

The Bioeconomy Consultants

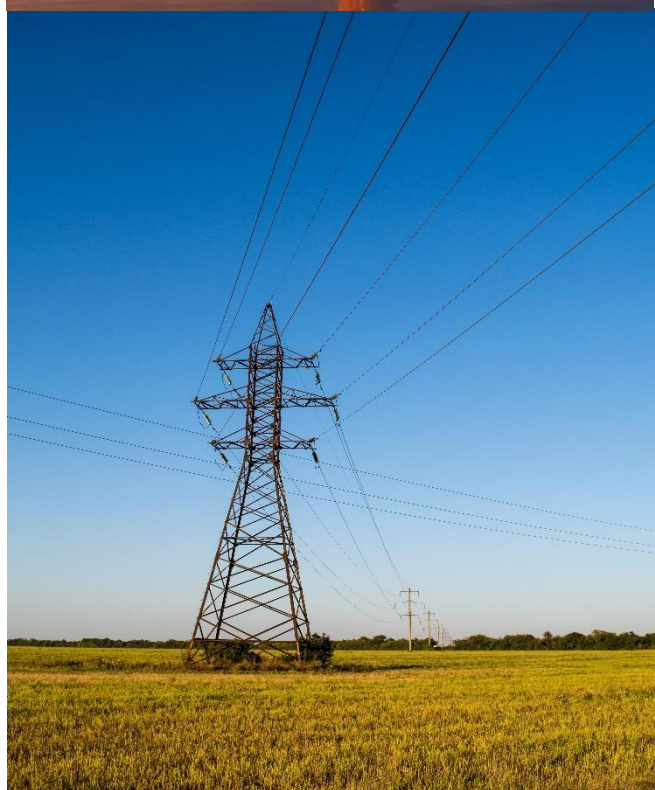


News Review

Issue Fifty-Nine

February 2017

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



Contents

Policy.....	4
Research & Development.....	7
Biomass Heat & Power	8
Biogas.....	9
Energy from Waste.....	10
Events.....	12
Prices.....	14

Foreword

Welcome to this month's edition of the NNFCC's Bioenergy News Review.

This month is very heavily dominated by policy and legislation, as some key documents have been published not only by our home government in the UK, but also across both waterways from us: in the USA and in Europe. The UK's government has published an Industrial Strategy, with the aim of promoting growth in the country. This strategy never really mentioned bioenergy, but indirectly presented many opportunities for the bioenergy sector (a more in-depth look at the strategy is available free on the NNFCC website). The strategy has been welcomed by the Anaerobic Digestion & Bioresources Association, who plan to demonstrate to the UK government how AD can form an integral part of that growth. Furthermore, BEIS published their response to the latest FIT Consultation in which they reviewed support for AD. This was met by short-term positivity and longer-term frustration for the industry with slightly higher tariffs than expected being confirmed, but rapid reductions expected to continue thus limiting viability beyond the next year or two. Over the Channel and/or the North Sea, biomass associations in Europe have signed the "Declaration of Graz", committing to several key bioenergy targets by 2030, including eradicating fossil fuel based energy and doubling biomass-based power. Across the Atlantic, in the USA, the Bioenergy Technology Office of the Department of Energy has announced its own Bioeconomy strategy, which centres on increasing the value of bioenergy and putting the country's biomass to good use, by developing value chains for it.

These legislative announcements come alongside the release of encouraging forecasts and statistics on both sides of the Atlantic: the UK has published its Greenhouse Gas emission statistics for the 25-year period from 1990 to 2015, showing a 38.5% reduction over those 25 years, with a 3.8% reduction on the previous year (2014), and while no forecasts accompany the statistics, they certainly imply that the country is heading in the right direction. Likewise, in the US, non-hydro renewables are set to increase over the next two years according to official forecasts, although energy-related GHG emissions are set to increase slightly in response to economic effects.

Read on for the latest bioenergy news.

Policy

UK Government Announces Feed-in-Tariff Reforms



Wikimedia Commons

In early February, the UK government published its response to a consultation on the Feed-in-Tariff scheme, including its plans to reform the scheme.

The significant changes include the introduction of sustainability criteria in terms of feedstock carbon intensity. Feedstock that is entirely waste will not be subject to these criteria.

