Newsletter IEA Bioenergy Task 37: 04/2022

IEA and IEA Bioenergy reports

Topics:

Trends of bioenergy in the member countries of IEA Bioenergy

IEA Bioenergy has just released its updated Country Reports, showing the trends of bioenergy in the IEA Bioenergy member countries up to 2019, looking at the role of bioenergy in total energy supply (TES), in electricity use, total fuel/heat consumption, and in transport energy consumption.
The summary report 'IEA Bioenergy Countries' Report – update 2021 presents a comparative overview of the results for the different countries. The countries have distinct characteristics that impact their renewable energy and bioenergy potential. Country size and population density, as well as topography, climatic conditions and land use distribution are particularly important. Fossil fuels (coal, oil, and natural gas) still play a dominating role in most countries. Only in Brazil, Finland, France, Norway, Sweden, and Switzerland renewable energy and nuclear energy represent more than half of total energy supply. The evolution of biogas/biomethane in the different IEA Bioenergy member countries is very distinctive. Germany is most advanced in biogas use, at a level of almost 4 GJ per capita. Nevertheless, other countries are catching up; particularly Denmark has taken major steps in biogas lately. Due to very favorable subsidies to build and operate biogas plants, Denmark has seen an important growth. While biogas/biomethane use peaks above 25% of natural gas use in Denmark, it tends to be equivalent to 1-5% of natural gas use in most countries, showing that major steps will still be needed to phase out fossil gas. The summary report was prepared from IEA statistical data while all individual country reports were reviewed by the national delegates to the IEA Bioenergy Executive Committee, who have approved the content
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IEA Renewables 2021 report is out

Renewables 2021 is the IEA's primary analysis on the sector, based on current policies and market developments. It forecasts the deployment of renewable energy technologies in electricity, transport

and heat to 2026. Almost 290 gigawatts (GW) of new renewable power will be commissioned this year, which is 3% higher than 2020's already exceptional growth. Solar PV alone accounts for more than half of all renewable power expansion in 2021, followed by wind and hydropower. The growth of renewable capacity is forecast to accelerate in the next five years, accounting for almost 95% of the increase in global power capacity through 2026. Globally, renewable electricity capacity is forecast to increase by over 60% between 2020 and 2026, reaching more than 4,800 GW. This is equivalent to the current global power capacity of fossil fuels and nuclear combined. Overall, China remains the leader over the next five years, accounting for 43% of global renewable capacity growth, followed by Europe, the United States and India. These four markets alone account for 80% of renewable capacity expansion worldwide. Rising prices are slowing biofuels' growth, but according to our forecast, demand in 2021 nevertheless recovers from the lows seen in 2020 during the Covid-19 crisis. By August 2021 biofuel prices had increased by between 70% and 150% across the United States, Europe, Brazil and Indonesia. For comparison, crude oil prices increased by 40% over the same time period.
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Perspectives on biomethane as a transport fuel within a circular economy

The literature indicates that the life cycle costs of biomethane fueled light vehicles may be 15 to 20% higher than for similar petrol and diesel fueled vehicles, while liquid biomethane fueled heavy duty trucks may have similar life cycle costs to diesel. However, such an analysis can be two dimensional and limited in the message it conveys. On one hand the acceptance of diesel fueled trucks and buses will be limited due to the climate emergency and air pollution and after 2030 diesel may not be the competition for biomethane anymore. On the other hand, biomethane production is part of a larger circular economy, energy, and environmental system. Biogas production is an important element in the environmental management of organic wastes; biogas plants can also deliver digestate, which contains most of the nutrients in the feedstock and can be an excellent biofertilizer. In addition, it is possible to utilize the carbon dioxide removed in upgrading biogas to biomethane as a product with added value. Natural gas systems should be a facilitator of the introduction of biomethane for transport, but the sustainability problems associated with natural gas negatively impact the view of biomethane. This is where arguments amongst the renewable sector actors can hinder progress.
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Review of the IEA Bioenergy Conference 2021

Between 29 November and 9 December 2021, IEA Bioenergy held its triannual conference. The central theme of the conference was 'The role of biomass in the transition towards a carbon neutral society'. The conference consisted of 10 technical sessions and 4 panel sessions, spread over two weeks. Each day was dedicated to a central topic such as feedstock mobilisation/ sustainability governance; transport biofuels; green gas; circular economy and industry; and bioenergy in the energy system. Almost 1200 people participated in one or more of the conference sessions. They were from around 90 countries from all over the globe. Presentations, recording, highlights, and poll results of all sessions, as well as a full conference report are available on the conference website. Two of the technical sessions focused on green gas. Presentations of the first session included State of the art in Green Gas; flexibilization of biogas systems; Increasing the green gas resource with gasification technologies or Hydrogen in Australia; and Innovation from an industry perspective. The second session gave insights of biogas and biomethane in different parts of the world – Europe, North America, China and developing countries
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State of the biogas industry from selected member countries

This publication contains a compilation of summaries of country reports from member countries of IEA Bioenergy Task 37, written by the Task members. Each country report summary includes information on the number of biogas plants in operation, biogas production data, how the biogas is utilised, the number of biogas upgrading plants, the number of vehicles using biomethane as fuel, the number of

biomethane filling stations, details of financial support schemes in each country and some information on national biogas projects and production facilities. The publication is a regular update and is valid for information collected in 2020-2021. Reference year for production and utilisation is 2020, unless stated otherwise.
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IEA Bioenergy News with focus on biogas

