

Fuelling the future

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Concerns about our environment and the worrying effects of climate change pose questions about how we fuel road transport in the years ahead

When the Westminster Government announced plans for motorists to be offered subsidies of up to £5,000 to encourage them to buy electric or plug-in hybrid cars last month, Transport Secretary Geoff Hoon said the plan was about "encouraging the idea that electric vehicles will become part of everyday life, that people will take them for granted and they will look and feel the same as any other car".

However, the potential for the electric car – with models eligible for the Government's scheme not expected to be on sale until 2011, and will exclude the G-Wiz, the best-selling electric vehicle in the UK as it is not classed as a car – is just one of a number of potential new fuels which the industry is developing to ensure there are carbon reductions from the road transport sector, which accounts for 90 per cent of the UK's transport CO2 emissions, according to the Committee on Climate Change.

Greg Archer, the director of the Low Carbon Vehicle Partnership says that "electric is not the only ultra low carbon technology", adding that "if there are other technologies that can compete then I would like to see those vehicles supported under this scheme as well".

He says that "the Government has supported a technology neutral policy, and we would like to see them retain that technology neutral stance while ensuring that it's giving adequate support for all of the promising technologies to emerge and evolve."

"The partnership's view is that we don't support any one technology – we think a portfolio of technologies are going to be part of the solution to low carbon transport, but

electric is certainly likely to be one of those, but it's going to take time to develop the expertise, the infrastructure and the vehicles to be able to supply that market. But we need to start now to build up over the next ten years."

Electric vehicle technology is progressing, with bus manufacturer Optare recently unveiling what it calls Britain's first practical electric bus, capable of a range of 60 miles.

Mark Houlton, engineering director at Optare, said that "there are niche operations, which would be, maybe, in environmentally-sensitive areas, or in airports, or city centres where there are shuttle services which don't do a great deal of mileage during the day but clearly go into very congested areas, and also potentially the community transport sector, they would be our target market." This mileage represents around 5-10 per cent of bus operations, says Houlton. "It comes down to, clearly, buses and scheduled around what vehicles are currently capable of doing.



Optare recently unveiled Britain's first practical electric bus

Where there is a bit more planning, I'm sure there will be more opportunity for electric vehicles to replace diesel vehicles, particularly running through city centres, where you could have passengers transferring at a hub. "One of the ideas of building this vehicle is the chance to prove and provide a possible part of the new transport solution. We're not advocating all buses are going to be this way, but we can certainly see a role for this, and we are just promoting this as a potential

solution," he said.

Other solutions include biofuels and – perhaps further off – hydrogen fuel.

Biofuels have suffered some criticism as to the sustainability of how the crops to produce them are grown, including claims from Friends of the Earth that biofuels could produce twice the carbon emissions of the fossil fuels they replace but Nick Goodall, the chief executive officer of the Renewable Fuels Agency, says work is undergoing to develop carbon sustainability standards. The body was set up to administer the Renewable Transport Fuel Obligation, which, in its second year of reporting, requires obligated suppliers to supply 3.25 per cent biofuel out of the total volume of road transport fuel they supply.

Concerns about the sustainability led to the RFA's Gallagher review into the indirect effects of biofuels, which called for the introduction of biofuels to be slowed until effective controls are in place to prevent

land-use change and higher food prices, which was accepted by the Westminster Government. The review sees a future for a sustainable biofuels industry but added creating the right policy framework is challenging and will take time.

Goodall says: "There are good biofuels and there are bad biofuels, and our remit says we identify the data and because we have this function of developing the standards mechanism and promoting the sustainable

biofuels, we'll be the first people to say that's not best practice, that's not sustainable."

He adds: "What we'll see as we move towards the (EU) renewable energy directive and mandatory standards. We see very encouraging signs that making sustainable biofuels to the highest standards in the world, in the UK, is something that's quite readily achievable."

While another potential source – hydrogen – may not be as near the market, Ian Williamson, hydrogen energy systems director of Air Products, the company which opened the first hydrogen fuel station in the UK and which has an agreement with Transport for London to provide fuel for ten hydrogen-powered buses, says that there has been a push towards hydrogen in vehicles over the last five to six years.

He estimates a large roll out of hydrogen vehicles from production lines between 2050 and 2060. "We're talking tens of thousands of vehicles at that stage rolling off the production lines, which means we will need an infrastructure to support those vehicles that the public will be happy with going forward, and that's really the challenge, trying to marry up the roll out of those vehicles with the infrastructure that's available, so people don't get disappointed," he said.

While biofuels prompt concerns in terms of sustainability, so too do electric cars and hydrogen-powered vehicles, which are only as green as their energy source.

