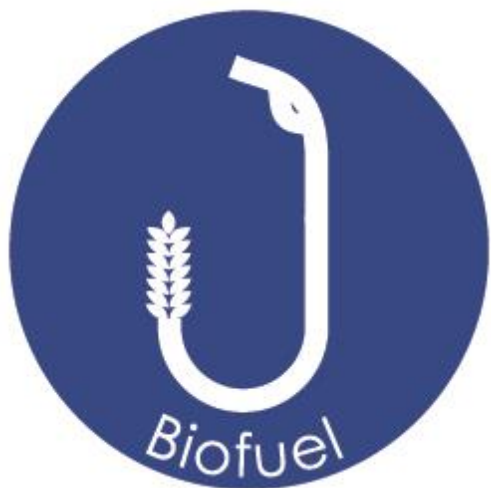


News Review



Issue Seventy-Five
June 2018

Each month we review the latest news and select key announcements and commentary from across the biofuels sector.

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Foreword

Welcome, subscribers, to June's Biofuels News Review, which also happens to be our 300th issue overall.

Fittingly, for such a significant issue, there is hugely significant news from Europe. With the second phase of the EU's Renewable Energy Directive - colloquially known as REDII – set to come into force, negotiations over the exact nature of the reforms have been in full swing for some time. Chief among the issues at hand has been the exact proportion of member states' energy consumption must come from renewables. There was a discrepancy between the targets desired by the European Parliament and the Council of the European Union. The latter sought a target of 27%, while the former was pushing for a higher target of 35%. It has been reported that after an all-night negotiation session, the so-called "trilogue" (the Council, the Parliament, and the Commission) reached an agreement of a target of 32% renewables. Member states have until 2030 to achieve this target, however, unlike the first wave of targets, they are not applicable at the national level. Instead, member states must make commitments to individual targets, contributing to the EU-wide target of 32%.

As far as biofuels are concerned, there has been a lot of controversy recently concerning palm oil use in biofuels, with environmental groups arguing that its use should be prohibited in European biofuels due to its effects on deforestation. However, the finalised text of the agreement makes no specific reference to palm oil, but does pave the way for a gradual phase-out of first-generation biofuels. As far as biofuels fit into the picture in terms of targets: there is a target for 14% of renewable energy in transport for 2030, with biofuels able to play a large role in achieving this target.

Back here in the UK, there has been good news for seven companies working in the development of biofuels, as all have received a share of £2million in funding from a combination of government and industry backers under the Future Fuels for Flight and Freight competition. The money is to be used to develop proposals over the course of this year, ready for a second round of competition, this time with £20million to be shared among successful applicants, to aid with plant construction. This competition reflects a commitment from the UK government to biofuels development, and it remains to be seen how this will pan out: we will follow the outcomes of this competition with interest.

Read on for the latest news.

Policy

RED II targets finalised



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REA, AEBIOM and other delegations to the EU report that during the 14th June trilogue negotiation process over the extension of the RED to RED II, the European Parliament, national ministers, and the EU Commission reached an agreement on the RED II renewable energy target for 2030.

Collectively, 32% of the EU member states' energy consumption has to be renewable by 2030. With the option to review the target in 2023. This represents a compromise between the Council's initial position of 27% vs the EU Parliament's position of 35% renewable.

The target will not be nationally binding as the current RED 2020 target, but instead be an overall EU target. Members states will instead pledge their ambitions for renewables, and if the collective pledge doesn't reach 32% the EU commission will invoke gap-filling measures.

The outcome also included a basic right to self-generation, consumption, storage and to sell excess renewable electricity to the grid at least at the market value at up to 25kW. Renewable heat now has to record annual increases of 1.3 per cent point, and there is a sectorial transport target of 14% by 2030.

There is no specific or explicit reference to palm oil in this agreement, despite the pressure from

environmental groups. The outcome does not constitute a ban or even a restriction on the imports of palm oil or palm-oil based biofuels. The relevant provisions in the Directive only aim to regulate to what extent certain biofuels can be counted by EU Member States towards reaching their sustainable energy targets.

