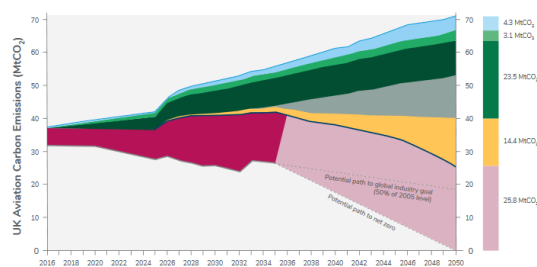


DECEMBER 2020, ISSUE NO. 2/2020

Advanced Motor Fuels News

Decarbonisation Road-Map for UK Aviation



Sustainable Aviation Fuels are one important element in bringing GHG emissions of the aviation sector down to zero.

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DEMONSTRATION / IMPLEMENTATION / MARKETS

2G Ethanol Demonstration

Mangalore Refinery and Petrochemicals Limited (MRPL) is planning to install a second generation (2G) ethanol facility in Karnataka, India.

MRPL has awarded LanzaTech the contract to commence the basic engineering for an integrated processing facility to convert locally available agricultural residues to about 16,000 metric tonnes (5.3m gallons) per year of fuel grade ethanol. LanzaTech will deploy commercially proven gasification technology from Ankur Scientific, a waste to energy company, that specialises in distributed production based in Vadodara, India.

The Indian government is encouraging production of cellulosic ethanol from agricultural wastes and residues that would otherwise be burnt. Not only does conversion to ethanol create a new source of income for local farmers, it is also in line with the governments biofuels roadmap to increase production of 2G, non-food or feed based ethanol across the country to meet its 20% ethanol blending mandate by 2030.

Link: <https://biofuels-news.com/news/advanced-biofuel-facility-gets-green-light-in-india/>

HVO Production

Phillips 66 announced plans to convert its San Francisco, California crude oil refinery to biofuel feedstocks. The plant will be capable of producing 680 million gallons annually of renewable diesel, gasoline, and jet fuel. Pre-treatment units will be constructed and existing hydrocracking units will be repurposed to enable the production of renewable fuels from feedstocks such as cooking oil, fats, greases, and soybean oils. Production for this plant is planned to begin in early 2024.

In addition, ExxonMobil will purchase 105 million barrels of renewable diesel per year for 5 years, from an oil refinery in Bakersfield, California that is being converted to use renewable feedstocks such as, camelina, cooking oil, soybean oil, distillers' corn oil. Production for this plant is planned to begin in 2022.

*Links: <https://www.reuters.com/article/phillips-66-biofuels/phillips-66-to-reconfigure-california-refinery-for-renewable-fuels-idUSL4N2FE3MY>
<https://bioenergyinternational.com/biofuels-oils/exxonmobil-and-global-clean-energy-holdings-sign-renewable-diesel-deal>*

Renewable Components for Diesel

To meet the transportation sector's need for diesel fuel, U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Bioenergy Technologies Office (BETO) National Laboratory

partnerships have developed a method to convert renewable and waste carbon into sustainable diesel fuel.

This catalytic chemistry method takes alcohols derived from renewable biomass and produces ethers that can then be used as high-octane and low-sooting blendstocks for diesel fuel. The catalyst used in this process was shown to be stable over time. Highly stable and long-lasting industrial catalysts are critical for the economic and environmental stability of the process.

Source: NREL

Link: <https://www.nrel.gov/news/program/2020/new-catalytic-process-turns-renewable-and-waste-carbon-into-cleaner-high-performance-diesel-biofuel-blendstock.html>

New Biofuels Candidates

A Co-Optima research team created a merit function tool that evaluates fuel properties and their impact on engine performance, giving the scientific community a guide to quickly evaluate biofuels.

The tool quantifies the fuel efficiency potential associated with six different fuel properties. In the journal article, the Co-Optima team explains how it has identified three fuel properties—research octane number, octane sensitivity, and heat of vaporization—as having the most significant impact on turbocharged SI engine efficiency.

