New York, we’ve got some less benefits in terms of urban destiny perhaps. If you look at that they you say what are the choices, what are the variables? There is not that many: get your buildings right, get your infrastructure right. (Interviewee, Melbourne, July 2008)

Given the centrality of infrastructures, such as energy networks and built environments, to the ways in which energy is consumed and GHG emissions are produced, it is unsurprising to find that reshaping such systems has been one of the approaches adopted in cities to address climate change. In metropolitan Melbourne, we find that in terms of the built environment, attention has primarily been focused on municipal buildings and in particular on retrofitting energy efficiency measures together with the use of energy efficient appliances, although an important secondary area of work has been in the commercial sector. In relation to energy systems, a key issue has been street lighting, an issue with

which NAGA has been centrally concerned, and to a lesser extent the emergence of some small-scale decentralised energy generation technologies. Notably, there is little evidence of an explicit attempt to reconfigure domestic buildings in order to reduce energy consumption. In part this reflects the fact that building standards for new and renovated buildings are set at the state government level (Climate Change Taskforce 2008: 22), and in Victoria this has been increased to 5\*“including a requirement for all new stand alone dwellings to have solar-gas boosted hot water systems installed” (City of Melbourne 2008: 33), but also the tendency for approaches in this sector to be focused on behavioural change, an issue which we discuss in Section 3.3.

### ***Built environment***

Those municipalities included in this research project have undertaken various measures to develop low carbon buildings. In the municipal sector, two strategies have been adopted – new demonstration buildings and (retrofitting) energy efficient technologies. Municipal buildings have been used as demonstration projects to showcase the range of technologies that are available for addressing issues of environmental sustainability. Examples include the Council House 2 Building in the City of Melbourne and the Hulme City Council Building. In terms of the use of energy efficient technologies, in keeping with the CCP focus on monitoring emissions and meeting targets for the reduction of GHG emissions within the council, attention has been given to measuring energy use and implementing solutions that will be cost-effective in the short to medium term. One mechanism that has been used to do this is ‘Energy Performance Contracting’, where a commercial organisation undertakes energy efficiency measures on behalf of the council, guaranteeing a certain rate of return on the investment and in return for a share of the financial savings generated by the reduction in energy use. One interviewee suggested that the rise of councils looking for such measures to be implemented as part of the CCP programme was in part responsible for the growing number of Energy Performance Contracting firms operating in Melbourne. However, while this approach means that the council does not bear the capital costs of such initiatives nor the risks of them failing to produce financial savings, some have found that “variations in service levels and weather conditions make it difficult and resource intensive to verify and pursue levels of guaranteed returns. It has not proved to be of value to Council to pay a premium for this guarantee” (Darebin City Council 2007: 33). At the same time, EPC models were seen as operating at some distance from council facilities, potentially missing opportunities for reducing energy use or undertaking inappropriate measures because of a lack of detailed knowledge about council facilities and the ways in which they are used. In contrast, interviewees spoke of the importance of a detailed understanding of the ways in which energy was used within the building, and the important impact this had on the potential to reduce emissions of GHG:

it’s got a commercial kitchen at the back, with a bit 6 kW hot water boiler. Now that was just ticking away 24/7 and was only really used on the weekends. So...quite simply process of linking a time-delay switch to that – an 8 hour time-delay, so it can be used only when it’s needed, and when it’s not it just shuts down and doesn’t use that energy. And that’s just a small, just an example of probably I think, if I remember rightly, there’s about 17 similar types

of units across this precinct that are now timer controlled so they only operate during occupancy hours. And of course people don't notice the difference because of course we fire them up an hour before people get here in the morning so there's still enough hot water for a cuppa. And, taking into consideration issues like legionella bacteria you know when you've got luke-warm water and things like that, so we take that into consideration with the timing sequence (Interviewee, Melbourne, August 2008).