As far as Anaerobic Digestion is concerned, the tariff level is set to decrease over the coming years, and AD plants used to generate electricity will be limited in terms of their payments for all feedstocks not derived from waste.

The government has also elected to reduce the amount by which they were going to decrease the cap on micro-combined heat and power units, which will drop from 30,000 to about 15,500, where the original planned reduction was to 3,500.

Click [here](#) for more information.

US Energy Forecasts for 2018

The US EIA released its latest short-term energy outlook in February. Non-hydropower renewables are forecast to provide 9% of electricity generation in 2017 and 10% in 2018. The generation share of hydropower is forecast to be relatively unchanged from 2017 to 2018, and the nuclear share declines slightly in 2018.

U.S. coal production is estimated to have declined by 158 million short tons (MMst) (18%) in 2016 to 739 MMst, which would be the lowest level since 1978. EIA expects growth in coal-fired electricity generation to contribute to a 3% increase in coal production in 2017. Coal production is expected to increase by 1% in 2018.

Wind energy capacity at the end of 2016 was 81 gigawatts (GW). EIA expects capacity additions in the next two years will bring total wind capacity to 94 GW by the end of 2018.

After declining by 1.7% in 2016, energy-related carbon dioxide (CO₂) emissions are projected to increase by 0.3% in 2017 and by 1.4% in 2018 in response to changes in economic growth, energy prices and weather-related impacts.

Click [here](#) for more information.

New Bioeconomy Strategy for US' Bioenergy Technology Office

In January, the U.S. Department of Energy's Bioenergy Technologies Office (BETO) released a new strategic plan, titled "Strategic Plan for a Thriving and Sustainable Bioeconomy."

The BETO described the plan as a blueprint for how it will tackle the challenges and opportunities that lie ahead in building a sustainable bioeconomy in the U.S. The plan sets the foundation for the development of the office's multi-year program plans, annual operating plans,

and technology program areas. It also takes a crosscutting approach to identify opportunities to adapt and align BETO activities and project portfolios with those in the public and private sectors.

The plan centres around four key opportunities, including enhancing the bioenergy value proposition, mobilizing the nation's biomass resources, cultivating end-use markets and customers and expanding stakeholder engagement and collaboration.

The plan sets goals for the development and demonstration of integrated value chains for biofuels, bioproducts and biopower.

Click [here](#) for more information.

UK releases Greenhouse Gas statistics through 2015

In 2015, UK emissions of the basket of seven greenhouse gases covered by the Kyoto Protocol 1 were estimated to be 495.7 million tonnes carbon dioxide equivalent (MtCO₂e), a decrease of 3.8 per cent compared to the 2014 figure of 515.1 million tonnes.

This decrease in emissions was mainly caused by reductions in the energy supply sector, down 12.3 per cent (20.1 MtCO₂e) driven by a large decrease in power station emissions due to a change in the fuel mix for electricity generation, with a decrease in the use of coal and more use of nuclear and renewables. There was also decrease of 2.6 per cent (2.3 MtCO₂e) in the business sector, driven by a reduction in emissions from fuel used in the iron and steel sector due to the closure of one of the UK's three integrated steelworks in September 2015, and a reduction of 7.1 per cent (1.4 MtCO₂e) in the waste management sector, due to decreased emissions from landfilled waste.

Carbon dioxide (CO₂) is the most dominant greenhouse gas from the Kyoto "basket" of greenhouse gases, accounting for 81 per cent of total UK greenhouse gas emissions in 2015.

The latest figures show that UK net 2015 CO₂ emissions were estimated to be 403.8 million tonnes (Mt), which was around 4.1 per cent lower than the 2014 figure of 421.2 Mt. This decrease in CO₂ emissions was mainly due to the large decrease in the use of coal for electricity generation (as described above).

The UK has domestic targets for reducing greenhouse gas emissions under the Climate Change Act known as carbon budgets, which set legally-binding limits on the total amount of greenhouse gas emissions the UK can emit for a given five-year period. The latest figures show the UK is on track to meet the second carbon budget, with annual 2013-2015 emissions that are each below the annual average emissions level of the budget period (556.4 MtCO₂e).

