Technology Collaboration Programme
by IEA

April 2023

# Advanced Motor Fuels News

## Alternatively-powered vehicles accounted for more than half of EU car market in last quarter of 2022

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ADVANCED MOTOR FUELS
IEA-AMF
Technology Collaboration Programme on
Advanced Motor Fuels

# DEMONSTRATION / IMPLEMENTATION / MARKETS

## Opening of India's largest bioCNG plant

The facility has the capacity to process up to 100 000 tonnes of agricultural residues per annum and will have a production capacity of 33 tonnes per day of bioCNG (CBG) and 650 tonnes per day of bio-manure.

The facility is also one of the first to make use of paddy straw which is otherwise burnt by farmers causing unmitigated health problems and environmental pollution thereby addressing not only the challenges of energy security but also the environmental concerns of the region.

*Source: https://bioenergyinternational.com/verbio-india-holds-grand-opening-of-first-biocng-plant/*

## First low-carbon fuel terminal in Ireland

UK biofuel supplier Green Biofuels Limited (GBF) announced the launch of Ireland's first renewable biofuel terminal in a built facility in Cork Harbor.

The terminal will act as both an import facility to service the accelerating demand for HVO renewable fuel in Ireland, and a blending/export facility to enable the collection and use of renewable fuels overseas.

*Source: https://biofuelscentral.com/uk-biofuel-supplier-green-biofuels-launches-first-low-carbon-fuel-terminal-in-ireland/*

## Largest public access biomethane refueling station

CNG Fuels has opened the world's largest public access biomethane refueling station in Avonmouth near Bristol, UK.

The site will meet the growing demand from major brands to cut emissions from haulage and save money while supporting the decarbonisation of the UK's road haulage sector, which is responsible for 18% of total UK road transport emissions.

The site forms part of CNG Fuels's nationwide network of eight renewable biomethane refueling stations, covering the length and breadth of the UK, enabling low-carbon deliveries from Inverness in Scotland down to Cornwall in South West England. The company plans to build a further 12 stations each year to cater to growing demand.

*Source: https://www.bioenergy-news.com/news/cng-fuels-opens-worlds-largest-public-access-biomethane-refuelling-station/*

## Collaboration to demonstrate $H_2$ HPDI fuel on ICE

Westport Fuel Systems is collaborating with a global original equipment manufacturer (OEM) to evaluate the performance, efficiency and emissions of the OEM's engine equipped with Westport's $H_2$ HPDI fuel system. This collaboration marks Westport's third major OEM engagement evaluating its $H_2$ HPDI fuel system to date. Funded by the OEM, the work starts immediately and continues through year end.

Hydrogen use in an internal combustion engine with Westport's $H_2$ HPDI fuel system offers a cost-effective solution that delivers substantial $CO_2$ reductions while allowing OEMs to preserve their existing engine architecture, leverage existing engineering talent and experience, installed investments, and decades of technology development in vehicle powertrain design, supply chain, and manufacturing.

*Source: https://www.greencarcongress.com/2023/03/20230307-h2hpdi.html*

## Alliance for green methanol production facilities

Danish shipping company Maersk has reached a strategic collaboration with US-based project developer Carbon Sink to speed up the production of green marine fuels.

With an annual production capacity of around 100,000 tons, the first plant will be co-located with an existing Red River Energy bioethanol facility in Rosholt, South Dakota, US.

*Source: https://www.ship-technology.com/news/maersk-green-alliance-carbon-sink/*

## Site for SAF facility secured

In the United States (US), sustainable aviation fuel (SAF) developer DG Fuels (DGF) has announced the execution of a long-term lease agreement with the Loring Development Authority for 1 240 acres of contiguous land in Aroostook County, Maine for DGF's second planned SAF production facility.

At its initial expected output of approximately 175 million (US) gallons (≈ 662.4 million liters) per year, the DGF SAF product will effectively remove an estimated 1.5 million tonnes of carbon dioxide from the atmosphere annually.

According to DGF, its SAF formula also has a higher energy density than conventional Jet A, providing airline customers with operational advantages in addition to environmental benefits.

Additionally, DG Fuels SAF product has improved blending characteristics when burned in conjunction with green hydrogen which will further reduce future fuel emissions.

*Source: https://bioenergyinternational.com/dg-fuels-secures-site-for-second-planned-saf-facility/*

## Groundbreaking for renewable diesel plant

Heartwell Renewables, a joint venture between Cargill and Love's, marked the start of construction for a renewable diesel processing facility in Hastings, Nebraska, with a ceremonial groundbreaking in November 2022. The facility is projected to have an annual production capacity of 80 million gallons of

renewable diesel and will support the growing demand for green fuel products. The company anticipates the project to be completed in the summer of 2024. The Hastings facility is a first of its kind to both manufacture and distribute this fuel all the way to the retail pump.

