The COMMERCE Project

Mobility Management evaluation tools and methodologies

Increasing the quality and quantity of Workplace Travel Plans in the EU

Supported by INTELLIGENT ENERGY EUROPE

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
Mobility Management INVENTORY
MM Monitoring and Evaluation Tools and Methodologies

The objective of this task is to identify existing monitoring and evaluation tools which are of use to EPOMM PLUS partners, especially the Initiation countries where evaluation of the benefits of Mobility Management is key to wide-spread implementation. This list can be used as a resource for MM stakeholders, to help them in implementation of their MM projects, and to help justify future investments in such initiatives. It will be made available on the EPOMM website, as a service to EPOMM members.

CONTENTS

Section A
Monitoring and Evaluation Tools and Methodologies
1) Max Tools – Max SUMO and EVA
2) Economic Benefits of Cycling
3) Reduced Mortality - WHO’s Health Economic Assessment Tool (HEAT)
4) Sustainable transport: assumptions on behaviour change
5) Smarter Choices 2010 (Funded by the DfT)
6) TRL Behavioural Change
7) COMMERCE Project
8) Travel blending®
9) Department for Transport
10) Sustrans' Bike It Project
11) Sustrans – Economic Appraisal of Cycling and Walking Projects
12) Sustainable Transport Cost Benefit Analysis: South East England
13) Cycling England
15) PAS 500 - workplace travel plans (UK)
16) EST Methodology for Calculating Fleet CO₂ Emissions (2007)
17) iTRACE (UK)

Section B
Online Carbon Calculators
1) Car Fuel Data
2) UK Government’s ACT ON Carbon Calculator
3) Resurgence Calculator
4) BP Target Neutral
5) Energy Savings Trust UK – Carbon Cutter Tool
6) Travel Footprint
7) Carbon Footprint Limited
8) ChooseClimate
Section A  
Monitoring and Evaluation Tools and Methodologies

1) Max SUMO and Max EVA (EU)  
The Max project ran from 2006 to 2009 and was part-funded by the European Commission’s 6th Framework Programme. This research project has developed a number of useful and transferable tools to extend, standardise and improve Mobility Management in cities and countries.

Max Tools  
The tools (as well as guidance documents and presentations) are available on the EPOMM website: www.epomm.org.

Max EXPLORER – is an interactive decision support guide. If you are not familiar with MM, then this is a very good starting point. It helps you to chose appropriate solutions to your local problem by comparing the effectiveness of different MM measures. It also provides case studies.

Max Q – improves the quality of your MM measures, especially in the context urban areas. It is a methodology for quality management guiding you through policy, strategy, implementation, monitoring and evaluation. This will help improve the credibility of you MM initiatives.

Max TAG – this online tool offers MM practioners step by step guidance in setting up their own successful travel awareness campaigns, drawing on best practice examples. It highlights the success factors at key stages.

Max LUPO – this advises planners, planning consultants, local authorities and developers how to make MM a core part of the building permission process for new developments, such as parking management and infrastructure for cycling.

Max SEM – this model helps practioners to understand the behavioural change process in psychological terms, which can be invaluable for effective use of resources in MM projects.

Max SUMO – this allows practioners to plan, monitor and evaluate MM projects and individual measures. It guides you on the setting of objectives and indicators. The results of your projects can then be fed into the Max EVA database.
Max EVA – this is an interactive web database for evaluation data of MM Projects it is based on the type of data generated by using Max SUMO and can calculate modal shift and CO2 emission savings. When the EVA database is filled with many examples, it will be possible to quickly benchmark the benefit to cost ratio of MM projects across the EU.

Example: Data on travel behaviour
2) Economic Benefits of Cycling

Research by SQW 18/12/08 has led to the following calculations of the monetary benefit of delivering cycling schemes, such as cycle training or building a cycle lane. As such a true benefit to cost ratio can be calculated by local and central government, and can be used to convince the private sector.

Benefits of introducing a cycle training scheme

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Notes</th>
<th>Values *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduced mortality</td>
<td>WHO HEAT</td>
<td>£408.67</td>
</tr>
<tr>
<td></td>
<td></td>
<td>£0.83 per Km per cyclist</td>
</tr>
<tr>
<td>Health care savings</td>
<td>SQW estimate</td>
<td>£28.30</td>
</tr>
<tr>
<td>Staff Productivity gains</td>
<td>6% reduction in absenteeism</td>
<td>£47.68</td>
</tr>
<tr>
<td>Pollution reduction</td>
<td>Health benefits of cleaner air</td>
<td>£69.14</td>
</tr>
<tr>
<td>Less congestion – free flowing traffic</td>
<td>Reliability of arrival time at work</td>
<td>£137</td>
</tr>
</tbody>
</table>

*per cyclist assuming full year of cycling, 3.9 km, 3 times a week, 50% of cycling trips replacing vehicle journeys

3) Reduced Mortality - WHO’s Health Economic Assessment Tool (HEAT)

The WHO’s Health Economic Assessment Tool (HEAT) estimates the annual economic benefit from reduced mortality as a result of increased physical activity. The tool calculates the value of loss of life as the willingness to pay of middle aged person to avoid sudden death.

Health care savings
The Study of the Copenhagen Centre for Prospective Population found a substantial decrease in the actual risk of death for people cycling 3 hours per week, aged 20 to 60 years, namely a risk of mortality ratio of 0.72. This is due to the lower risk of heart disease, stroke and cancer thereby reducing the amount of expensive health treatment services needed.

