

Climate Change Mitigation in Los Angeles, US

Heike Schroeder

**Case study prepared for
Cities and Climate Change:
Global Report on Human Settlements 2011**

Available from <http://www.unhabitat.org/grhs/2011>

Dr. Heike Schroeder is a research fellow at the Tyndall Centre for Climate Change Research and the James Martin 21st Century School in the Environmental Change Institute, University of Oxford. Her areas of interest include multilevel governance and institutions, international climate change politics and policy, cities and climate change and forest governance. She is also a member of the Scientific Steering Committee of the Earth System Governance Project under the International Human Dimensions Programme on Global Environmental Change (IHDP). Her latest publications include O.R. Young, L. A. King, and H. Schroeder, eds. (2008) *Institutions and Environmental Change* (MIT Press). Comments may be sent to the author by e-mail: heike.schroeder@ouce.ox.ac.uk.

Disclaimer: This case study is published as submitted by the consultant, and it has not been edited by the United Nations.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning delimitation of its frontiers or boundaries, or regarding its economic system or degree of development.

The analysis, conclusions and recommendations of the report do not necessarily reflect the views of the United Nations Human Settlements Programme, the Governing Council of the United Nations Human Settlements Programme or its Member States.

Climate Change Mitigation in Los Angeles, US

Heike Schroeder

1. Introduction

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 dominant locations of energy consumption and as places where vulnerability to climate change may be acute (Satterthwaite, 2008; Dodman, 2009). 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.

The City of Los Angeles provides an interesting case study given its relatively strong drivers and barriers to mitigating climate change. On the one hand, the city is challenged with high transport emissions, a high density of car ownership, urban sprawl and resistance to expanding public transportation. On the other, maintaining water and energy security into the future are high on the city's agenda and can be addressed at the same time as climate change. The strong engagement with climate change on the part of the State of California is another driver for the city of Los Angeles.

This case study is based on the analysis of policy documents, media reports and interviews with 14 representatives of the public and private sectors in Los Angeles conducted in September and October 2007. The section below provides a background for Los Angeles, including the national, state and city level contexts. Section 3 then outlines the history of climate policy in the city and provides an overview of the actions taking place as well as the opportunities and challenges associated with them. Section 4 analyzes four key drivers of change, including leadership, upgrading urban infrastructures, changing practice and partnership. Section 5 provides a short conclusion.

2. Background

2.1 National and state context

The United States ranks among the highest emitters in both, total and per capita emissions of greenhouse gases (GHGs) (Baumert et al, 2005). Between 1990 and 2007, emissions have risen by 17 per cent (USEPA, 2009). Although the US ratified the United Nations Convention on Climate Change (UNFCCC) in 1994 and signed the Kyoto Protocol in 1998, the Bush Administration withdrew from the Kyoto process in 2001 on the grounds that it is too costly and unfair given developing countries are not included in the commitments. There are a number of political, economic, geographic and cultural circumstances which have made it particularly challenging for the United States to reduce carbon dioxide emissions. For example, the politics of climate change are predominantly shaped by well-organised interest groups. The separation of powers between the legislative and executive arms of government and that the signing and ratification of international treaties are conducted by different arms of government, the President and the Senate, respectively, is a further complication. Also, the high levels of energy consumption, the large share of fossil fuels in the energy mix and the abundance of cheap coal coupled with vast distances and the social value of personal mobility compound this situation (Depledge, 2005).

The most significant policy measure taken by the federal government to date is the adoption in 2002 of an 18 per cent reduction of GHG intensity target by 2012, which is assessed to be close to a business-as-usual scenario (Bang et al, 2005; Harrison, 2007). Last year's attempt at creating a federal-level cap-and-trade system – the Lieberman-Warner Climate Security Act – failed to receive the required majority in the Senate in June 2008.¹ The Waxman-Markey Bill, officially entitled “The American Clean Energy and Security Act”, has just been passed in the House of Representatives. It addresses clean energy, energy efficiency, reducing emissions and transitioning to a clean energy economy. It does not currently include oil companies and electric utilities.²

The question whether GHGs are pollutants under the US Clean Air Act was settled by the US Supreme Court *Massachusetts v. EP* in 2007 after a protracted dispute. Although the decision does not force the US Environmental Protection Agency (USEPA) to regulate them, it does limit the justifications the Agency may give for not doing so. The Federal Government through the USEPA holds the authority over the regulation of emissions from new vehicles and pre-empts states from adopting or enforcing standards, to avoid a lack of national uniformity. Under the Clean Air Act regulations, however, California is the only authorized state to regulate vehicle emissions, while the rest of the states are free to adopt California's or the federal standards.

California, along with several other states, has pledged to implement the Kyoto Protocol's provisions at the state level and has introduced a variety of policy measures (Rabe, 2008). The 2001 California Climate Action Registry was the first of its kind to be established, and has led to the creation of the Climate Registry which, as of January 2008, serves large parts of North America in supporting voluntary, market-based and regulatory GHG emissions reporting schemes.

