NNFCC News Review

Feedstocks

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

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

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Foreword

Welcome subscribers, to our October Feedstocks News Review.

The recent nationwide lockdown due to the Covid-19 pandemic has led to a significant reduction in fuel consumption and electricity supply. More specifically, between May and July 2020, the UK's Major Power Producers (MPP) recorded a decrease of 9.4% in electricity generated, compared to the same period the previous year. Of MPP's total electricity supply, the fossil fuel-based feedstocks gas and coal provided 39.9% and 0.6% respectively. However, those numbers do not take away from the exciting 12.9% rise in bio-based electricity supply registered over that same three-month period compared to 2019. The increasing demand for bio-based fuel and energy is now a worldwide trend which has sparked an international effort striving to make the transition towards sustainable energies faster and more cost-effective.

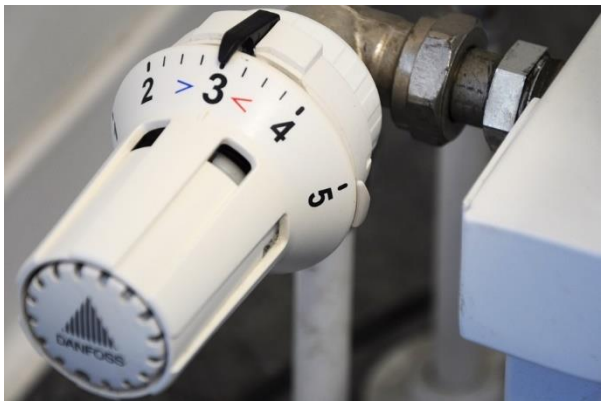
Joining the search for novel feedstock sources, Alliance BioEnergy are trialing Giant King grass as a new source of cellulosic feedstock. Should the testing produce positive results, this resource could become an alternative to corn stover, producing more biomass, costing less and requiring less space. Far from being obsolete however, corn remains an important source of bio-based feedstock and a crucial part of the bioeconomy sector as a whole. Cargill and Virent, Inc are currently assessing the viability of incorporating sugar extracted from corn into Virent's biofuels and biochemicals technology. Should this project be successful, the availability of this dextrose sugar, spanning several widely produced crops, would render the production of biofuel and other commodity chemicals easier and potentially cheaper.

The challenges of producing bioenergy from bio-based feedstock are well-known, which provides researchers with ample opportunities to identify new ways of rendering the processes quicker and cheaper. Recently, it has been discovered that pre-treating cellulose and lignocellulose using plasma – which applies atomic and molecular pressures onto the treated material - and microwave discharges, facilitates the bacterial-induced breakdown of the materials, and accelerates the production of biogas from anaerobic digestion processes.

Read on for the latest news.

Policy

Biomass for Heat Statistical Report 2020



Pixabay

Bioenergy Europe has announced the fourth chapter of its Statistical Report 2020 focusing on biomass for heat, highlighting the essential – yet neglected - role of the heating and cooling sector in 2050 European carbon neutrality.

The National Energy and Climate Plans of European Member States set the average RES share in the sector for 2030 at 40%. While it represents a significant increase from the current share of 19.7%, to achieve carbon neutrality by 2050, the 2030 targets should be revised upwards. The Renewable Energy Directive additionally includes a soft target that aims to drive the penetration of renewables in the heating & cooling sector. However, almost no Member State seems to have taken the required 1,3pp annual increment when calculating their 2030 objectives.

Overall, the Statistical Report on Bioheat sets out a number of essential recommendations. For one, fossil fuel subsidies must be phased out and replaced with the promotion of biomass district heating. Furthermore, the Renovation Wave needs to support and promote the replacement and modernization of old and inefficient residential installations with modern, high-quality biomass appliances.

Click here for more information.

Markets

Giant King Grass trials planned for Florida

Biofuels international reports Alliance BioEnergy (Alliance) has leased 18 acres of land in south-west Florida to establish a test plot for Giant King Grass as a renewable cellulosic feedstock.

