

News Review



Issue Seventy-Four

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

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Foreword

Welcome, subscribers, to May's Bioenergy News Review.

Over the past year, much of the bioenergy coverage has focused on the UK's RHI reforms. The consultation into reforming the scheme was announced in March 2016, with the government's response published in December of that year. It has been a long wait since, but over the course of this year, the reforms have passed through the various parliamentary stage and are now finally coming into force. As of this month, the last of the reforms have finally been implemented. The final round of reforms are mostly concerned with monitoring the performance of heat pumps at plants receiving tariffs, as well as a change to the scheme's degression system, by which tariff levels decrease if the scheme is oversubscribed. This new system means that degression will no longer occur if growth in uptake of the scheme has been limited, which will hopefully go some way to preventing the scheme from falling back into the realms of not being profitable for bioenergy generators. Back in September, in the previous round of reform implementations, the tariff levels were increased for biomass plants, but also drying of digestate or feedstock was removed as a qualifying use for renewable heat generated, which resulted in a mixed bag for bioenergy. Nonetheless, the scheme's reforms are now fully implemented, and we will look on with interest at how it progresses from here.

There is further news this month on the other UK government support schemes for bioenergy. Firstly, the Feed-In Tariff – the other significant support scheme available for bioenergy projects, alongside the RHI – is due to close on 31st March of next year, which is seen as a blow to smaller-scale generators, who will have access to less support. However, the Renewable Energy Association has reported that a government consultation is due this year, regarding potential options for the sector after the FiT's closure, which provides some hope for generators who may stand to lose out when the scheme closes to new projects next March.

Finally, a report by the National Audit Office has found that a change to the Contract for Difference auction rules, that limited biomass projects to 150MW of participation, has resulted in a net increase of costs to the consumer – to the tune of £100million per year. Although the intention behind this rule change was to open up the scheme to smaller-scale generators, these generators' higher operating costs have driven up the price of the energy for the consumer. However, this is to be a short-lived downside, as BEIS has reportedly said they will not apply the cap in the same way in future.

Read on for the latest news.

Policy

UK RHI reforms come into force



Geograph

The long-awaited reforms of the renewable heat incentive (RHI) have passed their final parliamentary hurdle, bringing challenges and opportunities for farmers.

The non-domestic RHI was launched in 2011, with the domestic scheme following in 2014. The initiative has since been instrumental in kick starting the UK's push towards a target of 11% of its heat requirement coming from renewable sources by 2020.

The new package of measures introduces a range of regulations affecting both RHI schemes.

Farmers have been urged to use the introduction of these new measures to review their heat strategies as there are economic advantages, as well as wider environmental benefits to be had.

Summary of measures: introduction of tariff guarantees; introduction of assignment of rights; uplift to biogas/biomethane tariffs; biogas/biomethane feedstock restrictions; removal of wood fuel drying, waste drying/processing, and domestic swimming pools as eligible uses of heat; removal of digestate drying as an eligible heat

use; changes to CHP efficiency thresholds; revision of degression thresholds; introduction of shared ground loop regulations for the Non-domestic RHI; introduction of mandatory electricity metering for heat pumps on the Domestic RHI and domestic properties on shared ground loop systems in the Non-domestic RHI; and various operational administrative changes.

Click [here](#) for more information.

Post-Closure future for UK Feed-in Tariff?

The UK REA has highlighted that a Government Consultation is expected on the future of the Feed-in Tariff post-closure on 31 March 2019.

The Feed-in Tariff (FIT) scheme is due to close to all new projects on 31 March 2019 (existing accredited projects are unaffected). BEIS was due to have launched a consultation on the future of the policy and closure arrangements 18 months ago.

This is now expected this spring (no exact dates known), with the possibility of being released in the next few weeks. The consultation will look at important policy issues such as the future of the export tariff and support for micro-generation after the scheme closes to new capacity next year.

Click [here](#) for more information.

CfD biomass changes costing consumers, report finds



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The National Audit Office has found that by changing auction rules and limiting the participation of biomass projects to 150MW, contracts for renewable power capacity are costing consumers £100 million more each year. As these contracts typically cover a 15-year period, the total cost is expected to be £1.5 billion over their lifetime.

