Clean fuels for all

FREQUENTLY ASKED QUESTIONS

FuelsEurope

Our "**Clean Fuels for All**" pathway is likely to trigger a number of questions from stakeholders such as our European and member state **policymakers**, our potential **industrial partners**, **investors community**, and of course civil society, **citizens and consumers**. Ensuring a good understanding of our approach is paramount.

We have therefore developed this series of FAQs to address all the practical and technical information we did not cover in our Summary.

We have categorised the questions into three main groups:

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- About Low-Carbon Liquid Fuels

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1 WHAT ARE LOW-CARBON LIQUID FUELS? WHAT TECHNOLOGIES ARE BEING CURRENTLY DEVELOPED?

Low-carbon liquid fuels (LCLF) are sustainable liquid fuels from non-petroleum origin, with no or very limited net CO_2 emissions during their production and use compared to fossil-based fuels.

LCLF are currently blended with fossil fuels and their share in the fuel sold at the pump will progressively increase. The carbon intensity of the fuels will depend on the share of LCLF blended in the end-product.

It will only be once the fossil component in the fuels sold at the pump is completely replaced by LCLF, that these fuels will be carbon-neutral.

Capitalising on our technological know-how and flexible infrastructures, we will increasingly switch to new feedstock, such as biomass, renewables, waste and captured CO_2 to progressively reduce net carbon emissions of liquid hydrocarbons.

The enabling technology set for LCLF includes sustainable 1st Generation biofuels, hydrogenation of vegetable oils/waste and residues, biomass-to-liquid (BTL), advanced biofuels and e-fuels, as well as Carbon Capture and Storage (CCS) and clean hydrogen applied in refineries.

2 WHAT ARE THE BENEFITS OF LCLF?

LCLF are essential in the transition to a low-carbon economy by 2050 and beyond. They fuel Europe's transport sector and bring significant socio-economic benefits.

1. Help maintain Europe's industrial strength and consolidate leadership in Internal Combustion Engine (ICE) and hybrid technologies and automotive value chain, enabling the creation of new high-skills tech jobs, while preserving jobs in the automotive sector.
2. Enable the decarbonisation of sectors where no other technological alternatives currently exist - aviation, shipping, and to a large portion, the heavy-duty sectors.
3. Provide strategic security of supply, while reducing energy dependency on third countries.
4. Give customers a choice between low-carbon technologies.
5. Smooth deployment cost of electric energy distribution and fast charging.
6. Reduce pressure and cost of achieving complete fleet turnover.

3 WHAT IS YOUR ROLE IN THE TRANSITION TO A CLIMATE-NEUTRAL ECONOMY?

Ttransport will remain the backbone of the European economy and we need to ensure our transport system, whilst progressively decarbonising, remains competitive, energy-secure and affordable.

Although we expect the demand for liquid fuels in Europe to gradually decline over time due to higher energy efficiency in traditional engines, and higher deployment of electric and hybrid vehicles in road transport, liquid fuels, with their unique characteristics (energy density, storage,...), will remain important. The refining industry is strongly positioned to play an active role in the roll-out of LCLF due to its existing distribution system and infrastructure.

The EU refining industry has an important and enduring role to play in the energy choices of the future, by providing LCLF to complement electrons, hydrogen and gas as energy carriers. Technology and collaboration across industries will facilitate the production of these LCLF.

Liquid fuels will remain particularly important in heavy-duty, shipping and aviation sectors where alternatives currently do not exist or are more complex to develop at scale.

Society is demanding solutions for more energy, delivered in new and better ways for a low-carbon future and this is why LCLF will have an important role to play in delivering secure, reliable and affordable energy that is technologically advanced and climate friendly.

A 2019 pan-European consumer **survey with 10,000 responses** shows us that EU citizens want more options in the transition to carbon-neutral mobility and that they urge governments to support the development of multiple clean-vehicle technologies. LCLF will give customers a choice, making carbon neutrality accessible to all, bringing clear benefits to European society and its economy.

The industry will continue to develop its assets and business models and to play its part in the transition to a climate neutral economy.

4 IS THIS A COUNTERPROPOSAL TO FULL-SCALE ELECTRIFICATION?

No, as full-scale electrification across most modes of transport, namely aviation, shipping and to a large extent heavy duty, currently does not exist.

LCLF are part of the energy mix in their own right. The global demand for liquid fuels will remain strong, particularly for commercial transport, aviation, marine, petrochemicals, where electrification is not technologically possible. Electrification across all modes of transport is at very early stages so liquid fuels will remain crucial.

