

Biofuels
Obligation
Scheme

January 19

2018

**Consultation on the future increases in the biofuel
obligation rate**

Green Biofuels
Ireland
Limited

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BIOFUELS OBLIGATION SCHEME

Consultation on future increases in the biofuel obligation rate.

Submission by Green Biofuels Ireland Ltd

Date: January 2018

Background

Green Biofuels Ireland Limited (GBIL) established a purpose built, commercial scale biodiesel manufacturing facility in New Ross, Co. Wexford as a direct result of the implementation of the Mineral Oil Tax Relief Scheme (MOTR). Production commenced in July 2008 and to date the company has manufactured and sold in excess of 262,000,000 litres of high quality, EN14214 standard, distilled biodiesel, exclusively from wastes (used cooking oil) and agricultural residues (category 1 tallow).

What does 262,000,000 litres of biodiesel mean in commercial and environmental terms? *Appendix I*

- It replaced the diesel portion of 7,100,000 barrels of oil,
- Turnover since inception exceeds €230,000,000, which has remained in Ireland,
- Supports in excess of 120 jobs, both direct and indirect,
- Has resulted in more than 700,000 tonnes of carbon saved to date,
- Is equivalent to removing more than 150,000 cars from the roads,
- Has added more than €78,000,000 to the beef processing industry,
- Has consumed more than 100,000 tonnes of wastes, (used cooking oil),
- Is fully sustainable (wastes) and has no ILUC emissions.

The fact that the production of indigenous biofuels has not increased since the MOTR came to an end in 2010 is not as a result of imports being more competitive with fuel distributors bypassing local production. To date GBI has placed in excess of 95% of its entire output on the Irish market. During the last decade major fuel companies have taken advantage not only of unfairly subsidised biodiesel imports from Indonesia and Argentina as well as B99 imports from the USA, that were subsidised by the Federal Government but have also procured biodiesel at the cheapest price possible, which in many instances is not of the highest quality, which in some instances may have contributed to issues experienced in the road transport sector.

GBI's responses to the consultation questions are outlined below.



Question 1.

In order to meet Ireland's 2020 Renewable energy target in the transport sector, it is proposed to increase the biofuel obligation rate to 10% from 2019 and 12% from 2020.

Do you support this policy measure?

GBI is fully supportive of this policy measure.

Key Points

- *2020 EU FINES*
- *Climate Change Targets*
- *Electrical Vehicles*
- *Clear post 2020 mandates and pathways similar to UK projected targets*

Ireland is not on track to meet its 2020 targets or to decarbonise its economy by 2050, according to the Climate Change Advisory Council. New figures from the Environmental Protection Agency (EPA) show greenhouse gas emissions increased by 3.5% last year to 61.19 million tonnes of CO₂ equivalent.ⁱ Within the transport industry emissions have increased by 3.7% in 2016 and 13% in the last four years. This is driven by economic and employment growth and shows no sign of abatement in the short term. The Council has warned that if Ireland does not introduce major new policies and measures it will miss its legally binding, 2020 targets resulting in large EU fines, estimated to be up to €455 million. Ireland is the worst performing country in Europe when it comes to taking action to combat climate change and is now 49th out of 56 countries ranked in the 2018 Climate Change Performance Index, which focuses on the world's worst countries for emissions.ⁱⁱ

Taoiseach, Leo Varadkar recently stated that the country was not meeting its climate change targets at present and failure to reach the targets would lead to significant fines. He also stated that he would rather spend money now on meeting Ireland's commitments than on fines from 2020 onwards.ⁱⁱⁱ

Together with the low uptake in electric vehicles in Ireland, the need to meet binding emission reduction targets and a lack of any alternative, it is imperative that the biofuel obligation rate is increased in line with the Departments consultation document. Sustainable biofuels provide an existing and long-term solution to reducing carbon emissions in the transport sector as well as providing energy security and reducing fossil fuel consumption in Ireland.

