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

Biofuel

Issue Seventy-Three
April 2018

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

Contents

Foreword

Welcome, all readers, to April's free issue of NNFCC's Biofuels News Review.

This month has seen some excellent news for the biofuels sector, with the UK's updated Renewable Transport Fuels Obligation coming into force. This legislation is the primary driver behind biofuels development in the UK, but there have been recent fears that it hasn't provided enough of an incentive for the sector. Thankfully, however, these fears have been allayed as the latest version of the RTFO has successfully passed through parliament and come into force.

Underpinning the entire legislation is the biofuel blend target, which has increased from 4.75% to 12.4%. Transport fuel producers now have until 2032 to achieve this target. In addition to the overall target, there is the introduction of an additional target for advanced biofuels derived from waste. Starting in 2019, 0.1% of the UK's fuel must take this form, rising to 2.8% in 2032, in line with the main target. Crop-based biofuels are set to be gradually phased out, with the current cap of 4% of fuels coming from crop-based biofuels set to decrease to 2% by 2032.

The other major change to the legislation is that aviation biofuels are now eligible to receive credit from the RTFO, where previously they hadn't been. This is an important development, as the aviation sector is a sector in dire need of decarbonisation, but development of suitable biofuels for aviation use has been stunted by the more stringent requirements for aviation fuel, and lack of government support. This change will dovetail nicely with the advanced biofuels target, as many aviation biofuel technologies are seeking to utilise waste as a feedstock.

The news of the RTFO reform has been clearly welcomed by one of the UK's most important biofuel producers Vivergo. The company had closed down its plant in Hull for maintenance, but it was unclear whether the plant would reopen at all. The company had cited unfavourable trading conditions and lack of clarity with regard to government support for biofuels making biofuel production economically unviable for Vivergo. However, in the wake of the RTFO reforms, Vivergo have determined the market conditions to be favourable again, and have resumed operations, reopening their Hull plant.

Read on for the latest news.

Policy

New UK RTFO comes into force

Wikimedia Commons

Changes to the UK's Renewable Transport Fuel Obligation (RTFO) will 'double' the use of renewable fuels in the UK transport sector, according to a statement from the Department of Transport.

Included in the revised (RTFO) are new biofuel targets that came into force on 15 April.

Transport fuels owners who supply 450,000 litres a year or more will be compelled to make sure their mix is at least 12.4% biofuel by 2032.

At present the target is 4.75% biofuel. The legislation will affect suppliers to transport companies such as haulage firms and airlines.

According to the statement, the changes to the RTFO will also, for the first time, reward and support the production of sustainable renewable aviation fuels in the UK.

Also included in the revised RTFO are an additional target for advanced waste-based renewable fuels, starting at 0.1% in 2019 and rising to 2.8% in 2032.

At the same time, the new legislation sets a decreasing cap for crop-based biofuels, in 2018 the maximum cap sits at 4%. Starting in 2021 this will decrease annually, reaching 3% in 2026 and 2% in 2032.

Currently, the majority of the biofuel in the UK comes from waste feedstocks, according to the Department of Transport.

According to the government, the new RTFO will contribute a third of the total savings from transport for the UK's carbon budget.

Click here for more information.

RTFO reform prompts Vivergo to resume production

The Vivergo plant has re-opened following a four-month shut-down period following unfavourable trading conditions; in part driven by Government inaction on the future of renewable fuels and current market conditions.

Over the coming months, it is hoped that conditions will improve as a result of the RTFO being passed through Parliament in March. This will come into effect later this month, increasing the use of renewable fuels in transport from 4.75% to a target of 9.75% by 2020.

The bioethanol industry is now calling for the Government to introduce E10 fuel by the end of the year. E10 is a more environmentally friendly blend of 10% renewable bioethanol with petrol which can lower emissions from vehicles. It is commonly used across North America, Europe and Australasia and introducing it in the UK would be the carbon emissions savings equivalent to taking 700,000 cars off the road.

Click here for more information.

New Fuel Standard to regulate Canadian green fuels

Wikimedia Commons

Biomass magazine reports that a group of stakeholders has come together at the behest of Environment and Climate Change Canada to shape regulations for the Clean Fuel Standard, with grand ambitions to achieve 30 megatons of annual greenhouse gas (GHG) emissions reductions by 2030 across a wide range of fuels (solid, gaseous and liquid). The group includes a mix of government, fossil fuel and bioenergy interests. The intent is to have draft regulations established by June. Following this, a process of public consultations and legislative procedures will ensue, with formal regulations to come in 2019.