In addition to already existing building and appliance codes, the state has recently passed several important pieces of legislation: In 2006, it passed the California Global Warming Solutions Act (AB 32), which, through an economy-wide regulatory programme, mandates reductions in GHG emissions to 1990 levels by 2020 (equalling a 25-30 per cent reduction from current emission levels). The act includes a package of policies to be put in place by state agencies. In Governor Schwarzenegger's Executive Order S-3-05 of 2005 he establishes a reduction of GHG emissions to 2000 levels by 2010, a reduction to 1990 levels by 2020 and a reduction to 80 per cent below 1990 levels by 2050. AB 1493, also referred to as the Pavley Bill, passed in 2002, has made California the first US state to regulate carbon dioxide emissions from motor vehicles. It mandates that the California Air Resources Board (CARB) develop and implement emission caps for vehicles beginning in model year 2009. California enacted a Renewable Energies Act in 2005, which requires that 20 per cent of the electricity sold by investor-owned electric utilities in the state come from renewable sources by 2010 (SB 107 – the target year was initially 2017 and accelerated by the California Public Utilities Commission (CPUC)). It is currently under consideration to be strengthened further – possibly to 33 per cent by 2020 (CPUC, 2005). SB 1368 of 2006, the Greenhouse Gas (GHG) Emissions Performance Standard, requires the California Energy Commission (CEC) and the CPUC to set a GHG emissions standard for electricity used in California, regardless of whether it is generated in state or purchased from plants out of state. These laws taken together constitute the most ambitious and comprehensive effort to mitigate climate change presently in the United States (Hanemann, 2008).

1. See: <http://www.pewclimate.org/federal/analysis/congress/110/lieberman-warner> (accessed June 2009).

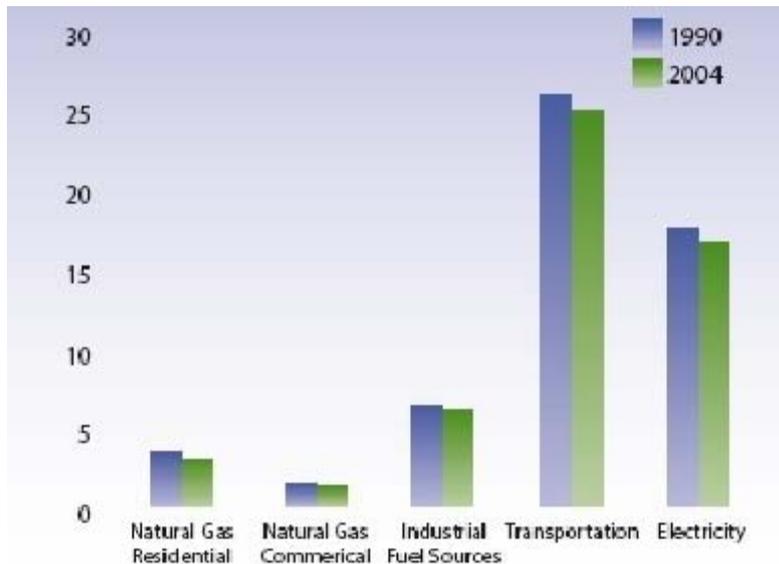
2. See: <http://www.pewclimate.org/acesa> (accessed June 2009).

2.2 Los Angeles' profile

Los Angeles is the largest city in California and the second largest in the country (after New York City) with a population of 3.85 million.³ The city spans over 465 square miles (1,204 km²)⁴ and has a relatively low population density of 7,828 inhabitants per km² (New York City's is 26,343).⁵ As of 2005, the Los Angeles Metropolitan Area had a population of 17.8 million.⁶ Because of the city's sea and air ports, which are among the largest in the world, and Los Angeles's size and continuing urban sprawl, air pollution from transportation has been a major environmental problem for the city during the last decades (City of Los Angeles, 2007). Los Angeles is the most car-populated metropolis in the world with one registered automobile for every 1.8 people.⁷ The scarcity of rainfall further exacerbates the problem as rain can clear smog to some extent.

Los Angeles's CO₂ emissions amounted to some 51.6 million metric tons in 2004, a third of which were municipal (including electricity use and generation, sea and air ports). Despite high emissions from transport due to Los Angeles's urban sprawl, the city's emissions are about two-thirds of the US average per capita emissions. This is mainly due to below-average emissions in the housing sector (heating and cooling) thanks to the region's moderate climate, but also to California's comparatively stringent building and appliance codes (e.g., Title 24). While the population of Los Angeles grew by about 10 per cent during the last fifteen years, per capita emissions decreased by around 13 per cent during this period (see Figure 1) (City of Los Angeles, 2007).

Figure 1. Los Angeles' carbon dioxide emissions (in million metric tons)



Source: City of Los Angeles, 2007, p14 (based on Environmental Affairs Department).

3. See: <http://quickfacts.census.gov/qfd/states/06/0644000.html> (accessed June 2009).

4. See: <http://www.loc.gov/exhibits/lamapped/lamapped-exhibit.html> (accessed June 2009).

5. See: http://lewis.sppsr.ucla.edu/GIScontest/OsgoogEtAl_LANYDensity_report.pdf (accessed June 2009).

6. See: http://www.scag.ca.gov/publications/pdf/2006/SOTR06/SOTR06_MetroRegions.pdf (accessed June 2009).

7. See: http://www.moveinandout.com/city_guide_for_moving_to_los_angeles_california.aspx (accessed June 2009).

The City of Los Angeles is governed by a mayor-council system with fifteen city council districts.⁸ It owns and operates its electric utility, the Los Angeles Department of Water and Power (LADWP), which is the largest publicly owned municipal utility in the United States. LADWP provides water and electricity to the entire population of Los Angeles. It is a proprietary department, which means that it does not rely on taxpayer money.⁹ The city also owns its sea and air ports and manages their on-the-ground operations. The Boards of Directors of the LADWP and Los Angeles's sea and air ports – they include Los Angeles International (LAX), LA/Ontario International (ONT), Van Nuys (VNY) and LA/Palmdale Regional (PMD) and the Port of Los Angeles – are selected by the mayor and confirmed by the 15-member City Council for a four-year term. Some major sources of GHG emissions are therefore largely controlled by the mayor.