We are convinced that LCLF and electrification will live side by side, as there is no silver bullet, no single technology that will address the challenge of decarbonsing the entire transport sector.

For the light duty vehicle segment and especially cars, electrification will be very significant but for certain regions or users it may be less practical or slower. LCLF and electrification are thus complementary.

5 WHAT DO YOU NEED FROM POLICYMAKERS?

Currently, no legislation recognises the contribution of LCLF to the improved CO_2 performance of vehicles. We therefore ask policymakers to put in place a regulatory framework that reflects this positive contribution.

The creation of a lead-market for low-carbon fuels. This market should be created in road transport, which is already strongly regulated and could afford such carbon-price signal.

Facilitate a high-level cross-sectoral dialogue.

The CO_2 standards in vehicles must be amended by recognising the contribution of low-carbon fuels to vehicle performance.

Overlapping fuel policies should be reformed and simplified, namely the Fuel Quality Directive which regulates the GHG intensity of fuels brought into the market, and the Renewable Energy Directive (RED) which mandates a share of renewable content in transport fuels.

Regulation should shift from energy taxation to carbon taxation to incentivise investments in advanced renewable fuels.

A predictable and stable regulatory framework to attract investors. Investment cycles for capital-intensive technologies are long. In the case of LCLF, they run between now and 2050.

6 WHY ARE YOU CALLING FOR A WELL-TO-WHEEL APPROACH?

It is important to keep in mind that the current method of testing vehicles focuses on emissions at point of use of the vehicle not the full system. This flatters the Battery Electric Vehicles (BEVs) but does not recognise any other changes such as in energy production. The climate impact of technologies cannot be narrowed to the exhaust pipe only. A more holistic approach around each technology manufacturing should be adopted. The electricity production in the EU has a CO_2 footprint which varies from one region to the other. On a Life Cycle basis the CO_2 emission of BEVs would be higher with the repercussions of mining of copper, lithium and cobalt extraction, and the manufacturing of the batteries.

Each technology should be assessed on its own merit.

7 WHAT DO YOU NEED TO GET STARTED?

LCLF already exist at small industrial scale in pilot plants, well beyond laboratory stage (Re-Oil by OMV in Schwechat, e-fuels by Sunfire in Dresden, Biorefinery by ENI Venice,...).

To get started beyond this first stage we need clear legislative signals that will create market incentives to spur investor confidence.

The industry is ready to start building its first commercial operating plants at scale as soon as the enabling policy framework is implemented.

8 WHEN DO YOU HAVE TO START TO GET THE FIRST UNIT OF LCLF READY?

We should start soon so that the first-of-a-kind plant at industrial scale starts producing LCLF around 2025 at the latest.

However, Covid-19 has had a dramatic effect on the global economy and our own industry (all our members), who have faced an unprecedented plunge of the demand, coupled with the lowest oil prices in recent history. Capital expenditures are likely to be impacted and investors' confidence might not be at its highest, which will have an impact in the short term.

Climate action remains a serious challenge and as we move into the recovery phase, it is essential that policymakers enable a conducive environment for investors, bringing stability and confidence into the market.

First milestones would be first-of-a-kind BTL, e-fuels and refining CCS and hydrogen plants at industrial scale in operation by 2025 or earlier.

9 WHY DO YOU START BY ROAD TRANSPORT BEFORE THE OTHER TRANSPORT MODES?

Collectively, we need to create a market for LCLF, and road transport is for now the only transport mode where this is feasible, because the sector is already heavily regulated and price signals already exists. This market will then enable the LCLF to become competitive. It is only after the completion of this first step that we can address aviation and shipping.

Evolution of current transport policies can be the basis for predictable demand and price signals.

Road transport is also a sector where the risk of tankering (action of refuelling in regions outside the EU where fuel prices are lower)/ carbon leakage is lower than for international aviation and maritime transport.

10 WILL WE HAVE ENOUGH OF THESE NEW FEEDSTOCK TO FUEL THE EU TRANSPORT SECTOR?

Scenarios developed by Concawe, our scientific arm, are based on research and projections published by DG Research and Innovation[1] and the European Commission's Joint Research Centre[2]. Both EU bodies show that the required amount of biomass is indeed available in the EU.

Concawe will nevertheless undertake its own study to assess biomass availability, cross-check all figures and explore other possibilities.

