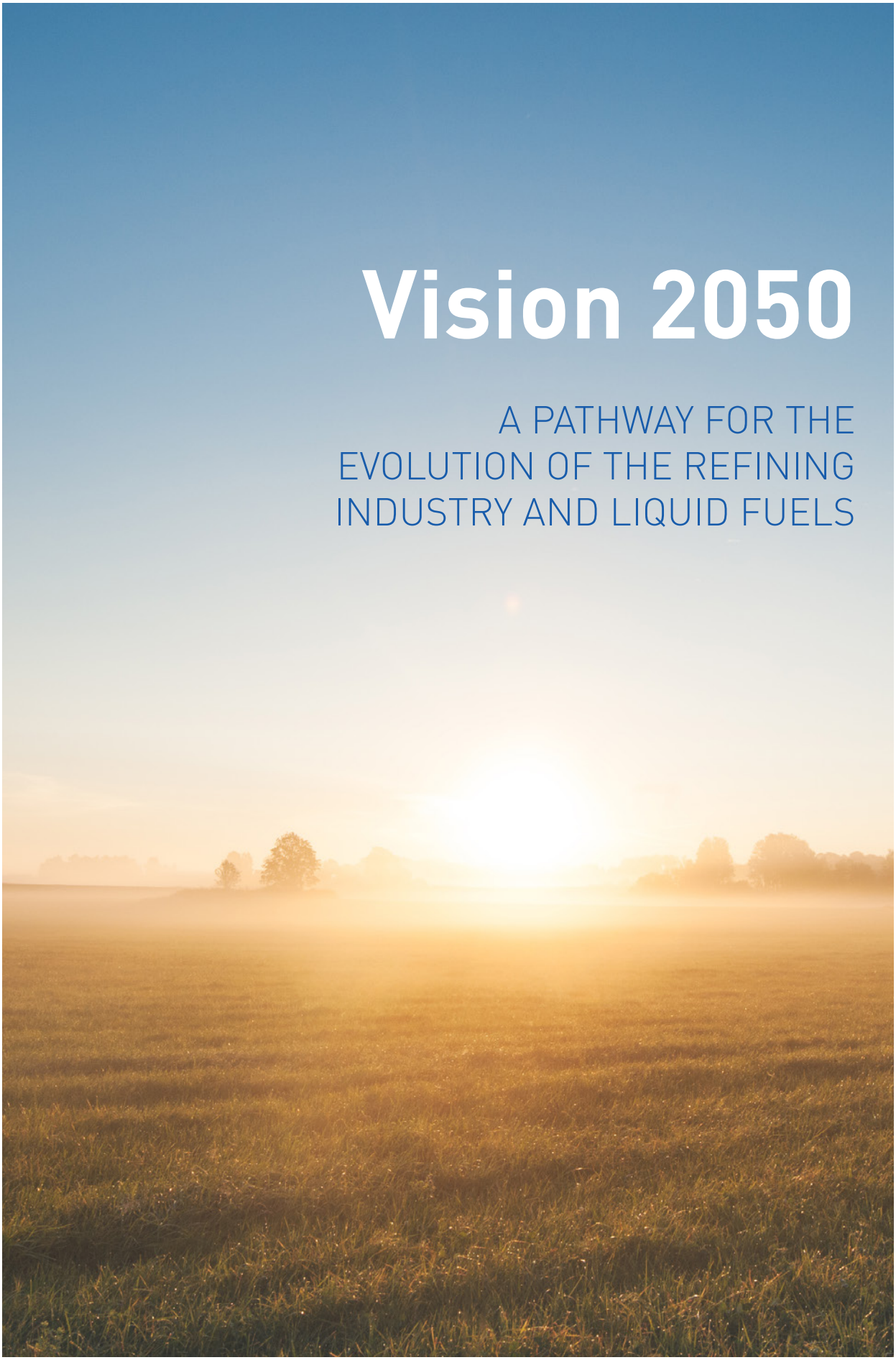

Vision 2050

A PATHWAY FOR THE EVOLUTION OF THE REFINING INDUSTRY AND LIQUID FUELS

FuelsEurope

REFINING PRODUCTS FOR OUR EVERYDAY LIFE

The EU has the ambitious objective to lead the world in addressing the global climate change challenge.

The EU refining industry is committed to contribute to this objective by continuing to reduce its CO_2 emissions and providing the economy and citizens with low-carbon fuels and other products that society needs. Development of a diversity of energies and energy carriers will give an economy flexibility, resilience and the possibility for the market to select the optimal solution for every sector and use. Liquid fuels, with their unique characteristics will continue to be employed in many transport fields. Therefore, the EU refining industry has an important and enduring role to play in the energy choices of the future, by providing low-carbon liquid fuels to complement low-carbon electrons, gas and hydrogen as energy carriers. Technology and collaboration across industries will facilitate the production of these low-carbon liquid fuels.