Increasing the obligation rate to 12% in 2020 and maintaining it at that level thereafter will provide investment certainty for further development of the biofuels industry in Ireland, producing sustainable biofuels from a significant amount of locally available feedstocks. The cattle kill in Ireland for 2017 was 1.75 million head, an increase of 6.4% over the previous year^{iv}. This provides sufficient feedstock to provide an Irish biofuels industry with in excess of 100,000 tonnes of animal fats to manufacture biodiesel, which, coupled with the availability of used cooking oil, amounting to approximately 20,000 tonnes would provide 120,000 tonnes of indigenous waste based feedstocks. As Irish production has only reached 30,000 tonnes this will lead to increased capacity in Ireland.



What biofuels do you envisage contributing to meeting these increased rates?

Key Points

- *Petrol E5 now to E10 but not until 2020.*
- *Diesel B7, double counted waste based.*
- *Some contribution from Electric Vehicles*
- *HVO lower GHG default value than UCOME and TME*
- *Bio-kerosene 2% to 5%.*

To achieve the required renewable energy targets, we envisage that the biofuels used will be ethanol (E5 with a potential to reach E10 by 2020) and biodiesel (B7 double counted), together with a home heating mandate and some contribution from EV's (electric vehicles) and HVO (Hydrogenated Vegetable Oil). Based on 2017 statistics (Nora.ie) 210 million litres of biofuels were consumed in the first eleven months of 2017 of which 53.8 million litres was single certified ethanol and 156.5 million litres of double counted biodiesel.

Assuming static fuel sales to 2020 in Ireland an increase to 10% in 2019 can easily be accommodated with an E5 (5% ethanol in petrol) and B6 (double counted, 6% biodiesel in diesel) blend, which would give an effective blend rate in diesel of 12%.

Reaching the 12% target in 2020 can be achieved with the rollout of E10 (10% ethanol in petrol), giving two more years to launch the E10 blend together with a B7 (7% biodiesel double counted in diesel blend, giving an effective biodiesel blend rate of 14%), without either affecting the blend wall, currently set at E5 (5% ethanol) and B7 (7% biodiesel) or the engine manufacturers warranties and without the inclusion of biofuels in the home heating sector.

The 2020 proposed biofuel obligation rate can also be achieved without the rollout of E10, by a combination of E5 together with B7 (double counted) and a potential low 2% mandatory blend of biofuels in kerosene for the home heating sector which would also aid in reducing emissions from this sector. *Appendix: II*, as well as some contribution from EV's and some HVO.

What alternative approaches do you view as being more likely to achieving Ireland's 2020 renewable energy target in the transport sector?

Key Points

- *No realisable alternatives at this time.*
- *Advanced Biofuels not commercially available*
- *Clear post 2020 mandates and pathways needed.*

With only two years left to reach the binding target of 10% there are little available alternatives. Advanced biofuels are not commercially available at this time and are unlikely to enter the market in any meaningful volume until well into the 2020's. Biofuels remain the ideal solution in the short to medium term, especially biofuels produced from wastes and agricultural residues which comprise in excess of 99% of the biodiesel consumed in Ireland. vi

As well as this the use of biodiesel produced from wastes and agricultural residues (used cooking oil and category 1 tallow) provide the highest greenhouse gas (GHG) savings with each tonne used saving 3 tonnes of CO2 equivalent. As per Annex V of the Renewable Energy Directive 2009/28/EC of the European Parliament & the Council of 23 April 2009 on the promotion of the use of energy from Renewable sources, waste vegetable and animal oil biodiesel save 88% GHG over fossil fuels.vii Therefore, based on 2017 11 month statistics the 154 million litres of biodiesel provided Co2 savings of more than 410,000 tonnes.

Based on a 12 month period increasing the biodiesel blend rate to 6% would require 194 million litres of biodiesel giving more than 510,000 tonnes of GHG savings and a 7% biodiesel blend would consume 227 million litres of biodiesel resulting in annual GHG savings of 600,000 tonnes.

