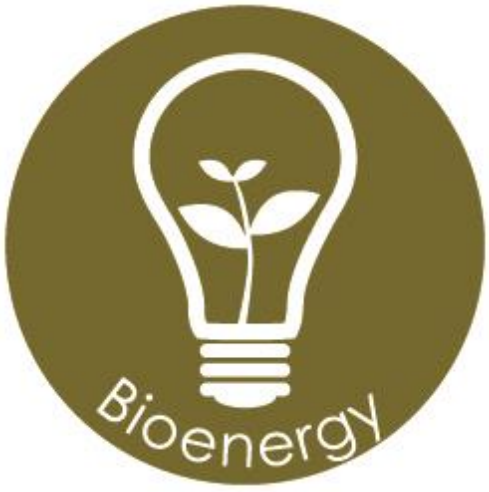
The Bioeconomy Consultants
NNFCC

**YOUR PARTNERS FOR BUSINESS INSIGHT AND MARKET INTELLIGENCE**

Providing clients with a strategic view of feedstock, technology, policy, and market opportunity across the bioeconomy

# News Review




## Issue Seventy-Nine

## October 2018

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

# Contents

# Foreword

Welcome all to October's free issue of NNFCC's Bioenergy News Review.

In the wake of the latest report from the IPCC, which details how much effort is going to be required going forward in order to mitigate global warming caused by greenhouse gas emissions, and to avoid catastrophic climate change as a result, the spotlight has once again turned on renewable energy. Here at NNFCC we have long been advocates that bioenergy is an essential part of the renewable energy mix, not being subject to seasonal conditions and thus being able to generate at all times. This sentiment has been echoed in the latest report from the International Energy Agency (IEA), whose latest renewable energy market analysis highlights great untapped potential in the bioenergy sector. Globally, bioenergy contributes half of renewable energy, and continues to be the sector that grows fastest. However, this growth is expected to slow over the next decade, as other technologies such as solar and wind energy continue to develop. This is a reality that the bioenergy sector has long since accepted, but in the meantime, bioenergy's importance cannot be overstated in the renewables sector.

Despite this, bioenergy continues to face an uphill battle, as shown this month by stories of biomass power struggling in the face of policy decisions and reluctant market uptake. The first is the opening of a consultation into the restriction of burning biomass as part of the Renewable Heat Incentive (RHI). Under the proposed restrictions, biomass burners would not be eligible for RHI support if they are burning biomass in urban areas connected to the gas grid. The reasoning behind this consultation is that burning biomass produces more particulate matter than burning gas, and with increasing scrutiny on air quality in the UK's cities, this does need consideration. However, it is a case of being between a rock and a hard place for the government, as the vast majority of the gas fed through the national grid comes from fossil sources, which, unlike biomass, is not "carbon neutral" when burned. Thus, a decision must be made on air quality versus greenhouse gas emissions. This problem could be solved by wider deployment of biogas energy, which presents the best of both worlds: carbon neutral energy without particulate emissions. This is possible, as demonstrated this month by Yorkshire Water's thermal hydrolysis plant in Bradford, which has produced enough biogas in September to power over 3000 homes. If biogas technology could be deployed more widely, particularly at waste and sewage treatment plants in cities, the air quality problem of burning biomass could be solved without compromising on carbon emissions.

Read on for the latest news.

# Policy

## Consultation on biomass RHI in urban areas

*Geograph*

The UK Government has released a new consultation concerning biomass combustion in urban areas.

In the Clean Air Strategy published back in May, the government committed to consult on restricting new biomass installations in urban areas under the Renewable Heat Incentive (RHI). In this latest consultation the Government proposes that biomass combustion installations should no longer be eligible for RHI support if they are located in urban areas that are on the gas grid. The consultation attempts to define these areas and indicate where restrictions could apply (consultation excludes the RHI scheme in Northern Ireland).

