Global Alliance for
EcoMobility

Fact sheet 1.3 - The Socio-Economics of EcoMobility

Featured in this Fact sheet:

1) What is the relationship between transport, mobility and socio-economics?

The socio-economic conditions of a region or a household are both the cause and the result of certain transport systems and mobility options. The structure and nature of a transport system defined at national and local level has a direct socio-economic impact (i.e. it directly impacts the affordability of transport for a country and for a family and its mobility capacity). At the same time, the socio-economic characteristics of a territory or household also influences transport choices and mobility behavior. The main variables affecting mobility choices are gender, age, marital status and household composition, income and profession.

2) What is the relationship between EcoMobility and socio-economics?

The spread of the concept of EcoMobility is expected to affect the socio-economics of the area or household. At the same time, EcoMobility should be available independently from specific socio-economic conditions. By providing new transport opportunities and solutions, EcoMobility aims at guaranteeing everybody's access to transport and sustainable mobility for the sake of better environmental, urban and health conditions, independently from socio-economic status. Socio-economic variables must be taken into account in order to amplify the success of EcoMobility and the change in transport choices and mobility behavior. However, they should be a source of opportunities rather than an obstacle.

3) Case study.

The case study analyses mobility behavior of higher income classes in Caracas. It shows how economic status can be a major determinant of mobility behavior and car-dependency. However, it also shows that such a behavior can be changed if adequate transport solutions are provided.

4) Summary and conclusions.

Transport is key to achieving both economic development and social inclusion. But in today's context it is more often perceived as an obstacle to attaining these objectives, rather than a source of opportunities. EcoMobility provides an alternative to this situation. By promoting an integrated system of sustainable transport options, guaranteeing accessibility for all, it decouples transport from specific socio-economic preconditions and overcomes current shortcomings in the system.

1) What is the relationship between transport, mobility and socio-economics?

The transport sector is a crucial element for economic development and impacts the welfare of entire regions and single households. When transport systems are efficient, they provide economic opportunities and social benefits with positive multiplying effects. When transport systems lack capacity or reliability i.e when they are inefficient, they can create an economic cost. The use of transport carries also important social and environmental implications that could cause significant costs.

At the same time, the socio-economic conditions of a region or household determine transport choices and mobility behavior and impact on the efficiency of transport.

2.1) Transport Systems and Economics

The **economic impacts** of transportation can be classified as direct and indirect:

- **Direct impacts** related to accessibility change where transport enables larger markets and enables to save time and costs.
- **Indirect impacts** related to the economic multiplier effect where the price of commodities or services drop and/or their variety increases.

The economic importance of transportation can also be assessed from a **macroeconomic and microeconomic** perspective.

At the **macroeconomic level,** transportation and mobility are linked to: level of output, employment and income within a national economy.

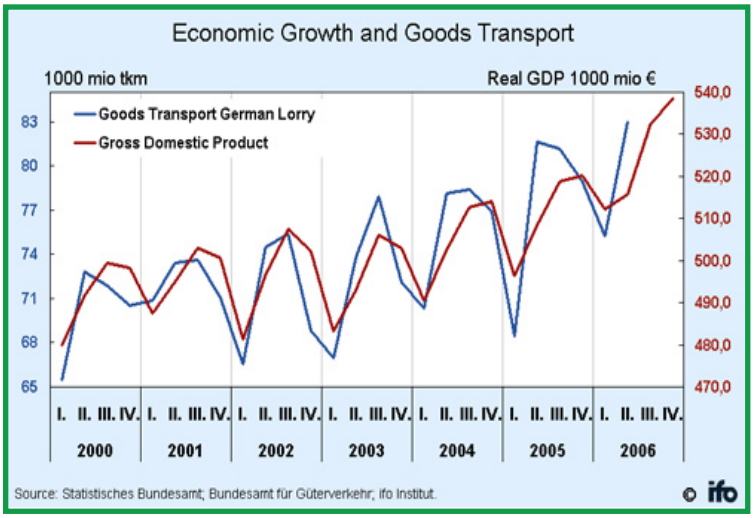
> In many developed countries, transportation accounts between 6% and 12% of the GDP.
>
> In 2002, transportation-related goods and services accounted for more than 10%—over $1 trillion—of U.S. Gross Domestic Product (http://www.bts.gov/programs/freight_transportation/html/transportation.html)