Many of Canada's population centres have access to cheap, abundant natural gas, but an entire subset of the population living off the grid relies on propane and diesel fuel for heat and power. The CFS is one of many "support mechanisms," under the broader Pan-Canadian Framework for Clean Growth and Climate Change, announced by Prime Minister Justin Trudeau in 2016. Aspects of this sweeping plan include phasing out traditional coal-fired electricity by 2030. The plan behind the CFS is to begin reducing GHG emissions in 2020, and ratchet up reductions through 2030.

Fuel streams, rather than sectors, will be regulated under the CFS, three broad categories of which are liquid, solid and gaseous. 75 to 80 percent of Canada's liquid fuels are used in transportation.

For liquid and solid fuels, producers and importers will be the regulated parties. For gaseous fuels distributed through pipelines, distributors will be obligated. For other gaseous fuels such as biogas distributed to end users outside of pipelines, the regulated parties have yet to be determined.

The federal backstop for carbon pricing will define the amount and application of a carbon tax system for all provinces and territories in Canada. The provinces or territories may adopt their own carbon pricing system or elect to have the federal system apply in their jurisdiction.

Click here for more information.

Indicators of US Bioeconomy

The USDA has produced a report on Indicators of the US Biobased Economy, building on previous reports (2011) to assess change up to 2016. The report shows significant increase in deployment of biofuels and use of feedstock crops and in the development of US wood pellet production, the latter driven by external factors driving exports and ensuring the US is now the largest wood pellet exported.

The number of renewable chemicals and biobased products that are USDA "certified" as BioPreferred has rapidly increased from 1,800 in 2014 to 2,900 in 2016. It is estimated that the overall number of biobased products in the United States marketplace was greater than 40,000 in 2014, up from 17,000 in 2008.

The biobased economy was estimated to support 4.22 million jobs in the US and make a value-added contribution of $393 billion.

The report outlines the supporting policies at Federal, State and National level that have contributed to sector development.

Click here for more information.

Markets

Increased imports affecting EU biodiesel production

AHDB reports that EU biodiesel production is reported to be under pressure from increased imports as a result of World Trade Organisation (WTO) rulings and free trade discussions.

Below are some of the factors currently affecting EU biodiesel uncertainty:

The EU cut import duties on Argentine biodiesel last September following a successful WTO challenge. The cut was just weeks after the United States imposed steep duties on imports, effectively halting US imports of Argentinian biodiesel.

The EU is now also considering whether to cut duties on biodiesel imports from Indonesia, following a January WTO conformity ruling.

There are ongoing free trade discussions between the EU and Malaysia. A key negotiating point for Malaysia is the ability to continue to export palm oil to the EU for use in biodiesel. The EU announced its intention to ban the use of palm oil in biodiesel production from 2021, earlier this year.

A second biodiesel plant in Germany has announced a planned cut in production, the plant in Marl is expected to cut output by 50% due to competition from imports from Argentina and Indonesia. The ADM biodiesel plant in Mainz, Germany had previously announced a suspension of production, again citing EU imports of biodiesel from Argentina and Indonesia.

Click here for more information.

Japan to allow imports of US bioethanol

Blogspot

The U.S. Grains Council (USGC), the Renewable Fuels Association (RFA), Growth Energy and their member organizations welcome the news that the Japanese government's new biofuel policy will allow imports of ETBE made from U.S. corn-based ethanol.

The change comes as part of the country's update of its existing sustainability policy, approved in 2010, in which only sugarcane-based ethanol was eligible for import and which only allowed sugarcane-based ethanol for the production of ETBE, an oxygenate. The new policy calls for an increase in the carbon intensity reduction requirements of ethanol used as a feedstock to make ETBE to meet a 55 percent reduction, up from 50 percent, and recognizes corn-based, U.S.-produced ethanol's ability to meet that goal, even with the higher greenhouse gas (GHG) reduction standard.

Japan will now allow U.S. ethanol to meet up to 44 percent of a total estimated demand of 217 million gallons of ethanol used to make ETBE, or potentially 95.5 million gallons of U.S.-produced ethanol annually. Japan imports nearly all of the ETBE from ethanol that it uses.