Giant King Grass grows all year round up to 20ft tall and can be harvested multiple times. According to Alliance, the crop can produce up to 44 tons per acre of cellulosic feedstock, which has a composition similar to corn stover. Corn stover can only produce 3.5-5 tons per acre and be harvested once per year. The Giant King Grass advantage in tons-per-acre-harvested will also "dramatically reduce" the total acreage needed to supply feedstock to a given sized facility. The harvest can be staggered, reducing the need for large amounts of feedstock storage, common to other crops.

The grass will produce for at least 5-7 years before needing to be replanted.

Click here for more information.

Biocarbon plant for silicon supplier Elkem

Elkem has decided to invest in a new biocarbon pilot plant in Canada. The project aims to secure industrial verification of Elkem's technology for renewable biocarbon, with a long-term goal of contributing to climate-neutral metal production. The technology also has potential for application in other industry sectors, contributing to reduced CO_2 emissions. Elkem aim to secure long-term access to low-cost, high-quality renewable biocarbon to replace fossil coal. Elkem will pilot an industrial biocarbon process tailor-made for silicon and ferrosilicon production. Using climate-neutral renewable biocarbon instead of fossil coal as a reduction agent is a key part of Elkem's sustainable production strategy. Elkem already uses close to 20 per cent biocarbon in its production in Norway and the company is working towards increasing this to 40 per cent by 2030.

The total investment for the pilot plant amounts to NOK 180 million. The project has received financial support from the Canadian government, the Québec government and the city of Saguenay, reducing Elkem's net investment to NOK 60 million. The plant will be constructed near Elkem's production site in Chicoutimi, Quebec, Canada, with start of construction planned for the second half of 2020. Based on conclusions from the pilot, Elkem will evaluate the basis for a full-scale plant.

Click here for more information.

New flagship biorefinery to receive €11.6 million BBI JU funding

ReSolute, a new flagship project aiming to build a first-of-its-kind industrial plant for the production of a green, high-performing solvent from wood biomass, has received a €11.6 million grant from BBI JU. The project will run for three years. With ReSolute, BBI JU is now supporting 124 projects with €717.6 million in total.

Click here for more information.

Japan's utility Chubu Electric Power and trading house Marubeni plan to build a biomass power plant

Pxfuel

Taking advantage of the country's feed-in-tariff (FiT) scheme, Chubu and Marubeni will construct the 7.5MW biomass power plant at Godo in central Japan's Gifu prefecture through their 50:50 joint venture Gifu Seino Green Power. Construction is scheduled to begin in October next year, targeting commissioning in March 2023.

The new power plant is designed to burn wood chips produced mainly by domestically-supplied unused timber from forest thinning, to produce around 53GWh/yr of electricity that can meet demand from 17,000 households.

Click here for more information.

Quadpack Wood inaugurates biomass plant

Quadpack's wood components factory in Torelló, Spain has taken a step towards carbon neutrality with the inauguration of a new biomass plant. The company will now use its own wood scraps to generate energy for its dryers, heating and air conditioning, eliminating the need for fossil fuels.

The €2m investment took nine months to build and follows the 2016 installation of a regenerative thermal oxidiser (to eliminate VOC emissions) and the site's 2017 move to using electricity from renewable sources, which has since been expanded to Quadpack's other facilities.

Click here for more information.

Cargill and Virent collaborate to produce biobased fuels and chemicals

Cargill and Virent, Inc. are working together to evaluate the use of Cargill's corn dextrose as a feedstock to Virent's BioForming® technology for the production of "drop-in" low-carbon biofuels and biochemicals.

Virent's BioForming® technology uses sugars found in plants as a feedstock to produce drop-in renewable gasoline and jet fuel, as well as lower carbon biochemicals, including bio-paraxylene, a key raw material for producing 100% renewable and recyclable biopolyester. The sugars may originate from any plant source, including first generation crops such as corn, sugar cane and sugar beets, as well as lignocellulosic materials derived from wood, corn stover, bagasse and other sources.

Upon completion of the study, Virent will use the findings to evaluate options for scale-up and the development of a first commercial plant utilizing the BioForming® technology. The long-term objective is to use commercially available feedstocks today as a bridge to next-generation lignocellulosic feedstocks in the future.