Staff productivity gains
There is an empirical link between increased exercise and reduced absenteeism: An average employee in the UK has 6.8 days absenteeism p.a. but this is reduced by 6% amongst cyclists (conservative estimate) which equates to increase output of £47.68 p.a. per capita.

Pollution reduction (urban)
The reduction in Co2 emissions and improved air quality leads to health benefits due to less occurrences of respiratory illnesses.

Congestion
Congestion on the roads costs the UK £20bn per year in terms of loss of work time, according to the Confederation of British Industry (CBI).
4) Sustainable transport: assumptions on behaviour change
http://www.etcproceedings.org/paper/sustainable-transport-assumptions-on-behaviour-change

This paper provides an overview of some important behavioural theories, which help to understand car use. It presents 'ten golden rules' which are tools to help policy makers to plan or implement policy measures aimed at reducing car use:

1. Influencing behaviour is more than a funny television spot
2. Acknowledge other people’s feelings like your own
3. Attitudes can be influenced
4. Make smart use of cognitive dissonance
5. Individualise social dilemmas
6. Habit and catastrophes
7. Fairness
8. You too, superior individual
9. Feelings are facts
10. Demand and supply: the double role of communication

5) Smarter Choices 2010 (Funded by the DfT)
http://www.transportforqualityoflife.com/policyresearch/behaviourchange/

Transport for Quality of Life led a major study for the Department for Transport to evaluate the effects of large-scale Smarter Choice Programmes in the Sustainable Travel Towns of Darlington, Worcester and Peterborough. This work gathered together and analysed in depth a large body of data, in order to evaluate the effect on car use and travel by other modes, and to understand the likely impacts on carbon emissions, congestion and physical activity resulting from a significant boost to investment in smart measures.

The tools to evaluate the success of the project began with household surveys that were carried out between 2004 and 2008, with sample sizes of 25,000 people per town and 75,000 journeys. This was combined with detailed examination of a number of secondary sources:
- automatic vehicle counts and manual car and taxi counts
- bus passenger boarding data
- automatic and manual counts of cyclists
- manual counts of pedestrians crossing a town center
- workplace travel surveys from employers engaged in travel planning
- school travel surveys for each school

Using this model it was possible to extract the following findings in the town of Peterborough:

- behaviour change was achieved without any significant constraint on daily mobility
- on average, people in Peterborough increased time they spent using active travel modes on a daily basis by 16% between 2004 and 2008
- there was a reduction of 31 million car kilometres per year on 2004 levels by 2008, leading to a saving of 6,400 tonnes of CO2 per year
- modal shift occurred at all times of the day, for nearly all types of journey and among all socio-demographic groups

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
Changes in trips by main mode (trips per person per year)

<table>
<thead>
<tr>
<th>2004</th>
<th>Trips per person per year</th>
<th>2008</th>
<th>Relative changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>436</td>
<td>Walking: 223</td>
<td>51</td>
<td>+14%</td>
</tr>
<tr>
<td></td>
<td>Bicycle: 57</td>
<td>4</td>
<td>+12%</td>
</tr>
<tr>
<td></td>
<td>Motorcycle: 4</td>
<td>4</td>
<td>-9%</td>
</tr>
<tr>
<td></td>
<td>Car as driver: 397</td>
<td></td>
<td>-7%</td>
</tr>
<tr>
<td></td>
<td>Car as passenger: 217</td>
<td>11</td>
<td>-35%</td>
</tr>
<tr>
<td></td>
<td>Bus: 70</td>
<td>10</td>
<td>+10%</td>
</tr>
<tr>
<td></td>
<td>Other PT: 1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Relative change in mode choice between 2004 and 2008

<table>
<thead>
<tr>
<th>Mode</th>
<th>Total</th>
<th>ITM target population</th>
<th>Target area non-ITM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>+ 14%</td>
<td>+ 9%</td>
<td>+ 14%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>+ 12%</td>
<td>+ 36%</td>
<td>+ 12%</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
</tr>
<tr>
<td>Car-as-driver</td>
<td>- 9%</td>
<td>- 11%</td>
<td>- 4%</td>
</tr>
<tr>
<td>Car-as-passenger</td>
<td>- 7%</td>
<td>- 5%</td>
<td>- 14%</td>
</tr>
<tr>
<td>Bus</td>
<td>+ 35%</td>
<td>+ 33%</td>
<td>+ 42%</td>
</tr>
<tr>
<td>Other PT</td>
<td>+ 10%</td>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>
Sample and response details for travel behaviour and in-depth surveys

<table>
<thead>
<tr>
<th>Travel behaviour surveys</th>
<th>In-depth surveys</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>TOTAL</td>
</tr>
<tr>
<td>Gross sample</td>
<td>4,100</td>
</tr>
<tr>
<td>Sample loss*</td>
<td>590</td>
</tr>
<tr>
<td>Adjusted gross sample</td>
<td>3,410</td>
</tr>
<tr>
<td>Returns (households)</td>
<td>2,028</td>
</tr>
<tr>
<td>Returns (persons)</td>
<td>4,461</td>
</tr>
<tr>
<td>Response (%)</td>
<td>60%</td>
</tr>
<tr>
<td>Contracted persons</td>
<td>4,000</td>
</tr>
</tbody>
</table>

Full reports with the methods and theory of measuring behavioural change are available here:
http://www.peterborough.gov.uk/pdf/Travelchoice_in_Peterborough_exec_summary_FINAL.pdf

6) TRL Behavioural Change
http://www.trl.co.uk/research_development/journey_reliability/travelBehaviour/attitudes_behaviour.htm

TRL has carried out numerous projects investigating the factors that influence driver, rider and pedestrian behaviour and accident liability. These projects have covered a wide range of specific subject areas, such as child and adolescent road users, older road users, pedestrians, motorcyclists, novice drivers, speeders, drink-drivers, and drivers with impairments or disabilities.