For more information, read the feature by Co-Optima partner Oak Ridge National Laboratory and visit the Co-Optima website.

Source: NREL

Renewable Natural Gas

The Brazilian sugar refiner and sugarcane ethanol producer, Grupo Cocal, will install a pressure swing adsorption biogas upgrading system to its sugar mill. This system will produce renewable natural gas from the anaerobic digestion of by-products from the sugar refining and ethanol production process. This will be the first commercial-scale pipeline injection RNG project in the Brazilian sugar cane industry. In addition, some of the RNG will be used in the vehicle fleet of the sugar mill operator.

In addition, a new commercial agreement will increase the development of small-scale liquefied natural gas production from both fossil and biogas sources. In Sao Paulo, up to 15 tons of LNG will be produced from biomethane produced at local landfills, while in Bahia, 30 tons of LNG will be produced from a mature gas field. Both projects are set to start in 2020 and will deliver the LNG to various end-uses including the pipeline and natural gas vehicle stations.

Links: <https://www.canadianbiomassmagazine.ca/greenlane-renewables-signs-2-4m-contract-with-brazilian-sugar-mill/> and <https://ngtnews.com/golar-galileo-technologies-partner-to-introduce-bio-lng-to-brazil>

EU Refiners and Low-carbon Fuels

The European refining industry supports the EU's 2050 climate neutrality ambition. Our industry is transforming and developed a comprehensive pathway to enable, with partners, climate neutrality in transport and meet EU's 2050 objective.

"We, EU refiners, have a plan of our own to deploy large-scale green investments to reach climate neutrality by 2050. Low-carbon liquid fuels can decarbonize transport, enabling all new and old vehicles in road transport, aviation and maritime to be climate neutral by 2050."

To unlock investments, Europe needs the creation of a lead market for low-carbon fuels, with a significant carbon-price signal. The CO₂ standards in vehicles must also be amended so that the Tank-to-Wheel approach currently in place — whereby emissions are only assessed at point of use of a vehicle — is corrected by embracing the CO₂ footprint of fuels.

What's more, we must shift from outdated energy taxation to carbon taxation. Zero or very low tax for low-carbon fuels would achieve the dual objective of keeping fuel prices socially acceptable and making a business case for investments.

Source: Politico

Link: <https://www.politico.eu/sponsored-content/eu-refiners-call-for-action-to-unlock-low-carbon-investment/>

EU New Cars Sales

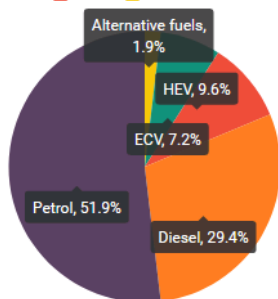
In the second quarter of 2020, the market share of electrically-chargeable vehicles increased to 7.2% of total EU car sales, compared to a 2.4% share during the same period last year. The overall decline in passenger car registrations as a result of the COVID-19 pandemic affected the diesel and petrol segments in particular, although together still accounting for more than 80% of car sales.

New passenger cars by fuel type in the EU

Market shares (%)

Q2 2020

Petrol Diesel ECV HEV Alternative fuels



Created with LocalFocus

Source: ACEA - Association des Constructeurs Européens d'Automobiles

Link:

<https://www.sciencedirect.com/science/article/pii/S0360128520300861>

POLICY / LEGISLATION / MANDATES / STANDARDS

Indonesia Implements B30

After a series of trials show positive results, the President of Republic of Indonesia Joko Widodo launched the Mandatory B30 Program on December 23, 2019, at Pertamina's Refueling Station Number 31.128.02 on Jalan MT Haryono, Jakarta. The mandatory B30 will be implemented simultaneously throughout Indonesia on January 1, 2020, making Indonesia the first country in the world to implement B30.