This decision by the Japanese government is based on its evaluation and life cycle assessment update of U.S. corn-based ethanol. The U.S. industry's efforts to maximize production efficiency through technological innovations that

lead to higher GHG emission reductions for corn-based ethanol and the emergence of co-products like distillers dried grains with solubles (DDGS) have supported this new access to the Japanese market while positively contributing to the feed and energy value chains.

U.S. organizations promoting the global use of ethanol will continue to work closely with the Japanese government as it implements its new policy and provide updated technical information about GHG reductions and other benefits of corn-based ethanol.

Since 2014, the U.S. ethanol industry and the U.S. government have partnered to develop a robust ethanol market development program that demonstrates the environmental, health and economic benefits of ethanol use and why strong ethanol policies include a role for trade.

Click here for more information.

Research & Development

Life Cycle assessment of alternative shipping fuels

There is a need for alternative fuels in the shipping sector for two main motivations: to deliver a reduction in local pollutants and comply with existing regulation; and to mitigate climate change and cut greenhouse gas emissions. However, any alternative fuel must meet a range of criteria to become a viable option. Key among them is the requirement that it can deliver emissions reductions over its full life-cycle. For a set of fuels, comprising both conventional and alternative fuels, together with associated production pathways, this paper presents a life-cycle assessment with respect to six emissions species: local pollutants sulphur oxides, nitrogen oxides, and particulate matter; and greenhouse gases carbon dioxide, methane, and nitrous oxide. While the analysis demonstrates that no widely available fuel exists currently to deliver on both motivations, some alternative fuel options have the potential, if key barriers can be overcome. Hydrogen or other synthetic fuels rely on decarbonisation of both energy input to production and other feedstock materials to deliver reductions in greenhouse gas emissions. Similarly, bio-derived fuels can be an abatement option, but only if it can be ensured that land-use change whilst growing biomass does not impact wider potential savings and the sector is able to compete sufficiently for their use. These examples show that crucial barriers are located upstream in the respective fuel life-cycle and that the way to overcome them may reside beyond the scope of the shipping sector alone.

Click here for more information.

Pixabay

Control of fermentation with light

The optimization of engineered metabolic pathways requires careful control over the levels and timing of metabolic enzyme expression. Optogenetic tools are ideal for achieving such precise control, as light can be applied and removed instantly without complex media changes. Here, the authors show that light-controlled transcription can be used to enhance the biosynthesis of valuable products in engineered Saccharomyces cerevisiae. They introduce new optogenetic circuits to shift cells from a light-induced growth phase to a darkness-induced production phase, which allows control of fermentation with only light. Furthermore, optogenetic control of engineered pathways enables a new mode of bioreactor operation using periodic light pulses to tune enzyme expression during the production phase of fermentation to increase yields. Using these advances, they control the mitochondrial isobutanol pathway to produce up to 8.49 ± 0.31 g l−1 of isobutanol and 2.38 ± 0.06 g l−1 of 2-methyl-1-butanol micro-aerobically from glucose. These results make a compelling case for the application of optogenetics to metabolic engineering for the production of valuable products.

Click here for more information.

Results of EU advanced biofuels project

Key to producing advanced biofuels from lignocellulosic biomass is the efficient conversion of the cellulose contained within cell walls into fermentable sugars - a major bottleneck for large-scale production. Efficient breakdown of biomass into sugars, called saccharification, can reduce the cost of the process and lower also the amount of feedstock required for production of biofuels with milder or shorter pre-treatment time.

Some microbes have natural structures called cellulosomes that contain cellulases, enzymes that break down cellulose efficiently into sugars. The EU-funded CELLULOSOMEPLUS project developed designer cellulosomes (DCs) to achieve high yields of fermentable sugars from the organic fraction of municipal solid waste (OFMSW) to create advanced biofuels at a low process cost.

The consortium produced the basic components of natural cellulosomes as well as other lignocellulosic enzymes and, after their assembly into DCs, characterised the hydrolysis of the OFMSW substrate. They also studied the cellulosome's physicochemical, atomic and supramolecular structure, and the interactions of its various components.

Tailoring DCs for the several biomass lignocellulosic residues should help improve process efficiency, thus lowering production costs.

Click here for more information.

