

## Newsletter IEA Bioenergy Task 37: 08/2018

### Studies and Tools

#### Facilitating a future green gas grid through the production of renewable gas

Task 37 published a new study entitled 'GREEN GAS: Facilitating a future green gas grid through the production of renewable gas'. The report explores the various substrates and technologies for green gas production, along with how much natural gas can be replaced by green gas in various EU countries including Ireland, the Netherlands, the UK, Italy and Denmark. As highlighted by the report, biomethane is very flexible in its application, more so than other renewable sources of energy, as it can be a source of electricity, heat or transport fuel. The report also draws special attention to algal biofuels and gasification based on lignocellulosic content, along with advanced smart grid technologies. The role of Power-to-Gas, converting surplus renewable electricity into methane, allowing long-term and affordable storage via transformation to a gas energy carrier, is also investigated. Two demo-scale projects using micro-biological methanation already exist and include the Electrochaea in Denmark (BioCat project) and MicrobEnergy in Germany (BioPower2Gas).

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#### Integrated biogas Systems

The brochure of Task 37 summarizes a number of local applications of anaerobic digestion towards integrated sustainable solutions. Through case studies, examples of technical solutions, concepts, and strategies, which pertain to sustainable biogas production, are provided. Data has been gathered on anaerobic digestion facilities from seven countries with a focus on developing countries or countries with an emerging biogas sector which are not dependent or have little reliance on, or recourse to, financial support. The case stories demonstrate that there is no 'ideal' integrated solution, as each anaerobic digestion application has different feedstocks available, constraints and end products.

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#### Task 37 two-page summaries

In spring Task 37 has released a number of short publications on a variety of interesting biogas issues including governance of environmental sustainability, methane emissions from biogas plants, green gas and local applications of biogas. The leaflets highlight in few words the major messages of the topic under discussion.

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#### The role of AD in the circular economy

Task 37 has released a report that summarizes the multidisciplinary role of biogas production which is the real strength of this technology. Sustainable biogas systems include processes for treatment of waste, for protection of environment, for conversion of low-value material to higher-value material, for the production of electricity, heat and of advanced gaseous biofuel. Biogas and anaerobic digestion systems are dispatchable and as such can facilitate intermittent renewable electricity. Hence, the biogas plant is the hub in the future circular economy. The intimate relation of AD with circular economy is exemplified through four case-studies from Denmark, Sweden, Finland and

Norway.

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### **Modern bioenergy 'key' for meeting Paris targets**

The scaling up of renewable energy production needs to be drastically accelerated if the world is to meet the climate change mitigation goals set out in the Paris agreements, according to IRENA's Roadmap to 2050. It argues that the combination of renewables and increased energy efficiency can provide over 90% of the necessary energy-related CO<sub>2</sub> reductions. The report also calls for greater focus on the likes of anaerobic digestion, liquid biofuels and wood pellet-based heating systems, which it claims could provide 'key' energy solutions. However, 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. Crucially, the new IRENA study makes a strong case for the role 'modern bioenergy' will have to play. IRENA defines modern bioenergy as biogas produced through anaerobic digestion of residues, wood pellet heating systems, liquid biofuels and biorefineries. The report states that a much stronger and concerted effort is needed, particularly the sectors shipping, aviation and various industrial applications for which bioenergy could provide key solutions.

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### **R&I perspective of the mid - and long-term Potential for Advanced Biofuels in Europe**

A recent study by DG Energy looked into the future potential role of R&I for advanced biofuels. The study is organized in three main tasks: **Task 1** assesses the potential for R&I to enable secure, low-cost, and low ILUC biomass feedstock for energy for the 2030 and 2050 time-horizons; **Task 2** addresses the potential contribution of advanced biofuels to achieving the EU's ambitious climate change objectives; and finally, **Task 3** compares advanced biofuels with alternative fuel options for the road, maritime, and aviation transport sectors. Task 1 showed that primary crop residues and cellulosic energy crops constitute the most relevant agricultural feedstock categories. Although almost two-thirds of the agricultural feedstock potential in 2030 comes from agricultural residues, energy crops make up 55 % of the total potential by 2050. Task 2 concluded that regardless of the degree of electrification in the transport system, advanced biofuels have the potential to play a significant role in decarbonization of the EU transport sector meeting around 50 % of the EU transport sector's energy demand by 2050. This corresponds to 65 % of the required emission savings needed, compared to 1990 levels

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### **New online toolbox focusing on successful biogas installations in Europe**

As part of the EU project Biogas Action, two new online toolboxes were made available for consultants and potential operators. One allows to discover successful biogas installations across Europe and find the perfect match for the own local conditions. The other Make use of the extensive Biogas Action database, providing existing calculation and planning tools, reports and guidelines for biogas promotion in Europe. The search tool uses numerous filters such as language, substrate, output, type of support and plant size.

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