[1] Research and innovation perspective of the mide and long-term potential for advanced biofuels in Europe (ECORYS led study commissioned by DG R&D, 2017)
https://op.europa.eu/en/publication-detail/-/publication/448fdae2-00bc-11e8-b8f5-01aa75ed71a1

[2] ENSPRESO report (JRC, 2019): https://www.sciencedirect.com/science/article/pii/S2211467X19300720?via%3Dihub

11 ARE THESE FEEDSTOCK SUSTAINABLE OR SUSTAINABLY PRODUCED?

These feedstock are sustainable and comply with the existing EU sustainability standards.

According to the sustainability standards plan, palm oil will be phased out as of 2030, and we will comply with it. Palm oil has thus not been accounted for in the available feedstock post 2030.

LCLF are sustainable liquid fuels from non-petroleum origin, with no or very limited CO_2 emissions during their production and use compared to fossil-based fuels.

CCS and clean hydrogen applied in refineries will also reduce the carbon footprint of fuels manufacturing, enabling progressively negative emissions that will in turn allow climate neutrality for road transport by 2050.

12 HOW DOES YOUR 2035 INTERMEDIATE TARGET COMPARE WITH THE RED II OBLIGATIONS?

RED II requires by 2030 14% of renewable energy to be blended in fuels, while enabling multipliers for various types of feedstocks (double/triple counting). First estimates show that, based on the multiplying factors, the net CO_2 emission reductions level are expected between 6 and 10%.

LCLF, by their very nature, will contribute to this objective, but our pathway shows a potential to exceed these targets (2030).

13 THE EU FIXES A MAX CAP FOR THE USE OF 1ST GENERATION BIOFUELS (RED II). DOES THIS MEAN THAT THE DECARBONISATION OF TRANSPORT WILL PRIMARILY NEED TO BE ACHIEVED THROUGH OTHER LOW CARBON LIQUIDS? IF SO, WHICH?

The 1st Generation biofuel percentage is a ceiling. We propose keeping this percentage flat.

14 WHAT ARE KEY TECHNOLOGIES THAT WILL DRIVE THE ENERGY TRANSITION IN TRANSPORT?

Electricity and hydrogen will have a significant role in the energy transition in transport.

Lignocellulosic biomass conversion technologies, hydrogenation of vegetable oils/waste and residues, and e-fuels, to replace fossil CO_2 by biogenic or recycled CO_2.

CCS and clean hydrogen applied in refineries to reduce the carbon footprint of fuels manufacturing.

New technologies will have to be developed between now and 2050, as a result of our continued investments in Research and Development (R&D).

15 DOES YOUR ROADMAP INCLUDE CARBON CAPTURE AND STORAGE TECHNOLOGY (CCS)?

Yes, CCS will help reduce the carbon footprint of fuels manufacturing, and ultimately contribute to negative emissions by 2050. CCS has been identified by the United Nations Framework Convention on Climate Change (UNFCCC) as a key technology for the decarbonisation of the energy sector in the long term that can play a significant role in mitigating carbon emissions in the future. **Source:** here.

16 SOME STAKEHOLDERS ARGUE CCS IS NOT PROVEN TECHNOLOGY AT SCALE. WHAT IS YOUR POSITION?

Carbon prices have simply been too low (cost of CCS vs Emissions Trading System (ETS) carbon price).

CCS has been identified by the United Nations Framework Convention on Climate Change (UNFCCC) as a key technology for the decarbonisation of the energy sector in the long term that can play a significant role in mitigating carbon emissions in the future. **Source:** here.

The delay in technology development is linked to the low carbon price, as well as public acceptance in Europe. The first CCS project is already in full swing in Norway, as part of the Norwegian government's efforts to develop full-scale CCS as a means to achieve long-term climate targets of Norway and the EU. The first phase of project alone could reach a capacity of approximately 1.5 million tonnes a year. There are currently 21 full-scale CCS projects worldwide that are either in development or operational.

Applied to refinery flue gases, CCS has been identified as a leading technology reducing CO_2 emissions and for reaching the global climate goals set in the Paris Agreement. Refineries, in clusters with other industries, can play a major role in demonstrating and deploying these technologies across Europe.

17 HOW MUCH INVESTMENT IS NEEDED TO DELIVER YOUR LCLF PATHWAY?

Predicting the investments needed for technologies that still need be developed at scale is very complex. Our current projections are based on our existing knowledge and costs estimate.

The investment to start this pathway is estimated between €30 and €40 billion over the first 10 years, while the total investment needed to deliver the pathway by 2050 is estimated between €400 and €650 billion.