*Source: https://landline.media/heartwell-renewables-plant-breaks-ground/*

# POLICY / LEGISLATION / MANDATES / STANDARDS

## Blueprint to decarbonize USA's transportation sector

Released in January and developed by the departments of Energy, Transportation, Housing and Urban Development, and the Environmental Protection Agency, the Blueprint is a landmark strategy for cutting all greenhouse emissions from the transportation sector by 2050.

The transportation sector - which includes all modes of travel through land, air, and sea to move people and goods - accounts for a third of all domestic greenhouse gas emissions, negatively affecting the health and well-being of millions of Americans, particularly those in disadvantaged communities. Transportation costs are the second largest annual household expense in the USA and for the poorest citizens, the financial burden of transportation is disproportionately and unsustainably high.

A well-planned transition to a decarbonized transportation system can address these and other inequities and provide equitable, affordable, and accessible options for moving people and goods. A successful transition will require various vehicle and fuel solutions and must consider full life-cycle emissions. This Blueprint focuses on each major transportation mode and identifies specific decarbonization opportunities and challenges, highlighting the role of various clean technologies for various applications.

*Source: https://content.govdelivery.com/accounts/USEERE/bulletins/34204ae*

## Provisional deal on EU Renewable Energy Directive

After months of trilogue discussions, the EU´s Council and Parliament have reached a provisional political agreement to raise the share of renewable energy in the EU's overall energy consumption to 42.5% by 2030 with an additional 2.5% indicative top up that would allow to reach 45%. Each member state will contribute to this common target. This provisional political agreement will now need to be endorsed by both institutions.

The Council and Parliament negotiators provisionally agreed on more ambitious sector-specific targets in transport, industry, buildings and district heating and cooling. In the transport sector, ambitions have been raised significantly. The provisional agreement gives the possibility for member states to choose between:

- a binding target of 14.5% reduction of greenhouse gas intensity in transport from the use of renewables by 2030
- or a binding share of at least 29% of renewables within the final consumption of energy in the transport sector by 2030

The provisional agreement sets a binding combined sub-target of 5.5% for advanced biofuels (generally derived from non-food-based feedstocks) and renewable fuels of non-biological origin (mostly renewable hydrogen and hydrogen-based synthetic fuels) in the share of renewable energies supplied to the transport sector. Within this target, there is a minimum requirement of 1% of renewable fuels of non-biological origin (RFNBOs) in the share of renewable energies supplied to the transport sector in 2030.

The directive still needs to be formally adopted and published.

*Source: https://www.consilium.europa.eu/en/press/press-releases/2023/03/30/council-and-parliament-reach-provisional-deal-on-renewable-energy-directive/*

## EU regulation on CO2 emissions for cars and vans

The Council adopted a regulation setting stricter CO2 emission performance standards for new cars and vans on 28 March, 2023. The new rules aim to reduce emissions from road transport that has the highest share of emissions from transport - and provide the right push for the automotive industry to shift towards zero-emission mobility while ensuring continued innovation in the industry.

The new rules set the following targets:

- 55% CO2 emission reductions for new cars and 50% for new vans from 2030 to 2034 compared to 2021 levels
- 100% CO2 emission reductions for both new cars and vans from 2035

The regulation contains a reference to e-fuels, whereby following a consultation with stakeholders, the Commission will make a proposal for registering vehicles running exclusively on CO2-neutral fuels, after 2035, in conformity with EU law, outside the scope of the fleet standards, and in conformity with the EU's climate neutrality objective.

*Source: https://www.consilium.europa.eu/en/press/press-releases/2023/03/28/fit-for-55-council-adopts-regulation-on-co2-emissions-for-new-cars-and-vans/*

### 11.1 Mio tonnes of $CO_2$ saved by biofuels in 2021

According to the Federal Agency for Agriculture and Food BLE in Germany, a total of more than 3.9 million tonnes of biofuels were used, of which approx. 2.72 million tonnes were biofuels replacing fossil diesel (biodiesel, HVO, etc.), and approx. 3.5 million tonnes in the quota year 2020. In terms of raw materials, palm oil is the most important source of raw materials with a total of 1.063 million tonnes, followed by used cooking oils and fats with 0.772 million tonnes and rapeseed oil with approx. 0.6 million tonnes.