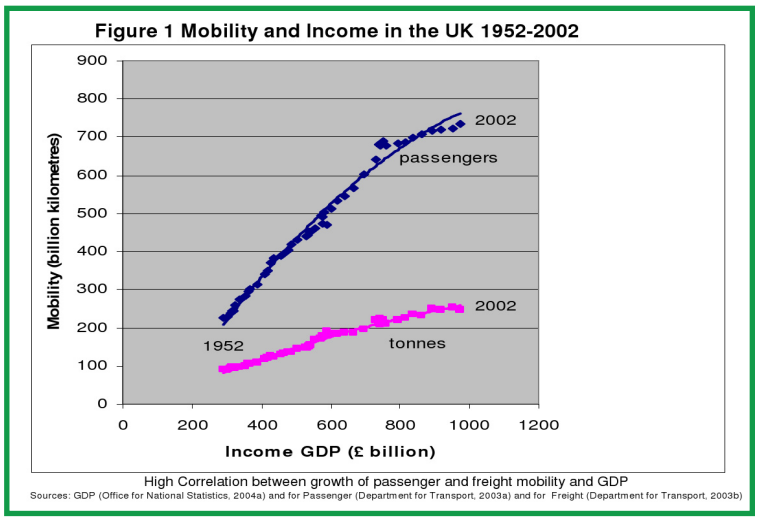
Studies[1] in Europe and the USA show that around 30 jobs are created for every 1 million € invested in public transport infrastructure and around 57 jobs for a similar investment in public transport operations.

From a study of 13 public transport investments in Europe the regional economic effects of public transport investments costs were found to have a multiplier effect of 2 to 2.5. In Switzerland a country renowned for its faith in public transport, the economy as a whole benefits from added value of 4.60€ for every 1 € spent on public transport. (source UITP and UNEP/ILO report on Green Jobs)

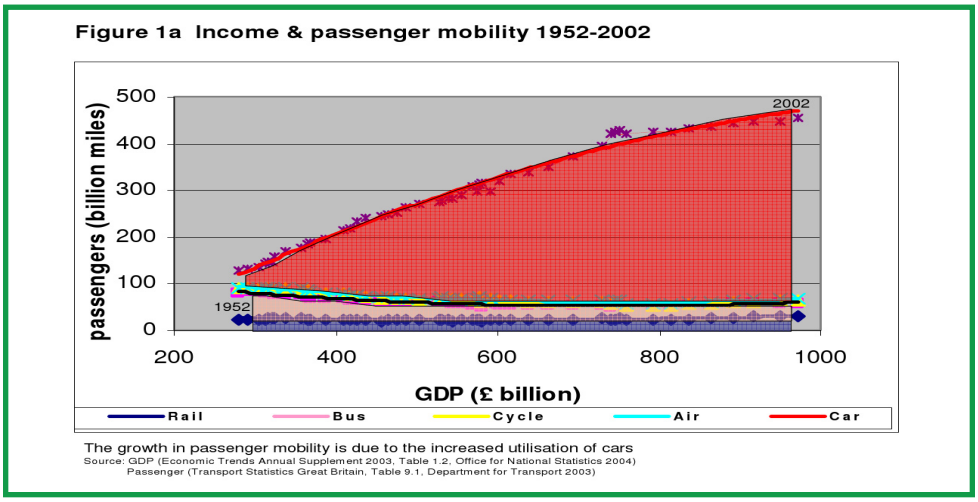
1 TRANSECON; Urban Transport and Local Socio-Economic Development Final Report 2003 & Public Transport and the Nation's Economy A quantative analysis of public transportation's economic impact prepared by Cambridge Systematics Inc. with Economic Development Research Group October 1999