Although biomass boilers are seen to be significantly cleaner than burning solid fuel on open fires or in stoves, they still produce much higher levels of particulate matter than gas- or oil-fired alternatives, which the government judges to be an issue in urban areas.

The RHI is targeted on, but not restricted to, removing future RHI support for biomass heat in off-gas grid areas. The majority of RHI biomass installations are not in urban areas but a small but significant proportion has been accredited in on-grid, urban areas (12.2% for Non-domestic RHI and 4.6% for domestic). However, as the REA and BEIS themselves point out, being within an on-gas grid area does not necessarily mean that homes and businesses are grid connected (but they would be excluded from adopting RHI-supported biomass heat applications under these proposals).

The consultation also considers whether regular checks on existing installations should also be mandated to ensure appropriate fuels are used to minimise particulates etc.

Click here for more information.

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## High number of RHI projects fail audit

The Renewable Heat Incentive Industry Forum was established by Ofgem met in September to review latest developments. Kevin Lindegaard (Crops 4 Energy) attended and outlined the key issues in a Wood Heat Association article.

The lack of knowledge of ongoing requirements by non-domestic RHI recipients was highlighted as an issue, with a high level of follow up audit failures.

Ofgem significantly increased the number of audits in 2017/18. In total, 620 projects were audited rising from 224 audits in 2016/17. Of these, 374 were targeted – projects are specifically picked out if they fall within certain criteria such as: large or high value projects, projects involving multiple boilers, projects where quarterly submissions have been missed, projects where there have been inconsistencies in their returns, and projects that have been amendments to the RHI agreement.

The other 246 audits were randomly chosen from all projects.

73% of targeted projects were non-compliant whilst 48% of statistical projects were non-compliant. This indicates that Ofgem have a high success rate of picking up on projects that are not complying fully with the obligation.

Fuel records and evidence of sustainability are the biggest reasons for failed audits comprising 35.5% of failures. In many cases the problems involve the lack of documentation on site or confusing record keeping due to fuel going into multiple installations on site.

There are likely to be more random audits in 2018-19. RHI recipients getting an audit request will receive both a desk and site audit. The desk audit will be conducted first, followed by the site audit.

Another key message that came out of the meeting was that RHI participants should be checking their meter readings more often to guard against meter breakage. The number of estimated readings is limited to only 8 quarters over the 20-year life agreements.

# Markets

## Bioenergy forecast to lead renewables growth, according to IEA

Renewables 2018 is the IEA market analysis and forecast from 2018 to 2023 on renewable energy and technologies. It provides global trends and developments for renewable energy in the electricity, heat and transport sectors.

The analysis this year contains an in-depth look at bioenergy, the world's largest source of renewable energy, highlighting the untapped potential of modern bioenergy and other renewable sources for greening the industry and transport sectors.

Under an accelerated case, the report also highlights policy and market improvements that can unlock further growth of renewable energy in electricity and transport biofuels.

Modern bioenergy was responsible for half of all renewable energy consumed in 2017 – it provided four times the contribution of solar photovoltaic (PV) and wind combined. Most modern bioenergy is used in final energy consumption to deliver heat in buildings and for industry.

Bioenergy is the largest source of growth in renewable consumption over the period 2018 to 2023. Bioenergy – as solid, liquid or gaseous fuels – will account for 30% of the growth in renewable consumption in this period. This is a result of the considerable use of bioenergy in heat and transport. Other renewables have less penetration in these two sectors, which account for 80% of total final energy consumption.

In 2023, bioenergy will remain the predominant source of renewable energy, although its share of total renewable energy declines from 50%, in 2017, to 46% as the expansion of both solar PV and wind accelerates in the electricity sector.

Click here for more information.

*Wikimedia Commons*

## Renewables, including bioenergy, continue to rise in the UK


*Flickr*

The share of renewables in UK electricity generation was a record 31.7% in the second quarter of 2018, government figures showed. This is an increase from 30.6% in the same quarter of 2017, which had previously been a record. The expanded share is a result of increased capacity and lower overall generation.