Global Bioenergies tests 34% renewable gasoline blend on track

Global Bioenergies has announced it will use an EN228-compliant gasoline blend containing over 34% of renewable, isobutene-derived, compounds to fuel a car on a circuit. Global Bioenergies will also present the results of preliminary engine testing conducted these past months by FEV, a European leader in engine-testing.

In preparation of commercial uses, Global Bioenergies developed several gasoline blends with two isobutene-derived compounds: Isooctane, obtained by the condensation of two molecules of isobutene followed by hydrogenation, and ETBE, obtained by the condensation of isobutene and ethanol.

Both compounds are high-performance additives (high octane rating equal or higher than 100) that have been in the past produced from fossil oil. Global Bioenergies' unique process allows to produce the very same compounds from renewable feedstocks such as industrial-grade sugars, straw, residual wood and potentially syngas.

The blends prepared by incorporating both ETBE and isooctane were designed for compliance with the EN228 norm, and are thus already authorized for sale to any gasoline car owner without any specific labelling requirement.

FEV, a German corporation leader in the field of engine-testing, analysed the characteristics of these high-octane fuel blends using a single cylinder engine, a reliable model of four-stroke engines.

An Audi A4 2.0 TFSI provided by the carmaker, Global Bioenergies' long-term partner, will drive around the historical and prestigious Montlhéry speed ring. This event marks the launch of the next phase of commercial preparation: on-road testing using regular vehicles.

Click here for more information.

Geograph

Microbial butanol production on multiple simultaneous substrates

The demand for cellulosic biofuels is on the rise because of the anticipation for sustainable energy and less greenhouse gas emissions in the future. However, production of cellulosic biofuels, especially cellulosic butanol, has been hampered by the lack of potent microbes that are capable of converting cellulosic biomass into biofuels. We report a wild-type Thermoanaerobacterium thermosaccharolyticum strain TG57, which is capable of using microcrystalline cellulose directly to produce butanol (1.93 g/litre) as the only final product (without any acetone or ethanol produced), comparable to that of engineered microbes thus far. Strain TG57 exhibits significant advances including unique genes responsible for a new butyrate synthesis pathway, no carbon catabolite repression, and the absence of genes responsible for acetone synthesis (which is observed as the main by-product in most Clostridium strains known today). Furthermore, the use of glucose analog 2-deoxyglucose posed a selection pressure to facilitate isolation of strain TG57 with deletion/silencing of carbon catabolite repressor genes—the ccr and xylR genes—and thus is able to simultaneously ferment glucose, xylose, and arabinose to produce butanol (7.33 g/litre) as the sole solvent. Combined analysis of genomic and transcriptomic data revealed unusual aspects of genome organization, numerous determinants for unique bioconversions, regulation of central metabolic pathways, and distinct transcriptomic profiles. This study provides a genome-level understanding of how cellulose is metabolized by T. thermosaccharolyticum and sheds light on the potential of competitive and sustainable biofuel production.

Click here for more information.

Bioethanol

Aemetis ethanol plant a step closer to construction

Aemetis

Aemetis, Inc. has announced that the company achieved a major milestone by completing the key federal and state agency permitting and environmental approvals for construction of the cellulosic ethanol plant in Riverbank, California.

Aemetis has received its Finding of No Significant Impact ("FONSI") under the National Environmental Policy Act ("NEPA"). This approval further confirms the previously received California Environmental Quality Act ("CEQA") approval.

After signing a 55-year lease agreement at the Riverbank site in February 2017, Aemetis began the process of obtaining CEQA approval, a requirement for any construction activities in California. We believe that approval under the strict CEQA environmental review process reflects positively on the environmental attributes of the Riverbank plant. Today, the agricultural waste used in the production process is burned, which contributes to pollution in one of the worst air quality districts in the country. The Aemetis project mitigates this burning by converting waste orchard wood and nut shells into clean, below zero carbon, renewable advanced cellulosic ethanol.

The federal FONSI approval was achieved after months of intense review of the environmental impacts of the cellulosic ethanol facility, including impacts on construction, noise, vehicle traffic, air quality, solid waste management, coastal resources, historic properties and historic preservation, biological resource, farmland protection, and water quality in addition to other environmental reviews. All of these environmental considerations were found to be either unaffected or minimally affected within strict parameters. The FONSI applied to both the construction and operations of the cellulosic ethanol facility.

