



Urban Transport and Climate Change Action Plans

An Overview

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Preface

More and more cities around the world are developing dedicated Climate Action Plans to reduce Green House Gas (GHG) emissions and improve the local air quality for their inhabitants. The transport sector usually plays a crucial role in any such strategy. In many cases, transportation is the primary source of CO₂ and other GHGs, contributing up to 40 percent of the cities' total emissions. The measures initiated to reduce these negative impacts of urban transport take many forms. Increasing the share of Public Transport and non-motorised modes such as walking and cycling are core elements in many emission reduction strategies, but most often they are supplemented by other short- and long-term measures. One key feature of most actions proposed is that they provide several co-benefits: Many options not only reduce GHG emissions and improve air quality, but also enhance energy efficiency and – especially in the developing world – contribute to better transport services for the poor.

This paper summarises the measures outlined in Climate Action Plans of more than 30 cities on all continents. Its focus is on the actions proposed in the transport chapter of the relevant plans. However, in many cases other Urban Transport Planning documents (Transportation Master Plans, Land Use Plans etc.) play a key role for implementing specific measures, while the Climate Action Plans outline the more general goals. Where available and indicated, such documents were therefore included for the summaries below. No further research beyond the documents mentioned in the relevant chapter for each city has been done. While every care has been taken to provide accurate and up-to-date information, this paper does neither claim to be exhaustive, nor to cover all major cities world wide. Rather, it aims at providing the reader with an overview of the numerous options municipal governments have in reducing GHG emissions and thereby contributing to the fight against global warming. This might be especially interesting for stakeholders in newly industrialised and developing countries, where large cities face increasing challenges with regard to emissions, but also congestion and related issues.

For further information on GTZ and the Sustainable Urban Transport Project (SUTP), please see the text at the end of this paper.

Any municipal stakeholders in cities with transport-related Climate Action Plans not covered in this document are most welcome to contact us. We would be pleased to include your city in future versions of this paper!

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Africa

Johannesburg



The “Air Quality Management Plan for the City of Johannesburg (AQMP)” (2003) lists several short, medium and long term goals. One of the key points is to establish an *Inter-departmental Transport Liaison Group* to facilitate information exchange and implementation of the different measures. While the short-term measures were centred on increased vehicle emission monitoring, in 2007 an integrated vehicle emissions reduction strategy was proposed for approval by the city authorities. It builds on an improvement of the institutional context (involvement of a multi-stakeholder group, inter-departmental co-operation) and an comprehensive awareness programme on issues of air quality.

The document proposes several specific actions:

- Establishing new vehicle emission standards
- Establishing an effective transport planning and management system in order to control the number of vehicles on the road (includes establishing a BRT)
- Encourage the use of unleaded gasoline, alternative fuels (such as bio fuels), and fuel additives
- Improve tests for priority pollutants and extend inspections to Turbo Diesel and Petrol propelled vehicles
- Establishing regulations and by-laws to support the principle of “Polluter pays”. These are to be enforced by Environmental Management Inspectors (EMIs).

Though the AQMP per se is mainly geared at improving the local air quality and living conditions, several of its (medium term) measures should also contribute to a significant reduction of Green House Gas (GHG) emissions.

Link: <http://www.joburg.org.za/content/view/961/114/>

Asia

Beijing



The 11th Five Year Plan of the Beijing government was drafted with the 2008 Olympic Games in mind. In its section for environmental protection, it contains several measures in the transport sector related to a reduction of emissions and an improvement of living conditions. Most of these measures reach beyond the short-term goal of establishing a “green image” for the Olympic Games. Among the proposed actions are the following:

- Giving priority to public transportation, with an emphasis on rail transportation (metro and light rail)
- Introducing more stringent vehicle emission limits (equivalent to Euro III)
- Encouraging the use of automobiles powered by cleaner fuels, fuel cell vehicles, electricity-powered vehicles and other types of lower emission vehicle
- Converting 90% of public buses and 70% of taxis to cleaner energy by 2007
- Tightening traffic control according to different automobile exhaust levels and taking stronger measures in law enforcement
- Controlling the traffic volume on the motorway in the urban area by adequately pricing a number of parking lots in the downtown

- Banning transit vehicles from other parts of the country from entering the inner city
- Encouraging people to use public transits and bicycles

The Beijing Five Year Plan lists a relatively wide range of measures, which seem adequate to achieve a significant reduction of GHG emission, even though the document often remains a bit vague about specific actions. Not surprisingly, the Report on the work of the Beijing government for 2008 focuses on the city's achievements during hosting the Olympic Games and mentions transportation rather seldom. Nevertheless, most of the transportation and climate goals outlined in the Five Year Plan continue to be on the agenda of the government, as published in the "Main work tasks for 2009".

