The Bioeconomy Consultants

NNFCC

Bioenergy

News Review

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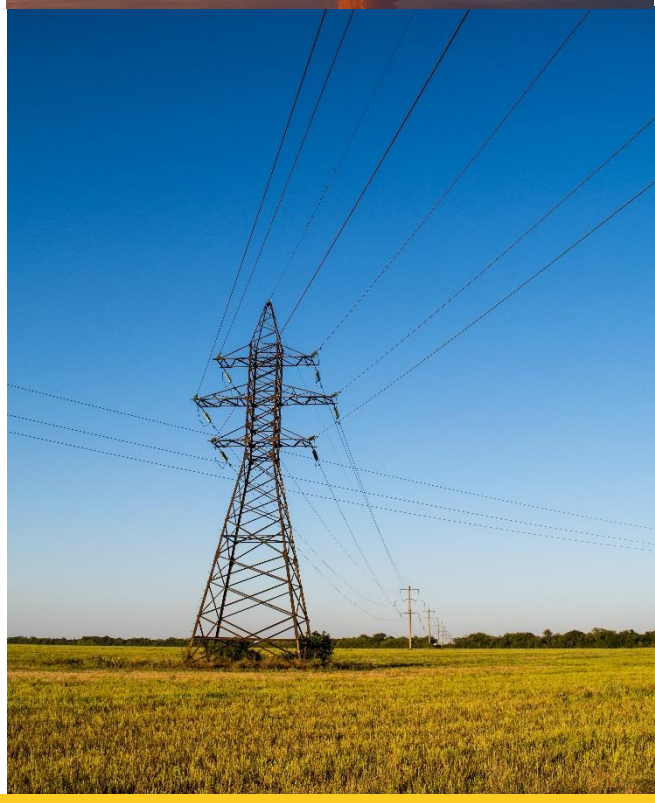
Each month we review the latest news and select key announcements and commentary from across the bioenergy sector.



Contents

Foreword

A warm welcome to all readers; we hope you had an excellent Easter weekend and are enjoying being allowed to eat chocolate again after Lent (some in our office certainly are!).

It's been a fantastic month for the Waste-to-Energy sector: we have reports on no fewer than six new plants, including five here in the UK. One in particular has been making the news thanks to its particularly high-profile locale: London's Gatwick Airport is set to be powered by an energy from waste unit. The plant runs on Category 1 airline waste, which is predominantly food waste but also disposable objects used on board such as cutlery, and food packaging. At present the plant is only self-sufficient in energy terms, with the energy generated being used to dry waste during processing and to heat the plant, but it has the capacity to provide power to other areas of the airport once the infrastructure is in place. This is part of a big initiative by Gatwick to improve their recycling rate, and will hopefully provide a positive example to other airports worldwide: Gatwick is the first airport to take this step both for dealing with their waste and providing more sustainable power. This just goes to show that bioenergy options really can work for everyone and can also be economically viable: Gatwick's plant could save them over £300k a year in energy and waste-management costs.

Elsewhere, if the bioenergy industry were a person, it would be celebrating right now, as statistics continue to pour in demonstrating that 2016 was the best year on record for bioenergy (and renewables in general). Global bioenergy capacity is now at a record high of almost 110GW, after surpassing 100GW in 2015. The 9GW increase between 2015 and 2016 is the biggest that has ever been recorded for bioenergy. This is a demonstration of faith in bioenergy as a serious alternative to fossil fuels the world over, and long may it continue.

Read on for the latest bioenergy news.

Policy

How to achieve 70% GHG reduction through energy changes

Wikimedia Commons

Global energy-related carbon dioxide (CO2) emissions can be reduced by 70% by 2050 and completely phased-out by 2060 with a net positive economic outlook, according to new findings released this month by the International Renewable Energy Agency (IRENA). Perspectives for the Energy Transition: Investment Needs for a Low-Carbon Energy Transition, launched on the occasion of the Berlin Energy Transition Dialogue, presents the case that increased deployment of renewable energy and energy efficiency in G20 countries and globally can achieve the emissions reductions needed to keep global temperature rise to no more than two-degrees Celsius, avoiding the most severe impacts of climate change.