The numbers follow scenarios produced by Concawe that will be made published in the form of a report towards the end of 2020.

18 WHO WILL FINANCE THE SCALING-UP OF THESE TECHNOLOGIES?

The role of investors to sustainably support the development of disruptive low-carbon technologies, particularly on a large scale, will be pivotal.

However, investors will only commit their resources if there is a reasonable expectation of a business case and the prospect of a profitable market.

The future Taxonomy should adopt a transitional, evidence-based and pragmatic approach, which reflects today's technological development, available renewable and highly efficient low-carbon solutions significantly contributing to the transition, as well as current energy mixes and existing infrastructure. Investments considered 'sustainable' today should also not become 'unsustainable' overnight because they are not listed or do not fit the Taxonomy definition. This is key to ensure regulatory certainty and economic stability.

These three key investment enablers must be brought about through appropriate regulation, to bring stability and predictability into the market.

It could also be our member companies, or other investors such as user groups or those in feedstock value chains or alliances of both.

19 WHERE WILL THESE PLANTS BE DEVELOPED?

Given the technologies' characteristics, plants are likely to be built closer to the feedstocks production facilities, e.g. forestry, windfarms or solar panel farms. Plants could therefore be of a relatively smaller size and spread across Europe.

We recognise that electricity for hydrogen could also be produced out of Europe.

The regional characteristics will influence where the technologies will be found. We expect a focus in Eastern and Northern Europe on biomass, wind in coastal countries, sun in the Southern Member States, and waste recycling units closer to the urban areas. Finland for example will host its LCLF plants close to existing forestry.

Refineries will play a critical role in these new value chains. The refinery of the future will become a hub where all these different fuels will be processed to comply with industrial specifications, e.g. the automotive industry, or the petrochemical industry.

20 HOW DID YOU COME UP WITH THE INTERMEDIATE TARGETS? CAN THEY BE EASILY VERIFIABLE?

Our pathway is informed by the European Commission's communication 'A Clean Planet For All'[3], and more specifically on the described 1.5°C Tech scenario. Aligned with the EU's Paris Agreement commitments, this scenario is ambitious as it achieves climate neutrality.

Based on the Commission's strategy and provided figures, we could estimate the amount of liquid fuels required for the intermediate targets.Based on the Commission's strategy and provided figures, we made our best estimate on the technology pathway due to the accelerated development / scale-up of the LCF technologies identified to define the amount of liquid fuels required/potentially available for 2035 and beyond.

[3] IN-DEPTH ANALYSIS IN SUPPORT OF THE COMMISSION COMMUNICATIONCOM(2018) 773A Clean Planet for all - A European long-term strategic vision for a prosperous, modern, competitive and climate neutral economy https://ec.europa.eu/clima/sites/clima/files/docs/pages/com_2018_733_analysis_in_support_en_0.pdf

21 WHY CAN WE NOT ACHIEVE MORE THAN 50% GHG REDUCTION BY 2050 IN AVIATION AND MARITIME TRANSPORT?

The European Commission itself acknowledges in the Clean Planet for All 1.5°C scenario that 100% GHG reduction will not be feasible in these sectors. By 2050 50% of their fuels is still expected to remain fossil-based.

The shipping industry could also use other solutions such as ammonia, hydrogen and wind.

The Aviation sector may use to some extent offsets for its emissions in international projects.

Ultimately, the markets are likely to drive the amounts of LCLF used in the various transport sub-sectors.

22 WHY CAN WE NOT SUPPLY ALL OF THE AVAILABLE LOW-CARBON FUELS DIRECTLY TO AVIATION AND MARITIME TRANSPORT?

Currently the fuels used in aviation and maritime transport are almost not subject to any form of taxation. If LCLF were to be introduced now, they would not be able to compete vis-à-vis petrol-based fuels due to their higher price and the lack of strong regulation. This would have an impact on consumers as well as airlines competitiveness. We propose road, aviation and maritime in parallel. The creation of a market for LCLF is thus essential to enable the availability of the products, increase their volume and subsequently lower their price. Further incentivisation schemes could facilitate a competitive penetration of LCLF in EU only flights.

23 WHAT DOES A REDUCTION OF 100 MT CO_2/YEAR REALLY MEAN?

In very concrete terms, this is equivalent to 50 million BEVs on the road.

We have extrapolated for 2035 the total emissions from the European Commission Clean Planet for All 1.5 Tech scenario. The result of that work indicates that the level of total transport emissions for 2035 will amount close to 500Mt CO_2/year (the baseline scenario +/- 700 Mt CO_2/year), and could thus be reduced by 100Mt CO_2/year to amount to 400Mt CO_2/year.