The auction the NAO investigated was for Contracts for Difference (CfDs). These contracts are the principal way the government encourages investment in new green power generation.

Generators compete in the auction by submitting the lowest fixed price (known as a 'strike price') possible in their application for CfDs. The project with the lowest price is chosen first, then the second lowest and so on until a project is added and it exceeds the scheme's budget limit. In the end all generators are given the same strike price: that of the last project to win a CfD.

Participation for biomass electricity in the 2017 auction was capped at a total of 150MW. A large project that exceeded the cap could be disqualified from the auction, while a smaller biomass project that came under the cap but charged a higher rate for its power could still

receive a CfD. In this way as much capacity is contracted under the cap as possible.

According to the report, at the time the Department made the decision to cap biomass, it was "unsure whether large-scale, long-term support of fuelled technologies (such as biomass and ACT) would contribute effectively to its broader strategic objectives."

The higher per-unit prices of the smaller biomass facilities drove up the strike price for the rest of the CfD recipients. The NAO assessed that the increased strike price caused by the cap will cost £100 million (€114 million) more per year. Over the 15-year period that these contracts are valid, this adds up to £1.5 billion (€1.7 billion).

When BEIS changed the rules, there were some projected scenarios where the alterations would have been beneficial. But the NAO found that the likelihood of these circumstances was not tested before committing to the change.

The contracts awarded in 2017 were at lower prices than the government expected, however, with the costs of wind farms having fallen significantly—as much as 50% according to BEIS. The auction also secured more generating capacity than expected.

Out of the 11 contracts awarded, three windfarms will produce 3.2GW of the 3.3GW in capacity secured.

In its report, the NAO says that BEIS has recognised that the outcome of the auction was 'suboptimal'. The Department says that it will not apply the cap in the same way. Previously, once a project reached the technology cap, applications for that technology were closed. The rule was changed in 2015.

Click [here](#) for more information.

UK 7th most "attractive" nation for renewables



Geograph

Earnst and Young have released their latest 'attractiveness index, for renewable energy.

The UK currently ranks 7th in the world, rising up the list following a large drop in renewables investment in 2017, the UK is bouncing back, with subsidy-free solar PV and onshore wind projects for merchant generation as well as repowering of old wind farms.

The UK sits behind China, USA, Germany, India and Australia.

Rising interest rates and the end of quantitative easing are set to raise the cost and reduce the flow of the cheap capital that has underwritten the dramatic roll-out of renewable energy capacity over recent years.

At the same time, government subsidies for clean power are being reduced or eliminated around the world. It also finds that the plunging cost of battery technology is increasingly enabling the cost-effective pairing of storage with wind and solar, providing clean dispatchable power, while standalone batteries are proving able to compete on price with open cycle gas plants in providing flexible demand response services.

Click [here](#) for more information.

\$78m US funding for early stage bioenergy research

The US Department of Energy has announced funding worth up to \$78 million (£57.6m) to support early-stage bioenergy research and development.

Organisations can bid for a share of the funding for projects, including those that develop highly efficient conversion processes for improving the affordability of fuels and products from biomass and waste streams.

Funding is also being offered for research and development related to the production of affordable and sustainable non-food dedicated energy crops that can be used as feedstocks for the production of biofuels and bioproducts.

Click [here](#) for more information.

Markets

10 million jobs in renewable energy

Biomass Magazine reported on the International Renewable Energy Agency announcement that the renewables industry created more than 500,000 new jobs globally last year, a 5.3 percent increase from 2016.

IRENA released the fifth edition of its "Renewable Energy and Jobs—Annual Review" report on May 8, reporting that the number of people employed in renewable energy now stands at 10.3 million. According to IRENA, 2017 marks the first time the world has surpassed 10 million jobs in the sector.

Jobs in bioenergy, which includes liquid biofuels, solid biomass and biogas, reached 3.06 million jobs in 2017, up from 2.74 million in 2016. The

liquid biofuels industry alone employed 1.931 million.

Worldwide employment in the liquid biofuels sector increased 12 percent, with most jobs generated in the agricultural value chain, which includes the planting and harvesting of feedstock. The solid biomass industry employed 780,000 people globally last year, while biogas employed 344,000. The municipal and industrial waste energy industries also employed 28,000. In the U.K., biofuels and solid biomass each contribute approximately 10,000 jobs.

