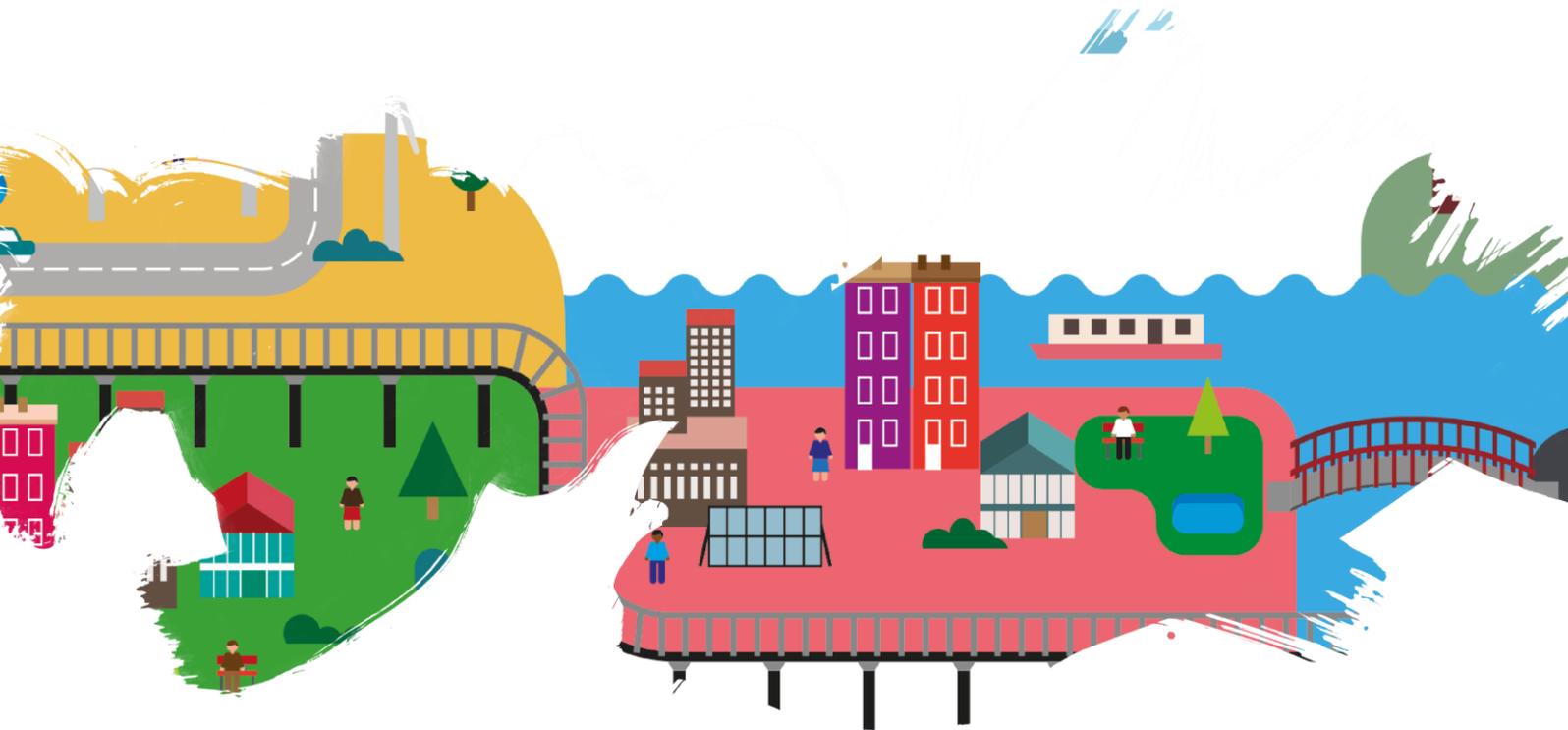




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GREEN TRANSPORT

Perspectives from Europe

INTERNATIONAL URBAN COOPERATION PROGRAMME
LATIN AMERICA AND THE CARIBBEAN

GREEN TRANSPORT

Perspectives from Europe



A brief introduction transport policy und urban planning in Europe

There are major differences in transport energy consumption between cities; an average U.S. urban dweller uses 24 times more energy annually for private transport than a Chinese urban resident, and almost four times as much as a European urban dweller. The average distance travelled by car by an American is twice as long as the distance travelled by a European. In Germany, for example, 24% trips are made by walking. These differences cannot be explained by culture and economic development alone but to enduring features of the city including urban density and urban design. The cities and nations that have invested most heavily in car-based transport systems are now the least environmentally sustainable, as measured by per capita fossil fuel use. The social and economic sustainability of car-based urban planning has also been questioned. The comparatively high energy efficiency of European cities can be explained by a long history of integrated urban and transport planning.

The basic principles of planning cities in the 20th century were laid through the Athens Charta in 1933. However in Europe most of these guidelines came only into use after the end of the Second World War. Even though the results in appearance may differ among Western European countries, the underlying planning principles were overall similar. The 1950s marked the beginning of a rapid individual motorisation, letting planners apply principles of car oriented developments. For both new suburban and inner city developments the idea of uninterrupted flowing car traffic with the least amount of intersections to grant quick access to the destination on highway-like roads became the heart of urban planning. The underlying idea was to meet the demand of traffic by increasing the supply in infrastructure. In the suburbia new developments were planned to be fast and easily accessible through trunk roads. In the inner cities it resulted in the construction of car parks, subways, multi-lane roads and elevated highways separating quarters and communities which made inner cities often less pedestrian friendly. The underlying principle was a separation of functions i.e. different zones for commercial activities, industry, leisure and residential functions.

However, planners recognised that the new infrastructure supply and separation of function by itself created again more demand and resulted in even more traffic growth. The separation of the city into different zones resulted in the necessity to commute from residence to work. Already since the 1970s mainstream transport planning in Europe has rejected the assumption that the private car was the best or only solution for urban mobility. For example the Dutch Transport Structure Scheme has since the 1970s required that demand for additional vehicle capacity only be met "if the contribution to societal welfare is positive", and since 1990 has included an explicit target to halve the rate of growth in vehicle traffic.

