

## Sustainability Committee

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## Carbon reduction in the transport sector

This paper provides some background briefing for the next stage of the committee inquiry into carbon reduction in the transport sector.

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## 1. Introduction

Transport contributes about 15 per cent of global CO<sub>2</sub> emissions and 23 per cent (by source) of UK domestic emissions. Road transport accounts for about 93 per cent of all CO<sub>2</sub> emissions from domestic transport<sup>1</sup>. In Wales in 2004, road transport was responsible for about 23% of all CO<sub>2</sub> emissions<sup>2</sup>.

Transport is the most rapidly growing source of emissions<sup>3</sup>, it is the only sector in which emissions have been rising consistently since 1990, and unless action is taken, emissions in the sector are projected to carry on rising<sup>4</sup>.

The *Transport (Wales) Act 2006* places a duty on the Assembly Government to promote safe, integrated, **sustainable**, efficient and economic transport as well as a requirement to produce a statutory Wales Transport Strategy. A consultation draft of the Wales Transport Strategy *Connecting Wales*<sup>5</sup> was published in July 2006. A final version of the strategy is due to be published before the end of 2007. Each of the four regional transport consortia is also preparing a Regional Transport Plan.

<sup>1</sup> Department for Transport, *Towards a Sustainable Transport System: Supporting Economic Growth in a Low Carbon World*, October 2007 <http://www.dft.gov.uk/about/strategy/transportstrategy/pdfsustaintranssystem.pdf>

<sup>2</sup> DEFRA, Local and regional CO<sub>2</sub> emissions estimates for 2004 for the UK, <http://www.defra.gov.uk/environment/statistics/globalatmos/regionalrpt/laregionalco2rpt20061127.pdf>

<sup>3</sup> DEFRA, *Key Facts About: Global Atmosphere*, <http://www.defra.gov.uk/environment/statistics/globalatmos/kf/gakf07.htm>

<sup>4</sup> House of Commons Environmental Audit Committee, *Reducing Carbon Emissions from Transport*, <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmenvaud/981/981-i.pdf>

<sup>5</sup> Welsh Assembly Government, *Connecting Wales*, July 2006 <http://www.connectingwales.gov.wales>

The European Commission adopted a Green Paper on Urban Transport, *Towards a new culture for urban mobility*, on 25 September 2007<sup>6</sup>.

The Green Paper presents a set of policy issues for urban mobility and includes the following questions:

- how the use of clean and energy efficient technologies can be increased e.g. promoting green procurement;
- how walking and cycling can be promoted and promoting solutions such as car sharing and Intelligent Transport Systems;
- the promotion of the use of urban road user charging;
- the use of existing EU funds such as the structural funds to develop sustainable transport.

## 2. Key issues and devolved responsibilities

According to the Commission for Integrated Transport<sup>7</sup>, options to cut transport emissions involve addressing one or more of the following:

- The demand for movement;
- The choice of transport mode;
- The technical efficiency of vehicles;
- The carbon content of the fuels used to power them;
- The efficiency of vehicle use.

**The Welsh Assembly Government has the most responsibility and scope for influence over the first two of these ie: the demand for movement and the choice of transport mode.**

## 3. Demand for movement

The *Connecting Wales* consultation draft includes as a theme "To minimise the need to travel". This identifies land-use planning, the use of technology, managing demand through pricing and regulation and raising awareness as examples of measures that can be applied.

### 3.1 Reducing demand for driving

- *Awareness-raising* - the Welsh Assembly Government can help to raise awareness alongside UK Government initiatives;
- *the provision of alternatives* (see choice of transport mode below);

<sup>6</sup> [http://ec.europa.eu/transport/clean/green\\_paper\\_urban\\_transport/index\\_en.htm](http://ec.europa.eu/transport/clean/green_paper_urban_transport/index_en.htm)

<sup>7</sup> Commission for Integrated Transport, *Transport and Climate Change: Advice to Government*, 2007  
<http://www.cfit.gov.uk/docs/2007/climatechange/pdf/2007climatechange.pdf>