Finally, UK emissions in 2015 were 38 per cent below the 1990 base year.

Click [here](#) for more information.

Guidance released for Contract for Difference application round 2

The National Grid's Contract for Difference Delivery Body have announced that the Allocation Round 2 Guidance is now available. Also, they have published FAQs for potential participants.

Guidance and FAQs shall be periodically reviewed and updated as the Round progresses, notifications of any changes shall be provided on the EMR Portal and to CFD email subscribers.

Click [here](#) for more information.

Plan for European Bioenergy unveiled

European biomass associations have come together and signed a new guideline for the development of "bioenergy in Europe towards 2030".

The pledge is called 'Declaration of Graz' and was unveiled at the 5th Central European Biomass Conference in Graz, Austria.

The declaration has four parameters, including: halving the use of fossil fuels by 2030, phase out fossil generated electricity, doubling of the final energy use of biomass, and a 2.5-fold increase of renewables.

In order to achieve these, the following measures are included: a general pricing on fossil CO₂ emissions to progressively reach 100 euro/ton CO₂, a renewable heat strategy for district heat, industrial and residential heating, blending obligations for biofuels, an integrated concept to mobilise biomass for energy, promoting integration of all renewables along with biomass for electricity generation.

Click [here](#) for more information.

€6bn funding for Dutch renewables



Netherlands Enterprise Agency

The Dutch government confirmed at the end of December that a further €6bn would be available to support renewable energy projects in two funding rounds next year.

In an announcement, the government said it would repeat the two auction rounds introduced

this year for its support scheme known as stimulation of sustainable energy production (SDE+).

The SDE+ 2017 is open to biomass, biogas, onshore wind, solar, geothermal and water projects that produce electricity.

However, the maximum basic amount for 2017 will be reduced from €0.15/kWh to €0.13/kWh due to the "success" of this year's auctions, which were both oversubscribed.

Previously the SDE+ system has received interest from US and Israeli-based biogas developers, as well as being lauded as a leader for its biomass sustainability credentials.

Click [here](#) for more information.

ADBA welcomes UK's Industrial Strategy

Green organisations have welcomed the UK government's Business Industrial Strategy.

UK Prime Minister Theresa May launched new proposals for a new industrial strategy on 23 January, 2017, which included a focus on "affordable energy and clean growth".

The green paper also set out technologies where Britain has strengths in research and development which could be supported through the government's new Industrial Strategy Challenge Fund, including: smart energy technologies; robotics and artificial intelligence, and 5G mobile network technology.

The Anaerobic Digestion and Bioresources Association (ADBA) has welcomed the publication of the government's Green Paper 'Building Our Industrial Strategy' and will be setting out over the next few months how AD can play a central role in helping UK industry to flourish.

The Environmental Services Association (ESA), the voice for the UK's resource and waste management industry, also welcomed the government's new strategy.

Click [here](#) for more information.

UK Government to consider flotation of Green Investment Bank

As the process of privatising the UK's Green Investment Bank - which has invested nearly £3bn in a variety of renewable energy projects since 2012 - continues to stall amid fears of asset stripping by leading bidder Macquarie, it is now being reported that the UK government may opt for flotation instead as an end to the long sale process. The government has denied that this is the case, but reports abound that Macquarie may be getting cold feet due to the political controversy surrounding the sale. Rival bidder SDCL believes that flotation may be an option in future, but not at present.

Click [here](#) for more information.

Non-Domestic RHI Accreditations Update

Between October and December 2016, Ofgem accredited 566 full applications and 4 preliminary applications. Over the same period they registered 13 biomethane producers. This brings the total to 16,067 accredited installations and 66 registered producers of biomethane in Great Britain.

Click [here](#) for more information.

Research & Development

EnviTec develops sustainable Thermal Pressure Hydrolysis

High pressure plus high temperatures: the recipe for success from thermal pressure hydrolysis (TDH). The optimised process from the R&D division of EnviTec Biogas utilises high pressures and temperatures to digest biomass even more effectively.

Apart from a long-term increase in gas yield, which can range from 10% to over 60% when renewable raw materials are used, the process also facilitates the use of substrates that have to date been entirely unsuitable for use in biogas plants – or at least not in any quantities worth mentioning.

