Carbon Budgets and Compensation

Involved Project Partners

- METRO - West Yorkshire Integrated Transport Authority (UK)
- City of Göteborg, Traffic and Public Transport Authority (Sweden)

This workpackage involves the development of innovative approaches to embed CO_2 reduction within transport planning and management and seeks to bridge the gap between national policy and local implementation for decarbonisation.
WP8 featured projects in the UK (West Yorkshire) and Sweden (Göteborg).
The projects are transferable to CARE North partner cities and elsewhere in the North Sea Region.

Why is Carbon Budgeting and Compensation important?

European Union

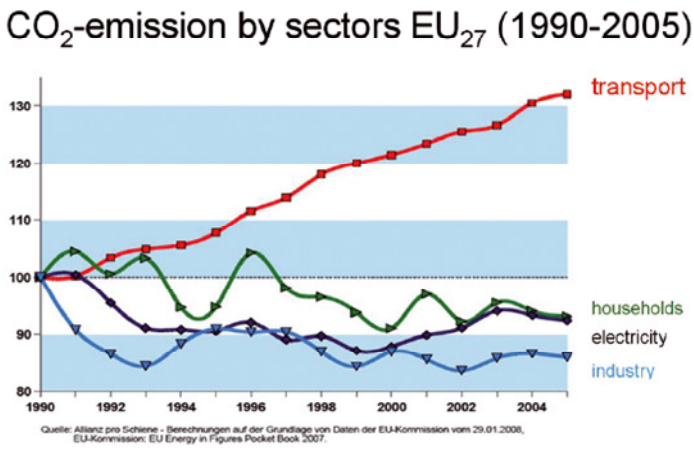
- The EU is committed to reducing carbon emissions to 20% below 1990 levels by 2020;
- Carbon emissions in the Transport sector have continued to increase over recent years;
- Economic recession is focussing all tiers of Government on facilitating economic activity and employment growth - which may generate increased travel and emissions;
- Current fiscal conditions mean potentially less funding for carbon mitigation.

United Kingdom

- The 2008 Climate Change Act set a legal requirement for a National Carbon budget, of at least a 34% reduction in UK greenhouse gas emissions by 2020, and at least 80% reduction by 2050, from a 1990 baseline;
- The UK Government published a Low Carbon Transition Plan in 2009 and set 5-year "carbon budgets" to define the emissions pathway to the 2050 target;
- Government anticipates that 19% of the total reduction in carbon will be contributed by the transport sector;
- Carbon emissions from road transport rose from 1990 to 2007 by 47%.

Sweden

- There is a national goal to decrease CO_2 emissions by 40 % from 1990 to 2020;
- By 2030 the vehicle fleet is required to be free from fossil fuels;
- By 2050 there is a requirement that there shall be no net emissions of climate gases in Sweden;
- From 1990 to 2011 the CO_2 emissions from road traffic increased by 10%



The Projects

Work in the UK focused on developing strategies to promote economic growth - informed and balanced by consideration of carbon impacts. There were 3 projects:

1) ***Transport for Leeds (TfL) project*** – This project, part funded by the UK Department for Transport, developed an approach to embedding CO_2 reduction in a local Transport Strategy for a city of 750,000 people. Evidence was at the heart of understanding how a strategy could best deliver objectives and gain political support. The project made use of an innovative forecasting methodology. An Urban Dynamic Model (UDM) - a strategic land use and transport interaction model - was used as the evidence based model, making use of a wide range of local modelling data collected specifically for the project to assess the effect of transport investment. TfL identified best value for money schemes options that:
   - Maximised the contribution that transport investment makes to increasing GVA;
   - Maximised the contribution that transport investment makes to reducing transport related carbon emissions;

2) ***West Yorkshire Local Transport Plan (LTP3)*** - This is the statutory plan for Transport for a sub-region of 2.2million people living in 5 Local Authority districts. The UDM was applied to development of a 15 year Transport Strategy (LTP) for the period 2011-26 and a first (£150m) 3 year delivery plan for the period 2011-14. Carbon Reduction is embedded as 1 of 3 central objectives of the agreed LTP. CARE North and the UDM helped inform the identification and agreement of a Carbon Budget for transport in West Yorkshire (apportioned from the National Carbon Budget) and headline targets for managing vehicle trips and increasing the mode share of low carbon modes. The LTP was approved in 2011.