Such interventions have not been without contestation. A particular area of conflict for one municipality concerned setting the indoor temperature:

we set those temperatures within the Federal Govt work ...guidelines which is 19°-22° C for indoor comfort, but if you set it at the lower end of those two parameters, it's too cold... ... the same people complain, they know it's going to be the same the next day, but they don't come in and adjust themselves in any shape or form, they're wearing exactly the same clothes, which are inappropriate for an indoor environment, but that's the way they want to be. And they would rather someone else deal with the problem. And they will say: climate change is not my problem – just give me a comfortable place to work in and you deal with climate change. ... I've got a little plaque out there saying wear appropriate clothing, and this is what the temperature should be and little thermometers on the wall, but they walk straight past it... (Interviewee, Melbourne, August 2008)

As this example shows, interventions aimed at reconfiguring infrastructures and the supply and use of energy within buildings are intimately connected to issues of behavior (Foresight SEMBEP 2008), and considerations of what constitutes an appropriate level of thermal comfort. While local authorities are engaging in various forms of self-governance in seeking to reconfigure municipal infrastructures, this in turn has meant engaging individuals within the municipality into particular forms of practice at work which are open to contestation. One of the ways in which the City of Melbourne has sought to overcome such conflicts is through involving staff in the generation of ideas for energy efficiency and other environmental improvements through a green guardians scheme, and interactive Wiki and the incentive of a 0.5% performance related pay award for meeting targets in this area.

Beyond a focus on council buildings and forms of self-governing, modes of regulation and enabling have also been used to seek to make changes to the infrastructure of the commercial built environment, particularly in the City of Melbourne which contains a large commercial sector. Under the Planning and Environment Act 1987 (Victoria), the City of Melbourne introduced the C60 Planning amendment to stipulate that all new office developments over 2,500 square meters must meet an energy star performance requirement of 4.5\*. However, by international standards for energy efficient buildings this is not a very high level of performance, and their extension is heavily dependent on the state government who must approve any changes to planning regulation at the municipal level. One example of a scheme which seeks to enable change in the commercial sector is *Savings in the City*, launched by the City of Melbourne in 2005 as a partnership with leading hotels in the city to reduce waste and

improve energy and water efficiency through a programme of retrofitting buildings. It is estimated that the thirty participating hotels saved over 24,000 tonnes of GHG emissions in the first two years of the scheme (City of Melbourne 2008: 38). However, the scheme has run into difficulty in recruiting participants and in getting the industry associations involved. In part this reflects the fact that the sector already has (less rigorous) 'green' standards for hotels in place and also that "the sub-sector is comparatively difficult to influence because businesses are wary of losing their competitive edge as a result of costly retrofitting, or a perceived loss of amenity" (City of Melbourne 2008: 42).

### ***Energy Systems***

In addition to work in the built environment, in metropolitan Melbourne there is evidence that action has focused on the development of low-carbon energy infrastructures. Reflecting the tendency amongst municipalities in the city to focus on issues close to their core business and over which they have a degree of direct influence, a key issue has been public lighting. Public or street lighting represents a significant proportion of corporate emissions for municipalities in Melbourne after the built environment:

It's the second biggest by a long way – and most of the councils in Victoria would be the same. In fact it's 41% of the corporate greenhouse gas emissions from council and the irony of that is that it's 41% where buildings I think are 43%...and that 41% we have absolutely no control over. We pay for it, we...provide public lighting ... but we have no control over what technology is used and how it's maintained and offered (Interviewee, Melbourne, July 2008)

In Victoria, "the majority of public street-lights are owned and maintained by 'distributors'" (Darebin City Council 2007: 28), which include the largest energy companies in Australia. While municipalities have a duty to provide adequate public lighting and pay for its provision, they therefore have little say over how it is delivered. One of the reasons why the issue is currently high on the agenda of municipalities across Melbourne is that in several municipalities the large-scale change-over of lightbulbs, which takes place every twenty years or so, is imminent. Switching to energy efficiency bulbs could save significant levels of GHG emissions per year (estimated by one council at 4,000 tonnes a year) as well as reducing operating costs, but will have a high capital outlay up front. For this reason, some municipalities have found it difficult to argue the case for low-carbon public lighting, and have found their arguments for addressing climate change in this manner opposed by local politicians who tend to be more skeptical of climate change as an issue and primarily focused on cost concerns. This is an area in which NAGA have been particularly active, pooling expertise from across the municipalities, developing sustainable public lighting action plans for municipalities, gaining funding to undertake technical and economic studies of the feasibility of energy efficient lighting, and lobbying for change in state regulations and amongst the energy distributors. In this manner, NAGA has been able to provide a 'consistent and collective voice' on the issue, and one that is regarded as more convincing and less