Source: <https://bioenergyinternational.com/policy/president-jokowi-launches-indonesias-b30-implementation>

Emission Regulations in Latin America

In Mexico, Euro VI-equivalent regulations (NOM-044) were delayed until December 2021 that would have required vehicle manufacturers to produce only heavy-duty diesel trucks and buses that operate on ultra-low sulfur diesel (ULSD) citing disruptions to the supply chain from the COVID-19 pandemic. In Brazil, manufacturers are seeking to delay for three years similar regulations (PROCONVE 8) for trucks and buses to utilize Euro VI aftertreatment technology, citing COVID-19 and technology development costs. At this point, the Brazilian government has not responded to the request and the regulations are currently scheduled to begin in January 2023.

Links: <https://theicct.org/blog/staff/euro-vi-latam-sept2020>

Advanced Clean Truck Regulation

The California Air Resources Board adopted the Advanced Clean Truck regulation, which is the first time a government agency has mandated truck manufacturers to transition from diesel to electric zero-emission trucks. The rule phases in sales requirements starting in 2024 and with the goal by 2045 every new truck sold in California will have zero emissions. The regulation has two components including a manufacturer sales requirement and a reporting requirement.

Manufacturers who certify Class 2b-8 chassis or complete vehicles with combustion engines would be required to sell zero-emission trucks as an increasing percentage of their annual California sales. By 2035, zero-emission sales need to be 55% of Class 2b – 3 straight truck sales, 75% of Class 4 – 8 straight truck sales, and 40% of truck tractor sales. In addition, large employers are required to report information about shipments, while large fleet owners are required to report about their existing fleet operations. This information will help California identify strategies to ensure that fleets purchase available zero-emission trucks and place them in service where suitable to meet their needs.

Source: <https://ww2.arb.ca.gov/our-work/programs/advanced-clean-trucks>

SPOTLIGHT SHIPPING AND AVIATION

Sustainable Aviation in UK

Sustainable Aviation is a long term strategy which sets out the collective approach of UK aviation to tackling the challenge of ensuring a cleaner, quieter, smarter future for our industry. Launched in 2005, it is a world first bringing together major UK airlines, airports, manufacturers, air navigation service providers and key business partners.

Sustainable Aviation commissioned independent consultants E4tech to model the future potential of sustainable aviation fuels. Their analysis estimates that in 2035 there may be between 14.5 and 30.9 million tonnes per year of sustainable aviation fuels produced globally. This would correspond to 4%-8% of global aviation fuel use. If UK production were to grow in line with global production, sustainable aviation fuels produced in the UK could provide between 3.3% and 7.8% of the UK's 2035 aviation fuel demand.

In 2050, 32% of the UK demand for kerosene could be met by domestically produced sustainable aviation fuel, requiring 4.5 mt/year of sustainable aviation fuel production. This corresponds to an annual growth rate from 2035 that is not dissimilar to historic growth rates in global biofuels production. By 2035, the development of a domestic industry for the production of sustainable fuels could generate a Gross Value Added (GVA) of up to £742m annually and support up 5,200 UK jobs. A further 13,600 jobs could be generated from the growing market for sustainable aviation fuels through global exports.

Source: <https://www.sustainableaviation.co.uk/>

Link: https://www.sustainableaviation.co.uk/wp-content/uploads/2020/02/SustainableAviation_FuelReport_20200231.pdf

Neste Supplies SAF to SFO

In the United States (US), Neste, the world's largest producer of renewable diesel and sustainable aviation fuel (SAF) produced from waste and residue raw materials, has announced that it has delivered its first batch of sustainable aviation fuel (SAF) to San Francisco International Airport (SFO) via pipeline, where it will be used by major airlines committed to reducing carbon emissions.

According to Neste, it is the first company to deliver sustainable aviation fuel, under its brand name Neste MY Renewable Jet Fuel, to SFO using existing multi-product pipeline infrastructure. The same pipelines are originally designed to carry fossil fuels and other oil products.