The latest Bioenergy News include a focus on Task 37 "Energy from biogas" where the Task Leader Jerry Murphy provides a short overview om the recent activities. In addition, short highlights are presented of all Task activities and the ongoing Inter-Task projects.
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Progress towards biofuels for marine shipping

IEA Bioenergy Task 39 (Biofuels) has recently published a report highlighting the status of deployment of advanced biofuels in the marine sector and barriers to their market introduction. According to interviews with key stakeholders, the lack of economic incentives, and a high level of uncertainty related to price development of biofuel feedstocks, sustainability. They also looked at RNG and LBG however, with little enthusiasm. They blame biogas for problems of uncontrolled leaking.
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Renewable Gases – Hydrogen in the grid

The objectives of the IEA Bioenergy Task 41 special project is to carry out a thorough study on renewable gases (RG) and the effect of hydrogen (H2) addition in the gas grid as well as applications at increased concentrations up to 100%. The project collected existing data, performance indicators, information on RG studies, projects and analyzed national strategies. It also identified and discussed the numerous challenges and hurdles for the gradual replacement of natural gas by renewable gases, with emphasis on H2 addition to the natural gas grid, and dedicated H2 grids. 19 country strategies and roadmaps out of the 21 countries included in the analysis give ambitious quantitative H2 production targets for the year 2030. For 2050, just four countries provide targets, with one of them only addressing exports. A potential alternative to hydrogen injection into the gas grid is to convert H2 into renewable synthetic methane to make H2 fully compatible with existing natural gas infrastructure and end-use technologies. With regard to options and hurdles for H2 injection in gas grids, biomethane and synthetic methane (SM) can already be added to the existing gas infrastructure without problems. Co-processing biogas and H2 to SM could boost near-term grid compatible production.
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IEA's global hydrogen review

The Global Hydrogen Review is a new annual publication by the International Energy Agency to track progress in hydrogen production and demand, as well as in other critical areas such as policy, regulation, investments, innovation and infrastructure development. In 2019, at the time of the release of the IEA's landmark report The Future of Hydrogen for the G20, only France, Japan and Korea had strategies for the use of hydrogen. Today, 17 governments have released hydrogen strategies, more than 20 governments have publicly announced they are working to develop strategies, and numerous companies are seeking to tap into hydrogen business opportunities. Such efforts are timely: hydrogen will be needed for an energy system with net zero emissions. Hydrogen demand stood at 90 Mt in 2020, practically all for refining and industrial applications and produced almost exclusively from fossil fuels, resulting in close to 900 Mt of CO2 emissions. However, global capacity of electrolysers doubled over the last five years. By mid-2021 around 350 projects currently under development could bring global capacity up to 54 GW by 2030. Another 40 projects accounting for more than 35 GW of capacity are in early stages of development. If all those projects are realised, global hydrogen supply from electrolysers could reach more than 8 Mt by 2030. This is still well below the 80 Mt required by that year in the

pathway to net zero CO2 emissions by 2050 set out in the IEA Roadmap for the Global Energy Sector. Europe is leading electrolyser capacity deployment, with 40% of global installed capacity.
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Younger generations will have far smaller carbon footprints than their parents

Babies born today will produce 10 times less carbon dioxide (CO2) emissions during their lifetimes than their grandparents if the world achieves the goal of reducing global emissions to net zero by 2050, according to IEAs recent commentary**.** According to the Net Zero by 2050 scenario, a person born in the 1950s would emit 350 tons of CO2 in their lifetime while babies born in the 2020s would on average produce a mere 34 tons. In other words, the average Baby Boomer – defined by the Pew Center as individuals born between 1950 and 1964 – would emit 10 times more in their lifetime than the average member of Generation Alpha, which refers to those born today or in the coming years. Generation Z, born between 1997 and 2012, would average 110 tons of CO_2 over their lifetimes if the world manages to reach net zero by 2050.Countries with historically high per capita emissions need to achieve much larger generational reductions. In our Net Zero Scenario, the lifetime CO2 footprints of individuals born in the United States or the European Union in the 1950s will be around 15 times greater than the footprints of their descendants born in the 2020s, whereas the figure for China is four times and India 3.5 times.
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IEAs global methane tracker 2022

The 2022 update of the IEA Global Methane Tracker provides, for the first time, a complete set of country-level estimates for methane emissions from the energy sector. It includes for the first time emissions from the coal sector. The global energy sector was responsible for around 135 million tons of methane emitted into the atmosphere in 2021. Following the Covid-induced decline in 2020, this represents a year-on-year increase in energy-related methane emissions of almost 5%. The energy sector is responsible for around 40% of total methane emissions attributable to human activity, second only to agriculture. Of the 135 million tons of energy-related emissions, an estimated 42 Mt are from coal mine methane, 41 Mt from oil, 39 Mt are from extracting, processing and transporting natural gas, 9 Mt from the incomplete combustion of bioenergy (largely when wood and other solid biomass is used as a traditional cooking fuel)
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