imbued with the internal politics of individual councils.<sup>9</sup> However, to date its impact in terms of shaping the changeover to energy efficient public lighting is more difficult to discern, with interviewees citing the legacy of inefficient infrastructures established in an era of cheap and plentiful brown coal and the current pressures of cost as paramount in shaping the decisions taken in individual municipalities.

Outside of the arena of public lighting, there has been comparatively little discussion in Melbourne over the development of alternative systems of energy provision in the city. State and federal government programmes have provided financial and regulatory incentives for the uptake of solar hot water and photovoltaic systems by householders, such as subsidies and the inclusion of solar hot water as a requirement for reaching the required energy star ratings for new build homes [check]. However, photovoltaic and other micro-generation schemes (such as wind) remain uneconomic, and there has been relatively little promotion or uptake amongst municipalities of these technologies aside from some demonstration projects (e.g. Queen Victoria Market in the City of Melbourne). The development of feed-in tariffs that favour such technologies, allowing them to feed electricity back into the grid for financial gain, is currently under consideration and may serve to change the economics around some of these technologies. However, under current conditions interviewees stressed the need to focus on energy efficiency rather than the development of alternative technologies of energy supply. At the same time, the debate on the decentralisation of energy supply systems, or the development of co-generation schemes for heating, cooling and lighting (Combined Cooling Heat and Power) has not been significant. While some leisure centres have used co-generation schemes, where the economics of providing hot water, space heating and electricity is in favour of such approaches, a wider debate about the potential of decentralised energy generation is yet to take place, reflecting once again the legacy of an energy supply system dominated by plentiful and cheap fossil fuel resources.

### **3.3 Changing practice**

A third key feature of the approach adopted for addressing climate change in metropolitan Melbourne has been the use of various strategies, primarily in an enabling mode, to change everyday practices in order to reduce GHG emissions. There are two approaches that have been adopted: first, the development and use of data concerning energy use as an instrument to facilitate behavioural change; and second, the development of schemes for engaging communities in new forms of low-carbon practice. We review each in turn.

Amongst the municipalities and other actors involved in this research project, data, and in particular accurate data concerning energy use, GHG emissions and costs, was seen to be of key importance in facilitating behavioural change. The development of an understanding of the emissions profile and trajectory has been a key part of the CCP campaign and its five milestones for addressing climate change at the local level. Interestingly, for several of the municipalities interviewed for this study, the CCP programme was not seen as offering sufficient tools for the collection of accurate and useful data,

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<sup>9</sup> See: <http://www.naga.org.au/naga/project/152/> for more on the public lighting project at NAGA.

dependent as it is on the downscaling of emissions from regional to local levels on the use of some basic indicators. Some municipalities, including Darebin, Moreland and City of Melbourne, have developed tailor-made approaches for estimating corporate and/or community emissions. Indeed, such approaches have been critical to the development of policy approaches in these municipalities. In some cases, it seems that the lack of good quality data against which progress in addressing emissions at the community level can be tracked is acting as a significant barrier to undertaking initiatives to reduce emissions outside of the council itself (Darebin City Council 2007: 22). Elsewhere, similar approaches based on the use of data as a means of enacting behavioral change have been adopted through the development of schemes to audit household or commercial energy use as a first step towards retrofitting or other sorts of practical changes. Two programmes seeking to work with small and medium sized enterprises in Melbourne to improve environmental efficiency and create financial savings – Grown Me The Money and CarbonDown – also work on the basis of gathering data on existing resource use in order to devise action plans for reducing resource use and waste. While such approaches make intuitive sense – frequently captured in the phrase, ‘if you can’t measure it, you can’t manage it’ amongst interviewees – they also have significant drawbacks. First, data availability is a key challenge, as one of those involved with the GMTM scheme explained:

“there is an actual programme with steps that they need to go through. So they start off, they register, they give us details about their bills in the past...and that’s been a difficult thing to get information from them to start off with ... it’s difficult because if you don’t have that then you don’t really have anything at the end in terms of results, but, we’ve had, out of those 500 we’ve had 50 businesses who’ve got to the point where they’ve given us an action plan of things they’re going to do” (Interviewee, Melbourne, August 2008)

At the scale of municipal communities, data on energy consumption and use is not readily available and there are significant costs involved in getting the data from energy companies and making it ‘usable’ for local authorities. Furthermore, having the data is insufficient – there need to be mechanisms for translating this knowledge into policy and action:

“we’ve engaged a consultant ... to get our data from the electricity companies so they’re actually getting all of our data electronically and putting it into a software package and then giving it to us. And it breaks down everything from buildings, type, usage daily...all those sorts of things... but the other thing is...it’s one thing to have the data it’s another to actually use it – to have someone who actually cares about it – so we’re kind of linking these things into the sustainable buildings programme and ... KPI [key performance indicators]” (Interviewee, Melbourne, August 2008)

As this quote suggests, information alone has little impact on practice and behavioural change – rather it is the way in which it is used and by whom that matters. This distinction is clearly recognized across the local authorities involved in this research project, and indeed one central aim for these municipalities has been to create more flexible datasets that can be used in a number of ways for different purposes.

More fundamentally, however, research on the role of knowledge and data in the policy process raises questions about the extent to which significant changes are achieved through the accumulation of knowledge, while work on the drivers of behavioral change equally point to the marginal role that informing the public can have on achieving significant changes in practice (Owens 2000). Rather, data of this kind can play an important political and symbolic role in making the case for acting on climate change, on demonstrating potential economic efficiencies and in opening communication between households or businesses and local authorities. Equally, too much of a focus on the gathering of data as the first step in addressing climate change may in fact be detrimental to achieving action because it draws attention to those actions that can be accounted for (in part explaining the overwhelming focus on internal emissions reductions across municipalities in metropolitan Melbourne) and can be used by those opposed to taking action as a reason not to proceed. This suggests that while an emphasis on rigorous data collection and analysis can empower action on climate change at the local level, acting to inform policy and to make municipalities accountable for their efforts (Interviewee, Melbourne, July 2008), it can also undermine these efforts and initiatives that operate on this basis will need to proceed with caution.

Many of the initiatives aimed at securing behavior change in Melbourne, as in our other case-study cities, are based on different forms of the enabling mode of governance undertaken by municipalities. While many focus on the provision of data and information about how households and businesses can make energy improvements – such as audits, workshops, and home visits or consultations about the technical measures available – others operate on the basis of offering incentives for taking action. One example in metropolitan Melbourne is the Community Power scheme, currently a “local initiative of Darebin, Whitehorse and Moreland City Councils and the Moreland Energy Foundation, which aims to reduce community greenhouse gas emissions by increasing the uptake of GreenPower and promoting energy conservation”.<sup>10</sup> Originated by Darebin, several different municipalities in Melbourne have been involved in the scheme since its inception in 2003. Designed as a means of promoting the uptake of renewable energy, the scheme involved:

“Encourag[ing] people to buy green power and it was the soft approach – so essentially if you sign up to community power, which is endorsed by the council, the provider of that power will give you a 20% green power option at no extra cost for the first 12 months. So it’s to get you used to buying green power... after that 12 month period you’d go on to pay the normal rate” (Interviewee, Melbourne, August 2008)