In the longer term advanced biofuels will need to replace conventional vegetable oil based biofuels, however, this will require significant investment and is not expected to become available in the near term. Should the proposed amendment to the draft Renewable Energy Directive II reclassify used cooking oil and category 1 animal fats as advanced biofuel feedstocks this will facilitate not only further investment in these waste based biofuels but would also contribute to Ireland meeting its advanced biofuel targets.



Question 2

In order to meet Ireland's 2020 renewable energy target in the transport sector, it is proposed to increase the biofuel obligation rate to 10% from 2019 and circa 12% in 2020.

What impact do you believe this will have on fuel prices?

Key Points

- *Minimal and potentially a saving if biofuel levy amended in respect of domestically produced sustainable biofuel.*

We consider that the impact of increasing the blend rate will have a minimal impact on fuel prices. Based on statistics provided by the Irish Petroleum Industry Association (IPIA) the current cost of biofuels blending, at 8.695% amounts to 1.4 cents per litre excluding VAT^{viii}. The current average cost of the biofuel obligation blend rate of 8% represents 1.3% of the total pump price. **Appendix III**

Increasing the blend rate to 10% would add an additional 0.35c (zero point three five) cents to the average price ex VAT, that is one third of one cent per litre.

Increasing the blend rate further to 12% would also add an additional 0.35c (zero point three five) cents to the average price ex VAT, that is one third of one cent per litre.

Fuel prices have fluctuated wildly over the last four years falling by 14% for petrol and 16% between January 2015 and January 2016, a further 4% for petrol and 9% for diesel between January 2016 and January 2017 and has increased by 11% for petrol and 15% for diesel between January 2017 and January 2018. **Appendix: IV.**

Therefore, based on the above the increase in the biofuel obligation rate will have a minimal effect on pump prices. Notwithstanding this the biofuel levy of €0.02 per litre could be removed from indigenous biofuels and this would minimise any effect on prices for the consumer and would also promote further investment in production facilities in Ireland.

What alternative approaches could provide a more cost effective method of achieving Ireland's 2020 renewable energy target in the transport sector?

There are currently no alternatives or more cost-effective methods of achieving the required targets. Biofuels account for a very small percentage of the cost of fuels and an increase from 8% to 10% and to 12% thereafter will have a marginal effect.

Question 3

In order to maximise the contribution of the Biofuels Obligation Scheme to Ireland's renewable energy target in the transport sector, it is proposed to restrict/reduce the current level of use of carried over certificates in 2020.

Do you support this approach?

Key Points

- *Restrict use on carryover*

GBI is fully supportive in adopting the proposal to restrict the use of carryover certificates in 2020. The obligation on Ireland is to achieve a penetration of 10% renewable fuels in road transport in 2020. The calculation of the volumes in energy terms for 2020 will be made based on the actual consumption of renewables in road transport fuels in 2020 and any carryover of certificates could result in Ireland not meeting its binding targets resulting in significant fines being incurred.

As well as this there is no impediment to meeting the 12% proposed target by physical blending of biofuels in 2020. Due to the low uptake in EV's and the limited availability of HVO a physical blending rate of 12% in 2020 is considered necessary to achieve the 10% target set for that year.

What would be the appropriate level of carryover for use in 2020 and beyond?

Key Points

- *Zero carryover*

GBI would consider that the appropriate level of carryover of certificates for use in 2020 should be set at zero.

To ensure that Ireland meets its 2020 renewable energy targets in 2020 there should be no carryover of 2018/2019 certificates into 2020 as this could result in the imposition of significant fines by the EU Commission on Ireland and there is no technical or other impediment to physically blending biofuels in 2020.

As well as this, in the event the Biofuel Obligation Rate is increased to 10% and then further to 12% it is unlikely that there will be a significant volume of carry over certificates as physical blending will more than likely be required to meet the mandatory blends.

