



between 2014 and 2017 and a long-term target of 147g/km in 2020. Each manufacturer's target is based on the weight of each new van it registers in the EU in a given year. Only the fleet average is regulated, so manufacturers can still make vehicles with higher emissions provided these are balanced by lower carbon vehicles.

Industry has made significant improvements to CO₂ emission levels in recent years and recognises its responsibility to deliver on-going environmental improvements. In setting emission targets, a balanced approach is required that considers economic and social factors. Additionally, for these advances to continue, an integrated approach from road transport industries, governments, fuel companies and other stakeholders is critical.

Industry welcomes the legal certainty on the targets to plan for and will work towards meeting them. The targets will be challenging, particularly the long-term target. They will require market transformation to bring forward breakthrough technologies that are not yet cost effective for commercial vehicle buyers. Affordability is a key point because vans are bought by commercial operators, whose purchase criteria are determined by their businesses.

In recent years, vehicle manufacturers have been investing huge resources in developing lower emitting vehicles and technologies.

Technologies are only part of the answer

Technologies have led to a dramatic impact on the number and depth of negative forces in the natural environment. However, human resources can go further and take a share of the responsibility for helping reduce fuel consumption and emissions.

The following are some top tips that could save motorists up to 15-20% in fuel costs and emissions and help reduce their impact on the environment.

1. Drive smoothly, accelerate gently and brake sensibly – use the natural momentum of the car.
2. Monitor your fuel consumption and try to improve – make it your aim to get more from the tank every time you fill up.
3. Change into a higher gear at the most economical point – this usually means at around 2,500 rpm in petrol cars and 2,000 rpm in diesel cars.
4. Anticipate conditions and plan your journey. Avoid peak times and areas of known congestion.

Environmental Developments

In the last 10 years, huge strides have been made to reduce the environmental impact of its products throughout the life cycle. Since 2000, improvements in production processes mean energy used to produce vehicles is down 28%, water use has been cut by 34% and 73% less waste enters landfill sites. Average new car tailpipe CO₂ emissions have also been slashed and are down 17% compared to 10 years ago.

Looking to the future, industry will continue to drive down emissions as technical progress and a collaborative government approach will help to move the UK towards a more sustainable and low carbon future.

There are several key environmental policies which will affect the UK automotive industry and more details can be found at www.logicalvm.co.uk/library.

Tailpipe CO₂ emissions

In 2009, an ambitious piece of legislation was passed which committed European car manufacturers to cut average CO₂ emissions from new cars to 130g/km by 2015 and about 95g/km by 2020. In the last 10 years, average new car tailpipe CO₂ emissions are down 17%. Car parc CO₂ emissions have fallen by 4.4% over the last decade, despite an 18.4% increase in the number of cars on the roads and a 9.8% increase in distance travelled.

The Van CO₂ Regulation ((EU) No 510/2011) mirrors the above New Car CO₂ Regulation ((EC) 443/2009) with each manufacturer having its own overall European fleet average CO₂ target. It sets a European fleet average target of 175g CO₂/km, phased-in

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5. Check your tyre pressures (and condition) regularly. Incorrectly inflated tyres can increase fuel consumption by up to 10% – and can endanger lives.

6. In stationary traffic or in temporary parking, switch off your engine.

7. Remove unnecessary weight from your car. An unused roof box could increase fuel consumption by up to 10%.

8. Use optional equipment sparingly. Turn the air conditioning off if you don't need it.

9. Service the car regularly. Missing a service is a false economy.

10. Think about alternatives to the car. Public transport can be relaxing, clean and reasonably priced.

European engine emission standards

Euro engine emission standards were introduced in the early 1990s to reduce other pollutants from vehicles. They have led to significant improvements in emissions of nitrogen oxides, particulates and hydrocarbons from passenger cars, vans and trucks. Since 1992, NO_x emissions have been reduced by around 67% and diesel particulates have dropped by 94%.

Euro 5 (light duty vehicles) is due to come into effect for all new passenger cars in 2011. Euro V is already standard for all new commercial vehicles. The Euro 6 standard will be required for new types of car from 2014 and vans from 2015. Euro VI applies to heavy duty commercial vehicles from 2013.