TRL measure drivers' attitudes, behaviour, exposure and road safety knowledge through questionnaires that have been used in a variety of research projects. They carry out observational surveys to provide an understanding of the potential problems in roadside surveys and the relevant health and safety issues.

A TRL study on cycle monitoring includes 6 points to be borne in mind if manual counts are to be carried out effectively:

1. count when flows are high/highest
2. count during good weather
3. count during summer time, preferably between May and October inclusive
4. count on weekdays and avoid public/school holidays

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
5. Where cycle journeys are primarily for leisure, weekends and holiday periods may be appropriate times to count
6. Comparison counts should be undertaken at the same time of year

The study was published in 1999 by TRL setting out guidance on monitoring. TRL 395 “Guidance on monitoring cycle use”, D Davies et al 1999

7) COMMERCE Project
http://www.londoncouncils.gov.uk/services/commerce/newsandevents/default.htm

The COMMERCE Project developed workplace travel plan standards across six partner cities in Europe which act as a quality assurance tool.

It includes the important components of implementing and evaluating workplace travel plans:

- Integrating the travel plan into the organisation’s long-term strategy
- Senior management support
- Staff consultation
- Nomination of travel plan coordinator
- Support from local/regional authorities and public transport operators
- Baseline evaluation of travel plans, including site audits and staff travel surveys
- Objectives and targets of a travel plan
- Identify transport alternatives
- Financial Issues
- Monitoring and Evaluation

These principles are summarised in an easy to use table that allows self evaluation, with columns for Basic, Intermediate and Advanced. It is therefore a transferrable tool to both the public and private sector.

<table>
<thead>
<tr>
<th>3.- Travel patterns, Site audit and Environmental impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey of the travel patterns of staff/visitors and their needs to change behaviour (response rate 25+%)</td>
</tr>
<tr>
<td>Survey of the travel patterns of staff/visitors and their needs to change behaviour (response rate 40+%)</td>
</tr>
<tr>
<td>Survey of the travel patterns of staff/visitors and their needs to change behaviour (response rate 50+%)</td>
</tr>
<tr>
<td>Survey on current organisation’s delivery patterns, fleet operations, business travel requirements and scope for consolidation.</td>
</tr>
<tr>
<td>Survey on current organisation’s mobility amenities and situation (number of car parking spaces, charging schemes, bike stands, showers, number of employee/visitors, working times/opening times)</td>
</tr>
<tr>
<td>Site assessment to calculate existing cost of access and transport provision</td>
</tr>
<tr>
<td>Assessment of the CO₂ emission generated by staff and delivery movements</td>
</tr>
</tbody>
</table>
8) Travel blending®

Travel blending® is an individualised marketing campaign implemented by Steer Davies Gleave consultancy. Travel Blending® has been implemented in Leeds and Nottingham in the UK.

Travel Blending® consists of two one week travel diaries completed by all members of participating households.

The first travel diary allows:
• the amount of travel to be quantified
• the pollution generated to be calculated
• consideration of household interactions which result in travel
• generation of targeted suggestions about how to reduce car use.

The second diary:
• identifies change in travel behaviour
• facilitates feedback to participants
• monitors the impact of Travel Blending®

Travel diaries record "all travel outside the home with details obtained of destination, place and purpose, start and end time of each trip, travel mode and for car driver trips, the odometer reading at the start and end of the trip" (Rose and Ampt, 2001). The diaries cover seven days as week day and weekend journeys can be very different; people may be more able to travel blend at the weekend than during the week, or vice versa. It was found that people did complete the full seven day diaries; possibly because they included a built in reminder system (Rose and Ampt, 2001). It therefore constitutes an accurate data collection tool with which to evaluate behavioural change.

Further information is available at the website – simply scroll down for “Indimark” In Europe
http://www.elseviersocialsciences.com/transport/konsult/private/level2/instruments/instrument006/l2_006c.htm#c

9) Department for Transport

In January 2010 the DfT published a “Guidance on the Appraisal of Walking and Cycling Schemes” that sets out a detailed set of formulas to assist with evaluating the success of sustainable transport projects.

The following table sets out the Minimum Monitoring Requirements of Cycling and Walking Schemes:

<table>
<thead>
<tr>
<th>Table 6: Minimum Monitoring Requirements of Cycling and Walking Schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data to be collected</td>
</tr>
<tr>
<td>Number of cyclists/pedestrians per day</td>
</tr>
<tr>
<td>Utility/leisure split</td>
</tr>
<tr>
<td>Journey time</td>
</tr>
<tr>
<td>Origins and destinations</td>
</tr>
<tr>
<td>Length of scheme</td>
</tr>
<tr>
<td>Environmental improvements (landscaping, vegetation etc)</td>
</tr>
</tbody>
</table>

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
Safety/security improvements (lighting, CCTV etc)
Links with other schemes (part of a network, parking, resting places, crossings etc)
Information (signage)
Number of cyclists/pedestrians per day
Utility/leisure split