If you feel the current level should be maintained, please provide reasoning including an alternative approach to maximising the contribution from biofuels to achieve Ireland's renewable energy target in the transport sector.

There are no alternatives at this time that would help Ireland achieve its 2020 obligations. Carryover of certificates would affect physical blending in 2020 which could result in Ireland missing its targets.

The contribution from biofuels in 2020 can only be made by physical blending a combination of 5% ethanol (E5) and/or 10% ethanol (E10 in 2020) coupled with 7% double counted biodiesel (B7 DC) and/or a small blend (circa 2%) in the heat sector, together with some contribution from EV's and HVO.

An alternative approach might be to allow the carryover certificates from 2018 to be used against 2019 and 2021 obligations and the 2019 carryover certificates to be used in 2021 and 2022 to cater for the 2020 mandatory requirements.

Question 4

The recently amended Fuel Quality Directive (Directive 98/70/EC) places an obligation on suppliers to reduce emissions – specifically the reduction in carbon intensity off at least 6% to be met by 31 December 2020 compared to 2010.

How do you envisage this requirement being met?

Key Points

- *Promoting E10 by 2020.*
- *Home heating bio liquid obligation.*
- *Extending the obligation to inland waterways / marine*
- *Use of some HVO, however, expensive alternative and not widely available.*

The overall GHG intensity of the road transport fuel sold in Ireland in 2015 was 91.9 gCO₂eq/MJ, which was 2.3% lower than the 2010 fuel baseline standard (94.4 gCO₂eq/MJ). This is equivalent to a shortfall of approximately 550,000 t CO₂eq relative to the 6% target. ^{ix}

Promoting the launch of E10, in a limited role in 2020 would contribute to reaching the target. This could be implemented in forecourts with more than two petrol pumps, whereby the third pump would be labelled E10 with the remaining pumps labelled as conventional E5.

As well as this it will be imperative to have a corresponding bio liquid obligation in the home heating sector, which even at a low blending rate of between 2% to 5% would aid in achieving the FQD target in 2020.

In summary with a B7 biodiesel blend, double counted together with conventional E5 and a limited rollout of E10 in larger forecourts, combined with a mandatory obligation in the home heating sector and a limited contribution from electric vehicles (EV's) coupled with smaller volumes of HVO should be sufficient to reach the 6% GHG savings in 2020.

It is important to note that there are currently no plans to extend the target for the reduction of greenhouse gas intensity under the Fuel Quality Directive beyond the year 2020. Instead, the EU commission is proposing to address the decarbonisation of transport fuels after 2020 in the framework of a revised Renewable Energy Directive. ^x

Are there any measures that Government could assist obligated parties reach the Fuel Quality Directive target?

Key Points

- *Promoting E10*
- *Bio-liquid obligation in home heating sector*
- *Marine and inland waterways*
- *Supplier compliance*

Promoting the launch of E10, in a limited role in 2020 would contribute to reaching the target. This could be implemented in forecourts with more than two petrol pumps, whereby the third pump would be labelled E10 with the remaining pumps labelled as conventional E5.

As well as this it would be imperative to have a corresponding bio liquid obligation in the home heating sector, which even at between 2% and 5% blending rate would also aid in achieving the FQD target in 2020.

In summary with a B7 biodiesel blend, double counted together with conventional E5 and a limited rollout of E10 in larger forecourts in 2020, combined with a mandatory obligation in the home heating sector and a limited contribution from electric vehicles (EV's) coupled with smaller volumes of HVO this should be sufficient to reach the 6% GHG savings in 2020.

As outlined above there are currently no plans to extend the target for the reduction of greenhouse gas intensity under the Fuel Quality Directive beyond the year 2020 and the target only has to be reached in 2020.