The process is not itself new, however. Previously, thermal pressure hydrolysis was used with the input materials, but the additional mashing means additional heating or cooling is required, depending on the type of hydrolysed material. Handling unwanted materials also adds to the effort here. EnviTec's method skips this step, however: the process targets only the difficult-to-degrade raw fibre from the biogas process. Since the technique doesn't involve any mashing of the input, this significantly reduces heating requirements. Other advantages include the exclusion of unwanted material as well as lower throughput.

The sustainable approach also has a positive effect on the plant owner's cash flow: compared to a conventional biogas plant, a biogas plant equipped with a TDH system is significantly more economical to run. Depending on the project, input costs can be cut by as much as 35% or more.

Click [here](#) for more information.

Biomass Heat & Power

DONG to be coal-free by 2023



Wikimedia Commons

Since 2006, DONG Energy has reduced its coal consumption by 73 per cent through a reduction in the number of power stations as well as conversions to sustainable biomass instead of coal. At the same time, the company has constructed more production capacity based on offshore wind than any other company in the world. This means that in just one decade, DONG Energy will have gone from being one of the most coal-intensive utilities in Europe to being among the greenest energy companies in Europe.

Since 2002, DONG Energy has used wood pellets and wood chips as fuel at both Herning Power Station and Avedøre Power Station, and over the years, the company has increased the share of biomass at the two power stations. In 2016, both Studstrup Power Station near Aarhus and Avedøre Power Station near Copenhagen were converted to run 100 per cent on wood pellets and straw, and during the spring of 2017, Skærbæk Power Station near Fredericia will be able to run 100 per cent on wood chips.

With DONG Energy's decision to stop all use of coal by 2023, a future solution must now be prepared for the company's remaining two coal-fired power stations: Asnæs Power Station and Esbjerg Power Station. DONG Energy is in dialogue with the heating customers in Kalundborg and Esbjerg regarding the possibilities of converting the two power stations to use wood chips as fuel instead of coal when the existing heating agreements expire at the end of 2017 and 2019, respectively.

Click [here](#) for more information.

Free to use Bioheat Profitability tool launched

The Austrian Energy Agency (AEA) in partnership with AEBIOM has developed an innovative, free-of-charge Bioheat Profitability Assessment Tool for the examination and comparison of investments in biomass-heating and equivalent fossil fuelled systems, for mid-scale production of low temperature space and domestic hot water as well as process heat. This tool has been produced as part of the H2020 Bioenergy4Business project.

The novelty of this tool is that it includes country-specific 2015-based investment data for all heating plant components of wood-pellets, wood-chips, natural gas and fuel oil fuelled in-house and district heating plants for a capacity range of 100 kW to 20.000 kW for 12 European countries. For countries where of relevance, data of straw and coal fired plants are available as well.

Click [here](#) for more information.

Specification for torrefied biomass established

Michael Wild, president of the IBTC (International Biomass Torrefaction Council) gave his views on the year ahead to Bioenergy Insight.

Technical development and densification issues have largely been sorted. In parallel, the agreement by the ISO committee on an ISO 17225-8 Technical Specification for Thermally Treated Biomass – defines clear categories and parameters for biogenic solid fuels resulting from a thermal pre-treatment processing. This is ready to come into place in early 2017.

Click [here](#) for more information.

Biogas

Southern Water enlists Veolia to produce biogas power at its sites



Veolia

Global resource management company, Veolia, is helping Southern Water derive even more of its power from sewage. The company is installing new combined heat and power (CHP) engines at three of Southern Water's treatment works - Budds Farm and Fullerton in Hampshire and Gravesend in Kent. The work will save around 3,600 tonnes of CO2 emissions each year and is part of Southern Water's wider project to generate even more renewable energy by upgrading CHP units at five of its sites.

Southern Water Services is the provider of water and wastewater services for Kent, Sussex,

Hampshire and the Isle of Wight. Routed through a sewer network of 39,000km, 718 million litres of wastewater get treated and recycled at the company's 368 treatment works every day.

Each new Veolia project includes the design, installation and operation of the biogas cogeneration units by Veolia's specialist CHP team, and adds to the systems already serving seven other Southern Water treatment sites. These CHP will now deliver around 48.3GWh of renewable electricity each year, taking pressure off the local electricity infrastructure and saving 8,800 tonnes of CO2 emissions - equivalent to the output from nearly 5,800 cars.