**Following scheme implementation**
Mode shift (previous journey mode)
Previous journey route (if transferred)
Journey time
Origins and destinations

Methods of monitoring **cycling** include the following:
- National Travel Survey, National Traffic Census, National Population Census (National level)
- Automatic Traffic Counters (ATCs) (including pneumatic tube counters, piezoelectric counters and inductive loops)
- Manual Classified Counts (MCC)
- Cordon and Screenline Counts
- Destination Surveys
- Interview Surveys

Methods of monitoring **walking** should include the following:
- Origin/destination surveys
- Household surveys and travel diaries
- Manual counts
- Automatic count methods (including video imaging, infrared sensors, piezoelectric pressure mats)

10) **Sustrans' Bike It Project**

This project is helping over 100,000 children cycle safely to school, more than tripling the daily cycling levels at its target schools.
http://www.sustrans.org.uk/what-we-do/bike-it

Sustrans’ TravelSmart element gives people tailor-made information and support they need to walk, cycle and use public transport more often. This process is known as Individualised Travel Marketing (ITM). TravelSmart demonstrates that people are very willing to change their travel behaviour when they are given the information and motivation they need so that they can choose to travel differently.

Building on 30 years' experience, TravelSmart's partner Socialdata has developed a unique and respected approach to **travel behaviour research**.

The Socialdata travel survey methodology, known as the New KONTIV design, has been used widely in the evaluation of Individualised Travel Marketing (ITM) projects in Europe, Australia and North America.

This methodology uses a self-administered, mail-back questionnaire and travel diary, coupled with motivation by post and telephone to encourage households to respond. The design of the survey and the response rates - typically between 60 and 80% - help ensure data validity.

Key features include:

- Survey samples drawn at random from across the ITM target population, including representative proportions of households in the 'Interested', 'Not Interested' and 'Regular User' groups
Further adjustment of results to take account of the proportion of households not responding to ITM, ensuring that the reported results are representative of the entire target population.

Use of a separate control group not affected by ITM to account for any background effects.

In addition to its role in the evaluation of ITM programmes, travel behaviour research conducted by Socialdata with support from Sustrans is providing local authorities with valuable local data to feed into transport planning.


This study was undertaken by SQW Limited on behalf of Cycling England to examine the economic benefits and the ways in which cycling can contribute to Government. It can be used as a tool to measure the costs of inactivity and obesity when taking into account changes in modal shift.

The report assumes that a cyclist travels an average of 3.9 km per trip and makes 3 trips per week – 160 per year. This is equivalent to 624 kms in a year.

<table>
<thead>
<tr>
<th>Additional cyclists...</th>
<th>Car switching</th>
<th>Area</th>
<th>Value per year (assuming 160 trips)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 and over</td>
<td>switching 160 trips of 3.9 km per year from car to bike</td>
<td>Urban area</td>
<td>£982</td>
</tr>
<tr>
<td></td>
<td>switching 160 trips of 3.9 km per year from car to bike</td>
<td>Rural area</td>
<td>£257</td>
</tr>
<tr>
<td></td>
<td>Making 160 trips of 3.9 km but not switching from a car</td>
<td>All</td>
<td>£176</td>
</tr>
<tr>
<td>Under 45</td>
<td>switching 160 trips of 3.9 km per year from car to bike</td>
<td>Urban</td>
<td>£233</td>
</tr>
<tr>
<td></td>
<td>switching 160 trips of 3.9 km per year from car to bike</td>
<td>Rural</td>
<td>£168</td>
</tr>
<tr>
<td></td>
<td>Making 160 trips of 3.9 km but not switching from a car</td>
<td>All</td>
<td>£87</td>
</tr>
<tr>
<td>Ambitions</td>
<td>Range from 9p to 91p per trip (applies to existing cyclists)</td>
<td>All</td>
<td></td>
</tr>
</tbody>
</table>

Source: SQW
12) Sustainable Transport Cost Benefit Analysis: South East England CRISPS

This document focuses on the efficiencies of the adoption of sustainable transport policies that acknowledges that the public sector has an extensive fleet of vehicles across the south of England which has a significant impact on the economy and the environment.

The report acknowledges that vehicle journeys are often unavoidable and so it seeks to provide alternative vehicles and fuels that are more cost effective and have less of an impact on the environment.

Pages 9, 10, 13 and 14 also have tables for calculating alternative fuels in fleet vehicles, and the cost savings that these represent.


The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
13) Cycling England
http://www.dft.gov.uk/cyclingengland/

Established in 2005 by the Department for Transport, it’s an independent, expert body, working to get more people cycling, more safely, more often. Results from the first three years of the Cycling Demonstration Towns programme show that it has been a major success. All six towns achieved their aim of getting more people cycling, more safely, more often and this means that, for the first time in the UK outside London, the national trend of a gradual decline in cycling levels has been reversed. A comprehensive evaluation of the investment in Aylesbury, Brighton & Hove, Darlington, Derby, Exeter and Lancaster with Morecambe has shown:

The report indicates that robustness in cycle monitoring is best achieved by Automatic Cycle Counters (ACCs). These counters include Inductive Loops, Radars, Pneumatic tubes, and beam counters. However, these give no indication about the demographics of cyclists, for example age, gender and ethnic group, or journey details which may be useful.