Click here for more information.

Research & Development

A natural alternative to carbon fibres give Porsche extra zoom at Nürburgring 24h race

Pxfuel

Porsche Motorsports premiered a partnership with technology leader Bcomp and Four Motors racing team to run full natural fibre bodywork at the legendary Nürburgring 24h race last weekend. Thanks to the powerRibs technology, the natural fibre parts cannot only match the performance of traditional monolithic carbon fibres, but also offer additional key benefits when it comes to sustainability (75% lower CO_2 footprint and viable end of life options), cost reduction (up to 30% lower material cost) and safety (ductile crash behaviour without sharp shattering).

Both companies have worked closely together on the development of the natural fibre body kit, from Bcomp's reverse engineering the carbon fibre parts into equivalent natural fibre parts, through iterations and manufacturing. It uses the same manufacturing technology and even the same moulds as the carbon fibre parts – with an important difference. Consumables such as bleeders and breathers can be eliminated, further reducing the environmental footprint and costs.

Click here for more information.

Inducing plasma in biomass could make biogas easier to produce

Producing biogas from the bacterial breakdown of biomass presents options for a greener energy future, but the complex composition of biomass comes with challenges. Cellulose and woody lignocellulose are especially hard for bacteria to digest but pre-treatment can make it easier.

Researchers have tested plasma formation in biomass and found a promising method: A plasma-liquid interaction forms reactive species that help break down the biomass.

Click here for more information.

Mobile processing unit quickly turns biomass into pellets

The EU-funded project Proxipel has designed a mobile pelletising unit, which can transform a huge variety of biomass types into easily transportable pellets, at a rate of 1 tonne per hour.

The Proxipel unit is the first mobile pelletising unit that can crush, mill, dry and press a wide variety of renewable raw materials. These include hardwood, wood from recycling centres, vine branches, forest residues, leaves, straw, hay, mill dust, manure and coffee grounds.

The unit contains a dryer that burns to remove moisture from the woody mass. Proxipel can reduce humidity from 60 % to 13 %. A heat exchanger also captures and recycles part of the escaping heat and introduces it back into the system.

Click here for more information.

New biomass opportunities come from non-traditional sources

Pxfuel

The Canadian pulp, paper, and bioproducts industry has historically produced traditional products like pulps for copy paper, printing, and newsprint but recently, due to a reduction in market demand for paper, the industry has been expanding into the development of new transitional grades. Research is focusing on finding non-traditional end-use applications for cellulose fibre and looking into other industries such as construction, cosmetics, pharmaceutical, and transportation.

Click here for more information.

Tillage report calls to reward green credentials of farmers and tackle key challenges

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"Crops 2030: A strategic plan to deliver environmental and economic stability for the Irish crops sector" is a recent report compiled by the Teagasc Tillage Crop Stakeholder Consultative Group. The document highlights the fact that the Irish tillage sector faces various challenges "which currently restrict its development", and stresses that the sector should "reward" producers for the environmental credentials of their produce and land use.

More specifically, in terms of opportunities in the renewable energy field for the sector, the document said:

"The non-food use potential of crops such as willow, miscanthus and hemp can contribute to GHG [greenhouse gas] reduction in energy use and displace fossil fuel based building and manufacturing products with renewable fibre alternatives [...] The sector can also provide feedstock for anaerobic digesters and utilise the digestate as organic amendments to the soil."

Click here for more information.

Biomass production on marginal land and its impacts on biodiversity and ecosystem services

To address the challenges and opportunities linked to production of agricultural biomass for bioenergy in Sweden, the multidisciplinary research project Land4Biomass was initiated. The study aims to understand the impacts of bioenergy-related land-used changes for above-ground biodiversity and associated ecosystem services on a local and a landscape level.

One of the core questions of the project is about knowing where to grow this biomass. To answer this, integrated data analyses of marginal or abandoned land will be done. Remote-sensing in combination with databases, ground truthing, and stakeholder surveys will be used to assess the current potential of biomass production. This information will be combined with a literature review of the latest knowledge in the field. Based on different bioenergy policy options, biodiversity impacts will be assessed through spatially-explicit models linking land use to crop pollination and/or species abundance.

