

The Bioeconomy Consultants

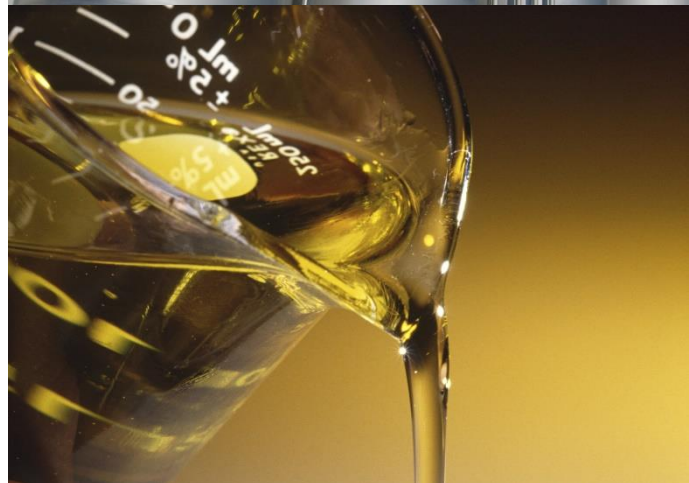


News Review

Issue Fifty-Five

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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 this month's edition of the NNFCC Biofuel's Market Review.

It's all eyes on bioethanol this month as a number of developments in the sector have taken place over the past 4 weeks. These include the announcement from Ineos Bio that they are to sell their ethanol business, citing changes in the US ethanol market no longer matching the company's strategic objectives as the key reason for the sale. While Ineos are set to sell up, Norwegian company Borregaard are looking to further develop with a multi-million Krone upgrade to their Sarpsborg plant in the pipeline. Borregaard are the world's largest producer of 2nd generation bioethanol, extracting sugars from wood which they then ferment to ethanol. Second generation biofuels, also known as advanced biofuels, are fuels which derive from non-food feedstocks. Earlier this year, the European Commission published a low-emission mobility strategy which outlined advanced biofuels as a key player in lowering transport emissions along with hydrogen, synthetic fuels and electrification. Conventional biofuels (aka 1st generation fuels) don't have a place on EC's list of alternatives however, an omission that has been castigated by members of the ethanol industry. Ethanol Europe Renewables (EERL) state that EC short-sightedness could result in the permanent loss of jobs, income, demand for feed corn and wheat as well as the loss of CO₂ savings.

Policy-makers scepticism towards using conventional biofuels has its roots firmly set in the indirect land use change (iLUC) debate which has fostered negative attitudes towards using first generation feedstocks for fuels. These attitudes stem from the belief that conventional fuels ultimately reduce feed and food feedstock supply, which in turn increases their prices. This increase in price then leads to increased feedstock production which leads to an increase in the total amount of GHG emissions, indirectly as a result of using the original feedstock for fuel. The problem with these theories, which have been factored in when carving biofuel policy in the past, is that they are based on flawed models which rely heavily on assumptions. David Zilberman addresses the mistakes used in past iLUC models in his editorial commentary which can be found later in the review.

Read on for the latest market news.

Policy

European low-emission mobility strategy under fire from ethanol industry

Destructive policy towards the ethanol industry in Brussels could continue to drive away billions of euros in investments and cost rural communities tens of thousands of jobs, a European ethanol producer says. Ethanol Europe Renewables (EERL) claims that the European Commission's (EC) new Low-Emission Mobility Strategy could cause massive losses in incomes, jobs, and the general European economy. In addition to the permanent loss of 133,000 rural generated jobs supported by the ethanol industry, EERL estimates that by 2030 losses every year could be as high as 30 million tonnes of feed corn and feed wheat demand for Europe's farmers, €4 billion in lost income for farmers, and 13 million tonnes of lost CO₂ savings – the equivalent of keeping 8 million extra cars on the road. Additionally, €8 billion in revenue from ethanol could be replaced by biofuels that are mostly more expensive and in some cases less environmentally friendly. "The negative impact of these policies on Hungarian GDP alone we estimate at €1billion," Mark Turley, CEO of EERL, said in Budapest in response to the EC's strategy. "Since 2008, the EC has progressively undermined the conventional ethanol industry by taking policy direction from ideology and dismissing science. Ethanol's sustainability, value to rural communities and its value as the lowest cost carbon abatement technology in the transport sector has been proven beyond doubt. And in the face of those facts, the Commission has proposed to abolish the entire industry, and not even provided a reason," he said.

