en2x
Wirtschaftsverband Fuels und Energie e.V.

# MOLEKÜL WENDE

## WHY WE NEED IT AND WHAT PART EUROPE CAN PLAY



# WHY ARE GREEN MOLECULES NEEDED?

What is the first thing you think of when you hear the buzzword "Energiewende"? Electricity generated from wind and solar power? Grid expansion and storage? Maybe heat pumps and electromobility? Then you are like most other people. The "Energiewende" is very often thought of only as an "Stromwende". However, the fact is that only 20 percent of our present final energy needs are met with electricity. The remainder comprises solid, liquid and gaseous energy sources, i.e. molecules.

Even if we are successful in significantly increasing the proportion of total energy needs met by electricity by 2050, a considerable proportion of the final energy required in the future will still need to be available in the form of molecules. These will then have to be produced $CO_2$-neutrally. Specifically, this means: where electrification is technically impossible or economically unviable, green molecules must replace fossil energy sources such as crude oil, natural gas and coal.

**It is therefore clear: we have a huge task ahead of us. To achieve our climate objectives, we now need a "Molekülwende", as well as the "Stromwende".**

## GREEN MOLECULES AS ENERGY SOURCES AND BASE CHEMICALS

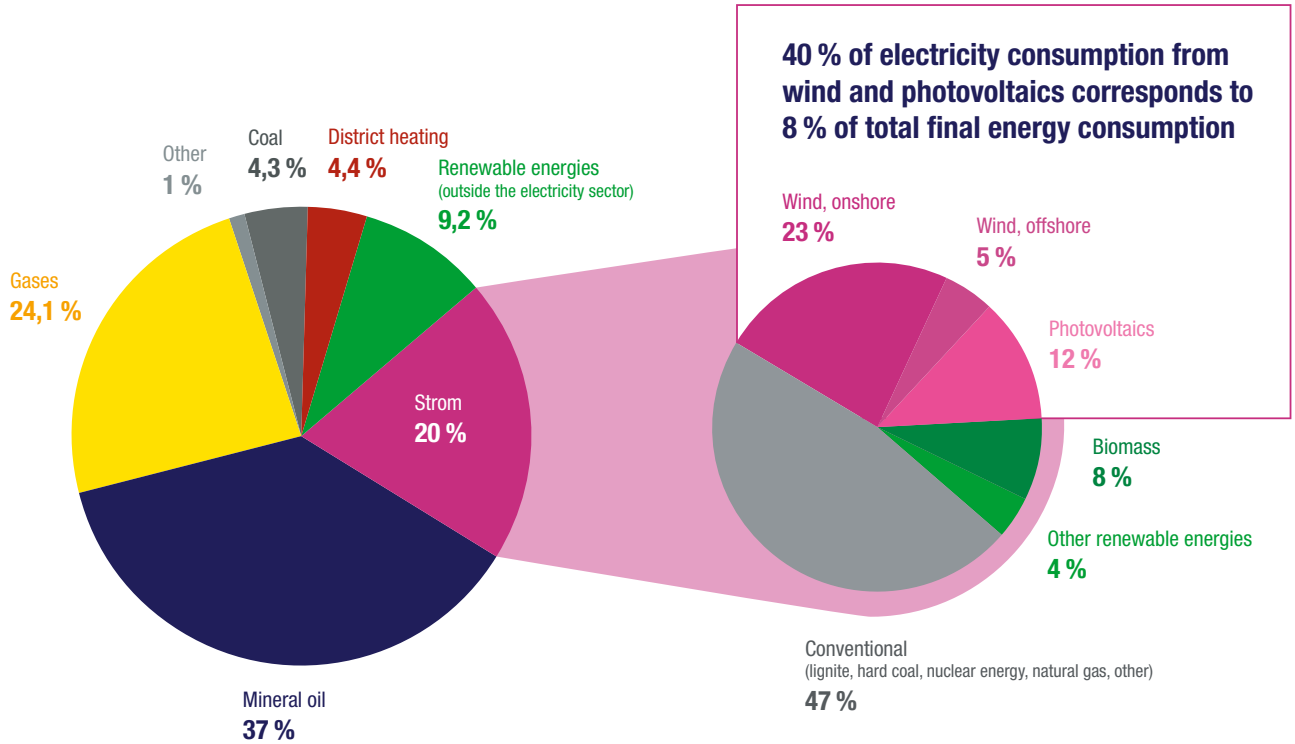
In the future, liquid or gaseous energy sources will be used only in sectors and applications that are difficult or impossible to electrify, such as aviation or shipping. Fuels will also be needed in the future for existing fleets of cars and commercial vehicles with a combustion engine, in agriculture, in the civil engineering sector, and for fire services. Furthermore, there will also be demand for the heating sector.

In addition, the material use of molecules – especially hydrocarbons – is essential for the chemical industry and other industrial sectors. They are required as input materials for the manufacture of many (preliminary) products. Important chemical input materials include, for example, naphtha, ethylene and liquefied gas, which are required including for the production of plastic, foam and insulation materials.

