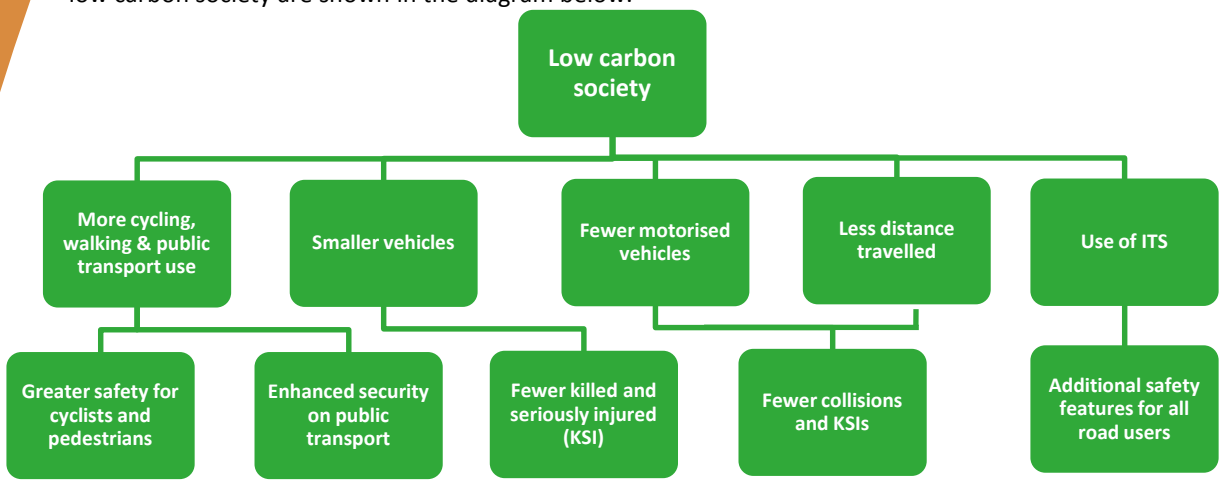
CATCH Fact sheet series

Benefits of Transport CO_2 Reduction for

SAFETY

A major challenge for transport sector is to mitigate greenhouse gas (GHG), including CO_2, emissions. In moving to a low carbon transport system, there are safety benefits too. Developing a low carbon society would provide the opportunity to further enhance road safety. Some of the possible road safety benefits of a low carbon society are shown in the diagram below.



There are many different ways in which CO_2 reductions can be brought about in the transport sector. Possible safety benefits come from two aspects of a low carbon transport system: the first, from an increased modal share of walking, cycling and public transport, and the second from a decreased number of trips, and the use of smaller vehicles. In a low carbon society there will be fewer motorised vehicles, which will result in fewer road collisions and fewer road users killed or seriously injured (KSI). A lower carbon society will not only have fewer vehicles, but the vehicles will be smaller (and/or lighter) and will travel for shorter distance resulting in fewer KSIs. Additionally, the number of cyclists and pedestrians will increase, and as the number increases, so will their relative safety level. This is beneficial to individuals who will be safer on the roads, but will also reduce safety-related costs borne by society.

Some facts

According to the World Health Organization (WHO) , almost 1.3 million people worldwide die each year as a result of traffic accidents on the roads. This represents, worldwide, a daily average of 3,242 deaths. In addition to these deaths, it is estimated that between 20 million and 50 million people worldwide are wounded or disabled as a result of traffic accidents on the highways each year[1]. Predictions show that the number of road traffic accidents will only rise, leading to this being the fifth largest cause of death by 2030[1].

Safety in low carbon transport modes such as walking or cycling increases as the number of pedestrians and cyclists increases[3]. A low carbon society with higher mode share of walking and cycling will result in greater safety for pedestrians and cyclists.

A low carbon transport system means shorter distances and lower speeds as well as enforcement of existing (and lower) speed limits in order to encourage more cycling and walking in urban areas. This results in less carbon emissions from vehicles travelling shorter distances, but also mean fewer deaths; a 5% decrease in average speed leads to approximately a 10% decrease in injury accidents and a 20% decrease in fatal accidents[4], and collisions between pedestrians and motor vehicles at lower speeds are less likely to result in death[5].

Only 29% of countries have urban speed limits of 50km/h or below, and allow local authorities to reduce them further[1].
Photo source: Marcin Szala, Wikimedia Commons

Public transport provides the safest mode of transport (per passenger km), with fatalities in the EU in bus and coach 30 times lower than those of cars, and 305 times lower than those of motorbikes[6].

How can a low carbon society contribute to safety?

A low carbon transport system decreases the use of single-occupancy motorised vehicles, and increases the use of alternative modes: cycling, walking, car-sharing and public transport. This will have the effect of reducing the overall number of motorised vehicles on the road as well as increasing the number of pedestrians and cyclists. This will bring about a two-fold increase in road safety: first because fewer motorised vehicles means fewer collisions and KSIs, and secondly, if cycling and pedestrian facilities are properly implemented, then the safety of cyclists and pedestrians will increase.

Intelligent transport systems (ITS) are seen as one way to improve the (energy) efficiency of transport (e.g. by contributing to more efficient route planning and driving styles). At the same time, the technology will be used for safety related applications (e.g. Intelligent Speed Adaptation (ISA) reducing (un)intended speeding[7]) bringing road safety benefits for all road users.

Most fatalities and injuries to pedestrians and cyclists occur in urban areas. Proper infrastructure design can help to reduce number of KSIs[2]. Photo source: cs:ŠJů

Although a low carbon society can bring many safety benefits, it is important to note that one possible problem in terms of safety comes from the introduction of electric vehicles. Since electric vehicles are much quieter than motor vehicles on the roads today they are often not noticed (or noticed too late) by cyclists and pedestrians and this could possibly cause safety problems if care is not given in their introduction[8].

Economic impacts

Road traffic deaths and injuries impose huge economic costs: it is difficult to put a precise figure on this, but it is estimated to be 200 billion dollars per year in the USA[9], and forms a high percentage of GDP (on average 2.5% in some OECD countries)[10]. A recent study shows that in the USA, the external costs of safety exceed the external costs of congestion[11], and this is likely to be even higher in countries with lower safety records. This means a huge cost created by motorised vehicle users but borne by society as a whole. In building a low carbon transport system, road transport accident costs will be reduced as well: saving lives and costs to society.

How can the CATCH project help?

The CATCH (Carbon Aware Travel Choice) project shows you how your city is performing in terms of carbon emission reduction and how you can help to make a positive change. It also shows how your city is performing in terms of related impacts upon safety, including:

- Traffic collisions per capita per year.
- Expenditure (insurance paid) related to crashes per capita.
- Annual passenger transport fatalities per million inhabitants.
- Number of serious injuries due to road accidents.

www.carbonaware.eu

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CATCH is a project co-financed by the European Union under the 7th Framework Programme for Research