Despite initial enthusiasm for the scheme, some suggest that uptake has faltered more recently, in part caused by the hiatus in the programme due to the withdrawal of the original commercial partner (AGL) and the slow process of forming a new partnership with Origin Energy, but also because the ‘message’ concerning the availability of ‘green power’ is now widespread (Interviewee, Melbourne, August 2008). The mixed success of this scheme suggests that, along with better information, economic incentives are

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<sup>10</sup> See: <http://www.communitypower.org/> (accessed June 2009)

only part of the means through which community-based action on climate change can be enabled. As some municipalities and other organizations in Melbourne recognize, creating behavioural change is a complex matter which requires multiple forms of engagement. One scheme which trying a more multi-faceted approach is the Sustainable Homes scheme, in which Banyule, Darebin and Whittlesea participate, and which involves a combination of home audits, workshops, prizes and other incentives, and seeking commitments for action on the part of householders involved (Darebin City Council 2007: 61). What is particularly notable about the programme is its focus not on energy and climate change per se, but on the broader context within which household practices are determined:

“when I first started we were still focusing on the save energy [message] and now its creating instead of conserving ... to create a sustainable home ... so it’s a more positive label. Being involved in something more exciting than just switching off lights. And I’m trying to connect people with architects, with plumbers, with the sort of professionals that they actually like access to, but cost a lot” (Interview, Melbourne, August 2008)

By seeking to engage householders with a set of aspirational practices and connecting them with professional expertise, this programme acknowledges the ways in which ‘energy’ behaviours are influenced by a range of other drivers and factors. Similarly, MEFL acknowledge that in undertaking home energy audits, they are frequently faced not with issues of data, knowledge, incentives or technologies, but with everyday practice:

When Euan Williamson from MEFL visited to make an energy audit on their small terrace house in Brunswick, he was faced with a difficult task that had nothing to do with energy saving, and all to do with customs, habits and expectations of comfort.<sup>11</sup>

Governing through enabling is therefore a complex task for municipalities, involving not only the provision of information and incentives, but also a more fundamental understanding of the ways in which energy conservation is facilitated and constrained by routines and everyday practice.

#### **4. Working together?**

Urban responses to climate change cannot be neatly contained within the boundary of the city limits or the corridors of municipal government. Rather, cities such as Melbourne are required to work together with a range of partners, with state and national government, and in the context of international policy. These interactions can provide additional barriers and opportunities for action at the city-scale (Research Question 2), as we discuss below.

##### ***4.1 Partnership: public-private and public-public co-operation***

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<sup>11</sup> See: <http://www.mefl.com.au/household/project/12/> (accessed June 2009)

Unlike some other cities included in this project, notably London, partnerships between municipal authorities and the private (corporate) sector seeking to address climate change are relatively rare in Melbourne. In part this reflects a historical lack of engagement between these two groups of actors and a continuing problem of communication where actors in the private sector perceive government (at all levels) to be rather distant and self-contained, while municipalities often regard private sector organisations as disinterested in the issues of climate change and sustainability. There are, nonetheless, some examples of emerging public-private forms of partnership within the city addressing climate change. One example is that of Community Power, discussed above. More recently, the Committee for Melbourne established a Climate Change Taskforce to assess the risks of climate change to the city and the opportunities for action. Attracting some eighty participants, representing a diverse set of private and public bodies across the city<sup>12</sup>, the Taskforce published *FutureMap: Melbourne 2030* in 2008, and has since been involved in various schemes to engage members more directly in addressing climate change. By making climate change a 'local' issue, the Committee for Melbourne found that it was possible to develop interest and focus on the issue:

"When these issues seem big and global and disconnected it's less inspiring or motivating or urgent. When they are local and connected then you get more attention and focus and we are hoping that people will get into it. In fact part of the opportunities section ... we are encouraging our members to actually get involved in things rather than just continually [lobbying] the Government for regulation changes" (Interviewee, Melbourne, August 2009).

Following the report, several working groups on issues as diverse as clean coal technologies, staff travel, green procurement and the challenges facing low-income renters have been established through which to continue the partnership and develop responses to climate change.<sup>13</sup> This suggests that public-private partnership approaches to governing climate change in Melbourne are embryonic, and, in particular in relation to the City of Melbourne where most large commercial organizations in the city are based, likely to grow over the next few years.