- *using the planning system to reduce demand* - for example through a town centre-first approach to new shopping development, or by restricting parking provision in new developments. The Welsh Assembly Government can influence this through planning policy and guidance to local planning authorities. TAN18 Transport emphasises the role that land use planning can play in helping to reduce the need to travel<sup>8</sup>;
- *introducing traffic demand management systems such as local road pricing schemes* – determined by local authorities but approved by the Welsh Assembly Government. The Local Transport Bill announced on the Queen's Speech will give local authorities and the Assembly Government greater powers in this area. This includes a Framework Power that would allow the Welsh Assembly Government to bring forward their own proposals for pricing schemes on the trunk road network in Wales;
- *using Information Communication Technologies to reduce the need to travel* – for example through tele-working and e-learning. The Welsh Assembly Government has a role in promoting the use of ICT in Wales.
- *increasing fuel duty* – determined by the UK Government.

### 3.2 Reducing the demand for air travel

Demand management is currently the only realistic means of limiting the CO<sub>2</sub> emissions from air transport, principally through price signals, determined by UK Government. Evidence indicates that price affects the demand for flying, in particular for non-business trips<sup>9</sup>.

The European Commission and the UK Government are currently examining the possibilities of incorporating aviation into the EU Emissions Trading Scheme.

## 4. Choice of transport mode

According to the Eddington Review of transport's role in sustaining the UK's productivity and competitiveness, transport pricing should better reflect the carbon impacts of travel<sup>10</sup>.

Higher carbon modes of transport (air and motoring) have become relatively cheaper than lower carbon modes (bus and rail), and highest carbon cars are taxed disproportionately lightly<sup>11</sup>. The Department for Transport's policy performance on carbon emission reduction has been described by the House of Commons Environmental Audit Committee as 'not nearly good enough'<sup>11</sup>.

<sup>8</sup> Welsh Assembly Government, TAN 18, Transport, 2007

[http://new.wales.gov.uk/about/departments/depc/epcpublications/PlanPubs/TAN/TAN18\\_2007?lang=en](http://new.wales.gov.uk/about/departments/depc/epcpublications/PlanPubs/TAN/TAN18_2007?lang=en)

<sup>9</sup> Brons M et al, 2002. Price elasticities of demand for passenger air travel: a meta-analysis, *Journal of Air Transport Management*, 8 (3), 165-175.

<sup>10</sup> Department for Transport, *Transport's role in sustaining UK's productivity and competitiveness: The case for action*, December 2006, <http://www.dft.gov.uk/162259/187604/206711/volume3>

<sup>11</sup> House of Commons Environmental Audit Committee, *Reducing Carbon Emissions from Transport*, HC 981-I, August 2006 <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmenvaud/981/981-i.pdf>

The consultation draft of *Connecting Wales*<sup>12</sup> includes a theme to achieve greater use of the more sustainable and healthy forms of travel and specifically a reduction in single-occupancy car use. It also seeks to promote the use of alternative modes through “smarter choices”.

Sustrans in their report on *Sustainable Transport for Wales*<sup>13</sup> state:

“76% - more than three quarters - of the Assembly Government 2005/6 budgeted expenditure for transport was directed at trunk roads or local roads. The Assembly Government’s 15 year £8 billion programme of transport expenditure, launched in December 2004, is set to continue this bias: all of the largest grants announced at its launch were for road schemes.”

#### 4.1 Road transport

The number of trips per person by car in Great Britain was broadly unchanged between 1995-97 and 2006<sup>14</sup>. More than half (58%) of car trips in Great Britain in 2006 were less than 5 miles<sup>15</sup>. Cars cater for 84% of personal travel in Wales (2004 figures)<sup>16</sup>. Wales has witnessed a marked increase in traffic levels in the past decade and traffic growth has exceeded that for the rest of the UK. This growth is set to continue with traffic levels on motorways and trunk roads forecast to grow by up to a third in the next ten years<sup>17</sup>.