Especially from the 1980s onwards planning policies answered the ever increasing traffic and the resulting environmental issues. The new approach was to integrate the various bodies involved in creating urban and traffic planning policies. Also the car centred policy approach was replaced by a more equal one towards all traffic participants – including non-motorised and public transport. Policies to counter the suburbanisation and making the inner cities again more attractive were introduced to increasing the population densities and to reduce commuting times. However overall increased mobility in the society created more demand for roads and other infrastructure, hence new policy guidelines

beginning with the late 1990 try to establish sustainable planning solutions to the growing issues of urbanisation and mobility. European cities nowadays tend to allow a greater mix of uses in their residential zones, thus keeping trip distances shorter. A higher density allows public transit to operate at a much higher efficiency level and also makes non-motorised transport more attractive.

Current State of Urban Transport in Europe

Cars are the most popular passenger mode across the European Union: they represent some 72% of all passenger kilometres. However, the private car is rarely the most energy-efficient form of transport. According to data from the UK, 60% of cars have only one occupant. The percentage increases to approximately 85% for commuting and business trips (Statistical Pocketbook 2010).

Whether environmental considerations make it into transport policy making highly depends on the public acceptability. Current surveys show that European consumers are willing to make changes to reduce emissions. The majority of car users (66%) say they would compromise on a car's size in order to reduce emissions and 62% say the same about the car's range— i.e. the distance driven before needing to refuel a combustion engine or recharge an electric vehicle. More than half (60%) would also be willing to pay more for their car if this helped reduce emissions. A key strategy in the White Paper on Transport is investments in public transport. Public transport quality and connections need to be greatly improved if consumer behaviour is to change. A large majority (71%) of car users feel that public transport is less convenient than the car. A similar proportion (72%) says they do not use public transport because of a lack of connections. 64% blame too few services and 54% mention lack of reliability. .

A large majority of European citizens live in an urban environment, with over 60% living in urban areas of over 10.000 inhabitants. They live their daily lives in the same space, and for their mobility share the same infrastructure. Urban mobility accounts for 40% of all CO₂ emissions of road transport and up to 70% of other pollutants from transport.

