

## Conclusions

The current transport priorities in the North Sea area are not taking us in a sustainable direction. An approach that combines a range of measures on various levels would allow the North Sea area to demonstrate how increasing wealth can be decoupled from energy consumption and transport volume. These measures should include:

### land-use policy that facilitate mobility through good access to necessary activities

It is possible to maintain levels of activities while reducing transport volumes (fewer vehicle kilometres, passenger kilometres and tonne kilometres), a practical approach to reducing fuel consumption.



Modern Car-Sharing station (Bremen)

### transport policy that focuses much more on the needs of the non-motorised modes

In Germany, this represents 30% of all trips. Urban areas in particular could easily become more car-independent by developing modern transport services such as Car-Sharing (car clubs in the UK). The CARE-North work package 'low car mobility culture' provides practical examples of this.



Local biogas (province Friesland)

### supporting a modal shift towards less harmful means of transportation

Together with walking and cycling, public transport needs to be further improved and mobility management activities further developed. Intermodal combinations and ride-sharing are important elements in reducing the carbon footprint and mitigating congestion and air quality and noise problems. CARE-North uses mobility management measures in its work package 'low car mobility culture'.

### more efficient motor vehicle travel

This can be accomplished through:

- better technology, less carbon-intensive fuels, downsized vehicles
- certain biofuels (but it is necessary to look in detail at the production chain and its environmental impacts)..
- the introduction of electric vehicles (with careful attention to the source of the electricity<sup>2</sup>)
- optimisation of traffic through the organisation of transport and improved driver habits (eco-driving)

The CARE-North work packages "Electric vehicles" and "low carbon fuels and propulsion" look in detail at the potential of fuels and vehicle technology - with lighthouse projects related to biogas and electricity production.

<sup>2</sup> It is necessary to measure the average CO<sub>2</sub> impacts of your entire grid to calculate the real CO<sub>2</sub> impacts of electric vehicles. In the German showcase, for example, this led to per kilometre CO<sub>2</sub> impacts similar to comparable petrol or diesel powered ones.

## Transnational workshop on transport and CO<sub>2</sub> emission

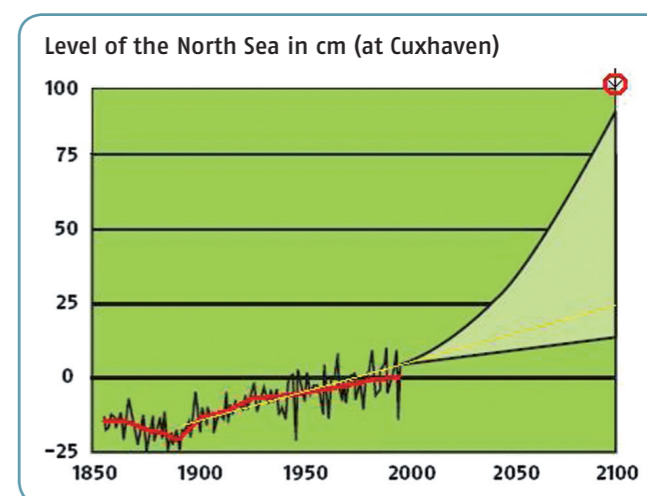
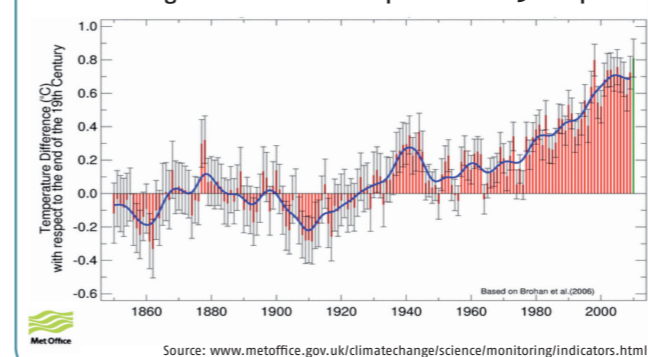
Climate change is a serious issue for the North Sea Region. Rising sea levels and extreme weather conditions will cause severe problems. To prepare appropriate strategies for climate protection, it is necessary to understand the role greenhouse gases play in this change. To this end, the CARE-North project held a transnational expert workshop in January 2011 in Bremen on the relationship between transport and CO<sub>2</sub> emissions. Input came from ICLEI climate expert Ian Shearer, Dr. Karl-Otto Schallaböck of the Wuppertal Institute for Climate, Environment and Energy, and the CARE-North team. The insights were so interesting that we decided to disseminate some core elements and conclusions. We believe they will contribute to the ongoing discussion on political priorities around the North Sea at the national, regional and local levels and may inspire debate in the North Sea Region of the Interreg programme and beyond.



