Newsletter IEA Bioenergy Task 37: 05/2021

Reports &Outlooks

Update to the IEA's Energy Technology RD&D Budgets Database

Last October IEA published the updated Database with the latest figures of the IEA member countries' Energy Technology RD&D Budgets, showing that the estimated total public energy RD&D budget for IEA member governments reached $21.5 billion in 2019 – the third consecutive year of increase after four years of decrease. This unique database allows users to track trends in spending by energy technology back to 1977. Data is collected from central or federal government budgets, as well as the budgets of state-owned companies, for spending on a range of sectors including energy efficiency, renewables, nuclear power, fossil fuels, hydrogen and fuel cells, and more. The Energy Technology RD&D budgets database includes data on budgets in national currencies, in USD and in Euro The government energy technology RD&D budgets are submitted on an annual questionnaire every year to the IEA Secretariat by appropriate Administrations in national currencies.

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Task 37 country reports

In fall 2020 Task 37 published three new country reports: The UK report focused on national policy, biomethane in heavy duty transport and filling stations, Sweden presented the impressive figures on passenger cars besides HDV and future development while Norway showed an excellent overview on biogas production and use, figures which are difficult to find due to lacking national statistics.

More on **UK** **Sweden** **Norway**

Task 37 Workshop on Biomethane

The recent virtual workshop on "Biomethane", organised by Task 37 and the University of Natural Resources and Life Sciences Vienna, IFA Tulln, highlighted different aspects of biomethane including certification; legislation; registration and financing and new developments in the field of methanation. It looked also towards future developments with country specific contributions from Germany, Switzerland, Sweden and USA. Of special interest is the presentation of the first Geo-methanation, an industrial size project where a former underground gas storage is used as a gigantic digester.

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Bio-waste in Europe — turning challenges into opportunities

This report of the European Environment Agency (EEA) provides an overview of bio-waste prevention, generation, collection and treatment in Europe. It aims to support countries by sharing experience and best practice. Bio-waste can play an important role in the transition to a circular economy, by both preventing its generation and capturing its potential as a source of valuable secondary resources. The focus of this report is on food and garden waste from households and similar public and commercial activities such as food services. Bio-waste accounts for more than 34 % of the municipal solid waste generated, amounting to 86 million tonnes in 2017 in the EU-28 (28 EU Member States for the period 2013-2020). Recycling bio-waste is therefore crucial for meeting the EU target to recycle 65 % of municipal waste by 2035. Food waste accounts for nearly two thirds (60 %) of all bio-waste from households and similar sources. More than other waste types, preventing food waste is perceived as an ethical responsibility for society.

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Eurobserv'ER Biogas Barometer 2020

In December 2020 Eurobserver released its latest statistical overview on biogas production and utilization. The main findings show that the primary energy production from biogas in the EU28 countries has increased only slightly. According to EurObserv'ER, output reached 16.6 Mtoe in 2019, which is marginally higher than in 2018. The rollout of regulations less supportive of using food-type energy crops for producing biogas has fuelled this general trend and has been compounded by the limitation on the capacity allocated to biogas tenders and less attractive biogas electricity payment terms. Concerning the outputs, electricity generation from biogas hardly changed (from 62.7 TWh in 2018 to 62.5 TWh in 2019) while biogas heat grew by 4% to 893.4 ktoe. The most important growth has been observed in the use of biomethane in transport sector having increased from 186.8 ktoe in 2018 to 269.6 ktoe in 2019. Some member countries have posted positive output growth, thanks to their determination to both encourage biomethane injection. A strong case in point is France whose output enjoyed a 11% double-digit growth in 2019 and is not far off one million toe (976.6 ktoe in 2019). Biogas production in Denmark, another key player, also grew strongly for the second year running reaching 396.6 ktoe in 2019 (+24.3%). The trend towards the increased use of biomethane in transport is also shown by EurObserv'ER's Biofuel Barometer that was released a couple of months earlier.

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EU methane strategy

In October 2020 the European Commission presented a strategy to reduce methane emissions. The holistic approach of the new strategy recognizes the potential of biogas and biomethane to reduce methane emissions from agriculture, which causes more than half of EU methane emissions. These emissions are avoided when methane emitting feedstock, such as manure from animal farming and biowaste, are brought to the closed and controlled environment of a biogas plant. In the biogas production facility, methane is captured and utilized instead of being naturally released into the

atmosphere during manure storage. The support for biogas production from agricultural waste, as proposed in the Methane Strategy, is a positive step to recognize the role of this sector as a booster of rural development. It is also an excellent example of sector integration in which the synergies between agriculture and renewable gas production are fully exploited. Biogas and biomethane can also help reduce emissions from waste, the second biggest source of methane emissions in the EU. As of 2023, member states are obliged to implement separate collection of bio-waste.