Click here for more information.

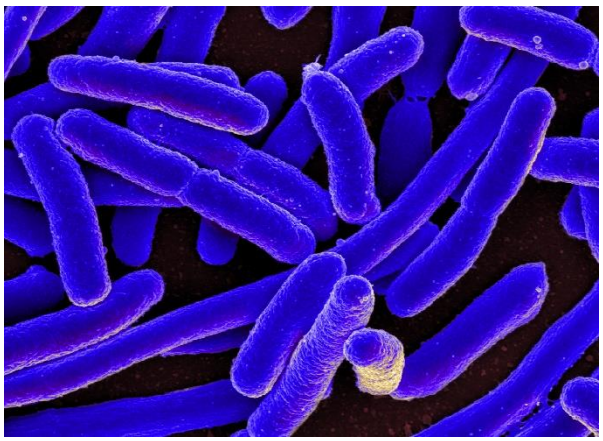
Biodiesel

Catalytic process to extend hydrocarbons allows biodiesel from sugar

Jet and diesel fuels are typically composed of C9-C14 and C12-C20 hydrocarbons, respectively, but the carbon-chain length of sugar-derived aldehydes and furanic compounds is no longer than C6. Here, a cascade catalytic process involving alkylation and hydrodeoxygenation (HDO) of 2-methylfuran (2-MF) with different aldehydes is conducted to directly produce long-chain alkanes with exclusive carbon number of C11-C17 in overall yields of 50–84 %. Preliminary investigations on the alkylation of 2-MF and formalin show that the relative density of Lewis and Brønsted acidic sites of zeolitic materials remarkably affect their catalytic activity and selectivity. Sn-beta(12.5) with pronounced Lewis acidity (including the acid density and strength) exhibits higher catalytic performance in the alkylation than other zeolites, producing long-chain oxygenates in 58–92 % yields. Even in aqueous solution, the Sn-beta(12.5) catalyst can be reused for at least six reaction cycles with almost constant reactivity. More importantly, the co-addition of Hf(OTf)4 with Pd/C greatly promotes C−O bond cleavage of the furan-ring during the HDO process under mild reaction conditions, producing long-chain alkanes in high yields of 84–94 %.

Click here for more information.

Impoving E coli production of biodiesel blending agents



Wikimedia Commons

The authors of this paper previously engineered Escherichia coli to overproduce medium- to long-chain saturated and monounsaturated methyl ketones, which could potentially be applied as diesel fuel blending agents or in the flavour and fragrance industry. Recent efforts at strain optimization have focused on cofactor balance, as fatty acid-derived pathways face the systematic metabolic challenge of net NADPH consumption (in large part, resulting from the key fatty acid biosynthetic enzyme FabG [β-ketoacyl-ACP reductase]) and net NADH production. In this study, they attempted to mitigate cofactor imbalance by heterologously expressing NADH-dependent, rather than NADPH-dependent, versions of FabG identified in previous studies. Of the four NADH-dependent versions of FabG tested in their previously best-reported methyl ketone-producing strain (EGS1895), the version from Acholeplasma laidlawii (Al_FabG) showed the greatest increase in methyl ketone yield in shake flasks (35-75% higher than for an RFP negative-control strain, depending on sugar loading). An improved strain (EGS2920) attained methyl ketone titres during fed-batch fermentation of 5.4 ± 0.5 g/L, which were, on average, ca. 40% greater than those for the base strain (EGS1895) under fermentation conditions optimized in this study. Shotgun proteomic data for strains EGS2920 and EGS1895 during fed-batch fermentation were consistent with the goal of alleviating NADPH limitation through expression of Al_FabG. For example, relative to strain EGS1895, strain EGS2920 significantly upregulated glucose-6-phosphate isomerase (directing flux into glycolysis rather than the NADPH-producing pentose phosphate pathway) and downregulated MaeB (a NADP+ -dependent malate dehydrogenase). Overall, the results suggest that heterologous expression of NADH-dependent FabG in E. coli may improve sustained production of fatty acid-derived renewable fuels and chemicals.

Click here for more information.

Red Rock finally receives clearance to build biofuels plant

After countless meetings, hearings, discussions and planning, all hurdles have been cleared for construction of a new renewable energy biofuels plant in Lake County.

