

Mobility 2020

A rapid shift to low-carbon mobility
with in-reach technologies



CO₂ g per km
Total CO₂ emitted (g)
104.8
835.7



Why Mobility 2020?

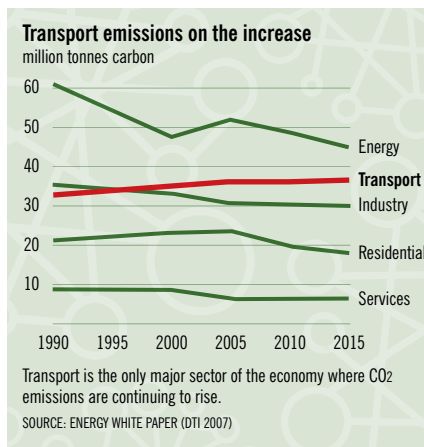


Today, the car is at the heart of personal mobility, offering us independence and our own space – at the price of congestion, pollutants and a rising contribution to climate change. Can we do things better?

The car-centred system of personal mobility we find across the UK reflects the aspirations of owners and the success of the automotive industry. The industry represents over 5% of the UK economy, but at 15% of the country's carbon emissions it is simply not sustainable.

And transport is the only major sector of the economy which – because of growth – will not contribute to CO2 reductions. While the energy sector is likely to achieve promising cuts in the period 2005–2015 and industry as a whole will make more modest reductions, transport is showing a steady rise.

Consumer behaviour, manufacturing developments and government policy have led to the present profligate system. Cars are getting bigger as they are engineered for performance and comfort, so the efficiency improvements have been offset



by the increase in mass. Heavier high-specification cars are also a growth area for the industry, while finance packages encourage buyers to trade up to larger models. Meanwhile technologies that might improve efficiency are sometimes left on the shelf.

Consumers are generally unaware of the true cost of running a vehicle. The cost, they believe, lies in the purchase price, so they are more likely to make frequent journeys with a half-empty car. And because they have a car, they use it: it's the default option.

This is matched by a failure to understand the environmental costs. Sometimes the right information is lacking. Consumer

research in Birmingham in May 2007 revealed scepticism and apathy among consumers: "We're such a small country ... what difference is it going to make?", "look at China" and "everyone is talking about climate change, but we don't really care". If the environmental performance of cars matters, they say, it's down to the government and the motor industry to sort it out.

There is impressive innovation in the industry, but it is linked to individual products and brands, not a system-wide solution. What is needed is vision. ■

Attitudinal statements Birmingham Forum, May 2007



72%

"I would reduce car use but there are no alternatives."



63%

"Car driving can be stressful."



