

Environmental Concerns	Relevant Factors/ Evidence	Some Implications
<b>NATURAL RESOURCES</b>	<p>Transport demand increases in line with economic growth. Greater national and personal wealth has led to more cars and greater use of resources particularly fossil fuels. The <b>Kyoto agreement</b> necessitates a more <b>sustainable development</b> path.</p> <p>Transport consumes 25% of world primary energy<sup>1</sup> and relies almost totally on oil, as only a few viable short-run alternatives are available.</p> <p>Peaking of crude oil production is likely early this century<sup>2</sup> although this would be delayed if oil prices rose sharply or alternative energy sources were introduced. World crude production would then begin to fall within years rather than centuries.</p> <p>There is a long lead-time in car manufacturing – it takes 10 years to change the production process and 15 years to renew the existing vehicle fleet.</p> <p>With increasing economic and population growth land will become scarce.</p>	<p>Society must develop a more sustainable use of resources.</p> <p>Potential for greater use of recycled materials e.g. for road building. The built environment needs to become more resource efficient. Need to consider the whole life costs of products.</p> <p>Develop improved road maintenance and construction techniques. Avoid over specification.</p> <p>Economic incentives will promote a more sustainable use of resources e.g. “feebates” would fine inefficient uses and reward energy efficient buildings and consumer items.</p> <p>Valuation of environmental costs and benefits will reflect societal values where users and polluters of environmental resources pay full environmental costs – by economic instruments and financial incentives.</p> <p>Policies to reduce car dependency will be necessary– e.g. promote walking and cycling, safe routes to schools.</p> <p>Development of more sustainable land-use policies. Regeneration will become main source of vacant land, mainly Brownfield sites. Adjustment of land-use trends to reduce transport demand and car dependency.</p> <p>Alternative non-fossil energy sources and technologies will have to be introduced more rapidly and on a larger scale than any experienced before.</p>
<b>CLIMATIC CHANGE</b> – particularly CO <sub>2</sub> emissions	<p>Transport produces about 25% of the UK’s CO<sub>2</sub> emissions<sup>3</sup> and this share is increasing.</p> <p>Current targets are to stabilise global CO<sub>2</sub> emissions by 2020. Seems unlikely that this will be achieved in the transport sector with the current targets due to continued world-wide growth in car ownership. OECD countries may have to take a 50% reduction in order to allow the emerging and developing countries to develop economically.</p> <p>Elasticities of demand for travel are low as the world economic system has developed with high levels of transport intensity, which in turn is based on the availability of cheap fuel.</p> <p>Climatic change effects will increase the potential risk of flooding . More people and wider areas will potentially be affected more often.</p>	<p>Greenhouse gas emissions from all sources need to be quantified and greatly reduced<sup>4</sup>.</p> <p>Transport policies will take full account of carbon emissions which will be reflected in pricing in order to reduce emissions.</p> <p>Energy-efficient programmes will be an integral part of all transport modes although any improvements will be outweighed by traffic growth. Shift to smaller and lighter cars.</p> <p>Vehicle technology will remain oil-based for the foreseeable future, although alternatives (electric cars and renewable energy vehicles) will also be in use.</p> <p>Unrestricted mobility cannot continue. The necessity for physical travel will reduce although the number of interactions per person or business will increase.</p> <p>Demand management and supply constraint policies will be set appropriate to each location (e.g. environmental capacities). Other means of communication and technology transfer must take place.</p> <p>Main reason for physical travel may become leisure as all other activities (work, education, personal business) will be carried out remotely through multi-media</p>

