

The Bioeconomy Consultants

NNFCC 

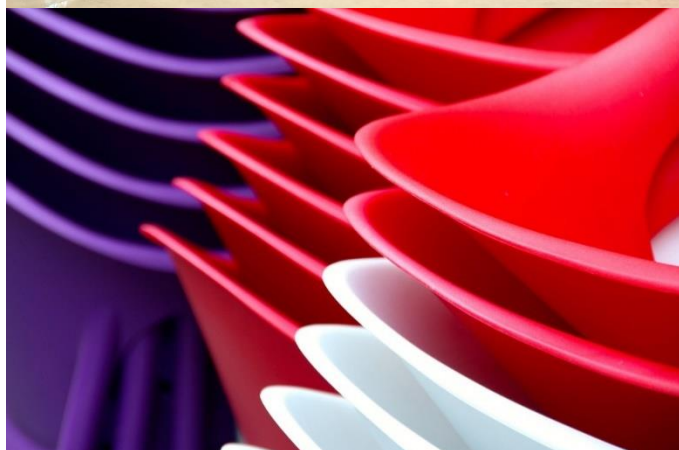


News Review

Issue Sixty-Five

August 2017

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



Contents

Contents.....	2
Foreword.....	3
Policy.....	5
Markets.....	7
Research & Development.....	7
Polymers	10
Chemicals	13
Consumer Products.....	15
Events.....	16
Price Information.....	19

Foreword

A warm welcome to August's Biobased Products News Review from NNFCC.

We begin, as we often do, on the continent, with some concerning news from Horizon2020-funded ProBIO project. An analysis conducted by this project has looked into the success rate of EU bioeconomy projects funded by the EU's 7th Framework Programme. The analysis has uncovered that less than 5% of such projects have successfully produced something able to be immediately brought to market, even if they resulted in future commercially valuable developments. This result shows that whilst the EU's projects have been successful at furthering knowledge in the bioeconomy, the commercial value of these endeavours has been limited, which the authors put down to lack of attention paid to market conditions during research, and failure to involve commercially-minded parties in projects. This has created a culture where technological breakthroughs are prioritised without considering what comes next. FP7's successor, Horizon2020, has a much clearer focus on commercial viability, bringing developments from "the lab to market", and so perhaps this will result in an improvement in bio-based research developments' market success.

At the other end of the circular economy cycle from bringing new products to market is the handling of waste, and in response to the European Commission's "Roadmap for a Strategy on Plastics in a Circular Economy", the European Bioplastic Association (EUBP) has highlighted areas they feel the Commission should focus on. At present, the Roadmap focuses on prevention and reduction of plastic waste, but EUBP argues that since the necessary technology, standards, and certification exist, more focus should be placed on what they term "organic recycling", consisting of industrial composting, and anaerobic digestion of plastics. Such a scheme would complement traditional mechanical plastic recycling as well as providing (in the latter case) renewable energy – adding another input stream to the circular economy.

Over in the US, the financial incentives for producing biobased chemicals (aside from access to an ever-growing market) may be set to increase, as legislation has been tabled that would provide tax credits for companies producing biobased chemicals. The important detail is that these chemicals need to be at least 95% biobased. This provides an incentive to companies whose chemicals are not yet fully biobased to continue development, as they would see increasing benefit as the biobased content increases. This will also be good news to Novamont, who this month also announced a 40% biobased minimum for all of their plastic, which still qualifies for the tax credit as long as they produce 95+% biobased monomers – what happens to the biobased monomers afterwards is not relevant.

Lastly, those familiar with NNFCC will know Dr Adrian Higson, our lead consultant for biobased products, and Bob Horton, whose words you are presently reading, are long-term members of the scouting movement and thus love all things outdoors. No doubt,

then, will it be music to our ears that our “Consumer Products” section of this News Review has a strong “outdoorsy” focus. We’ve reported before on the variety of applications that Dupont Tate & Lyle have found for biobased plastics and chemicals - from clothing to sunscreen – and this Summer they are set to unveil a new range of various outdoors equipment, including waterproofs, footwear, and a beer-cooler bag (please drink responsibly!). But it is not just Dupont Tate & Lyle, as Reverdia’s Biosuccinium biobased plastic has been used as a material in a new brand of hiking boots, and these new products join a market that already features Patagonia’s Yulex natural rubber wetsuit, and Bergans’ bio-based Eidfjord waterproof jacket. Biosuccinium is forming the base material for the shoes’ toe-caps and heel counters; both such parts of hiking shoes need to be highly durable, and thus this application demonstrates the high performance and durability we have come to expect from bio-based plastics, while simultaneously being sustainable. As development and market proliferation continues, this is only going to increase.

Read on for the latest news.

Policy

EU's FP7 bioeconomy projects have less than 5% success rate



FP7

An analysis by the Horizon 2020 ProBIO project has found that less than 5% of bioeconomy projects funded by the EU's 7th Framework Programme for Research and Innovation (FP7) have results with the potential to be introduced to market. ProBIO has screened more than 400 projects funded by FP7's Knowledge-Based Bioeconomy (KBBE) Programme and found that whilst projects have supported the generation of new knowledge, few are close to being ready to cause widespread socio-economic impact through commercialisation.