The text that has been agreed foresees that the contribution of certain categories of biofuels, (bioliquids and biomass fuels, namely those with high indirect land-use change (ILUC) risk and from food or feed crops for which a significant expansion of the production area into land with high carbon stock is observed), will be limited to the 2019 consumption levels. In order to achieve the EU's renewable energy goals, this contribution is later to be gradually reduced until 2030. Rapeseed, sunflower, soy or palm oil will be treated equally according to the same criteria.

Click [here](#) for more information.

US to up biofuels mandate in 2019

The U.S. Environmental Protection Agency has proposed setting a blending mandate of 19.88 billion gallons for 2019 under the Renewable Fuel Standard (RFS), 3 percent higher from this year's and in line with expectations.

The agency also said it is considering a number of measures to bring some transparency to the compliance credit market and decided against forcing large refiners to blend extra volumes to compensate for the hardship waiver exemptions for small refineries.

The EPA's decision against reallocating exempt volumes drew a wave of criticism from biofuel groups and their legislative backers in congress, but was applauded by the oil industry - the latest sign in the growing divide between the rival groups.

The EPA proposal would leave the target for conventional biofuel, mostly corn-based ethanol, at 15 billion gallons, the agency said.

The agency proposed an advanced fuel requirement at 4.88 billion gallons for 2019 and a biodiesel mandate of 2.43 billion gallons for 2020. It proposed a cellulosic mandate of 381 million gallons for next year.

Each year, the EPA must set annual requirements for the volume of renewable fuels that oil refiners and other fuel companies must blend with their petroleum-based products. The 2005 policy has been a source of contention between powerful corn and oil lobbies in Washington.

The agency also has the power to exempt smaller refineries from the blending requirements.

The EPA, under the current administration, has roughly tripled the number of exemptions granted to small refiners, angering Midwest farmers and their legislative backers who say they are effectively lowering the mandate unless they force larger refiners to make up the difference.

Exemptions representing some 2.25 million gallons worth of biofuel were granted for 2017 and 2016, according to the EPA proposal. That includes waivers covering 1.46 million RINs in 2017, the EPA said.

The EPA was considering a plan to shift the burden to larger refineries but the plan was scrapped after an outcry from the oil industry.

The deadline to issue the finalized rule is Nov. 30.

Click [here](#) for more information.

US ups isobutanol blend limit

On June 12, 2018, the Environmental Protection Agency announced the approval of isobutanol at a 16% blend level in gasoline for on-road use in automobiles. Previous to this isobutanol had been approved for on-road use up to a 12.5% blend.

Click [here](#) for more information.

UK funding competition for low-carbon fuels development



Geograph

Seven industry-led projects will receive a share of £2 million to develop proposals for advanced fuels production plants, as part of the government's drive to reduce carbon emissions.

Proposals include the production of aircraft jet fuel from steel mill waste gases, and a project exploring the use of waste wood to produce a synthetic natural gas for HGVs.

This is part of the Future Fuels for Flight and Freight Competition, which was launched in April 2017 to encourage private sector investment in the development of advanced fuel production facilities in the UK.

The UK government is committed to reducing carbon emissions from transport to tackle climate change and make the sector as sustainable as possible.

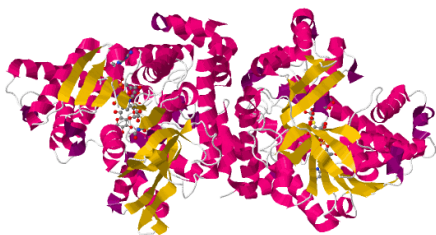
The £22 million funding commitment made through this competition will enable the development of this important set of technologies, paving the way for cleaner growth in the UK.

The aims of the competition are to increase domestic production of advanced low carbon fuels capable of reducing emissions from the aviation and HGV sectors, and to stimulate investment and create jobs through the development of a prosperous domestic industry.

Click [here](#) for more information.

Research & Development

Scientists increase plant fermentation rate by 30 times



Wikimedia Commons

Imperial College London scientists have enhanced the process of using biology to make products such as fuels, plastics, medicines, and cosmetics.

This could lead to cheaper and more environmentally friendly biofuel production and more efficient plastic recycling.