Others, such as transport-related policies, are only marginally controllable by the city government and shared, in part, by the Los Angeles Metropolitan Area. While the city is able to address emissions from city-controlled operations, such as its own fleet, bus services, and on-the-ground operations at its sea and air ports, it can only provide incentives to reduce road traffic. These include such measures as introducing bus and carpool lanes on some highways. Because roads and public transportation are shared among cities in the Metropolitan Area, the Los Angeles County Metropolitan Transportation Authority, a public agency, is charged by the state of California to oversee regional transportation planning and public transportation for the county of Los Angeles.¹⁰

3. Climate Change Mitigation Responses in Los Angeles

3.1 The evolution of climate change policy in Los Angeles

The city has issued several climate change plans since 1995, but they were narrowly focused on corporate emissions, electricity use of the city to light its buildings, or the fuel the city used in its own fleets. During Mayor Antonio Villaraigosa's campaign in 2005 he issued a Green Plan, the first mayoral candidate in Los Angeles to do so. While addressing comprehensively the main environmental issues Los Angeles is faced with, including air pollution, water quality, industrial waste and lack of green space, it did not explicitly address climate change. Recognizing this gap, the mayor and his staff identified climate change specifically as a problem for Los Angeles upon taking office.¹¹

Four aspects turned climate change into a priority issue for the city. First, the mayor and his staff recognized that “*everything was kind of related and that the kinds of strategies that we would consider to reduce the city's greenhouse gas emissions were also things that would benefit us on all of the other environmental problems that Los Angeles faces.*”¹² A Resource Management Blueprint (Smith, 2006) and a Renewable Energy Goal (LADWP, 2005) (see Table 1 below) were already in place. Second, it was realized that climate change will likely have significant adverse effects on Los Angeles and that climate change is not just a global and future problem, but a local and high-risk one for Los Angeles. Third, interviewees reported that the mayor has ambitions to run for the office of Governor of California. Given California's leadership position on climate change, it is suggested that developing a profile as a leader on climate change would put him at an advantage during a possible run for the

8. See: <http://lacity.org/lacity/YourGovernment/CityCouncil/index.htm> (accessed June 2009).

9. See: <http://www.ladwp.com/ladwp/cms/ladwp000508.jsp> (accessed June 2009).

10. See: http://www.metro.net/about_us/default.htm (accessed June 2009).

11. Personal communication, 2007.

12. Personal communication, 2007.

governor's office. Fourth, early on in his tenure, the mayor was contacted by the City of London to become part of their C20 network, providing opportunities to further raise his profile as a leader on climate change.¹³ While measures to mitigate climate change on the whole do not seem to have direct impacts within or across levels of governance, the mayor's motivation seems to have been at least strengthened by action in other global cities and at the state level, thereby being indirectly affected by them.

In May 2007, the mayor's office published an action plan, titled "Green LA: An Action Plan to Lead the Nation in Fighting Global Warming" (City of Los Angeles, 2007). The plan includes over fifty initiatives to reduce the city's carbon footprint, incorporating several already established measures targeting air pollution, water conservation and energy decentralization, as they are also reducing GHG emissions. It was put together with the help of the coalition Green LA (which differs from the city's action plan, called Green LA). Since its creation in 2006, it has now grown to a "coalition of over 100 mainline and cutting-edge environmental and environmental justice organizations that provide vision, expertise and community support toward making Los Angeles the greenest 'Big City' in America".¹⁴ The Green LA Coalition provides "environmental guidance and expertise to the City of Los Angeles in an exciting model of collaboration between decision-makers and advocates, helping to inform City policies and programs" (Green LA, 2006).

To help with the implementation of the LA action plan, the city adopted an implementation programme called 'ClimateLA' in December 2008. It is described as a 'living document' including for now a detailed list of near-term actions to implement the LA action plan (City of Los Angeles, 2008).

Table 1. Los Angeles' climate policy milestones

Milestone	Goal	Approach
May 1999 – LADWP Green Power for a Green LA Program.	<ul style="list-style-type: none"> Reach 10 per cent of power from renewables. 	<ul style="list-style-type: none"> LADWP customers have the option to directly purchase energy produced from renewable resources.
June 2005 – RENEW LA, A Resource Management Blueprint (short for Recovering Energy, Natural resources and Economic benefit from Waste for LA).	<ul style="list-style-type: none"> Shift the city's waste disposal system to one of resource recovery. Help meet the city's goal of recovering 90 per cent or more of waste by 2025. 	<ul style="list-style-type: none"> Twenty-year waste management strategy (2005–2025). Build seven conversion technology plants to draw valuable materials (e.g. plastics) from trash to use in manufacturing, and at the same time produce renewable energy.
December 2005 – LADWP Renewable Portfolio Standard / Renewable Energy Goal.	<ul style="list-style-type: none"> Increase share of renewables to 20 per cent by 2010 and 35 per cent by 2030. 	<ul style="list-style-type: none"> LADWP is developing several energy projects to generate energy from wind, solar and landfills.
July 2006 – Million Trees LA.	<ul style="list-style-type: none"> Plant one million new trees within the city limits, but without giving a set deadline. 	<ul style="list-style-type: none"> The City of Los Angeles, community groups, businesses, and individuals are collaborating in efforts to plant and provide long-term stewardship of one million trees.