46%

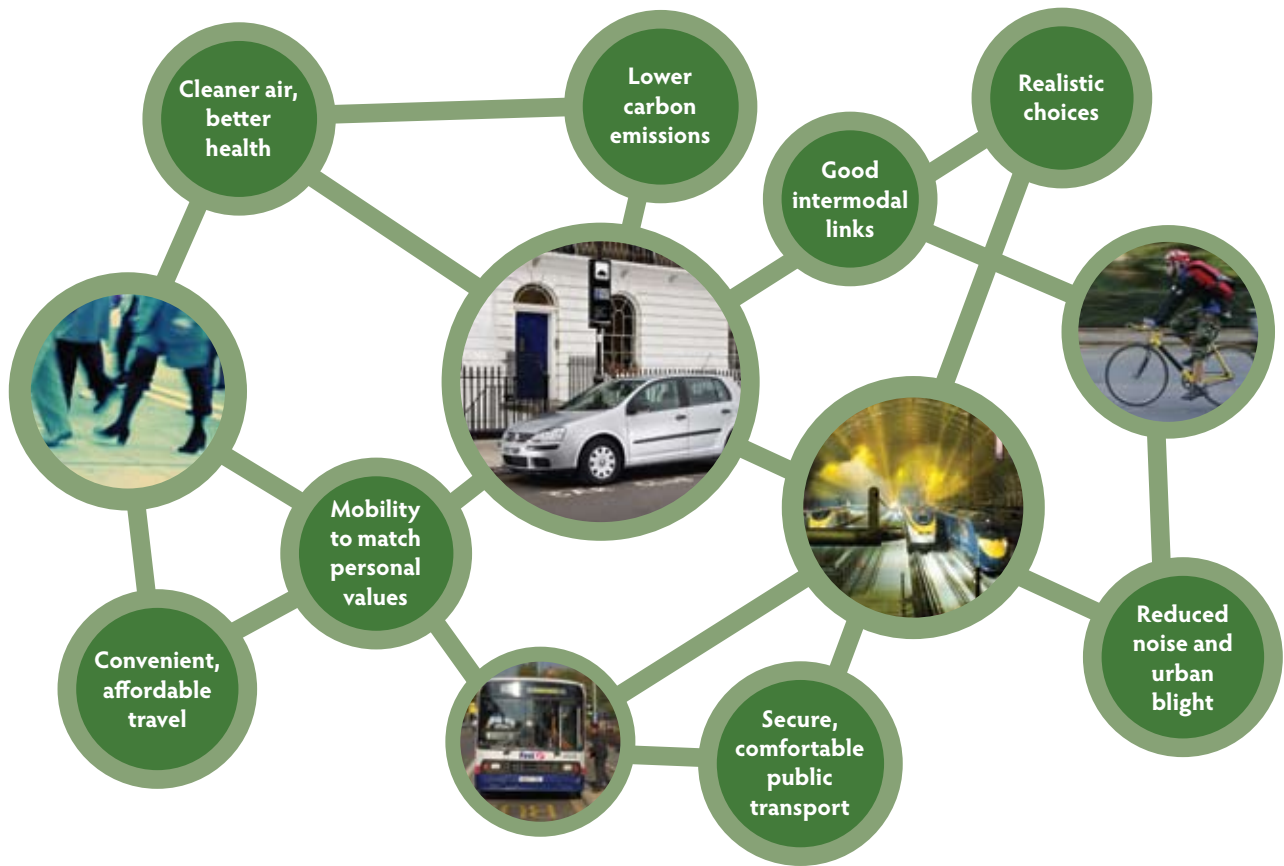
"I never use the bus."



25%

"I'm trying to use the car less."

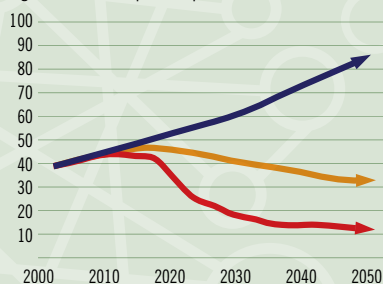
Vision of sustainable mobility



Personal mobility needs to be built on the pillars of efficiency, affordability and convenience. With a new approach, a 60% cut in car-related carbon emissions could be achieved by 2020.

Stabilising CO2 emissions

Gigatonnes of CO2 equivalent per annum



Key
 ■ Business as usual ■ 550ppm CO2e ■ 450ppm CO2e
 ppm = parts per million CO2e = carbon dioxide equivalent

The Stern Review on the Economics of Climate Change (HM Treasury, 2006) spells out the consequences of a failure to act. Early action is essential to avoid the economic/social disruption arising from severe climate change, and stabilising at 550ppm or below requires strong action – the next decade will be crucial.

The Business Taskforce on Sustainable Consumption and Production – set up in 2006 as part of a government drive to boost competitiveness in a sustainable way – has consulted business, industry and the public to shape a vision of personal mobility.

The vision anticipates the creation of a separate – and incentivised – market for more efficient cars in which, by 2020, the car will be an integral part of travel choices. The technologies are there, or within reach, and would allow a rapid shift to low-carbon mobility.