**glossary**

**Energiewende:** the transition from fossil-based energy to climate neutral energy supply and use
**Stromwende:** the transition from fossil-based energy to climate neutral electricity supply and use
**Molekülwende:** the transition from fossil fuels to $CO_2$-neutral molecules supply and use

## FINAL ENERGY CONSUMPTION IN GERMANY BY ENERGY SOURCE IN 2023




In the political debate on the question of how Germany can achieve the objective of climate neutrality, the demand for hydrogen and for renewable, liquid and gaseous energy sources is significantly underestimated. At the same time, the potential of electrification with green energy is overestimated. In 2023 only around eight percent of energy consumption was covered by electricity from wind and solar energy.

Source: AGEB/BDEW; diagram (no. 336b): en2x | figures for 2023, rounding differences possible

## MOLECULES ARE A KEY COMPONENT OF SUPPLY SECURITY

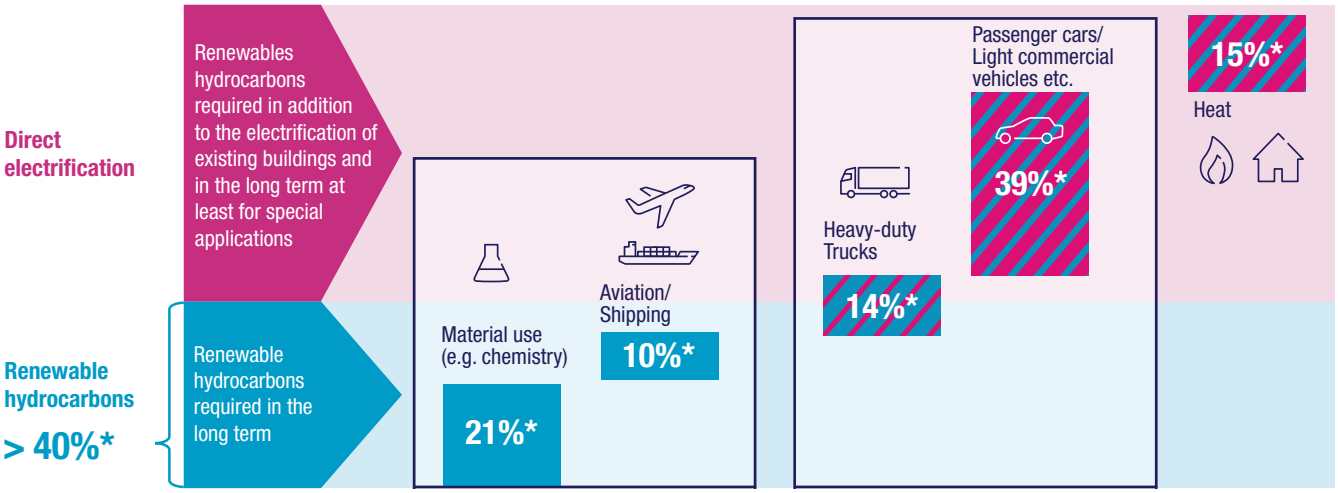
With regard to supply security too, green molecules play a key role alongside electricity generated from renewable sources. Chemical energy stores, such as green hydrogen and especially products made from it, such as methanol and other synthetic hydrocarbons, are excellently suited to storing large volumes of energy for a long time. They are therefore ideal to use as energy storage for emergency supply.

For an electricity generation system that is increasingly based upon fluctuating, renewable energies, such as solar or wind energy, these chemical energy stores are equally essential to cover peak loads and when the green electricity supply is insufficient. They are converted back as required, and thus stabilise the electricity grid and strengthen resilience of the energy supply overall.

## GREEN MOLECULES COMPLEMENT ELECTRIFICATION

In the future too, green molecules will play an important role, not in competition with but rather in addition to sensible electrification. There is therefore a need for an honest review of the available alternatives to fossil energy sources and for clear transformation paths derived from this, in order to meet the future demand of our society.

## $CO_2$-NEUTRAL MOLECULES ARE ESSENTIAL, IN ORDER TO ACHIEVE THE CLIMATE OBJECTIVES




*** Present sectoral distribution of hydrocarbons**

Source and diagram (no. 386a): en2x

### NO "ENERGIEWENDE" WITHOUT GREEN MOLECULES:
CREATING TRANSFORMATION PATHS FROM FOSSIL TO RENEWABLE

In the current debate on "Energiewende" there is little mention of how to replace the large volume of energy currently imported in the form of fossil energy sources. Instead, some social stakeholders are pinning their hopes either on complete electrification or on alternative options, although these are frequently viewed too optimistically with regard to their level of technological maturity and ramp-up time.

Thus the impression emerges that fossil energy sources will simply disappear over time (phase-out) and that their replacement will be available “somehow” in the future. Yet that is a fallacy.