The Government has already implemented the FQD under S.I. No. 160 of 2017, *“European Union (Greenhouse Gas Emission reductions Calculation Methods and reporting requirements) Regulations 2017”*, which sets out obligated parties responsibilities. ^{xi}

Under Section 8. *Reduction of Lifecycle greenhouse gas emissions*, “suppliers shall reduce life cycle greenhouse gas emissions per unit of energy from fuel and energy supplied by up to 10% by 31 December 2020, compared with the fuel baseline standard. This reduction shall consist of (a) 6 per cent by 31 December 2020.

Under Section 17. *“Compliance Orders”* a supplier (obligated party) who has not complied may be subject to a High Court compliance order. As well as this Section 11. *“Joint Obligation”* allows suppliers to group together to meet the reduction obligation jointly.



Therefore the onus for compliance lies with the supplier and not the Government and compliance will only be measured on 31 December 2020, so it is the responsibility of the supplier to comply.

Question 5

Increasing the biofuel obligation rate is likely to involve the introduction of fuels with higher concentrations of biofuel (such as E10 which is petrol blended with 10% ethanol and B7 which is diesel blended with 7% biodiesel). This may lead to compatibility older vehicles, consumer cost, and the necessity of consumer awareness in order to ease its introduction and potentially the development in forecourt infrastructure.

What do you view as the technical and consumer challenges associated with increasing the biofuel obligation rate (including introducing fuels such as E10 and B7)?

Key Points

- *E10 difficult transition*
- *B7 Cap limits*

It is our view that an E10 blend will be difficult to achieve in the short term, due not only to the age profile of Irish road fleet but also the possible requirement for some infrastructural improvements in smaller forecourts, where one petrol pump may have to be labelled E10 and another E5. Also, a marketing and consumer awareness campaign will need to be implemented to educate the consumer on the use of E10 however, there are still two years left to achieve this. ^{xii}

Regarding B7, this blend is currently in use with many obligated parties and has been a part of their blending strategies for many years, especially when coupled with double counting. The use of B7 does not invalidate engine manufacturer's warranties nor does it require and infrastructural changes to the existing forecourts as most diesel pumps are already distributing a B7 blend.

The use of B7, coupled with double counting, (wastes and agricultural residues) is used to cover the shortfall in ethanol blending which is currently capped at E5. During 2017 the average ethanol/petrol blend rate was 5% and the average biodiesel/diesel blend rate was 5.2%, with diesel sales accounting for 74% of road fuel sales and petrol the remaining 26%, ^{xiii}As in previous years the biodiesel consumed is almost entirely from wastes and agricultural residues and is double counted, therefore there is scope to increase the biodiesel/diesel blend rate to 7% double counted to accommodate any increases in the Irish Biofuel Obligation rate.



Can fuels such as E10 and B7 be brought to the market in Ireland by 2020?

Key Points

- *B7 available in the market place already*
- *E10 can be launched closer to 2020*

Regarding B7, this blend is already widely available in the market place. Many distributors blend at this rate, double counted, both to cover any shortfall in ethanol blending, currently E5 and to generate excess biofuel certificates for carryover into subsequent obligation years. Therefore, there is no impediment for B7 to be brought to the market.

In relation to E10, this blend can be launched closer to 2020, as a B7 double counted blend will cover any ethanol shortfall, especially since road fuel sales are predominantly diesel. This would allow an additional two years to improve the infrastructure and to introduce E10 into the market place and would also ensure that a higher number of vehicles will be compatible with E10 as the age profile of the petrol fleet changes.

Are there technical barriers to achieving 7% conventional biodiesel blend (B7) averages across the full year, including the winter months?

- *Key Points -SMG – Saturated Mono Glyceride Index*
- *Undistilled FAME*
- *CFPP*
- *Filter Blocking Tendency (FBT)*

The winter blending season from mid-October to mid-March requires the B7 blend to meet the winter EN590 requirements of -15 degrees Celsius and this reduces to -5 degrees Celsius for the remainder of the year. The ability to blend throughout the year is dependent of a number of factors, namely,

The SMG (Saturated monoglyceride) index, which is set at a maximum of 55 for winter blending,

The cloud point: measuring the carbon depositing tendency of a fuel and is an approximation for the tendency for carbon deposits to form in an engine, and is used to calculate the SMG index,

Monoglyceride levels: also used to calculate the SMG index for winter blending compatibility, this is currently set at a maximum of 0.7% under the FAME EN14214 standard.