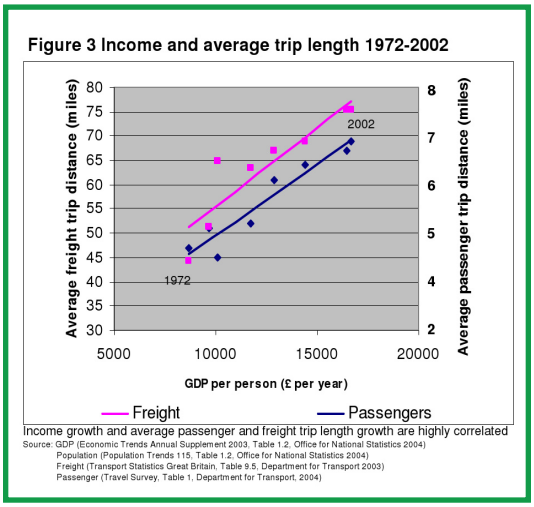
The capacity of a transport system and higher mobility levels are positively correlated to economic growth and income, as the two graphs below show:





In turn, higher GDP rates generate more demand for mobility, measured in terms of increased number of passengers:





The macroeconomic impact of transport can be assessed also in terms of lost productivity: the British Chambers of Commerce, for instance, estimates that _15 billion annually is lost from the national economy due to traffic congestion. At EU level, this figure is close to 1% GDP loss per year.

At **microeconomic level** transportation is linked to producer, consumer and production costs.

Transportation accounts for around 4% of the costs of each unit of output in manufacturing (but this figure varies greatly according to sub sectors);

It accounts on average between 10% and 15% of household expenditures.

Income levels are a main determinant of individuals' mobility. The higher the income, the higher the mobility, both in terms of numbers of trips and kilometers traveled.

Income also affects modal choices. High income households or countries register the higher rates of motorization and reliance on private motorized vehicles, while in poorer contexts people rely more on public transport, cycling or walking.

2.2) Transportation and social status

Transport and mobility behavior is also related to the **social aspect** of a country or a household. The following graph highlights the different use of transport in Australia across different genders, age groups, professional backgrounds, household structures and income levels:

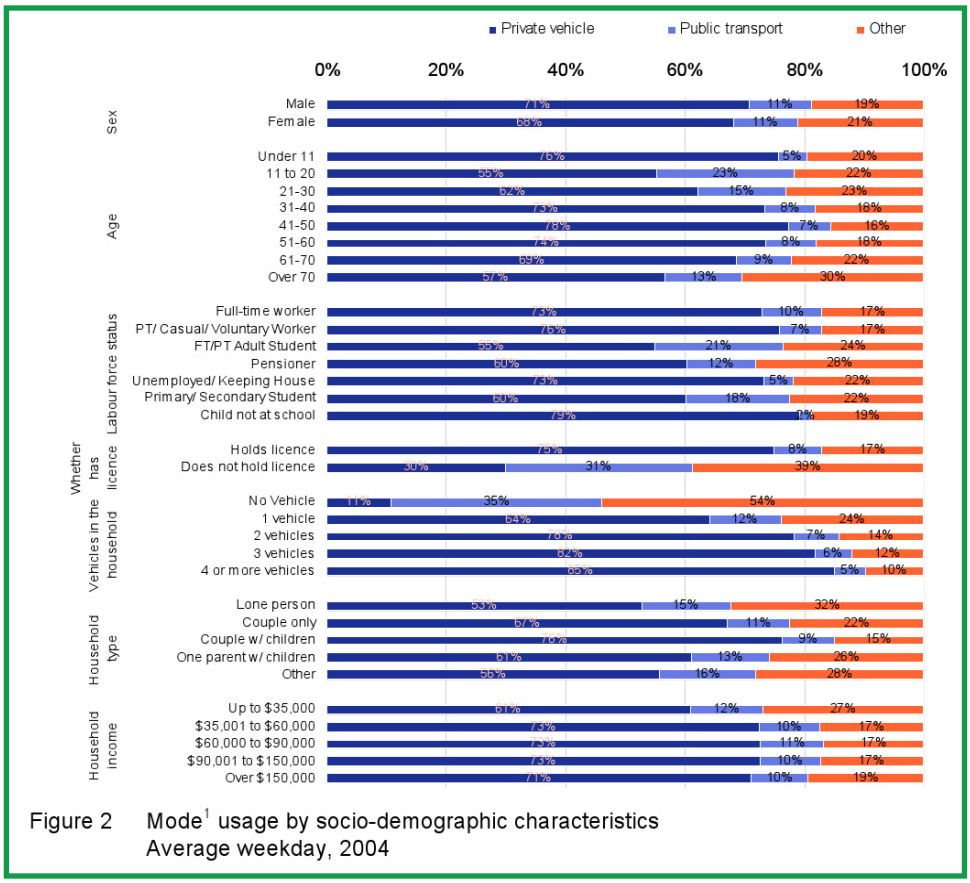


Figure 2 Mode[1] usage by socio-demographic characteristics
Average weekday, 2004

- More in details, data on modal split from the US and some European countries show clear differences in mobility choices among different **age groups**:

Figure 1-18
Mode Split Versus Mean Age
Source: DelDOT Household Survey 1995-2001

Mode	Mean Age
Driver	42
Passenger	41
Public Bus	40
Walked	34
School Bus	18
Bike	37
All modes	42

Figure 1-19
Mode Split by Three Age Groups
Source: DelDOT Household Survey 1995-2001

Mode	16 to 39	40 to 64	65 and over
Driver	85.5	90.3	81.1
Passenger	9.8	7.1	16.7
Public Bus	1.1	1.0	0.7
Walked	1.9	0.9	0.8
School Bus	1.1	0.2	0
Bike	0.2	0	0.2
Other	0.3	0.3	0.5

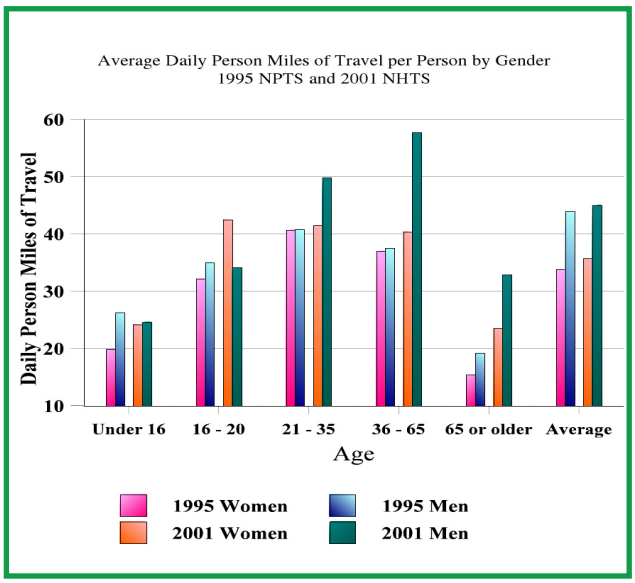
*Source: dspace.udel.edu:8080/dspace/bitstream/19716/1101/1/transit**model**.pdf*