While overall the energy investment needed for decarbonising the energy sector is substantial – an additional USD 29 trillion until 2050 – it amounts to a small share (0.4%) of global GDP. Furthermore, IRENA's macroeconomic analysis suggests that such investment creates a stimulus that, together with other pro-growth policies, will boost global GDP by 0.8% in 2050; generate new jobs in the renewable energy sector that would more than offset job losses in the fossil fuel industry, with further jobs being created by energy efficiency activities, and; improve human welfare through important additional environmental and health benefits thanks to reduced air pollution.

Globally, 32 gigatonnes (Gt) of energy-related CO2 were emitted in 2015. The report states that emissions will need to fall continuously to 9.5 Gt by 2050 to limit warming to no more than two degrees above pre-industrial temperatures. 90% of this energy CO2 emission reduction can be achieved through expanding renewable energy deployment and improving energy efficiency.

Renewable energy now accounts for 24% of global power generation and 16% of primary energy supply. To achieve decarbonisation, the report states that, by 2050, renewables should be 80% of power generation and 65% of total primary energy supply.

Click here for more information.

2016 record year for global bioenergy

A new report by the International Renewable Energy Agency finds that 2016 was a banner year for addition of global renewable energy capacity.

Led by solar, wind, hydropower and bioenergy, respectively, new capacity totalled 161 gigawatts (GW), bringing global renewable energy capacity to over 2,000 GW. 2016 brought an overall increased capacity of 8.7 percent, according to IRENA, with solar increasing by 71 GW, wind by 51 GW, hydropower by 30 GW and bioenergy by 9 GW, the largest increase in global capacity bioenergy has ever experienced.

Adding the most renewable capacity last year was Asia, accounting for over half, at 58 percent. The 13.1 percent increase from 2015 brings the country's capacity to 812 GW, 41 percent of the world's renewable capacity. Following Asia was Africa, with 4.1 GW installed in 2016—twice as much as it brought online in 2015.

On bioenergy specifically, the report finds that the majority of bioenergy capacity expansion occurred in Asia last year with over 5.9 GW added. The country is rivalling Europe in terms of global bioenergy capacity share, according to IRENA, at 32 percent, compared to 34 percent in Europe. Europe (up 1.3 GW) and South America (up 0.9 GW) were the other two regions where bioenergy capacity expanded significantly.

In North America, Canada added 1.37 GW, Mexico added 0.87 GW, and the U.S. added 12.4 GW, for a total of 14.69 MW of renewable capacity added in 2016.

Click here for more information.

Renewables continue to rise in Europe

Wind, solar and other renewable energy sources are steadily increasing their share in energy consumption across the European Union, further reducing the need for CO2-emitting fossil fuel energy, according to a report published by the European Environment Agency (EEA) on 3rd April 2017. This trend is driving down greenhouse gas emissions from electricity generation, buildings' heating and cooling, and transport.

The EEA report 'Renewable energy in Europe 2017: recent growth and knock-on effects,' shows that renewables have become a major contributor to the energy transition occurring in many parts of Europe. Growth in renewables continues to bolster climate change mitigation in the EU. The EU-wide share of renewable energy use increased from 15% in 2013 to 16% in 2014. This upward trend continued also in 2015, as renewable energy accounted for the majority (77%) of new electricity-generating capacity for the eighth year in a row. Recent data from Eurostat showed that the EU-wide renewable energy use finally reached 16.7% in 2015 – which is close to the EEA's 16.4% preliminary estimate published in December 2016. This steady EU-wide progress in renewables since 2005 enables the EU to stay well on course to reach its target of 20 % by 2020.

The uptake of renewable energy since 2005 allowed the EU to cut its fossil fuel consumption and greenhouse gas emissions by about a tenth in 2015 – comparable to the annual fossil fuel use and greenhouse gas emissions of Italy. Three quarters of these greenhouse gas reductions attributable to renewables came from the development of renewable electricity production. Coal was the most substituted fuel across Europe, representing about one half of all avoided fossil fuels, followed by natural gas (28% of all avoided fossil fuels). In both 2014 and 2015, the largest reductions in fossil fuel use and CO2 emissions due to the uptake of renewable energy sources took place in Germany, Italy and the United Kingdom.

Click here for more information.

