The Bioeconomy Consultants
NNFCC

YOUR PARTNERS FOR BUSINESS INSIGHT AND MARKET INTELLIGENCE

Providing clients with a strategic view of feedstock, technology, policy, and market opportunity across the bioeconomy

News Review

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

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Foreword

Welcome to NNFCC's October Biofuels News Review, our final free issue of the year.

The UK bioeconomy is still reeling from the closure of the Vivergo biofuels plant, as reported in these pages last month. Vivergo were one of the cornerstones of the UK bioeconomy, but their loss painted a wider, grimmer picture of the state of the UK biofuels industry. The chief reason cited by Vivergo for their closure was a bioethanol market that was not sustainable: the price of ethanol was far too low to justify the cost of production. This effect has been compounded this month with the closure of another plant: CropEnergies' Ensus plant in Teesside has "paused" production, awaiting friendlier market conditions. This mirrors Vivergo's initial decision to do the same, but the plant did not last long after reopening. While this doesn't quite amount to a crisis for the bioethanol sector, it does highlight how much investment and support is still needed to create a favourable market for biofuels to truly catch on.

Cost has always been the prohibitive factor behind biofuels uptake, particularly with continually low oil prices to compete with. It's not just road biofuels where this is an issue: news this month highlights how this cost barrier also affects the shipping sector. Shipping fuel tends to be heavy fuel oil, thus making it distinct from other fuels, but it has been shown that biofuels are compatible with current shipping engines, meaning the switch doesn't necessarily require any retrofitting. The problem is, once again, cost, with shipping companies reluctant to make the financial outlay required to run on biofuels. This is not helped by the absence of shipping emissions from the Paris Climate Agreement, meaning a dearth of government mandates and support for the sector, stalling biofuel's uptake in shipping. Until this is rectified, shipping companies will continue to use the cheaper, less environmentally friendly fuel.

These two cases highlight the two main issues facing biofuels development. Until investment is made to improve cost-effectiveness, government support is necessary. At the moment, the latter is in short supply, stifling the former.

Read on for the latest news.

Policy

UK transport emissions strategy criticised

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The UK's Committee on Climate Change has criticised the government's strategy for reducing GHG emissions recently published in its "Road to Zero" strategy. In a letter to the Secretary of State for Transport, Climate Change Committee Chairman Lord Deben advises that transport is now the largest greenhouse gas (GHG) emitting sector, accounting for 28% of all UK GHG emissions in 2017 and that there has been little change in the level of transport emissions since 2008. The CCC welcomed many of the initiatives set out in the Road to Zero, but its own detailed assessment indicates that there remains a large gap to the most cost-effective path for reducing transport emissions, and went on to urge the minister to implement policies with greater ambition to reduce emissions even further.

CCC's advice for closing the gap in transport emissions recommended reducing growth in demand for transport by increasing use of public transport and discouraging use of cars and vans, bringing forward the end of sale of petrol and diesel cars to 2035, establishing a minimum-capable range for electric hybrids (to ensure more journeys are completed in zero emissions mode), increasing support for reducing up-front costs of EV's, use of Vehicle Excise Duty and Company Car Tax as mechanisms to improve the vehicle fleet fuel efficiency, providing greater clarity on future vehicle emissions targets and improving emissions testing to reflect real-world situations, supporting the roll out of EV charging infrastructure, and setting targets for reduction in emissions from trucks for 2025 and 2030.

Click here for more information.