*Source: https://www.ufop.de/english/news/11-million-tonnes-co2-saved-biofuels-2021/*

### Bio-LNG to support sustainable mobility by 2050

According to the European Environmental Agency, transport is responsible for 27% of Europe's total GHG emissions and is a major contributor to climate change. The European Commission has recently set a target to increase the share of renewable energy in transport to at least 14% by 2030, including a minimum share of 3.5% of advanced biofuels. One of the options for the fast decarbonization of the transport sector is to use Bio-LNG, produced from organic residues and resulting from the purification of biogas. This renewable fuel is readily available for use at scale and with infrastructure in place. The paper authored by Floris Goedhart "Sustainable mobility in Europe: Potential market share for Bio-LNG in the heavy-duty transport and maritime sectors in 2050" also illustrates that the share of Bio-LNG in heavy-duty vehicles and maritime transport in 2050 are equally promising. His research shows that by 2050 the Bio-LNG production could amount to 46 – 405 TWh, representing between 1.7% (lowest scenario) and 18.7% (highest scenario) of European transport energy consumption. The market share of Bio-LNG could be at least 57% in the heavy-duty vehicles sector or 17% in the maritime sector.

*Source: https://www.gnvmagazine.com/en/bio-lng-can-support-europes-journey-towards-sustainable-mobility-by-2050/*

## SPOTLIGHT SHIPPING

### Fuel cell manufacturer sets sail for maritime market

The Danish fuel cell manufacturer Blue World Technologies extends its activities in shipping. With a methanol fuel cell-powered auxiliary power unit (APU), the company wants to replace conventional diesel generators for power supply on board ships. The company's focus on the maritime industry is supported by the Bill Gates-founded Breakthrough Energy Ventures, that in August 2022 entered as an investor and completed Blue World's series-B round of a total of 37 million euros.

The methanol fuel cell system of Blue World Technologies can supply the electricity needed on board a ship using a simple and modular cabinet configuration consisting of 200 kilowatts cabinets that combined can provide an energy load in the megawatt range. This means that the energy supply can be tailored to specific customer needs. To compensate for the green premium of e-fuels such as methanol, the methanol fuel cell APU system will have an energy efficiency of 45 to 60 per cent. This will lower the operating costs and thereby enable a cost-efficient use of e-fuels.

*Source: https://advancedbiofuelsusa.info/fuel-cell-manufacturer-blue-world-technologies-sets-sail-for-the-maritime-market/*

## SPOTLIGHT AVIATION

### IATA: 30 billion liters of SAF to be produced by 2030

The International Air Transport Association (IATA) estimates that sustainable aviation fuel (SAF) production reached at least 300 million liters by the end of 2022 — a 200% increase on last 2021's production of 100 million liters.

Airlines are committed to achieve net-zero carbon emissions by 2050 and see SAF as a key contributor. Current estimates expect SAF to account for 65% of the mitigation needed for this, requiring a production capacity of 450 billion liters annually in 2050.

*Source: https://biofuels-news.com/news/iata-30-billion-litres-of-saf-to-be-produced-by-2030/*

### Single-engine helicopter on 100 % SAF

Bell Textron Inc. has announced in February the Bell 505 completed its first flight fueled solely by 100 percent Sustainable Aviation Fuel (SAF), marking the first single engine helicopter to fly with 100 percent SAF. Bell collaborated with Safran Helicopter Engines, Neste, GKN Aerospace and Virent Inc. to make this Bell 505 flight possible.

The Bell 505 is a five-seat aircraft designed for safety and efficiency while using the most advanced technology to date. The platform uses a fully integrated Garmin G1000H NXi avionics suite and Safran Arrius 2R engine with a dual-channel FADEC.

*Source: https://verticalmag.com/press-releases/bell-505-becomes-worlds-first-single-engine-helicopter-to-fly-using-100-sustainable-aviation-fuel/*

## SPOTLIGHT ELECTRIC VEHICLES

### Registrations of new BEVs continued to grow in EU

In 2022, registrations of new battery electric vehicles (BEVs) continued to grow, despite the overall decline

of the EU car market. As a result, market share of BEVs expanded to 12.1%, a 3.0-percentage-point improvement compared to 2021. Hybrid cars achieved a market share of 22.6%. By contrast, traditional petrol and diesel fuel-types continued to lose ground. However, combined, they still accounted for more than half of EU car sales in 2022.

Alternatively-powered vehicles accounted for more than a half (53.1%) of the EU car market during the last quarter of the year, with over 1.3 million cars registered in total.