Environmental Concerns	Relevant Factors/ Evidence	Some Implications
		communications. Planning decisions will need to take account of increasing flood risks. Need to improve flood forecasting and warning systems.
<b>ENVIRONMENTAL PROTECTION</b>	Historically industrial activities have had undesirable impacts on human health and the environment. More sustainable production and consumption practices are now required <sup>5,6</sup> .	More environmental regulation. Environmental licensing for all business sectors. More environmental management systems and reports. Major construction projects with large environmental impacts are unlikely to proceed.
Air quality	Road transport is a major source of air pollutants (CO,NO <sub>x</sub> and volatile organic compounds) and the dominant source in urban areas. 42% of US population lives in a “non-attainment area” - not meeting National Ambient Air Quality Standards – for 1 or more of 5 key pollutants <sup>7</sup> . Climatic change and traffic growth may exacerbate poor air quality. Emissions from airports and aircraft are emerging as a concern.	Develop cleaner engines and vehicles which run on cleaner fuels. Restrict vehicles in urban areas. Encourage a modal shift towards cleaner modes of transport. Develop air quality management systems and real-time air quality information.
Noise nuisance	Noise pollution is likely to rise as both road and air traffic volumes increase.	Develop quieter vehicles. Restrict traffic in urban areas.
Visual intrusion/ severance	Visual intrusion/ severance issues likely to become more prominent.	Transport schemes will have to mitigate these effects e.g. by tunnelling, “Green Bridges”.
Loss of biodiversity	As more habitats are threatened by development, there will be more pressure to conserve rare habitats and to diversify species.	Protection of natural habitats will limit further development of countryside. Urban areas will become new focus of activity for habitat preservation. Wildlife considerations will become an integral part of industrial, economic and financial planning.
“Quality of life”	People want to live in an attractive, clean and safe environment which can be sustained both now and in the future.	Improve the quality of urban environments; improve access and facilities for disabled. Reduce fatalities and severity of casualties caused by road accidents. Develop vehicle speed management and control to reduce speeds in urban areas for safety reasons. This major long-term challenge is unlikely to be met by incremental change but rather it will require radical or a “step change” in products, in modes of production and consumption and in management and regulation.
Waste disposal & land fill	Landfilling and incineration are becoming environmentally unacceptable. Disposal of tyres and end-of-life vehicles (ELV) are the major transport concerns. ELV disposal accounts for 1% of Europe’s waste. The EU has proposed a minimum target of 65% material recycling and energy recovery by 2000 <sup>8</sup> .	Reduce amount of waste for ultimate disposal by increasing recyclable contents. Design cars for easier dismantling and recycling. Need a clear concept of responsibility for waste management e.g. make car manufacturers responsible for disposal of ELVs.

Environmental Concerns	Relevant Factors/ Evidence	Some Implications
		Increase the lifetime of cars and tyres.
Water quality and pollution	<p>Transport affects water quality usually in the form of surface and groundwater contamination through accidental oil spills, pipeline leakage, and leakage of fuel storage tanks. Several catastrophic oil spills (e.g. Exxon Valdez) have highlighted the problems of the global transportation of oil.</p> <p>Transport directly affects water quality through run-off from streets (such as salt and other chemicals used to de-ice roads) and through the improper disposal of motor oil.</p>	<p>Reduce the risk of catastrophic spills – perhaps by upgraded liability and compensation regime to encourage preventative measures by vessel owners and operators.</p> <p>Need greater accountability for pollution and other effects of waste.</p> <p>Require proper design of transport infrastructure to reduce pollution run-off from roads.</p> <p>Develop new materials for road surfacing that will prevent ice formation on roads without use of salt.</p> <p>Develop vehicle technologies that do not require motor oil.</p>
<b>CONGESTION</b>	<p>Congestion contributes to many environmental problems e.g. air quality, inefficient use of resources, quality of life. Rapidly increasing car ownership and use. Costs of motoring have fallen whilst real disposable incomes have increased.</p> <p>Traffic growth of 60% could occur between 1996 and 2031 assuming current policies on road network and rail and bus services<sup>9,10</sup></p> <p>Congestion is a serious problem in many urban areas and on some strategic inter-urban links. With increasing traffic, journey times will increase considerably, particularly on urban motorways. These areas of traffic stress will grow in size and duration as traffic levels increase.</p> <p>Regional concentration of population in SE with resulting transport bottlenecks.</p>	<p>Capacity of existing transport infrastructure is major limiting factor for future of transport.</p> <p>Need to make better use of existing infrastructure, including better operational management e.g. HOV lanes, green commuter plans, transit.</p> <p>Demand management will be essential to restrain growth - road pricing, charging, parking &amp; access controls.</p> <p>Develop real-time information and dynamic route guidance systems for roads.</p> <p>Develop off-peak transport (night-time deliveries)</p> <p>Develop booking systems for road use to achieve flow management on congested routes.</p> <p>Encourage more home-based activities e.g. – working, shopping, personal business.</p>
Public transport	<p>Decline in public transport use</p> <p>Bottlenecks in rail network.</p>	<p>Need integrated and quality public transport services to halt decline.</p> <p>Improve quality and comfort of public transport services and particularly interchange facilities. Guided buses. Demand responsive services.</p> <p>Provide up-to-the-minute information about travel conditions and choices.</p> <p>Encourage through-ticketing and modal transfers to public transport or multi-occupancy vehicles.</p>
Land-use	Increasing edge-of-town shopping & office developments	<p>Restrict further out-of-town developments.</p> <p>Ensure public transport forms integral part of any new schemes.</p>
Freight	<p>Increase in surface freight transport – amount of freight moved has doubled since 1970.</p> <p>Road freight accounted for 2/3rds of billion-tonne km in 1999<sup>11</sup>.</p> <p>Although the overall quantity of goods lifted has been stable over the past 30</p>	<p>Improve vehicle management, logistics and supply chain management.</p> <p>Develop handling techniques for freight transfer between road/rail/water/air modes</p>