**Aviation is one specific example of this:**
As things currently stand, there are no realistic alternatives to liquid fuels, especially for medium- and long-haul operations. To achieve the climate objectives nonetheless, the EU Commission and EU Parliament have agreed to increasing quotas for sustainable aviation fuels (SAF) in the “ReFuel EU Aviation” initiative: from two percent in 2025 to 70 percent in 2050. However, it is currently completely unclear whether the required volumes will be available. This is because, despite the ambitious sub-quotas for electricity-based kerosene (eSAF), there are still no investment decisions for the required PtL production facilities.

# HOW AND WHERE WILL THE GREEN MOLECULES BE PRODUCED?

For successful climate protection, large volumes of $CO_2$-neutral hydrogen and sustainable hydrocarbons are needed for many applications. This requires technology and infrastructure to produce, transport and store these substances and to process them into $CO_2$-neutral products.

### REFINERIES AND IMPORT INFRASTRUCTURE ARE KEY TO THE TRANSFORMATION

The present oil industry and the European refineries in particular want to make a significant contribution to the "Molekülwende", with their technology, their know-how, and not least their economic power. To this end, a gradual conversion is taking place, to a business model in which renewable energies such as wind and solar electricity, biomass, $CO_2$-neutral hydrogen, and synthetic or recycled raw materials form the basis and replace the crude oil in use today.

For the success of the "Molekülwende", it is important to develop import structures, as large proportions of the required energy will be imported in the future. Alongside a hydrogen strategy, a comprehensive carbon strategy will be needed, which takes an integrated view of all possible sustainable carbon sources, such as biomass, waste and residual materials, recycling and $CO_2$.

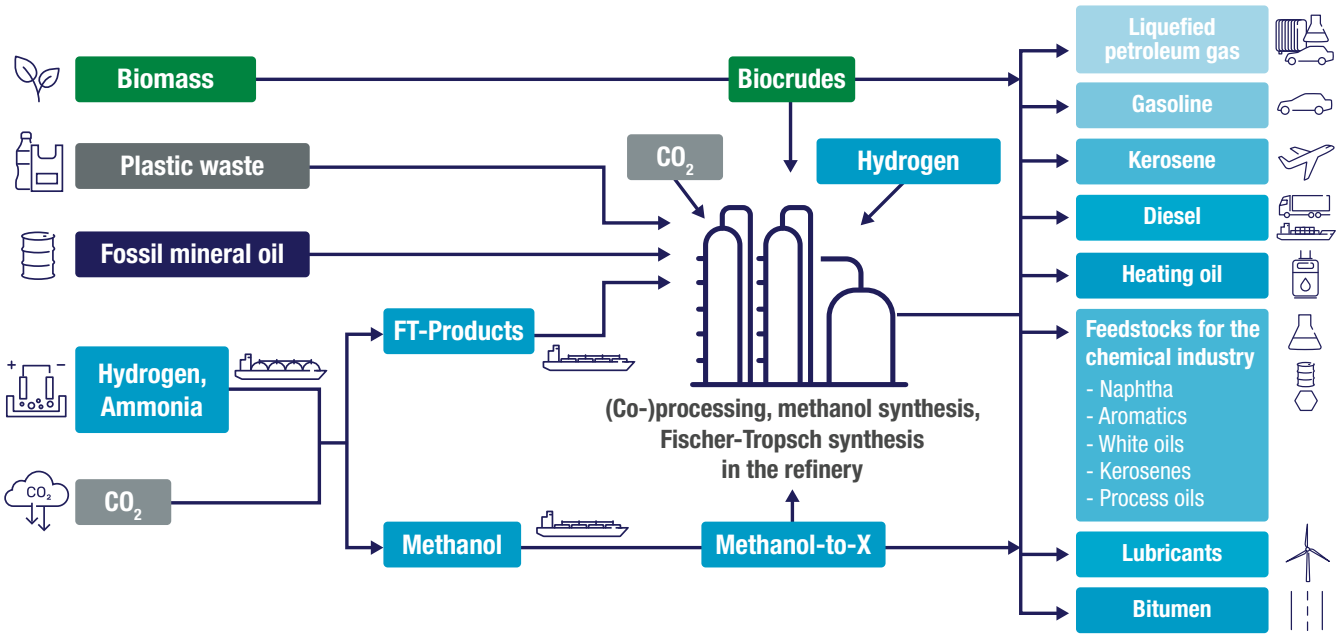
### TRANSFORMATION OF THE REFINERIES PRESERVES KEY ECONOMIC SITES

Refineries always produce a range of chemical raw materials (e.g. naphtha or paraffins) and energy sources (e.g. petrol, diesel or kerosene). This is called joint production.

It also includes the manufacture of those hydrocarbons that are an important source of raw materials for many industrial sectors, as preliminary chemical products. As well as the chemical industry, the pharmaceutical industry, for example, is also a part of this. Bitumen in road construction is another material use.