*Source: https://www.acea.auto/fuel-pc/fuel-types-of-new-cars-battery-electric-12-1-hybrid-22-6-and-petrol-36-4-market-share-full-year-2022/*

# SPOTLIGHT METHANE

## First LNG tractor

According to a statement issued by CNH, the multinational firm unveiled the T7 Methane Power LNG pre-production prototype tractor at its tech day event in Phoenix, Arizona, USA.

“Natural gas, and especially biomethane, are presently the ideal solutions to guarantee higher horsepower machine performance, while also lowering emissions and reducing operating costs,” it said.

The T7 Methane Power LNG would more than double the autonomy compared to a CNG design whilst boosting overall farm sustainability, CNH claims.

*Source: https://lngprime.com/europe/cnh-industrials-new-holland-agriculture-launches-first-lng-powered-tractor/68437/*

## New world record for biogas: 2,934 km

Efficiency races have been around for a long time, but now a biogas prototype has clearly demonstrated the efficiency of combustion engines powered by sustainable fuel at the 2022 EcoGreen Gas Challenge. With just 0.57 kilos of biogas on board, the streamlined CNG racer managed a distance of almost 3,000 kilometers – a world record.

*Source: https://www.cng-mobility.ch/en/beitrag/new-world-record-for-biogas-2934-km/*

## CNG cars in India

While its future in Europe is uncertain due to the phasing of ignition engines in 2035, CNG cars continue to develop in other parts of the world. In India, where the use of gas for mobility is accelerating, Toyota has launched its first CNG models in November 2022.

*Source: https://www.gnvmagazine.com/en/toyota-kirloskar-motor-announces-its-foray-into-the-cng-segment/*

## NG engine with high thermal efficiency

Weichai released their commercial natural gas engine with base engine’s thermal efficiency of 54.16%. TÜV Sud, an authoritative international testing institution, awarded certificates to the representatives of Weichai’s development team. Since 2018, the R&D team of Weichai has achieved huge leaps in the base engine’s thermal efficiency of natural gas engines, exceeding at the industry level of 42% to 45% and 50% in 2020 and 2021 respectively, In November 2022, the thermal efficiency of a natural gas engine was successfully improved to 54.16%, meeting the Euro VI emission standards.

*Source: https://www.gnvmagazine.com/en/weichai-group-launches-natural-gas-engine-with-a-brake-thermal-efficiency-of-54-16/*

## Fleets fueled with RNG carbon-negative

Natural Gas Vehicles for America (NGVAmerica) and Coalition for Renewable Natural Gas (RNG Coalition) announced in October 2022 that California fleets fueled with bio-CNG achieved carbon-negativity in 2021 for the second straight year. Ninety-eight percent of all on-road fuel used in natural gas vehicles in California in 2021 was renewable natural gas (RNG). According to data from the California Air Resources Board the annual average carbon intensity score of bio-CNG in that mix was -44.4 $gCO_{2e}$/MJ.
Source:
*https://biomassmagazine.com/articles/19422/california-fleets-fueled-with-bio-cng-achieve-carbon-negativity*

## Extended range RNG tanks

Natural gas versions of Iveco’s heavy truck enable operators to dramatically reduce their carbon emissions output by up to 95% when running biomethane fuels in either compressed (CNG) or liquefied (LNG) forms.

Iveco has expanded its available fuel tank options on its Iveco S-Way CNG 4×2 tractors, increasing the total fuel capacity to 1,052-litres, up by 132L.

This additional tank size enables 160kg of compressed natural gas to be squeezed into the tanks, which equates to an impressive 15% proportional uplift in vehicle range.

*Source: https://www.gnvmagazine.com/en/iveco-adds-extended-range-cng-tanks-to-iveco-s-way-natural-gas-range/*

# AMF NEWS

## AMF Workshop on e-fuels application

AMF Task 64 (E-fuels and End-Use Perspectives) organizes a series of online workshops on the application of e-fuels. Workshop number 4 will take place on 2nd May, 2023, and registration is open at the following link:

*https://www.iea-amf.org/content/events/web_seminars/*

Presentations from earlier Task 64 online workshops as well as from workshops on sustainable aviation fuels, trucks and methanol as motor fuel are also available under that link.