Link: <http://www.ebeijing.gov.cn/Government/reports/default.htm>

Hong Kong



The Environmental Protection Department (EPD) of the Hong Kong government lists the transport sector as second most important contributor to GHG emissions in the city area. To reduce vehicle emissions, several measures are envisaged:

- Further expanding and upgrading the public transport infrastructure with an emphasis on railways
- Encouraging the use of cleaner vehicles via tax incentive schemes for environment-friendly petrol private cars and commercial vehicles
- Promoting the use of bio diesel via duty-free arrangements for bio diesel as motor vehicle fuel

Especially interesting is the tax incentive scheme, as Hong Kong is one of the few cities world wide which has the opportunity to design such schemes independently from a country- or state-wide regulation. Qualified for a 30%-reduction in the First Registration Tax (FRT) are at least 40% better than the average fuel efficiency in the corresponding private car class. Vehicles, whose hydrocarbon (HCs) and nitrogen oxides (NOx) emissions don't exceed 50% of the limits in the Euro IV / Japan 2005 emission standards and whose fuel efficiency is fulfilling the requirements are certified by the EPD. The so-called "environment-friendly petrol private car qualifying standards" are scheduled to be tightened annually in the light of technological advancements.

Link: http://www.epd.gov.hk/epd/english/climate_change/transport.html

Seoul



The "Four-year Plan of the Fourth Elected City Administration" (2006-2010) contains a dedicated chapter about the improvement of the local air quality. Main goal of the administration is to improve the air quality to the levels of OECD member countries. In the transport sector, the following measures are mentioned:

- Reducing the pollution caused by Diesel vehicles. This includes replacing more than 7000 Diesel powered buses with CNG buses by 2010, and the instalment of pollution-reducing devices on older Diesel cars.
- Strengthening Public Transport with the introduction of modern buses, the extension of the BRT system and dedicated bus lanes, and several other general service improvements
- Developing a sophisticated Transport Operation and Information service for better traffic management
- Establishing Public Transportation Transit Centres to better connect different local and regional transport modes

- Providing a pleasant environment for non-motorised transport modes, e.g. improving the quality of pedestrian walkways

As many other strategies, the plan is mainly geared at local air quality improvements. Nevertheless, the measures indicated will significantly reduce GHG emissions, not at least by improving the modal split towards a larger share for Public Transport.

Link: http://english.seoul.go.kr/gover/initiatives/down/inti_4yearMasterPlan.pdf (large file)

Tokyo



In 2007, the Tokyo Metropolitan Government (TMG) published its “Climate Change Strategy - a 10-Year Project for a Carbon-Minus Tokyo”. It lists a wide range of measures, with an emphasis on industrial and household emissions. In the transport sector, relatively few actions are proposed:

- Creating rules for the utilisation of fuel-efficient automobiles in order to expand the use of hybrid cars
- Assisting voluntary activities by private companies such as Eco-Driving Campaigns

However, there are other activities of the TMG aimed at reducing vehicle emissions, some of which have been running for several years already. An example is the “*Say No to Diesel Vehicles*” campaign started in 1999. It aims at introducing more stringent standards and at replacing a large number of Diesel powered cars and trucks with LPG/CNG vehicles.

Link: <http://www2.kankyo.metro.tokyo.jp/kikaku/kikouhendouhousin/data/ClimateChangeStrategyPress.pdf>

Singapore



The city-state of Singapore has established the Energy Efficiency Programme Office (E²PO) to tackle the problem of GHG emissions via significantly improving energy efficiency. The E²PO is a multi-agency committee, in which all major government institutions are represented. In the transport sector, Singapore’s E²PO has announced the following measures and targets:

- Increasing the public transport mode share from currently 63% to over 70% in the next 10-15 years via enhancing the public transport infrastructure and services.
- Supporting the use of more fuel efficient and less polluting cars with the Green Vehicle Rebate (GVR)
- Raising consumer awareness for fuel economy in passenger vehicles with the Fuel Economy Labelling Scheme
- Continuing efforts to manage road congestion through infrastructure development, refinement of car ownership and usage restraint measures such as the Electronic Pricing (ERP) system

The Singapore approach of explicitly linking GHG emission reduction and energy efficiency clearly shows how close both issues are intertwined. A specific key feature among the measures proposed is the ability to build on the well-established ERP system, which can be a very effective instrument for regulation of private car usage.

Link: <http://app.mewr.gov.sg/web/Contents/ContentsSSS.aspx?ContId=1043>

Mumbai



Though there currently exists no explicit climate protection strategy, the Mumbai City Development Plan 2005-2025 contains a section on environment, which partly aims at improving the local air quality and thereby reducing vehicle emissions. Among the relevant measures proposed in the transport sector are the following:

- Improving fuel quality
- Extending and improving Public Transport (Railway, bus, boat) capacity and quality
- Improving traffic management, e.g. synchronizing traffic lights

The respective Urban Transportation chapter in the Development plan supplements these measures with other actions, such as improving pedestrian walkways. Especially many of the long-term measures proposed in the Urban Transport strategy might contribute to emission reduction, while some of the short-term measures currently seem oriented towards increasing capacity for motorised individual transport (e.g. building new flyovers and other road infrastructure).

