

Fuel from waste more likely at the pumps

Can fuel from waste play a strategic role in the UK's ambition to decarbonise the transport sector? **CORIN WILLIAMS** looks at a potentially lucrative market for waste companies

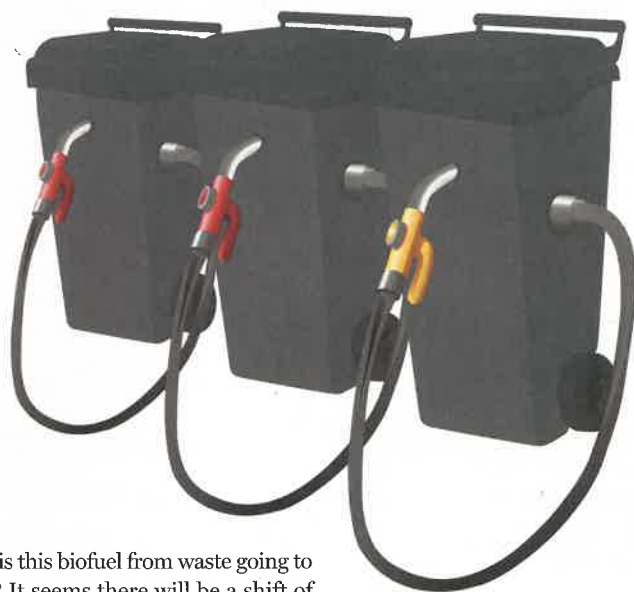
It's not often the Government says it wants to increase investment in technology to deal with waste. But proposed changes to the Renewable Transport Fuel Obligation (RTFO) could lead to a boom-time for companies developing fuel from waste streams.

Transport minister John Hayes has sent some positive messages. In his foreword to a consultation on the RTFO, he says he wants to "provide a positive investment environment beyond 2020" to encourage the development of waste-based and advanced fuels.

The push for fuel from waste is due to the UK's climate change commitments under the Paris Agreement to reduce greenhouse gas emissions by 80% by 2050. The transport sector accounts for around a quarter of current emissions and the Government is aiming to reduce this to "near zero".

Achieving this will not be easy. Biofuels derived from crops were once hailed as the future, but concerns about deforestation have led governments to look at waste streams instead. And the rewards could be enormous – consultancy Ricardo has estimated that the advanced global biofuels industry could be worth up to £15bn by 2030.

The waste sector is starting to take notice. Former top Defra civil servant, and current CIWM chief executive, Colin Church has highlighted a need for separate food waste collections in order to power HGV fleets as part of the UK's decarbonisation plans.



So where is this biofuel from waste going to come from? It seems there will be a shift of focus from used cooking oil (UCO) to gas from landfill and anaerobic digestion (AD) (*see box next page*). The UCO market is relatively well developed, but stimulating development in biogas fuels will take investment and this is what the changes to the RTFO are all about.

Under proposed new targets, the percentage of biofuel derived from waste other than UCO could rise to 30%. There is plenty of gas out there: a recent Policy Exchange report pointed to research by National Grid which found that around 80-120TWh a year of biomethane

could be produced in the UK, mainly from wastes. This leaves a lot of scope for UK companies to explore technologies that turn all sorts of waste into valuable fuel. Luckily, that is exactly what some have already been doing.

Advanced Plasma Power (APP) has been in the fuels game for a few years now. The company is constructing a £25m facility near Swindon to convert household waste to bio-substitute natural gas, which will be up and running next year. This was possible thanks to a £11m grant from the Department for Transport's (DfT) Advanced Biofuels Competition, and it will initially provide fuel for 40 vehicles operated by Howard Tenens, a local logistics company.

APP director of finance Andy Cornell says the problem with the current RTFO is that it "isn't bankable", and is working closely with DfT on the new policy.

"Because of uncertainty over the price of Renewable Transport Fuel Certificates (*see left*), the market is currently oversupplied – there is more fuel coming in than there is demand for," he explains. "Currently it is very hard to fund a plant. Proposals to create a short market >>

RTFO PROPOSAL

The Renewable Transport Fuel Obligation (RTFO) requires transport fuel suppliers producing more than 450,000 litres a year to ensure that a proportion of the fuel they supply comes from renewable biofuels.

Certificates are granted to companies that have met this obligation, which can then be bought and sold on an open market.

A consultation by the Department for Transport on a revision of the obligation

says: "To incentivise renewable fuels derived from waste feedstocks, we propose to ensure that wastes eligible for additional reward are genuine wastes that do not have higher value applications. We propose to do this by incorporating the waste hierarchy concept set out in the Waste Framework Directive into the RTFO Order."