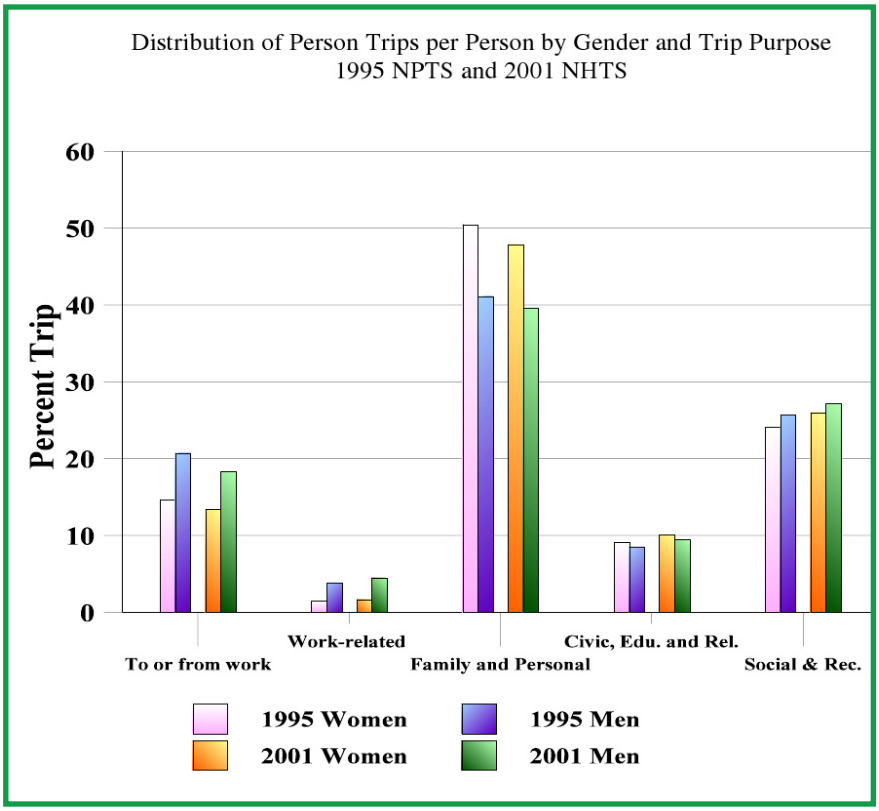
	0-11	12-17	18-24	25-29	30-39	40-49	50-59	60-74	75+
Pedestrian	29%	18%	20%	19%	18%	17%	18%	25%	34%
Bicycle	29%	52%	23%	17%	20%	23%	22%	24%	17%
Moped/mofa	0%	3%	2%	1%	1%	1%	1%	0%	1%
Motorcycle/scooter	0%	0%	0%	0%	0%	0%	0%	0%	0%
Passenger car	40%	17%	37%	56%	56%	55%	54%	46%	38%
Bus	1%	5%	8%	2%	1%	1%	2%	2%	4%
Tram/metro	0%	1%	3%	2%	1%	1%	1%	1%	1%
Train	0%	2%	6%	3%	2%	2%	1%	1%	1%
Other	1%	1%	0%	0%	0%	0%	0%	1%	3%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%

Table 1 Modal split by age group in the Netherlands. Source: Wegman & Aarts 2005

- Several studies have revealed the differences in travel patterns between **men and women**.

In terms of distance traveled, for instance, in 2001 in the US men traveled on average 45 miles per day against 35 of women.