Estimated timeline for introduction of year-round US E15

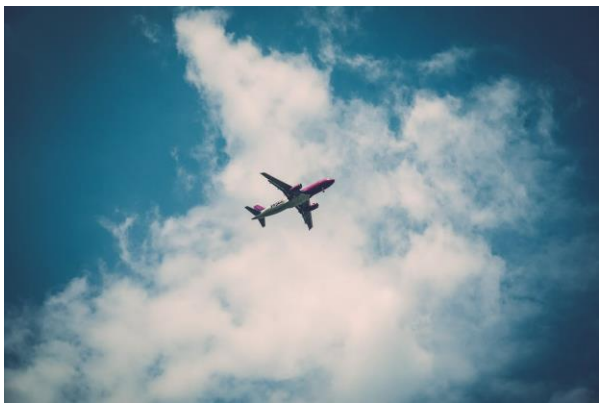
The US has released estimated timelines for the development of three U.S. EPA rulemakings that pertain to the Renewable Fuel Standard and year-round E15 sales, including one that includes a "reset" of statutory blending targets.

The administration released a summary of its Fall 2018 Unified Agenda of Regulatory and Deregulatory Actions on Oct. 17. The agenda includes three rules of specific interest to the U.S. biofuel industry. One will propose fuel regulations changes to allow for year-round E15 sales and propose modifications to RFS renewable identification number (RIN) market regulations. The other two address the EPA's yearly rulemakings to set annual renewable volume obligations (RVO's).

Information published by the Office of Management and Budget shows the EPA is expected to release a proposed rule to allow year-round E15 sales in February 2019, with a final rule scheduled to be issued by May 2019. An abstract of the future rulemaking indicates the EPA will propose regulatory changes to allow gasoline blended with up to 15 percent ethanol to take advantage of the 1-psi Reid vapor pressure (RVP) waiver that currently applies to E10 during the summer months.

Click here for more information.

Differing stances on airline carbon regulation



Pexels

International airline associations have written a joint open letter to the European Commission urging it to ensure the ICAO proposed rules governing the CORSIA carbon offsetting scheme are adopted uniformly and in their entirety throughout Europe. They also call for the monitoring, reporting and verification (MRV) requirements of the EU ETS to be aligned with those of CORSIA in order to avoid an added administrative burden, and for all international intra-EEA flights to be removed from the scope of the EU ETS from January 2021 when the voluntary phase of CORSIA starts.

In response, a group of Europe-based NGOs has called on the Commission to resist any moves to amend, barring certain non-essential MRV provisions, the EU ETS directive and for the EU to reserve its position on CORSIA until a review of the ICAO scheme has taken place.

Click here for more information.

Markets

Biofuels Barometer shows increase in EU biofuel use

Biofuel consumption for transport in the European Union increased by 9.2% between 2016 and 2017, according to new data in EurObserv'ER's 2018 Biofuels Barometer.

Between 2014 and 2016 biofuel usage remained relatively stable in the EU, something EurObserver'ER puts down to 'a period of uncertainty' surrounding the future of the biofuels sector. In 2017 however, consumption in terms of energy content rose to 15.5 Mtoe (million tonnes of oil equivalent).

According to the EurObserv'ER data, biodiesel made up the vast majority of biofuel used in Europe between 2016 and 2017, standing at 80.7% of the total.

Of the EU member states, France had the highest biofuel consumption in 2017, 3,335,000 toe, of which 539,000 toe was bioethanol, and 2,796,000 toe biodiesel. Next up was Germany with 2,608,197 toe of total biofuel consumption, and Sweden with 1,646,436 toe. Spain and Italy rounded out the top five EU biofuel consumers.

Germany's Crop Energies was the EU's biggest bioethanol producer, with 1,300 million litres of capacity, followed by France's Tereos and Cristanol.

Finland's Neste Oil was the biggest biodiesel producer, at 2,600,000 tonnes of capacity, followed by France's Avril and Spain's Infinita.

Click here for more information.

Second UK ethanol plant to pause production

Crop Energies, parent company of Ensus, the biofuels plant in Wilton, Teesside, has announced that the facility is to 'pause production' from the end of November due to difficult market conditions.

It cites a significant recent fall in ethanol prices as affecting its outlook for financial year 2018-19.

Click here for more information.

Bioethanol

Ethanol squeeze prompts US plant closures

Biofuel news reports prominent US ethanol producer Green Plains has planned the closure of two plants in Iowa. According to Reuters, the plants are to be shut due to low profit margins.