If we go on as we are, road transport emissions will continue to rise – but they don't have to. There is a real potential for emissions savings. If vehicle efficiency is doubled in this new parallel market, and if consumers can choose from a range of travel options that make the best use of cars, then CO2 emissions per km could be reduced by 60% by 2020.

A parallel market for Mobility 2020

This carbon-conscious future offers an attractive space for enterprise. In the new market, cars are still on the roads but are twice as efficient, with many of them rented (through car clubs) or shared for the journey (through car pools). There

A new engineering space

A typical family car emits around 200g of CO2 per km; a smaller car around 130g. Using existing technologies, the industry could reduce these figures to 130g/km and 80g/km. Easy wins for the industry include more efficient tyres/wheels, low friction oils, fewer extras and smaller fuel tanks. More radical redesign might involve photovoltaic panels to power cooling systems; waste reheat recovery; greater use of lightweight materials and a smart dashboard indicating CO2 emissions in real time. The technology is already here.



is a shift from individually owned cars to bundled services offering access to cars and integrated travel – and the new product/service mix spawns business opportunities. In this vision of personal mobility, producers, the public and the planet are all winners. ■

An integrated solution

Different generations have different needs. And weekend travel needs are not the same as weekday routines. Young and old, singles and families, city folk and rural dwellers – all need a reliable integrated transport solution.

A raft of influences determines our travel decisions. One powerful force is emotional need (empowerment, pride in car ownership); another is the practical requirement for travel that is convenient, comfortable and reliable. Cost can be important to consumers, while the underlying infrastructure plays a role through incentives and taxes and the road/rail network. And finally we may have choices as to whether and how to travel, with options such as home-working, online shopping, car clubs and greener cars.

To serve the Mobility 2020 market, providers need to understand this complex web of influences. Up to now, the car has dictated mobility, but we can expect the future to look different. In other industries, such as

electronics, business models are being transformed, as products and services are packaged together in new ways: hybrid mobile phones or PCs used for viral advertising.

New practices are also emerging in personal mobility. ‘Pay as you go’ insurance (PAYG) is attractive to car owners who don’t use their cars often. Lift share schemes and car clubs are gaining ground, offering the consumer easy access to a car suitable for their specific journey needs.

Mobility no longer operates in a silo. Its boundaries are being redefined, as electronic and engineering technologies offer new partnerships a way forward. A single smart card – issued in partnership – could cover travel options across different modes and include parking, public transport cycle access and car clubs. Other industries could be directly involved, with finance and insurance – perhaps even leisure – bundling their offers into personal mobility products.

There are barriers to change, but once they are overcome, a more integrated mobility map will allow easier, healthier, low-carbon travel. ■

Car clubs

Car clubs provide an easy-to-use car hire service. Members pay a small joining fee and annual insurance, which entitles them to use any of the cars in the fleet. Cars are left parked in numerous locations around the city and can be booked online or by phone.

The member opens the car with a smart card, keys in the pin number – and drives off. The member is charged for the period chosen: an hour, two hours, a day. The club looks after fuel and maintenance, so it’s car ownership without the hassle.

Car clubs are ideal for drivers with low car use. There are benefits for two-car households as well – if only a small car is needed in the week, a second, larger car can be booked for the weekend.

Car clubs are already popular in America and Europe and are taking off in the UK. Combined with a radical standard for vehicle efficiency, car clubs could play a key part in Mobility 2020.



A catalyst for change



More carrot than stick: the 4-Es approach – engage, exemplify, encourage, enable – will offer strong direction in the journey to Mobility 2020. Stakeholders from different sectors and travel modes will be encouraged to build new alliances to help realise a low-carbon, user-friendly mobility system.

The Business Taskforce has developed a road map to trigger change and guide us to Mobility 2020.

The road map deploys four strands: engage, exemplify, encourage and enable. New value chains are likely to emerge as the mobility system reshapes itself.