## Ongoing AMF Tasks

The full list of current AMF projects includes:

- Task 64: E-fuels and End-Use Perspectives
- Task 63: Sustainable Aviation Fuels
- Task 62: Wear in engines using alternative fuels
- Task 61: Remote Emission Sensing
- Task 60: The Progress of Advanced Marine Fuels
- Task 28: Information Service & AMF Website

*Link: https://www.iea-amf.org/content/projects/ongoing_projects*

# PUBLICATIONS

## Energy Technology Perspectives 2023

Building on the latest energy, commodity and technology data, as well as recent energy, climate and industrial policy announcements, ETP-2023 explores critical questions around energy and technology supply chains: Where are the key bottlenecks to sustainably scaling up energy and technology supply chains at the pace needed? How might governments shape their industrial policy in response to new energy security concerns for clean energy transitions? Which clean technology areas are at greatest risk of failing to develop secure and resilient supply chains? And what can governments do to mitigate such risks while meeting broader development goals?

*Link: https://www.iea.org/reports/energy-technology-perspectives-2023*

## Modal shift to cleaner transport fails to materialize

Global transport data from 2010 to 2021 collected by ITF show that inland freight transport shows no shift to more sustainable modes. The share of passenger transport by car increased for all reporting countries over the same period. The data also show the massive impact of the pandemic on rail passenger transport.

*Link: https://www.itf-oecd.org/modal-shift-transport-trends*

## Achieving climate neutrality with biogas

With a concrete roadmap, NGVA Europe shows how more biogas and bio-LNG in heavy transport could be used to meet EU climate targets.

Heavy lorries that transport large loads over long distances account for only 25% of Europe's fleet – yet they account for 75% of $CO_2$ emissions. That is why it is so important to take swift action in this area. This is precisely where trucks with CNG and LNG drive systems come into play. CNG and LNG trucks run on biogas to reduce $CO_2$ emissions.

*Link: https://www.cng-mobility.ch/en/beitrag/achieving-climate-neutrality-with-biogas-2/*

## Is the biofuel industry approaching a feedstock crunch?

Biodiesel, renewable diesel and bio-jet fuel producers are headed for a feedstock supply crunch during 2022-2027 if current trends do not change. In our main case, demand for vegetable oil, waste and residue oils and fats increases 56% to 79 million tonnes over the forecast period. Fuels made from wastes and residues are in particularly high demand because they satisfy GHG and feedstock policy objectives in the United States and Europe. In fact, wastes and residues are expected to be used for 13% of biofuel production in 2027, up from 9% in 2021.

The report forms a component of Chapter 4 of *Renewables 2022* and addresses a key question in renewable energy markets.

*Link: https://www.iea.org/reports/is-the-biofuel-industry-approaching-a-feedstock-crunch*

## $CO_2$ and emissions performance of PHEV vehicles

The scope of the report was to investigate the real-world performance of current non-SUV PHEVs available on the EU market for the costumer T&E. Three PHEV vehicles were investigated.

The tests were performed on three different routes in the city, rural and on the motorway in and around Graz, where the tests for the electric range and charge sustaining were performed on the same route.

Besides of the measurement of the gaseous components $CO_2$, CO, NO and $NO_2$ and PN23, emissions, a variety of other parameters such as ambient temperature, humidity and pressure as well as OBD data were recorded.

*Link: https://www.transportenvironment.org/wp-content/uploads/2023/02/2023_02_TE_PHEV_Testing_2022_TU_Graz_report_final.pdf*

## Potential of E-fuels to decarbonize ships and aircraft

This publication examines the potential of novel fuels to decarbonize aviation and maritime shipping. Fuels like hydrogen, ammonia and synthetic hydrocarbons can be produced from renewable sources. They could also be easier to deploy than other emerging low- and zero-carbon technologies. Yet many uncertainties exist around scaling up their use. These include cost, infrastructure needs, operational requirements and health impacts. The publication reviews the latest understanding of the production and use of novel fuels in the shipping and aviation sectors and highlights the policy requirements needed to accelerate their adoption.

*Link: https://www.itf-oecd.org/potential-e-fuels-decarbonise-ships-aircraft*

## Biofuels and ammonia analyzed by EMSA

The reports, prepared by the European Maritime Safety Agency (EMSA) to support the European Commission in the ongoing work on the "Fit for 55" package, in particular availability, sustainability, cost implications, and safety. As a 'drop-in' fuel which could replace conventional fossil fuels without substantial engine modification, biofuels can offer an immediate alternative for the existing fleet. The report finds that many of the existing maritime regulations can be transferred from fossil fuels to biofuels, and the safety risks are broadly similar. While the current use of biofuels in marine-engine applications is very limited (99.91% of marine fuel use was of carbon-based conventional fuels in 2020) there is significant potential for biofuels to capture a larger share of the total maritime fuel consumption. Projections for 2030 forecast between 6.3 to 8.0 exajoules (EJ) of available biomass volume in the EU and increasing to 6.7-14.7 EJ by 2050 (for comparison purposes, the international maritime transport sector represented about 12.0 EJ in 20212). However, the research notes that the future availability of sustainable biofuels may be in question, given the size of any potential demand from the maritime sector.