Click [here](#) for more information.

EPA Proposes Key Changes to Renewable Fuel Standard



The U.S. Environmental Protection Agency (EPA) has proposed enhancements to its Renewable Fuel Standards (RFS) program and other related fuel regulations to support market growth of ethanol and other renewable fuels in the U.S. According to the EPA, these proposed changes will provide the opportunity to increase the production and use of renewable fuels by allowing the market to operate in the most efficient and economical way, effectively introducing greater volumes of renewable fuels under the program. In the executive summary of the EPA proposal, the agency states that it is committed to taking steps to reduce emissions of greenhouse gases (GHGs), largely based on the Climate Action Plan announced by President Barack Obama in June 2013, the Paris Agreement reached at the United Nations Climate Change Conference in December 2015, and the RFS program required under the Clean Air Act (CAA).

Click [here](#) for more information.

Clean fuel group uses foreign threat to argue for subsidies

Clean fuels proponents are using the threat of international competition to push the importance of Congress passing legislation on clean energy subsidies before the end of the year. A letter from

the biotechnology industry to Republican and Democratic leaders on Capitol Hill makes clear that the threat from foreign competitors is real and could harm U.S. competitiveness if the subsidies aren't kept, while noting that their industry provides nearly 1 million new jobs in the U.S. The letter was sent by the Biotechnology Industry Organization, or BIO, the advanced fuel industry's lead trade group, laying out its argument for why Congress should take up the subsidies and not allow them to expire. The industry is "well aware of the financial constraints facing this country," but at the same time "global competitors are offering tax incentives for advanced biofuels and are attracting construction of new facilities" in other countries, the letter says.

Click [here](#) for more information.

India cuts ethanol prices for petrol blending by 21%

The Indian government's economic committee has approved a mechanism to lower the price of ethanol sold to its ethanol blending programme to 39 rupees (€0.53) per litre. The Cabinet Committee on Economic Affairs (CCEA) has approved a mechanism for revising ethanol prices to enable public sector oil marketing companies (OMCs) carry out the Ethanol Blended Petrol (EBP) programme. From 1 December 2016, to 30 November 2017, the administered price of ethanol for the EBP programme will be 39 Indian rupees per litre, down 21% from the current Rs 48.5-49.5 range. Charges will also be paid to ethanol suppliers as per actuals in case of excise duty and VAT/GST and transportation charges as decided by OMCs. The mechanism also factors for possible hikes or slumps in petrol retail prices, which will be reflected accordingly in the requirement of maintaining the fixed cost of purchase of ethanol during the ethanol supply year.

Click [here](#) for more information.

Markets

Ineos Bio to sell ethanol business, including Vero Beach plant

Ineos Bio has announced its intent to sell its ethanol business, including the Ineos New Planet BioEnergy demonstration plant in Vero Beach, Florida, and the Ineos Bio USA Research Centre in Fayetteville, Arkansas, via a bid process targeting year end completion. The company said it has received expressions of interest from a number of potential suitors, is progressing negotiations, and hopes to make a decision on bidders and sale by the end of the year. In a statement, Ineos Bio said the U.S. market for ethanol has changed and the economic drivers for development of the technology by Ineos are no longer aligned with the company's strategic objectives. As a result, the company intends to sell its ethanol business. The statement also indicates Ineos spent more than eight years and \$300 million developing and commercializing its cellulosic technology. "The Vero Beach demonstration plant has achieved continuous operations and commercial scale syngas fermentation and has been instrumental in identifying various process improvements to be incorporated into the design and construction of the next generation of bioethanol plants based on the technology," said the company.

Click [here](#) for more information.

Spain's Abengoa posts 3.7-bn-euro first half loss

ABENGOA

Abengoa

Spain's debt-laden energy giant Abengoa has posted a 3.7-billion-euro (USD 4.2-billion) net loss in the first half of 2016, as it seeks to seal a deal

with creditors to ward off bankruptcy. A "general slowdown in business" contributed to the result, the Seville-based group said in a statement it had only posted a loss of 340 million euros in the first quarter, while in the first six months of 2015, the group made a 72-million-euro profit. The world player in solar and wind power, biofuels and water management announced last year that it was filing for preliminary protection from creditors following years of frenzied, unsustainable expansion worldwide. It has launched a recovery plan that includes the sale of biofuels assets and other non-strategic holdings, as well as job cuts -- it has already shed at least 11,000 jobs since the end of last year -- and finalised a debt restructuring deal in August.

