

POLICY POSITION ON ALTERNATIVE LIQUID AND GASEOUS FUELS

ENVIRONMENT



Executive Summary

The FIA European Bureau supports the European Union's objective to decrease greenhouse gas emissions by 55% by 2030 and to reach **climate neutrality** by 2050. Measures to reach that objective should accompany the desired changes in mobility, which must remain reliable and affordable for consumers; consumer acceptance is crucial for the success of this transition.

The regulatory approach to propulsion systems and fuels should be **technology neutral and on a well-to-wheel basis**. Technology neutrality is key to reach carbon neutrality in the medium term and spur competition between technologies. This approach would allow the EU to carry out its transition in the most effective way, thus guaranteeing wide availability and affordability for individual consumers. The policy and regulatory framework should therefore remain **open to any option** that would allow consumers to fully embrace the transition to climate neutrality and contribute to emission reduction.



In general, **low carbon liquid and gaseous fuels** can play an important role in the transition to climate neutral mobility, besides electrification. Most of the current fleet use an **internal combustion engine**¹ and will remain on our roads for many years to come. Operating vehicles with low carbon fuels produced at reasonable cost in a sustainable way should be an important part of the EU mobility strategy.

The FIA European Bureau believes that such regulatory framework should consistently enable the development of alternative fuels and propulsion systems without bias for any specific technology or process.

It is important to get consumers onboard for the transition to climate neutrality and **leave no one behind**. Mobility is a basic need and an enabler for many, and, as the COVID-19 sanitary crisis showed, there is a renewed interest for personal mobility, for its flexibility and convenience.

The paramount objective shall be to ensure that motorists enjoy at least the **same level of convenience** as they do with conventional fuels and powertrains, at a comparable cost level.

An open and technology neutral approach

The FIA European Bureau believes that the transition to climate neutral mobility requires a **variety of powertrains and energy carriers** to be effective, and efficient. The use of sustainable electric power will be the overall trend in the transport sector, which could be used either directly in batteries (PEV and PHEV) or, after a conversion process, as e-fuels.

In general, **low carbon liquid and gaseous fuels** can play an important role in the transition to climate neutral mobility, besides electrification. They are however currently significantly hampered by their scarcity and their cost. Research should help to lever the potential for low carbon liquid and gaseous fuels to play a role in the full decarbonisation of transport. Most of the current fleet use an **internal combustion engine**¹ and will remain on our roads for many years to come. Operating vehicles with low carbon fuels produced at reasonable cost in a sustainable way should be an important part of the EU mobility strategy.

Designing a climate neutral transport system needs a fair assessment of all modes and their actual footprint on a **well-to-wheel basis, rather than only at the tailpipe**. Consumers need reliable information on the well-to-wheel **environmental performance** of different vehicle types and fuels over their entire lifecycle, to make the best choice for their mobility.

¹ EAFO (2021), AF fleet percentage of total fleet M1, <https://eafo.eu/vehicles-and-fleet/m1> as well as ACEA <https://www.acea.auto/figure/passenger-car-fleet-by-fuel-type/>.



Information to consumers

Over recent years, several new voluntary **labelling schemes** have appeared. The FIA European Bureau is a founding member of the Green NCAP scheme (www.greenncap.com) that offers, simple, objective, reliable, and comprehensive information to consumers based on multiple tests performed in both the laboratory and on the road.

In 2019, the FIA European Bureau commissioned the development of a new Life Cycle Analysis tool to prepare Club experts for questions of their membership on LCA. Currently, a dynamic and interactive consumer tool is being developed to be made available on the Green NCAP web portal in the beginning of 2022.

The European Commission should develop a sound well-to-wheel methodology for assessing the emissions performance and energy use of different vehicle technologies by 2023. In the longer run, the European Commission should seek to develop a methodology, encompassing all emissions produced by the sourcing of materials, production, and end of life of technologies and products². This would further reassure consumers that their choice is truly sustainable before they make important purchasing decisions.

