



CASE STUDY 43

3.6 Public transport & city planning

There is an obvious link between reduced vehicular travel and reduced fossil fuel use and therefore greenhouse gas (GHG) emissions. Local governments need to vigorously support a shift from private to public and non-motorized transport for daily commuters. In cities where a significant percentage of commuters walk, traffic calming measures aimed at reducing traffic speed and protection of pedestrians and cyclists are vital.

Urban form has a direct impact on energy use – and on GHG emissions. The development of compact, mixed-use neighbourhoods increases energy efficiencies, as do the increasing of densities around transport nodes and activity spines. These approaches to city planning also reduce infrastructure and service delivery costs.

Mass transit is at the heart of any smart growth policy, because it allows people to get from home to work in the most efficient, least environmentally-harmful way possible. Mass transit in the form of buses or rail can save energy, reduce pollution, reduce the need for parking, alleviate congestion, and provide economical transportation alternatives. In many congested cities using mass transit can also be faster than driving a car. One public transit system, bus rapid transit, has proven to be both cost efficient and popular with riders. In these systems, buses run on a dedicated lane separated from traffic, with its own timed traffic signals. Allowing buses to bypass car traffic congestion dramatically speeds up bus travel, and makes buses highly competitive with private cars for commuters.

Cities can also run buses on bio-diesel. Local governments might even consider starting a citywide waste vegetable oil collection service to run the buses. Bio diesel has many downsides however if it is made with edible food crops such as maize or soya. When fuels are manufactured from grains and other staple crops it can push up prices of food and thus impact most on the poor. The production of feedstock for biofuels production is often also be water intensive and bring other problems associated with mono-culture farming.

As cities encourage downtown, transit-friendly development, they should also try to limit aggressive suburban sprawl. Limiting sprawl helps cities conserve energy and resources by decreasing commute times and thus improving air quality and community health. Finally, managing sprawl helps to keep central city residents closer to labour markets, which has overall benefits to the urban economy.



Mexico City bus by travellingred/flickr.com

Bus Rapid Transit System reduces air pollution, carbon emissions, accidents and travel time Mexico City, Mexico

The transportation sector is the primary source of emissions in Mexico City. In 2000 the city generated 51 million tonnes of CO₂. Of this total, the transportation sector accounted for 37%. As transportation is also the largest source of air pollution emissions, many of the measures undertaken by the city focus on vehicle and other transport improvements.

In 2002 EMBARQ, The World Resources Institute's Centre for Sustainable Transport, initiated a partnership with the Government of Mexico City and the Centro de Transporte Sustentable de Mexico (CTS-Mexico) to develop the 20-kilometer bus rapid transit system. Mexico City's Bus Rapid Transit system, MetroBus, was officially opened to the public in June 2005. It transports an average of 260,000 passengers a day during the week through 36 stations on the city's longest street.

The system has replaced 350 older minibuses with 97 brand new articulated diesel buses that have eliminated 35,000 tonnes of GHG emissions, and reduced passenger exposure to tailpipe emissions by 23-59%.

The system has also managed to reduce travel time by an average of 33% as well as decrease accidents by 30%. Newly elected mayor Marcelo Ebrard and his administration are considering ten more MetroBus lines to be initiated.

Website: 1) www.df.gob.mx

2) www.metrobus.df.gob.mx/web.pdf

CASE STUDY 44

Putting commuters on the TransMilenio saves energy

Bogotá, Colombia

Fifteen years ago the Colombian capital Bogotá suffered from year heavy traffic congestion, no rail, no formal bus system and no plan for changes. The use of private cars was a major cause of congestion and air pollution. Although approximately 71% of motorised person trips were made by bus, 95% of road space was used by private cars, which transported only 19% of the population. By the end of the 1990s, a new Bus Rapid Transit (BRT) system, named TransMilenio was designed and partially implemented to solve these large inefficiencies of mass transit in Bogotá. TransMilenio was launched in 2000 with the first phase comprising 40 km of exclusive bus ways, 57 bus stations, 305 km of roads for feeder buses, 29 plazas and sidewalks, and a control centre.

One important factor in the success of TransMilenio has been the city government's strong leadership with careful design and planning. Under the leadership of then mayor, Enrique Penalosa, Bogotá was transformed into a leading model for innovative, efficient and accessible transportation networks worldwide. This leadership has combined with the mobilisation of necessary funds, state-of-the-art technologies adopted to run the system, the establishment of a good management company, a sound investment in infrastructure, and an efficient single fare pricing system.