13. Personal communication, 2007.

14. See: <http://www.greenlacoalition.org/contact.htm> (accessed 17 August 2009).

Milestone	Goal	Approach
May 2007 – Green LA: An Action Plan to Lead the Nation In Fighting Global Warming.	<ul style="list-style-type: none"> Reduce city’s emissions by 35 per cent by 2030. 	<ul style="list-style-type: none"> 50+ measures (see Table 2 below).
April 2008 – Los Angeles Green Building Ordinance.	<ul style="list-style-type: none"> Require that all new projects greater than fifty units or 50,000 square feet (4645 m²) show compliance with the US Green Building Council’s LEED certified level. 	<ul style="list-style-type: none"> Provide incentives (expedite processing through all departments if LEED Silver designation is met). Improve interdepartmental coordination (through a cross-departmental Sustainability Team that meets weekly to review and revise green building policies and specific projects). Improve green building expertise (through training of staff in green building methods and policies and/or as LEED Accredited Professionals).
November 2008 – Ballot agreement on expansion of transit system.	<ul style="list-style-type: none"> Reduce emissions from transport sector. 	<ul style="list-style-type: none"> Introduce a countywide 0.5 cent sales tax to fund transportation infrastructure improvements.
December 2008 – Publication of ClimateLA: the implementation program for the GreenLA Climate Action Plan.	<ul style="list-style-type: none"> The document describes the Action Items and Milestones identified in the GreenLA Plan that will help move the City closer to its goal of reducing GHG emissions to 35 per cent below 1990 levels by the year 2030. 	<ul style="list-style-type: none"> ClimateLA primarily focuses on those measures within the control of City departments, such as changes to City operations and City programs. New measures may be added to the program as the city expands its outreach activities and works more closely with businesses and residents.
February 2009 – Begin of 2008 annual inventory compilation.	<ul style="list-style-type: none"> Inventory municipal GHG emissions. 	<ul style="list-style-type: none"> This inventory will be expanded to include all six “Kyoto” gases. Later in 2009, once community protocols are further developed, the city hopes to begin a comprehensive GHG inventory for the entire community of Los Angeles.

Source: Schroeder and Bulkeley, 2008.

The city’s Green LA action plan commits the city to reduce greenhouse gas (GHG) emissions by 35 per cent of 1990 levels by 2030. As mentioned above, the action plan is to some extent a repackaging and synthesis of already existing measures. For example, it includes a Renewable Energy Goal of 20 per cent by 2010 and 35 per cent by 2030, adopted in December 2005, which should translate into a 17.5 per cent reduction of emissions by 2030.¹⁵ To coordinate the various actions promulgated under this plan, the mayor initially created a sustainable practices cabinet and later a climate action team, which includes members of each department.¹⁶

15. The target initially went beyond the requirements under the 2005 California Renewable Energies Act, which required that 20 per cent of the electricity sold by investor-owned electric utilities in the state come from renewable sources by 2017 (SB 107 — the target year was then accelerated to 2010 by the CA Public Utilities Commission (CPUC)). It is currently under consideration to be strengthened further — possibly to 33 per cent by 2020 (CPUC, 2005).

16. Personal communication, 2007.

The transport sector, which is responsible for around half of Los Angeles’ emissions, was left largely untouched by the Green LA action plan. A major barrier was the cost of building a transit system comparable to other major cities around the world and the perception that the support base was not yet strong enough. The investment required was estimated by interviewees to be around \$25 billion. Funding for transit in California “goes to the California Transport Commission, and their mission, along with that of CALTRANS [the California Department of Transportation], is to build more roads”.¹⁷ While it is possible for cities in other states, such as Portland, Seattle, Denver, or Chicago, to share the financial burden of expanding public transit systems with the state, in California 90 per cent of the funds have to be generated locally.¹⁸ A solution has nevertheless been found: A new countywide sales tax of 0.5 cent was agreed to in the November 2008 elections to fund transportation infrastructure improvements.¹⁹ Counties in California are able to place local option sales taxes before its voters, requiring a two-thirds majority of the vote. The revenue, estimated at around \$40 billion over thirty years, would currently include both transit and road improvements.

3.2 Opportunities and challenges

Table 2 below considers the initiatives under the LA Action Plan in more detail in order to examine the opportunities and barriers they have encountered (Table 2).

Table 2. Los Angeles’ climate change policy measures and initiatives under Green LA

Focus area and policy initiatives	Collaborating organizations	Goals and opportunities	Challenges
ENERGY – Renewable Energy Goal of 20 per cent renewables by 2010 and 35 per cent renewables by 2030.	LADWP, City Council	<ul style="list-style-type: none"> • Phase out contracts with out-of-state coal-fired power plants. • Expand solar, wind, biomass and geothermal to meet increasing energy demand and address possible future energy scarcity. • Address aging infrastructure problem. 	<ul style="list-style-type: none"> • Resistance to coal phase-out from LADWP labour unions. • Environmental conflict: renewables vs. building additional transmission lines (renewable sources cannot be built along existing transmission lines).
ENERGY – Green Building Ordinance.	Department of City Planning, Mayor’s office, City Council.	<ul style="list-style-type: none"> • Promote green building practices in the private sector and reduce the city’s carbon emissions by more than 80,000 tons by 2012. 	<ul style="list-style-type: none"> • Higher initial building cost • Continuing urban sprawl (inability to increase population density and reduce commuter time without better public transportation system). • A lot more education and outreach is needed to shift practice.

17. Personal communication, 2007.
 18. Personal communication, 2007.
 19. See: <http://www.metro.net/measurer/default.asp> (accessed June 2009).