The common assumption is that the EU has excellent research, but it is not turned into market success only because Europe lacks entrepreneurial capacity and there is a 'knowhow gap' concerning the needs of commercial exploitation. However, ProBIO found that there are more complex, structural barriers behind the low commercial performance of European research programmes.

These have taken a technology-push approach, thus ignoring market conditions, have not included enough commercially active partners, and have not provided full innovation process support.

Click [here](#) for more information.

Tax credits for bio-based chemicals tabled in US

US Representative Bill Pascrell recently introduced legislation in the US Senate that aims to establish a 15-cent-per-pound production tax credit for renewable chemicals made from biomass.

According to the text of the bill, the production credit would be 15 cents per pound of biobased content of each renewable chemical produced during the taxable year by the taxpayer or for the taxpayer by a contract manufacturer under a binding written agreement.

Eligible renewable chemicals would include those made in the U.S. from renewable biomass that are sold or used by the taxpayer for the production of chemical products, polymers, plastics or formulated products, or as chemicals, polymers, plastics for formulated products. To claim the tax credit, the renewable chemicals would have to contain at least 95 percent biobased content and be produced using biological conversion, thermal conversion or a combination of the two processes using renewable biomass as a feedstock. Renewable chemicals sold or used for the production of any food, feed or fuel are not eligible. Certain other exemptions are listed within the bill.

The legislation would also allow the taxpayer to claim an investment tax credit in lieu of the production tax credit. The investment tax credit for any taxable year would be equal to 30 percent

of the basis of any eligible property that is part of a renewable chemical production facility placed in service by the taxpayer during such taxable year.

The bill also places an aggregate limit of \$500 million on the total amount of credits that may be allocated under the program, with the limit on credits that may be allocated to any taxpayer for any taxable year set at \$25 million.

The legislation calls for a program to be established to allocate credit amounts to taxpayers based on job creation, innovation, environmental benefits, commercial viability and contribution to U.S. energy independence.

Click [here](#) for more information.

EU Parliament moves to support biodegradable mulch films



Wikimedia Commons

The European Parliament's Committee on Internal Market and Consumer Protection (IMCO) has adopted its report amending the European Commission's proposal for a revision of the Fertilisers Regulation. In its report, the IMCO Committee acknowledges the innovative potential of biodegradable mulch films, which provide positive agronomical effects and help to avoid the generation of microplastics on fields. European Bioplastics (EUBP), the association representing

the interests of the bioplastics industry in Europe, welcomes the support for this modern and efficient agricultural practice by the members of the IMCO Committee as well as the opinion-giving expert Committees on Agriculture and Rural Development (AGRI) and on the Environment, Public Health and Food Safety (ENVI).

Biodegradable mulch films have been available on the market for more than 15 years, backed by solid scientific and technical knowledge, and meeting a high level of acceptance among European farmers growing fruits and vegetables. They play an essential role in modern agriculture as they deliver positive agronomical effects such as increasing yield, improving quality of crops, weed control, and reduction of water irrigation and pesticides. Additionally, they offer distinctive advantages at the end of the crop cycle as they can be left on the field and ploughed under, which significantly reduces the agricultural plastic waste and potential soil pollution.

Click [here](#) for more information.

Amyris announces next step of Queensland relationship

Amyris, Inc., the industrial bioscience company, and the Government of Queensland, Australia today announced the next step their plans to develop a leading industrial biotechnology hub in Southeast Asia. Plans call for developing a new production plant with support from local partners to produce Amyris's sugar cane-based ingredient called farnesene, which is used in products including cosmetic emollients, fragrances, nutraceuticals, polymers, and lubricants.

Acceleration of this project, which was first announced on December 6, 2016, came out of the Queensland Government's Biofutures Acceleration Program that offers support to companies to build commercial-scale biorefineries in regional Queensland. Amyris was chosen based on its

legacy expertise in operating such production facilities.

Amyris and the Government of Queensland have successfully partnered on a number of initiatives since 2010 designed to foster adoption of renewable product solutions targeting large global markets while also supporting the development of a Queensland-based biotechnology industry using feedstock from local sugarcane.

Click [here](#) for more information.

Markets

Market Research Store analyses bio-based Butanol industry

This report analyses the Bio-based Butanol industry from two aspects. One part is about its production and the other part is about its consumption. In terms of production, the report analyses the production, revenue, gross margin of the industry's main manufacturers and the unit price that they offer in different regions from 2012 to 2017. In terms of consumption, the report analyses the consumption volume, consumption value, sale price, import and export in different regions from 2012 to 2017. It also makes a prediction of production and consumption in the upcoming period 2017-2022.

At the same time, the report classifies different Bio-based Butanol based on their definitions. Upstream raw materials, equipment and downstream consumers analysis is also carried out. What is more, the Bio-based Butanol industry development trends and marketing channels are analysed.

Click [here](#) for more information.

Research & Development

New project Enzymicals pursues bio-based Polyacrylonitrile



Enzymicals

Biocatalytic produced acrylonitrile is of great industrial interest to the "CO2 footprint" of polyacrylonitrile (PAN) fibre production. To address this, the main component for the production of PAN fibres, acrylonitrile, will be completely synthesized from renewable resources.