Link: <http://www.mcqm.gov.in/irj/portal/anonymouse?NavigationTarget=navurl://095e1c7b9486b1423b881dce8b106978#>

Australia & Pacific

Melbourne



A new strategy for city development called "Future Melbourne" is currently (2009) discussed in public. The transport sector plays a major role in this plan, which aims improving the city's attractiveness and sustainability. Among the measures proposed in the transport field are the following:

- Increasing the capacity and quality of Public Transport
- Consolidating future metropolitan growth into existing urban centres around public transport stops
- Assuring better connection between non-motorised modes (walking, cycling) and Public Transport
- Developing an inner-city bicycle rental system comparable with the one operating in Paris
- Improving traffic/road management and safety for pedestrians and cyclists
- Promote renting a car as required instead of buying one
- Promoting the use of more efficient vehicles

The comprehensive strategy encompasses far more aspects than only environment and GHG issues, but many of the proposed measures will indeed lead to a significant reduction in emissions if implemented as planned.

Link: <http://www.futuremelbourne.com.au/wiki/view/FMPlan/S2G6Connected>

Sydney



The City of Sydney has developed a range of measures dedicated to reducing GHG emissions in Australia's biggest agglomeration. These include:

- Reducing the size of the city's vehicle fleet and switching to more efficient/hybrid cars

- Financially supporting city employees when choosing a car that emits less than 200g CO₂ per kilometre driven
- Extending Public Transport (light rail / bus)
- Developing a dedicated Road Safety Strategy, Cycle Action Plan and Pedestrian Strategy in order to raise attractiveness of non-motorised transport
- Developing a car-sharing system

The role of non-motorised transport is especially noteworthy. The Cycle Strategy and Action Plan published in 2007 is a very comprehensive document. The monetary support for buying a car with less than 200g CO₂ emissions per km, on the other hand, doesn't seem to reflect the current state-of-the-art in emission standards for private cars.

Link: <http://www.cityofsydney.nsw.gov.au/Environment/GreenhouseAndAirQuality/WhattheCityisdoing/Transport.asp>

Auckland



New Zealand's largest city has initiated the campaign "Keeping Auckland's Future Bright" to develop a framework for a sustainable future, outlining fields of action for the coming 20 years. The city has identified the transport sector as the biggest single contributor to GHG emissions, which might not at least be due to the fact that Auckland has one of the highest rates for car ownership in the world. It is envisaged to achieve a combined modal share of Public Transport and non-motorised modes of 30% until 2026, leaving 70% to motorised individual transport. The climate strategy is supplemented by the Sustainable Transport Plan developed by the Auckland Regional Transport Authority. Measures outlined therein include *inter alia*:

- Encouraging walking and cycling, especially for short trips to school, to work etc., and with special regard to improve walking/cycling conditions in low-income areas
- Making cycling and walking safer, e.g. via speed restrictions for cars
- Developing travel plans for schools, businesses and neighbourhoods, with the overall goal to reduce car usage
- Integrating land use and transport planning in a way that reduces the need for private vehicle travel and significantly increases the amount of travel made by passenger transport, walking and cycling
- Establishing dedicated HOV (High Occupancy Vehicle) and bus lanes

Auckland's comprehensive transport and GHG reduction strategy contains a relatively wide range of measures. The city seems determined to stop and even reverse the past car-oriented development strategies.

Link: <http://www.aucklandcity.govt.nz/council/documents/bright/default.asp>

Europe

Frankfurt/Main



Air quality and GHG emissions have long been an issue in the Rhein-Main area in the centre of Germany. The 2005 "Air quality plan for the Rhein-Main Agglomeration Area" as well as several other action plans issued by the City of Frankfurt and the Environmental Ministry of the State of Hessen contain a range of measures to achieve a significant reduction of vehicle emissions and an improvement of living conditions. Selected instruments and actions include:

- Strengthening Public Transport via improvements in quality and service as well as extensions of the existing network
- Introducing bans on certain categories of vehicles (e.g. trucks) on several streets
- Promoting and supporting cycling and walking
- Reducing the need for travelling by including transport aspects in land use planning (e.g. for new residential areas)
- Extending speed restrictions and paid parking areas
- Public Awareness campaigns, including in schools
- Establishing a Low Emission Zone (LEZ) in the city centre

The last point (also known as “Umweltzone”) is an instrument currently used in a growing number of German cities. It includes a ban on vehicles not fulfilling requirements concerning particulate matter (PM) emission. Especially older Diesel cars and trucks will be banned from entering inner cities if not equipped with a particulate matter reduction device. The ban will be enforced in two steps starting in 2010 and 2012 respectively.

