

News Review



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Each month we review the latest news and select key announcements and commentary on feedstocks used in the bioeconomy.

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Foreword

Welcome, both subscribers and non-subscribers, to October's Feedstocks News Review.

The versatility of biobased feedstocks allows for a range of interesting innovations beyond their use in biofuel production. In the food and drink sector, the drive for biobased packaging is driving innovation and the search for new materials. Carlsberg has been developing a beer bottle made out of wood fibres, which will be 100% biobased. Coca-Cola have also been working on their drink containers to make them 100% bio-based, but in addition, based on circular economy principles they have also recently been developing sample bottles derived from recovered marine plastics. So far this has resulted in a 25% recycled plastic bottle, but they hope that the technology in development has the potential to increase the proportion of recycled plastics compared to virgin plastics, while maintaining quality. And finally, in a more niche example, an R&D facility in Wales has been developing a protein source that can be used in a similar way to minced meat – however the difference being it is made from insects! Requiring little feed, space and water and emitting barely any greenhouse gases, insects are an intriguing feedstock for edible protein.

Used cooking oil is one of the main feedstocks for biodiesel in the UK, however the increasing demand for such feedstocks has raised questions as to how this impacts on demand for virgin palm oil, which is tainted with deforestation claims by NGO's and with which the EU has sought to restrict use in biofuels. In June NNFCC published a report on the potential consequences of importing used cooking oil from outside the EU and in particular from China, where there appears to be a correlation with increased import of palm oil into the country. The recent fraud allegations being pursued against a Dutch used cooking oil FAME producer has also raised concerns over the traceability and validation of supply chains particularly when materials are sourced from outside the EU.

The GHG and wider sustainability credentials associated with use of vegetable oils, both virgin and recycled as a biodiesel feedstock need to be authentic to maintain public confidence. Indonesia and Malaysia as key palm oil exporters are understandably contesting blanket bans that restrict use of palm oil and highlight the development of sustainable oil production and the value this derives to smallholders. The Malaysia Palm Oil Certification Council has said that Malaysia is on track to export MSPO (Malaysia Sustainable Palm Oil) certified palm oil to Europe by next year, the objective is to help the Malaysian palm industry comply with the international sustainability requirements. Unfortunately, this may be a case of trying to close the door after the horse has bolted and serves as a warning to developers to ensure sustainability compliance is at the heart of any initiative looking for additional market support based on its claimed environmental credentials.

Read on for the latest news.

Policy

US Government seeks public comment



National Park Service

The White House Office of Science and Technology Policy is seeking input from the public on the U.S. bioeconomy in an effort to inform notable gaps and vulnerabilities and to identify areas in which the bioeconomy could benefit from government attention.

OSTP is seeking input from the public, including those with capital investments in the bioeconomy, who perform innovative research or are developing enabling platforms and applications in the field of biological sciences.

Information provided through the solicitation can include suggestions on the areas for greatest priority within the bioeconomy, as well as past or future federal government efforts to build, promote and sustain the U.S. bioeconomy.

Click [here](#) for more information.

US Forest Association refutes claims of Forest Carbon Decline

The North Carolina Forestry Association has spoken out to dispute a recent report released by the Centre for Sustainable Economy and the Dogwood Alliance that claims that carbon stored in forests is decreasing. NCFCA stresses it is not.

The report, released on 10th September, claims that industrial logging is North Carolina's third most carbon intensive sector, following electricity and transportation, and that the state's recently released Greenhouse Gas Inventory failed to accurately account for emission from logging, forest degradation and the biomass industry.

However, the NCFCA cites data from the state of North Carolina and the U.S. Forest Service that shows carbon stored in the state's forests has increased since 1990, the baseline year for the January 2019 greenhouse gas (GHG) inventory report cited by CSE and the Dogwood Alliance.

The NCFCA also references Forest Service data that shows that both forest area and forest inventory have increased in the Southeastern U.S. since recordkeeping began in 1953.

Click [here](#) for more information.

Markets

Canadian pellet feedstock cost rise

Pinnacle Renewable Energy released a statement on 30th September indicating ongoing sawmill curtailments in British Columbia are causing higher fibre, maintenance and repair costs at some of its facilities due to a decrease and intermittent supply of sawmill residuals and a higher supply of more expensive harvest residuals being processed at its British Columbia pellet plants.