European cities increasingly face problems caused by motorised transport. The question of how to enhance mobility while at the same time reducing congestion, accidents and pollution is a common challenge to all major cities in Europe. Congestion in the EU is often located in and around urban areas and costs nearly 100 billion Euro, or 1% of the EU's GDP, annually. (Source: DG Move). Cities themselves are usually in the best position to find the right responses to these challenges, taking into account their specific circumstances. Efficient and effective urban transport can significantly contribute to achieving objectives in a wide range of policy domains for which the EU has an established competence. The success of policies and policy objectives that have been agreed at EU level, for example on the efficiency of the EU transport system, socio-economic objectives, energy dependency, or climate change, to a large extent depend on actions taken by national, regional and local authorities.

The objectives of the EU White Paper on Transport Policy The proposals in the White Paper will dramatically reduce Europe's dependence on imported oil and cut carbon emissions in transport by 60%

by 2050. By 2030, the goal for transport will be to reduce GHG emissions to around 20% below their 2008 level. Given the substantial increase in transport emissions over the past two decades, this would still put them 8% above the 1990 level.

By 2050 the following objective should be achieved:

- No more conventionally-fuelled cars in cities.
- 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions.
- A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.
- All of which will contribute to a 60% cut in transport emissions by the middle of the century.
-

In recent years, EU policy and legislation relevant to urban mobility has been developed. Significant funding has been provided through the Structural and Cohesion Funds. EU-funded initiatives, often supported by the Framework Programmes for research and technological development, have helped to develop a wealth of innovative approaches. EU-wide dissemination and replication of these approaches can enable public authorities to achieve more, better and at lower cost. The EU can also help authorities to find solutions that are interoperable and facilitate smoother functioning of the single market. Agreeing standards for the whole of the single market enables larger volume production, lowering the cost for the customer. The EU has therefore developed an Action Plan on Urban Mobility.

The following topics are covered in the Action Plan:

- 1) Promoting integrated policies
- 2) Focusing on citizens
- 3) Greening urban transport
- 4) Strengthening funding
- 5) Sharing experience
- 6) Optimising urban mobility

EU policy

At the core of the European Union's strategy for transport in Europe is the 2011 White Paper on Transport which sets the way for a single European transport area and a competitive and resource-efficient transport system. ¹ The main goal of the White Paper is to disconnect mobility from its adverse effects. This means, above all, promoting co-modality, i.e. optimally combining various modes of transport within the same transport chain.

Policy Development History

The European Commission's first policy proposals in the area of urban mobility, the "Citizens' Network", date back to 1995 and 1998. They resulted in the launch of a series of initiatives based upon a "best practice" approach. After its review of the 2001 Transport White Paper 'European transport policy for 2010: time to decide', the European Commission adopted the Green Paper "Towards a new culture for urban mobility" in 2007. This consultation document opened a broad debate on the key issues of urban mobility: free-flowing and greener towns and cities, smarter urban mobility and urban transport which is accessible, safe and secure for all European citizens.

Based upon the results of the consultation process, the European Commission adopted the "Action Plan on urban mobility" in 2009 which introduced the "Civitas" initiative. The initiative promotes the development of urban level sustainable transport action plans. The preparation and implementation of such plans were supported since 2010 through the ELTIS Plus project (the projects are described in the Position Paper in Chapter 4 in more detail). The "Civitas" initiative is also supporting demonstration projects of clean and energy-efficient vehicles, like the European Green Cars initiative. The European Green Cars initiative is based on the EU directive (for EU member countries) on the promotion of clean and energy-efficient road transport vehicles, as outlined in the [2011 White Paper on Transport](#).

The EC Urban Mobility Package

The European Commission adopted the Urban Mobility Package in 2013 to further encourage a shift towards cleaner and more sustainable transport in urban areas. The initiative tackles urban mobility challenges by:

- Sharing experience, show-casting best practice and fostering cooperation
- Providing targeted financial support
- Focussing on research and innovation to deliver solutions for urban mobility challenges
- Involving the EU member states and enhance international cooperation

¹ White Paper: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0144&from=EN>

The concept of **sustainable urban mobility planning** is a key area in the Urban Mobility Package alongside urban logistics, urban access regulations, deployment of intelligent transportation systems in urban areas and urban road safety.