3) ***£1billion Transport Fund for major scheme delivery -*** This project is developing a £1bn supplementary fund, related to LTP3, for major transport infrastructure projects that will support jobs growth. The TfL methodology and UDM was enhanced to model a wider city region area and to test interventions for their contribution to a Net increase in GVA per £ spent, improvements in accessibility to employment and a carbon 'neutral' impact. Work is on-going to gain stakeholder support, develop a prioritised list of schemes to deliver and establish the funding mechanism.

Work in Sweden focused on developing a Carbon Budget and Compensation scheme for a city municipality:

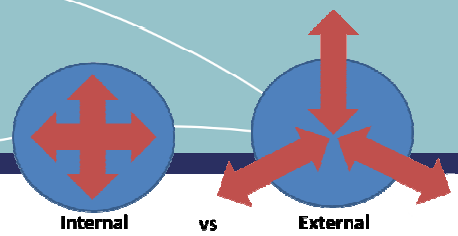
4) ***City of Göteborg Carbon Budgeting framework -*** The City of Goteborg launched an internal Carbon Budget and Compensation scheme in 2009 to cover its 45,000 employees. The scheme applies to all 20 City Technical Departments, 28 related publicly owned companies and 20 local district administrations. Each organisation or administration is required to produce data and calculate their carbon emissions from business travel, by car and by air, and to offset those emissions with financial investment within their organisation in environmental transport measures to influence staff to reduce carbon emissions in future. Commuting to/from work was not included in the scheme. The scheme is managed by the City's Transport office, which provides information and advice on compensation measures.

CARE North has also observed ***Kirklees Council's Carbon Budgeting framework*** - This West Yorkshire local authority was the UK's first to use a Carbon Budget to cap corporate emissions and provide individual Services with their own budget in tonnes of CO_2. The Carbon Budget requires a 40% reduction in CO_2 emissions by 2020 (from a 2005 baseline). The Carbon Budget is also expected to save the Council money and is thus aligned with Council financial budgetary and business planning processes. The Carbon Budget applies to all Council Services, Leisure and Social Housing operations, Schools and street lighting. Fleet Transport is included, but commuting was excluded, and employee mileage was removed from the process due to issues with data. Services are required to implement actions and cost savings. Kirklees has developed robust governance arrangements to manage their Carbon Budgets, with 4 key stages: (1) Carbon Impact Reporting (September) summarising the previous year's performance; (2) Carbon Impact Statement (October) showing how a Service will meet its Carbon Budget in the next financial planning period; (3) Service Performance Planning, where Services consider impacts, demonstrate achievements and report any new objectives and targets; all culminating in (4) Carbon Star Chamber (November) where Services report progress and plans for their Carbon Budget for senior management and political peer review of performance.

Definitions:

- **A Carbon footprint** is a measure of the total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product.
- **A Carbon Budget** is a quantum of total greenhouse gas emissions caused directly and indirectly by a person, organisation, event or product, which an area or organisation must stay within.
- **Carbon Compensation** is a mechanism whereby mitigation is sought to off-set greenhouse gas emissions.

Project delivery (UK)



West Yorkshire Local Transport Plan (LTP) 2011-26

The LTP is seeking external reductions in carbon emissions. Road transport contributes around 18% of all carbon emissions in West Yorkshire. The LTP has agreed six headline Indicators and Targets to influence delivery and manage performance. Two targets are specific to management of a Carbon Budget:

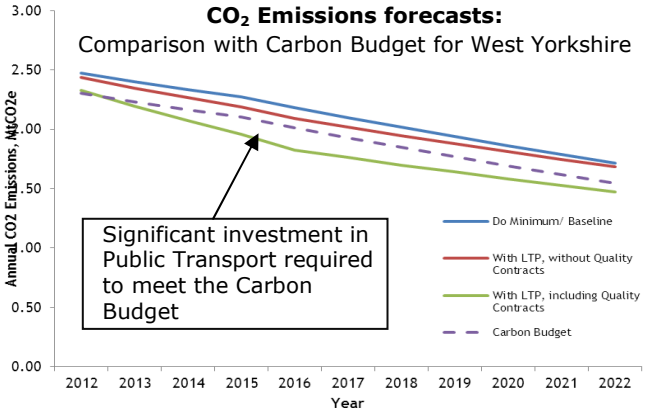
Key Indicator	What are we measuring	Baseline	TARGET TO 2026
CARBON BUDGET Emissions of CO_2 from transport	Annual road traffic emissions of CO_2 across the West Yorkshire local highway network (Excludes motorways)	2,611 $MtCO_2$	To achieve a reduction of 30% between the base year and 2026 (in line with the UK National target) 2.6 $MtCO_2$ **1.83 $MtCO_2$**
MODE SHARE	The total number of car journeys by West Yorkshire people per year	1458.2m person car trips Non-car mode share 36%	To keep the total number of car trips at current (2011) levels To increase the proportion of trips made by sustainable modes from 36% to 42% **42%** 36%

CARE North has provided carbon modelling of options and study visits to inform low carbon interventions. Technological developments will play a significant part in reducing carbon emissions to 1.83 $MtCO_2$ by 2026, with increasing adoption expected of hybrid and electric vehicles. Here, delivery will be on a national level and predominately market led with the West Yorkshire LTP supporting with local promotion and pilot projects to prime take-up. The key contribution the LTP can make to carbon reduction will be through delivering modal shift from car journeys to low carbon alternatives. Increases are required in the region of:

- **20%** increase in walk trips;
- **50%** increase in bus trips;
- **100%** increase in Rail trips;
- **300%** increase in cycle trips.

The largest carbon reductions are forecast to come through significant local investment in Public Transport. Metro is currently exploring Bus Quality Contract (Franchise) and Partnership schemes as options to address the problems experienced with a de-regulated bus industry, to achieve transformational change and increase patronage. Directors of UK Integrated Transport Authorities and a UK Member of Parliament visited Sweden and Denmark in 2012 to learn about bus franchising and low carbon transport measures. The Scandinavian models and Bus Quality Contracts were discussed at the annual UK Labour Party conference in 2012.

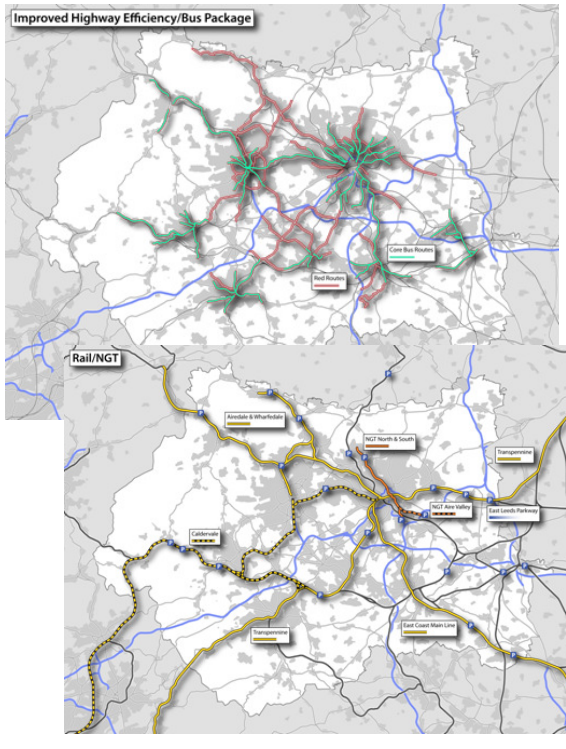
CO_2 Emissions forecasts:
Comparison with Carbon Budget for West Yorkshire



West Yorkshire Transport Fund

Work on the Transport Fund is gaining political support and increasing awareness of the economic and environmental contributions of large scale transport interventions. Around 60 interventions have been identified through consultation with stakeholders, and work is being carried out to test the schemes and appraise their impacts in respect of GVA per £ invested, increased connectivity and carbon impact, to ensure the most effective schemes are prioritised. To measure carbon impacts a carbon calculator takes the outputs of a UDM run for a given scheme and calculates the carbon impact of the scheme (CO_2 per car km and g CO_2 per bus/rail passenger km) to calculate carbon reduction returns for travel to work, home based and business to business trips. There is a potential conflict between increasing employment, expanding connectivity (which can increase commuting distances) and achieving a neutral carbon impact.