Pinnacle said same facility production for the third fiscal quarter was down 14% when compared to the same period of last year.

Pinnacle said it is continuing to make operational changes to mitigate the current impacts of the sawmill curtailments. This includes upgrades at the Williams Lake and Meadowbank facilities to increase dryer capacity to enable the processing of a broader range of fibre sources. The company has also increased chipping and grinding units from two in 2018 to eight in 2019, allowing increased processing of harvest residuals. Pinnacle also said it is increasing fibre deliveries to its British Columbia plants by 20% during the fourth quarter to build inventory in an effort to mitigate the impact of seasonal or maintenance-related sawmill shutdowns going forward. The company is also increasing fibre suppliers by 25% in the fourth quarter to improve supplier diversification.

Click [here](#) for more information.

Malaysia aims to export 100% certified palm oil



Wikimedia Commons

Malaysia is on track to export MSPO (Malaysia Sustainable Palm Oil) certified palm oil to Europe by next year. Malaysia Palm Oil Certification Council (MPOCC) chief executive officer Chew Jit Seng said the MSPO certification scheme is important as it will allow the country's palm oil to enter the European market.

In the Amsterdam Declaration, EU member states namely Denmark, France, Germany, Italy, the Netherlands, Norway and the United Kingdom wanted to import only fully sustainable palm oil from 2020. The EU has also threatened that it will ban palm-based biodiesel imports into the continent unless the palm oil is sustainably produced according to the EU Delegated Act.

MSPO was officially launched at the Malaysian Palm Oil Board's International Palm Oil Congress (PIPOC) 2013. Its objectives are aimed at reducing the industry's social environmental impacts and to help the independent smallholders to be MSPO certified for the global market.

The MSPO certification scheme will assist the industry to comply with the international sustainability requirements which encompasses the whole supply chain from growers to processors and traders.

The oil palm industry in Malaysia plays a vital role in the growth of the agricultural sector through its annual contribution to the GDP of around 4.5%, significant foreign exchange earnings of about RM 60 billion (£11.5 billion) and gainful employment and business opportunities for more than a million people including at least 500,000 smallholders.

Click [here](#) for more information.

Seaweed funding



Pixabay

A Scarborough couple which set up England's first commercial seaweed farm has secured a £25,000 loan from the Business Enterprise Fund (BEF).

The couple began the venture into seaweed farming with support from the Coastal Communities Fund.

After seeing a significant increase in demand for their products and wanting to expand into bigger industries such as biochemicals, food additives, biofuels and plastics, they approached BEF for funding.

Click [here](#) for more information.

Research & Development

Biomass for water purification

The demand for low-cost water purification technologies has become a pressing issue due to rapid population growth in the world. At the turn of the last millennium, we already had over 1 billion people lacking access to safe drinking water and basic sanitation and nearly 4,000 children under the age of five dying each day. This situation has and will continue to worsen with the projected increase in population. Current water purification technologies, often relying on relatively expensive systems and synthetic materials, are non-sustainable for the poorest communities in the most water-distressed regions, where these communities are expanding the fastest. It is imperative that we break the paradigm of seeking solutions from existing technologies and instead explore new avenues for sustainable solutions that, as of yet, are unavailable.

Benjamin Hsiao from Stony Brook University argues that one possible solution to tackle the problem of 'affordable and sustainable' is to use abundant and underutilised biomass as a source for extracting functional nanostructured cellulosic materials, or nanocellulose, for water purification through effective and low-cost means.

Recently, nanocellulose has been shown as an effective sportive material with adsorption capacity often better than activated carbon for heavy metal removal from water because of the large surface area and functional sites. It is, thus, sensible to consider the use of nanocellulose, extracted from underutilised biomass sources, such as agriculture residues and invasive species

that are mostly non-wooden plants, for water remediation.

Furthermore, nanocellulose can be used as a barrier material to construct highly permeable water filtration membranes (e.g. microfiltration, ultrafiltration and nanofiltration) with superior properties (e.g. higher permeance and lower fouling) over commercial membranes.