Manual counts are also used but these are unsuitable for measuring long term trends. The report recommends that the TRL study on cycle monitoring be observed when manually counting, which includes the following 6 points:

1. count when flows are high/highest
2. count during good weather
3. count during summer time, preferably between May and October inclusive
4. count on weekdays and avoid public/school holidays
5. Where cycle journeys are primarily for leisure, weekends and holiday periods may be appropriate times to count
6. Comparison counts should be undertaken at the same time of year

This study was published in 1999 by TRL setting out guidance on monitoring. TRL 395 “Guidance on monitoring cycle use”, D Davies et al 1999

Monitoring and evaluation tools are available here:
http://www.dft.gov.uk/cyclingengland/encouraging-cycling/monitoring-evaluation/


This overview of travel planning measures describes the individual tools used in travel planning, how they can be put together in a package, and how much change a local authority can achieve at site level and across an entire town.

Pages 17 – 20 contain specific tables with tools to evaluate public transport, cycling, walking, car sharing, fleet management and cross-modal tools.
Table 1: Public transport tools

<table>
<thead>
<tr>
<th>Providing generic public transport information</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Send regular bulletins of public transport timetables to target audience</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Produce and distribute public transport network maps to target audience</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send out public transport information with tickets or appointment cards, or include in public files</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Providing Tailored public transport information</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer personalised journey planners for specific regular trips</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market specific public transport route(s) to people within catchment area</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personalised travel planning (offer package of personalised information and advice)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide information about travel to new destination (new school for Year 6 pupils / new workplace for new residents / new area for new residents)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cheaper travel by public transport</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet-based fare / ticket booking platforms</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer discounted travel cards / season tickets</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer discounted 'all-in' tickets for travel plus visitor entry, or reduced-charge entry for visitors arriving by public transport</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Better public transport services</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negotiate with rail / bus operators to run new public service to site</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shuttle bus or shared taxi linking site to train station or town centre</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run dedicated bus service for target group</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Cycling tools

<table>
<thead>
<tr>
<th>Better facilities for cyclists</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provide cycle parking in convenient location</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>New cycle lanes on sites, or linking sites to national / local cycle network</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Install changing facilities, showers and lockers</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide cycle repair and maintenance service</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Encouraging cycling</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Offer interest-free loan for purchase of bicycle</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer bike maintenance training</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer cycle hire service</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set-up bicycle user group</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Run special cycling events (cycle to work/school days, cyclists’ breakfasts)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bicycles for new cyclists</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide bike routes for work-related trips</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer business mileage allowance for cyclists</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Set-up cycle train</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Intensive support programmes, offering bike and cycle equipment plus voluntary fitness monitoring | Y          | Y        |         |                     |                     |               |
| Incentive programmes (e.g., vouchers or points for cycle equipment or local shops) for every mile cycled | Y          | Y        |         |                     |                     |               |
| Personalised journey planners with cycle information | Y          | Y        | Y       |                     |                     |               |

Table 3: Walking tools

<table>
<thead>
<tr>
<th>Encouraging walking</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Targeted marketing for health promotional campaigns</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Personalised travel planning programmes</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Walking buses</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special walk to school days / weeks</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive programmes (vouchers / points for every mile walked)</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offer on-road pedestrian training</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Better facilities for pedestrians</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safe streets environment (pedestrian crossings, traffic calming, 20mph limits, bus zones)</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On-site improvements in facilities for people arriving on foot (e.g., covered waiting areas, seating)</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Car-sharing tools

<table>
<thead>
<tr>
<th>Promoting car-sharing for regular trips</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish and promote car-share database to match people for regular trips</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td></td>
<td></td>
<td>Y</td>
</tr>
<tr>
<td>Preferential parking for sharers</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Make sharers exempt from parking charges</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive payment to staff who car-share regularly</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guaranteed ride home if car-share fails through</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Promotional events to encourage people to register on database</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Promoting car-sharing for occasional trips</th>
<th>Workplaces</th>
<th>Hospitals</th>
<th>Schools</th>
<th>Visitor attractions</th>
<th>Leisure destinations</th>
<th>Neighbourhoods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publicise incentives / car-sharing schemes in promotional literature to members</td>
<td>Y</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
15) PAS 500 - workplace travel plans (UK)

Attachment – for further information see PAS500.ppt

The PAS 500 for workplace travel plans has been produced under the guidance of the British Standards Institute following widespread consultation and publication in the autumn of 2008. PAS stands for “Publicly Available Specification” and covers the setting of targets and objectives, data collection, survey methodology, the use of trip generation data bases, monitoring, validation and an independent system of certification. It specifies the requirements for 3 levels of travel plan achievement (bronze, silver and gold). After two years the PAS is reviewed and a decision is made as to whether it should be taken forward to become a formal British Standard. The following step could be ISO or International Standard.

The PAS was Project Managed by LEPT as part of the COMMERCE project and sponsored by TfL. The contents were based upon work conducted by Department for Transport and the National Business Travel Network whilst the technical author was Professor John Whitelegg. The Steering Group consisted of Steering Group

- ACT TravelWise
- ACT TravelWise Scotland
- Department for Transport (DfT)
- National Business Travel Network (NBTN)
- Highways Agency
- Transport for London (TfL)
- TravelWise Northern Ireland
- Welsh Assembly Government

Classification Grades

WTPs should demonstrate the following core requirements:
- Senior management support
- Defining aims and objectives

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
• Measuring baseline travel behaviour
• Defining the targets to be achieved and the associated timescales
• Identify a range of interventions
• Implementation strategy and budgetary resources
• Periodic review

**Bronze**

Must meet all core requirements and be publicly available (except commercially sensitive items) PLUS:

• Have sufficient budget / resources allocated to achieve objectives
• Be based on a survey, undertaken & analysed to identify travel behaviour of existing/proposed staff & visitors
• Identify director/senior manager to have responsibility for travel plan strategy, implementation & progress
• Include an implementation strategy giving clearly defined targets and milestones (min. 5 years)
• Include marketing & communications strategy (min. five years)

**Silver**

Must meet all above requirements and Bronze requirements PLUS:

• Survey details (questions, results, process of analysis) including how results will be used to achieve travel plan objectives
• 1st year targets achieved OR
• Review targets with full documentation and reasoning
• Evidence of decreased SOV / increase in sustainable alternatives
• Response rate of min. 30% of employees for travel survey
• Evidence of communication of WTP measures / objectives to staff
• Evidence of training for staff implementing WTP

**Gold**

Must meet all above requirements, including Bronze and Silver standards PLUS:

• Be operational for at least 5 years
• Survey undertaken and published at end of 5 years
• Survey achieves min. 50% response rate
• All targets must have been achieved, with supporting evidence
• Good practice displayed in WTP has been actively disseminated (presentations, articles etc)

16) EST Methodology for Calculating Fleet CO2 Emissions (23rd March 2007)
Source: (Energy Savings Trust, UK)

**Summary**

The aim is to establish a common approach that EST’s fleet consultants will use to estimate fleets’ CO2 emissions. This will allow for comparisons of fleets’ emissions over time and for comparisons between fleets.

The appropriate methodology to use for a specific fleet will of course depend on what data is available, so 5 different options are described below. These are presented in order of accuracy and the presumption should be to use the most accurate methodology possible i.e. use methodology 1 whenever fuel purchase/consumption data is available, methodology 2 as second choice etc.
In many cases it will be appropriate to use a combination of methodologies. For example if fuel usage data is available for vans but not for cars then methodology 1 (based on fuel consumed) should be used for the former and a mileage based methodology for the latter.

I. Fuel Purchase Data
If comprehensive fuel use data is available – either through fuel cards &/or consumption of bunkered fuel - then CO2 should be calculated by applying the following factors to the quantity of fuel consumed.

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>CO2 Emissions per Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diesel1</td>
<td>2.63 kg CO2 / litre</td>
</tr>
<tr>
<td>Petrol</td>
<td>2.30 kg CO2 / litre</td>
</tr>
<tr>
<td>LPG</td>
<td>1.49 kg CO2 / litre</td>
</tr>
<tr>
<td>Natural gas</td>
<td>2.65 kg CO2 / kg</td>
</tr>
<tr>
<td>100% biodiesel (B100)2</td>
<td>1.07 kg CO2 / litre</td>
</tr>
</tbody>
</table>

NB: Values for all other blends of biodiesel can be calculated by a pro-rata calculation based on the values for “Diesel” and “Biodiesel (100%)”. E.g. CO2 emissions from 5% biodiesel = (0.05 x 1.07) + (0.95 x 2.63) = 2.55 kg CO2 / litre

II. Mileage Data plus Car Make & Model
If data is available for each individual vehicle’s mileage as well as its make, model and variant– and for company cars organisations are obliged to hold this vehicle type information for P11D reporting - then car CO2 emissions can be calculated from cars’ official CO2 emissions. For current models, this data is available from the VCA website [http://www.vcacarfuelpdata.org.uk/search/search.asp](http://www.vcacarfuelpdata.org.uk/search/search.asp) and for older models it is available from the SMMT website: [http://www.smmtco2.co.uk/co2search2.asp](http://www.smmtco2.co.uk/co2search2.asp)

When employees use their own cars for company business (grey fleet vehicles) it might be that some but not all vehicle type information is available. For example “Ford Focus” might be recorded without information about the specific variant and perhaps without even engine size data. In such cases the consultant should use the above sources of CO2 data and his own judgement to decide upon the appropriate g/km figures to use – perhaps an average of several variants or perhaps one variant that he believes to be representative.

In-use fuel consumption and CO2 emissions are almost always higher than the official data for various reasons: the New European Drive Cycle is less demanding than most real-life driving conditions; the vehicles performing the tests are presented in perfect condition; and drivers carrying out the tests are selected for their eco-driving expertise. To account for this an additional 15.0%3 should be added to CO2 emissions calculated by this second methodology.

However, if a consultant considers this 15.0% adjustment to be inappropriate for a specific fleet, then the case could be made for using a different figure. For example, if a fleet of cars operates solely within the M25 during office hours then the consultant may consider that the fleet’s fuel consumption would be unusually high and that the adjustment factor needs to be higher. If a figure other than 15.0% is to be used for a specific fleet, please agree this with the client and indicate the rationale in the report.

---
2DEFRA (written response to PQ to Elliot Morley, Jan06) for overall biodiesel CO2 saving; [www.dieselnet.com](http://www.dieselnet.com) for relative energy densities of diesel & biodiesel
3ARVAL, pers comm with EST, June 06

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
III. Mileage Data plus Car Engine Size & Fuel Type
For grey fleet cars, employers will sometimes know mileage data and engine sizes and fuel types (information that may be captured as the basis for paying differential mileage rates) but not make and model. In such cases the following table should be used to estimate per km CO₂.