Link: http://www.frankfurt.de/sixcms/media.php/738/aktionsplan_ffm_2008_end.585953.pdf

Hamburg



The city has developed the comprehensive “Hamburg Climate Action Policy 2007-2012”, covering a wide range of issues. In the transport sector, a large number of measures is proposed, though some are still in an early planning and evaluation phase. Selected actions are as follows:

- Improving quality of Public Transport, especially via extended subway operating hours
- Introducing Diesel hybrid buses and taxis
- Increasing the appeal of cycling by improving the infrastructure, offering cycle carrying facilities in public transport, establishing a bike rental system etc.
- Improving conditions for pedestrians
- Improving traffic management for motorised individual transport
- Evaluating a city toll, increased parking fees and the introduction of a Low Emission Zone
- Developing a range of Public Awareness and promotion/information campaigns
- Investing in transport infrastructure, e.g. more efficient street lighting

As with many climate action plans, one of the most important overall goals in Hamburg is to achieve GHG emission reductions via a more favourable modal split. All in all, the measures outlined in the policy seem well designed to significantly reduce emissions.

Link: <http://www.klima.hamburg.de/index.php?id=verkehr>

Munich



The capital of the State of Bavaria has established a climate alliance (“München für Klimaschutz”), bringing together more than 60 local and regional public and private stakeholders. The overall target is a 50%-reduction of CO₂ emissions by 2030 (base year 1990). In the transport sector, the focus of measures proposed so far is on public awareness and information:

- Improving attractiveness and information about car sharing
- Developing an information campaign on combination of different transport modes (motorised/non-motorised)
- Developing concepts for climate-friendly travel to and from sights in Munich and beyond

- Integrating a CO2 calculator in route planning
- Considering conversion of car parking to bicycle parking facilities at selected subway stations

More measures are likely to be developed in the coming years. Moreover, environmental and climate aspects are included in several other municipal and regional programs/plans. As in most other large and medium German cities, Munich has introduced a LEZ in the inner city. Together with other cities and communities in the region, Munich has also developed a concept for smart urban planning ("Siedlungsentwicklung und Mobilität"). One of the key issues is to develop new residential and commercial areas around existing Public Transport facilities.

Link: <http://www.muenchenfuerklimaschutz.de/cms/>

Brussels



The capital of Belgium has started the „Bruxell'air” campaign to encourage its citizens to give up their private cars. Residents who turn in the license plates of their cars (or even scrap them) are rewarded with one or a combination of several available bonuses:

- A one-year ticket for Public Transport in the Brussels area
- A one-year subscription to the local car sharing system Cambio
- A training course for safe cycling in the city and an amount of EUR 470 to purchase one or more new bicycles and accessories

Moreover, the city also actively promotes the nationwide program which offers tax reductions when purchasing an environmentally friendly car (emitting less than 115g CO2 per km).

Link: <http://www.prime-bruxellair.be/homepage.php>

Copenhagen



In its ambitious "Vision 2015" published in 2007, the Danish capital aims at becoming the world's eco-metropole. The key issue within the transport sector is to foster non-motorised transport. Accordingly, the main goals and measures are:

- Increasing the share of people going to work by bike from currently 36% to 50%
- Reaching this target via improvements in infrastructure (e.g. cycle lanes and parking facilities) and awareness campaigns
- Thereby also improving safety for cyclists (envisaged reduction of the number of seriously injured cyclists per year by 50%)
- Improving the quality of Public Transport as second-best alternative to cycling
- Establishing an Environment / Low Emission Zone
- Working towards introduction of congestion charging and environmentally friendly vehicles

While the measures outlined in the climate-dedicated "Vision 2015" statement are heavily biased towards improving conditions for cyclists, the city's Municipal Plan and Agenda 21 Plan also contain other, more broad-based actions to reduce vehicle emissions.

Link: <http://www3.kk.dk/Borger/ByOgTrafik.aspx>

London



The city has developed a very comprehensive Climate Action Plan. In the chapter on ground based transport (the plan also covers aviation), the plan outlines measures to be taken along three broad targets: Changing the way Londoners travel, operating vehicles more efficiently and promoting the uptake of lower-carbon infrastructure, vehicle and fuel types. Among the key actions are the following:

- Improving Public Transport, with an emphasis on the Underground and (light) railway services
- Further enhancing cycling infrastructure in London, and increasing awareness and safety for cycling/cyclists
- Increasing walking by 10 per cent until 2015, via improvements in infrastructure and information (e.g. maps)
- Extending Travel Demand Management (TDM), e.g. travel plans for school and work, information campaigns etc.
- Extending and modifying the congestion charging scheme
- Promoting fuel-efficient motoring in London, linked to national eco-driving campaigns. The action is targeted at private persons as well as businesses and public actors (bus/train operators)
- Promoting the uptake of lower-carbon infrastructure, vehicle and fuel types for private as well as commercial and public use

The measures outlined above represent only a small part of the actions proposed in the Climate Action Plan. Together with the measures planned to reduce GHG emissions in other areas such as domestic consumption etc., London has developed one of the most comprehensive strategies worldwide.