Focus area and policy initiatives	Collaborating organizations	Goals and opportunities	Challenges
WATER – Water and Wastewater Integrated Resources Plan.	LADWP, Department of Public Works.	<ul style="list-style-type: none"> Improve water, wastewater and runoff management in the city. 	<ul style="list-style-type: none"> Previous water recycling project had failed in the 1990s due to political opposition. Some public uncertainty about tap water quality. City agencies are not yet working together sufficiently.
TRANSPORTATION – Reduce carbon intensity of transportation.	City of Los Angeles, Metropolitan Transport Authority (MTA).	<ul style="list-style-type: none"> Convert 85 per cent of city fleet and 100 per cent of city refuse collection trucks, street sweepers and buses of the MTA to alternative fuels. Promote and expand transit. 	<ul style="list-style-type: none"> NIMBYism – “<i>particularly strong sense of entitlement among rich Americans</i>”.²⁰ Example: delays in expansion of rail lines because certain neighborhoods “<i>don’t like the idea of the rail and the noise in their community</i>”.
LAND USE – Build transit-oriented developments (TODs).	Department of City Planning.	<ul style="list-style-type: none"> Create a more livable city. 	<ul style="list-style-type: none"> Culture – single family homes and several cars per family is still the aspired life-style of people in Los Angeles.
WASTE – Curbside co-mingled recycling program; RENEW LA.	City of Los Angeles, City Council.	<ul style="list-style-type: none"> Recycle 70 per cent of trash by 2015. Develop facilities that will convert refuse to energy without incineration. 	<ul style="list-style-type: none"> Further improve information flows.
PORT – San Pedro Bay Ports Clean Air Action Plan (CAAP).	Ports of Long Beach and LA, USEPA, CARB, South Coast Air Quality Management District.	<ul style="list-style-type: none"> Reduce air pollution from oceangoing, cargo-handling and heavy-duty vehicles through alternative marine power. 	<ul style="list-style-type: none"> Ships need to be retrofitted Sea-borne emissions have to be regulated internationally.
AIRPORT – Green the Airports.	Los Angeles World Airports (LAWA), LADWP.	<ul style="list-style-type: none"> Fully employ the Sustainability Performance Improvement Management System as requested by City Council. Meet green building specifications, improve recycling, use alternative fuel sources, use recycled water, etc. Purchase approximately 10 per cent green power. 	<ul style="list-style-type: none"> Air-borne emissions have to be regulated internationally.

20. Personal communication, 2007.

Focus area and policy initiatives	Collaborating organizations	Goals and opportunities	Challenges
OPEN SPACE AND GREENING – Increase green space.	City of LA, Environmental Affairs Dep., LADWP, TreePeople, Friends of the LA River.	<ul style="list-style-type: none"> • Create 35 new parks by 2010.. • Revitalize the LA River as naturalized river. • Plant 1 million trees - 1999-2010: 48,000 trees or 4,000 trees per year. • Manage the city as an ecosystem. 	<ul style="list-style-type: none"> • The public needs to get involved more and become a partner in these endeavours (1 million trees can not be planted by one person alone). • City agencies are not yet working together sufficiently.
GREEN ECONOMY – Promote the green economic sector.	City of Los Angeles.	<ul style="list-style-type: none"> • Identify and promote locations for green businesses. • Collaborate with private sector to offer effective incentives for the growth of local green businesses. • Certify green businesses. 	<ul style="list-style-type: none"> • Some industries are still undermining these efforts.
Adaptation/ climate proof LA.	City Planning Commission.	<ul style="list-style-type: none"> • Improve capacity to respond to emergency through education and outreach. • Develop comprehensive plans to prepare for climate change effects on the city. 	<ul style="list-style-type: none"> • Not yet a higher priority.

4. Drivers of Change

4.1 Leadership

The impetus to provide leadership on the issue of climate change, both within the city and at national and international levels, is a characteristic of the way in which Los Angeles' approach to climate change has developed. This is evident in three ways. First, as outlined above, it has been the political leadership of Antonio Villaraigosa and his staff, addressing climate change comprehensively and placing it on the political agenda of the city. This political high-level support has led to the development of climate change strategy and ambitious targets for emissions reductions for Los Angeles and to the widespread recognition of climate change as a policy issue for the city. As noted above, motivation to do so is based on multiple drivers, including personal ambitions. It is embedded in the context of the State of California, which has adopted progressive policies on climate change, such as the Global Warming Solutions Act (AB 32).

Second, Los Angeles has drawn on business and civil society leadership in the area on climate change to further support its strategies and plans. While “*there is a lot of industry fighting and undermining*” policy,²¹ other segments of the business community have shown some leadership in terms of promoting sustainable business conferences and green business solutions. The local environmental community responded to the mayor's initial indications of prioritising the environment by forming a coalition and offering their expertise in the process of drawing up an action plan (see Section 4 below).

21. Personal communication, 2007.

Third, national and international leadership has been a key element in Los Angeles' strategy. According to an interviewee (2007), "LA's impact is far greater than just our footprint because we inspire market places around the world. We inspire people to aspire to consume and do more damage probably than any other city." Action is also motivated by the aspiration to become the largest green city in the US. Given the city's multicultural makeup, it sees itself as a potential model for cities around the world. Importantly, Los Angeles is collaborating internationally as part of the C40 network "aiming to share emergent best practices and develop a common municipal agenda to address climate change" (City of Los Angeles, 2007, p28). The C40 network, which emerged from the earlier C20 network, was announced in Los Angeles in August 2006 by the Clinton Foundation, the mayors of Los Angeles, San Francisco and London, Prime Minister Blair, President Clinton and UCLA. Los Angeles is in the C40 steering committee and "very engaged in the process".²² It displayed its leadership by hosting a workshop on airports in April 2008.