Bioenergy themed Graphic Novel published

Supergen

A new graphic novel which addresses the big questions around bioenergy and climate change was launched by The University of Manchester ahead of a major conference in March.

In a unique collaboration between artists and researchers working at the cutting-edge of bioenergy, the graphic novel aims to answer some of the big questions such as what is bioenergy, does growing biofuel compete with growing food, and does bioenergy really reduce greenhouse gas emissions?

It is aimed at a general audience: a handy and accessible guide for the bioenergy industry and policymakers to use in promoting the benefits and addressing some of the controversies around the subject, but also accessible for school-children.

Bioenergy: A Graphic Introduction was put together by northern artists, who have interpreted discussions with scientists from the Supergen Bioenergy Hub in a series of striking images which imagine alternative futures and explain some of the technology involved and how it might be put into practice.

The Supergen Programme was set up in 2001 to deliver sustained and coordinated research on sustainable power generation and supply across several key research areas, including tidal, storage technology (including batteries for grid and transport), smart networks and wind power. The programme is managed by the Engineering and Physical Sciences Research Council (EPSRC) as part of the RCUK Energy Programme, which currently supports seven hubs at universities across the country.

Click here for more information.

Markets

Renewable energy generates £15bn for UK economy

The UK's Office for National Statistics released final results of direct and indirect activity from the UK Low Carbon and Renewable Energy Economy Survey (UK LCRE) for the reporting year 2015. The survey provides details of the low carbon and renewable energy economy in the UK. The sector employs a quarter of a million people and generates £42 billion turnover.

In 2015, an estimated 234,000 full-time equivalent (FTE) employees were working directly in low carbon and renewable energy (LCRE) activities in the UK, accounting for 1.0% of total UK non-financial employees.

LCRE activities generated £43.1 billion turnover in 2015, accounting for 1.3% of total UK non-financial turnover.

Sectors active in renewable energy generated £14.9 billion in turnover in 2015, which is 34.7% of all LCRE turnover.

The energy efficient products sector accounted for a third of LCRE turnover (£13.9 billion) and almost half of LCRE employment (102,500 FTE).

Over half (52.9%) of the UK's turnover from onshore wind activities was generated in Scotland (£1.5 billion).

The solar, offshore and onshore wind sectors combined accounted for 63.5% of all LCRE acquisitions in 2015.

Click here for more information.

Biomass Heat & Power

Drax successful in acquiring Louisiana pellet plant

Drax

Wood pellet producer Drax Biomass has acquired Louisiana Pellets with a winning auction bid of $35.4 million. The auction for the bankrupt Louisiana pellet manufacturer culminated on March 30.

Louisiana Pellets had filed for Chapter 11 bankruptcy with the U.S. Bankruptcy Court for the Western District of Louisiana in February 2016, and recently idled production. Located in Urania, the Louisiana Pellets' facility is capable of producing approximately 450,000 metric tons per year.

Drax Biomass said the purchase will support the company's strategy of more than doubling its current production capacity to self-supply 20-30 percent of Drax Power Station's demand. while also competing for supply contracts in new biomass markets. Headquartered in Atlanta, Georgia, Drax Biomass currently operates two pellet manufacturing facilities in Bastrop, Louisiana and Gloster, Mississippi, as well as a port storage and transit facility in Port Allen, Louisiana.

Drax Biomass said it intends to close on the sale by the end of April. The company is a subsidiary of UK-based Drax Group plc, which operates the largest power station in the United Kingdom and supplies up to 8 percent of the country's electricity needs.

Click here for more information.

Three bioenergy plants among those awarded in UK Heat Network Investment Project

Nine applications were successful in the pilot phase of the £320m Heat Network Investment Project (HNIP). Total awards are worth over £24m. The supported heat network projects provide heat to approximately 5,000 domestic customers and 50 non-domestic buildings. The £320m Heat Networks Investment Project (HNIP) capital investment programme is expected to support up to 200 projects by 2021 through grants and loans and other mechanisms and to lever in up to £2bn of wider investment, reducing bills, cutting carbon and forming a key part of wider urban regeneration in many locations.

Awarded recipients at the building stage include four projects in London, two in Manchester and one in Sheffield, Crawley and Colchester. Planning-stage support was won by projects in Trafford, Islington, Buckinghamshire and Middleborough.