The objective of this project is to investigate whether renewable raw materials can serve as a starting point for competitive biocatalysed polyacrylonitrile (PAN) fibres / precursors and to identify "green alternatives" to petroleum-based production routes.

For this purpose, acrylonitrile (ACN) is to be produced from biomass at several stages. The starting material is bioethanol from biomass. This is converted into acrylonitrile in several synthesis steps. For this, established classical chemical reactions are combined with a new biocatalytic pathway. Thus, this route would enable the production of biobased acrylonitrile.

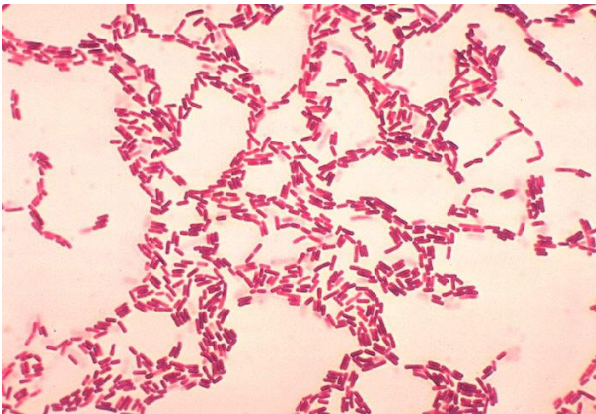
Enzymicals AG will establish the biocatalytic synthesis step, scale it up, demonstrate and characterize it. Dralon GmbH will investigate the polymerization of biocatalytically prepared

acrylonitrile. Then this polyacrylonitrile is spun into fibres so as to evaluate its suitability for producing biobased PAN fibres.

The development of an innovative conversion method based on glucose as a renewable raw material, positioned the overall project as a research, development and piloting project in the area of the use of renewable raw materials.

Click [here](#) for more information.

Bacteria to produce lactic acid from lignin



Wikimedia Commons

Three *Bacillus coagulans* strains were characterised in terms of their ability to grow in lignin-containing fermentation media and to consume the lignocellulose-related sugars glucose, xylose, and arabinose. An optical-density high-throughput screening was used for precharacterisation by means of different mathematical models for comparison (Logistic, Gompertz, Baranyi, Richards & Stannard, and Schnute). The growth response was characterised by the maximum growth rate and lag time. For a comparison of the screening and fermentation results, an unstructured mathematical model was proposed to characterise the lactate production, bacterial growth and substrate consumption. The growth model was then applied to fermentation procedures using wheat straw hydrolysates. The

results indicated that the unstructured growth model can be used to evaluate lactate producing fermentation. Under the experimental fermentation conditions, one strain showed the ability to tolerate a high lignin concentration (2.5 g/L) but lacked the capacity for sufficient pentose uptake. The lactate yield of the strains that were able to consume all sugar fractions of glucose, xylose and arabinose was ~83.4%. A photometric measurement at 280 nm revealed a dynamic change in alkali-lignin concentrations during lactate producing fermentation. A test of decolourisation of vanillin, ferulic acid, and alkali-lignin samples also showed the decolourisation performance of the *B. coagulans* strains under study.

Click [here](#) for more information.

Waste resource recovery in the future of bio-based processes

The promise of transforming waste streams with small economic value into valuable products makes resource recovery technologies in bio-based production processes an attractive proposition. However, the use of resource recovery technologies in industrial applications is still minimal, despite its wide use in closely related processes such as dairy production. In this paper, a perspective on the role of resource recovery in bio-based production processes is provided through reviewing the past practice and identifying the benefits, opportunities and challenges of introducing resource recovery technologies to industrial bio-based production processes. The role and importance of economics, technology readiness and socio-environmental impacts of resource recovery in successfully implementing resource recovery technologies in industrial bio-based production processes is also discussed. Finally, based on the insights gained in this review and assessment of resource recovery technologies in the domain of bio-based

production processes, an informed opinion and perspective is provided. The current state of resource recovery and the shortcomings when developing practical resource recovery applications in bio-based production processes are discussed.

Click [here](#) for more information.

Avantium acquires pilot plant, begins scale-up of Zambezi process



Avantium

Avantium, a leading chemical technology company and forerunner in renewable chemistry, has located a new pilot biorefinery at Chemie Park Delfzijl, the Netherlands. Avantium and AkzoNobel have signed a contract for the pilot plant accommodation and the supply of various facilities and services.

The pilot plant will validate the technical and economic feasibility of Avantium's Zambezi process, which aims to convert woodchips and other second-generation biomass into raw materials for the chemical industry. This is an essential step in scaling up the technology from lab to commercial operations. The pilot plant will be located at the Chemie Park Delfzijl, a part of Chemport Europe and is supported by the Groningen province. The plant is expected to be operational in the second quarter of 2018 with Avantium's Zambezi project on track. This

milestone achievement will lead to the employment of approximately 20 people.

In February 2017, Avantium announced a partnership with AkzoNobel, Chemport Europe, RWE and Staatsbosbeheer for the development of a reference plant at the Chemie Park Delfzijl to convert woodchips to renewable chemical building blocks.