Bioprocessing, which uses living cells or their components to make products like biofuels, plastics, medicines, and cosmetics, is time consuming and expensive.

Now, Imperial scientists say they can break down plant-based biomass 30 times faster than currently possible. The findings are published in *Nature Chemistry*.

If this new technique is taken up on a large scale, fuel-related carbon emissions could fall by 80-100 per cent.

Scientists modified the glucosidase enzyme, which helps break down complex carbohydrates in biomass, like cellulose from plant cells, into its basic units, glucose. The glucose can then be fermented to make ethanol, a form of biofuel.

Releasing glucose from cellulose is currently the most expensive and time-consuming part of the

process. This is partly because enzymes typically stop working at temperatures higher than 70 °C and when in industrial solvents like ionic liquids.

However, if the enzyme could work in higher temperatures and ionic liquids, the conditions would hasten the process.

To make glucosidase more robust, the scientists altered its chemical structure to let it withstand heat of up to 137 °C. The alteration also meant they could use the enzyme in ionic liquids instead of the usual water, and that they could use only one enzyme instead of three.

They found that the combined effect of heat resistance and solubility in ionic liquids increased the glucose output 30-fold.

If this new technique is taken up on a large scale, fuel-related carbon emissions could fall by 80-100 per cent.

Using biofuels made from corn starch, trees and other plant matter for vehicles and even electricity generation could massively reduce carbon emissions.

The alteration could be applied to a wide variety of enzymes, for a wide range of applications, such as making fuels from waste and recycling plastics, and can make bioprocessing more efficient.

Click [here](#) for more information.

Biofuels from lignin?

Preem and RenFuel are assessing, in collaboration with Rottneros, the construction of the world's first lignin plant for biofuels, at the pulp mill in Vallvik, Söderhamn, Sweden. The plant is expected to produce an annual volume of 25,000–30,000 metric tons of lignin, and will be completed in 2021.

The collaboration between the companies means that Preem will be the first fuel manufacturer in Sweden to use lignin in its production. Via the company Lignolproduktion AB, which is jointly owned by Preem and RenFuel.

Lignin can be refined to create both renewable diesel and renewable petrol, and used in all vehicles. Lignin, like tall oil, will help phase out fossil fuels to an even greater extent. It is a valuable raw material in our renewable fuel efforts, and is based on by-products from the Swedish forestry industry. It is also available in large volumes.

Deliveries of samples of lignin from Rottneros's pulp mill in Vallvik are already being made to Renfuel's pilot facility, which was established for the production of Lignol with the assistance of the Swedish Energy Agency. The Lignol oil is then taken to Preem's refineries, where the raw material is processed to make biofuels.

Click [here](#) for more information.

BioMonitor project seeks to address information gaps in the bioeconomy

BioMonitor is a project funded under the European Union's Horizon 2020 Biotech programme. It provides an opportunity for all 18 partners from 10 countries to offer an effective and robust methodology catered to the people working in statistical and custom offices, laboratories, policy makers and industries all over the world.

The BioMonitor project wants to address the information gap and mismatch of emerging innovative industries coming from the chemical and materials sectors that deal with the production of bio-based intermediate and end-products. It also wants to resolve the lack of indicators needed to quantify the bioeconomy's economic, environmental and social impacts in the EU and its Member States.

Indeed, this will be achieved by developing an integrated quantitative kit composed of a comprehensive bioeconomy database, an all-around data analysis and modelling toolbox, and a platform tailored according to professional stakeholders' needs. Various training methods and communication tools will be provided to guide them and to guarantee the uptake of these new set of bioeconomy standards over a longer period of time.

The German government is currently developing a comprehensive bioeconomy monitoring approach on the national level. On behalf of the German Federal Ministry of Food and Agriculture, FNR is supervising one of the 3 scientific projects involved in this undertaking, which is looking into Bioeconomy related biomass flows. FNR is further involved in the collection, processing and communication of relevant data, i.e. national data related to renewable feedstock production.

Click [here](#) for more information.