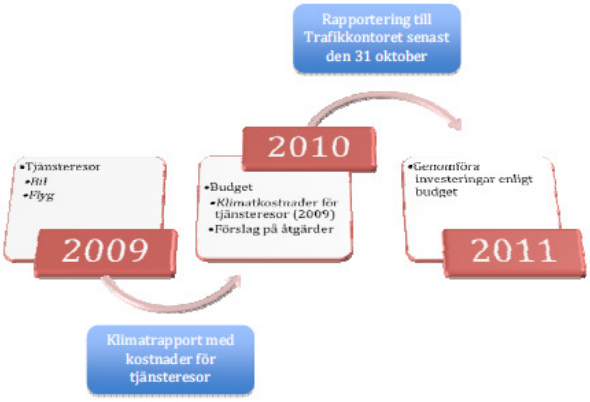
Types of interventions that have been identified include: Those that allow more people to travel into urban centres more quickly, cheaply and comfortably; orbital (ring road) highway improvements for efficient movements of goods and services; Schemes that enable the transformation of key development areas; and improvements between major centres to ensure high capacity and modern, fast and attractive opportunities to connect the key centres.



Project delivery (Sweden)

Göteborg Carbon Compensation scheme

The Göteborg project is targeted at achieving internal reductions in carbon emissions. The compensation scheme requires each of the city's 68 administrations/organisations to prepare a Carbon Budget. The process required carbon emissions from car and air business travel to be calculated in 2009 and in 2010 budgets to be set for the re-investing a related sum in carbon compensation measures. The price of emissions is set at 1.50 SEK / kg CO_2. Performance data was first available in 2011.



In 2009 a total of 50 (72%) administrations/organisations participated by calculating their emissions. Participation levels were considered encouraging, especially given that the launch of the compensation scheme had coincided with reorganisation of the City Authority and there were issues in establishing accurate emissions data.

The compensation scheme is expected to generate 10m SEK (approximately £0.94m / €1.16m euro) per annum. In 2011 a total of 5.5m SEK had been re-invested in low carbon transport measures for staff. The most common interventions delivered within administrations were: Bicycles/electric bicycles, Eco-driving, Training and Video conferencing equipment. Other measures included promoting train use as a substitute for air travel, electric pool vehicles and participation in car clubs.

Interest in the scheme is growing. The next tranche of Carbon Budget planning will include a further 4 administrations bringing the overall proportion to 77%. The City's Transport office does not police the scheme and there are no penalties for non-participation. The City accepts the scheme is in its infancy and view delivery as part of its' overall awareness raising activities and is content to encourage a culture of environmental awareness to mature. One change has been to pool compensation across administrations in a central pot in order to allow over-performing administrations with little scope for further measures to support delivery in other administrations. Goteborg's scheme is a role model for other municipalities - with 5 other local Authorities in Sweden implementing similar carbon compensation schemes.

Initial conclusions from WP8

- There is potential for the road transport sector to reduce carbon emissions;
- The low carbon interventions - policy levers, infrastructure, technologies and behavioural change programmes, are generally well known, cost effective and available;
- There are challenges for decision makers in balancing seemingly competing demands from differing objectives;
- Carbon offsetting is a new phenomenon with wide information needs – A lack of reliable carbon performance information will introduce a level of risk and uncertainty to decision making;
- Robust methodologies for understanding carbon effectiveness can help de-risk decision making, aid communication and engagement and strengthen the business case and political will for action;
- Make best use of existing governance process e.g. to embed carbon budgeting in financial process - for visibility and understanding of cost benefits;
- Apply a consistent methodology to the identification and evaluation of carbon reduction measures, including them in analysis that allows their performance to be compared with a range of other options;
- Strong governance structures and processes introduce review and challenge to improve performance;
- Strategies may require a step change in the rate of implementation of measures to achieve carbon budgets - building in low levels of ambition for implementation during early budget periods as political, managerial and stakeholder support is developed, with accelerated delivery into later budget periods.