The relative lack of partnerships across the public/private divide does not, however, mean that partnership has been absent from the strategies deployed to govern climate change in Melbourne. A critical aspect of governing climate change in the city has been the use of 'public-public' partnerships, between municipalities and between municipal authorities and non-governmental organizations. A key organization that has orchestrated the response of local authorities in the northern metropolitan region of Melbourne is NAGA. Initiated informally as a "a group of wilful individuals" (Interviewee, Melbourne July 2008), "NAGA's founding members are the Cities of Banyule, Darebin, Hume, Moreland, Whittlesea, Nillumbik Shire Council and the Moreland Energy Foundation Limited (MEFL); in early 2006 [with funding from the Victorian Government], the Cities of Manningham, Melbourne and Yarra joined NAGA" (NAGA 2006). In contrast to the CCP programme, which while critical in

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<sup>12</sup> See: <http://www.melbourne.org.au/taskforces/project/climate-change-taskforce1/> for a list of members

<sup>13</sup> See: <http://www.melbourne.org.au/taskforces/project/climate-change-taskforce1/>

initiating city-based action on climate change was seen largely to have run its course for this particular set of local authorities, NAGA was regarded as a crucial forum for climate change work for three reasons – the exchange of ideas and information, its strategic role, and its ability to leverage additional funding for those municipalities who are involved:

“just at a really basic level, is we ... get together and we talk about everything: what’s going on, what are the big issues...so we talk about supporting...a supporting network. It’s...quite technically aware...a quite strategic...angle on it and think about what the big issues are how we’re gonna get there, what the barriers are so we pull together projects that are really meaningful to us. Then we apply to the state for funding and we’re always successful because they’re projects that are worthwhile and meaningful ...” (Interviewee, Melbourne, August, 2008).

One of the most innovative examples of partnership between the public sector and non-governmental organisations can be found in the Moreland Solar City initiative, where the municipality, MEFL, and Sustainability Victoria are working with the Brotherhood of St Lawrence (BSL), a not for profit organisation established in the 1930s to address issues of poverty. In this initiative, one part of the scheme will focus on delivering energy audits and retrofits to low-income households in Moreland. In responses to climate change at the city level, it is rare to see a focus on issues of poverty and social inclusion combined with addressing issues of energy conservation, as this project and other initiatives in which BSL is involved seek to do.<sup>14</sup> While partnership is therefore not a primary means through which governing climate change in Melbourne is taking place, there are innovative examples of both public and private forms of partnership which could set the agenda for other cities in the world.

#### ***4.2 Multilevel ambiguity: the roles of state and federal governments***

Given the history of the Australian Federal government’s response to climate change (Section 2), the relationship between local, state and federal governments on the issue has been sometimes positive, occasionally antagonistic, at other moments ambiguous, and currently in a state of some flux. With relatively little influence over the key infrastructures, economic drivers and regulatory measures that shape the provision of energy and its use within the city, municipalities recognized the important role of federal and state governments in shaping the context within which municipal policies operated, and also their key role in financing much of what has happened at the urban scale on climate change over the past decade. In general, the stance of the Rudd government towards climate change and the recent signature of the Kyoto Protocol was welcomed by those interviewed in Melbourne, but with a note of caution:

“There was quite a lot of anticipation in this country certainly from our point of view and the community point of view with the change of Federal government last November but it’s quite

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<sup>14</sup> See: <http://www.bsl.org.au/main.asp?PagelId=5390> (accessed June 2009)

different now, we sort of feel like the government made a lot of promises and they're dropping the ball a bit..." (Interviewee, Melbourne, July 2008).