Bioethanol

Lanzatech receives backing from BASF



Lanzatech

BASF Venture Capital GmbH is to invest in LanzaTech, a biotech company headquartered in Chicago, Illinois, USA. Using special microbes, LanzaTech has developed a technology for gas fermentation that first enables ethanol to be produced from residual gases containing carbon monoxide and hydrogen. By re-using waste streams instead of incinerating them, industrial companies can reduce carbon dioxide emissions.

LanzaTech's patented technology is now being deployed at commercial scale in the steel industry where carbon monoxide from residual gases (off-gases) can be converted into ethanol. Ethanol can be used as the raw material for the production of diesel, gasoline or jet fuel and as a precursor to plastics and polymers. The company's product portfolio includes additional biochemicals besides ethanol, such as chemical specialties and intermediates, that can be used as raw materials in other chemical production processes. The technology is also potentially suitable for treating and recycling waste streams in the chemical industry and for municipal waste disposal.

Click [here](#) for more information.

Biodiesel

Czech company to produce waste cooking oil biodiesel

The Czech company Chemoprojekt, based in Ústí nad Labem in north Bohemia, is set to launch production of biodiesel made from waste frying oil. It will be the first company in the country to introduce production of so-called second-generation biofuels.

Chemoprojekt, which is part of the Safichem group, was the first company in the Czech Republic to introduce production of biofuels from rapeseed oil. The company said it recently decided to switch from rapeseed oil to waste frying oil and has already invested several dozen million crowns into the project.

Among the biggest environmental benefits of biofuels is the reduction of greenhouse emissions to the atmosphere. While rapeseed oil biodiesel generates about 35 per cent less greenhouse gas emissions than equivalent fossil fuels do, biofuels from waste provides a saving of 85 per cent. Due to tougher EU rules on greenhouse gas emissions, Chemoprojekt is expecting to see a growing demand for second-generation biofuels in the coming years.

Click [here](#) for more information.

Aviation Biofuel

Flight from Toulouse to Hong Kong powered by biofuel



Wikimedia Commons

A brand-new Cathay Pacific Airbus A350-1000 aircraft, which flew from the French city of Toulouse to Hong Kong, was partly powered by a sugarcane-based biofuel.

The aircraft, a 334-seater, flew with a 10% blend of biofuel along with traditional jet fuel in its tanks which can hold 1,56,000 litres.

Cathay Pacific had successfully tested the biofuel blend sourced from Brazil in its Airbus 350-900 variant earlier and seen promising results. Compared with the conventional jet fuel, biofuel can reduce greenhouse gas emissions by up to 80%.

The use of biofuels has been supported by Airbus itself as well as Total, the fuel supplier, who supplied the biofuel blend to power the A350-1000.

Cathay Pacific has 20 of the technologically-advanced A350-1000 aircraft on order for delivery over the next four years.

Click [here](#) for more information.

Funding for waste-to-jet fuel project

A project to turn landfill waste into sustainable jet fuel has received a major boost, securing almost £5m of funding from the UK government and industry backers.

The Department for Transport has committed £434,000 to fund the next stage of the project, which will involve engineering and site studies to scope potential for a waste-based jet fuel plant in the UK.

The plant would take hundreds of thousands of tonnes of post-recycled waste - otherwise destined for landfill - and convert it to fuel for aeroplanes.

The project is being led by biofuels firm Velocys, which has committed £1.5m to the next phase of development.

The scheme has also secured a further £3m from industry partners, including Shell and British Airways. The airline plans to use the waste-based fuel to help cut its greenhouse gas emissions from aircraft by up to 70 per cent, and particulate matter emissions by up to 90 per cent.

The funding for the Velocys project is part of £22m alternative fuels fund from the government, to advance development of a new breed of sustainable fuels for aviation and freight transport. Some £2m was awarded to firms today for further research and scoping work, and recipients of this will be invited to bid for a share of £20m for construction work.

As of April 2018, renewable jet fuel also qualifies for credits under the Renewable Transport Fuel Obligation (RTFO) - a shift that has further boosted the long term commercial viability of a waste jet fuel plant in the UK, Velocys said.

Waste-based jet fuel is widely regarded as a crucial tool for helping to decarbonise the aviation sector. But it is still an expensive alternative to traditional fuels, restricting its use primarily to test flights.

Click [here](#) for more information.

