

RTFA Feedstock Availability Summary Report

Introduction

Sustainable biofuels currently provide emission reductions of 5.4mn t CO₂e from the 1990 standard. Whilst in the longer-term electrification will be the main route to decarbonisation, in the short-term biofuels can play a major role in the decarbonisation of UK transport by driving out fossil fuels.

The Renewable Transport Fuel Obligation (RTFO) sets a target for the use of standard biofuels (e.g. bioethanol, biodiesel and biomethane) as well as encouraging strategically-important “development fuels” which will be important in decarbonising sectors which will be difficult to electrify. Given the urgency of addressing greenhouse gas reductions the RTFA would like to see fossil fuels driven out as rapidly as possible. However, the RTFO is insufficiently ambitious and without a significant target increase for standard biofuels, the UK will squander the opportunity of carbon savings achievable in the short term using today’s infrastructure.

Given the predicted reduction in the use of liquid fuels due to electrification, the Prima study has shown the RTFO would need to increase to around 14% simply to supply the volumes of biofuels it is supplying today. Instead, an increase from today’s level of 9.6%, to 12.1% by 2032 is proposed¹, meaning that the UK will move backwards in terms of the effort put into decarbonising road transport through the use of sustainable fuels. Indeed, it would see the use of waste biodiesel fall by 460mn gal/yr relative to 2019 levels. This is remarkably unambitious. By contrast the European targets show twice the ambition level.

The RTFA commissioned Prima to look at how much additional sustainable biomass feedstock is available globally, and to estimate how much of this might be available to the UK, given competing mandates in the EU and the rest of the world (ROW). [The Prima report](#)² shows the UK can comfortably afford to increase the RTFO target to levels of 21% and above, without increasing the risk of using crop-based biodiesel which (although still meeting sustainability standards, is less desirable from a land-use point of view).

¹ Targeting net zero - Next steps for the Renewable Transport Fuels Obligation. DfT, 25th March 2021. <https://www.gov.uk/government/consultations/amending-the-renewable-transport-fuels-obligation-rtfo-to-increase-carbon-savings-on-land-air-and-at-sea>

² Bridging the Carbon Gap: keeping UK decarbonisation up to speed with Net Zero. Prima. March 2021. <https://rtfa.org.uk/wp-content/uploads/2021/04/RTFA-05042021.pdf>

Stand still scenario

The UK sourced 5.1%³ of its transport fuel requirements from renewables in 2019, equivalent to 2.68bn litres of renewable fuel consumption. These renewable fuels cut UK transport emissions by 5.4mn t CO₂e showing a 4.4% reduction from the 1990 standard.

Prior to the ban of ICE's in 2030 BEIS is already modelling a 2% annual decline in UK fuel consumption between 2019 and 2032. Taking this trajectory and assuming a sensible growth in biomethane plus increasing use of bioethanol under the new E10 mandate, the UK biofuel blending mandate for standard fuels (i.e., non-development fuel) would need to rise to 14% just to keep current blend rates at a steady state. If it were only 13%, waste biodiesel use would fall by 460mn gal/yr relative to 2019 levels. If the rate of electrification were faster leading to a 3% decline in annual fuel use, a biofuel blending mandate of nearly 16%/yr by 2032 would be needed merely to keep current blending volumes at their current level.

	Specified amount as share of fossil fuel	Main obligation as share of fossil fuel	Crop cap	Diesel demand (mn l)	Gasoline demand (mn l)	Biodiesel demand (mn l)	Ethanol demand (mn l)	Biomethane (mn l eq)	Main obligation blend if ethanol at crop cap
2019	9.3%	9.2%	4.0%	28,435	15,974	1,669	756	9	9.2%
2020	10.8%	10.6%	4.0%	27,582	15,495	1,669	756	13	9.5%
2021	11.2%	10.7%	3.8%	26,754	15,030	1,669	756	18	9.8%
2022	11.6%	10.7%	3.7%	25,952	14,579	1,669	1,312	25	11.5%
2023	11.9%	10.7%	3.5%	25,173	14,142	1,669	1,273	35	11.8%
2024	12.1%	10.8%	3.3%	24,418	13,717	1,669	1,235	48	12.1%
2025	12.4%	10.8%	3.2%	23,686	13,306	1,669	1,198	68	12.4%
2026	12.6%	10.8%	3.0%	22,975	12,907	1,669	1,162	95	12.6%
2027	12.9%	10.8%	2.8%	22,286	12,520	1,669	1,127	133	12.8%
2028	13.1%	10.9%	2.7%	21,617	12,144	1,669	1,093	186	13.1%
2029	13.4%	10.9%	2.5%	20,969	11,780	1,669	1,060	260	13.5%
2030	13.6%	10.9%	2.3%	20,340	11,426	1,669	1,028	364	14.0%
2031	13.9%	10.9%	2.2%	19,729	11,083	1,669	998	510	14.7%
2032	14.2%	11.0%	2.0%	19,138	10,751	1,669	968	714	15.6%

The UK transport sector released emissions of 106mn t CO₂e in 2019. Despite the declines BEIS models in UK oil consumption over the period, it still predicts UK road transport will emit 83mn t of CO₂e in 2035, leaving transport the single largest contributor to national carbon emissions. In real terms this is equivalent to a 22% decline in transport emissions over the decade, and a 23% cut

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/932933/renewable-fuel-statistics-2019-final-report.pdf

relative to a 1990 baseline. The European Commission is however targeting a 55% cut in economy wide emissions by 2030 relative to a 1990 baseline.