While growing 3% year-over-year to 24.3 TWh, renewable electricity generation was 14% below the previous quarter which set a record of 28.2 TWh.

Onshore wind generation declined 12% from a year ago to 5.5 TWh, while offshore wind generation rose 19% to 4.8 TWh, although it remained 40% below the previous quarter when wind speeds were much stronger. Solar generation climbed 0.9% to 4.6 TWh, and bioenergy generation grew 8.8% to 8.5 TWh.

At the end of the quarter, the UK had 42.2 GW of renewable electricity capacity, up 10% on a year earlier, with the increase driven by offshore wind. Onshore wind and solar photovoltaic (PV) both account for some 31% of total renewable capacity, with offshore wind accounting for 19%.

In Scotland, renewable electricity capacity increased 8% over the year to around 10.3 GW.

Click here for more information.

## National grid "confident" it is ready for winter

The Winter Outlook Report presents National Grid's view of supply and demand for the forthcoming winter for both gas and electricity with particular focus on security of supply. The analysis is based on market insight and industry views provided via their winter consultation process and aims to present credible and robust information to allow preparation for the winter ahead. For this winter, even under colder conditions than experienced in recent years, National Grid are confident they have the right products and strategies in place to help balance the gas and electricity networks.

Click here for more information.

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## Rise in gas prices prompts increased UK coal burning

New Stream renewables report that UK carbon dioxide emissions rose by 15% after rising gas prices led to a shift back towards coal in recent weeks. With the cost of gas reaching a ten-year high it prompted large power stations to use coal-fired plants instead of lower-carbon gas plants.

Power generated from coal fell to a record low of 200MW during June and July, however doubled in August and during the first week in September reached 2GW. UK coal power stations are still set to be completely removed by 2025.

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## Drax acquires Scottish Power assets

The Business Desk reports that Power company Drax has agreed to acquire Scottish Power's portfolio of pumped storage, hydro and gas-fired generation for £702m from Iberdrola – Scottish Power's parent company.

The Portfolio consists of Cruachan pumped storage hydro (440MW), run-of-river hydro locations at Galloway and Lanark (126MW), four CCGT stations: Damhead Creek (805MW), Rye House (715MW), Shoreham (420MW) and Blackburn Mill (60MW), and a biomass-from-waste facility (Daldowie).

In August, the company switched on its fourth biomass generating unit.

This acquisition is a major step in taking the North Yorkshire power station coal-free.

The addition of the portfolio is expected to generate EBITDA in a range of £90-110m, from gross profits of £155m to £175m, of which around two thirds is expected to come from non-commodity market sources, including system support services, capacity payments, Daldowie and ROCs.

Capital expenditure in 2019 is also expected to be in the region of £30-35m. Drax entered into a fully underwritten £725m secured acquisition bridge facility agreement to finance the acquisition.

The acquisition is expected to complete on 31 December and is conditional upon the approval of the acquisition by Drax's shareholders and clearance by UK Competition and Markets Authority.

Click here for more information.

## Biomass Infrastructure Group raises £150m for investment

*Geograph*

The Bioenergy Infrastructure Group (BIG) has announced that it has raised a further £150 million from three companies to invest in "new UK biomass and waste to energy assets".

The additional investment has been made by Infracapital, Helios Energy Investments and Aurium Capital Markets, bringing the aggregate funding to over £600 million since the company was established in 2015.

BIG has invested in over 20 projects across the UK, including the 21MW Ince biomass plant in Cheshire, as well as the 20MW Mersey Bio Energy in Widnes and the 24MW Energy Works facility in Hull.

BIG says that in total its facilities will divert over 1 million tonnes of waste from landfill each year and generate enough electricity to power around 250,000 homes in the UK.

As part of the fundraising, Aurium, one of the investors, has acquired the equity stake held by BIG co-founder Foresight Group. BIG says however that Foresight "remains a key stakeholder" in the business with an ongoing advisory role and continuing interest in BIG's success.