Click [here](#) for more information.

KAAPA Ethanol Holdings Purchases Abengoa Bioenergy Plant at Ravenna

KAAPA Ethanol Holdings, LLC in Minden successfully closed on the purchase of the Abengoa Bioenergy ethanol facility in Ravenna for \$115 million. The facility, now KAAPA Ethanol Ravenna LLC, began contracting corn directly from producers in September. Chuck Woodside, CEO of KAAPA Ethanol, said, "We're excited about the opportunities that are created through the purchase of the Ravenna facility. It is a plant in a great location with great logistics and its proximity to our Minden facility will give us the opportunity for additional synergies."

Click [here](#) for more information.

Research & Development

Indirect land use change: much ado about (almost) nothing

Biofuel development was partially motivated by the promise of greenhouse-gas (GHG) emissions savings. A high-profile article by Searchinger et al. (2008), however, argued that biofuels are likely to increase GHG emissions relative to the fossil fuels they were intended to replace because of emissions attributable to 'indirect land use change' (ILUC). Biofuel production tends to reduce the supply of corn or other feedstocks available for feed or food, leading to higher prices. Farmers respond to higher prices by increasing corn supply, which expands the footprint of farming into natural land. To conclude that biofuels increase GHG emissions on net, Searchinger et al. (2008) applied a very popular model of the agricultural economy that relies on numerous assumptions. This editorial explains how subsequent more detailed analyses have shown this work to be seriously flawed and misleading.

Click [here](#) for more information.

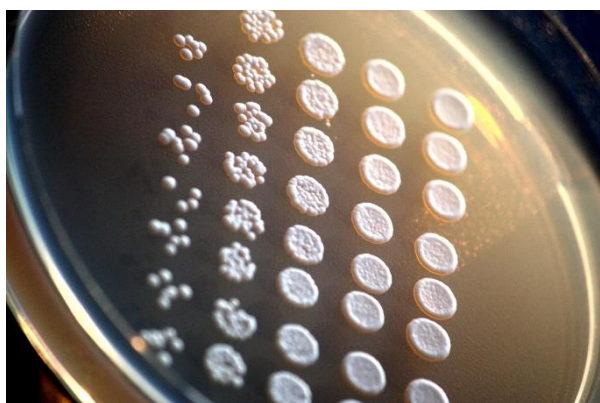
Commission admits policing biofuels according to public opinion

Delaware researchers have tweaked the recipe for creating acetone and found they can make the process a lot more efficient. Next on the agenda is applying the same procedure to make biofuels. The University of Delaware partnered with White Dog Labs, a biotech company near New Castle, to develop a bacteria that recaptures the carbon dioxide that is usually emitted in the traditional process, and they've added another element to the mix. Although they ended up creating a process that is more environmentally sound since it has almost no carbon emissions, they started off

on the project looking for a way to get more usable material out of each batch.

Click [here](#) for more information.

Super yeast' has the power to improve economics of biofuels



Wikimedia

Scientists at the University of Wisconsin–Madison and the Great Lakes Bioenergy Research Centre (GLBRC) have found a way to nearly double the efficiency with which a commonly used industrial yeast strain converts plant sugars to biofuel. The newly engineered "super yeast" could boost the economics of making ethanol, specialty biofuels and bioproducts. Though *Saccharomyces cerevisiae* has been the baker's and brewer's yeast of choice for centuries, it poses a unique challenge to researchers using it to make biofuel from cellulosic biomass such as grasses, woods, or the non-food portion of plants. The world-famous microbe is highly adept at converting a plant's glucose to biofuel but is otherwise a picky eater, ignoring the plant's xylose, a five-carbon sugar that can make up nearly half of all available plant sugars.

Click [here](#) for more information.

Bioethanol

Borregaard invests in multi-million euro bioethanol plant upgrade



Borregaard

Borregaard

Norwegian biorefinery operator Borregaard has decided to invest NOK 63 million (€6.8m) in a project including an upgrade of a bioethanol plant and a facility to capture and store biogas. The project has been awarded a grant of NOK 18.9 million from Enova, a Norwegian government agency which promotes environmentally friendly restructuring of energy end-use, renewable energy production, and new energy and climate technology. The bioethanol plant upgrade, to be implemented at the company site is Sarpsborg, Norway, includes installing modern production technology which will reduce the specific use of energy in the production process. As a result of the rebuild, there will be sufficient capacity to deliver the whole production as 100% water-free bioethanol. This market is growing, mainly driven by increased demand for bioethanol in automotive fuel.

