



Technology Collaboration Programme
by IEA

task37.ieabioenergy.com

Newsletter IEA Bioenergy Task 37: 08/2022

Reports, Statistics and Analysis

Topics:

[Sustainable Biomass availability in the EU to 2050](#)

[Energy Vision report analyzes non-petroleum fuel options for waste and recycling fleets](#)

[IRENA analysis shows hydrogen could disrupt global trade and bilateral energy relations](#)

[Record-breaking year for biomethane](#)

[Rapid growth of biomethane in European transport](#)

[New record for biogas in the Danish gas grid by 2021](#)

[Significant growth of biomethane in France by 2021](#)

[Analysis from Global Industry Analysts Reveals Steady Growth for Natural Gas Vehicles](#)

[Renewable Natural Gas motor fuel continues growth in America](#)

[The Easiest and Hardest Commercial Vehicles to Decarbonize](#)

[The path to climate-neutral road traffic](#)

[Cultivation of renewable raw materials in Germany remains constant](#)

Sustainable Biomass availability in the EU to 2050

The aim of the report of C. Panoutsou and K. Maniatis is to provide an estimation of the sustainable biomass availability in the European Union and the UK by 2030 and 2050 and to provide an evaluation of the advanced biofuel potential. It includes domestic feedstocks of agricultural, forest and waste origin included in Annex IX of RED II (Part A and B). A short overview of the potential for imports and algae, based on other studies has been included as an Annex. Food and feed crops, and other sustainable feedstocks accepted by RED but not included in Annex IX, are not included in this study. The study analyses firstly the sustainable biomass availability for all markets and then estimates the amount that can be available for bioenergy after excluding the known demand from non-energy sectors. Following, the study presents the status of the various technologies and their maturity for market deployment. The results show that sustainable biomass for all markets available in 2030 is between 0.98 to 1.2 billion dry tonnes (392 to 498 Mtoe) and 1 to 1.3 billion tonnes (408 to 533 Mtoe) in 2050. From this, the estimated amount for bioenergy ranges from 520- 860 million dry tonnes (208-344 Mtoe) in 2030 and 539 -915 million dry tonnes (215-366 Mtoe) in 2050. The total estimated net biomass that can be used for biofuel production, including imports, has been estimated at 126-262 Mtoe for 2030 and 101 – 252 Mtoe for 2050.

[More](#)

Energy Vision report analyzes non-petroleum fuel options for waste and recycling fleets

The sustainable energy NGO Energy Vision published “The Refuse Revolution”, its report on alternative fuels and new vehicle technologies for waste and recycling collection truck fleets. It assesses biodiesel and renewable diesel, fossil and renewable natural gas, hybrid technologies, battery electric vehicles

(BEVs), DME, and hydrogen for cost, performance, and climate and health impacts. Trucks with natural gas engines powered by renewable natural gas (RNG) achieve the greatest benefits at the lowest cost, the report finds. RNG trucks rated highest for performance, cost, and cutting lifecycle GHG emissions and health-damaging pollutants. Since RNG is made from captured methane biogases emitted by decomposing organic wastes, scaling up its production could cut overall U.S. methane emissions by 15%. This would take the U.S. halfway to the global goal of reducing methane emissions 30% by 2030, deemed essential by UN and IPCC scientists in order to avoid catastrophic climate change beyond 1.5 degrees centigrade. The report compares “lifecycle” GHG emissions of each option, covering fuel production, transport and use. It finds that BEV trucks’ claim to be zero-emissions isn’t accurate. The heavy weight of their batteries causes them to stir up road dust and increases tire wear, generating particulate pollution that may be greater than that of diesel trucks. BEVs also have considerable lifecycle GHG emissions, since they charge their batteries on a 58% fossil fuel-powered electric grid.