The combined nanocellulose membrane and adsorbent technologies not only can provide sustainable solutions to deal with many off-the-grid drinking water challenges, but also will offer new platforms to advance cost-efficient water treatment processes in large industrial scale.

Click [here](#) for more information.

Spatial biomass data made available for Australia

The Australian Government has made spatial data on biomass resources available through the ARENA data platform, this has been done to facilitate project development. In addition, it is possible to spatially map other renewable sources of energy. Case studies are also available to select and examine. The level of detail varies between states, but residues of interest include, sugar cane bagasse, cotton gin trash, sorghum straw, wheat straw, forests harvest residues, wood processing residues, manures, urban waste and food processing waste.

Click [here](#) for more information.

Future Forests + Jobs initiative launched in US



Flickr

Future Forests + Jobs will launch today to advance a fact-based conversation around renewable wood energy and hold those who spread misinformation about the industry to account.

For years, activist organizations such as the Dogwood Alliance, Southern Environmental Law Centre, and Environmental Integrity Project have waged what forest and bioenergy interests have termed a ‘misinformation campaign’ against the wood biomass industry as well as the entire forest products sector. These efforts mislead the public about the integrated forest products industry – including timber and renewable wood energy – and its role as a necessary solution to mitigate global climate change, which has been repeatedly affirmed by the world’s leading climate research authority, the UN’s Intergovernmental Panel on Climate Change.

Future Forests + Jobs will combat misinformation through a new website – FutureForestsAndJobs.com – as well as through media engagement and other grassroots activities.

Click [here](#) for more information.

Tackling single use plastics- are brand owners doing enough?

An article in the online magazine Circular, for waste management professionals highlights that academics at the University of Surrey have investigated "bold" new food packaging pledges made by some of the world's most prominent brands.

The investigations questions whether these pledges will translate into measurable actions. The report finds that while some companies are framing their sustainability goals in complex scientific language, the effect of these company initiatives on single-use plastic reduction remains unclear.

What's more, it says "alarmingly" none of the sustainability pledges of these companies outlines exactly how their strategies are going to be measured.

Click [here](#) for more information.

Wood & Crop

Wood to diesel plant planned for Sweden

Thanks to a Dutch invention, cars in Sweden will soon be powered by a fuel made from wood residues such as sawdust. TechnipFMC and the Dutch company BTG-BTL based in Twente will design and build a production facility in Sweden where wood residues will be converted into bio-oil. It will be the first plant in the world where 'green fuel' will be produced and further processed in a refinery for motor vehicles.

The plant will convert roughly 35,000 – 40,000 tons of dry wood residues into oil each year using a special technology called pyrolysis. This oil is then processed in a refinery to produce advanced biofuels. With this produced pyrolysis petrol an equivalent of 15,000 family cars can be powered per year.

The biofuel is mixed with other types of fuel – biofuels as well as fossil fuels – resulting in a petrol and diesel that is partly composed of sustainable oil. This ensures that it will comply with the European RED II directive under which, starting in 2020, petrol must contain a certain fraction of renewable energy from sustainable sources such as wind, sun, and biomass.

Click [here](#) for more information.

Carlsberg towards paper beer bottle



Pexels

During the C40 World Mayors Summit in Copenhagen, Denmark, the Carlsberg Group issued an update on its journey to create the Green Fibre Bottle, the world's first "paper bottle" for beer.

Made from sustainably sourced wood fibres, it is both 100% bio-based and fully recyclable. The Group also announced it has been joined by other leading global companies that are united in their vision to develop sustainable packaging through the advancement of paper bottle technology.

These developments are a continuation of Carlsberg's sustainable packaging innovation journey and a key part of its sustainability programme Together Towards ZERO, including its commitment to zero carbon emissions at its breweries and a 30% reduction in its full-value-chain carbon footprint by 2030.

Click [here](#) for more information.

Renewable naphtha

Michigan-based Dow, in partnership with Finland's UPM Biofuels, a producer of advanced biofuels, announces the commercialization of a plastics offering for the packaging industry made from a bio-based renewable feedstock.