Biogas, captured by anaerobic digestion from the wastewater treatment processes is used as a fuel, and will provide the electricity needed to power the wastewater treatment operations, with the surplus being fed to the Grid. The heat recovered from the CHP units is fed to the AD process to speed up the bacterial digestion of organic matter and biogas output.

Around 190 UK wastewater sites now produce biogas to generate electricity which is used on site or exported to the national grid. Today, the potential power from human sewage in the UK could now keep around fourteen million LED/LCD TVs or ten million game consoles running constantly.

Click [here](#) for more information.

Biogas fuelled hydrogen production plant opened in Japan

Air Products is part of a consortium that took part in the inaugural ceremony of the Shikaoi Hydrogen Farm, a hydrogen production supply facility derived from livestock biomass waste located in Hokkaido, Japan. Air Products provided its hydrogen fuelling technology for this project as part of the company's collaboration with NIPPON

STEEL & SUMIKIN Pipeline & Engineering Co. Ltd. to develop the retail automotive hydrogen fuelling infrastructure in Japan. In addition, Air Products has provided its proprietary membrane technology for the biogas purification process.

The Shikaoi Hydrogen Farm utilizes agricultural wastes which are anaerobically digested to create a supply of raw biogas. This biogas is upgraded to a purified supply of biomethane using Air Products' PRISM® PB Membrane separators. The biomethane is then used as a feedstock to manufacture renewable hydrogen on-site, which generates heat, power and vehicle fuel. This is the first facility in Japan to use agricultural wastes as the source to manufacture hydrogen.

The Shikaoi Hydrogen Farm is a five-year business project entrusted by the Ministry of the Environment in Japan for low-carbon hydrogen technology. The project demonstrates an integrated hydrogen energy-based supply chain, leveraging local renewable energy sources for hydrogen generation, storage, transportation and use. The hydrogen is returned to local livestock farmers and neighbouring facilities as a source of renewable energy and fuel. Hokkaido's first hydrogen-vehicle fuelling station is installed at the Farm, which delivers fuel to hydrogen-powered vehicles and forklifts.

Click [here](#) for more information.

DuPont's enzyme biogas process receives EC backing

DuPont Industrial Biosciences has been awarded a grant from the European Commission to demonstrate high-efficiency enzyme production to increase biogas yields as part of the DEMETER project, funded from the Bio Based Industries Joint Undertaking under the European Union's Horizon 2020 Research and Innovation program. Enzyme technology has been proven to improve biogas yields and process robustness, ultimately

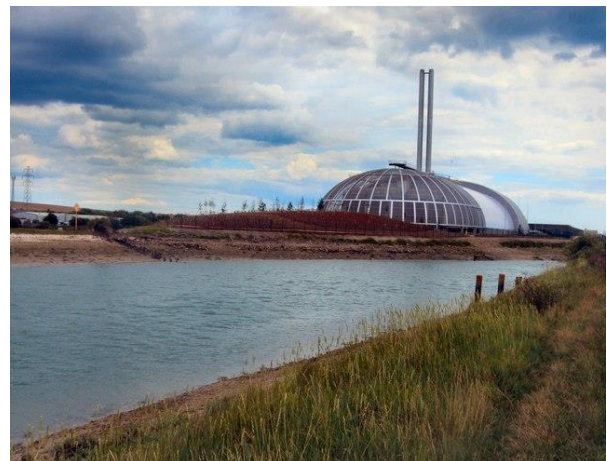
increasing customers' revenue and profitability while increasing offerings in renewable energy.

The grant will be used to improve and scale-up the enzyme-producing fermentation process to reach a cost reduction of at least 15 percent and to demonstrate the efficiency of the enzymes in biogas field trials in Europe. Methane biogas is primarily used to generate electricity or is compressed and inserted into the pipeline gas grid.

Click [here](#) for more information.