*Link: https://emsa.europa.eu/newsroom/latest-news/item/4834-update-on-potential-of-biofuels-for-shipping.html*

## Gas vehicle industry Roadmap

The European Gas Vehicles Association, NGVA Europe has launched a Carbon Neutral Roadmap to 2050 to deliver the Green Deal and achieve net zero $CO_2$ emissions in commercial road transport with biomethane. The Roadmap disclosed today is the foundation pillar of the industry's flagship initiative Gmobility - renewable gas in transport. To reach the Net Zero targets set by the EU, the share of biomethane has to be increased in line with the estimated demand supplied to the Heavy-Duty Vehicle (HDV) sector: biomethane blend rates of 55% by 2030, 75% by 2040 and 100% (15 billion cubic meters) by 2050.

*Link: https://www.ngva.eu/medias/the-gas-vehicle-industry-launches-a-carbon-neutral-roadmap-to-2050/*

## Joint statement of EU industry about renewable fuels

European industry, including fuel and automotive suppliers, vehicle manufacturers, dealers, repairers and transport operators eagerly anticipate the European Commission proposal on the revision of the $CO_2$ Regulation for Heavy-Duty Vehicles (HDVs).

The signatories of this letter welcome the revision of the $CO_2$ standards for HDVs in line with the "Fit for 55" objectives and believe that a recognition of all $CO_2$ emission reduction pathways along the entire value chain is critical. Transport operators and vehicle manufacturers must be encouraged to consider cleaner fuel alternatives to fossil fuels, immediately available today, including liquid and gaseous renewable and synthetic fuels. Depending on use cases, technology diversity is needed where all technologies, including electrification/hybridization, hydrogen and sustainable and renewable fuels can play a role.

The undersigned organizations recommend that sustainable and renewable fuels are considered for compliance in the $CO_2$ Regulation for HDVs. Including such a provision in the Regulation would support the EU's Green Deal objectives and accelerate the decarbonization of the commercial transport sector.

*Link: https://www.fuelseurope.eu/publications/publications/joint-statement-of-the-eu-industry-co2-regulation-for-heavy-duty-vehicles-should-recognise-decarbonisation-potential-of-sustainable-and-renewable-fuels*

## Biodiversity impact assessment of biofuel production

In the Renewable Energy Directive II (RED II), the European Commission emphasizes the necessity of the transition to renewable energy sources and sets a binding target share of energy from renewable feedstock until 2030.This study aims to determine environmental impacts on biodiversity due to biomass production for bioenergy use. The Fraunhofer study finds that the impact on biodiversity mainly depends on the state of the land before the cultivation.

*Link: https://www.concawe.eu/wp-content/uploads/BIA-Concawe-Report-Final-2022-05-30.pdf*

## EU Agricultural Outlook

The EU Agricultural Outlook for Markets, Income and Environment 2022-2032, published by the European Commission's DG for Agriculture and Rural Development, forecasts that demand for renewable ethanol will increase to 7.7 billion liters per year in 2030 before levelling out and decreasing slightly to 7.4 billion liters per year in 2032.

For biofuels, the report notes that while petrol and diesel consumption are expected to decrease by 18% and 21% respectively in 2032 compared to the 2020-2022 average, increasing biofuel blending rates will hold up demand for biofuels during this period.

*Link: https://agriculture.ec.europa.eu/system/files/2023-01/agricultural-outlook-2022-report_en.pdf*

# EVENTS

**Hydrogen Markets Americas Conference**

3-5 April 2023, San Diego, California, USA

*https://plattsinfo.spglobal.com/hydrogen-markets-americas-conference.html*

**Carbon Capture Utilization and Storage Technology**

April 11-12 2023, Amsterdam, Netherlands

*https://ccusevent.com/*

**Automotive Week 2023**

16-19 April 2023, Helmond, The Netherlands

*https://www.automotiveweek2023.com*

**WCX SAE World Congress Experience**

18-20 April 2023, Detroit, Michigan, USA

*https://www.sae.org/attend/wcx*

**European Algae Industry Summit**

19-20 April 2023, Lisbon, Portugal

*https://advancedbiofuelsusa.info/european-algae-industry-summit-april-19-20-2022-lisbon-portugal/*