Expert workshop 19 January 2011 in Bremen

The temperatures on the earth's surface are rising in parallel with increasing CO<sub>2</sub> concentrations in our atmosphere.

### Global Average Near-Surface Temperatures 1850-Sep 2010



As it becomes warmer (and some cold winters in parts of Europe are not counter-indicators of this overall trend), both the glaciers in the Alps and the ice in the polar areas are melting continuously. For the North Sea area, increasing sea levels are a cause for major concern. Related to climate change we are facing weather phenomena such as more frequent heavy storms and other extreme weather events. These changes are significant for the North Sea area and require us both to reduce greenhouse gas emissions to mitigate the impacts and to adapt to unavoidable impacts.

## The Cancun target

The 2010 COP 16 conference in Cancun, Mexico determined that the increase in the average global surface temperature must be limited to 2°C. While this may sound like a small number, achieving it requires a drastic reduction in our emission of greenhouse gases, and the developed nations, with high per-capita greenhouse gas emission levels, will have to reduce more than countries with lower levels of economic development.

But even an increase of 2°C in the global surface temperature is not harmless. According to the German Advisory Council on Global Change, it would still mean the melting of the polar icecaps.

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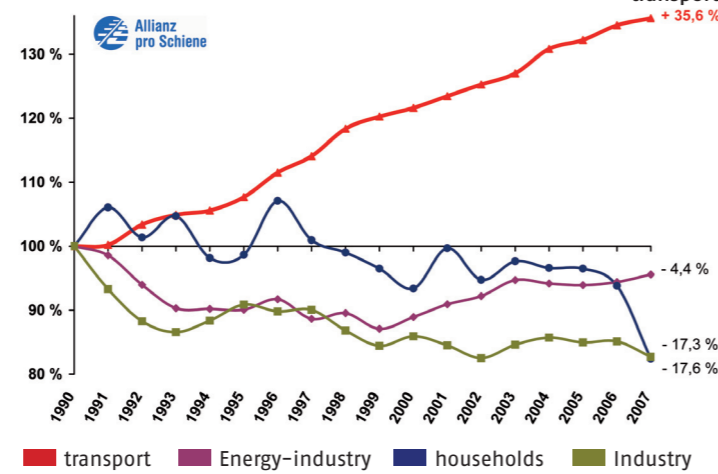


### CO<sub>2</sub> emission increase

Whereas in the European Union households, industry and also the energy sector were able to reduce their CO<sub>2</sub> emission, the transport sector shows strongly increasing emission of CO<sub>2</sub>.

It is obvious that we need to put the transport sector much more into the focus of climate protection strategies – otherwise we will not be able to achieve the necessary and agreed CO<sub>2</sub> reduction targets.

### CO<sub>2</sub> emission by sectors (EU 27)



source: Allianz pro Schiene - based on data of the European Commission



The presentation of Dr. Karl-Otto Schallaböck (Wuppertal Institute) analysed the German passenger transport sector by purpose of travel and travel mode, and by the distance travelled and the CO<sub>2</sub> impacts.