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A comprehensive study reveals RNG buses outperform electric counterparts

A new analysis released by NGVAmerica shows that renewable natural gas (RNG) transit buses outperform their electric counterparts on virtually every major assessment mark. The report was compiled by NGVAmerica based largely on data presented in the ongoing multi-year Foothill Transit (CA) Electric Bus Evaluation, a project by the U.S. Department of Energy's National Renewable Energy laboratory (NREL). By compiling public data from multiple independent third-party studies and evaluations, NGVAmerica demonstrates how investing in natural gas buses allows for more clean buses deployed today. Foothill Transit study results reveal: Battery electric buses (BEBs) cost 57 to 67% more; Electricity on an average energy equivalent basis cost 6 times more than CNG, nullifying much of the anticipated savings associated with operating battery electric buses. Overall, the BEB cost 1.5 times more than CNG on a total cost to operate basis, including repair and maintenance costs of $0.68/mile for BEB versus $0.41/mile for CNG. CNG buses were available for service 93 percent of the time while BEBs struggled at 63 percent. Transit operators require an 85 percent availability rate. CNG performance exceeded BEB by 18,000-20,000 miles between road calls. While both CNG and BEB buses achieved essentially zero criteria pollutant emissions, when fueled with RNG, the CNG bus can offer a net carbon negative greenhouse gas (GHG) emission.

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DNV GL energy transition outlook 2020

The Energy Transition Outlook is a model-based forecast of the world's energy system through to 2050. Owing to DNV GL's independent view and technical expertise, the annual reports have become a widely-cited resource on the energy future with more than 100,000 downloads. The actual report forecasts a rapid energy transition between now and 2050. It predicts an energy mix split roughly equally between fossil and non-fossil sources by 2050, taking into account expected developments in policies, technologies and associated costs. There is a massive, ongoing electrification where electricity is less than 20% of the energy mix today, it will more than double its share by 2050. During that period, solar PV will grow 25-fold and wind 10-fold, and in roughly equal shares will together be responsible for over 60% of the electricity generated. The world will need to achieve the same percentage of emissions reduction seen in 2020 every year through to 2050 to succeed in reaching the ambitions of the Paris Agreement. So, we urgently need to find more sustainable and lasting ways to reduce emissions.

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Major new study backs biomethane for U.K. road transport

The findings of the new Low Emissions Freight Trial (LEFT) report, as a result of a 3 year 32mio £ project, acknowledges that heavy goods vehicles (HGVs), fueled by biomethane can provide significant carbon reductions. Further confirmation that they should be a key technology for transport decarbonisation says industry trade association the Gas Vehicle Network (GVN). LEFT is a £20m government-funded programme (2017-2020) to cut emissions and improve air quality by focusing on emissions-busting technologies for trucks and vans. An additional £12m was contributed by private sector trial participants. In these industry-led trials, everything from renewable hydrogen fuel and battery electric trucks through to biomethane fuel, kinetic energy recovery systems and even lightweight and aerodynamic trailers have been put through their paces. The report outlines that biomethane fueled HDVs could reduce carbon emissions by up to 85% on a well to wheel basis. It also notes that additional capital and maintenance costs in gas vehicles compared to diesel, pay back in 2 years at 160,000 km/year. Another key finding was that methane slip was not an issue for the gas trial trucks.

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Setting a target for 11% renewable gas

The European Union (EU) aims to cut its greenhouse gas (GHG) emissions by 55% by 2030 compared to 1990 levels and become climate-neutral by 2050.1 Renewable and low-carbon gases are an important building block to meet these ambitious targets. The recent Gas for Climate Gas Decarbonisation Pathways 2020-2050 report concluded that current EU policies do not support a large scale-up of renewable and low-carbon gases, which are needed alongside increasing shares of renewable electricity to meet these targets. This means additional policy measures need to be put in place to meet the 2030 and 2050 climate targets. Although renewable and low-carbon gases are being scaled-up gradually, long-term policy incentives and certainty are needed to accelerate developments. Therefore, Gas for Climate calls on the European Commission to include an 11% renewable gas target with a sub-target of 3% for renewable hydrogen and a sub-target of 8% for biomethane in the RED II as soon as possible. This target would mean that at least 11% of all gas consumed in the EU by 2030 must be biomethane or renewable hydrogen. In line with current RED II Article 25 (1), member state shall set an obligation on fuel suppliers to ensure an overall share of renewable gas within the EU gas consumption of at least 11% by 2030. With this target, Gas for Climate joins the call for a binding renewable gas target of the European gas industry announced in September 2020.

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Combining RNG, gas and CCS is cheaper to reach net zero than electrification

Achieving a carbon-neutral EU by mid-century will cost 4 trillion Euros less if use of gas, increasingly decarbonized by carbon capture and storage (CCS), is continued alongside growing use of electricity in the transition says a DNV GL study commissioned by Eurogas. To assess how to achieve a decarbonized future for the European energy sector and European consumers DNV GL developed a 100% CO2 emissions reduction pathway (net zero) - labelled the 'Eurogas scenario'. This scenario builds on the strengths of the European gas sector and the advantages of energy delivery through existing gas networks. The Eurogas scenario was subsequently compared with an alternative pathway focusing on

replacing gaseous energy with (primarily) electricity. In both scenarios, all sectors need extensive decarbonization to achieve the reductions in emissions needed to meet the EC's net zero target by mid-century. In particular, it is clear that the electricity generation and manufacturing sectors (in both scenarios) must go carbon negative to achieve this. There are similarities between both scenarios: Decarbonization of the electricity and manufacturing sectors depends on CCS technology and infrastructure being scaled; Biomass use and second-generation biomethane technologies are pillars of Europe's decarbonization efforts. They are crucial for net negative emissions.

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