24 WHAT IS THE CONTRIBUTION OF THE VALUE CHAIN TO YOUR PATHWAY?

Our pathway contributes not only to transport fuels, but also to the feedstock for the petrochemical industry. Our industry has various value chains – transport, chemicals, but this LCLF pathway will trigger the creation of new value chains - e.g. biomass, forestry and more. The contribution of these value chains is critical, so we will be reliant on partnerships.

25 WHAT KIND OF PARTNERSHIPS ARE YOU LOOKING FOR?

The EU refining industry stands ready to collaborate with multiple industries, as well as with EU policymakers, to take bold climate action together.

Industries such as agriculture, chemicals, forestry, waste and recycling, including many SMEs, will play an important role in building the necessary LCLF value chains and assets.

Policymakers, NGOs and academia, car and truck industries, aviation and maritime, and customer groups will all have a role in developing the markets with the right definitions and parameters.

Civil society at large will have to be engaged through open, transparent and fact-based dialogue.

26 WILL THERE BE ENOUGH LCLF FEEDSTOCK OR WILL EUROPE NEED TO IMPORT TO SATISFY ITS TRANSPORT NEEDS?

Our pathway is based on research and projections published by DG Research and Innovation[4] and the Commission's Joint Research Centre[5], that shows that the required amount of biomass is expected to be available in the EU.

Concawe is nevertheless undertaking its own study to assess biomass availability, cross check all figures and explore other possibilities.

[4] Research and innovation perspective of the mide and long-term potential for advanced biofuels in Europe (ECORYS led study commissioned by DG R&D, 2017)
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[5] ENSPRESO report (JRC, 2019): https://www.sciencedirect.com/science/article/pii/S2211467X19300720?via%3Dihub

27 WILL THERE BE ENOUGH HYDROGEN FOR THE PRODUCTION OF E-FUELS?

Green hydrogen for the production of e-fuels comes from the electrolysis of water using renewable electricity. There will be enough green hydrogen for e-fuels production as long as enough renewable electricity is accessible at a low cost and in a continuous operation.

Electrolysers scale-up and learning curves to reduce costs will also be key in the green hydrogen production for e-fuels.

Imports of e-fuels to Europe from favourable regions of the world in terms of cheap renewable electricity (as North Africa or Middle East) could reduce e-fuels production costs. More information can be found in this **Concawe report on e-fuels**.

There is a strong push from the EU institutions to scale up hydrogen as a key technology to achieve climate neutrality and we certainly welcome that.

28 WHY WILL LCLF SMOOTH THE DEPLOYMENT COST OF ELECTRIC ENERGY DISTRIBUTION AND FAST CHARGING INFRASTRUCTURE?

LCLF will be placed on the market as soon as they become available. All vehicles on the road will benefit from them, leading to a progressive reduction of the fleet CO_2 footprint. Reducing thus the pressure for accelerated fleet renewal.

LCLF could reduce infrastructure investment requirements for electrification, enabling better planning and financing of those investments.

29 WHY ARE LOW-CARBON FUELS NOT ZERO-CARBON FUELS?

LCLF produced from new feedstock such as biomass, renewables, waste and captured CO_2 will be close to zero CO_2 content.

However, they cannot be labelled as such during the transition where these fuels will be first blended with fossil fuels even if they reduce their CO_2 intensity

30 HOW DO YOU REDUCE THE CARBON INTENSITY OF FUELS?

The production of those fuels implies necessary emissions (Scope 2) which we will offset by the use of clean hydrogen and CCS, ultimately enabling negative emissions that will, by 2050, offset the remaining CO_2 emissions from road transport.

For the use of the fuels, the switch from fossil-based to non-fossil feedstock (Scope 3), such as biomass, renewables, and waste, and captured CO_2 will allow further cuts in carbon intensity.

31 WHAT IMPACT WILL LCLF HAVE ON CONSUMERS, IN TERMS OF PRICE PER UNIT?

Under the current market conditions, LCLF will be more expensive than fossil fuels, but this is not helped by high levels of tax applied regardless of GHG intensity.

We therefore need an enabling policy framework facilitating not only the development of a lead-market, but providing incentives comparable to other low-carbon technologies such as electrification that encourages consumers to choose these low carbon liquid fuels.

32 WHAT SHOULD BE THE PRICE LEVEL OF LCLF VS CONVENTIONAL FUELS?

Price will depend on multiple factors, such as market demand, price of alternatives tax levels and government support schemes.