Green Plains is the number 3 ethanol producer in the United States and has an annual ethanol production capacity of around 1.48 billion gallons. It has also invested in vinegar production and cattle feedlots in an attempt to branch out from biofuels.

The closure of plants coincides with the Trump administration's growing trade disputes with Chinese markets to cut off US access to ethanol. This in turn has led to almost the lowest biofuel prices in over a decade, Reuters reports.

Waivers put in place by the US Environmental Protection Agency's Scott Pruitt to exempt some oil refiners from requirements to blend ethanol into the US gasoline supply, as well as the trade tensions between the United States and China, have contributed to putting pressure on the price of ethanol.

Click here for more information.

White Paper argues case for US corn ethanol

Wikimedia Commons

The American Coalition for Ethanol (ACE) has announced the official release of a White Paper entitled "The Case for Properly Valuing the Low Carbon Benefits of Corn Ethanol," coinciding with a general session panel at the 31st annual ACE conference in Minneapolis which highlighted the paper in a discussion on updates to lifecycle modelling and opportunities on the horizon for ethanol as a low carbon fuel.

The RFS was enacted, in part, to drive innovation and production of low carbon biofuels that reduce GHG emissions and as a result the program has successfully replaced 10 percent of petroleum in the U.S. transportation fleet with carbon-friendly fuel. However, the EPA has yet to update its original corn ethanol GHG assessments from when the RFS was enacted over a decade ago to reflect today's significant GHG reduction benefits.

Click here for more information.

Clariant begins construction of Romanian ethanol plant

Clariant

Clariant, a world leader in speciality chemicals, has officially started construction of the first large-scale commercial sunliquid plant for the production of cellulosic ethanol made from agricultural residues. At the flagship facility, the sunliquid technology developed by the company is being used on an industrial scale for the first time.

At full capacity, the plant will process around 250 000 tons of wheat and other cereal straw sourced from local farmers to 50 000 tons of cellulosic ethanol annually. By-products from the process will be used for the generation of renewable energy with the goal of making the plant independent from fossil energy sources. The resulting cellulosic ethanol is therefore an advanced biofuel that is practically carbon-neutral.

The flagship plant testifies to the competitive viability and sustainability of the sunliquid technology on an industrial scale, and at the same time fulfils an important function as a reference facility for the worldwide marketing of sunliquid licenses.

Cellulosic ethanol is an advanced, sustainable and practically carbon-neutral biofuel. It is produced from agricultural residue such as wheat straw and corn stover which is supplied by farmers. The straw is converted into cellulosic sugars. This is followed by fermentation to produce cellulosic ethanol. By using plant residues, cellulosic ethanol can extend the current production of biofuels to new feedstock and contributes to optimizing the efficiency and sustainability of biofuels. Cellulosic sugars also have the potential to serve as a building block for future production of bio-based chemicals.

The sunliquid technology offers a fully integrated process design built on established process technology. Innovative technology features such as chemical-free pre-treatment, the integrated production of feedstock-and process-specific enzymes, and simultaneous C5 and C6 sugar fermentation ensure optimum cost-effectiveness.

Click here for more information.

Ace Ethanol begins plant construction

D3Max LLC and Ace Ethanol LLC announced they have started construction of the first D3Max facility at Ace Ethanol's facility in Stanley, Wisconsin. Ace Ethanol will be the first ethanol plant to integrate the patented D3Max technology with its existing corn dry mill. Earlier this year, Ace Ethanol received approval from its board of directors and members to proceed with the design and construction of the corn kernel fibre-to-ethanol plant and now they have started construction of the D3Max facility. The integrated facility will also employ membrane-based ethanol recovery technology supplied by Whitefox Technologies.

Click here for more information.

Expansion for POET bioethanol refining plant

POET Biorefining Marion has opened an 80-million gallon expansion at a celebration that included area farmers, community members and state officials.