Unstilled FAME, especially from vegetable oils, would have a monoglyceride level of 0.7% and a cloud point of roughly +4, based on rapeseed biodiesel. Using this quality FAME produces an SMG index of 115 see *Appendix V*, which is not suitable for winter blending.

Whereas, distilled FAME, has a monoglyceride content of <0.02% and even with a cloud point of +14, the SMG index is calculated at 6, well below the permissible blending levels.

A further aspect of winter blending relates to the CFPP, cold filter plugging point, of the FAME. Cold filter plugging point (CFPP) is the lowest temperature, expressed in degrees Celsius (°C), at which a given volume of diesel type of fuel still passes through a standardized filtration device in a specified time when cooled under certain conditions.

FAME from wastes and animal fats has a higher CFPP than vegetable oil based biofuels. However, provided the diesel used has a higher CFPP than the minimum -15 degrees Celsius required for winter blending then biodiesel with higher CFPP results can still be blended with diesel in these months, without affecting the overall quality.

One further point relates to what is referred to as the FBT (Filter Blocking tendency) test. The UK have set a limit on the FBT of 2.52 due to problems experienced between September 2013 and April 2015 with filter blocking issues in some vehicles.^{xiv} Notwithstanding this, distilled biodiesel normally has an FBT of 1 and would therefore be compatible for winter blending.

In summary therefore, provided obligated parties procure good quality biodiesel and ensure the fossil diesel purchased during the winter months has a CFPP in excess of -15 degrees Celsius then there should not be any impediment to blending a B7 throughout the year.

Most obligated parties are well experienced with a B7 blend as many have used this blend, double counted, especially in the summer blending season to achieve compliance with their obligations.

For biodiesel blend rates higher than 7%, are drop in biofuels a viable solution for Ireland?

Key Point

- HVO not readily available.
- HVO preference for aviation.

In the market place today Neste are the largest manufacturers of HVO (Hydrogenated Vegetable Oil), a renewable diesel produced in the process of hydrogenation, i.e. treatment with hydrogen and production is concentrated in Finland, the Netherlands and Sweden in the EU. Although the density of HVO does not meet the required specification, it can be used to improve the parameters of off spec fossil diesel. A large share of the market belongs to companies doing co-processing, a technique allowing for HVO production using the desulfurization unit in a refinery whereby vegetal oils are directly mixed with fossil diesel. One disadvantage of this method is that more and more crude oil is becoming heavier and sour, i.e. increasingly hydrogen deficient and this will worsen over the next few years.^{xv xvi}



Notwithstanding this, HVO is not readily available in the market place to purchase in smaller volumes and the use of HVO in Ireland since the inception of the Irish Biofuel Obligation has been negligible and its future use is expected to focus on the aviation industry, due to its high CFPP levels, which will be a significant factor in the Renewable Energy Directive II, as it focuses on reducing emission in the aviation industry. In 2015 only 2.9% of the total biofuel consumed came from HVO and in 2016 its contribution fell to 2.3%, all of the HVO supplied was from spent bleached earth (SBE). Not only is the availability of HVO questionable it is generally more expensive than conventional biofuels and this could lead to increased pump prices.

Question 6

Since the publication of A European Strategy for Low Emission Mobility in 2016, the European Commission has designated that food based biofuels have a limited role in decarbonising the transport sector due to concerns about their actual contribution to the decarbonisation. It is envisaged that a gradual reduction of food based biofuels and their replacement by more advanced biofuels will realise the potential of decarbonising the transport sector and minimise the overall indirect land-use impacts. The EU Commission has signalled that the trajectory of biofuels is away from first generation biofuels towards advanced or second generation biofuels. This is primarily to be achieved through the introduction of a cap on first generation biofuels and the incentivisation of advanced biofuels.