Click [here](#) for more information.

Drop off in UK renewables investment

Investment in independent renewable energy projects dropped 20% to £227 million in 2017, reports The Independent, commenting on the Energy Entrepreneurs report for 2018, as the government plans to end the feed-in tariff scheme to support developers next year. It is also claimed that the conclusion of the Renewable Obligation Scheme on 31st March 2017 has also slowed growth.

Click [here](#) for more information.

Research & Development

Europe's first bioenergy carbon capture and storage project



Flickr

Drax has announced that it is to pilot the first bioenergy carbon capture storage (BECCS) project of its kind in Europe, which, if successful, could make the renewable electricity produced at its North Yorkshire power station carbon negative.

BECCS is vital to global efforts to combat climate change because the technology will mean the gases that cause global warming can be removed from the atmosphere at the same time as electricity is produced. This means power generation would no longer contribute to climate change, but would start to reduce the carbon accumulating in the atmosphere.

The demonstration project will see Drax partner with Leeds-based C-Capture and invest £400,000 in what could be the first of several pilot projects undertaken at Drax to deliver a rapid, lower cost demonstration of BECCS.

Drax Power Station became the largest decarbonisation project in Europe by upgrading its existing facilities and, if the pilot is successful, it will examine options for a similar re-purposing of

existing infrastructure to deliver more carbon savings.

A report by the Energy Technology Institute in 2016 has suggested that by the 2050s BECCS could deliver roughly 55 million tonnes of net negative emissions a year in the UK – approximately half the nation’s emissions target.

The first phase of the project, starting this month, will look to see if the solvent C-Capture has developed is compatible with the biomass flue gas at Drax Power Station. A lab-scale study into the feasibility of re-utilising the flue gas desulphurisation (FGD) absorbers at the power station will also be carried out to assess potential capture rates.

FGD equipment is vital for reducing sulphur emissions from coal, but has become redundant on three of the generating units at Drax that have been upgraded to use biomass, because the wood pellets used produce minimal levels of sulphur.

Depending on the outcome of a feasibility study, the C-Capture team will proceed to the second phase of the pilot in the autumn, when a demonstration unit will be installed to isolate the carbon dioxide produced by the biomass combustion.

Click [here](#) for more information.

UK opens bioenergy training centre

U.K. Prime Minister Theresa May recently helped celebrate the opening of a new bioenergy training centre at the U.K.-based Berkshire College of Agriculture. The new energy centre will provide training in the form of apprenticeships and short courses in biofuel engineering and related skills.

An official with the college noted that BCA already had two biomass boilers and engine rooms on campus and said the addition of the new energy

centre will provide for the development of professionally recognized training.

According to BCA, the college, along with its employer partner LC Energy, found that the emerging sector of biofuel and renewable energy has a significant skills gap, with a substantial need for education and upskilling of the current workforce. BCA enrolled 12 new apprentices in April for the new energy centre and associated programs.

Click [here](#) for more information.

IRENA publishes global 2050 roadmap for energy transformation



IRENA

Renewable energy needs to be scaled up at least six times faster for the world to meet the decarbonisation and climate mitigation goals set out in the Paris Agreement, says Global Energy Transformation: A Roadmap to 2050.

The historic 2015 climate accord seeks, at minimum, to limit average global temperature rise to “well below 2°C” in the present century, compared to pre-industrial levels. As this 2018 report from the International Renewable Energy Agency (IRENA) shows, renewable energy and energy efficiency can, in combination, provide over 90% of the necessary energy-related CO2 emission reductions.

Furthermore, this can happen using technologies that are safe, reliable, affordable and widely available. While different paths can mitigate climate change, renewables and energy efficiency

provide the optimal pathway to deliver most of the emission cuts needed at the necessary speed.

Actual carbon dioxide (CO₂) emission trends are not yet on track. Under current and planned policies, (including Nationally Determined Contributions under the Paris Agreement), the world would exhaust its energy-related carbon budget in less than 20 years. Even then, fossil fuels such as oil, natural gas and coal would continue to dominate the global energy mix for decades to come.