The reduction of CO₂ emissions from fuels and electricity production should be complementary to efforts to reduce energy consumption. This should include **incentivising light weighting of vehicles**, as the ever-growing EU average vehicle mass should be stopped from increasing over time. Vehicle manufacturers should be incentivised to build significantly lighter vehicles than the heavy ones that the EU fleet is composed of today, without compromising functional safety. There is a lot of attention to improving powertrain efficiency, but barely any focus on saving energy at the source. Significant reduction of a vehicle's rolling resistance, largely determined by the vehicle mass and the friction coefficient between tyres and road surface, is needed to save energy and lowering emissions.

The EU should furthermore align carbon pricing of energy carriers with EU climate and energy policy goals. Greenhouse gas emissions of different energy sources should be **treated in the same way**, regardless of the type of use or the user.

This position paper addresses both the policies and regulatory measures allowing alternative liquid and gaseous fuels to play a role in the transition to carbon neutral mobility. The FIA European Bureau position outlines what sort of measures are needed to support the deployment of alternative fuels based on renewable energy and, where appropriate, highlights the potential to reform and revise applicable EU legislation. It focusses on the **in-use measures** that should be taken to support the deployment of alternative fuels based on renewable energy in the coming years.

² Regulation (EU) 2019/631.



Relevant legislation

- Communication COM (2013)17 on a European alternative fuels strategy
- Regulation 2019/631 on EU CO₂ targets for new cars
- Directive 2014/94/EU on EU Alternative Fuels Infrastructure
- Directive 2009/30/EC on fuel quality
- Directive 2018/2001 on renewable energy
- Directive 1999/94/EC on car CO₂ labelling
- Regulation 2017/1151 on type-approval of motor vehicles with respect to emissions from light passenger and commercial vehicles (Euro 5 and 6)
- Directive 2018/2001 on the promotion of the use of energy from renewable sources

Alternative liquid and gaseous fuels

Definitions

Energy from renewable sources or renewable energy means energy from renewable non-fossil sources, namely wind, solar (solar thermal and solar photovoltaic) and geothermal energy, ambient energy, tide, wave and other ocean energy, hydropower, biomass which does not originate from pristine forests or in any other way valuable natural habitats or from resources competing with food crops, landfill gas, sewage treatment plant gas, and biogas³.

Renewable and low-carbon liquid and gaseous fuels include, for instance, hydrogen, hydrogen-based synthetic liquid and gaseous fuels, and advanced biofuels⁴. There are also solid fuels in development, e.g., hydrogen trapped in a semi-liquid paste, or a salt, when oxidised with fresh air resulting in heat.

Synthetic fuel is an energy carrier produced via catalytic synthesis of hydrogen and carbons, or by enthalpy release due to a chemical / physical reaction. Synthetic fuels may be derived from, among others, electricity, biomass, or fossil sources.⁵ Liquid synthetic fuels are compatible with conventional internal combustion engines and can therefore be used by the fleet in circulation.

E-fuels are solid, gaseous, or liquid energy carriers, such as hydrogen, methane, synthetic petrol, diesel fuels generated from renewable electricity⁶ or any synthetic combination that allows releasing the enthalpy from the basic energy carrier.

Biofuels are liquid or gaseous transport fuels such as biodiesel and bioethanol, which are made from biomass⁷. They should not originate from pristine forests or in any other way valuable natural habitats and not compete with food crops, and serve as renewable alternatives to fossil fuels, helping to

³ Directive 2018/2001 on the promotion of the use of energy from renewable sources, article 2.

⁴ European Commission, Sustainable and Smart Mobility Strategy, bullet 20.

⁵ German Energy Agency (2017), The potential of electricity-based fuels for low emission transport in the EU, page 145.

⁶ German Energy Agency (2017), The potential of electricity-based fuels for low emission transport in the EU, page 8.

⁷ See overview in European Commission [report](#).



reduce greenhouse gas emissions. To prevent adverse environmental and social affects, biofuels must comply with strict sustainability criteria, defined by the recast Renewable Energy Directive (EU) 2018/2001.

Advanced biofuels are biofuels that are produced from feedstock, such as mixed municipal waste, animal manure and sewage sludge, crude glycerine, biomass fraction of wastes and residues from forestry, and other cellulosic non-food material.⁸

Most of the current European passenger car fleet have an **internal combustion engine** (HEV, PHEV, CNG, LPG, diesel, and petrol cars) on board⁹. These cars still dominated new car registrations in the EU in 2020, where they accounted for a market share of about 90% of total new car registrations¹⁰. Considering the average age of the EU vehicle fleet of 10.8 years in 2019¹¹, conventionally fuelled vehicles with an internal combustion engine will likely remain the most widespread vehicle type on Europe's roads for years to come.