Dow is integrating wood-based UPM BioVerno renewable naphtha – a key raw material used to develop plastics – into its slate of raw materials, creating an alternative source for plastics production. Dow is using this feedstock to produce bio-based polyethylene (PE) at its production facility in Terneuzen, The Netherlands, for use in packaging applications such as food packaging to reduce food waste.

Following a successful year-long trial program, Dow is now planning to scale production and address the increasing global demand for renewable plastics.

Click [here](#) for more information.

Other Feedstocks

What do we need to do with Algae?



Pexels

Global Algae Innovations is working on a range of goals to improve the performance of algal production systems:

- to develop improved strains and cultivation methods to increase the algal biofuel intermediate yield by at least 70%,
- to develop new drying and extraction technology to reduce the energy for downstream processing by at least 50%,
- to work in an integrated outdoor system that reduces the projected minimum selling price (MSP) of algae biomass by 20%.

David Hazlebeck from Global Algae Innovations provides an illuminating overview prepared for the U.S. Department of Energy's Bioenergy Technologies Office to demonstrate the relevant technology they intend to develop as part of an application for public funding to address strain improvement, advanced cultivation methods, and more.

Click [here](#) for more information.

Welsh insect protein



Pixabay

SBRI-supported Bug Farm Foods has developed VEXo, a protein that can be used like minced meat, at its new R&D facility in St David's, Wales. VEXo has been developed by husband and wife team chef Andy Holcroft and entomologist Dr Sarah Beynon, who between them have also founded the UK's first full-time edible insect restaurant Grub Kitchen and the multi award-winning research centre and visitor attraction Dr Beynon's Bug Farm.

The innovative VEXo can be used in a similar way to minced meat, whilst reducing saturated fat by over 80%. Many insects contain weight-for-weight a similar amount of protein to beef and they can contain all nine essential amino acids. Insects can be farmed in high-welfare farms while requiring very little feed, water and space and emitting hardly any greenhouse gases.

Bug Farm Foods was funded by the Welsh Government and Innovate UK under the Small Business Research Initiative (SBRI) project to find a way to harness the nutrients contained in insects and deliver them in a form that is acceptable to our western palates.

Click [here](#) for more information.

Cellulosic fuels from agri-residues targeted in Poland

Specialty chemical company Clariant has announced a license agreement for its sunliquid® cellulosic ethanol technology with ORLEN Group member ORLEN Południe, a European fuels and energy markets player.

The agreement will help ORLEN Południe to realise a full-scale commercial plant for the production of cellulosic ethanol from agricultural residues, helping to establish the company as a leader in the Polish biofuels industry.

ORLEN Południe will use Clariant's technology for a proposed plant at its Jedlicze site in the southeast of Poland. According to the company, the facility will have an estimated annual production capacity of 25,000 tonnes.

Click [here](#) for more information.

Coca Cola - utilises marine plastics in sample bottles

Coca-Cola is unveiling the first ever sample bottle made using recovered and recycled marine plastics, demonstrating that, one day, even ocean debris could be used in recycled packaging for food or drinks. This sample is the first ever plastic bottle made using marine litter that has been successfully recycled and reused in food and drink packaging.

About 300 sample bottles have been produced using 25% recycled marine plastic, retrieved from the Mediterranean Sea and beaches. A small step for now, but the technology behind it has big potential. The marine plastic bottle has been developed to show the transformational potential of revolutionary 'enhanced recycling' technologies, which can recycle previously used

plastics of any quality back to the high-quality needed for food or drinks packaging.

Enhanced recycling technologies use innovative processes that break down the components of plastic and strip out impurities in lower-grade recyclables so they can be rebuilt as good as new. This means that lower-grade plastics that were often destined for incineration or landfill can now be given a new life. It also means more materials are available to make recycled content, reducing the amount of virgin PET needed from fossil fuels, and resulting in a lower carbon footprint.

The sample bottle is the result of a partnership between Ioniqa Technologies, Indorama Ventures, Mares Circulares (Circular Seas) and The Coca-Cola Company. Although enhanced recycling is still in its infancy, the partners produced the sample marine plastic bottle as a proof of concept for what the technology may achieve in time.