[More](#)

IRENA analysis shows hydrogen could disrupt global trade and bilateral energy relations

In United Arab Emirates, rapid growth of the global hydrogen economy can bring significant geo-economic and geopolitical shifts giving rise to a wave of new interdependencies, according to new analysis by the International Renewable Energy Agency (IRENA). “Geopolitics of the Energy Transformation: The Hydrogen Factor” sees hydrogen changing the geography of energy trade and regionalizing energy relations, hinting at the emergence of new centers of geopolitical influence built on the production and use of hydrogen, as traditional oil and gas trade declines. Driven by the climate urgency and countries’ commitments to net zero, IRENA estimates hydrogen to cover up to 12 per cent of global energy use by 2050. IRENA estimates that over 30 per cent of hydrogen could be traded across borders by 2050, a higher share than natural gas today. Countries that have not traditionally traded energy are establishing bilateral energy relations around hydrogen. As more players and new classes of net importers and exporters emerge on the world stage, hydrogen trade is unlikely to become weaponized and cartelized, in contrast to the geopolitical influence of oil and gas.

[More](#)

Record-breaking year for biomethane

The biomethane map 2021 published by EBA and GIE shows that the biomethane industry smashed all records in 2021: Europe has now 1,023 upgrading plants. EBA estimates that 87% of the biomethane plants active in Europe today are connected to the gas grid. To ensure that biomethane will play an increasingly important role as a renewable fuel, an efficient trade of biomethane across Europe should be established. Today, Europe has around 20,000 biogas and biomethane plants in operation. It is expected that sustainable biomethane will cover up to 30-40% of the EU gas consumption expected for 2050, with an estimated production of at least 1,000 TWh. Biomethane plants are exponentially growing across Europe: The Biomethane Map shows that almost 300 new units started operation in the past one and a half years. Europe has today 40% more biomethane plants compared to the previous edition released in 2020. France, Italy, and Denmark are the countries with the largest increase on the number of biomethane plants. No less than 91 new units began operation in France in 2020 and 123 plants started operation between January and October 2021. After France, the countries which saw the biggest growth in their number of biomethane plants are Italy (+11 plants in 2020) and Denmark (+ 10 plants in 2020).

[More](#)

Rapid growth of biomethane in European transport

The Natural & Bio Gas Vehicle Association (NGVA Europe) has released new data in 2022, proving rapid growth of biomethane as transport fuel in Europe. With more than a quarter of the gas used in road transport being renewable, an overwhelming amount of Europe’s 3,810 CNG stations already successfully delivered biomethane to European consumers. The leading countries offering biomethane as a transport fuel were Denmark and Sweden, supplying shares of 100% and 95% biomethane at their

17 and 205 CNG stations respectively by the end of 2020. They are followed by the Netherlands with 90% (185 CNG stations), the United Kingdom with 80% (10 CNG stations), and Norway with 63% (31 CNG stations), while Germany's 821 CNG stations already delivered 60% biomethane. Some countries' biomethane share made a huge leap forward: Italy's 1,392 stations already delivered 19% biomethane in 2020 up from 9%. Today in 2022, European gas refueling infrastructure network consists of more than 4,110 CNG and 499 LNG stations for which a significantly higher amount of biomethane is already available. This includes vast amounts of Bio-LNG. The European Commission estimates that there will be at least 44 bcm/467 TWh of biogas and biomethane available in 2030, and Gas for Climate estimates 95 bcm/1.020 TWh for 2050. From today's production of 22 TWh renewable gas, Europe has a potential of 1,200 TWh. Out of this, 117 TWh renewable gas will be distributed as transport fuel (bioCNG and bioLNG), which represents 40% of the overall fleet consumption in 2030.

[More](#)

New record for biogas in the Danish gas grid by 2021

Biogas facilities in Denmark have never before supplied as much biogas to the Danish gas system than they did in 2021. At the end of 2021, biogas injected into the gas system thus reached a level corresponding to just under 25%. By comparison, this level was around 21% at the end of 2020. Since 2013, 51 biogas facilities have been connected to the gas system. One facility is connected directly to the transmission system at Bevføt, while the other facilities are connected to the distribution system throughout Denmark. Analysis assumptions prepared in 2021 expect this growth to continue so that biogas will be able to cover 75% of Danish gas consumption in 2030. In 2034, biogas production is expected to be able to fully meet Danish gas demand on an annual basis.

