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Heavy Goods Vehicle (HGV) Ultra Low Carbon (ULC) Strategy

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1. Introduction

Manufacturers of Heavy Goods Vehicles (HGVs) are committed to CO₂ reduction in their sector, which comprises all freight carrying vehicles above 3.5 tonnes. Industry has already made great progress in reducing CO₂ emissions per tonne km by 2/3rds since the 1970s, whilst pollutant emissions such as nitrogen oxide and particulate matter have been reduced by as much as 85% and 95% respectively since the late 1980s. These manufacturers strive to maintain their position as technology leaders throughout the world and sustain their substantial contribution to improving the environmental performance of road transport in the UK. All possible means to ensure a supportive regulatory and business environment, which encompasses everything from access to capital to strengthening funding for R&D, should be explored to enable them to maintain their position as low carbon technology leaders. The heavy goods vehicle industry is an important part of the European automobile industry and currently employs about 1.5 million people directly and indirectly across Europe.

The economic recession is having a continued impact on the automotive industry and in particular on the market for HGVs. New truck registrations have been severely affected by the recession with the sustained decline of the construction sector having a big influence on truck demand. New truck registrations were down from 57,410 in 2008 to 34,746 in 2009, a 39.5% decrease. Volumes since the turn of the year are still in decline with rolling year totals to February showing truck registrations down 40.4%.

There have been some encouraging signs for the sector in February with total commercial vehicle registrations increasing 36.3% on the year to date. However, demand for HCV still remains very low. A sustainable recovery is not expected for many months making durable growth in business investment and supportive government policies crucial to the sector.

2. Background

EU - In 2008, the European CV manufacturers united behind Vision 20-20¹ and **voluntarily committed to reduce fuel consumption of new trucks by a further 20% per tonne kilometre on average by 2020**, compared to 2005.

In addition, the industry will actively help strike a balance between mobility and environmental protection through a partnership with political leaders, the fuel industry, hauliers, vehicle operators and, last but not least, the drivers themselves. The manufacturers' ambitious strategy fits well with the EU objective to reduce overall greenhouse gas emissions by 20% in 2020. The International Road Transport Union's (IRU), representing truck, bus, coach and taxi operators, has also committed to reduce emissions and adopted a "30-by-30" Resolution in November 2009²: a voluntary road transport industry commitment to reduce CO₂ emissions by 30% by 2030.

¹ Vision 20-20 http://www.acea.be/index.php/files/european_automobile_industry_report_09_10

² IRU 30-by-30 Resolution: http://www.iru.org/index/cms-filesystem-action?file=en_Resolutions_General%20transport%20policy/09_30-30.E.pdf

UK - In July 2009 DfT issued its Low Carbon Strategy³. Whilst HGVs have an important role in freight movement they are responsible for approx. **5% of the UKs total greenhouse gas emissions**; therefore decarbonising road freight transport is key to the Government's carbon reduction strategy.

In parallel, during 2009 the New Automotive Innovation and Growth Team (NAIGT)⁴ investigated the need of the UK automotive industry for sustainability and growth. The team issued its report in May including a technology roadmap for low and ultra low carbon passenger cars. A follow on Automotive Council which sees government and industry working in collaboration with technology and supply chain sub-groups, is now in place to implement the agreed recommendations. This strategy aims to create a specific ULC strategy for HGVs and provide the necessary focus on HGVs and their role in driving down CO₂ emissions in the UK.

3. Definition of ULC Technology

The definition applied to ULC passenger cars and vans that can be found in current and upcoming EU Regulations, i.e. vehicles generating <50g CO₂ per km is not suitable for HGVs. Included in this strategy is the task of developing a definition matched to HGVs and suitable for legislation and incentive purposes.