On the one hand, the new approach to the international arena by the federal government was seen as the last nail in the coffin of arguments concerning the reality of climate change or of the importance of taking action on the issue, and hence welcomed by municipalities pursuing this agenda. On the other hand, there was concern about the extent to which the federal government was going to follow through on its promises and also about the ways in which this was being done. In particular, concerns were expressed about the possible introduction of an emissions trading scheme, at the time under consideration by the Garnaut Review, and its implications for local authorities. While some welcomed the move, which it was considered would increase energy prices and therefore make the case for energy efficiency clearer, others were concerned about the impact on municipal budgets and on poorer sections of the community. Equally, confusion over the government's policy in renewable energy, including how different technologies would be treated under the revised MRET scheme, and its fit with any possible emissions trading scheme were also expressed. There was a widespread feeling that the leadership on the issue of climate change that so many municipalities had been pressing for had yet to be forthcoming:

"People generally want leadership from Federal Government in this space and there is a little bit of shall we wait, shall we go, shall we wait. So there is a little bit of wait and see"  
(Interviewee, Melbourne, July 2008).

At the state government level, participants equally recognised the important role that the Victorian government had played in championing climate change in the absence of federal government leadership, in introducing enabling legislation around renewable energy and energy efficiency, and in providing funding for regional partnerships (in this case, NAGA), as well as specific programmes and schemes. Municipalities recognised their dependence on the state government in these respects, but also questioned whether state government policy was sufficiently 'joined up' internally:

"I think the State Government talks a good talk. I think they are still genuinely a bit confused ... We will need their support and we will need to work in partnership in everything that we do ... we can only achieve so much without their support. We can push them a little bit harder. It would be great if it got to a point where they were running faster than we were but we not in that state" (Interviewee, Melbourne, July 2008)

"We're having more trouble with the State government at the moment... they've just brought in a net feed-in tariff [but] they have to be less than 2kW and it's only for residential ... [and] they've just announced a new coal fired power station ...oh and they're talking about putting an 18 lane road tunnel from the east to the west...they just love roads ... there's always freeway on the go in Victoria" (Interviewee, Melbourne, August 2008).

In part, this reflects the pressure that state (and federal) government has experienced from interest groups seeking to oppose additional costs or change established ways of doing business (Bulkeley 2001a), and anticipated negative responses from the public to measures that might restrict demand for energy and mobility. For example, the introduction of mandatory 5\* standards for new residential housing attracted significant opposition from the housing industry who sought to overturn the decision through appeal to the federal government. On the other hand, it reflects the deeply ingrained nature of dependence of fossil fuels in Australia and perverse incentives to consume energy. In turn, this dependence on a fossil fuel economy in turn raises concerns at the state and federal government levels about the impact on particular sectors of the workforce and particular regions of policies to address climate change.

## **5. International climate policy and the new 'urban' global**

The third research question posed by this project relates to the significance of post-2012 climate policy for global cities, and how developments at the urban level might affect international climate policy. In Melbourne, as with our case-studies of London and Los Angeles, the international climate policy arena was seen to have little *direct* impact on climate change policy responses and the process of international negotiations, and in particular the detail of what was or was not to be included in a post-Kyoto agreement, was seen to be of little significance.

However, the *indirect* impact of international climate policy was notable. First, the response on the part of the international community to address climate change provided the main impetus for action at the municipal level among pioneer local authorities in the late 1990s and a basis for sustaining their argument that such action was both necessary and morally appropriate in the face of recalcitrance on the part of the Australian federal government. Second, as discussed above, the recent engagement on the part of the Rudd administration with the international policy process, and the suite of measures to be introduced domestically as a result of this new direction, have significant implications for municipal authorities and are leading to something of a hiatus in municipal responses as they wait for clear direction from the federal level. In this manner, both the failure of the Australian government to engage with the international policy process and its recent conversion to this cause have had significant influence over how climate change responses have developed in Melbourne.