Keeping the global temperature rise below 2 degrees Celsius (°C) is technically feasible. It would also be more economically, socially and environmentally beneficial than the path resulting from current plans and policies, known in the report as the Reference Case. However, the global energy system must undergo a profound transformation, replacing the present system that is largely based on fossil-fuels.

The total share of renewable energy must rise from around 18% of total final energy consumption (in 2015) to around two-thirds by 2050. Over the same period, the share of renewables in the power sector would increase from around one-quarter to 85%, mostly through growth in solar and wind power generation. The energy intensity of the global economy will have to fall by about two-thirds, lowering energy demand in 2050 to slightly less than 2015 levels. This is achievable, despite significant population and economic growth, by substantially improving energy efficiency, the report finds.

Although the power sector has already seen significant decarbonisation, that progress must be accelerated. As low-carbon electricity becomes the main energy carrier, the share of electricity consumed in the end-use sectors (buildings, heat and transport) would need to double, from approximately 20% in 2015 to 40% in 2050. Renewables must also expand significantly as a source for direct uses, including transport fuels

and direct heat, the report adds. The analysis is based on IRENA's global roadmap for scaling up renewables, known as REmap.

The global energy transformation makes economic sense. Yet it calls for more investment in low-carbon technologies without delay. Understanding its socioeconomic footprint, meanwhile, is essential. The shift to renewables should create more energy jobs than those lost in fossil-fuel industries, IRENA's analysis shows. It would also boost global GDP by 1% in 2050 and significantly improve overall welfare.

Click [here](#) for more information.

Report finds community engagement increases renewables uptake

Researchers from Lund University in Sweden have released a report into how communities can successfully transition to a low-carbon energy system.

The study, published in the Journal of Applied Energy, examined the question 'under the energy justice magnifying glass' and cites transparent processes and local involvement as key factors.

Under investigation were the factors that enable such a transition and the manner in which conflicts encountered in the shift were handled by both communities and decision-makers. Community perspectives and perceived energy injustices that resulted from the transition were also taken into account.

The research examined two cases; one in Samsø, Denmark and one in Feldheim, Germany, both of which have seen the successful implementation of low-carbon energy systems.

Samsø is the first island in the world to be entirely powered by renewable energy. It has been energy-positive for more than ten years,

producing its surplus energy from wind and biomass.

In contrast, Feldheim was the first energy self-sufficient settlement in Germany, using community-owned electricity and heating grids supplied by local renewable energy generation.

The team found the key to these particular transitions was engaging the local population, who were given the opportunity to take part in the decision-making process and implement their own solutions to the project's effects.

For instance, the wind turbines in Samsø are owned by a combination of private owners, investor groups, the municipal government and local cooperatives.

A transparent and open process was also identified as a driving factor to the successes, considered more important than distribution of the project's benefits.

The team has said that a quantitative analysis is needed to qualify their findings, though the necessity for open procedures which involve community populations seemed a conclusive requirement for the successful implementation of the schemes.

The success of these case studies is, however, also due to their small size – Feldheim is home to 128 residents, while Samsø holds 4,000– and low rate of industry. As such, the translation to larger cities may encounter difficulties given that the population to be consulted is far greater, as is the energy required.

Click [here](#) for more information.

Biomass Heat and Power

Swedish researchers improve biomass gasification technology



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Researchers at Chalmers University of Sweden have demonstrated a new approach to gasification technology which would enable existing power facilities to incorporate biomass gasifiers.

The team's main findings relate to the use of biomass ash constituents to catalyse the process of biomass gasification, as well as the application of coated heat exchangers to retrofit fluidised bed boilers into biomass gasifiers.

While biomass gasification is not a new concept, the method has been hindered in the past by problems encountered when the biomass releases tar which interferes with the process.

Now, the Chalmers team has demonstrated that the syngas produced – a hydrogen, carbon monoxide, carbon dioxide blend – could be used to make a biogas end-product. And further, that they can improve the quality of that biogas through tar management, presenting a viable bio-

fuel replacement for natural gas in existing applications, such as in power plants.

This, combined with their development of heat-exchange materials, provides novel possibilities for converting fluidised bed boilers in to biomass gasifiers.