Link: http://www.london.gov.uk/mayor/environment/climate-change/docs/ccap_fullreport.pdf

Madrid



The Spanish capital published its “Plan for the Sustainable Use of Energy and Climate Change Prevention” in June 2008. Comprising more than 340 pages, the detailed plan not only indicates measures to be taken to reduce GHG emissions, but also contains detailed statistics on current energy consumption and a range of future scenarios. All goals developed in the plan are to be achieved until 2012. Among the actions proposed in the transport sector are:

- Drawing up a comprehensive Urban Mobility Plan, in co-ordination with other relevant Urban Planning documentation and with several main goals such as fostering public and non-motorised transport
- Promoting alternative fuels such as bio fuels, LNG, LPG or electricity and supporting the establishment of a corresponding supply network
- Raising awareness among drivers to consider environmental aspects in purchasing new vehicles
- Setting up a Car-Sharing system
- Limiting the number of parking spaces in commercial areas
- Annual campaigns to analyse energy consumption and GHG emissions by the municipal vehicle fleet, as well as corresponding eco-driving training for municipal employees

The measures proposed seem adequate to achieve a significant emission reduction. Especially the Urban Mobility Plan currently under development seems promising, as it may be the basis for a climate friendly long-term city development.

Stockholm



Stockholm's "Action Programme Against Greenhouse Gases" has been adopted in 2003. Many of the actions proposed or already implemented are within the transport sector:

- Establishing a Road Information Centre for better traffic flow
- Increasing capacity and quality of Public Transport, with the overall goal of increasing public transport's market share from 48% to 55%
- Introducing a large number of clean vehicles and mopeds to the fleet of municipal vehicles
- Promoting cycling via a wide range of campaigns and programs
- Increasing compliance with speed limits, and introduce further speed limits in the city area
- Promoting eco-driving at companies and driving schools
- Increasing the share of Biofuel added to Diesel and petrol
- Offering companies and private individuals a subsidy of 30 percent of the extra costs when buying clean vehicles and informing the public about the positive impact of driving clean vehicles
- Introducing environmental/congestion charges aimed at reducing congestion and environmental impact from road traffic

As a special feature of Stockholm's action plan, for every single measure proposed the corresponding short- and long-term CO₂ reductions are estimated and published.

Link: http://www.stockholm.se/PageFiles/86676/Stockholm_ActionProgramme_against_Greenhouse_Gases_2002.pdf

Vienna



The Austrian capital initiated a Climate Protection Program as early as 1999. Its goals are mirrored in the 2003 Transportation Master Plan and the 2005 City Development plan. The numerous measures to be taken cover a wide range of fields, from Public Transport to Urban Planning. One of the major goals is to increase the modal share of Public Transport from currently 37% to 43% and the share of non-motorised transport from 26% to 32%. Among the measures proposed to reach this target are the following:

- Reducing travel needs with smart urban planning (e.g. better combination of residential areas and necessary facilities for shopping and other services)
- Improving conditions for cyclists and pedestrians and overall attractiveness of the inner city with the creation of parks, relevant infrastructure (e.g. cycle lanes), extended speed limits for cars and limited parking supply
- Improving the quality of Public Transport with additional stops and stations, better reliability, dedicated bus lanes and better information facilities
- Support car sharing and Car Pooling projects
- Increase public awareness with information campaigns, including mobility management training in businesses and schools
- Offering eco-driving training to municipal employees
- Acquiring fuel efficient vehicles for the municipal fleet
- Consequently accounting for external costs of the different transport modes and thereby raising awareness for total mobility costs

The City of Vienna hopes that the Climate Protection Program will lead to a reduction of transport-induced CO₂ emissions in the range of five percent per person by 2010.

Link: <http://www.wien.gv.at/umwelt/klimaschutz/klip/mobilitaet/index.htm>

North America

Boulder



The Boulder (Colorado) City Council approved the Climate Action Plan (CAP) in June 2006. The CAP identifies three overall strategies to reduce transportation sector GHG emissions: reduce vehicle miles (VMT), increase the use of bio fuels, and increase the aggregate fuel economy of vehicles in Boulder. Actions proposed include:

- Implementing the new Transportation Master Plan (TMP), which aims at reducing congestion and enhancing travel options
- Developing an Individualised Marketing Campaign to facilitate increased use of alternative transportation modes
- Educating residents on driving habits and vehicle maintenance tips to increase fuel economy, as well as assist them with information on available incentives and rebates when purchasing a fuel efficient car
- Increasing supply and use of biofuels (Biodiesel and Ethanol)

Main goal of the measures outlined in the CAP is to cut Boulder's GHG emissions by 22% until 2012.

Link: <http://www.beclimatesmart.com/content/documents/CAP.pdf>

Chicago



The Chicago (Illinois) Climate Action Plan lists measures in five different fields of action, transportation being one of them. The following transport-related actions and goals are envisaged:

- Improving Public Transport (for example with an extensive BRT system) with the overall target to increase ridership by 30%
- Transit-oriented city/community development
- Doubling the current number of walking and cycling trips with dedicated Bike and Pedestrian Plans
- Increasing efficiency for car travel, e.g. with car sharing and Pooling schemes, also in co-operation with businesses
- Increasing the number of Hybrid and other fuel efficient vehicles in the municipal fleet
- Reducing emissions on Chicago O'Hare Int'l Airport (e.g. improved traffic control for less engine idling)

The City of Chicago profits from the fact that it already maintains the second-largest transit system in the United States. With the measure outlines above, it hopes to significantly reduce GHG emissions in the transport sector, which currently make up around 21% of the city's total emissions.