This biorefinery will be based on a new technology that has been developed by Avantium. The Zambezi process aims for a cost-effective process for the production of high-purity glucose, lignin and a mixed sugar syrup from non-food, second generation biomass. The reference plant will predominantly use forestry residue sourced from the Netherlands.

Glucose is required for the manufacture of products including vitamins, enzymes and other biobased chemicals and raw materials. Lignin is an excellent feedstock for renewable energy and other applications, while the mixed sugar syrup is a good feedstock for the production of ethanol and other biofuels.

Click [here](#) for more information.

Polymers

Novamont introduces 40% bio-based minimum for all its plastics



Novamont

At the G7 environmental summit in Bologna this past weekend, Novamont has announced it has taken a unilateral decision to introduce a 40% minimum threshold for bio-based content in all of its MATER-BI bioplastics, helping reduce CO₂ emissions by an annual equivalent of 75,000 city cars from the streets of our cities. More environmentally sustainable products with a renewable raw material content of up to 100% for specific applications will be made available and will be certified through the Kyoto Club e-label! environmental multi-label.

This milestone was achieved thanks to over 700 million Euros invested by the company in unprecedented proprietary technology, the regeneration of decommissioned industrial sites and the creation of new jobs in the past twenty years. MATER-BI bioplastics now incorporate monomers from renewable sources produced in Novamont biorefineries.

The company is bringing forward the targets of Italy and France for bio-based content for certain applications (e.g. fruit and vegetable bags), for which a minimum threshold of 40% will be established from 2018.

These products have been optimised from an environmental perspective in view of the pressing need to minimise risks to natural capital and in particular to water, soil and air, thereby creating new opportunities for soil regeneration.

Click [here](#) for more information.

EUBP's recommendations for EU Plastics Strategy

At the beginning of this year, the European Commission published its EU Roadmap for a Strategy on Plastics in a Circular Economy. Consultations and discussions around some of the most important issues to be covered by the Strategy on Plastics have already started, showing the complexity of the initiative as well as the need to incorporate the entire value chain from feedstock to waste management.

While prevention and reduction are paramount to reduce plastic waste and leakage into the environment, the consultations on the EU Plastics Strategy will also assess the diverse end-of-life options for plastics. When discussing biodegradation of plastics and the circular economy today, considerations should focus on organic recycling (industrial composting and anaerobic digestion) as an existing and proven concept. Harmonised and accepted standards, certification schemes, and labels for industrial compostable plastics already exist. Such materials combined with accurate information for consumers on how to dispose of the waste correctly, have proven to help collect more bio-waste for organic recycling and, that way, divert it from landfills and reduce contamination with biodegradable waste in mechanical recycling streams.

Organic recycling is a well-established industrial process ensuring the circular use for biodegradable plastics while creating a strong secondary raw material market and opportunity for renewable energy generation. Biodegradability in other environments (other than industrial composting or anaerobic digestion), however, should only be considered for a limited number of carefully selected applications, such as in agriculture and horticulture, cosmetics, or shipping and fisheries.

Currently, the share of biodegradable plastics designed for organic recycling sold in the EU is comparatively small. Hence, the potential of misthrows by the consumer to reach a critical volume that could impact the quality of mechanical recycling streams is an unreasonable assumption at this point in time. Available sorting technologies, such as NIR (near infrared) can easily detect biodegradable plastic materials such as PLA (polylactic acid). Tests show that sorting quotas are similar to those of conventional plastics. A recent study by the University of Wageningen (2017) analysed biodegradable plastics in mechanical recycling streams and detected levels not higher than 0.3%.

EUBP urges the European Commission and all the stakeholders participating in the on-going discussions to consider recycling as both mechanical and organic recycling and to contemplate the corresponding plastic materials in this context. Furthermore, investments into sound waste management infrastructure across Europe as well as comprehensive projects to increase the consumers' knowledge of correct disposal need to be considered. Only then, leakage into the environment can be limited and a strong secondary raw material market in a circular economy will flourish.

Click [here](#) for more information.

Sateri's viscose capacity set to go up to 1 million tonnes



Sateri

Sateri signed an investment agreement with the municipal government of Jiujiang in Jiangxi province on April 11 to expand its viscose staple fibre capacity in China by up to 1 million tons per year.

Sateri is currently the largest producer of viscose in China, with annual capacity in excess of 550,000 tons from its three mills in Fujian and Jiangxi provinces.

With investment of 12 billion yuan (US\$1.75 billion), the latest expansion in Lianxi, Jiujiang, will be executed in four phases of 250,000 tons each. Construction of the first phase is scheduled to start in the fourth quarter of this year.

Coupled with the expansion plans at its mill in Hukou, Jiujiang, the company's total capacity in Jiujiang city is expected to exceed 2 million tons per year, advancing Sateri's plans to become the world's largest producer of viscose fibre. In Hukou, a 160,000-ton expansion is already under construction and is expected to start up in early 2018.

Sateri, managed by the Royal Golden Eagle (RGE) group, will also invest in feedstock production and work with the Jiujiang government to attract investment from spun yarn and non-woven companies to build a complete industry chain.

Click [here](#) for more information.