A **more widespread use of renewable and low carbon liquid and gaseous fuels** is needed to decarbonize the existing fleet. Using cleaner fuels in vehicles in-use, operating with an internal combustion engine, should be an important element of such a strategy to reduce emissions and allowing conventional vehicles also to significantly contribute to greenhouse gas emission reductions.

E-fuels, like hydrogen, are not a primary energy source but a secondary energy carrier. As an indirect electrification pathway, they are subject to additional conversion losses during both their supply-side production and their demand-side utilisation.

Considering their lower energy efficiency, e-fuels should primarily be produced on an industrial scale at locations with higher renewable energy potential; nevertheless, in Europe, excess electricity from wind energy could also be used. E-fuels should therefore be seen as a necessary addition to electrification, but not as a replacement.

To decarbonise the transport sector, besides renewable electricity used in Pure Electric Vehicles, the increased use of **renewable and low carbon liquid fuels** is essential; the use of these fuels should not be limited to shipping and aviation.

⁸ Directive 2018/2001 on the promotion of the use of energy from renewable sources, article 2

⁹ EAFO (2021), AF fleet percentage of total fleet M1, <https://eafo.eu/vehicles-and-fleet/m1>, as well as ACEA Handbook https://www.acea.auto/files/ACEA_Pocket_Guide_2020-2021.pdf (p 6).

¹⁰ EAFO (2021), AF market share new registrations M1 electricity, <https://eafo.eu/vehicles-and-fleet/m1>

¹¹ ACEA (2021), Average age of the EU motor vehicle fleet, by vehicle type, <https://www.acea.be/statistics/article/average-age-of-the-eu-motor-vehicle-fleet-by-vehicle-type>



Certified conventional biofuels have contributed to significant emission reductions in the past, mainly through their application via blending¹²; advanced biofuels have a great potential to further strengthen this trend.

Strict sustainability criteria are essential to prevent adverse environmental and social effects from the use of renewable and low carbon fuels. The FIA European Bureau demands prohibition of the usage of palm oil for production of biofuels as soon as possible, as defined by the recast Renewable Energy Directive (EU) 2018/2001¹³.

In contrast to blending conventional biofuels with fossil fuels, the CO₂ footprint can also be reduced by co-processing. **Co-Processing** describes a process innovation to produce an integrated fuel, consisting of both fossil - and alternative inputs. These inputs get transformed simultaneously into finished fuels via existing petroleum refining processes.¹⁴ With this method, a cleaner type of fuel is produced directly and not via blending. EU legislation should allow for this process innovation and guarantee the possibility to account for the corresponding CO₂ reductions and share of renewable sources.

Basing the transition to alternative propulsion systems and fuels on renewables, i.e., greenhouse gas neutral energy, is very important in delivering the EU's higher climate ambition for 2030 and greenhouse gas neutrality by 2050. Therefore, the FIA EB welcomes the EC's ambitious proposal to revise the Renewable Energy Directive, in line with the higher climate ambition of the European Green Deal and the Climate Target Plan. The level of the 2030 Union target for renewable energy should be raised within the range indicated in the 2030 Climate Target Plan (38 - 40%), and the **overall renewable target** should be binding at EU level or at national levels.

Regarding the use of renewable and low carbon fuels in transport, the types of fuels that can be counted should be harmonised to ensure that **all fuels that are eligible for counting** towards the renewable energy target are supported in all Member States. To promote R&D investment, renewable and low carbon fuels should be promoted by an **obligation on fuel suppliers** to reduce the CO₂ footprint of their product.

Although in their infancy, further research into **advanced sustainable biofuels** should be comforted by legislative safeguards put in place to provide producers with an adequate level of certainty.

To benefit most from the market mechanism, **carbon emissions should be priced equally**, wherever they are generated. The promotion of renewable energy and the inclusion of road transport into the EU Emissions Trading System both address a common objective currently covered by the energy

¹² Process of mixing traditional fossil fuels and alternative fuels, in which the percentages may vary according to the specifications of fuels.