Click [here](#) for more information.

Biodiesel

Dead whale washed up on UK shores to become biodiesel

The carcass of a dead whale which washed up on the Devon coastline is to be used for biofuel. Teignbridge District Council said the 30ft (9.1m) fin whale on Red Rock Beach near Dawlish is being taken apart in small pieces by dumper trucks.

A local rendering plant will remove the oil from the carcass and cook the remaining body. This will then be shipped to various sites around the country to be used for biofuel.

Click [here](#) for more information.

Aviation Fuel

Airline Low-Carbon Future Needs Fuel Nobody Makes in Volume



The airline industry's plan to ease its impact on global warming hinges on fuels made from vegetable oil, corn and household garbage. The hitch: nobody has ever been able to produce the stuff in the volumes needed. JetBlue Airways Corp., United Continental Holdings Inc. and Richard Branson's Virgin Group Ltd. have begun blending eco-friendly substitutes into traditional jet fuel made from kerosene. Even with that backing, there's still only a handful of producers of the fuels. They lack the capacity to crank out the billions of gallons needed to supply the global aviation fleet, and the pace of investment is slowing. Even so, airlines are staking their low-carbon future on renewable fuels. The aviation industry, responsible for more than 2 percent of greenhouse gases, is being pushed to act this week by delegates from 190 nations, who are debating a United Nations accord in Montreal that would cap emissions from international flights. Ultimately, that means burning less fossil fuel. With electric planes still experimental, airlines and

aerospace companies say biofuels are their best bet.

Click [here](#) for more information.

JetBlue makes one of history's largest biojet purchase agreements

JetBlue announced a 10-year renewable jet fuel purchase agreement with SG Preston, a bioenergy company, Sept. 19. The airline is partnering with SG Preston to purchase renewable jet fuel made from rapidly renewable, biobased feedstocks that do not compete with food production. This marks one of the largest renewable jet fuel purchase agreements in aviation history, and the largest, long-term, binding commitment by any airline globally for hydro-processed esters and fatty acids (HEFA) based renewable jet fuel. For nearly 100 years, planes have run on fossil fuels. Investments in renewable energy sources are key to a lower carbon future. Renewable jet fuel is produced from biological resources, like plant matter, which can be replenished rapidly and without impacting food supply. With SG Preston, JetBlue is creating renewable jet fuel that has the ability to benefit the airline's bottom line while also lowering its net CO2 emissions.

Click [here](#) for more information.

Neste to co-chair EU initiative for advanced biofuels in aviation

Henrik Erämetsä, Head of Aviation Regulation at Neste, has been appointed Co-Chair of the EU initiative 'the European Advanced Biofuels Flightpath' as a representative of the biofuels industry. Mr. Erämetsä will co-chair together with Ruben Alblas from KLM Royal Dutch Airlines. The initiative supports the goals of the Paris Climate Agreement and the EU targets set for reduction of greenhouse gas emissions. It was launched in 2011 by the European Commission, Airbus, leading European airlines and biofuel producers to

promote the production, distribution, storage and use of sustainably produced and technically certified aviation biofuels. The initiative aims at getting biofuels to the market faster, through the construction of advanced biofuel production plants in Europe, and at setting a target level to the amount of sustainable biofuels used in European civil aviation. Biofuel companies taking part in the initiative at the moment are Neste, Biochemtex, Honeywell UOP, Swedish Biofuels, and Total. Airlines involved are KLM, Air France, British Airways, and Lufthansa. "Aviation is the most rapidly growing segment of traffic. Sustainable biofuels along with reduced fuel consumption of airplanes and increased operational efficiency offer us means to lower the carbon footprint caused by increased aviation in the EU. They also contribute to reaching the IATA target of carbon-neutral growth of airline industry from 2020 and subsequent reduction of carbon emission. I am glad to be able to use my expertise in pursuing the targets", says Henrik Erämetsä.

Click [here](#) for more information.

The UK's road transport sector faces unprecedented pressure to decarbonise, meet legally-binding targets set out the Carbon Budgets and demonstrate that new technologies can deliver these reductions and improved air quality they promise. This conferences will ask how compatible are the Carbon Budgets with the UK's transport targets? What's the problem with road transport - CO2, NOX, fuels or something else? Are new technologies being deployed quickly enough? If not, what can we do about it? Amongst the challenges, what are the opportunities for UK plc? How should we frame the debate? Sustainability - Brexit - Industrial Strategy?