Click [here](#) for more information.

Events

European Biosolids & Organic Resources Conference Manchester, 19th-20th November 2019

The conference gives an essential annual update on: legislative changes, new technologies, best practice and site-experiences with existing technologies, and an insight into relevant research in biosolids and organic resources production and use.

Click [here](#) for more information.

CannaBiz Innovation Hub London, 4th-5th December 2019

Unique platform to debate best practices that are imperative to enabling scale, efficiency and industrialisation of products and medicines in the emerging legal cannabis markets.

Alongside the cannabis industry leaders will also feature the experience of large CPG's and pharma organisations in enabling scale of innovative products with "problematic" ingredients.

The Cannabis market is moving extremely fast, in order to embrace hyper-growth opportunities, execute breakthrough industry-firsts and sustain market leadership – you need to be armed with contacts, knowledge and the enterprise vision.

Click [here](#) for more information.

RSB Annual Meeting Berlin, 5th-6th December 2019

Join us at the 2019 RSB Annual Meeting, sponsored by Agrisoma, Airbus and UPM Biofuels, where we will be unlocking the tools and strategies being employed by leaders across the advanced bioeconomy as they embed real sustainability in every layer of their operations.

Members, brand leaders and innovators, certified operators, feedstock producers and non-profits are invited to join us in Berlin for two days of discovery and practical insight.

Click [here](#) for more information.

The 3rd World Bioeconomy Forum Ruka, 9th-11th September 2020

Bringing leading edge bioeconomy face-to-face with one of the world's unique areas of outstanding natural beauty and biodiverse forests. The 3rd World BioEconomy Forum will be held at Ruka on September 9–11, 2020. World BioEconomy Forum will bring together major think tanks, regulators and operators in this famous holiday resort in northeast Finland.

Click [here](#) for more information.

Feedstock Prices

UK spot prices of bagged wood pellets, and wheat and barley straw. Arrows indicate rise ↑, unchanged – or fall ↓ from previous month.

Date	UK Wood Pellets Delivered	UK Ex-Farm Barley Straw	UK Ex-Farm Wheat Straw
	(£/tonne, 5% VAT)	(D1000) (£/tonne)	(D1000) (£/tonne)
14 Oct	287.13-287.13 (↑-↑)	40-50(--↓)	30-45(↓-↓)

For wood pellets prices we considered UK pellet traders selling prices.

For details on straw spot prices, see <http://www.farming.co.uk>

UK (LIFFE), French (MATIF) and US (CBOT) future prices for wheat, rapeseed, maize, and soybean. Arrows indicate rise ↑, unchanged – or fall ↓ from previous month's predictions.

Date	UK (LIFFE) Feed Wheat (£/tonne)	MATIF Wheat (€/tonne)	MATIF Rapeseed (€/tonne)	CBOT Wheat (cnts/bsh)	CBOT Maize (cnts/bsh)	CBOT Soyabean (cnts/bsh)
Nov-19	135.7 (↑)		383.7 (↑)			936.00 (↑)
Dec-19		180.5 (↑)		508.0 (↑)	397.7 (↑)	
Jan-20	137.3 (↑)					950.50 (↑)
Feb-20			384.2 (↓)			
Mar-20	140.0 (↑)	183.5 (↑)		514.0 (↑)	407.7 (↑)	961.00 (↑)
May-20	143.3 (↑)	185.7 (↑)	382.0 (↓)	518.5 (↑)	412.7 (↑)	968.50 (↑)
Jul-20	147.9 (↑)			522.2 (↑)	416.5 (↑)	976.75 (↑)
Aug-20			369.0			978.75
Sep-20		183.7 (↑)		529.2 (↑)	407.7 (↑)	
Nov-20	146.8 (↑)		371.2 (↑)			
Dec-20		186.5		541.0	410.0	
Jan-21	148.3 (↑)					
Feb-21			370.7			
Mar-21	150.4	188.0				
May-21	151.3 (↑)	189.2				
Sep-21		185.2				
Nov-21	148.6 (↑)					

For details on future prices see <http://www.hgca.com>

Other biomass feedstock prices are available upon request, simply contact enquiries@nnfcc.co.uk

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