Engage, exemplify

Industry and the public need to work together to achieve a low-carbon future. Business stakeholders from travel and transport, financial, retail and electronics services, together with the motor industry itself, will play a powerful part. Private sector employers are in a position to influence the commuting options and business travel of their workforce and have a significant contribution to make.

Central government – through its various departments and agencies – and the major urban authorities of local government need to be engaged in the task. And the response of the public will be key to success. Motoring and passenger organisations, campaigning and community groups will want to come on-side. The media will have an influential role in shaping attitudes.

Leadership Group

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Examples of innovative practices will have an impact in themselves and inspire others to follow. Companies renewing their car fleet will be able to help by choosing lower-carbon models that meet a future Mobility 2020 vehicle standard (see opposite). If car hire and car clubs meeting the standard take off, success will breed success.

Encourage, enable

Encouragement to manufacturers and owners will be crucial. The approach is more carrot than stick and government can help catalyse the new market through standards and accreditation for carbon-reducing products and services, a fiscal regime to stimulate take-up, incentives and tax relief, and support for R&D.

With a more educated public, consumer demand will start to pull through the new products. New products and services must be delivered at a pace that matches rising consumer expectation. Demand and market offerings have to be kept in synch. But with increasing investment in infrastructure, the new product/service mix can be a reality.

Next steps

The Taskforce concludes its work during 2008 but is recruiting a leadership group – from across business and industry – to take the Mobility 2020 goals forward. The group will guide business and government in implementing the Mobility 2020 vision, including the accreditation of vehicles that meet the radical green standards and will have a strong impact on the new market for cars.

The four strands of activity – engaging, exemplifying, encouraging and enabling – will create business opportunities in a dynamic market and provide a catalyst for change. ■

Defining the standard for Mobility 2020

A hidden revolution is on the way. Elegant forms, both familiar and evolutionary, could conceal technologies that help to cut carbon emissions – and a formal standard would recognise and reward the carbon-efficient cars of the future.

There are numerous technologies – emerging, shelved or within reach – that could transform the way cars are engineered. The Taskforce has explored principles which could lead to a standard for carbon-efficient cars. The standard would be accessible to all and ensure that efficiency is radically improved: the target is to double the efficiency of the cars on the road in 2007. Prescription will be avoided so that cars are assessed on their performance, not on the technology used or design adopted.

A revolution inside

Cars of the future won't necessarily look very different, although more radical types such as hybrids may become more common. Existing brands may offer a revolution inside, helping the industry to deliver green solutions by 2020, emitting 80g of CO₂ per km, or thereabouts, as against 200g/km from the more polluting cars of today.

There are no plans to make the standard compulsory, but the existence of a standard will encourage the development of the growing Mobility 2020 market. Green credentials will come to be preferred over top speeds, acceleration and luxury items, all of which detract from efficient performance, as the metrics of the new standard will show.

Criteria for a future standard are being discussed. They include emissions of not more than 80g/km, a maximum speed of 75mph, dashboard information on fuel consumption, CO₂ emissions and journey costs, declared embodied energy of the vehicle and efficient route-planning technology. The debate is on.

The standard should be clear and accreditation stringent, avoiding greenwash and unrealistic claims as to what is green, and hastening the pace of change towards essential carbon reductions.

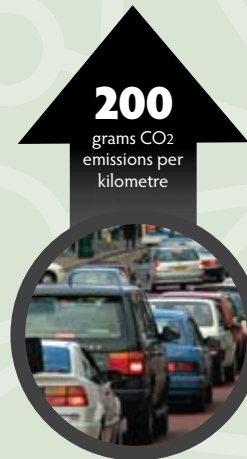
Credits for low-carbon use

To encourage uptake of accredited cars, a reward system could be created. Transferable rewards could be applied to the whole range of green travel. Points gained from the purchase of a car meeting the standard, reduction in mileage or the use of bicycles could be used to fund an attractive purchase. If new alliances are forged, the benefits accrued could be spent in a different industry, such as leisure. ■