**TRANSFORMATION OF THE OIL AND REFINERY SECTOR TO BECOME CLIMATE-NEUTRAL**
GROWING PROPORTION OF ALTERNATIVE INPUT MATERIALS




Source and diagram (no. 385): en2x

In the past, the close relationship of refineries with other industrial sectors has helped to maintain competitiveness, despite the energy costs and environmental requirements being high by international standards.

What is important here is: the oil industry has proven in the past that it can adapt its production and supply capacity to the qualitative and quantitative changes in demand for hydrocarbons. Focusing on the manufacture of a single product, for example such as sustainable kerosene, is feasible neither in respect of the process nor economically.

Instead, existing, very efficiently interconnected, local industrial clusters around refinery and import locations should be preserved. These conditions offer good options for a “flexible” transformation and thus increase social acceptance of the "Energiewende", as drastic structural changes can be avoided.

## POSSIBLE CONVERSION OF THE REFINERIES INTO PRODUCTION CENTRES FOR GREEN ENERGY SOURCES AND CHEMICAL INPUT MATERIALS

Oil-based fuels and chemical products are composed of long chains of molecules comprising carbon (C) and hydrogen (H) atoms, so-called hydrocarbons. To manufacture products with similar properties without fossil raw materials, sustainable carbon sources are therefore required in addition to green hydrogen.

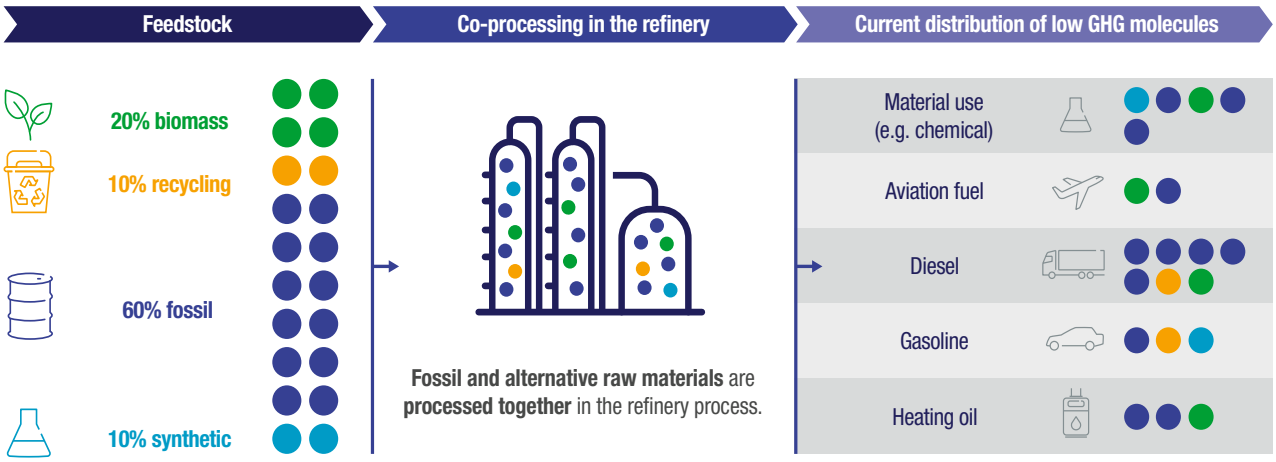
As one of the big producers and processors of hydrogen, refineries are ideally placed to support the ramp-up of green hydrogen. Alongside in-house production in electrolysers on site, connection to the German $H_2$ core network is a key requirement. As well as transporting hydrogen through pipelines, the international logistics for the supply of liquid hydrogen derivatives such as methanol, ammonia and synthetic crude oil are highly relevant for transformation of the whole industry.

## DEFOSSILISATION OF REFINERY PRODUCTS THROUGH CO-PROCESSING

In co-processing, fossil and alternative raw materials (feedstock) are processed together in the refinery, with various processing methods to produce climate-friendly products. The development of new processing facilities just for alternative raw materials would slow down the transformation process, impede scaling and make the products more expensive.

With co-processing, refineries are now already technically capable of manufacturing large quantities of $CO_2$-neutral energy sources and chemical feedstocks with low greenhouse gas emissions, in existing facilities, with minimal adaptations. During the transformation, the refineries process increasingly $CO_2$-neutral hydrocarbons, rather than fossil crude oil. These input materials can be obtained from waste-based and advanced biomass (used cooking oil, pyrolysis oil, biocrude), as well as from chemical recycling of plastic waste.
In addition, there is joint processing of raw materials, which are manufactured e.g. in the form of methanol or synthetic crude oil on the basis of renewable electricity and imported into Germany. The proportion of fossil sources decreases in scope as the proportion of alternative raw materials increases.

### CO-PROCESSING IN THE REFINERY (EXAMPLE)




Co-processing is a key technology for the manufacture of products with low greenhouse gas emissions in the refinery. Economic supply of these products must be facilitated through balanced crediting and flexible allocation of the climate-friendly properties.