Without adjustment, the mandate as is, will effectively leave the biofuel supply investment stranded. The RTFO's current 'flatline' trajectory of 9.6% standard biofuel target and even the modest additional 2.5% proposed in the recent DfT consultation, is a missed opportunity.

Biomass Supply Potential

The RTFO has resulted in much more use of waste feedstocks in recent years, and more feedstocks are becoming available. The list of feedstocks included in Annex IX part A will be expanded in a first set of revisions to the RED II rulebook expected in summer 2021. Fats suitable for immediate biomass-based diesel processing including brown grease are expected to be prominent on the expanded list⁴.

The UK and international renewable feedstock pools have sufficient elasticity to easily allow the UK to achieve a 21% RTFO target for standard biofuel by 2032. This blend ratio would allow 3%/yr growth in biodiesel blended into a diesel pool which is shrinking by around 3%/yr. It would require an average additional feedstock supply of around 400mn l/yr and by 2032 feedstock consumption would be around 732mn l/yr higher than it is today. Under this model, the UK's crop cap would limit UK bioethanol consumption. Without a crop cap, a 22% standard fuel mandate would allow ethanol to maintain a higher market share, again with feedstock readily available. The Prima report shows these increases can be all accommodated with Annex IX feedstocks. The supporting data table is appended to this summary.

Conclusion

Current UK RTFO legislation leaves the UK's biofuels industry on a path of decline. This will surrender the UK's pioneering role in the development of low carbon intensity streams. The UK road transport fuel industry has already demonstrated its ability to quickly increase the supply of sustainable transport fuels at a reasonable cost per tonne of carbon saved. The sector has innovated sustainability frameworks across a global reach. As well as delivering tangible carbon benefits, this work will serve other international industrial supply chains as they look to decarbonise and expand beyond the UK's existing EU business focus.

The UK's poor level of ambition for the role that sustainable fuels can play in decarbonising transport makes little sense in an environment where it is pressing to be the first major international economy to decarbonise. It also threatens to leave the industry stalled or in retreat, stranding existing assets and supply chains and serving as a disincentive to investors looking at other aspects of the decarbonisation agenda.

Higher RTFO targets making use of available sustainable feedstocks are the easiest way of quickly reducing carbon emissions as other technology and modal solutions develop. A rise in the non-development fuel mandate to at least 21% by 2032 should be a high priority.

⁴ PRIMA reports

Biodiesel Methyl Ester								
Feedstock	UK supply vol (mn l)	UK total supply potential (mn l)	UK Sensitivity	UK RTFO potential supply (mn l)	Current RoW supply into UK	RoW potential supply	RoW Sensitivity	RoW RTFO supply potential (mn l)
Brown grease	3.0	0	Assuming flow is captured as FOG	0	13.4	0	0	0
Food waste	27.7	0	Non-economic	0	32.0	0.0	0	0
Palm oil mill effluent	0.3	0	0	0	17.0	2,265	High: UK buyout	113.3
Sewage system FOG	0.3	485	High: energy incentive doubles as incentive to improve water systems	485.0	0.0	56,000	High: UK buyout	1,120
Soapstock acid oil contaminated with sulphur	2.0	0	0	0	39.0	0.0	0	0
Spent bleaching earth	0	0	0	0	9.0	906	0	0
Tallow	15.0	340	Low: Cat 3 is single count	0	36.0	17,041	High: EU vet standards mitigate against RoW imports	852.1
Used cooking oil	118.0	544	High: High UK buyout	272.0	1,308.4	66,000	High: High UK buyout, existing market penetration	3,300
Crude tall oil	0	0	0	0	0	2,265.0	Low: Single count in UK	1,132.5
Total:	1669.2*	1,369		757	1,454.7	144,477		6,517.8

Bioethanol								
Feedstock	UK supply vol (mn l)	UK total supply potential (mn l)	UK Sensitivity	UK RTFO potential supply (mn l)	Current RoW supply into UK	RoW potential supply	RoW Sensitivity	RoW RTFO supply potential (mn l)
Corn	0	0		0	322.6	469,000	High: US consumption already mature	4,690.0
Ethanol from cleaning / extraction of blood plasma	0	0.0	Non-tradeable	0.0	4.0	Non-tradeable	0	0
Food waste	1.0	N/A	Non-tradeable	N/A	25.7	Non-tradeable	N/A	N/A
Starch slurry (waste)	0	N/A	N/A	N/A	58.2	N/A	N/A	N/A
Sugar beet	64.0	0	Limited room to expand crop	0	48.6	0	0	0
Sugar cane	0	0	0	0	152.9	22,000	High: Rapid growth in Brazilian production, UK outside EU tariff wall	220
Triticale	0	0	0	0	2.0	0	0	0
Wheat	35.0	5,073.6	Wheat has fallen as UK ethanol input leaving ready slack	202.9	37.2	244,000	0	0.0
Ligno cellulose	0	398	39.8	0	0	46,323	0	926.5
Total:	756.3	5,472		203	651	781,323		5,836
Biomethane								
Husks	0				0	0		
Municipal organic waste	0				3	0		
Sewage sludge	0	420			1	0		
Wet manure	0	877,500			0	0		
Total:	22.2	877,920			4	0		