Energy efficiency regimes

In addition to efforts to reduce CO₂ from the tailpipes of vehicles, industry has also put effort into reducing emissions from the manufacturing process. There are several energy efficiency regimes that the industry is covered by, the mandatory EU Emissions Trading Scheme, the voluntary UK Climate Change Agreements, or the UK Carbon Reduction Commitment energy efficiency scheme.

The Manufacturers Energy and Trading Schemes working group (SMMT) was set up to help the sector comply with the CCAs, an agreement set up between industry and government to achieve a discount on the climate change levy (CCL) by meeting emissions reductions targets. This group also covers the EU ETS, CRC and other areas of manufacturing energy use and how that relates to government policy.

The public have made significant improvements in energy efficiency, including reducing emissions covered by the CCA by over 50% in relative terms (energy use per vehicle) between 1995 and 2011 and by 40% in absolute emissions in the EU ETS area between 2005 and 2011.

Vehicle recycling

The automobile is already one of the most effectively recovered and recycled consumer products, with its parts being used again in vehicles or for other purposes. The metals used in its manufacture are routinely recovered, reused and recycled to high levels. The challenge is to recover non-metallic parts to enable the very high levels required by law.

The End of Life Vehicle (ELV) Directive seeks to increase the level of reuse and recycling of vehicles, improve environmental standards at sites processing ELVs and limit the use of material harmful to the environment in new vehicles.

The UK auto industry is committed to sustainable development and in 2010 achieved 85% reuse, recycling or recovery by weight of end of life vehicles. The industry is working to ensure that a 95% target will be met by 2015 in order to comply with the ELV Directive.

European Fuel Quality Directive

From 1 January 2011, the Fuel Quality Directive (2009/30/EC) enables the marketing of new fuels, in particular E10 unleaded petrol, which contains up to 10% ethanol. Fuel suppliers are not expected to market this fuel in the near future, however, in due course, E10 will be introduced and may become the main grade of unleaded petrol towards the latter half of the decade.

The European Automobile Manufacturers' Association (ACEA) has published a list of vehicles on its website. This applies to fuels meeting the current EN228:2008 specification only; if you would like any further information please contact your manufacturer. A "protection grade" of unleaded fuel, which with no more than the current maximum 5% ethanol, will continue to be made available for vehicles that are incompatible with E10.

In due course, diesel will change to a mixture that contains up to 7% FAME (Fatty Acid Methyl Ester), more commonly known as 'B7'.

All gas oil for use in all non-road mobile machines (NRMM) – known as 'Red Diesel' – must contain no more than 10 milligrams of sulphur per kilogram of fuel. This is a reduction of 99% (from the current 1000 mg/kg limit) and brings the sulphur level in the

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NRMM fuel to the same low level as already exists in the (white) diesel used by road vehicles.

Future Trends

The Deputy Prime Minister has joined the UK automotive industry to launch 'Go Ultra Low', a 12-month campaign to help motorists understand the benefits, cost savings and capabilities of the raft of new ultra-low emission vehicles on the market.

Backed by some of the automotive world's biggest players – BMW, Nissan, Renault, Toyota and Vauxhall – the new campaign will prompt car buyers to consider the benefits of pure electric, plug-in hybrid and extended-range vehicles with information about their low running costs, ease of charging and impressive range.

A new website, www.GoUltraLow.com provides a one-stop-shop for information about owning and running one of these vehicles, the makes and models available and the locations of the thousands of publically available charge points.

In the last three years alone, almost 20 electric and plug-in cars and vans have been launched in the UK. With the average UK journey being less than 50 miles, the 'Go Ultra Low' campaign asks drivers: 'What are you waiting for?' especially when it comes to eliminating or reducing traditional fuel costs, and opting for a car with either zero, or less than 75g/km of CO₂ emissions.

The collaborative campaign is the first of its kind, bringing together the Department for Transport, the Office for Low Emission Vehicles, SMMT and a group of leading car manufacturers: BMW, Nissan, Renault, Toyota and Vauxhall.

As well as the website, the campaign will see national print advertising, a radio advertising campaign, celebrity ambassadors programme, online community campaigns and fleet partnerships through the course of 2014.

To support the existing home and business charging network where the majority of charging is done, the government has unveiled an £9.3m investment in additional infrastructure. The investment includes:

- £5.8 million for more than 140 new rapid charge points that can fully recharge a ULEV in 30 minutes. These will be in towns and on major roads where there has been an historic lack of charge points, creating a UK-wide network of around 500 rapid charge points.
- £600,000 for 80 more charge points at train station car parks, making it easier for commuters and other rail

users to cut the environmental impact of their whole journey.