Diagram (no. 430a): en2x



**"THE INDUSTRY IS FIRMLY RESOLVED TO PLAY A KEY PART ON THE ROAD TO GREENHOUSE GAS NEUTRALITY,**

**WITH MAJOR INVESTMENTS IN A RANGE OF $CO_2$-NEUTRAL PRODUCTS, SOPHISTICATED TECHNOLOGIES AND INNOVATIONS, AND IN GLOBAL INFRASTRUCTURE."**

### USE OF ALTERNATIVE CARBON SOURCES IN CLOSED CIRCUITS

Another question central to the "Molekülwende" is: How can the demand for hydrocarbons be met in the future, without fossil carbon sources? Not only are hydrocarbons important energy sources; they are also essential chemical components of many consumer goods and durables.

To prevent the emission of any additional $CO_2$ into the atmosphere in their production and use, through to disposal, closed carbon circuits are needed. With the use of biomass, the carbon circuit is completed by the plants that have previously taken the $CO_2$ out of the atmosphere. Another option is the use of $CO_2$ from exhaust gases or from the air. The recycling of plastics is another option.

Raw materials based on biomass or residual materials are available at relatively short notice. In many European countries, previous oil refineries have already been converted into biorefineries. Many companies are therefore prioritising strategies based on biological and residual materials, as the first step in the transformation.

### STRATEGIC DEVELOPMENT OF INTERNATIONAL ENERGY PARTNERSHIPS FOR THE REQUIRED IMPORT VOLUMES

In the future, despite the expansion of renewable electricity generation, Europe will have to meet its energy and raw material demand largely from imports – probably in the form of hydrogen, ammonia, methanol, synthetic crude oil or methane, and in the form of renewable or $CO_2$-neutral finished products.

Here, energy partnerships must now be established quickly with countries that have favourable conditions for the production of green hydrogen and its derivatives using solar or wind power. A global Power-to-X market can create a win-win situation for everyone involved, as well as offering an opportunity for countries with an income that is dependent primarily on fossil energy exports.

Because of its international nature, the oil industry can effectively support the development of energy partnerships for green molecules into a global market. It has an established infrastructure, such as pipelines, mobile transport capacity and tank storage, which can also continue in use or be adapted for import, processing, logistics and sales of raw materials and products that increasingly have reduced greenhouse gases.

# WHAT IS NEEDED, IN ORDER FOR THE "MOLEKÜLWENDE" TO SUCCEED?

The aim of achieving greenhouse gas neutrality by 2045 in Germany and by 2050 in Europe requires extensive abandonment of fossil carbon for almost all the energy sources and chemical input materials currently manufactured from oil or natural gas. Sectors and applications that are dependent on the use of hydrocarbons in the long term must increasingly be supplied with $CO_2$-neutral products. Only a very small proportion of liquid and gaseous energy sources is renewable at present – and this largely comprises conventional biofuels with limited potential for expansion. A "Molekülwende" and fundamental change of the present oil industry are therefore required now, as well as extensive transformation in the industrial, transport and construction sectors.

### TIME FOR GREATER CLIMATE PRODUCTION IS SHORT

State funding for pilot projects and demonstration facilities is not enough to get the "Molekülwende" off the ground to the extent required. Instead, the market conditions need to change, so that green molecules become competitive and ideally even cheaper than fossil energy sources. A comprehensive transformation demands investments in new or modified production processes, which can quickly run to hundreds of millions or to billions.