Click here for more information.

Wood & Crop

BLC ramps up shea production for confectionery and bakery with first African plant

Bunge Loders Croklaan (BLC) has officially unveiled its first shea processing plant in Africa, pegged as the largest of its kind on the continent. Located in Tema, Ghana, the new facility is a fully

automated solvent fractionation plant that processes raw shea butter made from locally collected and crushed shea nuts. Alongside this, the company is actively developing partnerships with local crushers, which in turn increases the holistic gains for local women's cooperative groups.

Click here for more information.

Novel bioenergy pellets being developed to reduce Yorkshire's carbon footprint and help its wildlife

A feasibility study, led by the Biorenewables Development Centre (BDC) will investigate the commercial production of sustainable, locally sourced materials, such as municipal and woodland waste, to produce biomass boiler pellets. The new, cheaper, pellets will help to reduce the region's carbon footprint and provide a source of income for nature reserves and other conservation efforts.

The high price of biomass pellets in York and North Yorkshire threatens the continued operation of wood-fired boilers and could drive up the carbon footprint of the region if they are shut off in favour of fossil fuels.

The researchers will assess waste streams from the sustainable management of Yorkshire's woodlands, parks and nature reserves, alongside the University of York's waste streams (food, cardboard, wood), using pilot-scale facilities based at the BDC, near York. The study will also assess the potential for sourcing material from Yorkshire's forestry industry. The environmental impacts of the scheme will also be assessed.

Click here for more information.

Other Feedstocks

Waste tyres to pyrolysis oil

Pixabay

BASF has signed an uptake supply agreement with the Hungary based New Energy, a technology company specialized in the pyrolysis of waste tires. New Energy will supply BASF with up to 4,000 metric tons of pyrolysis oil per year derived from waste tires. In a pilot phase, first volumes of the pyrolysis oil have already been utilized successfully in BASF's integrated chemical production site in Ludwigshafen, Germany.

The agreement is part of BASF's ChemCycling project which was started in 2018 and focusses on chemically reprocessing post-consumer plastic waste on an industrial scale.

The focus of the project remains the use of mixed plastic waste, which would otherwise end up in landfill or incineration. In addition, BASF also sees an opportunity to increase recycling rates for end-of-life tires.

Click here for more information.

Method to assess biomass in scrap tires

A new publication in the Environment, Development and Sustainability Journal, reports on a study to develop a methodology to assess natural rubber content in scrap tires. A methodology has been implemented in order to define an undifferentiated tire which is independent of brand tires or light or heavy tires. The method was validated using calibrated samples. It allows to establish a simple methodology to determine the fraction of biomass in the alternative fuel under study.

According to the results achieved, the proposed methodology would be used in facilities which use scrap tires as fuel. This research simplifies the determination of biomass content in scrap tires in a specific region or country, and it could be a reference to be consulted by stakeholders.

Click here for more information.

Events

Global Bioeconomy Summit
Online, 19th-20th November 2020

The third Global Bioeconomy Summit #GBS2020 with the support of the German government. Since the first summit in Berlin in 2015, the summits have established themselves as a unique format for global exchange on bioeconomy policy, governance and sustainable development.

Click here for more information.

European Biosolids & Bioresources Conference
Online, 24th-25th November 2020

Celebrating its 25th year, this industry-leading conference provides an essential annual update on the latest innovations, best practice, cutting-edge technology and research in the wastewater and resource management industries.

Click here for more information.

RRB 2021
Aveiro, 6th-8th September 2021

The 17th edition of the International Conference on Renewable Resources & Biorefineries will take place in Aveiro, Portugal from Monday 6 Sept until Wednesday 8 Sept, 2021. Based on the previous RRB conferences, this conference is expected to welcome about 350 international participants from over 30 countries.

Click here for more information.

RWM 2020
Birmingham, 22nd-23rd September 2021

The UK's largest Recycling, Resource & Waste Management Event, features over 180 expert speakers across the waste management and circular economy industries, over 500 exhibitors and numerous experiential features and live demonstrations.