**Petrol Cars**

<table>
<thead>
<tr>
<th>Engine Size</th>
<th>Small Engine (&lt;1.4 litres)</th>
<th>Medium Engine (1.4 – 2.0 litres)</th>
<th>Large Engine (&gt;2.0 litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>183.1</td>
<td>216.2</td>
<td>296.4</td>
<td></td>
</tr>
</tbody>
</table>

**Diesel Cars**

<table>
<thead>
<tr>
<th>Engine Size</th>
<th>Small Engine (&lt;1.7 litres)</th>
<th>Medium Engine (1.7 – 2.0 litres)</th>
<th>Large Engine (&gt;2.0 litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150.7</td>
<td>188.1</td>
<td>263.5</td>
<td></td>
</tr>
</tbody>
</table>

**LPG Cars**

<table>
<thead>
<tr>
<th>Engine Size</th>
<th>Small Engine (&lt;1.4 litres)</th>
<th>Medium Engine (1.4 – 2.0 litres)</th>
<th>Large Engine (&gt;2.0 litres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>164.8</td>
<td>194.6</td>
<td>266.8</td>
<td></td>
</tr>
</tbody>
</table>

**Petrol Hybrid Cars**

<table>
<thead>
<tr>
<th>Engine Size</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>126.2</td>
<td>224.0</td>
<td></td>
</tr>
</tbody>
</table>

These data already include a 15% uplift to translate from test-cycle to real-life.

IV. Mileage Data plus Fuel Type
If fuel type alone (but not engine size) is known, then the following figures should be used for cars to estimate per km CO₂.

<table>
<thead>
<tr>
<th>Fuel Type</th>
<th>Petrol Car (Average)</th>
<th>Diesel Car (Average)</th>
<th>LPG Car (Average)</th>
<th>Petrol Hybrid (Average)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>209.5</td>
<td>198.7</td>
<td>188.6</td>
<td>175.1</td>
</tr>
</tbody>
</table>

These data already include a 15% uplift to translate from test-cycle to real-life.

V. Global Averages - Cars & Vans

4New figures from DEFRA (supplied directly to EST in March 07, yet to be published)
5LPG data assumes 10% tailpipe CO₂ saving compared to petrol
6New figures from DEFRA (supplied directly to EST in March 07, yet to be published)
7New figures from DEFRA (supplied directly to EST in March 07, yet to be published)

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
Where only mileage data are available, with no engine size or fuel type information, then the following global average figure should be used to estimate per km CO₂.

<table>
<thead>
<tr>
<th>Average Car</th>
</tr>
</thead>
<tbody>
<tr>
<td>207.5</td>
</tr>
</tbody>
</table>

These data already include a 15% uplift to translate from test-cycle to real-life.

**Vans**
For vans it will normally be possible to use methodology 1 since vans are usually refuelled from bunkered fuel or from fuel purchased by fuel cards. However, if this is not possible then the following average figures should be used to estimate per km CO₂.

<table>
<thead>
<tr>
<th>Car-derived van e.g. VW Caddy or Vauxhall Combo</th>
<th>Medium van e.g. Ford Transit Connect or Peugeot Partner:</th>
<th>Large van e.g. Ford Transit or Mercedes Sprinter:</th>
</tr>
</thead>
<tbody>
<tr>
<td>179</td>
<td>202</td>
<td>277</td>
</tr>
</tbody>
</table>

These data already include a 15% uplift to translate from test-cycle to real-life.

Some models of van will not fit clearly onto one of these three categories. In these instances the consultant should use his judgment to decide which represents the best fit.

**Other Information**
1. For most fully expensed drivers (those that receive from their company free fuel for private use) it will be impossible to distinguish between company and private mileage. In such cases the entire mileage and CO₂ emissions should be counted towards the fleet total.

**17) iTRACE (UK)**

iTRACE is a Travel Plan Project Management Application; it provides a centralised software suite designed to monitor and report on the performance of Workplace and School Travel Plans.

It is the chosen evaluation tool of Transport for London and the 33 London boroughs. It is also employed by many other UK local authorities and has attracted interested from other EU municipalities. Recently, it proved that there has been a 13% decrease in single occupancy vehicle in London in just 2 years thanks to the WTP and STP programme. These statistics, instantly available, bolster the political and economic justification of financing such "soft measures".

Access is browser based and so no software is required. The information which is uploaded by officers is flexibly managed to generate reporting at individual school / workplace level, up to borough level, sub regional level and London wide.

The sole responsibility for the content of this publication lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission are responsible for any use that may be made of the information contained therein.
Components

Local Government Management & Monitoring tool
- Sophisticated mapping & database technology
- Fast & simple to add, edit & access information
- Geo-locate sites on a map
- Attach documents & related data to sites
- Produce predefined standard reports
- Filtering Engine
- Enables analysis of individual Travel Plans against targets, planning conditions and obligations

Workplace access to Site Audit & Survey tool
- Request Site Audit
- Standard methodology
- Online or paper based staff surveys
- Check Audit status
- Generate Draft Travel Plan Report Automatically
- Create file for Post Code mapping

iTRACE has been developed by the company iBASE.
Dan Blanchet, Commercial Manager,
dan.blanchet@ibasesystems.co.uk
Tel +44 20 7372 1122

Section B
Online Carbon Calculators

1) Car Fuel Data (UK)

This online calculator is designed for UK drivers to calculate their vehicle tax. However, it also provides the user with an accurate calculation of grams per KM Co2 emissions for a vast number of vehicle types, models, engines and fuels and so is relevant pan-EU.