Reaching the standard for Mobility 2020

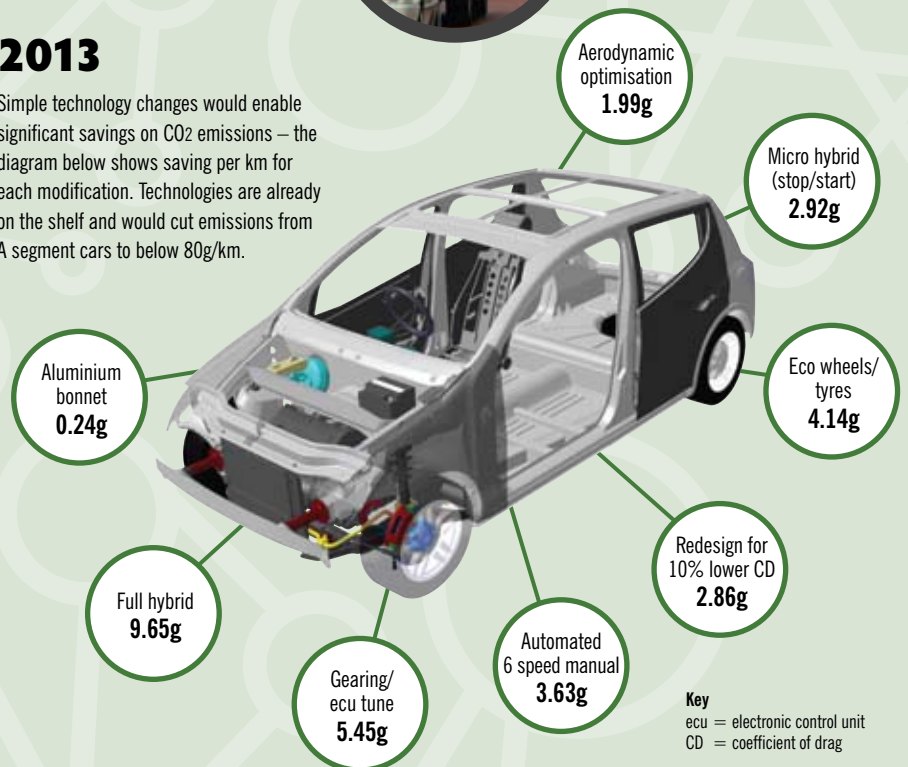
2008

A large family car emits, on average, around 200g/km – way off the Mobility 2020 target of 80g/km. A very small A segment car (1.4 hdi) emits around 109g/km, while a small to medium C segment car (1.6hdi) emits 120g/km.



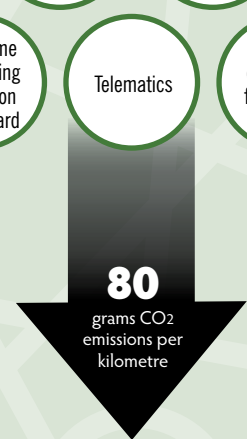
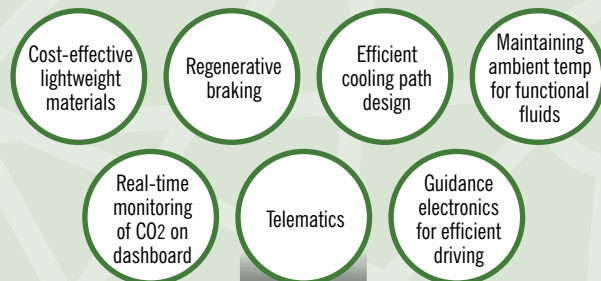
2013

Simple technology changes would enable significant savings on CO₂ emissions – the diagram below shows saving per km for each modification. Technologies are already on the shelf and would cut emissions from A segment cars to below 80g/km.



2020

Further changes, using 'near reach' technologies, would take the C segment to below 80g/km.