Red Rock Biofuels, a Colorado-based company established in 2011, has had its sights set on Lakeview since 2013 as a target location to build its first operational facility; identifying the location for its proximity to rail, highways, the Ruby natural gas pipeline and an abundance of forest bi-products to be collected and converted to jet fuel.

The facility is expected to convert 136,000 tons of woody biomass and forest bi-products into 15 million gallons of renewable fuels annually.

Once operational, the facility will intake woody biomass and ag waste, compiled from forest bi-products gathered from thinning projects to reduce fire fuels. By using a combination of gasification, hydro-processing and the Fischer-Tropsch method of combined pressure, heat and water; raw materials are converted into jet and diesel bio-fuel.

Click here for more information.

Review of biodiesel in Indonesia

Indonesia promotes biodiesel consumption through a blending mandate and a subsidy program. The current required biodiesel blend level in transport fuels is 20%, set to increase to 30% in 2020. The mid-level blends required to meet the mandate may raise concerns of combability in vehicles. Biodiesel reduces fuel economy and can degrade some vehicle components and materials, as well as affecting vehicle emissions. Vehicles specially designed for higher biodiesel blends are available, but most diesel vehicles are not designed for the use of these blends. Previous studies on biodiesel impacts on vehicles have mostly focused on vehicles and fuels in Europe and the United States. Indonesia's case may be different because it mostly uses palm oil to produce biodiesel, has a warm climate, has a vehicle fleet with older technology, and tends to have lower fuel quality and higher fuel sulphur content than in Europe and the United States. This working paper reviews the effects of biodiesel on vehicles specifically in the Indonesian context. It does not address other renewable diesel substitutes such as hydrotreated vegetable oil.

This paper first reviews the effects of biodiesel on emissions of nitrogen oxides, carbon monoxide, hydrocarbons, and particulate matter in conventional vehicles. It compares the effects of using palm biodiesel and other biodiesel feedstocks, such as soy and rapeseed oils. The paper then reviews the effects of biodiesel on vehicle materials, including components of the fuel supply, engine, and exhaust system. These effects include corrosion and wear of metallic components, degradation of elastomers, and deposit formation in filters and fuel injectors. The implications of the impacts of biodiesel on vehicle emissions and materials are discussed in the context of Indonesia specifically.

Click here for more information.

Aviation Biofuel

Commerical flights may now run on ethanol

Pixnio

On April 1, ASTM International added ethanol as an approved feedstock in ASTM D7566 Annex A5, the Standard Specification for Aviation Turbine Fuel Containing Synthesized Hydrocarbons for alcohol-to-jet synthetic paraffinic kerosene (ATJ-SPK). Jet fuel produced from ethanol by LanzaTech in accordance with the Annex A5 ATJ-SPK criteria completed all required aircraft and engine Original Equipment Manufacturer (OEM) testing and review. Following a review by the OEMs and the Federal Aviation Administration(FAA) that the ethanol-derived ATJ-SPK was fit for purpose for use on aircraft and engines, an ASTM Subcommittee D02.J on Aviation Fuel ballot was submitted to the ASTM membership for review (the "D02.J Ballot"). The D02.J Ballot passed all levels of ASTM technical scrutiny: ASTM D02.J subcommittee (November 8, 2017), ASTM D02 Main committee on Petroleum Products, Liquid Fuels, and Lubricants (March 18, 2018) and ASTM General Society Review (April 1, 2018). The fit for purpose determination was based on a Research Report led by LanzaTech and submitted to ASTM which contained detailed data measured on ethanol based ATJ produced using the technology originally developed by the Pacific Northwest National Lab (PNNL) and scaled up by LanzaTech. The Research Report demonstrated that the LanzaTech-PNNL ATJ-SPK meets all fit-

for-purpose properties required by ASTM D4054, the Standard Practice for Qualification and Approval of New Aviation Turbine Fuels and Fuel Additives, including when blended at the 50% level with conventional jet.

The revision of ASTM D7566 Annex A5 to increase the blend ratio of ATJ-SPK to 50% was also completed on April 1.

As a result, ASTM International will publish the revision of ASTM D7566 on its website in the coming months. LanzaTech's ethanol based ATJ-SPK will be eligible for use as a blending component with standard Jet A/Jet A1 for commercial airline use in the United States and in most countries around the globe. Under the revised ASTM D7566 LanzaTech ATJ-SPK will be eligible to be used up to a 50% blend in conventional jet fuel for commercial flights.

economically, and socially sustainable feedstocks in each region.