[More](#)

Significant growth of biomethane in France by 2021

With 4.3 TWh of biomethane injected into the networks in 2021, the biomethane sector continues to break through in France. In the field of mobility, RNG now represents nearly 20% of the gas consumed. Despite the difficulties linked to the pandemic, the biomethane sector continues to develop in France. According to data published by GRTgaz, France had 365 sites injecting into the French gas networks at the end of 2021. Biomethane injections represented 4.3 TWh in 2021, compared to 2.2 TWh in 2020. With an additional 19 TWh of projects under development, methanization is more dynamic than the trajectory envisaged in the 2019-2023 Multiannual Energy Program, which set a target of 6 TWh in 2023. GRTgaz estimates that renewable and low-carbon gas production will reach 320 TWh by 2050 (excluding hydrogen). In terms of uses, GRTgaz confirms the momentum of gas for heavy mobility. According to data provided by the network operator, CNG accounted for almost one in two registrations in the bus market in 2021. In total, France now has more than 15,000 heavy vehicles running on natural gas. That's three times more than five years ago.

With the launch of a new support system through a call for tenders, the government intends to accelerate the development of the biomethane sector by releasing 1.6 TWh of additional production capacity in three periods. The first one runs until December 2022 and will allow the contracting of a cumulative production capacity of 500 GWh/year. With submission deadlines set for June and December 2023, the other two periods will allow for the release of 550 GWh/year of additional capacity. For each period, it is planned to reserve a volume of 200 GWh/year as a priority for projects with a projected annual production of less than 50 GWh/year.

[More](#) (in French)

Analysis from Global Industry Analysts Reveals Steady Growth for Natural Gas Vehicles

Global Industry Analysts Inc. (GIA), released its report titled "Natural Gas Vehicles (NGVs) – Global Market Trajectory & Analytics". Amid the COVID-19 crisis, the global market for NGVs estimated at 25.2 million units in the year 2022, is projected to reach a revised size of 32.5 million units by 2026. Light Duty Vehicles, one of the segments analyzed in the report, is projected to record a 6.1% compound annual growth rate (CAGR) and reach 31.9 million units by the end of the analysis period. After a

thorough analysis of the business implications of the pandemic and its induced economic crisis, growth in the Medium & Heavy Duty Trucks segment is readjusted to a revised 5.3% CAGR for the next 7-year period. The U.S. market is estimated at 172,200 units in 2022, while China is forecast to reach 7,400 units by 2026 trailing a CAGR of 6.6% over the analysis period. Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 4.3% and 4.8% respectively over the analysis period. Within Europe, Germany is forecast to grow at approximately 5.1% CAGR. In the global Medium & Heavy Duty Buses segment, USA, Canada, Japan, China and Europe will drive the 4.3% CAGR estimated for this segment. These regional markets accounting for a combined market size of 337,400 units will reach a projected size of 452,900 units by the close of the analysis period. China will remain among the fastest growing in this cluster of regional markets. Led by countries such as Australia, India, and South Korea, the market in Asia-Pacific is forecast to reach 400,300 units by the year 2026, while Latin America will expand at a 4.4% CAGR through the analysis period.

[More](#)

Renewable Natural Gas motor fuel continues growth in America

Natural Gas Vehicles for America (NGVAmerica) and Coalition for Renewable Natural Gas (RNG Coalition) announced that 64 percent of all on-road fuel used in natural gas vehicles in calendar year 2021 was renewable natural gas (RNG). Captured above ground from organic material in agricultural, wastewater, landfill, or food waste, RNG can produce carbon-negative results when fueling on-road vehicles like short- and long-haul trucks, transit buses, and refuse and recycling collection vehicles. California Air Resources Board data confirms that the annual average carbon intensity (CI) value of California's bio-CNG vehicle fuel portfolio in its Low Carbon Fuel Standard (LCFS) program was carbon negative and below zero at -44.41 gCO₂e/MJ for calendar year 2021. RNG use as a transportation fuel grew 13 percent over 2020 volumes, up 234 percent from 2017 levels. NGVAmerica and RNG Coalition report that in 2021 a total of 610 million gallons (GGE) of natural gas were used as motor fuel. Of that, 390 million gallons (GGE) or 1.5 Mia liters were from renewable sources. With current savings of up to \$2.60/gallon or more over diesel, fleets can slash annual fueling costs while virtually eliminating NOx and particulate matter emissions and decarbonizing their freighting operations. RNG use as a motor fuel in 2021 displaced 3.8 million metric tons of carbon dioxide equivalent (CO₂e).