Link: <http://www.chicagoclimateaction.org/>

Denver



The City of Denver (Colorado) launched the "Greenprint Denver" agenda in mid-2006. The overall goal is to cut GHG emissions per capita by 10% until 2012 (baseline 1990). Selected

actions proposed by the “Greenprint Denver” Advisory Council in the transport sector – which currently contributes 30% of total GHG emissions in the city – include:

- Working with industries and businesses to encourage use of alternative commuting modes (non-motorised, Car Pool etc.)
- Encouraging the purchase of certified carbon offsets for travelling (car and airline)
- Adopting policies and incentives to centre future city growth around mass transit hubs
- Promoting and fostering alternative transport modes (e.g. Hybrid, but also Mass Transit and non-motorised)

The first measures have already been successfully implemented. The number of city employees using Public Transport for commuting, for example, has already been raised by more than 30%. New Transportation and Land Use Planning guidelines have been developed. Significantly reducing GHG emissions in the transport sector will require determined actions by the city, which saw a steadily increasing rate of transport-related GHG emissions per capita since 1990, not at least due to the increased share of light trucks/SUVs.

Link: <http://www.greenprintdenver.org/about/reports.php>

Houston



The fourth largest city in the United States, which currently counts more than 140 million vehicle miles travelled within the city boundaries per day, published an Emission Reduction Plan in mid-2008. Its scope in the transport sector is limited to measures affecting the municipal vehicle fleet and comprises the following main goals, supplemented by actions proposed in the “Green Houston” program:

- Replacing older vehicles with modern, more fuel efficient cars and trucks
- Introducing Hybrid vehicles and other new technology
- Working with businesses to shift a part of daily commuting to before or after peak-time commute hours
- Supporting cleaner technologies, e.g. Hybrid cabs

Although the measures outlined in the above mentioned programs might not be exhaustive, it seems that the actions currently envisaged are very narrow in scope and not adequate to achieve a significant reduction in transport GHG emissions.

Link: <http://www.greenhoustontx.gov>

Los Angeles



The City of Los Angeles (California) has initiated a range of actions intended to reduce GHG emissions in the transport sector. Among them are the following:

- Increasing the use of fuel efficient and CNG/LPG-powered vehicles in the municipal fleet
- Promoting bicycle use, e.g. by improving infrastructure and facilitating bicycle transport in buses
- Improving Public Transport options

There may exist other programs and projects, but the information concerning targets for GHG emission reductions in the transport sector remain rather less specific.

Link: http://www.lacity.org/ead/environmentla/2_airtrans.html

New York



Transportation plays an important role in New York's PlaNYC, which outlines a comprehensive strategy for a more sustainable future. The following key actions are proposed:

- Extending quality and coverage of the existing rail transit network
- Introducing and further extending Bus Rapid Transit (BRT) schemes, along with dedicated bus lanes and other improvements
- Promoting alternative transport modes such as cycling (e.g. with installation of several hundred miles of bike lanes) and ferry boats
- Initiating a pilot project on congestion pricing in the CBD area
- Creating an integrated Traffic Management System

According to the 2008 progress report, the majority of actions is already being implemented. An exception is the congestion pricing project. After having been approved by the New York city council, the measure was stopped by State legislature. It remains to be seen whether this project can be implemented at a later point of time. The decision taken by the State seriously endangers New York's future Public Transport projects, as revenues originating from congestion pricing had already been included in the city's financing plans.

Link: <http://www.nyc.gov/html/planyc2030/html/plan/transportation.shtml>

Montreal



The City of Montreal adopted its « Premier plan stratégique de développement durable de la collectivité montréalaise » in 2005. Reducing GHG emissions is one of the primary targets of the strategy, and the transport sector plays an important role for achieving this goal. In the current implementation phase (2007-2009), the actions proposed for transportation include the following:

- Reducing vehicle emissions from idling engines by introducing new laws that e.g. prohibit idling for more than three minutes for a stopped vehicle, coupled with efforts to raise awareness about the issue in the general public
- Strict enforcement of regulations on illegal parking in the city centre, as well as developing a new parking concept which aims at making commuting by car in the CBD less attractive
- Further improving conditions for cycling
- Introducing a car sharing system
- Improving attractiveness of Public Transport and non-motorised transport for travel to and from work and school/university
- Purchasing fuel-efficient vehicles for the municipal fleet

The above measures are not exhaustive and supplemented by targets and actions outlined in the "Plan de transport" and "Plan de urbanisme", with the latter focusing on urban planning issues including the commitment to concentrate city growth around existing or projected Public Transport facilities.