The three projects in the Heat Networks Investment Project that will utilize waste or biomass are the Sheffield District Energy Network development, an energy-from-waste plant, and the Crawley Town Centre Heat Network, which will utilize a biomass boiler and gas combined-heat-and-power plant.

Click here for more information.

50MW cofired biomass plant nearing completion

The construction of a renewable energy biomass cogeneration facility adjacent to Albany, USA's Procter and Gamble manufacturing centre is on schedule, the $200 million (184 million euro) plant is set to start producing energy and steam for its customers within 90 days.

When completed, the 50-megawatt cogeneration biomass facility will produce energy for Georgia Power, steam for Procter and Gamble and steam that will be converted to energy for Marine Corps Logistics Base-Albany.

As well as supplying power to Georgia Power, the biomass plant will be an important part of Procter and Gamble's commitment to reduce its global footprint by increasing its use of renewable energy.

Click here for more information.

National Trust Estate set for Biomass Power

Wikimedia Commons

A National Trust owned property is set to save £34,000 a year by switching to an environmentally friendly biomass heating system.

Knightshayes Court in Tiverton, Devon, is undergoing the switch to the new, sustainable heating system this spring. It's part of the National Trust's goal to get 50% of its energy from renewable sources by 2020. There are currently forty projects underway as part of the Trust's national Renewable Energy Investment Programme.

The house and stables will get rid of their existing oil consumption system and replace it with much more sustainable locally sourced woodchip. National Trust sites such as Saltram, Killerton, Cotehele and Castle Drogo have already installed biomass heating systems as part of the Renewable Energy Investment Programme. Nationwide, there are over 60 woodchip, pellet or log boilers installed at National Trust properties.

Switching to a system powered by locally sourced woodchip will save Knightshayes around £30,000 annually on the cost of oil, and over £4,000 a year on the electricity currently being used to heat the stables' café and shop. The substantial savings will allow Knightshayes to re-allocate funds to caring for the house and surrounding parklands, and important conservation projects.

As part of the project, the property aims to transition to being able to supply its own woodchip, using available timber from nearby woodland at Knightshayes and surrounding Buzzards Estate.

Click here for more information.

Proving sustainability of biomass fuels now easier thanks to new system

Sustainable Fuels Register

A new system for proving the environmental credentials of non-woody biomass fuels is set to help producers and users make more money; and make their life much easier. The system can help to add £'s per tonne to the value of combustible straw, for example.

The Sustainable Fuel Register (SFR) has been developed jointly by leading consultants Crops for Energy Ltd (C4E) and FEC Energy. It provides water tight sustainability reporting for growers and users of a variety of non-wood fuels who need to prove the provenance of their material to Ofgem, so Renewable Heat Incentive (RHI) subsidy can be claimed when the material is burned in accredited equipment.

SFR is an on-line system, which enables producers and users to register 'lots' of fuel so that the greenhouse gas emissions and land criteria requirements associated with that 'lot' can be recorded. This can be done at each stage of production and trading to give a traceable 'history' and proof of the sustainability of the fuel. The system has been developed in accordance with Ofgem requirements and is recognised by them as an acceptable way of showing sustainability.

Until now, the only way to register sustainability was through a time-consuming and complicated self-reporting system. For many fuel producers and users, going through this was simply too onerous to contemplate, so they would forgo their subsidy on non-wood fuels.

Fuels which can be put through the system include straw, miscanthus, grass, bracken, food wastes (such as used coffee grounds), horse manure and bedding.

As well as saving a lot of time, it adds value by giving the end user a traceable history of the sustainability of the product in which they can have confidence. It also safeguards users in the event of audit, as they have the necessary records to demonstrate the sustainability of their fuel.

Click here for more information.

Biogas

SEaB's Waste-to-Energy FLEXIBUSTER to provide energy for California

SEaB Energy has just been awarded a contract to supply the State of California Energy Commission with one of its award-winning waste to energy FLEXIBUSTER™ units as part of a five-year research programme into sustainable energy generation from food waste.

In a partnership with the University of California, Davis, Southampton based SEaB Energy will be installing one of their FLEXIBUSTER™ units at a US Naval Base in Ventura county in October 2017, expanding their operations in the US to include the West Coast and building on existing contract wins in the Midwest and East Coast regions.