Source: <https://bioenergyinternational.com/storage-logistics/neste-first-to-supply-saf-via-pipeline-to-san-francisco-international-airport>

SPOTLIGHT ELECTRIC VEHICLES

US Funds Fuel Cell R&D

The U.S. Department of Energy DOE announced plans for the investment of \$100 million over five years in two new consortia to advance hydrogen and fuel cell technologies research and development. One consortium will conduct R&D to achieve large-scale, affordable electrolyzers. The other consortium will conduct R&D to accelerate development of fuel cells for heavy-duty vehicle applications, including long-haul trucks. This initiative will set a five-year goal to improve fuel cell technology to so that heavy-duty fuel cell trucks can meet the durability, cost, and performance requirements of the trucking industry.

In addition, the U.S. DOE also announced \$139 in federal funding for 55 projects that focus on areas such as fuel diversification and vehicle efficiency. Projects cover a wide range of areas including the development of a heavy-duty direct-injection spark-injection natural gas engine by Volvo and the research of how to improve electric vehicle performance in cold-weather.

Links: <https://www.energy.gov/articles/doe-announces-new-lab-consortia-advance-hydrogen-and-fuel-cell-rd>

<https://www.energy.gov/articles/doe-announces-139-million-funding-55-projects-advance-innovative-vehicle-technologies>

New US EV Fast Charge Routes

Electrify America completed its first cross-country DC fast charging route that allows drivers to travel the 2,700 miles between Los Angeles, California and Washington, D.C. By the end of 2020, another route from San Diego, California to Jacksonville Florida will be completed. The stations are located on average 70 miles apart near highway routes and in metro areas and will have both CCS and CHAdeMO connectors. Electrify America was established in 2016 to offset emissions from the Volkswagen diesel scandal.

Link: <https://electrek.co/2020/06/24/electrify-america-completes-fast-charging-cross-country-route/>

Electrification of Buses

The recent IEA Global EV Outlook features case studies on transit bus electrification in Kolkata (India), Shenzhen (China), Santiago (Chile) and Helsinki (Finland) highlighting the important role that electrifying public transport can play in reducing local air pollution and emissions. The report includes policy recommendations that incorporate learning from frontrunner markets to inform policy makers and stakeholders that consider policy frameworks and market systems for electric vehicle adoption.

Source: IEA

Link: <https://www.iea.org/reports/global-ev-outlook-2020>

IEA & IEA AMF NEWS

AMF ExCo Meeting

AMF ExCo 60 was held as a series of online meetings in November 2020. Separate meetings were held for AMF management issues, membership and outreach, and strategy and technology.

During the Membership & Outreach Meeting, AMF decided to set up a formal collaboration with the International Transport Forum. Also, it was decided to extend the AMF communication channels to also cover LinkedIn and Twitter (make sure to follow @AMFTCP).

During the Strategy & Technology Meeting, recent trends and developments in the field of advanced motor fuels were discussed. Based on this, a number of new topics for AMF work were brought up. AMF will continue to work on HDVs and on marine fuels, and is interested in starting dedicated work on sustainable aviation fuels and on e-fuels such as hydrogen, ammonia and methanol.

In the Management Meeting it was decided to take steps to adapt the AMF legal text to the new IEA TCP Framework. The group of ExCo Chairs for the next two years was elected, with Jesper Schramm as ExCo Chair, and Sandra Hermle, Michael Wang, and Jun Li as Vice-Chairs.

The next ExCo meeting will be held in May 2021, again as a series of online meetings.

Ongoing AMF Annexes

Annex 61: Remote Emission Sensing

Annex 60: The Progress of Advanced Marine Fuels

Annex 59: Lessons Learned from Alternative Fuel Experiences

Annex 58: The Contribution of Renewable Transport Fuels to Decarbonizing Road Transport

Annex 57: Heavy Duty Vehicle Evaluation

Annex 28: Information Service & AMF Website (AMFI)

AMF Online Seminars

Expert Workshop on Lessons Learned from Alternative Fuel Experience

AMF Annex 59 “Lessons Learned from Alternative Fuel Experience” assesses 16 examples of market introductions of alternative fuels in six countries. These case studies were recently presented at an online expert workshop. The key message from this workshop is that for the successful implementation of alternative fuels and vehicles in the transport system long-term and comprehensive policies are needed which address markets, stakeholders and different technologies. Also, these policies should all types of stakeholders along the value chain to gain benefits.