A sub-target has been proposed to boost the use of biofuel from waste other than used cooking oil.

FEATURES

would give more certainty of value of certificates. That will help to provide a bankable income stream and unlock investment into advanced fuels production."

The fact that the DfT seems to be including biomethane as a development target is crucial for APP, which relies on transport fleets converting their diesel engines to work on compressed natural gas (CNG). "All of our work to date has been on production of biomethane, and we see that as a very cost-effective fuel to produce from waste," says Cornell. "There is a growing market for biomethane in transport."

Although APP could in theory produce a range of fuels, Cornell says biomethane makes sense. The firm uses gasification and plasma conversion to create the 'syngas', which is usable in converted vehicles. It is possible to go further with catalysts and other processes to create liquid diesel and, indeed, new company Renovare is looking to do just that (*see feature, page 30*).

For Cornell, gas remains the straightforward route because it is easier to make, but he sees the appeal of producing liquid fuel that can go directly into vehicles' tanks.

"Your end-to-end efficiency for making simpler stuff [gas] is higher than for making more complicated stuff. The big disadvantage of going down the biomethane route is you need to change all the trucks. You produce a cheap fuel but you have got that cost [which runs into tens of thousands], whereas if you could do diesel as cost-effectively, then you can just tap into the existing market."

Compressed gas networks already exist and vehicles are out there on UK roads powered by biogas derived from waste. Everything APP produces will be injected into the gas grid; in winning the DoT grant, the company is committed to produce at least 1,000 tonnes of advanced biofuel by the end of 2018.

APP is also in talks with CNG Fuels, which

currently operates the UK's largest capacity CNG stations at Crewe in Cheshire and Leyland, Lancashire. Businesses are starting to get involved – supermarket chain Waitrose recently commissioned a fleet of 10 trucks that run exclusively on waste-derived biomethane, which will be filled up at CNG Fuels' facilities.

The Renewable Energy Association (REA) thinks the waste industry is geared up for expansion. A report issued in April last year concluded that, while current production of biomethane from AD was relatively small, "the potential exists for it to supply a significant amount of vehicle fuel".

But James Court, head of policy and external affairs, warns that the Government's attitude to food waste has to change.

"As well as getting greater access to domestic wastes, supply chains must be guarded after Brexit and more mandatory separate food waste collections introduced in England," he says. "One of the risks identified by the sector post-Brexit is the threat of tariffs and complicated customs regimes being introduced on materials imported from Europe. Additionally, greater access to food waste is needed by the AD industry if growth is to continue at a good pace. There are still seven million tonnes of it unnecessarily going to landfill every year."

The REA wants to see the Government commit to a target of 10% renewable transport fuel by 2020 – it currently stands at below 5%. Court says: "This would send a signal to the market that the UK was ready to move towards its own targets and that transport could immediately [start] reducing carbon emissions. And the confidence of advanced fuel investors would begin to rekindle."

We are still waiting for the Government's final decision. But if the RTFO lives up to expectations, a new market could be greatly expanded. The road ahead looks promising. ☉

Filling them up: Waitrose has 10 vehicles running on waste-derived biomethane



IMPORT-EXPORT EXCHANGE



Used cooking oil (UCO) has become a major component of the UK's biofuel supply in recent years. In 2008-9 it made up just 5%, with the rest provided by crops but by 2011-12, it accounted for more than 50%. This percentage then declined a little due to the increased use of biofuels derived from tallow and starch slurry.

Around 159 million litres of UK UCO currently supplied to biodiesel manufacturers is used to blend EU-standard fuel.

It is not a widely advertised fact, but the majority of UCO for renewable transport fuel is imported to the UK from around the globe.

Between April 2015 and April 2016, 1,522 million litres of renewable fuel was supplied under the RTFO, and UCO made up 36% of that as biodiesel. Only 9% originated from the UK, with the rest imported from as far away as China and Peru. Spain was the biggest importer of UCO at 6%, followed by the US at 5%.

Confusingly, the UK also exports a fair amount of UCO to the EU. It is thought this is because of advantageous tax breaks on the continent.

UK UCO firm Olleco wants the Government to target large trucks in its decarbonisation plans, and points out that each HGV consumes on average more than 29,000 litres of fuel a year – more than 3.5 billion litres overall. The company is calling for the estimated 50-60 million litres of UCO exported each year to remain in the UK.

Richie Dalton, Olleco's group UCO processing manager, says: "The Government's proposed crop cap at 2% would drive the increased obligation towards waste-based biofuels. Where the proposal fails to support UCO is around the need to decarbonise the heaviest producer of emissions – the HGV sector."