Arkema pursues 300m Rilsan plant

Eager to sustain its customers' strong growth, in particular in automotive, 3D-printing, and in consumer goods markets such as sports and electronics, Arkema has announced an investment plan of some 300 million euros over five years in the biosourced polyamide 11 chain. This major investment will enable the Group to increase by 50% its polyamide 11 global production capacities. The project falls in line with Arkema's strategy to speed up its development in advanced materials, one of the key pillars of its future growth, sustained by a unique portfolio of innovations around the main sustainable development trends.

Over the next five years, the Group plans to invest some 300 million euros in building a world-scale plant dedicated to producing Rilsan® PA11 biosourced polyamide from castor oil in Asia. The new plant, which will produce both the amino 11 monomer and its polymer, Rilsan® PA11, should come on stream in late 2021. It will enable Arkema to increase by 50% its Rilsan® PA11 (powder and granule) production capacity. The investment also includes a 50% increase in global production capacities for Pebax®, in particular Pebax® RNew of which amino 11 is a key component. Pebax® RNew is a biosourced polyamide elastomer with unique properties such as energy return and flexibility, earmarked in particular for the sports and electronics markets.

With this upcoming plant, Arkema will have a second amino 11 monomer production site, complementing its historical site in Marseille, France.

Rilsan® PA11 is the only high performance 100% biosourced polyamide to qualify for the most exacting applications in particular in the electronics, 3D-printing and automotive markets, where it serves as a metal substitute.

Click [here](#) for more information.

The Fibre Year review of 2016

The year 2016 will always be remembered from textile perspective as historic milestone. The world market size has surpassed the incredible volume of 100 million tonnes.

Fibre production on global stage has grown 3% to 100 million tonnes due to 8% rebound in cotton production after disastrous contraction in the 2015/16 season. The world market has even arrived at 101 million tonnes when taking into account the cotton consumption which was fairly unchanged to the preceding year. However, the new all-time high was result of a further deceleration in demand at retail stage. Final end-use slowed in the fourth consecutive year to a little over 1%.

Manmade fibres now occupy 70% of the global market. While synthetic fibres have suffered from their slowest growth in eight years at below 2% cellulosic fibres have expanded at a rate above 3%.

The staple fibre market was up 1% following modest increases of synthetics and a 4% gain of cellulose. Natural fibres, still occupying 55% of the market, stagnated once again. Hence, their dominant position is at risk when considering the long-term performance with an 80% share in the year 1970. The development in the three largest producing nations with a joint share exceeding 60% was completely different in the previous year. PR China experienced a growth in manmade fibres only. The Indian output advanced due to increases in all segments while the U.S. production surged as result of a rebound in cotton only.

The world filament production modestly grew 2% and has experienced the slowest growth in polyester since 2008 while polyamide surged at almost double-digit rate. Industrial yarn succeeded in the third straight year to grow faster than textile filament. Spun yarn production stagnated with cotton yarn output ex-panding

slightly faster, especially in Bangladesh, Indonesia, Mexico and Vietnam.

The first-time comparison of filament and cotton yarn output for a period from 2005 reveals quite different developments and strategies on national basis. Turkey has a stable share of two thirds in favour of cotton yarn, while the ratio of cotton yarn in Mexico has steadily grown to three quarters and the Korean industry has been relying on 80% filament yarn while this ratio even rose to 90% for filaments in Malaysia.

Click [here](#) for more information.

Chemicals

REACH certification for Green Biologics' n-butanol

Green Biologics, Inc., the U.S. subsidiary of Green Biologics Ltd., a U.K. industrial biotechnology and renewable chemicals company, has announced that it has received REACH certification, a regulation of the European Union that promotes protection of human and environmental health from risks posed by chemicals. By registering with REACH, which stands for Registration, Evaluation, Authorisation of Chemicals, Green Biologics is now able to supply Europe with larger bulk quantities of its bio-based n-butanol. The company has also obtained pre-registration for its bio-based acetone and various derivatives, allowing it to ship up to 100 tonnes of these chemicals to Europe through June 1, 2018. This achievement underlines Green Biologics' commitment to embracing a global view on customers and business. It also enables the company to solidify its long-term position as a supplier to customers and markets in Europe.

The result of more than 100 years of research and development, Green Biologics' fermentation platform utilizes a robust library of Clostridium microbial strains as biocatalysts to produce its 100 percent bio-based n-butanol and acetone. The company has plans to offer a full suite of BioPure™, 100 percent bio-based, high purity, products through its patented Advanced Fermentation Process™ and third-party partnerships. Currently, all Green Biologics chemical products are being produced at the company's commercial facility, Central Minnesota Renewables, located in Little Falls, MN, which officially began operations in December of last year.

Click [here](#) for more information.

Genomatica with strong results for 1,4-butanediol process



Genomatica

Genomatica announced strong results for its GENO BDO™ biobased process technology regarding overall process performance and production volume to date for bio-based 1,4-butanediol (BDO).

Novamont, Genomatica's first GENO BDO licensee, has officially confirmed that its new industrial plant in Bottrighe, Italy has met all performance guarantees committed to by Genomatica. The guarantees include technical and economic parameters, such as efficiency of converting feedstock sugars to Bio-BDO product and product quality. The process runs as designed, as modelled, and as represented.