Click here for more information.

Global Bioenergies seeks to incorporate isobutene in jet fuel

Global Bioenergies, the company developing a breakthrough process converting renewable resources into isobutene, and SkyNRG, world market leader in sustainable aviation fuel, will work together to accelerate the commercialization of Global Bioenergies' approach to process isobutene into a jet fuel blending component. The companies will work towards the aviation industry's approval allowing addition of Global Bioenergies' isobutene-based SAF into ASTM D7566, the predominant jet fuel specification used by the industry, thereby enabling commercial use by airlines as quickly as possible.

The first batches of the bio-isobutene-based SAF were produced by Global Bioenergies in Leuna (Germany) and sent to SkyNRG for preliminary analysis, laying the basis for Tier 1 of the ASTM evaluation process. The evaluation process includes up to 4 stages: from Tier 1 up to Tier 4 (as described in ASTM Standard Practice D4054). Tier 1 tests consist of the analysis of physical and chemical properties of the fuel, such as: composition, volatility (distillation curve and density), fluidity (freezing point and viscosity), net heat of combustion, corrosion and thermal stability.

The SAF batches are mainly composed of C12 iso-paraffins with very good "cold-flow" properties, high octane and an energy content in the jet fuel range. The targeted C12 iso-paraffin molecules are the same as those present in conventional jet fuel. The product was obtained through oligomerization and hydrogenation of bio-isobutene. Both the pure product as well as a blend with fossil-based kerosene will be evaluated. Global Bioenergies' high-quality SAF can be produced from forestry or agricultural wastes.

Click here for more information.

Max Pixel

Other Fuel

Green Biologics and Kingsford launch biobased lighter fluid

Green Biologics, Inc. announced that it has agreed to supply their patented GreenFlame® bio-based charcoal lighter fluid formulation exclusively to Kingsford® Charcoal, to be marketed under a new brand: EcoLight™. The licensing agreement builds on the successful 2017 introduction of GreenFlame, a natural USDA BioPreferred® certified, clean-burning charcoal lighter fluid based on Green Biologics' proprietary advanced fermentation process.

Kingsford® EcoLight™ Powered by GreenFlame® charcoal lighter fluid will be available at retailers across the country starting later this month, with intentions for continued expansion throughout 2018 and beyond.

Click here for more information.

Events

EUBCE
Copenhagen, 14th-18th May 2018

We look forward to the 26th EUBCE in 2018 in Denmark and to the many vibrant topics that will be included in the agenda. The core of the traditional EUBCE conference will be held over 4 days.

There will however be an extension to the core conference and exhibition in order to showcase the many achievements in the field of full scale biomass utilisation in Denmark that are an integral and major part of the country becoming fossil-free by 2050. Members of the national organising committee will organise special technical visits to sites in the centre of the country where biomass is the key renewable feedstock into processes producing renewable energy, biofuels, biochemicals and biomaterials as well as integrating bioproducts into traditional established fossil-based systems.

Click here for more information.

World Waste to Energy and Resources Summit
London, 23rd-24th May 2018

The World Waste to Energy and Resources Summit brings together its best ever faculty of international waste management CEOs, developers, bankers, private equity financiers, technology providers and industrial end users for two days of intensive networking.

With a firm focus on advanced conversion technologies, the summit addresses the need for innovation – not just in technology, but in policy, finance and partnership models – in order to accelerate the growth of the industry worldwide.

Click here for more information.

RRB 14
Ghent, 30th May - 1st June 2018

The 14th edition of the International Conference on Renewable Resources & Biorefineries will take place in Ghent, Belgium from Wednesday 30 May until Friday 1 June 2018. Based on the previous RRB conferences, this conference is expected to welcome about 350 international participants from over 30 countries.

The three-day international conference will consist of plenary lectures, oral presentations, poster sessions and an exhibition. Companies and research organizations are offered the opportunity to organize a satellite symposium.

Click here for more information.