How should the development of increased levels of advanced biofuels be supported in Ireland?

Advanced biofuels are not commercially available today and although there may be several "pilot" projects in existence, so far none have been brought to commercial production.

Should the Renewable Energy Directive II include used cooking oil and animal fats as advanced feedstocks then Ireland would be in a position to meet its advanced biofuels target and the Government should be supportive of this proposed amendment to the definition of advanced feedstocks as there is significant available feedstocks of used cooking oil and animal fats within Ireland.

In order to promote the development of advanced biofuels a grant or excise relief scheme similar to the Mineral Oil Tax Relief (MOTR) scheme should be reintroduced.

Question 7

Currently, the Biofuels Obligation Scheme is limited to the transport sector. In the heating sector, there is a high use of fossil fuels (including oil) and a target 12% of energy consumption from renewable sources by 2020.

What is your opinion on the potential for an obligation scheme (similar to the Biofuels Obligation Scheme) in the heat sector?

Key Points

- *Significant potential*
- *Reduce carbon monoxide emissions*
- *Obligation rates – mandates and pathways*

We believe there is significant potential for an obligation scheme, similar to the Biofuels Obligation Scheme, in the heat sector.

The creation of a biofuel obligation would reduce carbon monoxide emissions, release less particulate matter and unburned hydrocarbons and biofuels contain virtually no sulphur so it doesn't contribute in any way to the acid rain phenomenon. Biofuels are cleaner than fossil fuels and would improve the lifespan of the burners/furnaces and would result in less filter replacements, thus saving money in the long term. ^{xvii}

Dr. Paul Deane, of University College Cork's Environmental Research Institute recently stated that the big offender in the renewable energy sector was home heating and that a heavy reliance on fossil fuels such as oil, gas and peat for heating buildings makes it an outlier internationally. ^{xviii}

In 2015 the heat sector consumed over 1.8 million tonnes of oil, which represented 40% of the energy use in the heat sector. ^{xix}

Introducing an obligation in the heat sector, even at a low level equivalent to 2% could not only avoid the necessity of an early rollout of E10 but would also contribute to Ireland meeting its binding 2020 targets.

What do you see as the technical barriers to introducing such a scheme?

Key Points

- *Storage locations*
- *Storage time*
- *Excise duty or Carbon tax?*

We view the main technical barriers to be the location of the storage tanks and the length of time that the product is stored before being completely consumed.

Notwithstanding this, there is long standing experience of using biofuels combined with home heating oil in the USA, even in colder climates and the recommendation is to use up to 5% in the colder months and up to 20% for the remainder of the year. Therefore, it would be considered prudent to introduce an obligation in the home heat sector at a low level (e.g. 2% initially), increasing this from 2% in 2019 to 5% in 2020, which would contribute to Ireland's renewable energy obligations. ^{xx}

One possible solution to mitigate any increase costs to the consumer to cover blending costs would be to remove the excise duty attributable to the biofuel portion of the bio-heating oil blend, which is currently €0.047 per litre. ^{xxi}



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- ^{xix} SEAI Energy in Ireland – millions of tonnes of oil equivalent.
- ^{xx} <http://www.networx.com/article/advantages-of-biodiesel-fuel-blends-for-home-heating-oil>.
- ^{xxi} Revenue.ie mineral oil tax excise duty rates.



Appendix I

262,000,000 Litres of biodiesel sold: What does it mean?



Replaced the diesel portion of 7,100,000 barrels of oil



€230,000,000 stayed in Ireland.



Supported some 120 jobs in Ireland.



Expanding biodiesel use.



Equal to more than 150,000 cars off the road (>700,000 tonnes of CO2 reduction)



Added revenue to the beef processing industry of €78,000,000.



100,000 tonnes worth €71,000,000 of used (waste) cooking oil consumed.