Click here for more information.

### AMP holdings raises £8.5m from stock sale

Aggregated Micro Power Holdings Plc (AMP) has conditionally raised GBP 8.5 million (USD 11.2m/EUR 9.6m) in gross proceeds through a shares placing.

The UK-based provider of distributed heat, power and renewable fuels, is placing 8.5 million new ordinary shares at GBP 1.00 apiece, which is a discount of about 9.1% to the closing mid-market price of GBP 1.1 per ordinary share on October 12, 2018.

AMP plans to use the net proceeds from the issuance to fund the redemption of fixed rate secured 8% Series I and Series II convertible loan notes 2021 with a total amount of GBP 10 million, including GBP 2.22 million that will be converted into new ordinary shares by directors and managers of the firm. Any remaining funds will be spent mainly to meet working capital requirements and for growth investments.

AMP further noted that for the period from April 1 to August 31, 2018, it has achieved unaudited group revenue of some GBP 14.5 million.

Click here for more information.

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# Research & Development

### New report claims CHP could save UK industry millions

*Flickr*

A new report claims the British industrial sector could save up to £540 million (€601 million) per year on its energy bills by switching to new energy technologies such as combined heat and power (CHP), solar or battery storage.

The research comes as part of Centrica Business Solutions Powering Britain report, which has analysed the UK's major production and manufacturing activities, including steel, mining, chemicals, car manufacturing, machinery and food & drink production. Combined, these sectors cover a quarter of the country's entire electricity demand.

Centrica has published the report to coincide with the opening of its new CHP factory in Salford, Manchester. The new site will operate alongside Centrica's existing CHP factory, which has produced more than 3,000 CHP units for use in the UK and around the world since 1984. 20 new jobs have been created by the expansion.

The report suggests that savings could be achieved by adopting distributed energy technology, such as CHP, new heating and lighting, solar, and battery storage. It also claims that if just 50% of businesses in the sector adopted energy improvements, UK productivity and growth could be boosted by £13.9bn GVA (Gross Value Added).

Click here for more information.

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### Report into Greenhouse Gas removal technologies for the UK

A joint report by the Royal Academy of Engineering and Royal Society presents an ambitious plan for how the UK can lead the way in deploying greenhouse gas removal (GGR) technologies to achieve net-zero carbon emissions by 2050. It is the first time that a range of GGR technologies have been assessed for their real-world potential in being used together to meet climate goals in the UK over the next 30 years.

The report's authors state that while the UK's first priority must be to maintain efforts to rapidly cut greenhouse gas emissions, GGR technologies have a role to play in counteracting emissions from aviation and agriculture, where the scope to completely reduce emissions is limited. However, to meet climate targets significant action is essential, starting now. Bringing the UK to net-zero emissions in 2050 will require annual removal of an estimated 130 megatonnes of CO2, even with stringent reductions in emissions.

The report also considers the global picture and outlines a scenario in which a portfolio of GGR technologies can be implemented together to achieve carbon removal across the world by 2100 to meet the goals of the Paris Agreement. Biological solutions like planting trees will become saturated by the end of the century and other GGR technologies will need to be developed and used in the longer term.

The technologies discussed in the report range from well-known and ready to deploy methods, such as forestation, to more speculative technologies like direct air capture, which aims to use chemical processes to remove CO2 from the atmosphere.

Each technology is assessed on its readiness for deployment in the time scale required, potential for scalability, costs, environmental and social impacts and how much of a 'dent' it can make in removing excess carbon to meet the targets.

Click here for more information.

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# Biomass Heat and Power

### Drax making Brexit preparations

Bloomberg reports that Drax, which has generated power for more than 40 years at its site in North Yorkshire, is working together with the operator of its port as well as the rail operator to make sure that supplies won't be disrupted when the U.K. leaves the EU next March. The company has its own berths and unloading facilities.