Click here for more information.

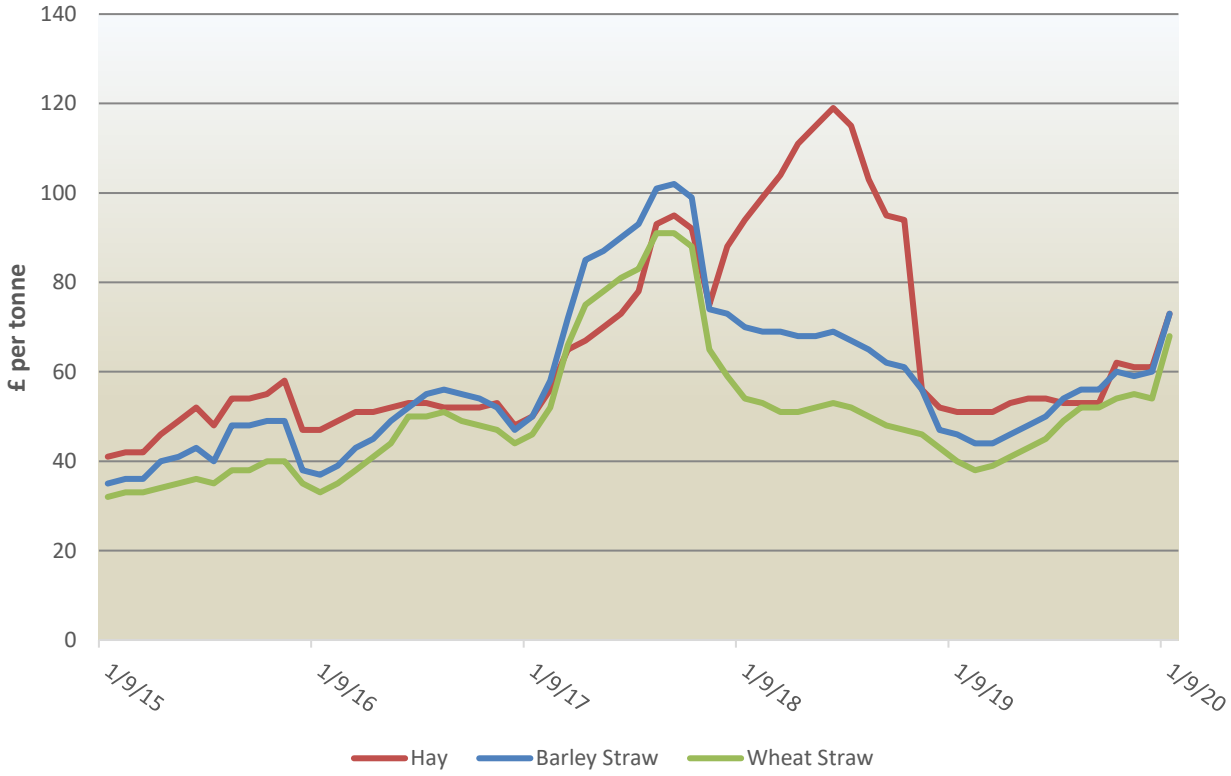
Feedstock Prices

UK spot prices of bagged wood pellets, delivered. Grain and oilseed prices are across all main regions of the UK.

	Wood Pellets £/tonne, 5% VAT	Milling wheat £/tonne, ex-farm	Feed wheat £/tonne, ex-farm	Feed barley £/tonne, ex-farm	Oilseed rape £/tonne, ex-farm
High	321.43	203.00	180.00	136.00	342.00
Low	260.00	195.00	167.00	126.00	332.00
Average	285.98	197.95	175.12	132.58	339.15

For wood pellets prices we consider UK pellet traders advertised selling prices.
For details on grains and oilseed prices, see Farmers Weekly.

Monthly prices of ex-farm Hay and Straw in England and Wales. Prices shown are for 5 years up to September 2020.



Source: British Hay and Straw Merchants' Association, Defra

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

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