- Grants of £2.9 million awarded to public sector organisations to install more than 450 charge points on their own estate for their staff, fleets and visitors. The public sector is seeking to lead by example by demonstrating commitment to ultra-low emission transport. The successful organisations include a central government department (MOD), two of the devolved administrations (Scotland and Northern Ireland), Defence Science and Technology Laboratory at Porton Down, a number of NHS trusts, two fire and rescue services (Devon and Somerset, and London), a police force (Gloucestershire), and several local authorities.

The government has also committed to invest £5 million to introduce electric vehicles across government and wider public sector fleets this year.

The global automotive industry continues to grow at a staggering rate and the opportunities and challenges faced by the motor industry are varied and exciting. The business environment is in place to encourage and recognise the creation and development of new innovative products, technologies and ideas that could change the face of the UK automotive industry.

From the invention of the three-point seat belt to the airbag and Electronic Stability Control, the automotive industry has been a constant innovator of new products to encourage safer and greener motoring. At 20 billion (euros) per year, the automotive sector is Europe's largest investor in R&D, driving industry forward and helping deliver more sustainable motoring for the 21st century.

The automotive industry is conducting extensive work to revolutionise the transport system. This will make roads safer and allow an improved traffic flow therefore cutting emissions.

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logical.
makes sense.



Key areas being developed include Intelligent Transport Systems (ITS) which allow vehicle-to-vehicle and vehicle-to-infrastructure communication. Implementing these communication systems can help to reduce road accidents, relieve congestion and reduce emissions. Examples of ITS applications in use today include urban and motorway traffic management and control systems, electronic toll collection and route navigation systems. In the UK, a platform has been established to bring together industry thinking, to stimulate collaborative working across ITS industries and services and to inform the direction of ITS research and development.

Another technology being developed which aims to improve road safety is Intelligent Speed Adaptation (ISA). ISA systems inform the driver of the speed limit for the road they are travelling on and automatically reduce the speed of the vehicle.

E-call automatically alerts the emergency services to the location of an accident and is a system widely used in other countries.

Driver Assistance Systems such as Electronic Stability Control and Emergency Brake Assist are systems that function automatically with no interaction with the driver and will improve the safety of the vehicle in use.

Implementation of these systems requires continued co-ordinated work between all stakeholders involved to ensure that all information is available.

Green Car Technologies

There are a range of green car technologies for you to choose from. Here you can find out more about green car technologies and whether a green car would suit you. Remember, the environment is an on-going issue and new technologies are always being developed and tested. Hopefully, one day we will have many more green technologies than those listed here.

Electric Cars

An electric car uses an electric motor instead of an internal combustion engine which is what most conventional cars use for power. They store chemical energy in rechargeable battery packs and are more energy efficient than most conventional cars that use internal combustion engines.

Advantages of an electric car

- ✓ They do not produce any exhaust fumes.
- ✓ Some battery packs are capable of being charged from renewable energy sources.
- ✓ They do not produce noxious fumes.
- ✓ They are much quieter than internal combustion engine powered vehicles.
- ✓ Many electric cars have regenerative braking, which means that when the car brakes, the battery is partially recharged. This also reduces wear on the brakes.
- ✓ Many electric cars can travel hundreds of miles without the need to recharge the battery packs.

Electric cars decrease the need for petroleum powered vehicles and reduce the effect of global warming. They have good fuel efficiency and many have an acceleration performance that exceeds that of conventional cars. However, electric cars do have some limitations:

Disadvantages of an electric car

✗ Travel distance between battery recharging is limited. This travel time depends on the driver's performance, the shape and weight of the car and the type of battery used:

- Lead-acid batteries have a range of 20 to 80 miles.

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- NiMH batteries can deliver up to 120 miles. Lithium-ion batteries can deliver a range of 250 to 300 miles in a single charge.

Some cars may take a long time to recharge battery packs.

Some cars have batteries with a short lifespan.

Although these drawbacks can be seen with electric cars, new technologies are producing batteries with a longer lifespan and reduced recharging time. Even some car hire providers are investing in electric cars by adding them to their fleet, which shows how companies see a future in electric vehicles.