Click [here](#) for more information

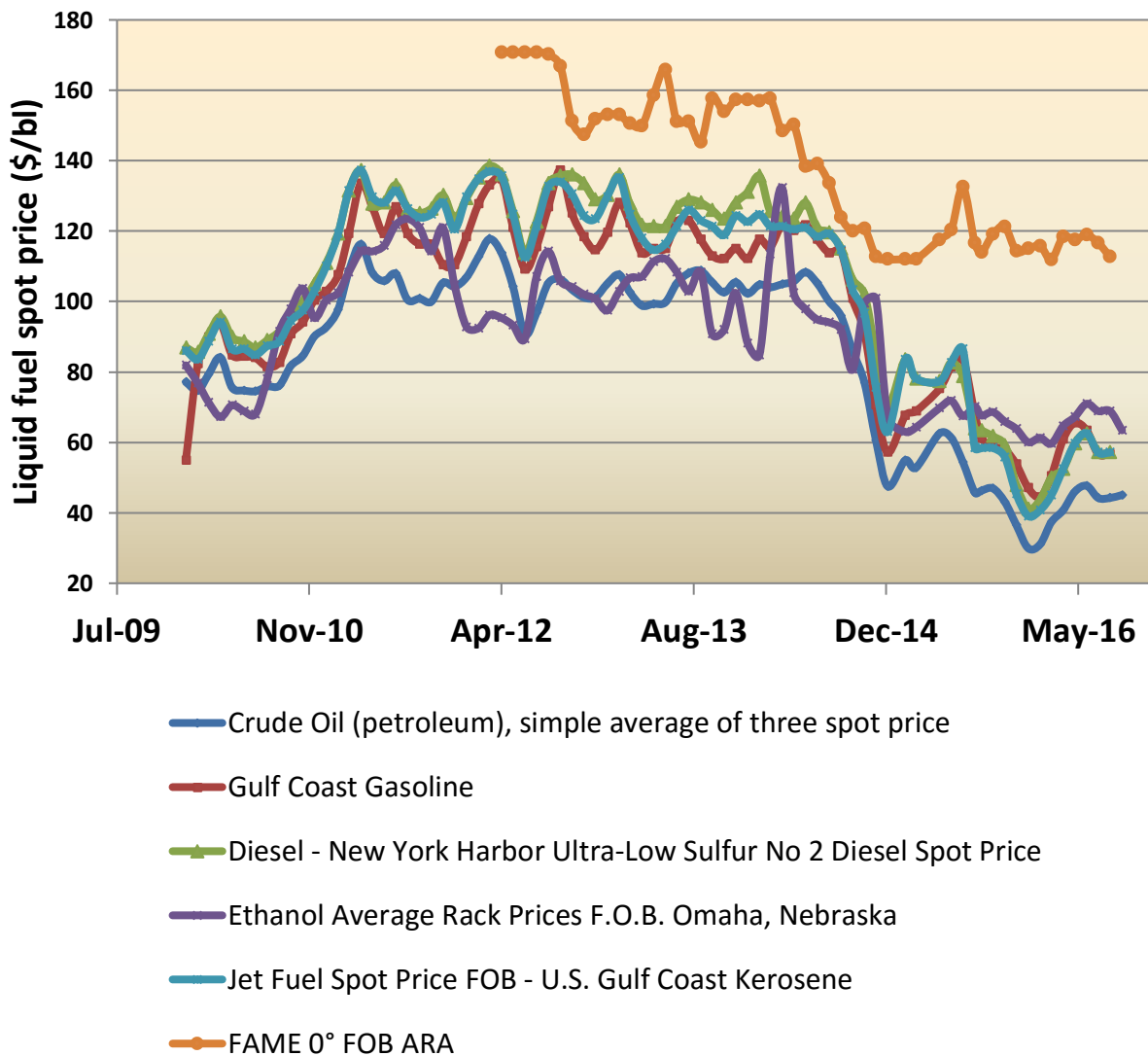
Events

REA Event - Delivering Sustainable Road Transport to 2030 and Beyond, 7th December, London, UK



Price Information

Historical spot prices of liquid fossil fuels and liquid biofuels. Five years prices and up to September 2016 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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