With this expansion in place, POET Biorefining Marion now has an annual capacity of 150 million gallons of clean-burning biofuel and 360,000 tons of high-protein animal feed per year. New production from this facility adds 26 million bushels of annual corn demand for area farmers at a time when agriculture faces serious economic challenges. The $120 million project also added 225 temporary jobs throughout the course of its construction.

More than four years of low commodity prices across the US Midwest have created severe challenges for farmers. Recent instability in trade markets have aggravated the problem, highlighting the need for long-term, stable, domestic grain demand. POET CEO Jeff Broin said the answer is E15, a 15% biofuel blend that – due to an outdated regulation – is only approved for use from September to June.

Click here for more information.

Biodiesel

Red Rock biofuels licenses Fischer-Tropsch technology

Emerging Fuels Technology Inc has executed a license agreement with Red Rock Biofuels LLC under which EFT will provide its TL8a Fischer-Tropsch (FT) technology to provide additional FT capacity for RRB's biorefinery in Lakeview, Oregon. EFT has also received a notice to proceed from RRB to commence design of its FT system to be installed at the Lakeview biorefinery.

RRB is a subsidiary of IR1 Group LLC, which has built and operated over 325 million gallons of biofuels production capacity and is constructing the Lakeview biorefinery.

IR1 will build a global portfolio of biorefineries to convert waste woody biomass into renewable jet and diesel fuels. Through a proprietary integration of existing technologies, IR1 makes the long-commercialized Fischer-Tropsch process economic at the biomass scale. By using forest and sawmill residues IR1 will also reduce the risk of catastrophic wildfires by removing waste biomass from overstocked forests.

Click here for more information.

Biodiesel from coffee waste

Biofuels news reports South African recycling company Verda Waste is to build a plant that will process coffee waste into biofuel. The plant will be located in Johannesburg and is expected to be built in 2019.

The company intends to lead the industrialising process of converting waste coffee grounds into biofuels. It proposes to do so by recycling 17million kilogrammes/year of spent coffee grounds into 1.8million litres/year of biodiesel as well as 4.5million kilogrammes/year of biomass fire logs and pellets.

Verda Waste reports that the demand of coffee is so high, that large amounts of residues are created in the industry that are toxic and could cause severe environmental problems.

The plant is set to recycle around 70,000 tonnes of coffee waste that if not used, would have ended up in South African landfills over the next 5 years. This would lead to a saving of 476,000 tonnes in carbon emissions.

Click here for more information.

Aviation Biofuel

Norway to mandate aviation biofuel from 2020

Public Domain Pictures

Airlines operating in Norway must use more environmentally friendly jet fuel mixed with biofuel from 2020, according to an announcement by the Ministry of Climate and Environment.

As part of Norway's push to cut greenhouse gas emissions, the minority centre-right government said the aviation fuel industry must mix 0.5 percent advanced biofuel into jet fuel from 2020 onwards, a move which will force airlines to use the more costly fuel.

"The government's goal is that by 2030, 30 percent of the airline fuel will be sustainable with a good climate effect," said the ministry.

This corresponds to around 6 million litres of what is also known as second-generation biofuels, a product of waste and leftovers, and cannot be based on palm oil.

Biofuels for aviation cost around two or three times more than regular jet fuel, according to a report by Norway's environmental agency, the civil aviation authority and state-owned operator Avinor.

However, as there is no functioning market for biofuels in aviation, the real prices are uncertain.

According to the report, a quota obligation of 0.5 percent advanced biofuels can correspond to a price increase for the airlines of around 54 million Norwegian kroner annually.

This cost amounts to roughly $6.6 million.

Even though there are other initiatives and trials around the world, Norway's move to legislate biofuels use in aviation may be the first bill introduced worldwide on the topic.

Aviation biofuels, now produced in small volumes from renewable sources, are expected to play an important role in delivering the goal of carbon-neutral growth in airline CO2 emissions from 2020.

Click here for more information.