Link: http://ville.montreal.qc.ca/portal/page?_pageid=736,4732962&_dad=portal&_schema=PORTAL

Ottawa



The Canadian capital initiated the "Air Quality and Climate Change Management Plan" in 2004. The overall goal is to reduce emissions by 20% compared to the 1990 baseline until 2012. The transport sector is identified as the largest source of emissions in Ottawa,

contributing around 40% of the total. Accordingly, a wide range of measures aims at reducing emissions especially from private transportation:

- Shaping development patterns to support transportation goals (compact and transit friendly);
- Implementing TDM measures (reduce automobile dependency)
- Investing in new infrastructure and services (walking, cycling, and transit capacity and service)
- Investing in a “Rapid transit network”;
- Incorporating a “Transportation system management”, which includes improved signal systems, intersection improvements and queue jumper for buses
- Instituting an “Intelligent transport system” (highway monitoring and signalling)
- Using transportation models to forecast and improve transit flow

The measures are closely linked with the Ottawa Transport Master Plan, which contains detailed actions. One of the key goals is to increase the overall modal share of Public Transport from currently 17% to 30% until 2012, with more modest growth in the share for NMT (walking from 9.6% to 10%, cycling 1.7% to 3%)

Link: http://www.ottawa.ca/city_services/planningzoning/2020/air/air_cc_mgt_plan_en.pdf

Toronto



The transport sector plays a key role in the city’s efforts to reduce GHG emissions. Actions proposed fall in the following four broad categories:

- Promoting walking, with the establishment of a dedicated Walking Strategy, investments in infrastructure and the “Active and Safe Routes to Schools” program
- Promoting cycling, with the development of the Toronto Bike Plan, improvements such as dedicated bike lanes and parking facilities and several accompanying marketing/awareness programs
- Making Public Transit more efficient and eco-friendly, e.g. with Hybrid buses, Biofuel usage and the evaluation of dedicated bus lanes
- Reducing emissions from cars and trucks, e.g. with the Idling Control Law, increased use of Hybrid and CNG vehicles in the municipal fleet and several public awareness measures

It may be noteworthy that, together with other Canadian stakeholders, the Toronto municipal government actively supports the development of a new, more climate and energy efficiency-oriented National Transport Strategy.

Link: <http://www.toronto.ca/environment/transportation.htm>

http://www.toronto.ca/mayor_miller/bg_transit.htm

Vancouver



The city adopted the “Corporate Climate Change Action Plan” in 2003, soon followed by the “Community Climate Change Action Plan” in 2005. These strategies have since been supplemented by several transport-related documents and plans. Among the measures proposed or implemented to reduce GHG emissions from transportation are the following:

- Reducing emissions from the municipal vehicle fleet (e.g. increased use of Biofuel and fuel-efficient cars)
- Fostering non-motorised transport, e.g. via improvements in infrastructure such as bike lanes and pedestrian/cyclist crossing signals

- Co-operating with numerous local businesses and organisations to engage the public about climate change and specific actions they can take to reduce emissions
- Enforcing a by-law on engine idling
- Promoting the use of Hybrid and other fuel-efficient cars, e.g. in co-operation with taxi associations and with parking discounts for low-consumption private vehicles
- Significantly expanding the capacity of transit service, which is currently stretched to its limits
- Supporting a further expansion of car sharing

As in many other cities, Vancouver's Climate Change Action Plans are closely linked to standard transport planning documents, which describe the actions to be taken in more detail.

Link: <http://vancouver.ca/sustainability/documents/Progress2007.pdf>

Latin & South America

Mexico City



The Mexican capital has drafted a Climate Action Local Strategy (ELAC by its Spanish acronym), thereby becoming the first local authority in Mexico to develop such a document. It features the following measures in the transport sector:

- Extending the scope of the long-running "Hoy no circula" program, which restricts usage of certain groups of vehicles on one day of the week
- Converting minibuses to CNG, and replacing a large number of such low-capacity vehicles with new, larger buses
- Replacing old taxis with more fuel-efficient ones
- Extending Public Transport (BRT, bus, tram) and evaluating financing options such as revenues from Emission Trading (proposal submitted for the "Metrobus" project)
- Improving infrastructure for cycling
- Establishing and extending pedestrian areas, especially in the historic city centre
- Gradually introducing a obligatory bus service to schools, thereby banning private transportation of students

Other more general activities include raising public awareness, especially with regard to behaviour towards non-motorised traffic (pedestrians, cyclists). The ELAC formulates important first steps to reduce transport GHG emissions, and features innovative proposals such as the introduction of emission trading as a means of financing for public transport projects.