The contract announced on March 24th is the latest in a series of export orders for SEaB Energy that has seen rapid growth since the second half of 2016.

Click here for more information.

Farmers concerned about increasing numbers of AD plants

Farmers Weekly reports on concerns that a rise in the number of anaerobic digestion (AD) plants could put food security at risk in Scotland. Mr Nairn, environment spokesman for the Scottish Tenant Farmers Association (STFA), said the Scottish government's energy policy was strangling domestic livestock feed supplies, which could impact Scotland's ability to be self-sufficient.

Mr Nairn said Scottish farmers have been using draft from distilleries for the past 200 years, and buying dark grain pellets for 40 years, but AD plants have sent prices of this so-called "waste" product soaring and monopolised supplies.

The Scottish government is due to report in the summer on an investigation into the long-term impact renewable energy production from distillery by-products will have on livestock production.

Click here for more information.

UK exports biomethane to Europe for the first time

Europe is receiving biomethane from the UK for the first time, green gas shipper Barrow Green Gas announced.

It is being sent from the UK to Europe via the interconnector pipeline to Essent in the Netherlands.

Essent, the largest energy company in the Netherlands, is importing green gas to meet growing demand in the Netherlands which cannot all be met locally.

The green gas is produced by joint venture Energen at Poundbury, which was the first commercial plant to inject green gas into the existing UK gas network. Barrow Green Gas delivers the green gas to RWE, Essent's parent company, for delivery to the Netherlands via a pipeline that connects the UK to continental Europe.

Click here for more information.

Looking ahead to post-subsidy German biogas

Wikimedia Commons

A project is to investigate how German biogas plants will operate post-2030 when the majority of the country's 9,000 facilities will no longer receive state subsidies.

The German biomass research centre (DBFZ), revealed on 27 March, it had been commissioned by country's federal environment agency to carry out the work.

According to the DBFZ, in 13 years' time a "large number" of biogas plants will no longer receive support under Germany's renewable energy act, known as the EEG.

Options for how existing biogas facilities can be "economically and ecologically" used post-2030 is needed, as Germany looks to balance energy production from biogas and other renewable energy technologies, according to the DBFZ.

The project will select plant concepts and the assessment matrix it will take forward for the two-year research period in November.

Click here for more information.

Sewage plants lead the way in AD

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The RO closed to all new generating capacity on 31 March this year, but what is less widely appreciated is that, for the early generators, the default accreditation period of 20 years means that the majority of sewage sludge AD plants will lose their eligibility for ROCs in 2022, despite the fact that the RO itself will continue up to 2037. In effect, these plants have just five years or less of continued subsidy.

In addition, anaerobic digestion technology has moved on considerably over the last 15 years, particularly here in the UK. While new capacity has grown – the number of sewage biogas plants has increased from 49 in 2004 to 159 today – many of the original wastewater AD facilities are now looking to upgrade, often switching from producing electricity to biomethane in order to take advantage of the Renewable Heat Incentive, particularly given the positive outcome of last year's consultation on the scheme.

Upgrading an existing plant is also an ideal opportunity to improve its overall efficiency and ensure that every bit of heat and power produced is utilised, to maximise both energy production and overall greenhouse gas savings. In fact, the water sector is at the heart of AD efficiency and improvements – while the installed capacity for the anaerobic digestion of sewage sludge rose 12% to 216 MWe between 2010 and 2015, wastewater plants actually generated over 25%

more power. Recapturing heat is one of the easiest ways to improve efficiency, and heat exchangers represent the best way of doing this. They are an established technology, but despite their widespread use in industries such as food manufacturing and the chemical sector, they are often under-used in AD plants.

Heat can be utilised in the AD process itself, for example to pre-heat feedstock or digesters to improve gas production efficiency, or anywhere else that heat is required; from water treatment, pasteurisation, evaporation or drying processes to office and space heating, or to provide hot water for cleaning.

Click here for more information.

Energy from Waste

Energy from Waste at Viridor's Avonmouth plant

Viridor

Viridor, one of the UK's largest recycling and renewable energy companies, has appointed CNIM S.A. and Clugston Construction Ltd to build a new £252million Energy Recovery Facility (ERF) on an industrial site in Avonmouth on the outskirts of Bristol.