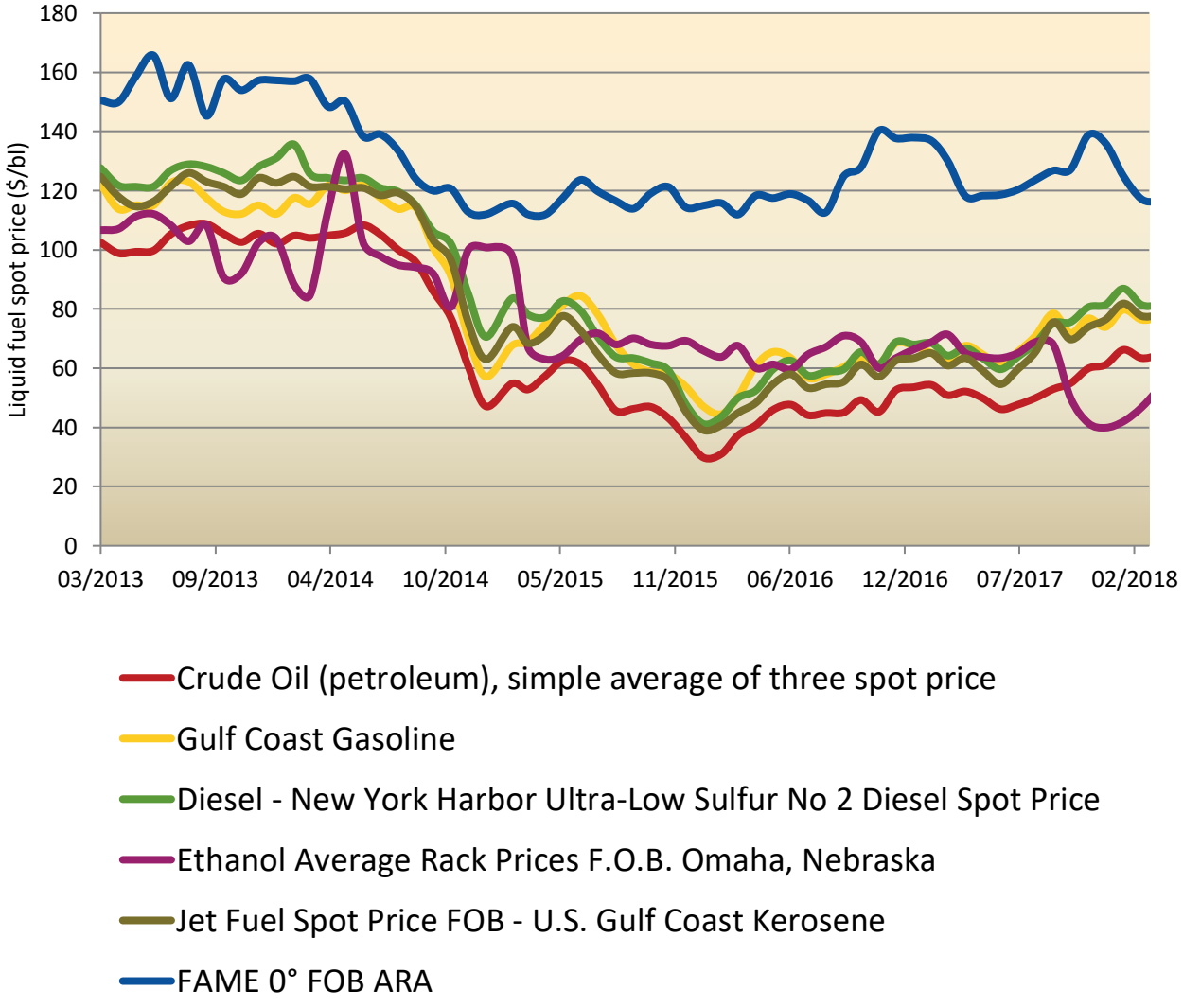
EFIB
Toulouse, 16th-18th October 2018

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 March 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

Credits and Disclaimer

NNFCC News Review is edited by Bob Horton for NNFCC subscribers. Feedback is welcome. The Review has been compiled in good faith and NNFCC does not accept responsibility for any inaccuracies or the products or services shown.

The Bioeconomy Consultants

NNFCC

NNFCC	**Phone: +44 (0)1904 435182**
Biocentre, York Science Park	**Fax: +44 (0)1904 435345**
Innovation Way	**Email: enquiries@nnfcc.co.uk**
Heslington, York	**Web: www.nnfcc.co.uk**
YO10 5DG	**Twitter: @NNFCC**