Other Fuel

Green gas spreading as fuel in the UK

A growing number of commercial haulage operators are clamouring to improve their environmental credentials by running haulage trucks on green gas. Whilst some green gas has been imported, domestic producers have so far been limited to supplying the heat market.

Now that the first transport fuel supplier has succeeded in earning Renewable Transport Fuel Certificates (RTFCs) for UK-produced gas, a new route to market has been demonstrated. The overall production of green gas is now expected to increase, as producers are likely to ramp up their production.

According to the REA, the biogas sector currently employs around 3,000 people across the UK supply chain; with the sector turning over around £356m annually.

Click [here](#) for more information.

RED II agreement welcomed by UPM Biofuels

European institutions have come to an initial agreement on the revised Renewable Energy Directive. UPM Biofuels welcomes the agreement as it creates an obligatory advanced biofuel blending mandate in all EU Member States starting at 0.2% in 2022, double counted, and rising to 3.5% in 2030.

The UPM Lappeenranta Biorefinery, the world's first to produce wood-based renewable diesel on a commercial scale, has proven the potential as a significant producer of truly sustainable advanced biofuels. UPM BioVerno, which reduces GHG emissions up to 80% compared with fossil fuels, has found a solid market place. The agreement will further boost interest in the most sustainable biofuels and strengthens the position of advanced

low-ILUC fuels, such as UPM BioVerno, that have minimal risk of causing indirect emissions or land use change.

UPM started operations at the Lappeenranta Biorefinery at the beginning of 2015. In the years since, UPM has established a strong position in advanced biofuels markets with special attention on product quality, high GHG and local emissions saving, and excellence in sustainability, including certification.

Click [here](#) for more information.

First UK filling station to offer hydrogen alongside conventional fuels

Shell has unveiled a new hydrogen refuelling station at one of the UK's busiest service stations, in the same week as the government delivered multi-million-pound funding for hydrogen refuelling infrastructure. EURACTIV's media partner edie.net reports.

Shell Beaconsfield on the M40 will be the first UK site to bring hydrogen under the same canopy as petrol and diesel.

The refuelling station will be owned and operated by clean fuel company ITM Power. The hydrogen generated onsite uses an electrolyser that requires only water and electricity to generate the gas.

The opening follows the launch of the first fully branded and public hydrogen UK refuelling site at Shell Cobham in February 2017. It forms part of Shell's ambition to support a shift to low-carbon transport, which has seen the launch of rapid electric vehicle (EV) charging systems at its UK petrol stations.

Click [here](#) for more information.

Events

UK AD & World Biogas Expo 2018 Birmingham, 11th July 2018

UK AD and World Biogas Expo, the largest international trade show dedicated solely to the anaerobic digestion and biogas industry, returns in 2018 to provide the latest market and technology news, sector by sector, as well as a platform for industry professionals from the UK and overseas to network, share experiences and do business.

Anaerobic digestion (AD) is a rapidly-expanding sector, with the potential to become a £1 trillion global industry making a significant contribution to the development of a green, circular economy. AD plays a critical part in meeting nine of the UN Sustainable Development Goals, providing solutions applicable to agriculture, urbanisation, waste and water management, transport and energy generation. This creates exceptional opportunities for the AD market to grow, both in the UK and abroad.

UK AD and World Biogas Expo 2018 is unique in bringing together an international gathering of new and existing players in this game-changing sector. Over two full days, it will provide a dynamic platform for them to engage with each other.

Click [here](#) for more information.

Biofuels International Conference & Expo Berlin, 10th-11th October 2018

Now in its 11th year, the acclaimed Biofuels International Conference and Expo will be taking place in Germany for the first time.

With regulations and markets constantly evolving, it's becoming increasingly important to stay informed on this ever-changing landscape.

Not only will attendees benefit from the fantastic networking opportunities available but they will hear two-days of engaging talks from industry experts and discover the trends that will shape their biofuels plans for the near future.

Brought to you by Biofuels International, the leading international industry publication, this year's conference will be co-located with the International Biogas Congress & Expo as well as the International Biomass Congress & Expo, heralding this series of bio events as our largest gathering yet of bio related companies, giving participants unrivalled coverage.