4.2 Updating urban infrastructures

A second notable driver of Los Angeles' approach to addressing climate change has been the need to address outdated and insufficient urban infrastructures, including energy, water and transport. Energy and water supply reconfigurations are being conducted by LADWP:

"The Los Angeles Department of Water and Power ... is embarking on the most ambitious transformation of any utility in America. In 2005, Mayor Villaraigosa challenged the department to accelerate plans to generate 20% of its electricity from clean, renewable sources from 2017 to 2010. Since then, LADWP has more than doubled its portfolio of renewable energy by purchasing wind, solar, and geothermal power" (City of Los Angeles, 2007, p4).

The LADWP is faced with the challenge that existing transmission lines cannot meet projected future energy demand at present, which is projected to increase by 43 per cent over the next two decades (Pasternak, 2008). The LADWP is addressing this problem mainly in two ways. First, it is raising electricity prices while at the same time introducing pricing structures to reward those who conserve energy, such as tiered, seasonal, and time-of-use pricing (Tucker, 2007). Second, it is shifting its power mix away from coal, which currently accounts for about 60 per cent of the power source, to renewable energy.²³ The question of transmission lines to transport renewable energy is an unresolved problem. Both these strategies respond to the desire on the part of the LADWP governing board to green its operations. In the words of an LADWP representative:

"One of our specific barriers to whether or not we can actually reach our greenhouse gas mandates is our ability to bring transmission, to develop adequate transmission to bring the green power in. So we are working with various groups in the environmental community to see if we can figure out corridors or some other way that allows us to build transmission, address these concerns of conservation, and habitats and even developments." ²⁴

The current emphasis is on the latter strategy: shifting the city's energy mix away from coal. There is a sense that this is the more politically viable option, even if the significant challenge of building additional transmission lines remains unresolved. The new pricing structures are too conservative to make a significant impact on GHG emissions. The state law requirement

22. Personal communication, 2007.

23. Personal communication, 2007.

24. Personal communication, 2007.

that Californian utilities supply 20 per cent of their energy from renewable sources by 2010 is another reason why emphasis on shifting power supply is currently prioritized, even if it appears that several California-based utilities may not meet California's renewable portfolio standard. Given that some of the current solar and wind farm projects are based out of state (LADWP, 2007), the intricacies of interstate commerce, which comes under the purview of the national government, further complicate the situation. An additional hurdle is that existing transmission lines cannot be used given the new projects' locations and new transmission lines would have to pass through protected areas where it becomes a question of relative gain between protecting nature and wildlife versus reducing emissions through expanding renewable energy. Furthermore, the LADWP labor union and its protection of jobs in the traditional power infrastructure have made it difficult for the city to move ahead with its restructuring.²⁵

As to the second part of the LADWP's portfolio, water, the department is faced with the challenge of securing water for a growing population in a geographic area where demand from other parts of the region is increasing and water resources are depleting. In addition, an increase in droughts is expected to further exacerbate the situation. For Los Angeles, water is a crucial issue in the context of climate change because water is imported into the city, which generates significant emissions of GHGs and negatively impacts habitat. 85 per cent of water is imported from Northern and Eastern California (the Colorado River). From Northern California, water is transported partly by a water lift over the Tehachapi Mountains, which constitutes a huge expenditure of energy (State Water Project).²⁶ According to the California Energy Commission, about 19 per cent of total electricity of all sectors combined is related to water, the biggest single source (Krebs, 2007). 20 per cent of electricity in Los Angeles is expended merely on the transportation of water into the city.²⁷ Reducing the amount of imported water to Los Angeles would therefore have a noticeable effect on its emissions level.

Previously, Los Angeles has successfully reduced its extraction of water through efficiency improvements and reuse when required to do so in response to environmental harm at Mono Lake, in the Owens Valley system and in the Eastern Sierras.²⁸ Currently, the Los Angeles action plan envisages a decrease in per capita water consumption by 20 per cent through water conservation and recycling, including capture and reuse of storm water (City of Los Angeles, 2007, p6).

Regarding transit, the city is developing several transit-oriented developments (TODs) (City of Los Angeles, 2007, p23). While relatively successful in other cities such as Portland and Washington D.C., TODs in Los Angeles are facing a number of obstacles. A study reported on by the Los Angeles Times found that TODs are not yet reducing traffic, rather they seem to increase congestion at such developments as they attract others to their urban infrastructure (shops, for example). It was found that transit is not yet efficient and built out enough for a significant shift from vehicle use to public transport. Jobs and schools are usually not close to transit lines, making it difficult for TOD residents to leave their cars behind (Bernstein and Vara-Orta, 2007).

25. Personal communication, 2007.

26. Personal communication, 2007.

27. Personal communication, 2007.

28. Personal communication, 2007.

4.3 Changing practice

The third key driver of Los Angeles's climate change policy is an emphasis on the need to change behaviour, particularly with regard to energy and water use in the built environment.