Appendix II

PROPOSED IRISH BIOFUEL OBLIGATION BLENDING RATES

	<u>Gasoline</u>	<u>Ethanol</u>	<u>Blend</u>	<u>Diesel</u>	<u>Blodiesel</u>	<u>Blend</u>	<u>Biodiesel</u> <u>100% DC</u>	<u>Effective</u> <u>Blend</u>	<u>Kerosene</u>	<u>Blend</u>	<u>Biofuels in</u> <u>Kerosene</u>	<u>Totals</u> <u>Fuels</u>	<u>Bio</u>	<u>Blend</u> <u>Rate</u>
11 Months 2017	1,054,489,348	53,789,665	5.1%	2,974,632,881	156,527,951	5.3%	313,055,902	10.5%	866,809,184	0%		4,029,122,229	366,845,567	9.1%
12 month est 2017	1,150,352,016	58,679,635	5.1%	3,245,054,052	170,757,765	5.3%			945,610,019					
2019	1,150,352,016	57,517,601	5.0%	3,245,054,052	194,703,243	6.0%	389,406,486	12.0%	945,610,019	0%		4,395,406,068	446,924,087	10.2%
2020	1,150,352,016	115,035,202	10.0%	2,974,632,881	208,224,302	7.0%	416,448,603	14.0%	945,610,019	0%		4,124,984,897	531,483,805	12.9%

ALTERNATIVE WITH BIOKEROSENE

2020	1,150,352,016	57,517,601	5.0%	3,245,054,052	227,153,784	7.0%	454,307,567	14.0%	945,610,019	2%	18,912,200	4,395,406,068	530,737,368	12.1%
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Source: *Nora.ie* statistics

Appendix III

CALCULATION OF BIOFUEL BLEND COSTS TO THE CONSUMER

% COST RELATED TO BIOFUELS

IBO Blend Rate	Biofuel costs cents per litre incl VAT	% Cost		Average <i>Note 1</i>	FORECOURT PRICES		
		PETROL	DIESEL		PETROL	DIESEL	
					cents per litre		
8%	1.72	1.2%	1.3%	1.3%	139.90	129.90	Jan-18 Actual
10%	2.15	1.5%	1.7%	1.7%	140.33	130.33	Jan-19 Estimate
12%	2.58	1.8%	2.0%	2.0%	140.76	130.76	Jan-20 Estimate

Note 1 based on actual consumption 76% diesel and 24% petrol

Appendix IV

JANUARY HISTORICAL PUMP PRICES Source: AA.ie

CENTS PER LITRE

	<u>PETROL</u>	<u>DIESEL</u>
Jan-15	152.90	147.60
Jan-16	131.60	124.30
% CHANGE	-14%	-16%
Jan-17	126.50	112.80
% CHANGE	-4%	-9%
Jan-18	139.90	129.90
% CHANGE	11%	15%

Appendix V

SMG CALCULATION & COMPARISON CONVENTIONAL AND DISTILLED BIODIESEL

Recommended Max is 55

Distilled biodiesel - UCO/animal fats

	Density kg/m3	MG	Cloud Point	(Formula C3) Smg	(Formula C4) Smg Index	Dilution
Input	880	0.02	14	0.0098258	8	7%

Use Formula C3 to convert the monoglyceride figure of the 100% fame aligned with the Cloud point to get the "Saturated " monoglyceride content. Then apply Formula C4 to get the figure for the SMG index, which should be less than 55 in (Northern Europe Winter).

Recommended Max is 55

Rapeseed Biodiesel

	Density kg/m3	MG	Cloud Point	(Formula C3) Smg	(Formula C4) Smg Index	Dilution
Input	880	0.7	4	0.186543		7.0%

Use Formula C3 to convert the monoglyceride figure of the 100% fame aligned with the Cloud point to get the "Saturated " monoglyceride content. Then apply Formula C4 to get the figure for the SMG index, which should be less than 55 in (Northern Europe Winter).