These results are in large part due to the strong support received from Novamont. Novamont successfully constructed and currently operates an energy-efficient and highly innovative flagship industrial site producing Bio-BDO.

The plant is designed to use Genomatica's licensed process technology to produce BDO from renewable feedstocks. Following startup in late 2016 the plant operations have been notably smooth.

Genomatica also confirmed that more than 10,000 tons of Bio-BDO have been produced worldwide using its GENO BDO™ process. Novamont's new Bio-BDO plant has added to volumes previously generated during production campaigns in 2012 and 2013. The earlier campaigns generated a few thousand tons and validated commercial scale performance. They helped pave the way for the first dedicated Bio-BDO plant that uses the GENO BDO licensed technology.

The speed of hitting 10,000 tons represents a milestone for the industry in the biological production of widely-used intermediate chemicals.

More molecules are on the way as Genomatica develops and commercializes additional processes to produce existing and new molecules using advanced biotechnology.

Click [here](#) for more information.

METEX to construct chemicals plant in France

METabolic EXplorer, an industrial biochemical company specialising in the development and industrial application of green and sustainable biochemical processes, announced the signing of an agreement with TOTAL Développement Régional (TDR) for the construction of a PDO/BA (1,3 propanediol and butyric acid) production plant. The Carling Saint-Avoid chemicals platform

in Moselle (Greater East Region) has been chosen as the site for this facility. METEX considers the construction of this plant a top priority for the implementation of its new strategy, presented last May.

METEX's goal is to become the leading supplier of butyric acid for animal nutrition and the top-ranked producer of non-GMO 1,3 propanediol (PDO) for use in cosmetics. To achieve this goal and retain the majority of the value generated, METEX has decided to prioritise the construction of its own production facility.

Following an initial assessment phase of the METEX project by TOTAL, METEX agrees to carry out studies for the construction of its PDO/BA plant at the Carling Saint-Avoid site. TOTAL agrees to make every effort to mobilise all stakeholders and to assist METEX in obtaining public funding. The agreement between METEX and TDR specifies the financial support to be provided for the preliminary studies and also the competitive terms for the provision of land and the main utilities and services required.

Click [here](#) for more information.

Alliance Bio-Products receives approval to purchase ethanol plant

Alliance Bio-Products, Inc., a subsidiary of Alliance BioEnergy Plus, Inc., has announced it has received approval from the United States Department of Agriculture (USDA) Office of Rural Development for the collateral purchase of the closed ethanol facility in Indian River County, Florida. The approved purchase includes the fully functional plant, 143+ acres that the plant resides on, and all related equipment and vehicles.

The Company made an offer to purchase the eight Million Gallon Per Year (8MMGY) ethanol facility with the intention of converting the current process into its patented Cellulose to Sugar (CTS)

process under an agreement with Alliance BioEnergy. By renovating the plant and utilizing a state-of-the-art fermentation and distillation system already in place, and with an abundance of free feedstock available, Bio-Products believes it can increase production capacity and profitability of its sustainable, environmentally friendly alternative to petroleum-based fuels and other products. The plant also sits on a large parcel of land that would allow Bio-Products to expand as demand increases.

The Company's patented CTS process allows it to produce biofuels for less than \$1 per gallon that are 100% CO2 neutral, because of the process, and have 85-95% less greenhouse gases than petroleum-based products. Bio-Products expects it will be able to begin production at the plant by summer of 2018, potentially generating \$25 million in EBITDA and then will look to double capacity to 16 MMGY, potentially generating \$54 million in EBITDA in 2020 before maximizing capacity of 34 MMGY, generating \$112 million in 2023.

The plant purchase will create approximately 100 permanent jobs in the short term, with additional employment opportunities created as production expands. The community will also benefit from an infusion of tax base revenue, as well as support revenue through an increase of usage of trucking, housing, restaurants, suppliers and more. The plant would also help to dispose of green waste that would otherwise fill up the landfill and release millions of tons of carbon dioxide.

Click [here](#) for more information.

Consumer Products

DuPont Tate & Lyle to showcase durable bio-based plastic equipment

DuPont Tate & Lyle Bio Products have announced participation in the 2017 Outdoor Retailer Summer Market showcasing many new innovations based on Susterra® propanediol, a pure, bio-based, petroleum-free diol. Susterra® delivers high performance in a variety of polyurethane applications, from footwear and waterproof films to artificial leather and coatings.

Durable coatings and waterproof, breathable membranes made with Susterra® propanediol are manufactured through a proprietary fermentation process using plant-derived glucose instead of petroleum-based feedstocks. In addition to being renewably sourced, Susterra® is manufactured using a sustainable process that produces 50 percent less greenhouse gas emissions and consumes 42 percent less non-renewable energy than equivalent petroleum-based diols.

Known for its resistance to abrasions, tears and scuffs, CORDURA® fabric is a primary ingredient in many of the world's leading high-performance gear and apparel products ranging from luggage, upholstery and backpacks to footwear, military equipment, tactical wear, workwear and performance apparel. The CORDURA® brand is a trademark of INVISTA, one of the world's largest integrated polymer, intermediates and fibres businesses.