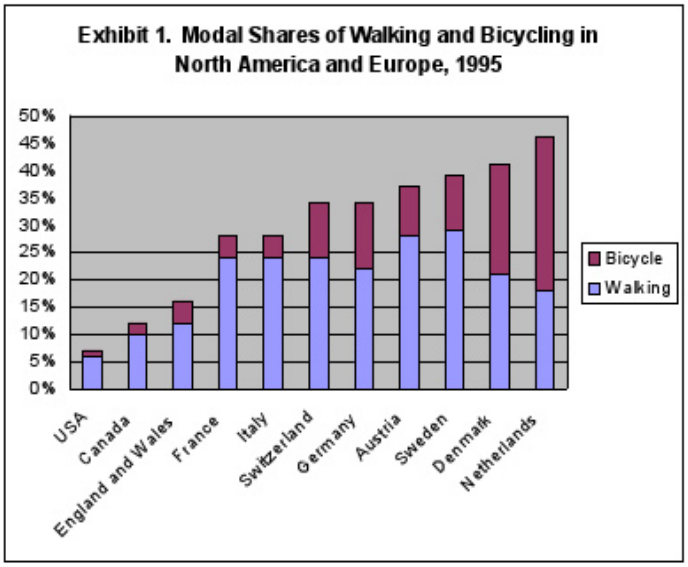
http://nhts.ornl.gov/publications.shtml

Other characteristics differentiate women trips compared to men's. Women travel features: more trips, but shorter average distance; more household and family support trips; women in multi-person households have an above average of shopping trips; more trip chaining; higher use of public transport, less car use; more passenger trips.

Access to transport is particularly complicated in developing countries, creating significant mobility gaps. Research by the TRB in Karachi, Pakistan, on the barriers to women enjoying a similar level of mobility to men showed that lack of accessibility and affordability of transportation (21%), bus frequencies and low level of services (17%), bus staff behavior (17%), limited seats (22%), poorly planned public transportation infrastructure (15%) as well as resistance by male members of the house to travel (8%) - highlighted inefficiencies in the transportation system.

http://pubsindex.trb.org/document/view/default.asp?lbid=776885

Travel behavior differs from country to country and is often the result of **cultural differences.** Even in countries with similar socio-economic structures, mobility behavior can present dissimilarities.



Source: Ministries of transport and departments of transportation in various countries.
Note: Modal split distributions for different countries are not fully comparable due to differences in trip definitions, survey methodologies, and urban area boundaries. The distributions here are intended to show the approximate differences among countries and should not be used for exact comparisons.

Mobility gaps = mobility is one of the fundamental components of transportation. When transportation is unevenly distributed and/or not available, certain groups can experience lack of mobility. The lack of mobility opportunities affecting a specific population group is referred to as mobility gap. Lack of income, lack of time, lack of means, the lack of access, age, gender, are some of the most relevant factors that can generate substantial mobility gaps between different population groups. These mobility variations are particularly relevant as they are likely to have substantial impacts on the socio-economic opportunities of individuals.

2) What is the relationship between EcoMobility and socio-economics?

Economic impact of EcoMobility:

Macroeconomic level:

- create investment opportunities through the construction of innovative and safe infrastructures to serve new needs deriving from different mobility behavior;
- create employment opportunities through the implementation of services to support different mobility needs;
- reduce mobility gaps based on gender, race or culture and increasing social inclusion their participation in the labor force;
- reduce dependency on fossil fuels and increase security of resources;
- ultimately to help alleviate poverty and reduce social exclusion.

Microeconomic level:

- keep transport more affordable through less car-dependency and more efficient use of economical, sustainable transport such as bicycles, wheeled vehicles, and public transport by:
- providing innovative solutions and services;
- creating efficient public transport services in all countries, including developing countries.
- Create equitable transport solutions that allow everybody to move, independent of their economic situation and avoiding that mode choice is based on economic capacity.
- Provide alternatives for the high income classes to convince them to reduce their usage of personal car.

Social impacts of EcoMobility:

- Increase in both developing and developed countries the ability of everybody to move quickly and efficiently, sustainably and independently, irrespective of their social status by:
- increasing sustainable mobility opportunities in all age groups. In particular, EcoMobility will provide integrated sustainable mobility solutions to reduce mobility gaps amongst children and the elderly;
- providing more adequate solutions for women which are better adapted to their mobility needs, enabling them to increase of their independence and reduce mobility gaps
- providing safer, affordable means of transport in particular in developing countries to allow everybody's access to education, employment and jobs, markets, and other primary services (e.g. hospitals)
- Increase the number of non car-dependent trips in particular amongst men, encouraging the use of alternative means of transport on shorter routes and trips to work.