First commercial flight with LanzaTech's biobased jet fuel

The aviation industry has taken a landmark step towards making commercially-viable sustainable aviation fuel a reality – thanks to a world first flight by Virgin Atlantic and LanzaTech, supported by long-term partner Boeing.

The first batch of LanzaTech jet fuel was used on a commercial flight for the very first time – Virgin Atlantic's VS16 flight from Orlando to London Gatwick, operated by a Boeing 747 aircraft. Passengers on the historic flight were welcomed by a familiar face on arrival as the airline's founder Sir Richard Branson marshalled the aircraft into stand. This flight follows hot on the heels of a £410K UK government Future Fuels for Flight and Freight grant to determine the feasibility of building a 40-50million US gallon jet fuel plant in Britain.

LanzaTech produces next generation 'advanced' fuels by recycling waste industrial gases like those produced from steel making and other heavy industrial processes. LanzaTech takes these waste, carbon-rich gases to first make ethanol. The ethanol can be used for a range of low carbon products, including jet fuel. The innovative alcohol-to-jet process used to make the fuel in this flight was developed in collaboration with

Pacific Northwest National Lab and the US Department of Energy.

Virgin Atlantic is calling on the UK government to commit to making this fuel a commercial reality in the UK. Allowing access for new carbon capture and utilisation technologies like LanzaTech's to incentives already given to earlier generations of 'biofuels' and providing critical investor support will enable first plants to be swiftly built.

Click here for more information.

Other Biofuels

Low biofuels uptake threatens shipping carbon targets

In April 2018, the International Maritime Organization (IMO) announced the world's first full agreement on tackling climate change in the global shipping sector. Following a marathon two-week meeting involving representatives from more than 170 countries around the world, it was agreed that by 2050, greenhouse gas emissions will be cut by 50% compared with 2008 levels.

The announcement was made amid mounting pressure on the IMO, after international shipping was left out of the 2015 Paris Climate Agreement despite accounting for around 3% of global carbon dioxide emissions, and increasing its emission levels by 77% between 1990 and 2015.

But while news of the agreement was welcomed by industry associations, analysts say achieving its ambitious targets will not be possible without transitioning from heavy fuel oils (the main fuel used by deep sea vessels) to low and zero-carbon alternatives.

A lot of biofuels are already compatible with current engine technology and could be used in existing infrastructure and vessels with little to no retrofitting.

But years after biofuels were first raised as an option for the shipping industry, uptake remains incredibly limited. Less than 1% of the current fuel supply makes use of the fuel, with the few initiatives currently operational mostly involving inland or short-sea shipping.

The main problem remains the cost of biofuels, which are forced to compete with heavy fuel oils. Converting engines to process biofuels can also be a costly process, with "many companies unwilling to facilitate the conversion given the reliability of current engines running on heavy fuel oils"

Increased investment is essential for the development of innovative and cost-effective technologies that can be incorporated with relative ease into existing shipping infrastructure. But the return on such investments could take as long as 20-25 years, meaning investors used to immediate returns will need to dramatically change their mindsets from short-term gain to doing what is ethically right. That will require a "long haul" effort: Changes will take decades and a full switch from fossil fuels to renewables will take 30-50 years, and that is only if both industry and government are committed.

Click here for more information.

First UK recycling group to use biogas-fuelled lorries

Geograph

A North East recycling company is to begin using a fleet of vehicles run on biogas produced by the food waste they collect.

Warrens Group, which is headquartered in Bishop Auckland, will become the first recycling company in the UK to fuel its lorries by directly converting food waste from customers into biogas.