- *Trunk Roads* - The Welsh Assembly Government set out its plans for the future maintenance and improvement of trunk roads in Wales in the March 2002 report, ***Trunk Road Forward Programme***. Following a review of Transport Policy in 2004, the Assembly Government issued updated information on the programmes<sup>18</sup>. This updated information was integrated into four priority phases as follows:
  - ‘Phase 1’ – programmes due to start by March 2007;
  - ‘Phase 2’ – programmes that could be ready to start by April 2010;
  - ‘Phase 3’ – programmes that are unlikely to start before April 2010, and;
  - ‘On hold’ – recognised programmes that have no proposed start dates.

The M4 Magor to Castleton scheme (Newport bypass) is currently in Phase 2. The Deputy First Minister recently announced the anticipated opening of the new M4 in 2013, subject to the successful completion of statutory processes, procurement routes and the outcome of a public inquiry<sup>19</sup>.

- *Making Better use of the existing network, including Active Traffic Management* – this is the responsibility of the Welsh Assembly Government for the trunk road network in Wales. The

<sup>12</sup> Welsh Assembly Government, *Connecting Wales*, July 2006

[Connecting Wales](#)

<sup>13</sup> Sustrans, *Sustainable Transport for Wales, Time for Change*, July 2006

<http://sustrans.org.uk/webfiles/Wales%20Policy%20Docs/STW%20-%20Full%20report%20in%20English.pdf>

<sup>14</sup> Table 3.4, Department for Transport, *National Travel Survey 2006*

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/personal/mainresults/nts2006/pdfnatravlsur06.pdf>

<sup>15</sup> Ibid Table 3.4

<sup>16</sup> Welsh Assembly Government, *Connecting Wales*, July 2006

[Connecting Wales](#)

<sup>17</sup> Ibid Para 2.13

<sup>18</sup> Welsh Assembly Government, *Trunk Road Forward Programme*

<http://new.wales.gov.uk/topics/transport/roads/?lang=en>

<sup>19</sup> RoP, p 43, 19 September 2007

Department for Transport has been piloting the use of the hard shoulder as an additional lane for traffic on the M42 around Birmingham during times of congestion. They believe that such Active Traffic Management schemes could provide an alternative to conventional road widening in some places and could potentially bring reductions in CO<sub>2</sub> emissions, as well as reducing congestion, improving safety and improving air quality.

#### 4.2 Substituting road transport with other modes

- *encouraging the transport of freight by rail* – determined by UK Government although the Welsh Assembly Government can pay grants;

*Shifting freight from road to water* – largely determined by UK Government. The House of Commons Environmental Audit Committee concluded that there are clear advantages in terms of carbon emissions of shifting freight from road to water, and the Department for Transport needs to do more to actively encourage this shift;

- *improving the Welsh railway system* – overall priorities and funding are determined by UK Government, although there is some scope for additional funding from the Welsh Assembly Government and Network Rail;
- *improving Welsh bus transport* – bus provision is largely deregulated but there is some role for local authorities in partnership with bus companies. The Local Transport Bill announced in the Queen's Speech will give local authorities greater powers in this area;
- *Concessionary fares* – the Welsh Assembly Government has an existing scheme for free bus travel for the over 60's and disabled people and is piloting a similar scheme for rail travel;
- *Promoting smarter choices* – through travel awareness campaigns, work travel plans, station travel plans, personalised journey planning, car sharing and car clubs. The Welsh Assembly Government and the Regional Transport Consortia have roles to play in these initiatives;
- *Demand responsive transport* – particularly in rural Wales, providing alternative forms of public transport such as taxi buses, dial-a-ride schemes;
- *Seamless travel* – including provision of walking and cycling routes to rail stations/bus services and development of better bus-rail links. The Welsh Assembly Government and the Regional Transport Consortia can encourage this. The Local Transport Bill announced in the Queen's Speech will give local authorities greater powers over bus services.

#### 4.3 Walking and cycling

The Welsh Assembly Government produced a **Walking and Cycling Strategy** in 2003<sup>20</sup>

The key factors in encouraging walking and cycling are an overall reduction in motorised transportation and a reduction in the speed of remaining vehicles in urban areas<sup>21</sup>. Powers to restrict speed in urban areas are currently available to local authorities through initiatives such as home

<sup>20</sup> Welsh Assembly Government, *Walking and Cycling Strategy*, 2003

<http://new.wales.gov.uk/topics/transport/IntegratedTransport/walkingcycling/?lang=en>

<sup>21</sup> British Medical Association, *Memorandum by the British Medical Association: Walking in towns and cities*, January 2001,

<http://www.parliament.the-stationery-office.co.uk/pa/cm200001/cmselect/cmenvtra/167/167ap15.htm>

zones, quiet lanes and 20 mph zones. Safe Routes to School projects also encourage walking and cycling. There are public health benefits associated with walking and cycling.