### CO<sub>2</sub> impacts

When the real distance travelled and average emission per kilometre (=emission factors) are combined, the impacts of land-use patterns and of our transport systems become clear. Motorised road and air transport – both dependent on fossil fuels – account for the lion's share of transport related CO<sub>2</sub> emissions. The disproportionate impacts of ever-increasing distances travelled such as long-distance business travel and holidays with long-distance flights also become obvious.

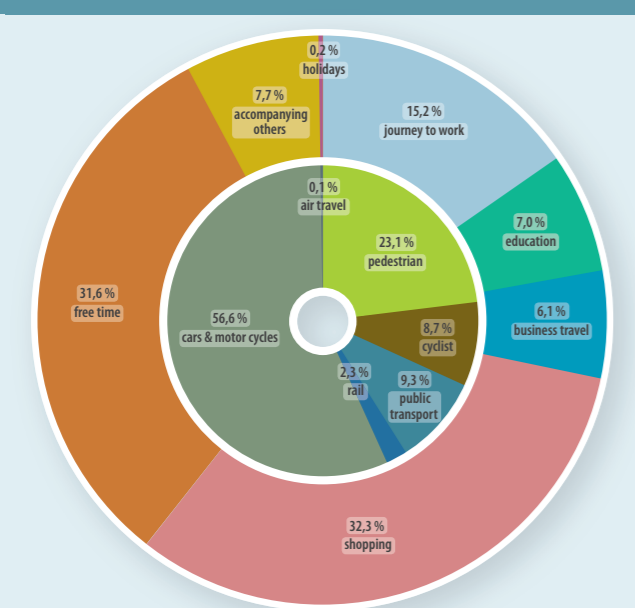
### Number of trips by purpose and transport mode

Every trip has a purpose. This graph examines the various purposes of passenger transport and our ability to carry out the activities that are important in our lives.

### Distance travelled by purpose and transport mode

The picture changes when looking at distances travelled. Although this graph does not include international air travel, the dramatic impacts of changes in lifestyle and in land-use patterns are still evident.

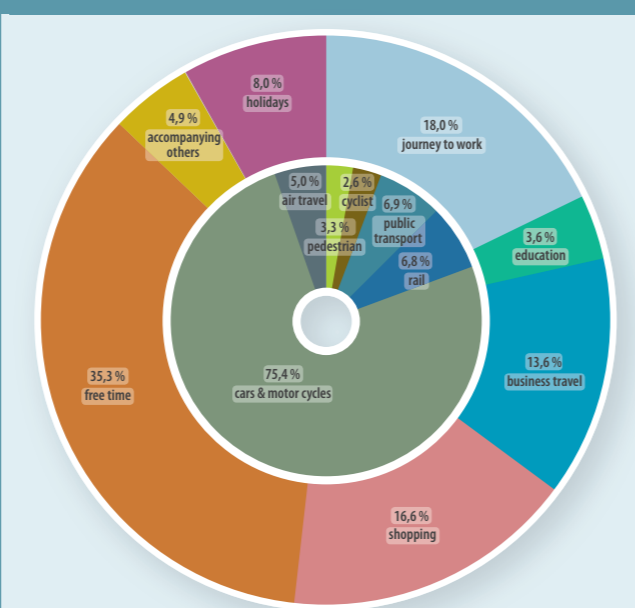
#### Trips by purpose of travel and transport mode



Interestingly, more than 30% of all journeys are made CO<sub>2</sub> free on foot and by bike. About 12% of journeys are made by public transport and rail while cars and motorcycles together account for 56.6%.