Hybrid Cars

A hybrid car uses both an electric motor and an internal combustion engine to power the vehicle. These cars use petrol or diesel to power internal combustion engines and use electric batteries to power electric motors. They use less petroleum than conventional cars and therefore produce less pollution.

Advantages of Hybrid Cars

Some hybrid cars use an internal combustion engine to generate electricity and recharge the battery, unlike electric cars that recharge the battery from an external source.

They are much quieter than conventional vehicles.

They consume less fuel compared with conventional cars and produce less air pollution.

The internal combustion engine used in hybrid cars is smaller, lighter and more efficient than conventional vehicles.

Many hybrid cars have regenerative braking, which means that when the car brakes, the battery is partially recharged. This also reduces wear on the brakes.

Hybrid cars can be more fuel efficient than conventional cars, resulting in cheaper running costs and less damage to the environment. However, there are some drawbacks to hybrid cars:

Disadvantages of Hybrid Cars

Some hybrid cars are designed to have a power boost which means there would be no benefit to the environment or running cost.

Hybrid cars are generally more complex than conventional cars; this may result in increased repair costs.

Hybrid cars may be more expensive to purchase than conventional cars.

Hydrogen Cars

Hydrogen cars use hydrogen as the primary source of power opposed to petrol. They are not a huge success at the moment and only a few hydrogen cars have been produced so far. There are two ways in which hydrogen can be used to power a vehicle:

- Combustion conversion; hydrogen is burned in engines in much the same way as conventional cars.
- Fuel-cell conversion; fuel cells turn the hydrogen into electricity to power internal electric motors.

Advantages of Hydrogen Cars

Hydrogen cars have many benefits to the environment:

These cars use oxygen from the air and hydrogen as a power source; this produces water vapour which is better for the surrounding environment.

Hydrogen is produced at centralised power plants where the by-products of burning fossil fuels can be better controlled.

It may also be possible to produce hydrogen from renewable energy sources; this means that there would be no increase in carbon dioxide emissions.

Disadvantages of Hydrogen Cars

There are many drawbacks to hydrogen cars, which is why they have not made it onto the market as of yet. It will be many years before these challenges are overcome:

They are expensive to produce.

They have high running costs and low energy efficiency.

There are few hydrogen refuelling stations in the UK.

These technical challenges are unlikely to be solved for several decades. However, Transport for London are taking the first step towards overcoming these challenges by investing in hydrogen fuel cell buses. They have a fuel cell that combines hydrogen with oxygen to produce water; this process creates electricity to power the vehicle. It is hoped that the buses will reduce noise and air pollution in London and serve as a positive influence to the rest of the world.

Honda has also teamed up with industrial gases company BOC and Ford Swindon to create the UK's first hydrogen vehicle refuelling station just off the M4. The station, at Honda's South Marston car manufacturing plant, is located halfway along the popular motorway route between London and Swansea. The aim of the station is to be successful so the station can be replicated across the country and encourages the uptake of hydrogen fuelled vehicles.

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Solar Cars

A solar car uses solar energy to power the vehicle. It obtains solar energy by using solar panels on the surface of the car and converts it into electrical energy. There are tremendous benefits of solar cars to the environment:

Advantages of Solar Cars

- ✓ There are no exhaust fumes.
- ✓ There is no release of greenhouse or noxious gases, reducing global warming and improving human health.
- ✓ They are quieter than conventional cars.
- ✓ As they run on sunlight, there is no fuel cost.

Disadvantages of Solar Cars

However, solar cars are yet to make it into the market as practical transportation for many reasons:

- ✗ They can only travel a limited distance without the sun, which could be problematic on cloudy days and at night.
- ✗ Solar cells are very fragile and can be easily damaged.
- ✗ Solar cars are built for function not comfort and can usually only fit one or two people.

Summary

The impact on the environment by motor vehicles has reduced year on year. In fact, the automotive industry; once considered the 'bad boy' as a primary contributor to environmental damage, has arguably made a far more significant reduction in environmental impact than other industry that create sources of environmental damage. Year on year the industry leads the way and Logical believe with a legislation regime specifically targeted at a reduction in harmful emissions, the trend is set to continue. We believe the industry should be commended for its approach to a reduction in harmful impact on the environment and we recognise that we should play our part in guiding customers towards more efficient technologies and help educate and inform our customers on how their business and their people can play a role in reducing environmental damage still further.