**AltFuels Peru 2023**

19-22 April 2022, Lima, Peru

*https://altfuelscg.com/en/air-quality-and-emission-reduction/altfuels-peru-2023-lima-will-be-the-heart-of-clean-fuels-and-sustainable-mobility/*

**Conference on $CO_2$-based Fuels and Chemicals 2023**

19-20 April 2023, Cologne, Germany and online

*https://co2-chemistry.eu*

**2023 Value of Biogas East Conference**

25-26 April 2023 — Toronto, Ontario, Canada

*https://biogasassociation.ca/vob2023east*

**Argus Biofuels & Feedstocks Asia Conference**

25-27 April 2023, Singapore

*https://www.argusmedia.com/en/conferences-events-listing/asia-biofuels*

**International Vienna Motor Symposium**

26-28 April 2023, Vienna, Austria

*https://wiener-motorensymposium.at/en/*

**IV International Conference on Biofuels**

26-28 April 2023, Calli, Colombia

*https://www.conferenciabiocombustibles.com/en/*

**1st EUROPEAN B+ SUMMIT**

26-28 April 2023, Estoril, Portugal

*https://www.europeanbplussummit.com/invite*

**Symposium on Biomaterials, Fuels and Chemicals**

30-3 April-May 2023, Portland, Oregon, USA

*https://www.simbhq.org/sbfc/*

**Advanced Clean Technology (ACT) Expo**

1-4 May 2023, Anaheim, California, USA

*https://www.actexpo.com/*

**New York Sugar & Ethanol Conference**

4 May 2023, New York, USA

*https://www.datagroconferences.com/en/eventos/citi-iso-datagro-conference/*

**aireg Sustainable Aviation Fuels Conference 2023**

4-5 May 2023, Berlin, Germany

*https://aireg.de/en/home-en/*

**Sustainable Aviation Futures APAC Congress**

9-11 May 2023, Singapore

*https://www.safcongressapac.com*

**Fastmarkets Biofuels and Feedstocks Americas 2023**

15-17 May 2023, Chicago, Illinois, USA

*https://www.fastmarkets.com/agriculture/biofuels-feedstocks-americas/**

**International Biogas Congress and Expo**

16-17 May 2023. Brussels, Belgium

*https://bioenergy-news.com/conference/*

**$CO_2$ Capture, Storage & Reuse 2023**

16-17 May 2023, Copenhagen, Denmark

*https://fortesmedia.com/co2-capture-storage-reuse-2023,4,en,2,1,21.html*

**Smart Cities Connect Conference and Expo**

16-18 May 2023, Denver, Colorado, USA

*https://spring.smartcitiesconnect.org/*

**International VDI Conference - Electrified Off-Highway Machines**

16-17 May 2023, Düsseldorf, Germany

*https://www.vdiconference.com/event/electrified-off-highway-machines/*

**15th ITS European Congress**

22-24 May 2023, Lisbon, Portugal

*https://itseuropeancongress.com/*

**Electric & Hybrid Vehicle Technology Expo**

23-25 May 2023, Stuttgart, Germany

*https://www.evtechexpo.eu/en/Home.html*

**ITF 2023 Summit: Transport Enabling Sustainable Economies**

*24-26 May 2023, Leipzig, Germany*

*https://www.itf-oecd.org/itf-2023-summit*

**Argus Green Marine Fuels Conference**

23-25 May 2023, Amsterdam, Netherlands

*https://www.argusmedia.com/en/conferences-events-listing/green-marine-fuels*

**31st European Biomass Conference and Exhibition (EUBCE)**

5-9 June 2023, Bologna, Italy and ONLINE

*https://www.eubce.com/eubce-in-brief/*

**European Electric Vehicle Batteries 2023**

6-7 June 2023, London, UK

*https://www.wplgroup.com/aci/event/european-electric-vehicle-batteries-summit/*

**Sustainable Aviation Futures Congress**

7-9 June 2023, Amsterdam, The Netherlands

*https://www.safcongress.com*

**International Fuel Ethanol Workshop & Expo**

12-14 June 2023, Omaha, Nebraska

*https://few.bbiconferences.com/ema*

**CIMAC Congress**

12-16 June 2023, Busan, South Korea

*https://www.cimaccongress.com*

**2023 International Fuel Ethanol Workshop & Expo**

12-14 June 2023, Omaha, Nebraska, USA

*https://few.bbiconferences.com/ema/DisplayPage.aspx?pageId=Home*

**Oleofuels 2023**

14-15 June 2023, Seville, Spain

*https://www.wplgroup.com/aci/event/oleofuels/*

**Hydrogen & P2X 2023**

14-15 June 2023, Copenhagen, Denmark

*https://fortesmedia.com/hydrogen-p2x-2023,4,en,2,1,22.html*

**Commercial Vehicles 2023 Truck, Bus, Van, Trailer**

14-15 June 2023, Baden-Baden, Germany

*https://www.vdiconference.com/event/nutzfahrzeuge/*