At the same time, as we also witnessed in London and Los Angeles, in Melbourne there is a growing emphasis on the emergence of an 'urban' global arena with respect to climate change, within which cities are constructing a particular set of responses to the challenges of climate change:

“There is also recognition of the need for the City of Melbourne to align with other likeminded climate change cities. At an international level a significant number of city authorities, such as the Greater London Area, New York City and Tokyo have now developed and are implementing climate mitigation strategies that move beyond those defined within the original Zero Net 2002” (City of Melbourne 2008: 2)



For the City of Melbourne, and some of the private sector partners involved with the Climate Change Taskforce, the presence of ICLEI-Oceania, C40 and the Clinton Climate Initiative in the city are important signs of the potential role that Melbourne can play globally in addressing climate change, as well as sources of political support and leverage:

“based in Melbourne is ICLEI. We’ve had Clinton Climate initiative based here ... I think having those sort of programmes based here does illustrate our desire to get on with things ... Melbourne is one of the C40 and really the size of the city would normally preclude us from that and I think there are only a couple of city our size that are in that group” (Interviewee, Melbourne, August 2008)

Rather than being based directly on an engagement with the international process of climate change negotiations, another ‘global’ arena in which Melbourne may play key role is therefore at the heart of the municipal response to climate change. However, as attention shifts from the ICLEI CCP programme to other forms of partnership and collaboration, this is an arena in which only the City of Melbourne is an active participant, with other municipalities regarding it as something of which they were not a part and in some sense deliberately excluded. While some other municipalities had international links, these were more ad hoc and based on individuals and the exchange of experience than part of a strategic move to align urban responses to climate change globally. This raises interesting questions about how the ‘urban’ in such new global networks is being conceived, effectively in terms of the city as a ‘corporate’ space, and the implications for the vast proportion of emissions of GHG at the metropolitan scale that arise from the everyday energy and mobility practices of households across the city.

## **6. Conclusions**

The landscape of climate change responses across metropolitan Melbourne is a complex and fragmented one, dominated by the self-governing approaches of municipalities seeking to ‘get their own houses’ in order and complemented by some innovative programmes, schemes and partnerships. While municipalities have made significant inroads in terms of reducing their own GHG emissions, these remain marginal in terms of their overall effect on emissions at the metropolitan scale and evidence suggests that community-based emissions have continued to increase significantly over the past decade. There are a range of explanations for the predominant focus on the self-governing mode – including the relative authority of municipal government in the Australian federal system, a focus on a data-driven approach, a lack of resources, and the challenges encountered from powerful interest groups. Nonetheless, policy ambition in Melbourne is high, and the political commitment to ‘zero net’ emissions unusual amongst global cities. Some innovative schemes, notably those sponsored by the MEFL, are seeking to engage communities in addressing climate change, while others have engaged with the private sector, especially in the City of Melbourne. By and large, and in contrast to our other case-studies, such forms of partnership remain the exception rather than the rule. Pursuing such approaches

in the future may be one way in which municipalities in Melbourne could overcome some of the barriers to achieving significant reductions in community GHG emissions by themselves, and recent changes in federal government policy on climate change may make such partnerships more likely as private and public sector actors alike face rising energy costs and opportunities for investment in renewable energy and energy efficiency. At the same time, the continued support of fossil fuels, and decisions to develop 'high carbon' infrastructure at state and federal government levels raise questions as to whether such gains may be negated by the continuation of business as usual in the development of the energy and transport sectors.

As regards the impacts of, and influence upon, the post-2012 international climate policy framework, three conclusions from this report are particularly salient. First, the specific details of any international agreement are of less importance than its general features. In short, for Melbourne, as for the other cities studied in this research project, any agreement will be better than none. Second, any such agreement is likely to have an *indirect* but still significant impact on Melbourne's climate policy, in particular because of its importance of shaping the climate policy positions of the federal and state government and in particular through the knock-on effects of the introduction of a national emissions trading scheme. Third, Melbourne's influence on the international policy framework is limited. Though involved in the C40 network and Clinton Climate Initiative, Melbourne is in a relatively peripheral position in these networks at present and unable to exert much influence on their scope or direction. Nonetheless, their participation does much to cement the idea of such networks as 'globally' important, and in this manner may effect what takes place in other cities, and other countries, across the world with consequences for the make-up of a post-2012 framework.

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