Power and district heating plants, as well as paper and pulp mills, sawmills, oil refineries and petrochemical plants are all viable options for conversion to biomass gasification.

The gasification technology could be used to create renewable hydrocarbons to replace oil in the production of fuels, chemical and materials. It could also produce electro fuels – synthetic vehicle fuels produced using the carbon dioxide captured from biomass combustion, electricity and water.

The research, which has been conducted over a ten-year period, adds to a growing trend of developing new technologies that adapt industrial plants to produce fossil-free heat, electricity, fuel, chemicals and materials.

More than 100 Swedish plants contain a fluidised bed boiler. If all of these plants were modified they would be able to produce 346TWh of biogas per year, which is equal to around 1% of global natural gas consumption in 2013.

Alternatively, the modified plants could produce 278TWh of aviation fuel each year, which is equal to around 10% of global aviation fuel consumption in 2014.

A paper published in Energy, Science & Engineering in February detailed the team's findings from a wood-based biomethane production plant and the 2MW-4MW research gasifier at the university, which led to their proposed commercialisation of the technology.

Click [here](#) for more information.

Cheshire biomass plant begins generation

The new 21.5MW Ince Bio Power biomass plant in Cheshire has begun generating electricity. The power station is owned by the Bioenergy Infrastructure Group (BIG) and is the first active facility at Peel Environmental's £700 million Protos energy hub.

BIG has so far invested in more than 20 energy projects, including seven biomass and energy-from-waste plants. The company acquired stakes in most of the projects from the Green Investment Group last year.

The Protos hub is located within the newly created Energy Innovation District near Ellesmere Port in between Manchester and Liverpool.

Click [here](#) for more information.

Wood Recyclers Association calls for clarity on acceptable wood fuel



Pixabay

As figures released earlier this month by the World Health Organisation revealed the most polluted towns and cities in the UK, The Wood Recyclers' Association (WRA) has renewed its call to the industry to ensure good practice on the use of biomass fuel.

The Wood Recyclers' Association (WRA) is now renewing its call to biomass boiler and fuel suppliers to ensure only clean untreated pre-consumer waste wood or virgin wood is burnt in non-Industrial Emissions Directive (IED Chapter IV) compliant boilers.

The association is still waiting for the regulators to remove inconsistencies in guidance on what grades of waste wood are acceptable for small scale Renewable Heat Incentive (RHI) biomass boilers (non IED compliant), something it asked for last year after discovering confusing wording used in guidance to boiler manufacturers, fuel suppliers and users.

Click [here](#) for more information.

Biogas

Mapping US green gas production

The Coalition for Renewable Natural Gas (RNG Coalition) has released a new map and project database of renewable natural gas (RNG) production facilities in North America. The refreshed database reveals that there are now at least 76 operational RNG facilities in the U.S. and Canada, representing 85 percent growth from the 41 projects that were built between 1982 and 2014. In addition, 23 RNG production facilities are currently under construction and another 25 have undergone substantial development prior to commencing construction.

Click [here](#) for more information.

Events

RRB 14

Ghent, 30th May - 1st June 2018

The 14th edition of the International Conference on Renewable Resources & Biorefineries will take place in Ghent, Belgium from Wednesday 30 May until Friday 1 June 2018. Based on the previous RRB conferences, this conference is expected to welcome about 350 international participants from over 30 countries.

Delegates from university, industry, governmental and non-governmental organizations and venture capital providers will present their views on industrial biotechnology, sustainable (green) chemistry and agricultural policy related to the use of renewable raw materials for non-food applications and energy supply. The conference further aims at providing an overview of the scientific, technical, economic, environmental and social issues of renewable resources and biorefineries in order to give an impetus to the biobased economy and to present new developments in this area.

The conference will provide a forum for leading political, corporate, academic and financial people to discuss recent developments and set up collaborations.

The three-day international conference will consist of plenary lectures, oral presentations, poster sessions and an exhibition. Companies and research organizations are offered the opportunity to organize a satellite symposium.

Click [here](#) for more information.