By 2015, TransMilenio will have 22 lines and 6000 articulated buses providing five million trips per day. In addition to exclusive busways, the City of Bogotá has 230km of bike lanes with plans to increase this to 350km expanded side walks and a 17km pedestrian zone. Among the travel demand management (TDM) measures instituted are forbidding private cars to operate in Bogotá central business district during the morning and evening peak. Parking fees were increased by 100% and fuel taxes were increased by 20%. A key promotion measure is "car free day" held once a year on a week day and car-free Sundays on particular roads.

The TransMilenio public transport system has become the first mass transit system in the world to be considered a clean development mechanism (CDM) in accordance with the Kyoto Protocol. The UN Framework Convention on Climate Change (UNFCCC) has approved Andean Development Corporation CAF's methodology to consider the TransMilenio scheme as having a CDM component. This means that it is officially accepted that the TransMilenio system reduces the emission of greenhouse gases because of its greater efficiency in transporting passengers and due to the partial substitution of private means of transport by high quality public services. The UNFCCC-approved methodology presented by CAF and TransMilenio is applicable to other mass public transport systems in Colombia, such as the MIO in Cali, Transcaribe in Cartagena, Transmetro in Barranquilla and Megabus in Pereira. It could also be applied to similar transport systems in other countries.

Website: www.transmilenio.gov.co/transmilenio/home_english.htm

Source: Ward, S. & Mahomed, L. 2003. *Energising South African Cities and Towns – a local government guide to sustainable energy planning*. SEA

CASE STUDY 45



Kisumu City by Victor O' / flickr.com

Urban mobility plans

Kisumu, Kenya

Following a City Consultation held in August 2004, the Kisumu City Council in collaboration with Sustainable Cities Programme (SCP), ITDG, IHE-UNESCO, and the various stakeholders finalised an Environmental Profile and developed a city-wide urban mobility strategy that will provide a framework for area-specific action plans for selected hotspots. This is done under a new component of the SCP Programme, The Sustainable Urban Mobility (SUM) initiative.

One of these action plans involve making improvements to the main arterial road in Kisumu, Jomo Kenyatta Highway, to (1) increase the comfort, efficiency and safety of boda-boda bicycle taxi operations, (2) increase the efficiency of matatu mini-bus operations, and (3) to increase the safety of pedestrians. The Jomo Kenyatta highway traverses in the SW-NE direction and forms the division and backbone of the internal road network within the Kisumu Central Business District (CBD).

Improvements that were most beneficial to pedestrians included covered boda-boda waiting areas at regular intervals, and raised zebra crossings to allow for safer crossings. The SUM initiative is aimed at strengthening the technical knowledge of local authorities and their partners in the area of low cost mobility (walking and cycling) and to institutionalise it through the SCP/ Environmental Planning and Management process.

Source: UN Habitat Sustainable Cities Programme, Sustainable Urban Mobility Component

CASE STUDY 46

Assistance to purchase bicycles

Lima, Peru

In 1990, the Municipality of Lima set up a micro-credit programme to help low income citizens purchase bicycles. The programme, 'Programma de Transporte Popular de Vehiculos No Motorizados', is scheduled to extend to the year 2020.

The programme was developed in harmony with the city's Transport and Infrastructure, and Urban Development Plans. The main objectives of the programme are to:

- increase bicycle use as a complementary or alternative means of transport;
- reduce transport costs for low income groups by facilitating access to bicycles;
- reduce automotive environmental pollution and improve health; and
- provide safe, convenient and direct non – motorised transport (NMT) infrastructure.

Public transportation, costs about US\$ 25 per month, workers earning US\$ 200 per month can see their income effectively rise by 8% during the repayment period and by more than 12% once the loan is paid off. Supported by a World Bank loan, current activities include construction of bicycle lanes, provision of credit facilities for bicycle purchase by the poor, reviews of traffic regulations to include NMT, and bicycle promotion and educational campaigns for all road users. Local institutional capacity has been strengthened and the city's NMT office is developing a Bikeway Design Manual meeting country-specific requirements.