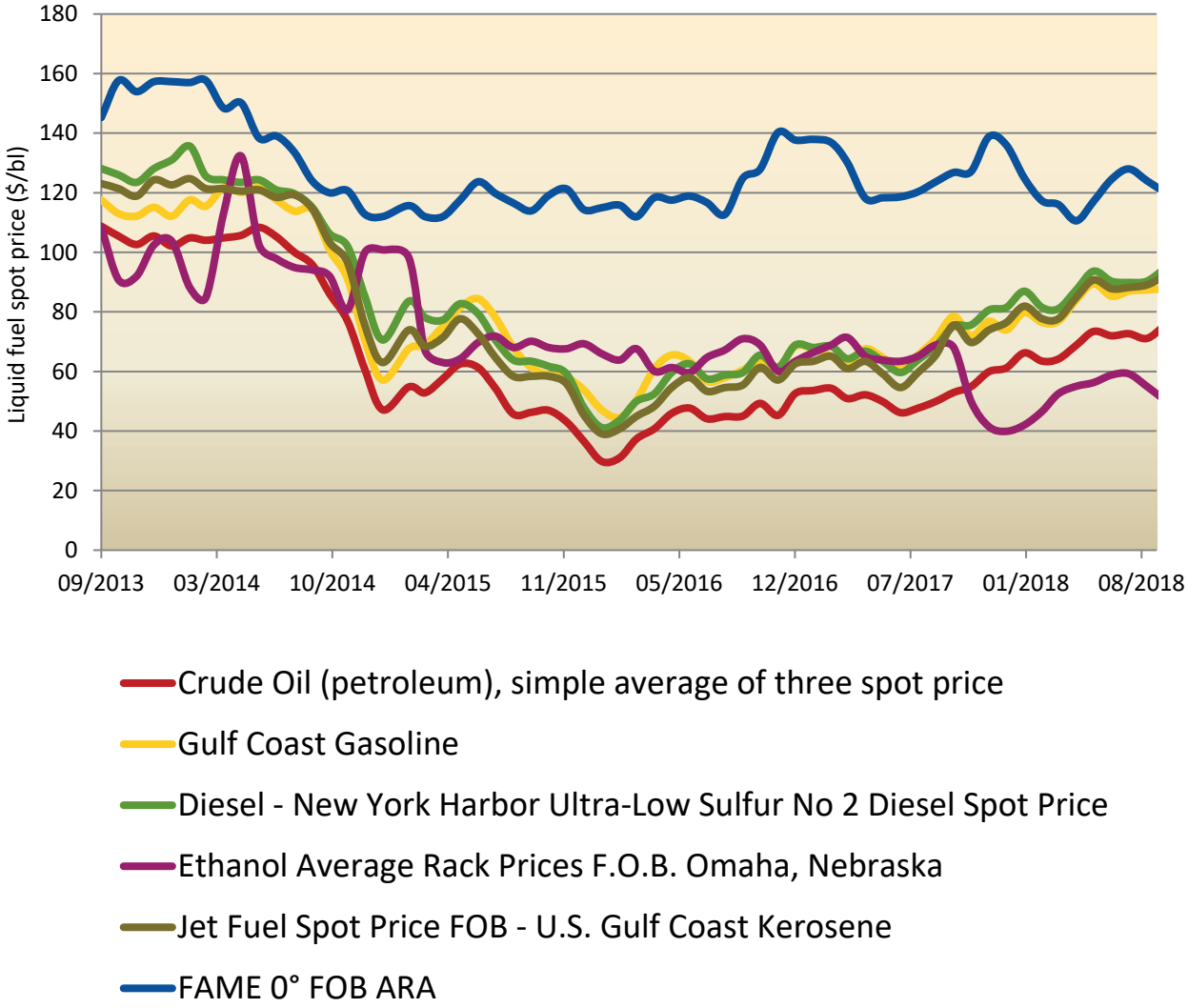
The family-owned company has taken delivery on its first Eurocargo Natural Power lorry, after partnering with vehicle manufacturer IVECO to specify the vehicle.

The biomethane-powered waste collection vehicle will be in operation six days a week, with refuelling carried out at Warrens Group's on-site facility at Newton Aycliffe.

Click here for more information.

Price Information

Historical spot prices of liquid fossil fuels and liquid biofuels. Five years prices and up to September 2018 are given in $ per barrel.



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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