Link: https://www.iea-amf.org/content/news/expertworkshop_annex59

Webinar with IEA Bioenergy

Annex 58 “The Contribution of Renewable Transport Fuels to Decarbonizing Road Transport” was carried out jointly with IEA Bioenergy and has recently been completed. The results are published in a final report and were presented at a webinar with 300 participants. The report and the webinar presentations are available for download.

Link: https://www.iea-amf.org/content/projects/map_projects/58?_ga=2.28327355.641463388.1607339257-1604395506.1560919408

IEA Clean Energy Transitions Summit

Ministers from dozens of countries accounting for over 80% of the world economy took part in the IEA’s first Clean Energy Transitions Summit, discussing how to bring about a sustainable and resilient recovery from the Covid-19 crisis and achieve a definitive peak in global carbon emissions.

Participants highlighted the impacts of the Covid-19 pandemic on their energy systems, underscoring the importance of finding ways to support clean energy transitions despite the current challenges. Key themes included the need for greater innovation in areas such as hydrogen, the importance of inclusive and equitable recoveries, and how to make the electricity sector more resilient and sustainable.

Source: IEA Energy Mix

Link: <https://www.iea.org/news/40-ministers-from-around-the-world-gather-to-address-the-world-s-energy-and-climate-challenges>

AMF WORK KEY FINDINGS

Methanol as a Motor Fuel

Methanol could become a cost efficient, clean and green alternative for replacing fossil fuel in road transport and shipping sectors, if relevant supporting measures and instruments are introduced.

Methanol was demonstrated in large vehicle fleets during the 1980/90s. Despite technical success methanol was not a commercial success. Recently, interest in methanol as motor fuel has increased again. Prominent examples are China as largest user of methanol as automotive fuel and Europe where methanol is being considered as marine fuel or to be used in fuel cell electric vehicles. Internal combustion engines using methanol as fuel could be further developed for high efficiency to gain maximum energy and pollutant savings. However, if methanol shall be applied with higher blending rates or as pure fuel, technical adjustments of the existing fuel infrastructure are required.

The key findings of this AMF project were presented to an audience of 250+ through presentations within the Methanol Institute Webinar Series. The final report and the key messages are available on the AMF website.

Link: https://iea-amf.org/content/projects/map_projects/56

PUBLICATIONS

IEA Energy Technology Perspectives

A major effort to develop and deploy clean energy technologies worldwide is urgently needed to meet international energy and climate goals – particularly in order to reduce carbon emissions from areas of the economy beyond the power sector, according to the Energy Technology Perspectives 2020 report.

The report analyses more than 800 different technology options to assess what would need to happen to reach net-zero emissions globally by 2070 while ensuring a resilient and secure energy system.

The report finds that transitioning just the power sector to clean energy would get the world only one-third of the way to net-zero emissions. Completing the journey will require devoting far more attention to the transport, industry and buildings sectors, which today account for about 55% of CO₂ emissions from the energy system. Hydrogen, carbon capture and biofuels will be vital solutions – alongside electricity.

Source: IEA Energy Mix

Link: <https://www.iea.org/reports/energy-technology-perspectives-2020>

ETP Clean Energy Technology Guide

The ETP Clean Energy Technology Guide is an interactive framework that contains information for over 400 individual technology designs and components across the whole energy system that contribute to achieving the goal of net-zero emissions.

For each of these technologies, it includes information on the level of maturity (or Technology Readiness Level, TRL) and a compilation of development and deployment plans, as well as cost and performance improvement targets and leading players in the field.

Link: <https://www.iea.org/articles/etp-clean-energy-technology-guide>

Sustainable Recovery

Since the scale of the economic crisis began to emerge, the IEA has been leading the calls for governments to make the recovery as sustainable and resilient as possible. This means immediately addressing the core issues of global recession and soaring unemployment – and doing so in a way that also takes into account the key challenge of building cleaner and more secure energy systems.