Website: www.ibike.org/library/america.htm

Additional Source: Alternative Urban Futures: Planning for Sustainable Development in Cities and Cities Turning to Bicycles to Cut Costs, Pollution and Crime, WorldWatch Institute, 1998

CASE STUDY 47



Velib' bikes, Paris by the noggin_nogged/lickr.com

Public bicycle rental programme

Paris, France

In July 2007, the city of Paris launched a new self-service "bicycle transit system" called Velib'. Parisians and visitors alike will be able to pick up and drop off bicycles throughout the city at 750 locations – offering a total of 10,648 bikes. By 2008, there will be a 'Velib' station approximately every 250m for a total of 1,451 locations and 20,600 bikes.

In order to use the system, users need to take out a subscription, which allows the subscriber an unlimited number of rentals. Subscriptions can be purchased by the day, week or year, at a price of, respectively, US\$1,5, US\$8, or US\$45. With a subscription, bike rental is free for the first half hour of every individual trip, and then costs one to US\$6 for each subsequent 30-minute period. The increasing price scale is intended to keep the bikes in circulation.

Velib' is part of a wide-ranging plan drawn up by Paris Mayor Bertrand Delanoë to encourage residents to leave their cars at home and reduce both the pollution and the heavy traffic congestion that often affects the city's broad boulevards. The system is owned and operated by the city authorities and financed by the JCDecaux advertising corporation, in return for Paris signing over the income from a substantial tranche of on-street advertising.

Website: <http://en.wikipedia.org/wiki/V%C3%Aglib'>

Source: Paris Set for Bike-Share Scheme to Cut Congestion, Planet Ark, June 2007.

CASE STUDY 48

Reducing vehicular volume and GHG emissions

Baguio City, Philippines

Pollution from motor vehicles accounts for 62% of Baguio City's annual GHG emissions. In recent years, smog and the high particulate matter content of the city's air have threatened not only the health of the city's populace but also its main source of income – tourism.

Aside from the 23,803 motor vehicles registered in the city, some vehicles registered in neighbouring municipalities also operate within the city perimeter. In 2002, road density was recorded at 1.25 km/1000population. This is far below the 3.9km/1000population road density standard set by the National Economic and Development Authority.

As a result of this, in 2003 Baguio City aimed to reduce vehicular volume within their central business district by 20% through a number coding scheme. While government vehicles are allowed to pass through this district at all times, vehicles that are privately-owned and public utility vehicles are designated one day off every week from Monday through Friday, for a 12-hour period on specific routes. The last digit of the plate number determines the day off schedule.

This practice has resulted in reducing the city's GHG emissions by 9%, and saving 7.5 million litres of fuel annually.

Website: https://www.iclei.org/fileadmin/user_upload/documents/SEA/CCP_Projects/Baguio.pdf

CASE STUDY 49

Pedestrian Ordinance

Busan, Korea

The city of Busan has a civic ordinance that establishes a safe and comfortable walking environment by providing for the guarantee of pedestrian rights. Some of these rights include: the right to a safe and comfortable pedestrian environment, and the right to actively participate in the development of improvements.

A pedestrian improvement plan is established every five years, along with an annual operational plan. The plan includes planned improvements, the establishment and expansion of pedestrian corridors, a review of current operations, operating costs and suggested financial resources.

Source: Ordinance on the Guarantee of Pedestrian Rights and Improving Environment for Pedestrians, City of Busan.

CASE STUDY 50



Masdar World Future Energy Summit & Renewable Carbon Free Exhibition
by Arend Kuester/flickr.com

Zero-Carbon Masdar

Masdar, United Arab Emirates

The Emirate of Abu Dhabi, capital of the United Arab Emirates, has taken a bold decision to invest in a long-term strategic development programme for alternative energy and sustainable energy technologies.

In April 2006, Abu Dhabi launched Masdar, a multi-faceted, multi-billion dollar investment project in renewable and alternative energy and clean technology. Masdar is helping to explore, develop and commercialise such future energy sources, including solar and hydrogen power. In 2008, the building of Masdar City is to begin – this is to be the world's first zero-carbon, zero-waste, car-free city, which will eventually be home to 1,500 businesses and 50,000 residents.

The development will be an integrated six square kilometre energy, science and technology community that will be car free, with a compact network of streets that will encourage walking and complemented by a personalised rapid transit system. Surrounding land will contain, wind, photovoltaic farms, research fields and plantations, enabling the city to be entirely self-sustaining.

Website: www.masdaruae.com