Integrated Urban and Transport Planning: Sustainable Urban Mobility Plans (SUMP)

At the end of a comprehensive consultation and review process, the European Commission has translated the widely advocated paradigm of integrated urban land-use and transport planning into a practical concept: Sustainable Urban Mobility Plans.

The idea behind the concept is to avoid planning transport in silos of administrations, modes or expertise. In practice this means that urban transport planning and land-use planning should be integrated, that modes should be developed in a balanced manner and that people and not traffic are the planning subject.

A Sustainable Urban Mobility Plan aims to create an urban transport system by addressing – as a minimum – the following development objectives (EC Guidelines: Developing and Implementing a Sustainable Urban Mobility Plan, sourced from http://www.eltis.org/sites/eltis/files/guidelines-developing-and-implementing-a-sump_final_web_jan2014b.pdf)

- Ensure all citizens are offered transport options that enable access to key destinations and services;
- Improve safety and security;
- Reduce air and noise pollution, greenhouse gas emissions and energy consumption;
- Improve the efficiency and cost-effectiveness of the transportation of persons and goods;
- Contribute to enhancing the attractiveness and quality of the urban environment and urban design for the benefits of citizens, the economy and society as a whole

The process of developing SUMPs is as important as the plan itself. A thorough discussion of the city development and mobility targets as much as possible solutions and measurements (for different scenarios) is crucial during a cross-departmental including public stakeholder.

Transferability of urban transport policy

Policies have to be considered in a regional context. Sweden, Germany, the Netherlands and the United Kingdom were identified as nations that have been actively addressing sustainable transportation issues

for several decades. Similarities are the growing auto ownership and use, suburban development, and public interest in community amenities and quality of life. European practice frequently matches operating responsibility for transit and highway systems with control over funding for those systems, and often assigns such responsibility and control to local or regional agencies. This can be seen as a logical extension of policies related to the integration of connectivity of transportation systems, across and between modes, for people and freight.

Planning approaches that might be adopted in other countries include visioning processes to develop shared goals, strategic planning for both the long-term and mid-term, and backcasting to test to see what strategies would be needed to meet goals. Another policy item with high potential is the use of performance standards along with monitoring and reporting on progress. This policy could be coupled with fiscal incentives for actions supportive of adopted goals. Of particular interest are car-sharing and projects aiming to educate the public about the costs of driving, as well as the possibilities for joint development to help pay for expensive but socially and environmentally attractive project designs. There is considerable interest in the strategic use of new technologies for the advancement of sustainable development goals, and for creative designs using biotechnologies, recycled materials, and other context-sensitive approaches to build and rebuild transportation infrastructure that better fits its environment.

The five possible intervention areas for sustainable transport planners

For most of these policies best practices are provided in the following chapters.



Source: Strompen, Litman et al (2012).

Good Practices - Illustrations

Avoid:

Avoid overdependence on car-based transit modes



Source: Wikipedia

Avoid traditional and polluting technologies



Source: Wikipedia

Shift:

Shifting from road-based to rail-based systems



Source: Wikipedia

Public transport, goods delivery, private transport and pedestrians in Amsterdam



Source: Wikipedia

Improve:

Growing popularity of tram systems, using electricity



Source: Wikipedia

The Bus Rapid Transit of Metz – diesel-electric hybrid driving system



Source: Wikipedia

Vauban in Freiburg, Germany



Source: Florian Steinberg

Electrical car



Source: Florian Steinberg

The come-back of the trams in Europe – introducing innovative green designs



Source: <http://whatissustainabledesigns.com/green-building/sustainable-architecture-europe/>