The Sustainable Recovery Plan set out in this special report shows governments have a unique opportunity today to boost economic growth, create millions of new jobs and put global greenhouse gas emissions into structural decline. This work was done in collaboration with the International Monetary Fund.

Source: IEA

Link: <https://www.iea.org/reports/sustainable-recovery>

Clean Energy Transitions Programme

The 2019 CETP Annual Report provides a comprehensive summary of CETP activities and programme highlights.

The report outlines work carried out in 2019 across each of the CETP work streams, presents activities and major achievements for each of the priority countries (Brazil, the People's Republic of China, India, Indonesia, Mexico and South Africa); and priority regions (Africa, Latin America and Southeast Asia). These CETP priority countries represent 41% of global CO₂ emissions from fuel combustion.

The report also identifies opportunities for further collaboration with potential partners as well as introducing the major activities planned for 2020.

Source: IEA

Link: <https://www.iea.org/reports/clean-energy-transitions-programme-2019>

Emissions Trading Scheme for China

China is set to implement a national emissions trading scheme (ETS) to reduce CO₂ emissions in a cost effective way beginning in 2020 with gas and coal-fired power plants. The scheme will be the biggest of its kind in the world. This IEA report looks at the implications for China and how this scheme could drive the country's clean energy transition.

Source: IEA

Link: <https://www.iea.org/reports/chinas-emissions-trading-scheme>

Japan: Energy White Paper 2020

Agency for Natural Resources and Energy, METI Japan published the Energy White Paper in June 2020, that was an annual report based on the Basic Act on Energy Policy (statutory white paper). The 2020 version is the 17th publication since its first release. The White Paper comprises of 3 parts, namely Part 1: Analysis based on the current energy situation, Part 2: Data on energy trends at home and abroad, and Part 3: Measures Taken in FY2019 concerning Energy Supply and Demand.

Link:

https://www.enecho.meti.go.jp/en/category/whitepaper/pdf/2020_outline.pdf

EU 2020 – Energy Policy Review

This IEA in-depth peer review of the EU energy policies commends the progress made by the EU, such as the creation of an internal energy market and enhancement of energy security and climate policies. The IEA provides a range of recommendations for the successful implementation of the European Green Deal in the coming years. The report also outlines opportunities for boosting short and long-term actions for a resilient, sustainable and just recovery of the European economy.

Source: IEA Energy Mix

Link: <https://www.iea.org/reports/european-union-2020>

EU Statistical Pocketbook 2020

The energy sector is one of the pillars of growth, competitiveness and development for modern economies. To keep up with the ongoing transformation of the energy sector in Europe, we need data that is accurate and up-to-date. This publication provides an overview of the most relevant annual energy-related statistics for the European Union as a whole and for each of its Member States. The data contained in this pocketbook is drawn from several sources: Eurostat and other European Commission's services, the European Environment Agency, the International Energy Agency.

Source: *European Commission Publications:*

Link: <https://op.europa.eu/en/publication-detail/-/publication/87b16988-f740-11ea-991b-01aa75ed71a1>

Crediting System for Renewable Fuels

On behalf of the German Economic Ministry the consultancy Frontier Economics has developed a methodology of how to account the CO₂ reduction of renewable fuels in the CO₂ fleet regulation of the automotive industry. The political support of this study in the revision of the fleet regulation during the European Green Deal will decide if the automotive industry will purely stay on a "tank-to-wheel" approach and, therefore, has to electrify almost everything or if in addition CO₂ credits from sustainable fuels are accounted.

Link: <https://www.frontier-economics.com/media/3937/crediting-systems-for-renewable-fuels-in-eu-emission-standards-for-road-transport-en.pdf>

JEC publications on WTW, WTT, TTW

JRC (the Joint Research Centre of the European Commission), EUCAR and Concawe have updated their joint evaluation of the Well-to-Wheels energy use and greenhouse gas (GHG) emissions for a wide range of potential future fuel and powertrain options, first published in December 2003.