[More](#)

The Easiest and Hardest Commercial Vehicles to Decarbonize

To date, the primary approach for decreasing emissions has been through regulations on vehicle and fuel suppliers to improve vehicle energy efficiency and fuel carbon intensity, respectively. These regulations have mostly been developed for light-duty vehicle markets and technologies. However, the success of these policies in the light-duty vehicle market is prompting replication for the medium- and heavy-duty vehicle (MHDV) market. To inform the broad community of stakeholders on the nuances of MHDV decarbonization, the Fuels Institute collaborated with Guidehouse Insights to highlight the complexity of the market. To do so, Guidehouse Insights identified the top five and bottom five applications for MHDV decarbonization. The results of the analysis indicate that the top five MHDV applications affect nearly 50% of the market and are responsible for 42% of emissions. Meanwhile the bottom five affect 20% of the market but are responsible for 45% of emissions.

[More](#)

The path to climate-neutral road traffic

Road transport is responsible for around 30% of Swiss greenhouse gas emissions. Researchers from Empa, Paul Scherrer Institute, ETH Zurich and EPFL Lausanne jointly investigated the potentials of electricity-based mobility with regard to reducing the impact on the climate in the context of an evolving energy system. According to the researchers, the switch from fossil fuels to renewable electricity is not enough on its own. The experts also assessed how gas vehicles perform compared to fuel cell and electric vehicles in the scenarios – with exciting results. The researchers calculated twelve different scenarios. The results show that for eight out of the 12 simulations, the differences in

CO₂ reduction between electric and hydrogen cars and also vehicles powered by synthetic fuels are small. This is because efficiency and flexibility outweigh each other in such cases. In addition to the energy calculations, the researchers also examined the effects of charging electric vehicles on the local electricity grid. After all, a single electric car that is charged at a plug socket all night corresponds to around four electric stoves that run at full power for six hours. And only intelligent charging systems that adapt the charging power of the vehicles to the currently available grid capacity will prevent the electricity grids from becoming overloaded and, in extreme cases, from causing blackouts. Vehicles powered by biogas or synthetic gas are another option for sustainably reducing CO₂ emissions in the transport sector, which is unfortunately often forgotten due to the current framework conditions and the so-called tail-pipe calculation of CO₂ emissions. Finally, an electric car powered by the EU's electricity mix still emits around 87 grams of CO₂ per kilometer in a well-to-wheel balance. That's an impressive difference to the official climate calculation with Nil emission. An electric vehicle is only a sensible alternative if it is charged with renewable electricity. In this case, the electro-friendly Forum Electromobility predicted CO₂ emissions of just 5 grams in 2019. A study of biogas-fueled CNG vehicles by the consulting company PA Consulting Group came up with exactly the same number. As a result, there is currently virtually no way around trucks powered by CNG or LNG, especially in HD transport.

[More](#)

Cultivation of renewable raw materials in Germany remains constant

The 2021 data of the German Agency for Renewable Resources (FNR) show that the area under cultivation for renewable raw materials (Nawaro) in Germany was estimated at 2.63 million hectares, thus remaining at a largely constant level. Out of that, the surface taken up by energy crop production for biogas plants covered the major share with 1.57 million hectares. Corn accounts for 56 percent of this area, followed by cereals, grasses and sugar beets. As an alternative biogas energy crop, silphia (*Silphium perfoliatum*) has increased significantly in cultivation from 3,500 to around 10,000 hectares. After a low in 2020, the area of canola for material and energy uses rose again to just under 600,000 hectares, but it is still a long way from the large area planted in earlier years. Areas for solid fuels from fields, such as miscanthus or fast-growing tree species, and for starch-, sugar-, oil- or active ingredient-producing plants for technical purposes and phytopharmaceuticals remained largely stable. Plant fibers for material use are a small but steadily growing cultivation niche, climbing in size from just under 1,500 hectares in 2015 to around 6,500 hectares in 2021. Detailed figures on the cultivation, use and prices of Nawaro can now be found on the FNR's new statistics portal.

[More](#) (in German)

If you do not wish to receive the Newsletter further on, please unsubscribe [here](#)