Industrial engineering contractor CNIM will provide the established technology for the new, consented facility and Clugston has been appointed as the building and civils contractor.

Construction will start this summer, with more than 600 people working on site during peak construction and 45 permanent roles created during operations.

The facility will enable local authorities and business to transform 320,000 tonnes of non-recyclable residual waste each year into renewable energy, which would otherwise go to landfill. As part of that transition Viridor recently signed a 25-year contract with Somerset County Council, brokered by Somerset Waste Partnership, which will see about a third of the available capacity at Avonmouth being taken up, by diverting waste that is currently transported to three landfill sites.

Once operational in 2020, the new ERF at Avonmouth will generate 34MW of low carbon energy, supplying National Grid with enough electricity to power 44,000 homes.

Click here for more information.

SUEZ to build four energy from waste plants in Europe

With the commissioning of four new plants (three in the UK and one in Poland) that will handle an additional 1.2 million tonnes of residual waste, the Group boosts its recovery capacity and further confirms its role as a major energy recovery producer.

In 2017, SUEZ will recover more than 9 million tonnes of waste in 55 Energy-from-Waste (EfW) plants in Europe. Seven TWh of energy will be sold, which is the equivalent of the annual consumption of a city with two million inhabitants, such as Vienna or Hamburg, and will avoid more than 1.5 million tonnes of CO2 emissions.

Residual waste cannot be viably recycled, but represents an important source of energy and a sustainable alternative to fossil fuels. In EfW plants located within the territories, it can be

transformed into electricity, heat or steam to supply electricity grids and local heating networks, or can be made available to the industrial customers.

This type of recovery offers a competitive alternative to burying waste on storage sites and is virtuous as it limits the use of fossil fuels and reduces greenhouse gas emissions.

Click here for more information.

Gatwick becomes world's first airport with a waste to energy plant

Wikimedia Commons

DHL Supply Chain and London Gatwick Airport have opened a new £3.8m (US$4.8m) waste management plant, which enables Category 1 airline waste to be turned into energy on-site.

The plant is a world's first for an airport and will save £1,000 (US$1,260) in energy and waste management costs every day it operates.

Category 1 forms the majority of waste from non-EU flights and is defined as food waste or anything mixed with it, such as packaging, cups and meal trays from international transport vehicles. Through the plant, waste is turned into a dry-powdered organic material, which is then used as fuel to heat the site and dry the waste for the next day.

With the objective of boosting the airport's recycling rate from 49% to around 85% by 2020, the plant includes a waste-sorting centre to maximize recycling on-site. Concentrating all activities in one location enables the team to transport waste four times more efficiently than before, reducing local traffic and carbon emissions. The plant has also been designed with the future in mind and has the capacity to produce additional energy that could one day be used to power other areas of the airport.

DHL Supply Chain, Gatwick's partner on the project, currently manages inbound deliveries for the airport's 150 partners and retailers.

Click here for more information.

Events

All-Energy
10th - 11th May 2017, Glasgow

All-Energy, the UK's largest renewable energy event, is taking place on 10th & 11th May 2017 in Glasgow. 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.

Visions of Bioenergy
11th May 2017, Brussels

AEBIOM
EUROPEAN BIOMASS ASSOCIATION

Come and hear about Europe's visions of bioenergy, from both the institutional and the grassroots perspectives. Organised by AEBIOM, in the frame of the BioRES project, Visions of Bioenergy - Bringing Local Initiatives to Brussels gives you the opportunity to discover, first-hand, a range of concrete, local projects that have transformational and far-reaching regional benefits.

Participants will have the chance to visit one of these projects, an Austrian BLTC, through a total immersion in a 360° video. It'll be like travelling to the place…

Click here for more information.

International VDI Conference
16th - 18th May 2017, Copenhagen

VDI Wissensforum

2017 the "Energy and Material from Waste" conference is held for the 4th time. Use the event to discuss the innovations of BREF WI, innovative technologies and markets, current developments in the Waste-to-Energy sector and the concept of "Circular Economy" with other experts. Due to new technologies and innovations, waste continues to evolve troublesome garbage to a valuable commodity. In addition, the landfilling of waste without treatment is now only allowed in a few exceptional cases. Other options of waste disposal are therefore becoming a major topic.