As an update of the previous version, the objectives of JEC WTW v5 are to establish, in a transparent and objective manner, a consensual Well-to-Wheels energy use and GHG emissions assessment of a wide range of automotive fuels and powertrains relevant to Europe in 2025 and beyond. This version updates the technologies investigated and applies a common methodology and data-set to estimate WTW emissions. This WTW version 5 concentrates on the evaluation of energy and GHG balances for the different combinations of fuel and powertrains, in road transport. The current version 5 investigates, for the first time, the heavy duty segment, thus expanding the scope of the previous versions of the study.

Link: <https://ec.europa.eu/jrc/en/jec/publications/reports-version-5-2020>

LCA Tool for Cars

Carculator is an open-source, comprehensive and transparent life cycle assessment tool for passenger cars. It allows for an economic and environmental evaluation of different types of cars under several driving and energy supply scenarios. Results partly rely on the background inventory data of ecoinvent v3.6, and the implementation of impact assessment methods therein.

Link: <https://carculator.psi.ch/>

Energy Consumption and Cost Estimates

The U. S. Department of Energy Vehicle Technologies Office (VTO) and Hydrogen & Fuel Cell Technologies Office (HFTO) support new technologies to increase energy security in the transportation sector. VTO and HFTO work in collaboration with industry and research organizations to identify the priority areas of research needed to develop advanced vehicle technologies to reduce and eventually eliminate petroleum use, and reduce emissions of greenhouse gases, primarily carbon dioxide from carbon-based fuels.

The objective of the present studies was to evaluate the benefits of the DOE VTO and HFTO for a wide range of light duty vehicle applications, powertrain configurations and component technologies for different timeframes and quantify the potential future petroleum displacement up to 2045 as well as the cost evolution. 9500+ light duty and 500+ medium and heavy duty vehicles were simulated

Source: *Autonomie*

Link: https://www.autonomie.net/publications/fuel_economy_report.html

Sustainable Aviation Fuel Pathways

The U.S. DOE published a report on potential pathways to produce sustainable alternative fuels suitable for use by the commercial aviation sector.

Renewable and wasted carbon can provide a path to low-cost, clean-burning, and low-soot-producing jet fuel. Research shows an opportunity to produce fuel in which aromatics are initially diluted with the addition of renewable iso-alkanes, aromatics are later fully replaced with cycloalkanes, and finally high-performance molecules that provide mission-based value to jet fuel consumers are introduced.

Key to this fuel pathway is sourcing the three blendstocks—iso-alkanes, cycloalkanes, and high-performing molecules—from inexpensive resources. When resourced from waste carbon, there are often additional benefits, such as cleaner water when sourcing carbon from wet sludges or less waste going to landfills when sourcing the carbon from municipal solid waste or plastic waste.

Link:

<https://www.energy.gov/sites/prod/files/2020/09/f78/beto-sust-aviation-fuel-sep-2020.pdf>

Hydrogen-powered Aviation

A new independent study, commissioned by Clean Sky 2 and Fuel Cells & Hydrogen 2 Joint Undertakings on hydrogen's potential for use in aviation, was presented at an online event on 22 June.

The study found that hydrogen – as a primary energy source for propulsion, either for fuel cells, direct burn in thermal (gas turbine) engines or as a building block for synthetic liquid fuels – could feasibly power aircraft with entry into service by 2035 for short-range aircraft. Costing less than €18 [\$20] extra per person on a short-range flight, and reducing climate impact by 50 to 90%, hydrogen could play a central role in the future mix of aircraft and propulsion technologies.

Source: FCH

Link:

https://www.fch.europa.eu/sites/default/files/FCH%20Docs/20200720_Hydrogen%20Powered%20Aviation%20report_FINAL%20web.pdf

Co-Optimization of Fuels and Engines

The U.S. DOE published a report summarizing the recent progress of its Co-Optima initiative that is focused on the introduction of efficient, clean, affordable, and scalable high-performance fuels and engines. About 40 research topics for light-duty and heavy-duty engines and fuel technologies are discussed. For example, recent research focused on multimode approaches that combine spark-ignition and other forms of combustion, such as advanced compression ignition (ACI), to increase light-duty vehicle fuel economy. In addition, heavy-duty engine research was completed on mixing-controlled compression ignition (MCCI), with ducted fuel injection that showing great promise for reducing engine emissions when combined with oxygenated biofuels.