Energy from Waste

Waste to Energy encouraged by European Commission, with considerations



Paul Gillet

The European Commission has published new guidance on the production of energy from waste as part of the EU Action Plan for the Circular Economy, which encourages manufacturers and consumers to get the maximum value and use from all raw materials, products and waste. This

guidance emphasises that generating energy from waste that cannot be recycled or reused can contribute to a circular economy and energy diversification.

However, the REA reports that the Commission has issued a communication warning member states not to support investment that leads to over-capacity of some waste-to-energy technologies, including incineration.

The document encourages states to follow the waste hierarchy. Their central concern is that the development of too much waste-to-energy capacity could prevent higher levels of prevention, reuse, and recycling in the future.

The communication states that in the future, more consideration should be given to those processes, such as anaerobic digestion of biodegradable waste, where material recycling is combined with energy recovery.

Conversely, the role of waste incineration – currently, the predominant waste-to-energy option - needs to be redefined to ensure that increases in recycling and reuse are not hampered and that overcapacities for residual waste treatment are averted.

Click [here](#) for more information.

FCC Environment blames post-Brexit currency slide for falling revenues



FCC Environment

Spanish-based FCC Environment has reported a 16.3% drop in revenues from its UK environmental

services division – blaming the slide on the depreciation of sterling after the Brexit vote.

The findings are reported in FCC Citizen Services' 2016 earnings report – which shows the Group's financial performance across its international environmental, water and infrastructure arms.

While the earnings of the Group improved overall by 2.3% in 2016, the business saw a slump in revenue and a total 4.5% decline in its environmental services division.

FCC provides a number of waste and recycling services via its environmental arm in the UK, including household collections, energy from waste plants and household waste recycling centre operations.

According to the FCC update, the drop is largely due to the 'depreciation by sterling (-11.4%) as a result of the Brexit vote, and another was the completion of construction work on treatment plants following the commissioning of the Buckinghamshire plant in June'.

The company has also claimed the winding down of its UK landfill business has had an impact.

Click [here](#) for more information.

European Commission's communication on Waste-to Energy welcomed by the industry

ESWET, the European Suppliers of Waste-to-Energy Technology, welcomes the publication of the Communication from the Commission on the role of Waste-to-Energy in the Circular Economy, since they believe that waste management policies, in order to bring benefits to all EU citizens, should be based on efficient and sustainable solutions. Waste-to-Energy (i.e. thermal energy recovery of waste) is one of them: it complements Circular Economy by dealing with

waste not suitable for recycling that would be otherwise landfilled. On the other hand, it also provides a source of reliable and local energy that can be used in our houses or by industry. Finally, it helps recovering important materials (metals and minerals).

The Communication states that the rules on separate collection and more ambitious recycling targets 'are expected to reduce the amount of waste potentially available for Waste-to-Energy processes such as incineration and co-incineration'.

The Communication also highlights that incineration capacity is unevenly spread within the EU. Indeed, 13 Member States still landfill more than 50% of their municipal waste and they have no or very little Waste-to-Energy capacity. Hence, ESWET believes that there is room for integrated waste management plans, including new thermal recovery facilities, in these regions. Therefore, financial support should be given for the implementation of such integrated waste management strategies, including new thermal recovery facilities.

Finally, it is also important to notice that waste statistics used for assessing incineration capacities does not take into account commercial and industrial waste, which is also treated in thermal energy recovery facilities. As it is mentioned in the study on incineration capacities (also prepared to support this Communication) it is difficult to identify share of mixed municipal waste and non-municipal waste in the plants. Municipal waste generation and Waste-to-Energy capacities are therefore figures that are difficult to compare. Consequently, ESWET advises caution when talking about risk of overcapacities.

Click [here](#) for more information.

Events

Optimising your AD Plant

14th March 2017

Selby, England



Join BioVale for a free half-day workshop looking at the latest ideas and technologies to explore how you can get the best from your AD plant, maximising your performance and minimising your problems. The workshop is followed by an optional networking lunch. You can also join a tour of Amur's AD plant.

The event is suitable for interested parties including: developers, operators, investors, farmers, local authorities and regulatory bodies.

Click [here](#) for more information.

All-Energy

10 – 11th May 2017

Glasgow, Scotland



Since its launch in 2001, All-Energy has provided the industry suppliers, experts and thought-leaders from the renewable energy supply chain the opportunity to connect with new customers, increase their sales opportunities and expand business networks in this fast-changing marketplace.