The remaining share of fossil fuels is expected to be marginal and should not prevent transport sector from contributing to the EU's climate-neutrality ambition, as per the Commission's Clean Planet for All communication (Scenario 1.5 Tech).

33 WHAT IS NEEDED TO REDUCE SIGNIFICANTLY THE COST TO PRODUCE LCLF ON A LARGE SCALE?

- To enable the scaling of the production.
- To ensure proper incentives for those operating the first-of-a-kind facilities.

34 WHAT IS THE ROLE OF LIQUID FUELS IN THE FUTURE?

- Transportation.
- Petrochemical feedstock.
- Energy storage, by transforming the production of electricity into liquid, hence enabling its storage.

35 WHAT WILL BE THE PROPORTION OF THE USE OF LCLF VS CONVENTIONAL FOSSIL FUELS FOR TRANSPORT IN 2050?

- For road transport, it is almost 100% substitution.
- For Aviation and Maritime the total liquid demand amounts at 100 Mtoe/y and LCLF could represent up to 60 Mtoe/y.
- All together LCLF could represent over 75% of the total demand for liquid fuels.

36 WHAT IS THE DIFFERENCE BETWEEN 'TRADITIONAL' FUELS AND LCLF?

LCLF are not produced with petroleum-based feedstock as is the case for 'traditional' fuels.

LCLF are sustainable liquid fuels from non-petroleum origin, with no or very limited CO_2 emissions during their production and use compared to fossil-based fuels.

Biomass, renewables, waste and captured CO_2 are among the feedstock that will be used to generate LCLF.

37 DO LCLF HAVE AN IMPACT ON AIR QUALITY, AND IF SO, WHICH IS IT?

With the evolution of vehicle technologies the latest EURO 6d and EURO 7 are extremely clean. Recent tests under real driving conditions have shown that EURO 6d vehicles are fully compliant with emission level limits (for PMs & NO_x) set by the EU.

For the remaining emissions (NO_x and PMs from the tailpipe), existing emission-control technologies will enable their offset.

Air Quality is not determined by the fuel but by the vehicle.

A study show that LCLF will bring significant contributions to the EU's climate-neutrality objectives, with no negative impact on air quality.

38 WHEN WILL THESE ALTERNATIVE FUELS BE AVAILABLE ON THE MARKET?

LCLF already exist at small industrial scale in pilot plants, well beyond laboratory stage (Re-Oil by OMV in Schwechat, e-fuels by Sunfire in Dresden, Biorefinery by ENI Venice,...).

The industry is ready to start building its first commercial operating plants at scale as soon as the enabling policy framework is implemented.

39 ARE THESE ALTERNATIVE FUELS COMPATIBLE WITH MY CURRENT CAR?

Yes, these fuels are compatible with existing engine technology.

The refinery of the future will become a hub where all these different fuels will be processed in a way that complies with the automotive industry' specifications.

40 WHAT IS THE VALUE ADD OF LCLF VS ELECTRIFICATION?

Substantial reduction of new infrastructure needed, and a smooth deployment cost of electric energy distribution and fast charging.

LCLF are the only technology alternative for many transport segments, aviation, maritime and heavy-duty where electrification is at very early stages of adoption. LCLF will therefore enable the progressive decarbonisation of these sectors.

They also bring a large number of benefits to the European economy and consumers, starting with choice between low-carbon technologies, ensuring that carbon neutrality is accessible to all, as LCLF will, for the foreseeable future, provide a competitive solution compared to the alternatives.
Provide strategic security of supply.

Reduce pressure and cost of achieving complete fleet turnover to ensure climate neutrality, also supporting a just transition across Europe.

Help maintain European industrial strength and jobs in the automotive sector.

41 WHY ARE E-FUELS CLIMATE NEUTRAL?

E-fuels are made from solar, wind and hydro, all renewable energy sources. The CO_2 component of these fuels is captured from the atmosphere and released when the fuel is used. This net-zero CO_2 cycle makes e-fuels climate-neutral.

42 WHAT WILL THE VEHICLE PARK CONSIST OF IN 2050?

Extremely efficient ICEs and electric vehicles will populate European roads 30 years from now.

We consider that in 2050 all road vehicles should enable road transport to achieve climate neutrality.

With climate neutral liquid fuels and a 100% renewable electricity, this mixed technology fleet can all be climate neutral.

Clean fuels for all

FREQUENTLY ASKED QUESTIONS

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