Click [here](#) for more information.

Biosuccinium used in hiking shoes



Wikimedia Commons

Reverdia's Biosuccinium® has been used in the production of bio-based materials for VAUDE's new Skarvan range. As part of the completely redesigned Summer 2018 Shoe Collection, they offer consumers a sustainable choice of trekking shoe with high-end design and were unveiled at the OutDoor 2017 show in Friedrichshafen, Germany.

This is the first time the German outdoor brand has used a bio-based thermoplastic polyurethane (TPU) for toe caps and heel counters. VAUDE is committed to minimising the environmental footprint of its products and was the first outdoor company to receive certification under the EU's Eco-management and Audit Scheme (EMAS). It now seeks to reduce dependency on oil by replacing conventional materials with sustainable bio-based alternatives.

Biosuccinium® from Reverdia is the bio-succinic acid with best-in-class environmental footprint. Polyols derived from it enable polyurethanes (PU) with a significant share of bio-based content and a reduced carbon footprint which can be used in the manufacture of sustainable products.

Click [here](#) for more information.

Events

BIOMAAP 2017

London, 31st August - 1st September 2017

Biomaterials have been a growing field of interest for over half a century, spanning industries as diverse as medicine, biology, chemistry, materials science and through to engineering. Biomaterials can be used for clinical purposes, drug discovery, or to further understand tissue and organ development. Another area of concern is the biomaterial polymers market as there is a need for more research and development into biodegradable and bio-compatible polymers. One of the many fascinating areas, where biomaterials can be applied is in new dental materials and diagnostic tools. Bioengineering, another prominent area of research, not only includes biomaterials but also biomechanics. It has also been gathering momentum with research encompassing the fields of biomechanics of the hand and wrist, gait analysis and orthopaedics.

BioMAAP 2017 offers a great opportunity for both researchers and industry players to come together and gain better knowledge, find new business partners, discover possible synergies or sector crossovers and get clued up on all recent developments in the field of biomaterials.

Click [here](#) for more information.

Chemistry and Industrial Biotechnology Showcase 2017 York, 20th-21st September 2017

This two-day conference and exhibition hosted by the Knowledge Transfer Network is a major event to bring together industry, researchers, investors and government agencies to showcase how the UK chemistry and industrial biotechnology sectors are helping to enable growth in key UK supply chains through innovation.

Click [here](#) for more information.

Value from Unavoidable Food Waste York, 21st September 2017

Join us to discuss the opportunities, barriers and latest technologies for extracting high-value products from unavoidable food waste. With the help of a panel of experts from industry, policy and academia, we will be exploring the issues over breakfast.

Click [here](#) for more information.

EFIB 2017 Brussels, 9th-11th November

The 10th European Forum for Industrial Biotechnology and the Bioeconomy (EFIB) returns to Brussels October 2017 and will attract industry executives committed to a shift towards renewable, biologically-based manufacturing. EFIB is organised by EuropaBio, Europe's largest and most influential biotechnology industry group and Smithers Rapra, global leader in rubber, plastics, polymer and composites information products.

Click [here](#) for more information.

European Biosolids & Organic Resources Conference Leeds, 20th - 21st November

Now in its third decade this event provides practitioners with an annual update on legislative changes; new technologies; best practice and site-experiences with existing technologies and an insight into relevant research in the science and engineering of biosolids and organic resources. The conference is attended by recognised experts from around the world both, as speakers and delegates.

The programme covers the latest innovations and updates of existing technologies. Presentations from respected industry experts and newcomers follow the development of technologies and legislation from inception to full-scale installations.

Click [here](#) for more information.

European Bioplastics Conference Berlin, 28th - 29th November

Today, there is a bioplastic alternative to almost every conventional plastic material and corresponding application. While offering the same qualities and functionalities as their conventional counterparts, bioplastics strive to be even better by providing innovative solutions with improved properties and performances as well as the unique ability to reduce emissions and our dependency on fossil resources. The 12th edition of the annual European Bioplastics Conference will showcase just how biopolymers are Making the Difference in driving innovations forward for more sustainability, resource efficiency, and functionality.

Click [here](#) for more information.

BBI JU Stakeholder Forum Brussels, 7th December 2017

The inaugural Stakeholder Forum is a one-day public event dedicated to engaging directly in dialogue with BBI JU's stakeholders. Save the date and make sure you are part of the day. The event will include plenary keynote speeches, high-level discussions with expert panels, thematic breakout sessions, with plenty of networking possibilities.

You can also find out about our work through meeting all 65 of our ongoing projects who will be presenting their work in the permanent exhibition, accessible throughout the event.

The agenda includes opening and closing keynote speeches from champions of the bio-based economy. In the plenary sessions key contributors will present their views on defining the roadmap for a bio-based Europe, the strategic context of the BBI initiative & achievements, lessons learned & sector development and rapporteur feedback.

Click [here](#) for more information.

Bioeconomy Investment Summit Helsinki, 14th-15th December 2017

Over 30 speakers from across the globe will share their views on how we can bring together the economy and the environment.