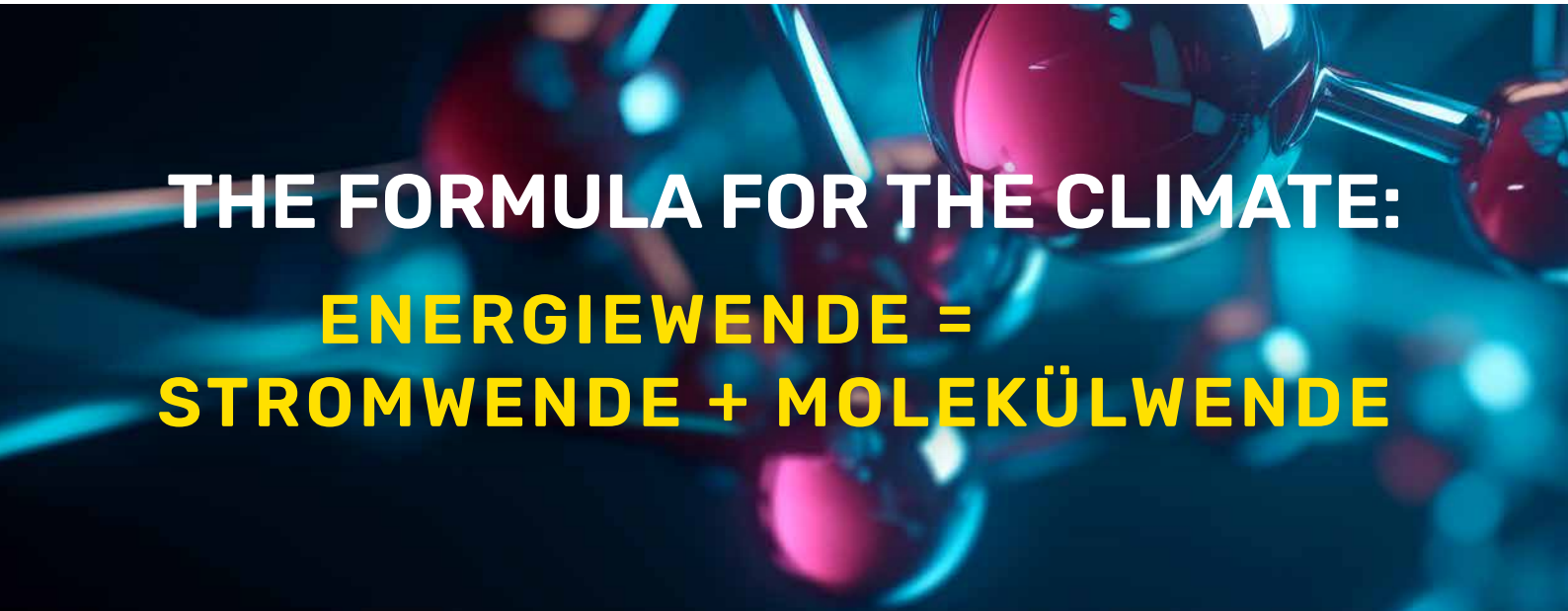
Yet, despite high future demand, the evolution of new technology and the development of manufacturing capacity for $CO_2$-neutral products still fails to present a business case in the vast majority of instances. In addition to technological risks, which always exist at the start of the learning curve with new, large-scale production processes and can quickly lead to a loss of competitiveness for the first facilities, major investments are still too often prevented by economic and regulatory risks.

Because of this, it is vitally important to create an environment that triggers the required investments in new technology and infrastructure for green molecules, so that enough affordable energy sources and input materials are available in the future, in order that the fossil age can really be brought to an end.

### VITAL FRAMEWORK CONDITIONS FOR THETRANSFORMATION AT A GLANCE

Consensus on the need for the "Molekülwende" is required in politics and business, on an equal footing with the electrical transition already initiated. This transformation to green molecules represents a huge challenge, which cannot be met without comprehensive regulation. en2x and its member companies would like to enter into a constructive dialogue about this with politicians and other stakeholders in the "Energiewende". The following framework conditions are important to us here:

- Reliable and sufficiently high pricing of fossil $CO_2$ emissions
- Targeted support and appropriate financing instruments for initial investments in industrial facilities
- Creation of a broad demand base for renewable products
- Connection of the refineries to the networks for high-voltage electricity, hydrogen and $CO_2$
- Development of international markets and energy partnerships with the relevant import infrastructure
- A global carbon strategy to accompany these measures



# WHICH DIRECTION SHOULD BE TAKEN AT EUROPEAN LEVEL?

The present oil industry is firmly resolved to play a key part on the road to greenhouse gas neutrality in Germany – with major investments in a range of $CO_2$-neutral products, sophisticated technologies and innovations. To this end, it is relying on framework conditions that make the transformation a sustainable business model.

The European Union is vitally important here, as much of the direction for the future of Germany is set in Brussels. The legislative proposals at European level that can promote the "Molekülwende" are listed below:



### IMMEDIATE, GREATER CLIMATE PROTECTION ON THE ROADS: SHAPING REGULATIONS TO BE OPEN TO TECHNOLOGY

To achieve the climate objectives on the roads, all available, renewable fuels and alternatives are needed. It is therefore essential to create new infrastructure for e-mobility and hydrogen-powered vehicles as quickly as possible. **Among other things, there is therefore a need for foresighted expansion of networks, consistent and fair access to network connections, development of new areas for filling stations and charging parks for lorries in particular, and faster approval processes.**

Liquid fuels with reduced greenhouse gases are also relevant, in order to achieve the climate objectives, especially with regard to the currently growing stock of vehicles with a combustion engine. Even today, these still account for 80 percent of new car registrations.

**For alternative fuels to be able to play their part, there is a need for consideration in the fleet regulations and as a part of the Eurovignette directive (road user charge).**



### ALTERNATIVE FUELS MUST BECOME COMPETITIVE: REFORM OF THE ENERGY TAXATION DIRECTIVE

For the foreseeable future, fossil fuels will be cheaper to produce than comparable products that are produced $CO_2$-neutrally. There is therefore a need for a regulation that will specifically improve the competitiveness of alternative fuels. The Energy Taxation Directive could become a decisive lever here. The EU Commission proposal of 2021 to change the Energy Taxation Directive (ETD) envisages taxing fossil fuels at a higher rate than sustainable biofuels and e-fuels. For suppliers and consumers, that would send a clear price signal, as well as offering investors the urgently needed, long-term planning security.