UK AD & World Biogas Expo Birmingham, 11th-12th July 2018

UK AD and World Biogas Expo, the largest international trade show dedicated solely to the anaerobic digestion and biogas industry, returns in 2018 to provide the latest market and technology news, sector by sector, as well as a platform for industry professionals from the UK and overseas to network, share experiences and do business.

Anaerobic digestion (AD) is a rapidly-expanding sector, with the potential to become a £1 trillion global industry making a significant contribution to the development of a green, circular economy. AD plays a critical part in meeting nine of the UN Sustainable Development Goals, providing solutions applicable to agriculture, urbanisation, waste and water management, transport and energy generation. This creates exceptional opportunities for the AD market to grow, both in the UK and abroad.

UK AD and World Biogas Expo 2018 is unique in bringing together an international gathering of new and existing players in this game-changing sector. Over two full days, it will provide a dynamic platform for them to engage with each other.

Click [here](#) for more information.

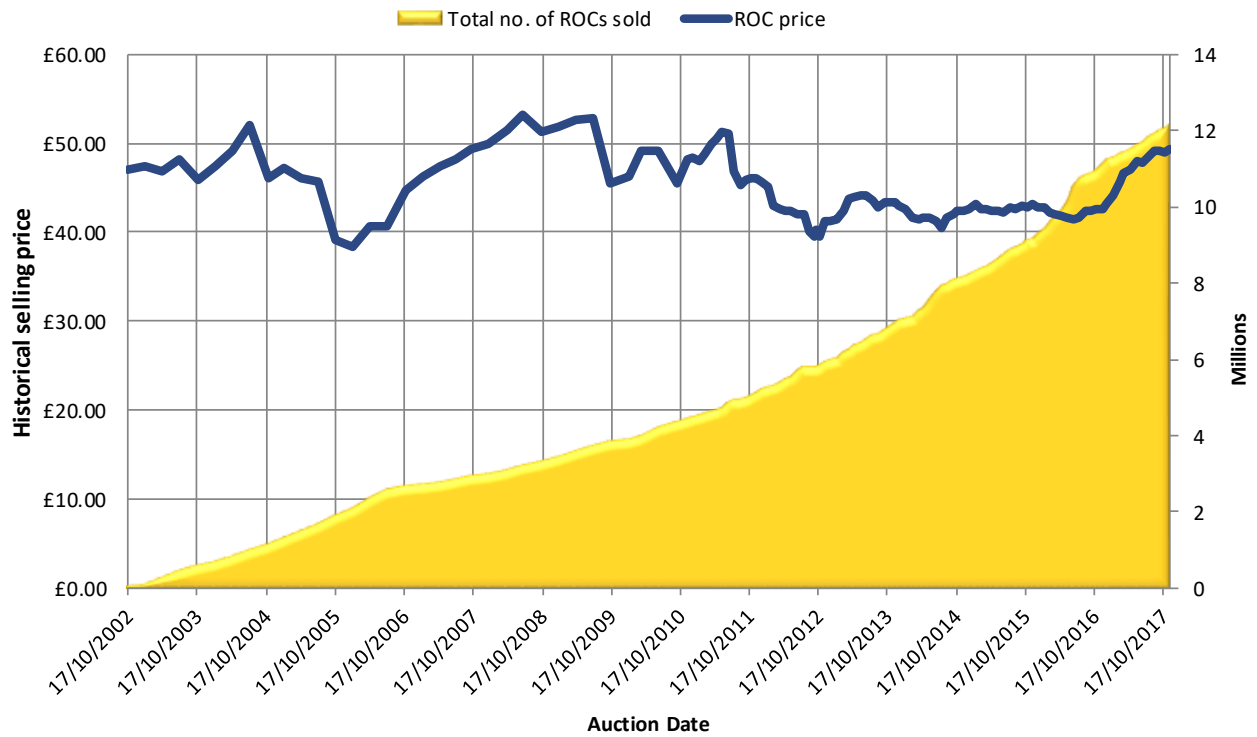
EFIB 2018 Toulouse, 16th-18th October 2018

Join over 650 bio-based leaders in 2018 for the 11th edition of EFIB in Toulouse, France, on the 16th, 17th and 18th of October.

Click [here](#) for more information.

Prices

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



Click [here](#) for more information

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