#### 4.4 Air transport

Air transport is undergoing the most rapid increase of any transport sector: even under the Department for Transport's best case scenario for carbon emissions, aviation will account for a quarter of the UK economy's "entire capacity to emit carbon" by 2050<sup>22</sup>. The rapid growth of air traffic throughout the world has been described by the Sustainable Development Commission as one of the most severe threats to the global environment today<sup>23</sup>. Passenger growth at Cardiff International Airport in the ten years to 2002 was 9.8 per cent per annum<sup>24</sup>, greater than the UK regional average.

The climate impacts associated with air transport are more severe than those associated with emissions at ground level. Most commentators apply a multiplication factor of 2.7 to aviation emissions to cover the additional impact at high altitudes<sup>25</sup>.

## 5. Technical efficiency of vehicles

### 5.1 Reducing demand for fuel-inefficient vehicles and increasing demand for fuel-efficient models

- *increasing the tax levied on certain road transport fuels* – determined by the UK Government;
- *varying the Vehicle Excise Duty on cars, depending on their fuel efficiency* – determined by the UK Government;
- *Green Vehicle Public Procurement* – determined by the EU, but the Welsh Assembly Government and local authorities can introduce their own policies. The European Commission's Green Paper on Urban Transport examines how the use of clean and energy efficient technologies can be increased through promoting green procurement.

*Introduction of low carbon buses* – determined by the UK Government.

### 5.2 Increasing the fuel efficiency of private and public transport

- *reducing the g/km CO<sub>2</sub> emissions from new cars* – largely determined by the EU.

in 2002 the UK Government launched the Powering Future Vehicles (PFV) Strategy, designed to promote new vehicle technologies and fuels, and ensure the involvement of the UK automotive industry in the development of new technologies. This contained a main target that by 2012, 10 per cent of all new car sales will be cars emitting 100g/km CO<sub>2</sub> or less at the tailpipe. To help achieve this target, the Government established the Low Carbon Vehicle Partnership (LowCVP)<sup>26</sup>, a coalition of public, industry, and academic groups, to co-ordinate research and drive on innovation; and

<sup>22</sup> House of Commons Environmental Audit Committee, *Reducing Carbon Emissions from Transport*, <http://www.publications.parliament.uk/pa/cm200506/cmselect/cmenvaud/981/981-i.pdf>

<sup>23</sup> Sustainable Development Commission, *Missed Opportunity: A Critique of the Air Transport White Paper*, <http://www.sd-commission.org.uk/publications/downloads/Missed%20Opportunity-Combined.pdf>

<sup>24</sup> Department for Transport, December 2003, *The Future of Air Transport: Key Facts – Wales*, [http://www.dft.gov.uk/stellent/groups/dft\\_aviation/documents/page/dft\\_aviation\\_031526.pdf](http://www.dft.gov.uk/stellent/groups/dft_aviation/documents/page/dft_aviation_031526.pdf)

<sup>25</sup> Anderson K et al, 2006, *Growth scenarios for EU and UK aviation: Contradictions with climate policy*, Tyndall Centre for Climate Change Research, January 2006,

[http://www.tyndall.ac.uk/publications/working\\_papers/wp84.pdf](http://www.tyndall.ac.uk/publications/working_papers/wp84.pdf)

<sup>26</sup> <http://www.lowcvp.org.uk/>



implement a package of measures. As part of the 2002 PFV Strategy, the UK Government also set a target of seeing 600 low carbon buses entering service each year by 2012.

## 6. Carbon content of fuels

### 6.1 Decreasing the fossil fuel component of transport fuel

- *increasing the proportion of fuel from renewable and non-fossil sources* – determined by the EU. The UK Renewable Transport Fuels Obligation (RTFO) will require suppliers to ensure a share of their sales is from biofuels or other renewable fuels, rising in stages to 5% by 2010–11.