New advances in technology mean that everything that can be made out of oil can be made from renewable, biological resources. There are huge environmental and business opportunities for a wide range of industries: construction, chemicals, textiles, energy, plastics.

Click [here](#) for more information.

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

Over 30 speakers from across the globe will share their views on how we can bring together the economy and the environment.

New advances in technology mean that everything that can be made out of oil can be made from renewable, biological resources. There are huge environmental and business opportunities for a wide range of industries: construction, chemicals, textiles, energy, plastics.

The bioeconomy gives us a unique opportunity for building a sustainable future. Our speakers will focus on what investment steps we need to take to make it happen.

Click [here](#) for more information.

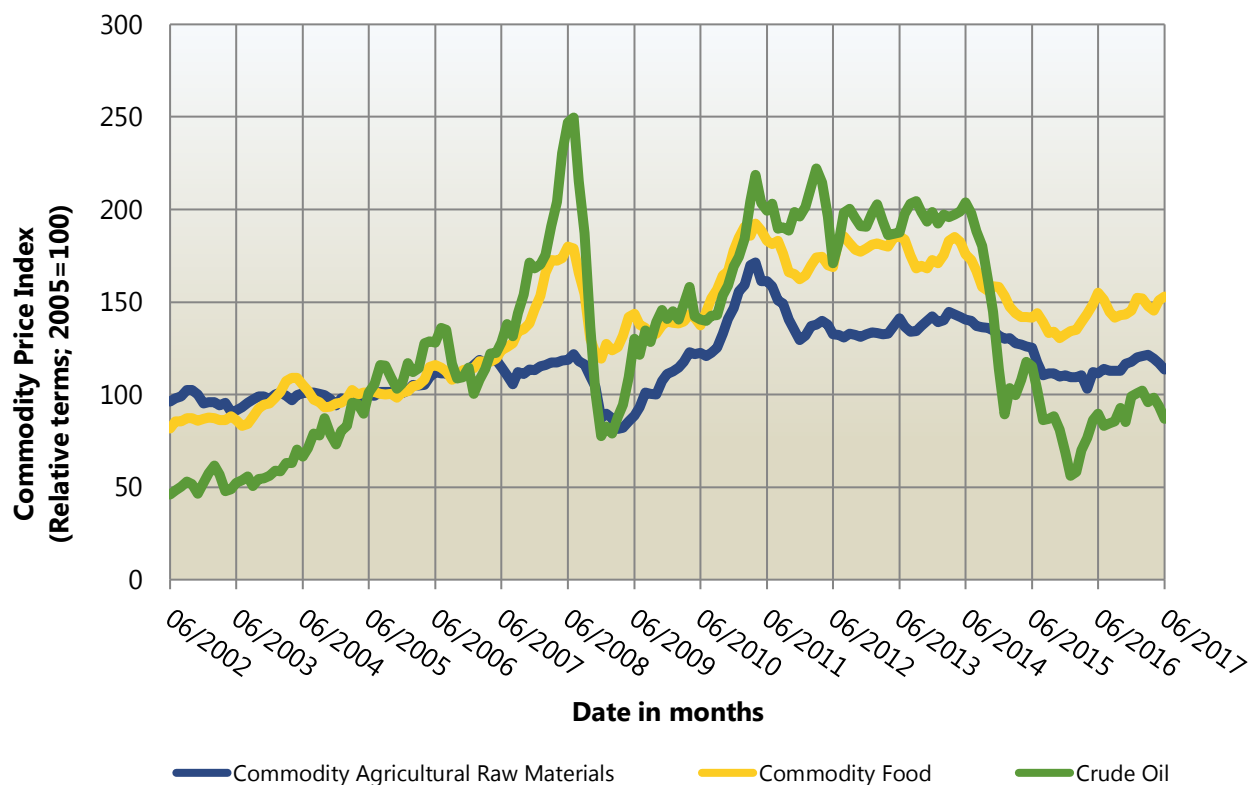
Price Information

Spot Prices of feedstocks as of today and five years ago, and percentile price change. Arrows indicate rise (↑), constant (–) or fall (↓) from previous month.

Item	Price, US\$ (Jun 12)	Price, US\$ (Jun 17)	Price Change
Crude oil (petroleum, barrel)	90.73 (↓)	46.13 (↓)	-49%
Maize (corn, metric ton)	267.23 (↓)	157.96 (↓)	-41%
Sugar (pound)	0.201 (↓)	0.1375 (↓)	-32%
Rapeseed oil (metric ton)	1,182.69 (↓)	830.44 (↓)	-30%
Soybean oil (metric ton)	1,097.80 (↓)	704.83 (↓)	-36%
Ethanol (gallon)	2.13 (↓)	1.60 (↓)	-27%

For details on indexes please see www.indexmundi.com/commodities; Ethanol prices from Govt of Nebraska at www.neo.ne.gov/

Raw materials 15-year Price Indices



For details on the nature of these commodities please see www.indexmundi.com/commodities

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
Biocentre, York Science Park
Innovation Way
Heslington, York
YO10 5DG

Phone: +44 (0)1904 435182
Fax: +44 (0)1904 435345
Email: enquiries@nnfcc.co.uk
Web: www.nnfcc.co.uk
Twitter: @NNFCC