A new business platform

Innovations are not lacking in transport and travel, but the sector can also learn from other industries. It may take a light bulb moment to join up the new and impending technologies to form an integrated mobility system.

The Mobility 2020 way of life will reflect the shifts in the way we travel. In this future, more collaborative era, we will

need new products to meet our changing needs: communication, geospatial and real-time information tools presented in user-friendly products, inside and outside the car. A single smart card to cover all our travel, with optional add-ons, perhaps for leisure or health products. Loans, leasing and insurance fine-tuned for the Mobility 2020 market.

Exciting times lie ahead. The new standard may level the playing field in some areas, leading to a dynamic market. There is

everything to play for, but the traditional British strength of design excellence will serve us well. For the automotive supply chains, there will be opportunities in the drive to meet the new standard and accreditation. And many activities will need to be joined up to exploit the business opportunities.

The benefits of Mobility 2020 will be there for all: dramatically lower CO2 emissions, better public health and an improved quality of travel. ■

Links have already emerged between different sectors, with new product and service offers for commuters and other travellers. By 2020 we can expect a far stronger network of offers to bring about consumer-friendly, responsible mobility.

YourNextBus

Telecoms and transport are natural partners, as the experience of Travel South Yorkshire shows. Using 'YourNextBus', travellers can receive real-time information on when the bus is due, via text message, WAP or the internet.

Intermodal transport

Intermodal journey planners (IJP) allow travellers to plan their journey across more than one mode of transport. Advanced systems incorporate real-time information into their computations, capturing incidents as they happen. German software company Mentz Datenverarbeitung, which offers innovative transport solutions in this fast-moving field, developed the IJP for Transport for London.

Insurance as you go

'Pay as you drive' insurance is a new way to insure a car, designed for people who don't drive much. A GPS device is fitted discreetly to the car. Journey data is transmitted back to the insurance company which bills its customers monthly.

Lowering car ownership

Car leasing and car clubs are attractive to city dwellers who want to avoid the hassle and worry of car ownership. Over a two-year period, according to London car club Streetcar, membership has led to around 1,200 cars being taken off the road, while Zipcar claims that each of its cars replaces 15 privately owned vehicles.