4. Key Factors

UK HGV manufacturers, importers, aftermarket and operators have developed a ULC strategy based on the need for a holistic approach which promotes:

- An Integrated Approach to fuel consumption and CO₂ reductions in the road transport sector allowing identification of the most cost-efficient measures, whether they be through vehicle technologies, government (infrastructure, fiscal policy etc) or consumer information.
- An ULC HGV research/technology roadmap specific to heavy goods vehicles, inclusive of ULC vehicle technologies⁵, operator practices & the UK/EU Intelligent Transport environment.
- The need to develop global, practical and effective fuel-efficiency measurement metrics, methodologies and regulations.
- Prioritisation of vehicle technologies and operator practices providing a reduction of CO₂ emissions, with a viable business case and short term deployment potential.
- The recognition of the wide variety of HGV types and the effect of operator journey variation on CO₂ emissions.
- Logistics management, utilising ITS services linked with ICT. eg. route planner, multi-modal journey, adaptive cruise control
- Deployment of operator activities that directly support ULC vehicle operations such as eco driving.

³ Go to: <http://www.dft.gov.uk/pgr/sustainable/carbonreduction/> to see the relevant report

⁴ New Automotive Innovation & Growth Team
www.berr.gov.uk/whatwedo/sectors/automotive/naigt/page45547.html

⁵ See **Appendix 1** for "Barriers and opportunities regarding deployment of ULC technologies"

- Whole life accountability for the ULC vehicle, including tractor/trailer combinations
- Restriction on customer uptake of low carbon technologies due to the current/near future UK economic conditions

5. Recommendations

(i) Government action to provide an incentives' package for promoting the uptake of ULC technologies by industry, as from 2011

To help stimulate the market Government support is required, in line with the Governments of other EU countries. It is important that the resultant environment takes into account the matching of ULC technologies to HGV types and operating duty cycles

Current costs involved with many ULC technologies are seen to be prohibitive by most if not all operators and even the early adopters are only running one or two units as demonstrators, rather than embracing the technology whole heartedly.

To reduce costs, production volumes need to be increased and for volumes to increase the cost of production needs to decrease.

Government support should be in a form that does not encourage the inflation of the cost of new technology and is sufficiently robust that it does not run out before sufficient operators have been able to acquire the technology to reach a critical mass. Examples of such problems can be seen with the Power Shift grant that stimulated the LPG infrastructure but when withdrawn the sale of LPG vehicles largely ceased.

(ii) Clearly defined measurement of HGV CO₂ emissions must be established to determine the true "well to wheel", "well to tank" and "tank to tail pipe" emissions.

A diesel vehicle will produce very similar CO₂ emissions at the tail pipe as a vehicle powered on BioMethane, however the greenhouse gas effect of using BioMethane is much lower than that of diesel as it is a renewable fuel. Currently it is very difficult to determine unequivocally the actual figures that are so important to operators and to climate change.

Without a clear definition or methodology for measuring CO₂ emissions from HGVs, the industry fears that the g CO₂/km metric used in the EU new car CO₂ Regulation No. 443/2009 will be "read-across" to HGVs, as it has been in the Proposal for N1 light CVs. This would generate inaccurate and misleading data that may distort decisions in the market and actually lead to an overall increase in CO₂ emissions.

It is essential, therefore, to factor the weight and/or volume of goods that are being moved (g/t. km or g/m³.km) into the CO₂ metric. Once this is established it will be possible to determine which current and future technologies hold the most potential for the future, and which CO₂ measurement method is most appropriate, whether for the purposes of regulation or incentives.

The CO₂ metric must be supported by a corresponding HGV test cycle in order to achieve system and vehicle accreditation for EWVTA.

(iii) Whole life accountability - Technologies must be proven to have positive benefits in a life cycle context, before the industry is encouraged to adopt them.

For instance, EVs can only be zero carbon if charged from renewable energy sources. Assessing the whole life environmental impact is an important part of developing a strategy.

There are a number of technologies that help to reduce fuel CO₂ emissions, some of these are carbon positive, some are carbon neutral at best.

Telematics, for example can help to improve driving style and reduce CO₂ emissions, whilst these are moderately expensive they are low in carbon inputs with regard to their production and can be seen to have a positive payback in a matter of months. Low energy tyres, however, are known to have a shorter life and whilst they will lower CO₂ emissions they may, due to increased production costs and inputs coupled with a shorter life actually produce more CO₂ over the life of the tyre, from production to disposal.