Link:

<https://www.energy.gov/sites/prod/files/2020/06/f75/beto-co-optima-fy19-yir-report-june-2020.pdf>

GHG Emissions of Cellulosic Biofuels

In order to examine the climate change impacts of cellulosic biofuels, researchers developed a quantitative ecosystem modeling approach, which explicitly differentiated primary production, ecosystem carbon balance, and biomass harvest. The assessment illustrated how deliberate land use choices support the climate performance of current-day cellulosic ethanol technology and how technological advancements and carbon capture and storage addition could produce several times the climate mitigation potential of competing land-based biological mitigation schemes. These results affirm the climate mitigation logic of biofuels, consistent with their role in climate stabilization scenarios.

Link: <https://www.pnas.org/content/117/36/21968>

Renewable Methanol Webinar

The “Renewable Methanol: A Carbon-Neutral Fuel” webinar organized by the Methanol Institute took place on August 5, 2020. The webinar was organized with the support of presenting companies Clariant, Haldor Topsoe, bseEngineering, and Ørsted.

The webinar shared the experiences of companies that are part of the renewable methanol value chain in various regulatory and commercial landscapes. The companies also shed light on what they believe is the future of this sustainable solution as global industries move towards limiting their impact on their operating environments and reducing greenhouse gas emissions.

The presentations and the webinar video are available online.

Link: <https://www.methanol.org/renewable-methanol-companies/>

Decarbonising the Marine Sector

The shipping sector is responsible for 80-90% of global trade, employing millions worldwide, and is aptly described as the “lifeblood of the global economy”. The downside is that even though shipping is a cost-effective and low carbon-intensive mode of transport, it accounts for more than 900 million tonnes (or 2-3%) of global GHG emissions (and large amounts of sulfur emissions). The International Maritime Organization's (IMO's) 2050 target calls for at least a 50% reduction in GHG emissions compared to 2008 levels while putting much stricter limits on sulfur emissions.

However, decarbonising the marine sector will not be easy! BC-SMART and IEA Bioenergy Task 39 hosted a webinar to assess the progress against the aspirations.

Link: <http://www.bc-smart.ca/resources/>

EVENTS

18th International Conference on renewable mobility - Fuels of the Future 2021

18-22 January 2021, Digital Conference
<https://www.fuels-of-the-future.com/>

National Biodiesel Conference & Expo

18-21 January 2021, Ft. Worth, Texas, USA
<https://www.biodieselconference.org/>

Transportation Research Board 100th Annual Meeting

24-28 January 2021, Washington, Virtual Event
<http://www.trb.org/AnnualMeeting/AnnualMeeting.aspx>

SAE Hybrid and Electric Vehicle Technologies Symposium

16-18 February 2021, Pasadena, California, USA
<https://www.sae.org/attend/hybrid>

Renewable Fuels Association National Ethanol Conference

15-17 February 2021, San Diego, California, USA
<http://www.nationalethanolconference.com/>

The Work Truck Show & GreenTruck Summit

9-12 March 2021, Indianapolis, Indiana, USA
<http://www.worktruckshow.com/>

WCX SAE World Congress Experience

13-15 April 2021, Detroit, Michigan, USA
<https://www.sae.org/attend/wcx>

Advanced Clean Technology (ACT) Expo

3-6 May 2021, Long Beach, California, USA
<https://www.actexpo.com/>

The Battery Show and Electric & Hybrid Vehicle Technology Expo

18-20 May 2021, Stuttgart, Germany
<https://www.evtechexpo.eu/>

Biofuture Summit II and BBEST2021

24-26 May 2021, Sao Paulo, Brazil
<http://bbest-biofuture.org/v2/>

RNG 2021 Conference

13-16 December 2021, Dana Point, California, USA
<http://www.rngcoalition.com/rng-conference/>

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 Andrea Sonnleitner 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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