Smart Transport Management in London, United Kingdom



Source: Wikipedia

Congestion Charges, London, United Kingdom



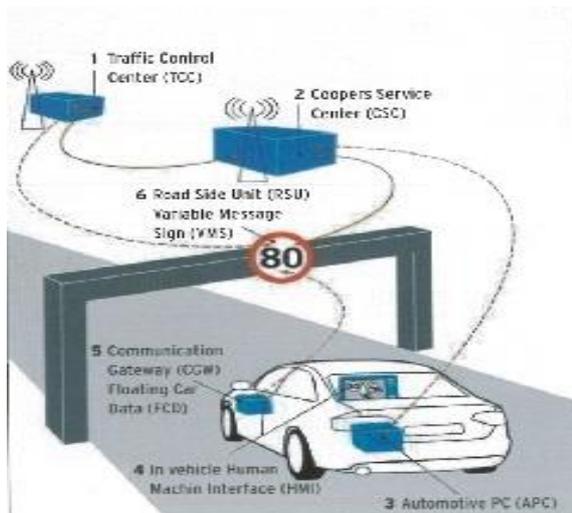
Source: Wikipedia

Boundaries of Congestion Zone – Central London, United Kingdom



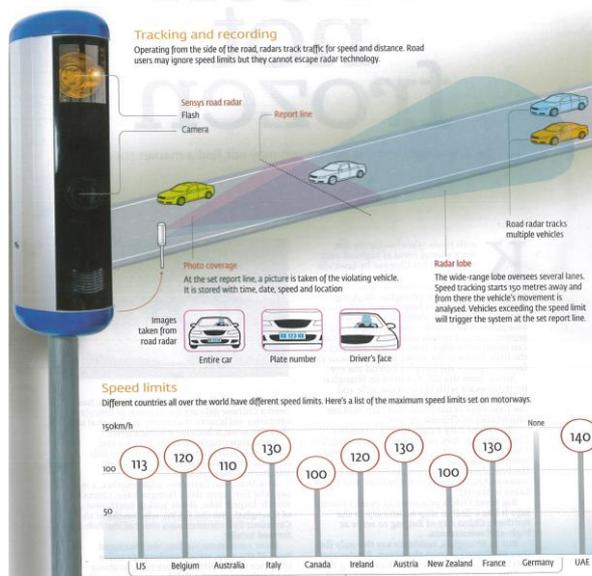
Source: Wikipedia

Traffic Management System being developed by COOPERS, a European research initiative



Source: Gilka, P. 2011. Das Endes des Taus im Strassenverkehr?, in: *TU International*, No. 67. Berlin. Pp. 26-27.

Road smart management and Speed Limits



Source: Sensys British Columbia Ministry of Transportation, rhinocarhire.com

Non-Motorized Transport for Tourists, Berlin, Germany



Source: Florian Steinberg

Electrical Motorbike



Source: BMW

Secure bicycle lanes in London, United Kingdom



Source: Centre for Liveable Cities. 2015. Urban Solutions 6. Singapore. p.7.
<http://www.clc.gov.sg/index.htm>

London: Proposed cycle super highways making bikes the transport of the future



Source: <http://edition.cnn.com/2015/03/04/tech/city-cycle-super-highways/index.html>

Methane Gas Powered Buses, Bristol, United Kingdom

New CO2-Neutral Buses in Copenhagen



Outlook

Mainstream transport planning in Europe has, by contrast to the US, never been based on assumptions that the private car was the best or only solution for urban mobility. For example the Dutch Transport Structure Scheme has since the 1970s required that demand for additional vehicle capacity only be met "if the contribution to societal welfare is positive", and since 1990 has included an explicit target to halve the rate of growth in vehicle traffic. There are major differences in transport energy consumption between cities; an average U.S. urban dweller uses 24 times more energy annually for private transport than a Chinese urban resident, and almost four times as much as a European urban dweller. These differences cannot be explained by wealth alone but are closely linked to the rates of walking, cycling, and public transport use and to enduring features of the city including urban density and urban design.

The cities and nations that have invested most heavily in car-based transport systems are now the least environmentally sustainable, as measured by per capita fossil fuel use. The social and economic sustainability of car-based urban planning has also been questioned. Within the United States, residents of sprawling cities make more frequent and longer car trips, while residents of traditional urban neighbourhoods make a similar number of trips, but travel shorter distances and walk, cycle and use transit more often.