Drax sources 83 percent of its feedstock from North America, with the remainder coming from the Baltics, Brazil, Portugal and other countries within the European Union.

Click here for more information.

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## Price holding back US biomass power

Power magazine comments on US biomass power development. Though experts say biomass should continue to play a key role in the U.S. renewable power portfolio for its baseload properties, contributions to forest management, and other reasons, a swathe of uneconomic biomass power plants across the U.S.—especially in the West—have been recently idled or shut down.

According to the Energy Information Administration (EIA), the number of biomass (or biopower) plants producing electricity from combustion, co-firing, gasification, anaerobic digestion, and pyrolysis, nearly doubled between 2003 and 2016 (from 485 to 760). Yet, biomass power accounted for only 1.6% of net U.S. electricity generation in 2017, producing 64,057 GWh.

The predicament is most apparent in California, where, despite a flurry of measures to prop up biopower, net biomass generation has shrunk by 11% since 2013. While nearly 530 MW is online in the state, about 200 MW remains idled. These include sizable projects like the 48-MW Covanta Delano plant and the 25-MW Covanta Mendota plant. About 100 MW is ready to come online as needed within 30 to 90 days.

Click here for more information.

## Low uptake in German biomass power auctions

*Wikimedia Commons*

Renewables Now commented on the outcome of the recent German biomass power auction. Biomass auctions in Germany are held once a year with a capacity volume target of 150 MW. To this is added the capacity not awarded in previous tenders. The 2017 tender, Germany's first for biomass, left almost 95 MW of unsubscribed capacity following a weak response.

There were 79 winners, representing a combined capacity of 76.54 MW. This is far below the total tender volume of 225.8 MW announced in July.

The tender allowed existing biomass power plants to compete for 10 extra years of fixed payments if they have less than eight years left under their current contracts. Such plants secured contracts for 47.06 MW of capacity in the auction, while new projects with a combined capacity of 29.48 MW were also successful.

The bidding cap for new biomass power plants was EUR 0.1473 per kWh, while that for existing stations was EUR 0.1673/kWh. The lowest bid was for EUR 0.10 per kWh and the highest EUR 0.1673 per kWh. The average, quantity-weighted surcharge arrived at EUR 0.1473/kWh.

Click here for more information.

### Wood-fired CHP plant in Kent begins generation

Copenhagen Infrastructure Partners (CIP) has announced that Kent Renewable Energy, a 27 MW wood-fired combined-heat-and-power (CHP) plant located in Sandwich, UK, has successfully commenced operations.

Construction on the plant began in mid-2016 and was completed on budget and two months ahead of schedule—only 25 months after financial close. Commissioning began in February 2018. The plant began commercial operations on September 13.

The plant is fuelled with locally sourced wood supplied by EuroForest. Information released by CIP indicates the facility is creating a new reliable market for low-grade wood that is otherwise difficult to make use of.

The facility produces heat and power that is sold to Discovery Park and to local power consumers connected to U.K. Power Networks' grid. The plant's 27 MW capacity is expected to serve approximately 50,000 homes and offset approximately 100,000 tons of carbon dioxide emissions annually.

Kent Renewable Energy is majority owned by Copenhagen Infrastructure II. BWSC and Estover Energy also hold ownership in the plant. The company is fund managed by Copenhagen Infrastructure Partners. Kent Renewable Energy will operate under the Renewables Obligation Certificate regime for power and under the Renewable Heat Incentive for heat.

Click here for more information.

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# Biogas

### Glastonbury festival to have AD plant

*Wikimedia Commons*

Work is underway to create a new "bio digester unit" at Glastonbury Festival, helping to turn cow dung into electricity.

A crane spotted on site at Worthy Farm got festival fans talking about the possibility of a new area or stage at the world-renowned event, which will return in June 2019 after a year off.

However, it has been confirmed by the owner of CJ Tower Cranes that the work being carried out is in preparation for the arrival of a new anaerobic digestion plant.