Go to VED calculator at the top of the screen:
http://www.vcacarfueldata.org.uk/

2) UK Government’s ACT ON Carbon Calculator
http://carboncalculator.direct.gov.uk/index.html

UK Government’s ACT ON uses data and factors verified by government departments to calculate the carbon footprint generated by travel, along with household heating and lighting and appliance use. It appears to be the basis for most other calculators in terms of the format and the questions asked.

The travel calculator can be used to calculate emissions made by a vehicle, both from the distance travelled and from the way the car is driven. It also calculates emissions from plane travel.

The household calculator requires the user to input details including the number of occupants, the age and size of the property, the level and type of insulation and the type of fuel that is predominantly used for cooking and heating. There is also an
option to input household energy bills from different quarters of the year to more accurately calculate emissions. The appliance calculator asks information relating to the type, age and efficiency rating of appliances in the home and the frequency of their use.

3) Resurgence Calculator  
http://www.resurgence.org/education/carbon-calculator.html

This calculator came first in an independent survey of carbon calculators on-line, and is widely rated as the most user-friendly and accurate on-line carbon calculator. It contains two sections relating to travel: one is specifically for private transport, and the other is for longer journeys.

The user enters information into tables relating to journeys made in the last year, in addition to their car use. You can enter the distance (or journey-time for international rail and flights), select the single or return, the number of people who share the journey (for car/taxi journey) and the frequency of the journey. The table has room for 5 journey listings under each section. If you need more space, you can simply list your journeys on a separate sheet of paper, add up the miles, and enter them into the table.

A link to the Google distance calculator to help the user estimate journey distances is also provided: http://www.daftlogic.com/projects-google-maps-distance-calculator.htm.

4) BP Target Neutral 
https://www.bp.com/secure/iframe.do?categoryId=9082&contentId=7039040

Around 21% of all CO₂ emissions in the UK come from road transport. BP Target Neutral is a positive, practical and straightforward movement started by BP to help drivers help the environment by reducing CO₂ one car at a time. Target Neutral is not-for-profit and can calculate emissions for UK-registered vehicles that were registered after March 2001.

It allows the user to calculate their vehicle emissions online by inputting their vehicle registration number and annual mileage. The BP Target Neutral calculator will tell you how much many tonnes of CO₂ your vehicle emits annually and what you would need to spend to offset this by supporting projects which effectively cancel out your emissions. You can also enter a fixed amount of CO₂ neutralise if you already know the amount of CO₂ you want to offset.

This website also contains further information on how to reduce, replace and neutralise carbon emissions.

5) Energy Savings Trust UK – Carbon Cutter Tool 
http://www.energysavingtrust.org.uk/calculator/calculate

This website allows the user to calculate their individual or household CO₂ footprint for the home, appliances and travel. The travel calculator can be used to calculate emissions made by a vehicle, both from the distance travelled and from the way the car is driven. It also calculates emissions from plane travel.

The household calculator requires the user to input details including the number of occupants, the age and size of the property, the level and type of insulation and the
type of fuel that is predominantly used for cooking and heating. There is also an option to input household energy bills from different quarters of the year to more accurately calculate emissions.

The appliance calculator asks information relating to the type, age and efficiency rating of appliances in the home and the frequency of their use.

6) Travel Footprint
http://www.travelfootprint.org/

This website is part of the Clear Zones project that enables users to compare the lifecycle environmental impacts of the main methods of passenger travel in the UK. It also allows detailed emissions comparison of cars available since 2001 as well as vehicles that are part of a fleet.

For road journeys, the distance is calculated by Google using best route algorithms and will apply to all road vehicles. For rail, these are calculated according to main rail line distances using the most common rail interchanges. For air travel, distances are calculated using algorithms provided through Geonames.org

7) Carbon Footprint Limited

Carbon Footprint Ltd is a leading carbon management company that helps hundreds of organisations and individuals to measure their carbon footprint generated by mode:

- Plane
- Car
- Bike
- Bus
- Rail

The household calculator is available in 10 different European languages and is therefore a very transferrable tool at European level for stakeholders to quantify the impact of travel measures.

8) ChooseClimate
http://www.chooseclimate.org/flying/mf.html

This website is specifically aimed at people who travel by plane. It enables the user to specify the type of ticket, model of plane and occupancy rate and displays its findings as kilograms of fuel used, kilograms of CO2 generated, and the total warming effect. The latter takes into account other emissions from aviation, such as nitrogen oxides and water vapour, and the fact that CO2 emitted at high altitude has an enhanced warming effect.

By selecting your origin and destination on an interactive map of the world, the emissions guide will automatically calculate the environmental impact of your journey.
Overview of Carbon Calculators

All carbon calculators make assumptions. For example, most calculators of household energy consumption use a conversion factor of 0.43 when working out the number of kilograms of CO2 produced per kilowatt of electricity. This figure is provided by Defra and based on the projected fuel mix of the national grid for 2009. [http://www.defra.gov.uk/environment/business/reporting/pdf/20090928-guidelines-ghg-conversion-factors.pdf](http://www.defra.gov.uk/environment/business/reporting/pdf/20090928-guidelines-ghg-conversion-factors.pdf)

However, the actual figure will be based on the mix of fuel used to generate the electricity provided by a person’s specific supplier during a particular year. People can see how their supplier compares to the average on the ElectricityInfo website: [http://www.electricityinfo.org/suppliers.php](http://www.electricityinfo.org/suppliers.php)

The Climate Outreach and Information Network provide a survey into the most accurate carbon calculators [http://www.coinet.org.uk/](http://www.coinet.org.uk/)