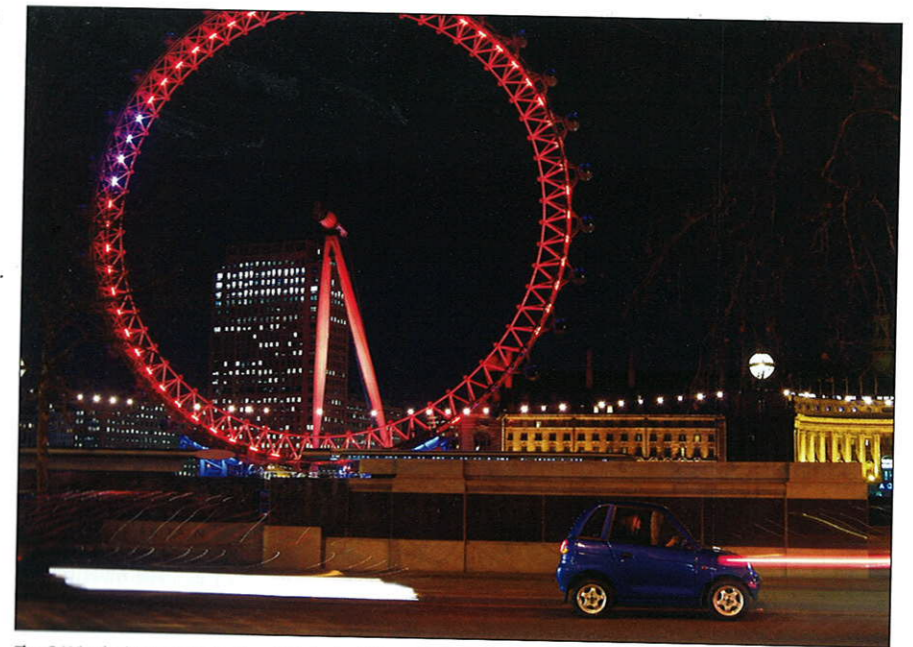
Williamson says: "We can create these molecules in a green way, but at this moment in time, some of these technologies need to be scaled up, to a certain extent, to allow us to do it on a fully commercial basis. We can do it on a trial, or demonstration basis, but the commercial reality of the project on a bigger scale is not there yet."

He foresees a dovetailing of two technologies – electric and hydrogen – in the future.

"What we believe is the way forward, is that a fuel cell car is, effectively, an electric car, just the same as a battery powered vehicle is electric. We foresee that the technologies will merge going forward, so you will have a plug-in, hydrogen-hybrid car, so you will have the ability to do your short trips on the battery, but when you get to that limit of what the battery will supply the vehicle, the battery will be recharged on board, using a fuel cell and a hydrogen supply, and that will allow your vehicle to have an even longer range than standard hydrogen.

"The fuel cell vehicle relies on the electric vehicle to be a success, and what hydrogen offers is, essentially, a range extension of a battery vehicle," he adds.

Could different technologies, though, end



The G-Wiz, the bestselling electric vehicle in the UK

up in competition for development spending? Archer, whose body was established to take a lead in accelerating the shift to low carbon vehicles and fuels in the UK and which has recently formed a not-for-profit company applying for charitable status, says: "I think there is certainly a danger of that, but I think what we need to do is recognise that there are a relatively small number of promising fuels and power sources that the Government will need to help initially support in order that they're able to initially compete with

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petrol and diesel.

"Each of them will play an important and different role in low carbon transport. Electric vehicles are not going to be the solution for heavy goods vehicles, for example, but biomethane could be, and biofuels, more generally, if we can address some of the sustainability concerns as we're starting to. So I would hope that the support that's being given to electric vehicles at the moment will also be carried over so that other promising fuels also get supported."

The Government's electric-car plan was part of a wider vision for cutting carbon

from road transport over the next five years, and they have also set out carbon reduction budgets to 2022. As the Scottish Parliament continues to examine the Climate Change (Scotland) Bill, with its target to reduce emissions by 80 per cent by 2050, Archer calls for "clarity" on what transport and other sectors are going to be expected to deliver. "We have an overall target but we have no clarity around what transport's going to deliver, as opposed to what domestic's going to deliver. Until we have clarity on what overall proportion of the UK's CO2 cap transport can occupy, then I think it's going to be very hard to make any progress." This mirrors a call by the Scottish Parliament's Transport Infrastructure and Climate Change Committee in its scrutiny of the Bill that "the Scottish Government should be required, in setting out its approach to the meeting of the targets, to define and quantify how each of four sectors (land use, energy generation, energy efficiency and transport) is expected to contribute to overall emissions' reductions.

Archer adds: "But once we've got clarity on that, we can start to construct policies to ensure we remain within that cap, and that means looking at what levels of CO2 emissions we're going to need to achieve from our car fleet, looking at the kind of speeds we can afford to do on our roads in order to stay within that cap, looking at how much we can allow aviation to expand, looking at how much we need to manage down demand and encourage walking and cycling and other low carbon modes."