¹³ Delegated act C/2019/2055 supplementing Directive (EU) 2018/2001

¹⁴ ECOFYS (2018), Determining the renewability of co-processed fuels, page 4



taxation framework, which needs to be adapted accordingly for the reform to be financially neutral for the consumer.

Alternative fuels should be supported through legislation if they are truly sustainable and efficient, thus offering significant emissions reductions. The sustainability of renewable and low carbon fuels should be **certified and verified**, and:

- cover all end-use sectors
- cover all renewable and low carbon fuels
- demonstrate that renewable synthetic fuels are produced from renewable electricity
- ensure that the greenhouse gas impact of energy conversions along the value chain (e.g., renewable electricity used to produce renewable synthetic fuels) are fully taken into consideration, while avoiding double counting

According to recital 90 of the current RED II¹⁵, the production of synthetic fuels in installations and green hydrogen in electrolyzers connected to the public electricity grid should only be classified as renewable if the electricity used is demonstrably derived from installations which have been built 'additionally'. This scheme should be further developed in the framework of the revision of the Directive in such a way that **unprofitable electricity generation plants are converted to the production of green hydrogen and synthetic fuels**, when state support expires. Without new yield opportunities, these plants will go off the grid over the next few years and will even be dismantled. By using their electricity for hydrogen production, their continued operation can be made possible without state support.

Fuel cell and hydrogen

The contribution of fuel cell electric vehicles (and other hydrogen-based powertrains) to decarbonisation in all modes of transport can only be realised if an appropriate infrastructure is established. Therefore, the rapid expansion of hydrogen refuelling stations is needed. The production of hydrogen should take place where sufficient resources from renewable energies are available, and production can take place at low cost. The cooperation mechanisms set out in RED II should be extended to cover renewable hydrogen regardless of its end use, so that Member States can support renewable hydrogen projects in other Member States and in third countries while counting the energy produced as their own. Compliance with social and ecological standards is a prerequisite for hydrogen production.

The use of hydrogen should be encouraged only if produced and used in a way that leads to no or lower greenhouse gas emissions along their life cycle, compared to the fossil fuel they are replacing.

¹⁵ Directive 2018/2001 on renewable energy



In addition, it should also be possible in the future to be able to **store "excess" electricity as "additional"** liquid or gaseous fuels. If no additional energy is needed in the electricity grid, this excess production from windmill may be used to produce climate-friendly fuels.

Compatibility with alternative liquid fuels should be an integral part of **type approval testing and certification** of new vehicles. Furthermore, vehicle manufacturers are also encouraged to test and certify the compatibility of vehicles that are in-use with any alternative liquid fuels that subsequently come to market. Information about such tests should be clearly presented to consumers (vehicle certification should for instance include fuel compatibility information) so that they are aware of which fuels are compatible with their vehicle type. Vehicle manufacturers should be obliged to inform owners **of older vehicles** on the maximum technically permissible blending rates.

Related studies

[European Commission \(2016\), Impact Assessment study for the review of Directive 2009/33 on the Promotion of Clean and Energy - Efficient road transport vehicles - final report](#)

[European Commission \(2020\), State of the art on alternative fuels transport systems in the European Union - 2020 update](#)

[European Commission \(2019\), Commission Staff Working Document on the evaluation of the Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators and repealing Directive 91/157/EECC, SWD\(2019\) 1300](#)

[European Commission \(2020\), Renewable Energy Progress Report, COM\(2020\) 952](#)



The FIA European Bureau

The FIA European Bureau engages in European research and innovation programmes to support and promote the development and the deployment of alternative fuelled vehicles, such as:



The **ELVITEN** project which focuses on demonstrating the benefits of light electric vehicles (such as e-bikes and scooters).



The **Green NCAP** scheme and the Green Vehicle Index (GVI) project which promote the development of vehicles that are clean, energy efficient and environmentally friendly.



The **MODALES** project which encourages the adoption of driving behaviour and vehicle maintenance that can help lower emissions.



The **FIA European Bureau** is a consumer body representing 67 Motoring and Touring Clubs and their 36 million members from across Europe. The FIA European Bureau represents the interests of our members as motorists, riders, pedestrians, and passengers. The FIA European Bureau is working to ensure safe, affordable, clean, and efficient mobility for all. Learn more at www.fiaregion1.com.