Click [here](#) for more information.

International Biogas Congress & Expo Berlin, 10th-11th October 2018

Brought to you by Bioenergy Insight, the leading biogas industry publication, this two day conference will bring together leading producers, stakeholders and companies within the biogas sector.

Expert international speakers will address a range of biogas related issues and topics within Europe and beyond. Co-located with the International Biomass Congress & Expo as well as the renowned Biofuels International Conference and Expo, this series of bio events will be our largest gathering yet of bio related companies, giving participants unrivalled coverage.

Click [here](#) for more information.

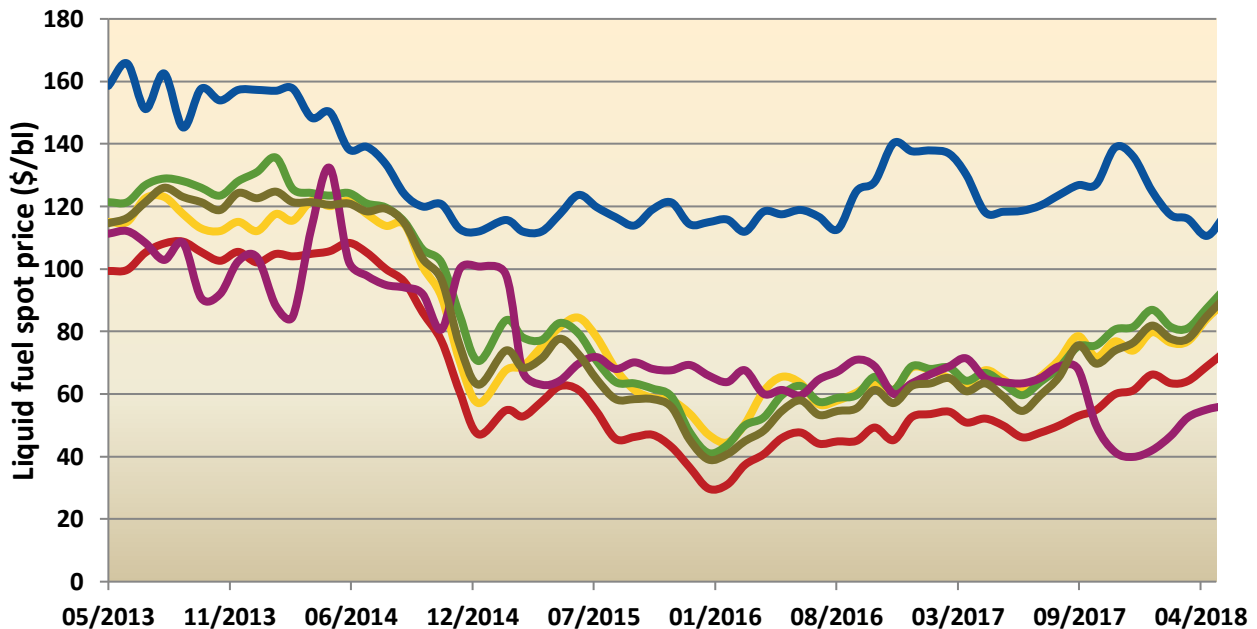
EFIB Toulouse, 16th-18th October 2018

Join over 650 bio-based leaders in 2018 for the 11th edition of EFIB in Toulouse, France, on the 16th, 17th and 18th of October.

Click [here](#) for more information.

Price Information

Historical spot prices of liquid fossil fuels and liquid biofuels. Five years prices and up to November 2014 are given in \$ per barrel.



- Crude Oil (petroleum), simple average of three spot price
- Gulf Coast Gasoline
- Diesel - New York Harbor Ultra-Low Sulfur No 2 Diesel Spot Price
- Ethanol Average Rack Prices F.O.B. Omaha, Nebraska
- Jet Fuel Spot Price FOB - U.S. Gulf Coast Kerosene
- FAME 0° FOB ARA

Prices of Crude oil, diesel, gasoline, and jet fuel are recorded from www.indexmundi.com; Price of ethanol from www.neo.ne.gov; Biodiesel spot prices from <http://www.kingsman.com>

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