



SIMI Response to Biofuels Obligation Scheme Consultation on future increases in the biofuels obligation rate

The Society of the Irish Motor Industry (SIMI) welcomes the opportunity to make comments on the above consultation. The SIMI is the trade association and representative body of some 1,200 member companies whose business includes the distribution, retailing, repair and maintenance of motor vehicles and their components. The Motor Industry currently employs over 40,000 people in Ireland.

SIMI and the Motor Industry that we represent strongly supports environmental objectives aimed at reducing the negative environmental and air quality impact from the Transport Sector and seeking to transition the national vehicle fleet to more sustainable fuels.

While much of the environmental debate and media focus on transport strategies have recently centred on the role of electric and hybrid vehicles, we are acutely aware of the need to support the widest range of options if we are to deliver the level of improvement in our environmental performance that is required. As the potential deliverers of technological solutions in this environmental challenge, the Motor Industry welcomes the opportunity to respond to the Consultation Document and hopefully to be engaged as a key and constructive stakeholder going forward.

In submitting our views on the concept of a phased increase in the biofuel obligation rate, we have limited our input to the question of potential technical challenges as the other issues are more appropriate to other players in the process.

Vehicle Compatibility

While we are not aware of detailed studies based on the current car parc having been undertaken in Ireland we are aware of media reports and comments by various sources in the UK and other European countries about the potential technical problems that may arise from the use of higher blends of biofuel particularly in relation to petrol vehicles. Studies on the effects of E15–E30 have also been undertaken and published by various stakeholders in a number of countries. The primary technical concerns that have been highlighted with

regard to vehicles, in relation to the introduction of these intermediate blends of ethanol include:

- Reduced fuel economy due to the lower energy density of ethanol;
- Increased emissions of pollutants such as NO_x due to higher catalyst temperatures;
- Corrosion of metals and other materials in engines and fuel systems;
- Degradation of elastomers, polymers, and seals, which can lead to fuel leaks; and
- Phase separation of water and ethanol from gasoline.

Much of what has been written is focused on older vehicles and highlights the corrosive potential of ethanol to damage systems and parts as well as the potential for fuel quality issues. While we add the caveat that we have not seen significant research in relation to the Irish Vehicle Parc, we are reassured by research carried out in the US by the International Council on Clean Transportation (ICCT) in 2014 but this nonetheless points to some issues which should be noted.¹

Given that the energy density of ethanol (the energy content in each litre of fuel) is lower than the energy density of petrol, when operating on the slightly higher ethanol blend cars will experience some range reduction and consumption increase.

According to the ICCT research *“there are theoretical reasons to be concerned that cars operating on higher ethanol blends than they were designed for could emit greater concentrations of pollutants in their exhaust gas. Cars need oxygen from air to combust gasoline, and under normal operation this ratio of air/fuel is carefully controlled so that the fuel burns optimally. If the ratio is not adjusted when using ethanol blends, the exhaust temperature will rise and, over time, can result in deterioration of the catalytic converter. This situation can increase the level of certain pollutants in the vehicle’s exhaust. Modern cars have the ability to prevent this imbalance by automatically adjusting the air/fuel ratio depending on the ethanol content of the fuel. Older vehicles, however, do not have a mechanism for automatically adjusting the air/fuel ratio, which can pose a problem (with emissions)”*.

They go on to say, however, that given that E10 has the highest vapour pressure of any blend level, it is not expected that increasing the ethanol content of fuel above E10 will result in higher evaporative emissions. In reviewing their own and other studies ICCT conclude that vehicles model year 2001 or later can safely consume E15, but the evidence shows that although vehicles older than 2001 may tolerate E15 blends, such vehicles do not have the same technological advantages as newer cars so ***“it is likely not prudent to use higher ethanol blends in them”***.

¹ **Technical Barriers to the Consumption of Higher Blends of Ethanol**; Stephanie Searle, Francisco Posada Sanchez, Chris Malins & John German, The International Council on Clean Transportation. February 2014

Fuel Quality can be a significant Issue:

Biodiesel blends have fewer issues than ethanol/petrol blends. Biodiesel can potentially have fuel system materials incompatibility problems in older vehicles with seals and fuel lines. However, these problems are not observed with blends of 20% or less². The low temperature properties of biodiesel are different from mineral diesel and tallow-based biodiesel, with a higher cloud point and cold filter plugging point than mineral diesel may cause problems in low temperature environments.

As we know from experience here and in other countries, under ideal conditions, a petrol-ethanol blend is perfectly acceptable. But consumers cannot control those conditions, and they have no easy way of knowing if the fuel they're buying has been contaminated. All petrol is susceptible to changes due to weather and moisture content, but ethanol exacerbates this problem. A higher concentration of alcohol in a fuel tank at any stage in the delivery process from production and shipping to road tankers and filling station storage tanks, will result in problems for the car owner, as alcohol can hold more water than petrol. If water concentrations get high enough, the alcohol and water will drop out of suspension, turning the fuel into a thick substance that a car's engine can't use. While Vehicle Manufacturers in Europe have been highlighting the problem of inconsistencies across the EU in fuel quality and the implications from this for emissions and fuel consumption, increased levels of ethanol in fuel may well increase the potential for vehicle problems from contaminated petrol.

If water contamination is high enough, the ethanol/water mix will separate from the petrol and form a layer at the bottom of the tank, in a process known as phase separation. In general though, ICCT believe that it is unlikely that water contamination with ethanol blends will be high enough to cause problems with vehicle operation.

From an Irish viewpoint, having previously experienced some fuel quality issues, perhaps arising from fuel laundering or petrol stretching, the issue of ensuring a consistently high quality may come more into focus with higher ethanol blends.

The National Vehicle Fleet in Ireland:

The Motor Industry strongly supports the process of increasing the renewable content of transport fuels and would be firmly of the opinion that the major issue in relation to the current proposal will be the challenges facing the owners of older vehicles. At the end of 2016 there were just over 2.6 Million Vehicles on the road in Ireland³ which include 1.1 Million Petrol, 1.5 Million Diesel, 9,100 Biofuel capable and 1,800 Electric Vehicles.

² **Enabling Biofuels Risks to vehicles and other engines**, TERNZ Ltd, Prepared for Ministry of Transport New Zealand, 2006

³ **Irish Bulletin of Vehicle and Driver Statistics 2016**, Department of Transport, Sport & Tourism

Approximately 60% of these vehicles are 6 years old, and over, with 40% below this in age. Approximately 143,000 vehicles are pre 2001, the age highlighted in some studies as a key division between those that can tolerate higher biofuel blends and those that will have problems, representing about 5.5% of the National fleet.

In our view this will require further and more detailed engagement and consultation as these vehicles are potentially among the most polluting vehicles in use as they predate many of the environmental improvements that have been implemented. In many EU Member States these are the vehicles which have been excluded from Low Emission Zones (LEZ) in major cities. Yet these are vehicles owned, in many cases, by those least likely to be able to afford to change for a newer cleaner model. The alternative to these vehicles facing some potential technical challenges would be to require the provision of two different grades of fuel but this would likely add significant cost not just for fuel companies but for consumers as costs are likely to have to be passed-on in prices charged. Two fuel grades would raise significant signage and information/education challenges for the Fuel Sector, the Motor Industry and the State and at the same time the number of vehicles requiring the lower blend fuel will be decreasing until it is negligible.

While SIMI is strongly supportive of the project we would wish to see some expedient work on research (focused on the Irish Vehicle Parc) and on a strategy to ensure that the problems that may exist can be reduced or removed entirely. We believe that SIMI can make a practical and supportive contribution in such an approach.