A less car intensive means of urban transport is carsharing, which is becoming popular in North America and Europe, and carsharing can reduce car ownership at an estimated rate of one rental car replacing 15 owned vehicles. Car sharing has also begun in the developing world, where traffic and urban density is often worse than in developed countries. Companies like Zoom in India, car2go in China, and Carrot in Mexico, are bringing car-sharing to developing countries in an effort to reduce car-related pollution, ameliorate traffic, and expand the number of people who have access to cars. Many other

cities throughout the world have recognised the need to link sustainability and transport policies, for example by joining Cities for Climate Protection.²

Access and mobility are fundamental enablers of development. Unfortunately, as rapid urbanization has led to rapid private motorization, the preferred chosen form of mobility, specifically cars and motorcycles, has ironically resulted in less access and mobility. Congestion, contamination, and road deaths are increasingly a defining feature of modern cities, and especially those cities of the developing world.

The alternative transport pathway for green cities is achieved through designing away the need for private motorized transport in the first place. The framework of Avoid-Shift-Improve articulates both the contents and priorities that seem to best present such an alternative. A synergistic package of mixed-use development, integrated spatial planning, quality public transport and non-motorized transport facilities, disincentives to car and motorcycle use, and clean vehicle technologies offers a way forward towards Green Cities. The market-driven nature of car-free communities, such as Vauban in Germany, means a percentage of the population indeed prioritize quality-of-life in choosing living options.

In Europe many cities have been dominated for long by car-friendly policies. However, as a result of the green development, the pedestrians, bicycle users and those who do not (want to) own cars, have started to claim their fair share of the cities' public space. Thus, different interest groups debate today their access to the urban city. It is the perspective of sustainable green transport against the 'car city' advocates which matters today.³

City leaders have more power than they realise

Transportation policy has enormous bearing on a city's success and on issues of fairness, prosperity, and safety. Mayors must recognize that cities hold substantial power over transportation, because they control how the street is used and how new developments connect with transportation systems. Leaders who link transportation accomplishments to broad goals can improve life for their citizens while winning public acclaim.⁴

"Installing dedicated bus lanes, building pedestrian-friendly streets, and reaching Vision Zero; it's the kind of talk that tickles the urbanist's fancy. But it takes so much to implement even the smallest of transit improvements that it's easy for mayors and other city officials to avoid it all, afraid that they're at the mercy of state and federal governments.⁵ But when it comes down to it, all transportation is local." Cities can establish actions which make transport working for their citizens, with cycling and walking as viable options.⁶

² ICLEI. 2009. *Local Governments for Sustainability. Cities for Climate Protection*. International Council for Local Environmental Initiatives 1995–2008. Bonn.

³ Stadt und Auto. 2014. Special edition of *Stadtbauwelt*. Berlin.

⁴ <http://transitcenter.org/publications/atil/>

⁵ Transitcenter. 2017. *All Transportation is Local - A Field Guide for City Leaders*. <http://transitcenter.org/wp-content/uploads/2017/03/TC-ATIL-Digital-Report-20170315.pdf>

⁶ Poon, L. 2017. On Transit Policy, City Leaders Have More Power Than They Think. *Citylab.com*. 16 March 2017. <https://www.citylab.com/transportation/2017/03/field-guide-to-making-city-transportation-better/519672/>



IUC-LAC PROGRAMME

The International Urban Cooperation Programme - Latin America and the Caribbean (IUC-LAC) connect cities in different regions of the world to get in touch and share solutions to common problems. This initiative is part of a long-term strategy of the European Union to promote sustainable urban development in collaboration with both the public and private sectors and with civil groups and citizens. Through participation in the IUC-LAC, Latin American municipalities exchange knowledge with their counterparts in Europe, thus building a greener and more prosperous future.

IUC-LAC activities promote the achievement of political objectives and important international agreements on urban development and climate change, such as the EU Urban Agenda, the UN Sustainable Development Goals and the Paris Agreement.

Author and Editor: Florian Steinberg
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* All the aforementioned information is based on internet and published source mentioned in footnotes.