To “*help Angelenos be ‘energy misers,’*” as the Los Angeles Action Plan (City of Los Angeles, 2007, p5) puts it, measures have been adopted ranging from customer rebates and a fund to acquire energy savings to distribution of energy efficient refrigerators and compact fluorescent light bulbs. In addition, the city requires that all new buildings exceeding 50,000 square feet (4,645 m²) or fifty-plus units become LEED (Leadership in Energy and Environmental Design) certified.²⁹ As building stock turns over every eighty years in Los Angeles,³⁰ targeting new builds will slowly yield emissions reduction results. Importantly, for the housing sector, the Los Angeles Department of City Planning is developing a Green Building Program focusing on the nexus between transit and housing. To this end, the department is developing a standard of sustainability for new building projects in the city, which it intends to regularly strengthen in accordance with technological development.³¹ Many interviewees have referred to the substantial cultural barrier around transit. In the words of one:

*“There have also been efforts around reducing Los Angeles’s carbon footprint by putting housing and jobs closer to transit and by increasing housing density in the past ten years. Given the cultural barrier around connecting high-income, single-family districts to the public transportation grid, progress has been slow and the focus has been on creating residential units in commercial quarters and increasing density there. This, however, also requires developing infrastructure (schools, etc.) to encourage families to come into these areas.”*³²

Another impediment to building out Los Angeles's public transportation system is, as one interviewee (2007) noted, that “*Southern California disposes of an especially virulent dose of ‘NIMBYism’—not in my back yard attitude. There is a sense of entitlement among especially rich Americans where they feel they can act in their narrow self-interest if they want to.*” One prominent example is that plans for building a new light rail line are being held up by one particular neighbourhood community because of the associated noise.³³ Interviewees shared the impression that California-based businesses are generally more amenable to a culture of sustainability than companies coming in from out of state; this applies in particular to automobile companies. Companies are said to have adapted to California's more progressive stance: “[t]hey have learnt long ago that you don't fight it but shape it the best way you can because they cannot pick up and move from California”.³⁴

Business behaviour is targeted through a number of initiatives including a green business certification scheme, incentives for the growth of local green businesses and identification and promotion of locations for green businesses. Over fifty buildings are being designed to LEED standards in the private sector and forty-eight buildings in the public sector have already been

29. LEED is a US Green Council award, covering five areas: site; materials; energy efficiency; water consumption; and interior air quality. See: <http://www.usgbc.org/Displaypage.aspx?categoryID=19> (accessed June 2009).

30. Personal communication, 2007.

31. See: http://www.lacity.org/ead/greenbuilding/eadgreenbuilding298559789_04302009.pdf (accessed June 2009).

32. Personal communication, 2007.

33. Personal communication, 2007.

34. Personal communication, 2007.

completed (Roosevelt, 2007). The response from businesses is mixed. While there have been requests from members of the business community to the city to put in place codes and regulations on green buildings, there is also resistance to such measures from other segments of the community. As a compromise, measures have started low and are being strengthened over time to obtain the buy-in from a larger segment of commerce (Schroeder and Bulkeley, 2008).

4.4 Partnership

Partnership has been another important driver in Los Angeles' approach to climate change. First, the Green LA Coalition of the major environmental organisations in LA was contracted by the mayor to help with the details of the city's action plan, providing broad expertise and contributing new policy ideas. The Green LA Coalition is made up of over 100 environmental groups and a large part of its activity focuses on climate change. It was formed in 2006 in response to the then new mayor's commitment to addressing environmental issues in the city, expressed in several speeches over the course of his first year in office (Villaraigosa, 2005). Its Green LA Institute is the education and capacity building arm of Green LA. The Institute works with the Green LA Coalition to bring timely information and access to policy makers to the environmental community. For the first time, the issue of climate change has brought together previously opposing environmental groups, such as environmentalists and new urbanists as they realized that increased urbanisation has environmental benefits in terms of the positive effects on transport of denser housing. Second, to help with the implementation of this plan the mayor has set up a climate action team with representatives from every city department. Collaboration with the 15-member City Council, deemed to have the greenest credentials of any to date, has also been important. Third, organisations such as the International Council on Local Environmental Initiatives (ICLEI) and the Clinton Foundation have played important roles in terms of raising visibility and identifying best management practices.

Collaboration with the local community has been very important for Los Angeles for several reasons. First, ownership is shared among community members in collectively reducing the city's carbon footprint. Second, different groups within the community have different ways of communicating, thereby expanding the overall reach of the city's actions and policies. Third, there is the benefit of the snowball effect whereby the groups reached will communicate with yet other people and knowledge about climate change can spread further. In the words of a local community leader (October 2007):

“The barrier is politicians are afraid people won't support the policy changes. ... From top down it's just not working. We've got to go bottom up. And we can. Even in a massive city like this we can go to the people and move up.”

Taking action in the transport sector has especially relied on partnership. Passage of the sales tax increase to pay for investment into public transportation and highway infrastructure as discussed above was only possible through development of a strong support base among stakeholders and voters. The Green L.A. Transportation Working Group meets monthly and brings together various environmental and environmental justice organizations that work on transportation issues. In addition, public-private partnerships are emerging, such as the Public Private Partnerships for Transit Oriented Development and Affordable Housing³⁵ and the Metro Green Public-Private Partnership between The LA County Metropolitan Transportation

35. See: <http://www.its.ucla.edu/events/eventdetails.cfm?ID=110> (accessed 16 August 2009).

Authority and Chevron Energy Solutions to build one of the largest “green” transportation facilities in the country.³⁶

Through its leadership position in the C40 network, Los Angeles, together with other global cities, may be affecting the tenor of domestic climate politics in several countries which will be critical in the make-up of the post-2012 policy framework. In this manner, a non-nation state actor such as Los Angeles may be significant beyond its jurisdictional realm.