The Welsh Assembly Government's Environment Strategy contains a target to publish a **Biomass Energy Strategy** in 2007. In 2006, the Environment, Planning and Countryside Committee of the Second Assembly looked at the potential of biocrops and the biofuels industry in Wales. A draft report<sup>27</sup> was considered by the Committee in June 2006 following evidence sessions from scientific experts and the farming unions. The report is still awaiting a response from the Welsh Assembly Government. The Strategy is expected to be published by the end of 2007.

## 7. Efficiency of vehicle use

- *Reducing the portion of private travel that takes place at higher-emission speeds* – National road speed limits are a UK Government reserved matter. Enforcement of national speed limits is a matter for the police.

CO<sub>2</sub> emissions from private transport increase as speed increases above 60mph<sup>28</sup> and are also greater at very low speeds.

Assuming a 5 per cent share of UK road traffic in Wales, research indicates:

- Strict enforcement of the 70mph speed limit on motorways would cut carbon dioxide emissions by 183,000 tonnes per annum (54 per cent of cars exceed the speed limit on motorways<sup>29</sup>).
- Reducing the maximum speed limit to 60mph would cut carbon dioxide emissions by 345,000 tonnes per annum<sup>30</sup>.

The Commission for Integrated Transport has argued that the principle of “smart” or “eco-driving” aimed at optimising engine performance (for example gentle acceleration, limiting the use of air conditioning, avoiding sharp braking) can lead to average fuel savings of between 5 and 10 per cent<sup>31</sup>. It argues that the Government should pursue an intensification of eco-driver training programmes for emissions savings and for additional safety and air quality benefits.

<sup>27</sup> [Report on the evidence taken by the Environment Planning and Countryside Committee on Biocrops and Biomass](#)

<sup>28</sup> UK Energy Research Centre, *Getting the genie back in the bottle: Limiting speed to reduce carbon emissions and accelerate the shift to low carbon vehicles*, January 2006, [www.ukerc.ac.uk/component/option.com\\_docman/task.doc\\_download/gid.807/](http://www.ukerc.ac.uk/component/option.com_docman/task.doc_download/gid.807/)

<sup>29</sup> Department for Transport, *Statistical release on vehicle speeds in Great Britain: 2006*,

<http://www.dft.gov.uk/pgr/statistics/datatablespublications/roadtraffic/speedscongestion/vehiclespeedsqb/statrelease06>

<sup>30</sup> UK Energy Research Centre, *Getting the genie back in the bottle: Limiting speed to reduce carbon emissions and accelerate the shift to low carbon vehicles*, January 2006, [www.ukerc.ac.uk/component/option.com\\_docman/task.doc\\_download/gid.807/](http://www.ukerc.ac.uk/component/option.com_docman/task.doc_download/gid.807/)

<sup>31</sup> Commission for Integrated Transport, *Transport and Climate Change: Advice to Government*, 2007



- *Promoting Road Safety* – the Welsh Assembly Government and local authorities have responsibility for promoting road safety in Wales. The Welsh Assembly Government published its **Road Safety Strategy** in January 2003. The Vision of the strategy is “to reduce real and perceived danger for all road and footway users in Wales in order to promote safe and sustainable access”.



## 8. Key documents

**Connecting Wales**, Wales Transport Strategy Consultation Document, Welsh Assembly Government, July 2006:

<http://new.wales.gov.uk/consultations/closed/busandeconclocons/951740/?lang=en>

**Transport and Climate Change**, Advice to Government from the Commission for Integrated Transport, 2007:

<http://www.cfit.gov.uk/docs/2007/climatechange/pdf/2007climatechange.pdf>

**Towards a Sustainable Transport System**, Supporting Economic Growth in a Low Carbon World, Department for Transport, October 2007:

<http://www.dft.gov.uk/about/strategy/transportstrategy/pdfsustaintranssystem.pdf>

**Reducing Carbon Emissions from Transport**, House of Commons Environmental Audit Committee, July 2006:

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