**The EU member states should call for rapid adoption of the ETD. To avoid competitive disadvantages for sectors with products and services that are competing internationally, e.g. such as aviation and shipping, compromise proposals are on the table.**



## USING THE POTENTIAL OF BIOMASS TO REDUCE FOSSIL ENERGY SOURCES

Fossil fuels and combustibles, as well as preliminary chemical products, can be replaced with renewable hydrocarbons based on biomass or synthesis methods (Power-to-X). For reasons of cost and because of the time still required for scaling of the PtX technology, sustainable biomass will have to play a very important role in the next step, until other compliance options such as e-mobility, hydrogen and e-fuels can make a significant contribution to climate protection.

Manufacturers of fuels, combustibles and chemical feedstocks are increasingly relying on second- and third-generation biomass based on secondary raw materials (waste and residual materials) to reduce potentially competing uses. A transparent and reliable process must be created for adequate recognition of new, sustainable raw materials.

**The sustainable production and use of biomass play an essential part in the reduction of greenhouse gases in all sectors. Here, the sustainability of biomass must be guaranteed by means of robust certification and monitoring systems.**



## PROMOTING CARBON MANAGEMENT IN THE EU TO DEVELOP SUSTAINABLE CARBON SOURCES

In the development of the European carbon management strategy, the whole $CO_2$ value chain must be taken into account, from capture (from industrial point sources and the air), through multimodal logistics, to use or storage. It is also important to include the interaction with other alternative carbon sources, such as biomass or recycled plastics.

For the fastest possible reduction of emissions, long-term storage of $CO_2$ (CCS) must also be possible for hard-to-abate emissions. These also occur in refineries, although, with continuing expansion, refineries can also act as $CO_2$ consumers and process $CO_2$ into numerous energy sources and chemical feedstocks (CCU).

**To guarantee this, a stable and supportive regulatory framework is needed, which creates planning security for investments, as well as start-up funding for a corresponding infrastructure.**



## CREATING LONG-TERM RELIABILITY: EU EMISSIONS TRADING (ETS) AND CBAM

With revision of the ETS as a part of the Fit for 55 package, additional sectors including buildings and transport have been incorporated into the scope. Emission prices are predicted to rise in these sectors too, although social justice and acceptance of the "Energiewende" must be ensured. Political interventions following rising prices must not impair the calculation basis for investments in facilities that reduce emissions, so that the economic risk for companies remains calculable.

In the switch from free issue of certificates to the carbon border adjustment mechanism (CBAM), a solution is needed for exports outside the EU. Furthermore, it has not yet been determined how other sectors can be incorporated into the CBAM. As noted in the CBAM directive, the allocation in the case of refineries is not trivial.

**A simple and practical solution must be found here, in consultation with the industry.**



# WE ARE POOLING OUR STRENGTHS FOR CLIMATE PROTECTION

Climate protection is one of the greatest challenges of our time. Because we want to leave behind a world in which future generations can live, action must be taken to reduce $CO_2$ emissions quickly. Together with our members, we at en2x – Wirtschaftsverband Fuels und Energie e. V. (fuels and energy trade association) are therefore working to achieve the Paris climate objectives.

Our member companies provide a large proportion of Germany's present energy supply. Furthermore, they supply considerable quantities of raw materials, especially for the chemical industry. It is clear to us that the future of energy sources and raw materials will be greenhouse-gas-neutral. To achieve this objective, a huge transformation process is required, which we as an association want to support, promote and help to shape. With a range of fuels and energy, sophisticated technology and pioneering innovations, our industry can play a key part in this transformation.

Our members bring together many skills, by we do not yet have an answer for everything. As an association, we therefore rely on dialogue and discussion, in order to find appropriate ways to achieve the climate objectives.

**"WITH ITS TRANSFORMATION, THE INDUSTRY IS PLAYING AN IMPORTANT PART IN ACHIEVEMENT OF THE CLIMATE OBJECTIVES"**

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## FUELS AND ENERGY

Whether green hydrogen, alternative fuels and combustibles, new products for the chemical industry, or charging stations for electric cars at filling stations and other sites:
There are many solutions to continue the reduction of greenhouse gas emissions. Our member companies provide a range of options for customers, both now and in the future. Here, the companies in the industry represent a high level of supply security in respect of energy and raw materials.

In the future, the use of electricity from renewable energies will play a significantly greater role, especially on the road but also in the heating sector. We support this development. en2x members are therefore increasingly providing electricity for charging and thus improving the infrastructure for e-mobility. Increasing electrification will produce a rapid rise in the demand for electricity. Significantly accelerated expansion of green electricity generation is therefore required in this country, if the climate objectives are to be achieved. In addition, much more energy can be saved through greater efficiency and the avoidance of traffic.