Link: http://www.sma.df.gob.mx/sma/links/download/archivos/paccm_summary.pdf

http://www.sma.df.gob.mx/cclimatico/principal.php?op=acciones01_a

São Paulo



The city initiated a Climate Action Plan in 2008. In the chapter on « Estratégias de Mitigação e adaptação », the transport sector plays a prominent role. Among the actions proposed are the following:

- Introduction of sophisticated traffic guidance systems to reduce congestion and thereby fuel consumption
- Establishing multi-modal transshipment centres to facilitate goods flow
- Restricting access to the inner city for private vehicles
- Improving the quality of Public Transport (Rail, metro, trolley bus)
- Promoting the use of non-motorised transport and improving conditions especially for cyclists
- Establishing dedicated bus and HOV lanes
- Establishing and enforcing emission limits for vehicles in co-operation with the relevant government agencies
- Introducing smart land use principles, in order to reduce travel demand and promote a more dense city development

The measures outlined above seem adequate so achieve a significant reduction of GHG emissions. Combined with the actions to be taken in several other fields such renewable energies etc., the city hopes to achieve a 30%-reduction in emissions by 2012.

Link: <http://www.iclei.org/index.php?id=8594>

Summary of the measures outlined in the Climate Action Plans

The tables below summarise the measures proposed in the above discussed Climate Action Plans and divide them into 16 different categories. Please note:

The measures indicated below are those which are explicitly listed in the relevant Urban Transport / Climate Action Plans of the cities covered here. This list might not be exhaustive in cases where specific measures are not mentioned separately, but rather summarised in more general terms. Measures only formulated in standard, not climate/environment-related Urban Transport Planning documents may also be missing, as these documents were not the primary scope of research for this paper.

(✓) indicates a measure currently only evaluated or in a very early planning stage

Summary of the measures outlined in the Climate Action Plans

Instruments		Africa	Asia						Australia & Pacific			Europe					
		Johannesburg	Beijing	Hong Kong	Seoul	Tokyo	Singapore	Mumbai	Melbourne	Sydney	Auckland	Frankfurt (Main)	Hamburg	Munich	Brussels	Copenhagen	London
Planning	Land Use Planning	✓			✓		✓		✓		✓			✓			
	Public Transport	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Non-Motorised Modes		✓		✓		✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Regulatory	Physical restraint Measures																
	Traffic management Measures	✓	✓		✓		✓	✓	✓	✓		✓	✓				✓
	Regulation of Parking Supply		✓					✓			(✓)	✓		✓			
	Low Emission Zone		✓									✓	✓	✓		✓	
	Speed Restrictions										✓	✓					
Economic	Road Pricing						✓				(✓)		(✓)			(✓)	✓
	Tax Incentives			✓			✓										
	Parking Pricing		✓								(✓)	✓	(✓)				
Information	Public Awareness Campaigns	✓	✓			✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	Stakeholder conferences	✓				✓					✓		✓				✓
	Driver Training / Eco Driving					✓			✓								✓
Tech-nology	Cleaner Technology	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓				(✓)	✓
Research	Emission monitoring, Establishing a reliable database	✓			✓												

Summary of the measures outlined in the Climate Action Plans (continued)

Instruments		Europe (continued)			North America										Latin & South America	
		Madrid	Stockholm	Vienna	Boulder	Chicago	Denver	Houston	Los Angeles	New York	Montreal	Ottawa	Toronto	vancouver	Mexico City	Sao Paulo
Planning	Land Use Panning	✓		✓	(✓)	✓	✓			✓	✓	✓				✓
	Public Transport	(✓)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
	Non-Motorised Modes	(✓)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓
Regulatory	Physical restraint Measures														✓	✓
	Traffic management Measures		✓	✓				✓		✓	✓	✓				✓
	Regulation of Parking Supply	✓		✓						✓	✓	✓				
	Low Emission Zone															
	Speed Restrictions		✓	✓							✓					
Economic	Road Pricing		✓							(✓)						
	Fuel Tax Incentives															
	Parking Pricing										✓	✓				
Information	Public Awareness Campaigns	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
	Stakeholder conferences	✓		✓				✓	✓				✓			
	Driver Training / Eco Driving	✓	✓	✓	✓											
Tech-nology	Cleaner Technology	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓
Research	Emission monitoring, Establishing a reliable database				✓			✓	✓		✓					

GTZ – Sustainable Urban Transport Project (SUTP)

Based on more than 25 years of practical experiences, GTZ hosts the “Sustainable Transport: A Sourcebook for Policy-Makers in Developing Cities” (www.sutp.org) with a wealth of information and knowledge on appropriate solutions, inter alia on tackling climate change in the transport sector. Through training and advisory services, decision makers in the transport sector are better informed about transport emissions and their impact on our climate. This may, for example, lead to improved urban transport systems, less traffic and better alternatives to using cars or motorised two-wheelers, which are responsible for the lion share of transport fuel emissions. A win-win-situation on the local and global levels, as transport operators and users may save on fuel and in turn reduce emissions. In a nutshell: Smarter mobility means more fresh air for people and less GHG pressure on our climate.

The flagship publication “Sustainable Transport: a Sourcebook for policy-makers in Developing Cities” compiles most international practices and provides access to numerous other resources. Materials are complemented by training courses targeted to policymakers, planners or engineers in cities, regional entities and on governmental level.

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For more information on our work, please visit:

www.sutp.org
www.gtz.de/fuelprices
www.gtz.de/transport



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