It seems as though the festival is looking to make the most out of its natural assets, being a dairy farm for the majority of the year, and take more steps to becoming the greenest event it can be.

Theoretically, festival-goers' portaloo and long drop deposits could also be used to create electricity at Worthy Farm.

Planning documents show an application for the "erection of a 124kw Anaerobic Digestion Plant and associated infrastructure" at Worthy Farm.

Planning permission for the project was granted by Mendip District Council on August 1st.

Click here for more information.

## Record thermal hydrolysis generation in Bradford

Yorkshire Water's £34 million Thermal Hydrolysis Plant (THP) at Esholt Wastewater Treatment Works in Bradford opened in 2014 with the sole intention of creating energy from sludge to power the site and supply any excess electricity to the National Grid.

The THP process involves heating up sludge to 165ºC to kill off any pathogens. This then enables the bio-digestion process to generate more methane gas per unit of sludge, which is used to power combined heat and power (CHP) systems to generate electricity.

Its record performing week in September generated 490MWh and as well as powering the sewage works supplied enough electricity to the Grid to power 3,600 homes. This also adds towards a wider commitment the firm has made to create up to 12 per cent of its own electricity from renewable sources.

The plant uses the BioThelys thermal hydrolysis system supplied by Veolia Water Technologies.

Currently, Yorkshire Water has just one THP but in the future would be able to bolt this technology onto its new wastewater treatment works if required. A similar technology, anaerobic digestion, is currently used at 18 of the firm's sewage sites.

Even the by-product of the digestion process is able to be used as a rich land fertiliser by the agricultural sector, avoiding any waste having to go to landfill.

Click here for more information.

## Centrica add two fast-response plants

*Centrica*

Centrica plc has completed construction of two new fast response power plants in Brigg, North East Lincolnshire, and Peterborough. Capable of producing enough power to meet the needs of 100,000 homes, the 50MW facilities have been designed to respond to peaks in demand within two minutes.

The new plants have been built on land adjacent to Centrica's existing gas-fired power plants and each consist of five reciprocating gas engines that will typically run for a few hours a day. The facilities will be operated from Centrica's new Energy Control Centre in Peterborough and maintained by local teams.

The power plants form part of a £180m investment by Centrica into a series of flexible generation and storage facilities announced in December 2016.

The engines have been supplied by Wärtsilä.

The plants each comprise 5 x 9.8MW engines, delivering a total capacity of 49MW each.

Click here for more information.

### Welsh Water to upgrade AD capabilities at Cog Moors

As reported by local news outlet, The Glamorgan Gem, Dwr Cymru Welsh Water is set to begin a €53.7 million ($63.1 million) investment scheme to improve the 'green energy' output at one of its facilities.

Named Cog Moors, the wastewater treatment works is in the town of Sully in southern Wales. The plant in question was built in the 1990s and assists in filtering wastewater for upwards of 200,000 people.

An upgrade of the site's original anaerobic digestion (AD) plant is part of the investment scheme. The plant will undertake construction of an additional advanced AD process (AAD).

The AAD will enable more biogas to be produced from the waste, which will then be converted into electricity.

Construction is set to start this year, and the plant should be 'operational' by 2020.

Click here for more information.

# Events

### European Biomass to Power Conference
### Stockholm, 7th-8th November 2018

Following the success of last year's conference in Aarhus, Denmark we are delighted to be hosting Biomass to Power 2018 on 7th & 8th November in Stockholm, Sweden.

Already on its 8th edition, this two-day event will bring together key industry stakeholders to join our forum discussions and excellent networking, including senior representatives from Power Companies, Biomass Producers, Biomass Traders & Distribution Companies, Trade Associations, Renewable Energy Consultancies, EPC Contractors and OEMs, Regional & National Governments and Regulatory & Research Bodies.

This year's conference will give updates on the European biomass market and its new developments, as well as focus on sustainability and commodity challenges. Over the two days, the event will give you in-depth look into case studies giving practical examples of planning, finance and technology strategies utilised for biomass co-generation projects.