However, this does nothing to alter the fundamental challenge: In Germany, around 70 percent of the energy we use is currently imported from other countries. Even with a massive expansion of wind and solar facilities, we will not achieve energy self-sufficiency in this country. Our members are contributing to the supply security of renewable energies through increasing production and by importing large quantities of high-quality, greenhouse-gas-neutral energy sources. They are experts in global energy flows. Alternative fuels are essential, if the climate objectives are to be achieved in aviation, shipping and heavy goods traffic. It is our members who know the demand and the specific requirements of the customers and supply chains behind them. At the same time, alternative fuels increasingly facilitate refuelling of the large stock of vehicles that have a combustion engine with climate-friendly and – in the future – $CO_2$-neutral energy. Even for heating applications that are difficult to electrify, such fuels may be a climate-friendly solution in the future. In addition to the energy products, our members also supply base materials for the chemical industry. Future defossilisation of these preliminary products is an essential component of the strategy to achieve the climate objectives in this important industrial sector and to keep the industrial value chains in Germany. Process and district heating from the refineries, which is used in industry and for heating residential buildings, contributes further to the reduction of greenhouse gas emissions.

## TECHNOLOGY

To be able to achieve the climate objectives, many substances and products used in industry must be defossilised in the next two decades. This can be accomplished for example with green hydrogen and the development of closed carbon cycles.

Development and expansion of the production of green hydrogen on an industrial scale therefore play an important role. It can be used directly, or for the manufacture of secondary products. Further processing of residual and waste materials from other sectors is crucially important for a circular economy that does not use fossil carbon. The same applies for the further development of $CO_2$ capture and usage technology. Based on their experience of dealing with hydrocarbons and the production facilities for these, as well as hydrogen and $CO_2$, our members have the required know-how and are optimally positioned to develop greenhouse-gas-neutral alternatives to the still fossil substances used today, to scale up the relevant production facilities, and to develop the required circuits.

Today, there are already many projects that clearly point towards this greenhouse-gas-neutral future. These include, for example, the construction of electrolysis facilities on refinery and chemical sites, and the production of biofuels from residual materials and algae.

## INNOVATION

The ambitious climate objectives call for a range of technological answers. Some solutions we may still need to find; others, we need to test and improve. Our members therefore specifically promote innovations and bring partners together, in order to continue to develop new technologies, products and services, both for climate protection and for customers. The aim here is to devise solutions that are practicable and affordable on a large scale.

Research and development therefore play a key role in the further expansion of skills and in promotion of the transformation process, in order to achieve the climate objectives. This includes initiating and supporting pilot projects and living laboratories – not just in this country, but in many places across Europe and all over the world. In addition, targeted joint ventures are being established with start-ups in the energy sector, to pave the way for new solutions for greater climate protection and energy security.

en2x also promotes innovation through its own pilot projects. In the OWI Science for Fuels research institution, we have a subsidiary company which, as a charitable undertaking,has already spent many years at RWTH Aachen focusing on increasingly greenhouse-gas-neutral fuels. Moreover, we are a partner to the likewise charitable research organisation DGMK, which promotes science, research, technology and education.

## DIALOGUE

New questions constantly arise on the road to a greenhouse-gas-neutral future. Today, we do not yet have an answer to all of them, and we may yet have to change some answers. However, our member companies have many of the skills that are needed for promotion of the required transformation in line with the climate objectives.

To be successful here, we rely on cooperation and dialogue. Together with others, we look for the best solutions. For us, this specifically includes discussion with politicians and authorities, environmental and climate protection organisations, businesses and consumers. Here, we will also have to deal with criticism of our industry and its products. As an association, we represent the interests of our members in the debate about greater climate protection.

We are committed to an appropriate and reliable regulatory framework, so that sales markets emerge for new products from our member companies, or existing sales markets can be supplied with products that have ever lower volumes of $CO_2$.

Through the creation, continuous evaluation and adaptation of scenarios and roadmaps, we highlight ways to achieve the climate objectives.

We want to be credible, open and dialogue-focused. This is equally true both for specific subjects, such as fiscal policy and regulation, and for the big picture, energy supply in consideration of the environment, climate protection and social concerns, for the benefit of people and nature.

Wirtschaftsverband Fuels und Energie e.V.

Climate protection is one of the greatest challenges of our time. Together with our members, we at en2x – Wirtschaftsverband Fuels und Energie e. V. (fuels and energy trade association) are therefore working to achieve the Paris climate objectives.

Our member companies from the present oil industry provide a large proportion of Germany's energy supply today for mobility and heating, and they supply considerable quantities of basic chemical products. For a future that is greenhouse-gas-neutral, a comprehensive transformation process is needed now. With a range of renewable energies, alternative fuels and raw materials, technologies and innovations, our industry can play a significant, key part in this change and thus in the "Molekülwende".

In open discussion with others involved in the "Energiewende", we want to support, promote and help to shape this process.

To find out more, go to **www.en2x.de**.

en2x - Wirtschaftsverband Fuels und Energie e.V. is a registered lobbyist and is listed in the federal lobby register under the registration number: R000885.

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