The Prius hybrid

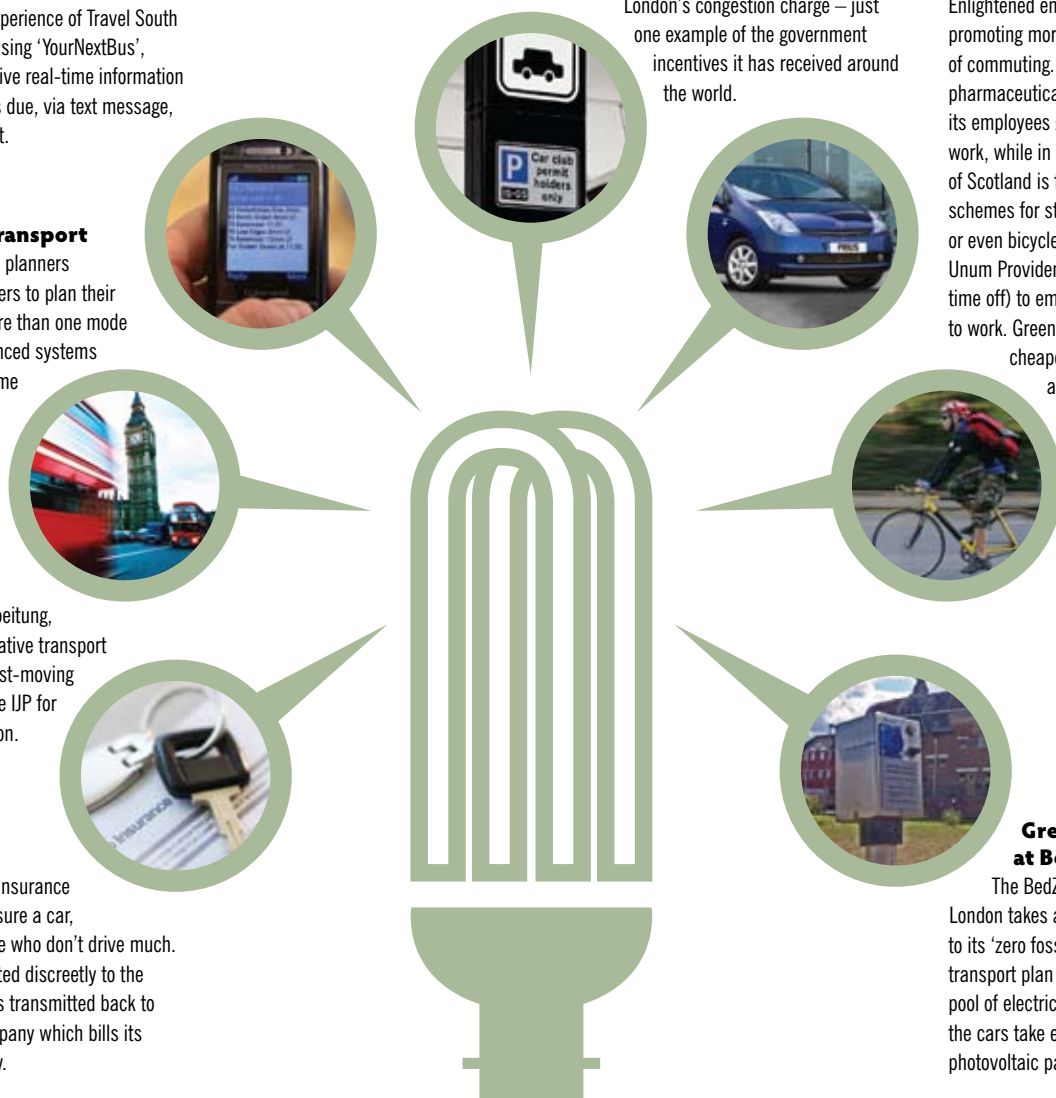
The Toyota Prius is a hybrid car running on petrol and electric power. It has regenerative braking, allowing kinetic energy to be used to reduce wear and tear on the brake pads. Originally launched in 1997, it has since been redesigned with more efficient models. It is exempt from London's congestion charge – just one example of the government incentives it has received around the world.

Green commuting

Enlightened employers are already promoting more sustainable ways of commuting. In Sandwich, Kent, pharmaceutical company Pfizer is paying its employees £2 a day not to drive to work, while in Edinburgh, the Royal Bank of Scotland is facilitating tax-friendly schemes for staff to buy season tickets or even bicycles. And insurance company Unum Provident offers incentives (such as time off) to employees who walk or cycle to work. Green travel policies are often cheaper than providing car parks – and far cheaper than building new roads.

Green transport at BedZED

The BedZED housing estate in south London takes a comprehensive approach to its 'zero fossil energy' goals. A green transport plan for residents includes a car pool of electric cars. Charging points for the cars take energy from south-facing photovoltaic panels.



Sources

This brochure derives from original work by the Business Taskforce on Sustainable Consumption and Production during 2006–2008, including: Consumer Forum on Personal Mobility: Report of Findings (Birmingham) (May 2007); Personal Mobility workshop: Future Focus; and Mapping the Pathway to a Low Carbon Fleet.

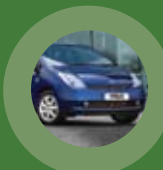
About the Taskforce

The Business Taskforce on Sustainable Consumption and Production was convened by Defra and DTI (now BERR) to bring forward proposals on how to help companies adopt more sustainable patterns of consumption and production (SCP) in ways that boost competitiveness and contribute to economic growth.

Taskforce Business Network partners

- University of Cambridge Programme for Industry
- Business in the Community
- Business Council for Sustainable Development United Kingdom
- The Prince of Wales's Business & the Environment Programme

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