Environmental Concerns	Relevant Factors/ Evidence	Some Implications
	years, goods moved (tonne km) have increased substantially owing to major structural changes in the sourcing, production and distribution of goods.	Encourage more rail and water-based freight movements.
Air	<p>Massive growth in aviation both passenger and freight due to increased wealth, improved aviation technology<sup>12</sup>.</p> <p>80% of all people who enter/leave UK do so by air and for the majority of air journeys there is no alternative mode. Air traffic (passengers) expected to grow at 4.5% per year.</p> <p>About ¼ of UK exports conveyed by air.</p> <p>Boeing predicts that in 50 years there will be a major plane crash every week!</p>	<p>Airports are key national assets. Need to build and upgrade existing international links of transport system to maintain and improve UK's world-wide competitive position.</p> <p>Growth in air traffic demand will have a knock-on effect on the surface access to airports. Improve surface access to airports and ports. Develop regional airport hubs with rail providing surface access. Off-airport check in facilities.</p> <p>Improve capacity of air traffic control. Technological changes could reduce airspace congestion to negligible levels given suitable investment and technical development.</p>

### **Other relevant factsheets**

Energy issues

Vehicle design and technology

Travel substitution

### **References**

<sup>1</sup> Environment97 (Ichem) Conference Proceedings. "2020 Vision for Transport". Nov 1977.

([www.environment97.org/text/reception/r/keypapers/s28.htm](http://www.environment97.org/text/reception/r/keypapers/s28.htm))

<sup>2</sup> World Resources Institute. "Oil as a finite resource: Conclusions and policy implications". Washington DC. March 2000.

([www.econet.apc.org/wri/climate/jm\\_oil\\_008.html](http://www.econet.apc.org/wri/climate/jm_oil_008.html))

<sup>3</sup> DETR. "A New Deal for Transport: Better for Everyone". 1998

<sup>4</sup> European Commission. "ACACIA Concerted Action on Climatic Change". ([www.ucl.ac.uk/~ucfwmal/acacia/objectives.html](http://www.ucl.ac.uk/~ucfwmal/acacia/objectives.html))

<sup>5</sup> Environment Agency. "Creating an Environmental Vision – Consultation Draft". June 1999. ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk))

<sup>6</sup> Foresight Natural Resources and Environment. "A way to go – A consultation document". 2000. ([www.foresight.gov.uk](http://www.foresight.gov.uk))

<sup>7</sup> US Dept of Transportation. "The Changing Face of Transportation". Summer 2000.

<sup>8</sup> Institute for Prospective Technological Studies. "The recycling industry in the European Union: Impediments and Prospects". Dec 1996.

<sup>9</sup> DETR. “National Road Traffic Forecasts, Great Britain”. 1997.

<sup>10</sup> Foresight Transport Panel. “Actions for Sustainable transport – Optimisation across modes”. June 1999. ([www.foresight.gov.uk](http://www.foresight.gov.uk))

<sup>11</sup> DETR. Transport Statistics Great Britain:2000 Edition.

<sup>12</sup> Daniel Jacob. Imperial College Seminar on Transport in the 21<sup>st</sup> Century. Air Transport in the 21<sup>st</sup> Century. Sept 1998.