**Advanced Automotive Battery Conference Europe**

19-22 June 2023, Mainz, Germany

*https://www.advancedautobat.com/europe*

**Electric and Hybrid Marine EXPO**

20-22 June 2023, Amsterdam, The Netherlands

*https://www.electricandhybridmarineworldexpo.com/en/*

**iVT ExPo**

28-29 June 2023, Cologne, Germany

*https://www.ivtexpo.com/en/index.php*

**23rd Stuttgart International Symposium**

4-5 July 2023, Stuttgart, Germany

*https://www.fkfs-veranstaltungen.de/en/events/stuttgart-symposium*

**Dritev**

5-6 July 2023, Baden-Baden, Germany

*https://www.vdiconference.com/dritev/*

**Industrial Vehicle & Off-Highway Technology Expo**

23-24 August 2023, Chicago, Illinois, USA

*https://www.ivtexpo.com/usa/en/conference.php*

**Powertrains, Energy and Lubricants International Meeting**

29-1 August-September 2023, Kyoto, Japan

*https://2023pel.jp*

**Argus North American Biofuels, LCFS & Carbon Markets Summit**

11-13 September 2023, Monterey, California, USA

*https://www.argusmedia.com/en/conferences-events-listing/biofuels-and-lcfs-markets*

**Electric & Hybrid Aerospace Technology Symposium**

27-28 September 2023, Bremen, Germany

*https://www.electricandhybridaerospacetechnology.com/en/*

**Argus Methanol Forum**

18-20 September 2023, Housten, Texas, USA

*https://www.argusmedia.com/en/conferences-events-listing/methanol-forum*

**Sustainable Aviation Futures North America Congress**

3-5 October 2023, Housten, Texas, USA

*https://www.safcongressna.com*

**Aachen Colloquium Sustainable Mobility**

9-11 October 2023, Aachen, Germany

*https://www.aachener-kolloquium.de/de/*

**Argus Biofuels Europe Conference**

11-13 October 2023, London, UK & Online Access

*https://www.argusmedia.com/en/conferences-events-listing/biofuels*

**DATAGRO International Conference on Sugar and Ethanol**

23-24 October 2023, São Paulo, Brazil

*https://www.datagroconferences.com/eventos/conferencia-internacional-datagro/*

**Zero $CO_2$ Mobility**

7-8 November, Berlin, Germany

*https://fev-live.com/zero-co2-mobility/*

**Heavy-Duty, On- and Off-Highway Engines 2023**

7-8 November 2023, Nuremberg, Germany

*https://www.atzlive.de/en/events/heavy-duty-on-and-off-highway-engines/*

**Alternative Fuels and Chemicals Coalition Global Biobased Economy Conference & Exhibit**

12-14 November 2023, Washington, DC, USA

*https://www.altfuelchem.org/2023-afcc-biobased-economy-co*

**A3PS Conference Eco-Mobility 2023**

16-17 November 2023, Vienna, Austria

*https://www.a3ps.at/event/eco-mobility-2023*

**London EV Show**

28-30 November 2023, London, UK

*https://londonevshow.com*

**Green Shipping Conference**

29 November, Vancouver, Canada

*https://vmcclimate.ca/green-ship-2022*

# IMPRINT

The Advanced Motor Fuels Technology Collaboration Programme (AMF TCP) is one of the International Energy Agency's (IEA) transportation related Technology Collaboration Programmes. These are multilateral technology initiatives that encourage technology-related activities that support energy security, economic growth and environmental protection.

AMF provides an international platform for co- operation to promote cleaner and more energy efficient fuels and vehicle technologies. This newsletter contains news articles on research, development and demonstration of advanced motor fuels, information about related policies, links to AMF projects, and an overview over publications and events.

The newsletter is prepared based on contributions from Werner TOBER and Robert ROSENITSCH, TU Vienna, Shinichi GOTO, AIST, and Andy BURNHAM, ANL. It is edited by Astrid Wolfbeisser, A3PS and Dina Bacovsky, BEST – Bioenergy and Sustainable Solutions. The Newsletter is available online at: *www.iea-amf.org*.

AMF welcomes interested parties to make contact and to become members of the AMF family. If you wish to get in touch please contact the AMF Secretary, the AMF ExCo Chair or your national AMF Delegate.

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