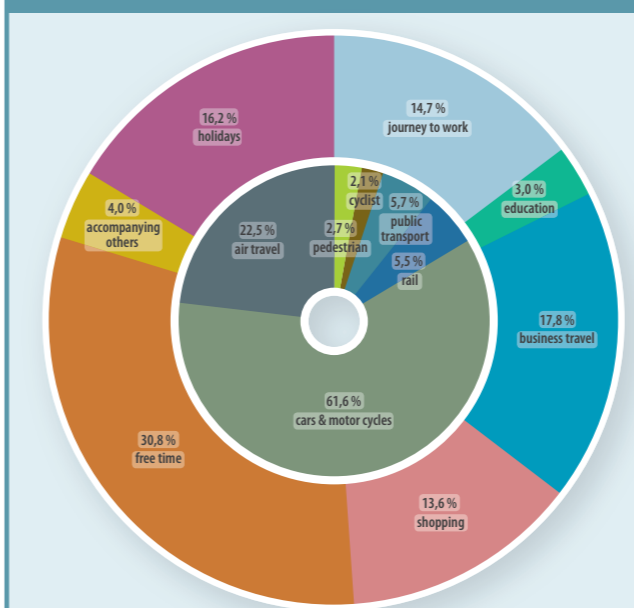
While holiday trips account for only 0.2% of all trips, shopping trips (32.3%) and leisure-related journeys (31.6%) are significant. Journeys to work and school/university account for about 22% of all trips, while business travel is only 6%.

#### Distance travelled by purpose of travel and transport mode



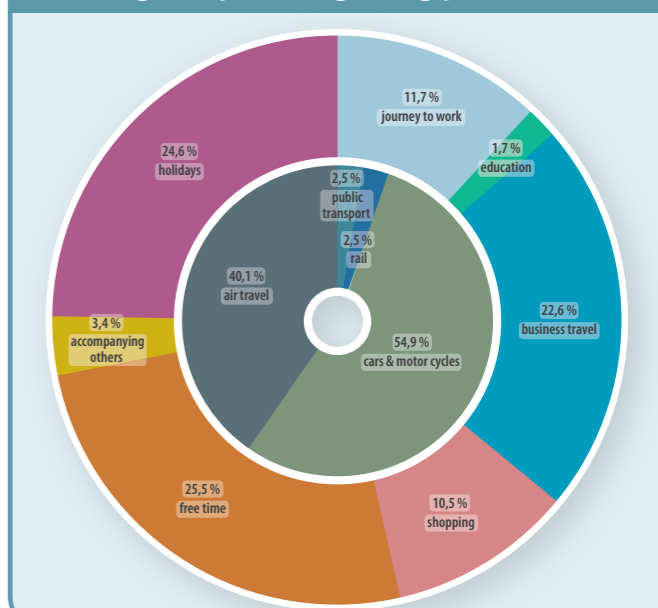
Walking and cycling are used for shorter trips. Cars and motorcycles have a wider range and account for 3/4 of passenger transport mileage. Although rail accounts for only 2.3% of all trips, it represents 6.8% of total mileage, while 5% of (domestic) mileage is travelled by air. Leisure accounts for 31.6% of all trips and 35% of mileage travelled, whereas shopping trips are remarkably short (32% of all trips but only 17% of mileage travelled). Business trips (13% of distance and 6% of trips) and vacations (8% of distance and just 0.2% of trips) are responsible for a disproportionate number of kilometres in relation to the number of journeys they represent.

#### Kilometers travelled by purpose and mode of transportation Germany 2007 – air transport with est. real distances



When international flights are added, the figures are even more dramatic. The share of holiday travel doubles to more than 16% of kilometres travelled and business trips increase to 17%. Air travel is thus responsible for 22% of total mileage travelled – but less than 1% of all trips.

#### Greenhouse burden of transportation by purpose and mode Germany 2007 – using simple weighting factors



<sup>1</sup>Emission factors are needed to calculate the CO<sub>2</sub> impacts of the trips by various modes. This process is complex as emissions depend on many factors. Simplified emission factors were used in this model.

#### reasons to travel

- journey to work
- education
- business travel
- shopping
- free time
- accompanying others
- holidays

#### way of traveling

- pedestrian
- cyclist
- public transport
- rail
- cars & motor cycles
- air travel

Source: DIW, Verkehr in Zahlen 2009/10; further calculations by Schallaböck  
All data relate to Germany and are based on studies by the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung) in Berlin.