Click here for more information.

World Waste to Energy and Resources Summit
23rd - 24th May 2017, London

WORLD WASTE TO ENERGY AND RESOURCES SUMMIT
London, May 23-24, 2017

The World Waste to Energy & Resources Summit returns to London this May 23-24, 2017, and is shaping up to be the most international and high-profile event to date.

From the impact of Brexit and the upcoming CfD auction, to identifying ACT opportunities for growth and deriving high-value fuels and chemicals from waste, the summit welcomes waste management CEOs, project developers, technology companies and financiers to discuss the greatest challenges and opportunities facing the industry.

Click here for more information.

EUBCE
12th - 15th June 2017, Stockholm

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

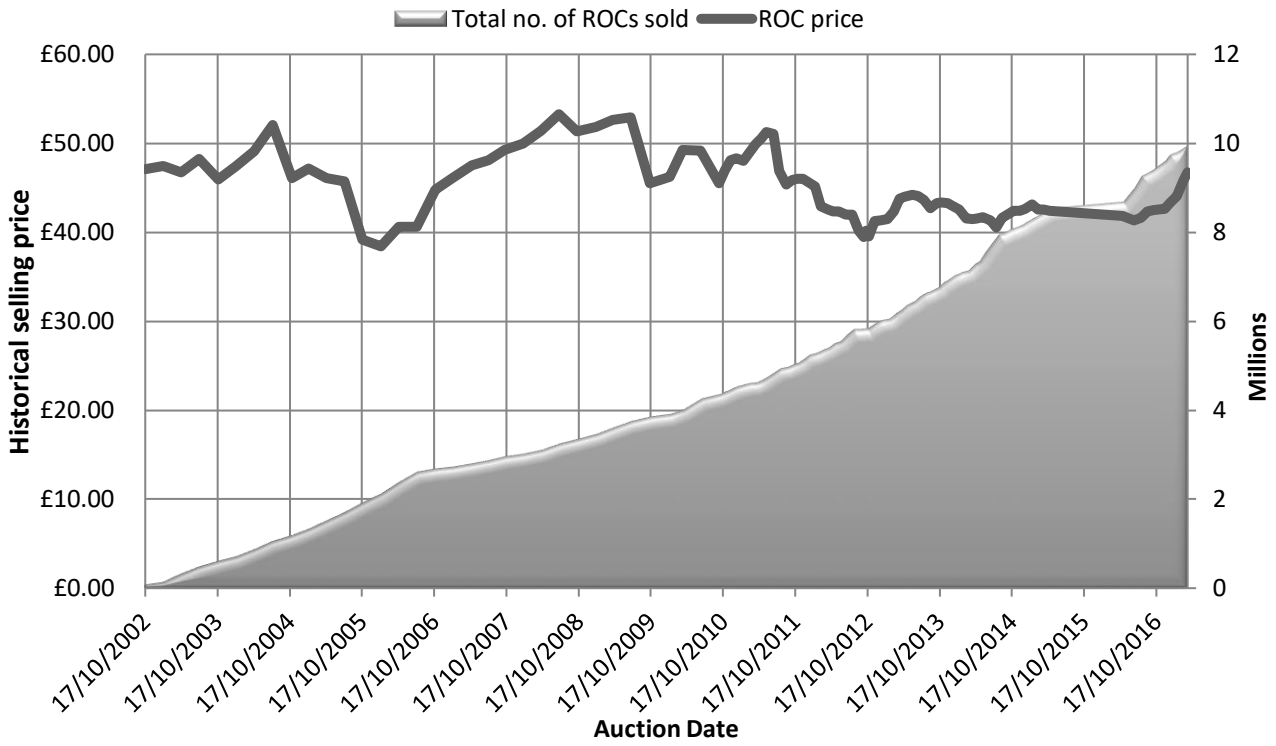
The EUBCE covers the entire value chain of biomass to conduct business, network, and to present and discuss the latest developments and innovations, the vision is to educate the biomass community and to accelerate growth.

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 sterling pounds, and total amounts of ROCs historically sold.



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