On Tuesday 6th November a limited number of conference delegates will receive a unique opportunity to visit Stockholm Exergi's and Vattenfall's Uppsala plants. There is no extra charge to attend the site visits, but spaces are strictly limited and allocated to conference delegates on a first-come, first-served basis, so it is highly recommended to book early to guarantee availability.

Click here for more information.

### European Biosolids & Organic Resources Conference
### Leeds, 13th-14th November 2018

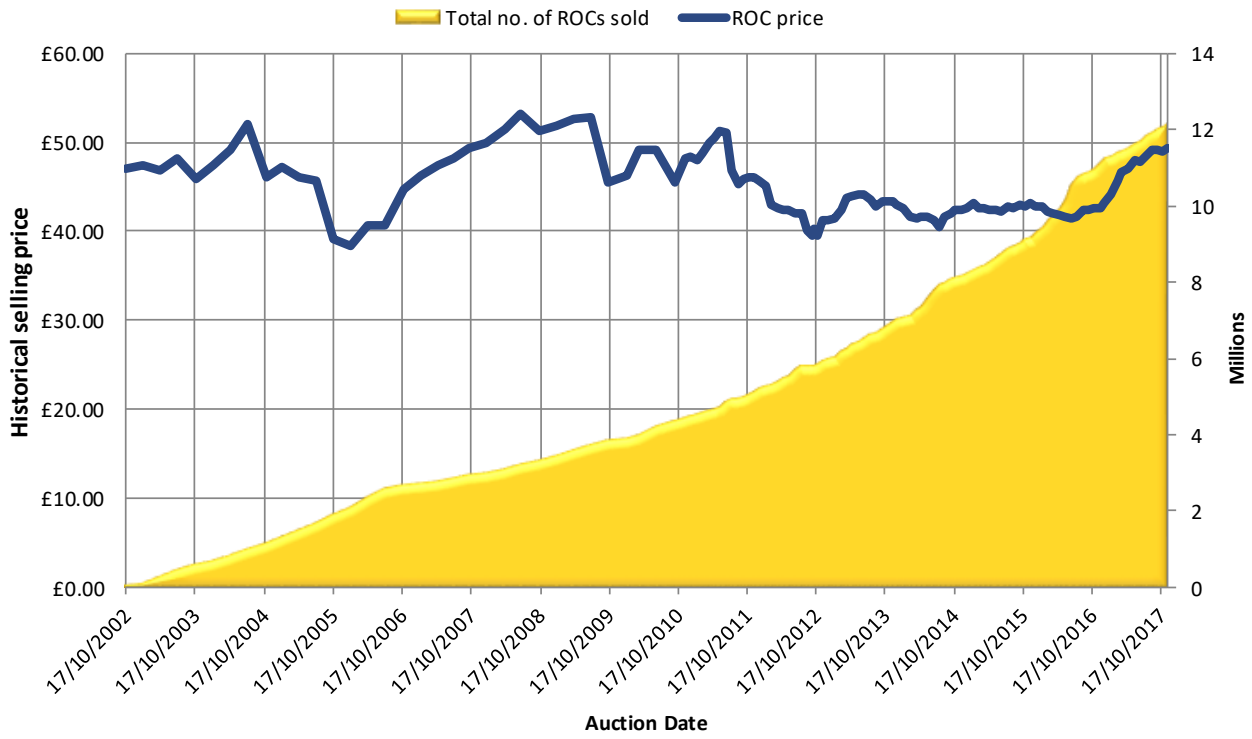
Now in its third decade, the conference provides an essential annual update on the latest industry innovations, best practice, cutting-edge technology and research in the waste water and resource management industries.

NNFCC will be leading a workshop on "Making the Bioeconomy Work", exploring how businesses have moved from theory to commercial reality to bring the bioeconomy to life.

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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**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**