The free-to-attend annual conference and exhibition brings together the UK's largest group of buyers from the bioenergy, solar, offshore and onshore wind, hydropower and wave & tidal sectors, as well as those involved in energy storage, heat, low carbon transport and sustainable cities solutions.

Click [here](#) for more information.

European Biomass Conference and Exhibition

12th – 15th June 2017

Stockholm, Sweden



The European Biomass Conference and Exhibition (EUBCE) is a world class annual event which, since 1980, is held at different venues throughout Europe.

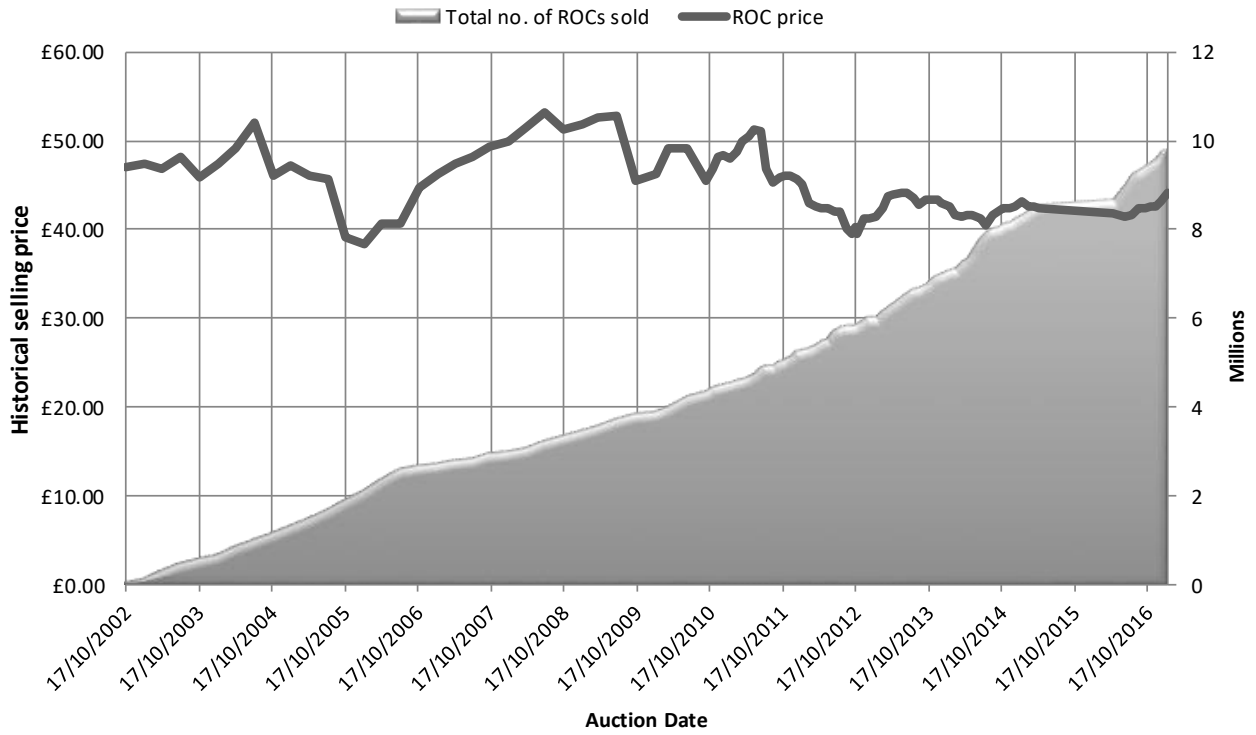
The EUBCE covers the entire value chain of biomass to conduct business, network, and to present and discuss the latest developments and innovations, the vision is to educate the biomass community and to accelerate growth.

The EUBCE will host a dynamic international Exhibition for companies and research labs to showcase their latest products and bringing scientists, technologists and key players together with leading Biomass industries and organizations.

Click [here](#) for more information.

Prices

Historical auctioned prices of ROCs in pound sterling, and total amounts of ROCs historically sold.



Click [here](#) for more information

Credits and Disclaimer

NNFCC News Review is edited by Bob Horton for NNFCC members. 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