Trailer fairings will help reduce CO₂ emissions but these must be tailored meet the operational needs of the customer to prevent excessive damage being caused when in use.

(iv) Alternative fuels, emissions trading and road user charging. An impact assessment of all policy options should be undertaken before selecting preferred options within the HGV strategy.

A CO₂ taxation of all fuels reflecting their global warming potential could provide effective long-term incentives for an increased market penetration of Alternative Fuels (Bio diesel/Bio methane), but consideration must be given to the need to avoid penalising diesel in wider (light duty vehicle) transport policy.

Road user charging and EU Emissions Trading Scheme (EUETS) should also not be discounted.

Emissions trading has advantages over fuel taxation: it establishes a CO₂ cap (tax does not, high willingness to pay, rebound effect). Emissions trading is already in place for airlines and is being considered for shipping. The inclusion of goods transport by road in the EUETS is worthy of consideration if:

- it is connected to vehicle usage (i.e. the trader would be the freight forwarders, common carriers, actual carriers and transport buyers, who all have major influences on CO₂ performance)
- it is an open trading scheme, so traders can trade with any other entity, not just within the road transport sector.

Road charging could be a valid option. A number of factors need to be considered, such as differentiation between vehicle use (private/business), vehicle type, time and place of use etc. Other factors such as emissions could be considered as long as there is consistency and coherence and clear signals are sent to all road users

6. Summary

In parallel to the focus on long term ULC technical solutions industry need to identify/develop bridging technology that is commercially viable. This technology should be suitable for short and medium term deployment by both vehicle manufacturers and operators.

All operators can help to reduce their CO₂ emissions but a clear strategy for the next 10, 20 and 50 years needs to be established and then applied. This will be a living document to ensure that it keeps pace with developing technologies, both in vehicles and the transport infrastructure. Policies that are laid out for only 3 – 5 years are not helpful as it takes longer than this to develop new vehicles and engines.

We have available today the means of reducing carbon emissions. We need Government to establish a coherent and long term strategy to enable ultra low carbon technologies to reach the market and the industry to be an active and central stakeholder to help guide ideas from a practical perspective.

Appendix 1

Barriers and Opportunities - deployment of HGV ULC technologies

<u>Subject</u>	<u>Legislative Barriers</u>	<u>Opportunity</u>
Operator & Driver licensing	3.5t threshold restricts operators & promotes use of smaller vans (<3.5t) over more "CO ₂ /per ton freight" efficient 4.5t/7.5t vans	Raise threshold to 4.5t or 7.5t
Speed Limiting	Current speed limiters legislation does not apply to <3.5t vans	Apply 115kph speed limit to <3.5t vans
Weights & Dimensions	Current legislation does not include allowances for Goods Vehicles using hybrid/EV propulsion and/or alternative fuels	Amend legislation with allowance for addition weight penalty resulting from propulsion system / fuel storage in line with operator and driver licensing legislation changes above. Note: SMMT believe that that extra vehicle or axle weights should be restricted to specific technology – any weight increase might be applicable to all technologies although raising safety and/or environmental standards might be specified to accompany new W&D limit changes.
	Current legislation does not allow the fitment of "body" systems to improve aerodynamic performance of the HGV/HGV combination	Amend legislation with allowance for additional vehicle dimensions resulting from "aerodynamic" body systems. eg. spoilers & pillows
	Overall length of the HGV rigid/combination is fixed	Amend legislation with an increase in overall length, particularly for the semi-rigid combination

		Note: Consideration to be given to both adoption of the European Modular system (25.25m), now permitted in Finland, Holland and Sweden and longer semi trailers.
Green Procurement Directive	Directive does not include special conditions for low carbon technologies	Amend legislation to include a procurement best practice for low carbon technologies
London Congestion Charge	Charge includes exemption for hybrid/EV passenger car, but not hybrid commercial vehicles	Amend congestion charge to extend hybrid exemption to commercial vehicles
Low Carbon Fuels	Low Carbon fuels are not widely available for operator utilisation	Introduce incentives to promote the development of biomass for production, supply, distribution infrastructure and utilisation of sustainable low carbon fuels. To include synthetic diesel, Biomethane and DiMethylEther (DME)