5. Conclusion

Although it is too early to evaluate the success of the particular approach Los Angeles has taken to addressing climate change, it is noteworthy that Los Angeles is acting remarkably autonomously and is focusing on the supply side of emissions which city administrators have control over. That is greening urban infrastructures: energy and water supply as well as housing and ground operations at air and sea ports. At the same time, this focus constitutes a strategy of reducing vulnerability from climate change in the future. Where measures are modest at best is in the area of conservation and transport. Partnership is largely focused locally, while interplay with state and federal policies is either not sufficiently addressed (state) or constitutes a significant barrier to further reductions (federal). While mayoral leadership has been instrumental in coordinating and pushing city-wide initiatives, Los Angeles’ mature environmental community is providing crucial social capital in implementing the city’s action plan. Impetus to act on climate change has been driven by state leadership, horizontal (C40, ICLEI) structures and individual aspirations. The case of Los Angeles illustrates how the climate change agenda can be used in the city context to create win-win situations. All measures taken by Los Angeles address local needs in one way or another, and together will reduce emissions by a about a third of 1990 levels by 2030, which greatly surpasses any trajectories for the US as a whole. It is likely that other major cities across the United States have similar low-hanging fruits and win-win opportunities within their reach, if only mayors, entrepreneurs and community leaders would see them.

References

- Bang, G., A. Tjernshaugen and S. Andresen (2005) ‘Future U.S. climate policy: international re-engagement?’ *International Studies Perspective* 6(2): 155–305
- Baumert, K., T. Herzog and J. Pershing (2006) ‘Navigating the numbers. Greenhouse gas data and international climate policy’, WRI, http://pdf.wri.org/navigating_numbers.pdf
- Bernstein, S. and F. Vara-Orta (2007) ‘Near the rails but still on the road’, *Los Angeles Times* 30 June, at A-1, <http://www.latimes.com/news/local/la-me-transit30jun30,0,4693321.story?page=3>
- CPUC (California Public Utilities Commission) (2005) ‘Implementation roadmap for energy policies’, <http://docs.cpuc.ca.gov/published/REPORT/51604.htm>
- City of Los Angeles (2007) ‘Green LA. An Action Plan to Lead the Nation In Fighting Global Warming’, http://www.lacity.org/ead/EADWeb-AQD/GreenLA_CAP_2007.pdf

36. See: http://www.metro.net/about_us/govtrela/images/green_pub_priv_partnership.pdf (accessed 16 August 2009).

- City of Los Angeles (2008) 'ClimateLA. Municipal Program Implementing the GreenLA Climate Action Plan Executive Summary', http://www.lacity.org/ead/environmentla/pdf/ClimateLA_v5.pdf
- Depledge, J. (2005) 'Against the grain: the United States and the global climate change regime', *Global Change, Peace & Security* **17**(1): 11–27
- Dodman, D. (2009) 'Blaming cities for climate change? An analysis of urban greenhouse gas emissions inventories', *Environment & Development* **21**(1): 185–201
- Green LA (2006) 'A Green Los Angeles, Recommendations to the City of Los Angeles from Green LA, a Working Group for a Just and Sustainable Future', http://www.libertyhill.org/common/publications/Greenla/GREENLA_to_print.pdf
- Hanemann, M. (2008) 'California's new greenhouse gas laws', *Review of Environmental Economics and Policy* **2**(1): 114–129
- Harrison, K. (2007) 'The road not taken: climate change policy in Canada and the United States', *Global Environmental Politics* **7**(4): 92–117
- Krebs, M. (2007) Deputy Director for Research & Development at the Cal Energy Commission, Address at the Assembly Comm. on Water, Parks, & Wildlife, Water Related Energy Use in California, <http://www.energy.ca.gov/2007publications/CEC-999-2007-008/CEC-999-2007-008.PDF>
- LADWP (Los Angeles Department of Water and Power) (2005) 'Board of Commissioners Moves to Accelerate Renewable Energy Goal to 20 per cent by 2010', *Business Wire*, 21 December, http://findarticles.com/p/articles/mi_m0EIN/is_2005_Dec_21/ai_n15955733
- LADWP (2007, February) 'Planning to meet the Challenge "Greening LA"', ppt, p8
- Pasternak, J., (2008) "'Corridors" of power are finding resistance', *Los Angeles Times*, 24 March, at A8
- Rabe, B. (2008) 'States on steroids: the intergovernmental odyssey of American climate governance', *Review of Policy Research* **25**(2): 105–128
- Roosevelt, M. (2007) 'Bid to Make Buildings Greener OK'd', *Los Angeles Times*, 16 November, at B-1
- Satterthwaite, D. (2008) 'Cities' contribution to global warming: notes on the allocation of greenhouse gas emissions', *Environment & Development* **20**(2): 3–21
- Schroeder, H. and H. Bulkeley (2008) Governing climate change post 2012 — the role of global cities-London, Tyndall Working Paper 122, Tyndall Centre for Climate Change Research, http://www.tyndall.ac.uk/publications/working_papers/twp122.pdf
- Smith, G. (2006) Renew Los Angeles, http://www.lacity.org/COUNCIL/cd12/renewla/cd12renewla243139873_08142006.pdf
- Tucker, C. (2007) 'LADWP Commissioners approve new water & electric rate actions', *LADWP News*, 2 October, <http://www.ladwpnews.com/go/doc/1475/176896/>
- USEPA (US Environmental Protection Agency) (2009) '2009 U.S. Greenhouse Gas Inventory Report', <http://epa.gov/climatechange/emissions/usinventoryreport.html>
- Villaraigosa, A. (2005) 'City of Dreams', Remarks of Los Angeles Mayor Antonio Villaraigosa, Town Hall Los Angeles, 9 November, http://www.lacity.org/mayor/myrspeeches/mayormyrspeeches280948898_11092005.pdf