3) Case studies and examples

Attracting higher income class to public transport in socially clustered cities. The case of Caracas, Venezuela.

In Caracas, as in most socially clustered cities, modal split is highly related to income.

High income population is mostly car dependent, while lower income people are captive to public transport.

This typical situation is explained by the fact that new residential areas for the upper social levels have been located in areas poorly served by public transport, automatically creating a dependency on the private car.

World-wide social values and fashion are also part of the explanation (e.g. during the 1970's, a high proportion of Caracas's middle and high-income citizens were systematically using their car even in areas where there was a good offer of public transport as owning and using a car was a signal of social status).

However in 1983 when the metro system was inaugurated, a new pattern of travel

behavior started to emerge as the metro mainly attracted high-income people.

Many metro riders are also regular car users but choose to take the metro when it provides a good alternative. Currently, the transit system in Caracas is comprised of four main modes: the metro; the "por puesto", which are minibus vehicles of 18 to 32 seats; the jeeps, which are dual traction vehicles of up to 12 seat (most of them serving hilly areas, which are also usually the slum areas); and the bus system, consisting of metro-bus and private operators. CA Metro operates the metro and, since 1987, metro-bus lines, which are bus feeder services extending the area covered into the outer city zones. While the metro and metro-bus offer transit services to middle and high income users, the mini-buses and jeeps provide flexible transit service to low income groups.

The metro and metro-bus services are more reliable and offer higher quality than mini-buses and jeeps This higher quality service is one of the main attributes to attract the wealthier people to metro and metro-bus and since the inauguration of the metro strong advertising has not only promoted its use but also created a different civic behavior of it's users.

The analysis of the data collected by CA Metro on modal split by income shows the strong correlation between the quality of public transport and the income distribution of users, which can not be explained by tariffs only.

The data collected over the years allows an econometric analysis of the evolution of the trend. A series of interviews with metro and metro-bus managers, as well as sociologists and social psychologists have helped identify the sociological variables with the highest influence in the travel behavior of high income population and those quality attributes of metro and metro-bus with most attractiveness. The results could be indicative on how successful policies to induce a change in modal choice from cars to public transport could be implemented even in cities where social segregation is extreme.

This behaviour can also be seen in other cities. Zürich is one of the wealthiest cities yet is has a high modal share of public transport. Surprisingly it does not have a metro (as decided by its citizens in several public referendums) but it offers a fully integrated system 'zurimobil' around light rail, tramways, buses and car sharing on one ticket. Professional people feel quite at home using the system which is considered to be quicker and easier than using a car in the central city area. Curitiba, Brazil. Curitiba has a successful Bus Rapid Transit system used by all levels of the population and its also own more cars than the average.

Vienna, the capital of Austria has just (2009) been voted one of the most live-able cities. It's citizens own a higher than average number of cars per 1000 head population but the modal split in Vienna is one of the highest in Europe.
The mobility options in Vienna are based on a quality of life approach, which allows a high level of mobility without the need to use a car except for trips that are best served by that mode. This approach has also been successful in Freiburg, Germany.

4) Conclusions

- Mobility and accessibility shows up deep differences in usage according to many variables;
- The main determinants of transport choices: economic condition and social characteristics, at individual and country-level. i.e. GDP, income, gender, age, marital status and household structure.
- Socio-economic conditions can therefore lead to inequalities and mobility gaps, that is lack of mobility opportunities for certain groups of less advantaged people;
- In particular, the use of private motorized transport requires a higher economic capacity, specific skills and even social status.
- For these reasons, private motorized transport tends to widen mobility gaps, slow down economic development and increase exclusion;
- EcoMobility aims at providing adequate alternative transport solution and infrastructures that allow everybody to move locally without relying on private motorized transports;
- EcoMobility is expected to have a socio-economic impact eliminating obstacles to the mobility of certain groups, their economic betterment and social inclusion.