The contribution of the EU refining industry can be enhanced by the EU industrial strategy and a policy framework which will enable its transition, while allowing refineries to retain economic viability in the face of a declining domestic market demand and of an increasingly aggressive international competition.

THE VISION FOR LOW-CARBON LIQUID FUELS FOR EUROPE

- **In our Vision, Europe's citizens and businesses will be supplied with liquid fuels and products that are progressively lower in carbon intensity**, being used in progressively more efficient vehicles, setting a long-term pathway toward a low-emission and resilient economy.

- **In our Vision, the Refinery of the Future**, capitalising on its technological know-how and flexible infrastructures, **will increasingly use new feedstocks, such as renewables, waste and captured CO_2, in a very efficient manufacturing centre**, integrated in a cluster of industries, in synergy with other sectors, such as chemicals, district-heating, sustainable biofuels and power industry. These clusters will process and exchange a variety of feedstocks and semi-finished products – such as renewable hydrogen, waste carbon, sustainable biomass, waste, residual heat, conventional and synthetic crude oil and renewable power.

- Our Vision is **ambitious but achievable**. It is based on both established and emerging technologies, and on models of industrial collaboration built on the principles of the circular economy and resource efficiency. However it will require an enabling policy framework.

- **Our Vision, combined with increasingly efficient use of low-carbon products in transport and other industries**, will give the EU the means to achieve its climate change mitigation objectives.

- Our Vision represents an industrial opportunity for Europe to develop low-carbon technologies and offer them to the world as part of the global climate solution.

We are fully committed to collaborate with other industries and policymakers to deliver our Vision, and to be a major player of the long term industrial and energy solution for Europe, enabling climate leadership and contributing to economic prosperity.

EUROPE AND THE WORLD WILL NEED LIQUID FUELS AND PRODUCTS FOR MANY DECADES

- After over a hundred years, **hydrocarbon liquid fuels remain unrivalled for use in transport thanks to their superior energy density**; they are simply the best form of portable energy storage and delivery. Whole sectors of transport and industry cannot function without them.

- To meet the EU and global climate change mitigation objectives while continuing to **provide affordable mobility**, vital to citizens and industry, there will be a need for both "low-carbon" electrons and "low-carbon" molecules. While electrons offer a viable alternative for passenger cars and vans in cities, molecules for liquid fuels will still be needed, especially for long haul heavy duty road transport, aviation, and marine, as well as for petrochemical feedstocks, lubricants and other products.

- Low-carbon liquid fuels can be **among the most cost-effective options for cutting CO_2 in transport**. Part of this is due to extensive and reliable distribution infrastructures already in place, a clear advantage compared to other energy solutions requiring the build-up – often with public funds - of new infrastructures.

- **In the transition** towards lower emissions road transport, low-carbon molecules will contribute by reducing emissions of **all the vehicles in circulation**, while the gradual penetration of new alternative technologies requires much longer to provide significant results.

- **Many technologies will be needed to produce low-carbon liquids** with the potential to deliver low-emission mobility across life-cycle in all the transport segments, such as sustainable biofuels, CCS/CCU[1], renewable hydrogen and power-to-liquids.

THE REFINERY OF THE FUTURE AND ITS CONTRIBUTION TO ENERGY TRANSITION

- **EU refineries are perfectly placed to be low-carbon manufacturing centres integrated within a cluster of industries** - they already have many technologies to combine and optimise the chemical formulation of their respective products and demonstrate, with the extensive **integration of refineries and petrochemical sites** how these industrial synergies enhance the competitiveness of the industrial cluster.

[1] CCS: Carbon Capture and Storage; CCU: Carbon Capture and Utilization

- **The refinery of the future** will have the possibility to further **expand this industrial collaboration** by participating in joint initiatives to develop innovative low-carbon technologies for reducing the overall emissions of the cluster of industries and of their products.

- It will work on **further improving the carbon-efficiency of its operations**, through the advancement of its energy management system and the adoption of new technologies.

- **It will continue supporting investments** in manufacturing low-carbon fuels and other low-carbon products.

- **It will engage in expanding, deepening and developing collaborative projects** with other industries to enable emissions reduction across the full value chain.

- Through the energy transition, and beyond, the refining industry will deliver low-carbon products to society while continuing to provide skilled jobs, scientific and financial contributions to the EU economy. This Vision will also ensure energy diversity and security of supply for the EU. The collaboration between industrial sectors will give the EU the global technological leadership for the low-carbon transition, creating opportunities for exporting technologies and business models.

POLICY ENABLERS

We call on the EU and its Member States to help the EU refining sector **make this Vision a reality** through the following:

- **Integrate this Vision into the EU industrial and technology strategy** and research and development programmes for Europe to strongly support the development and deployment of the enabling technologies for low-carbon liquids and products, and of the deep industrial collaboration necessary to deliver these at scale.

- **Implement a policy framework that provides investors with stability and predictability and preserves technology neutrality** for the success of this transitional strategy, with long term (20+ year) consistency.

- Based on current technologies and anticipated learning curves, the cost for implementing low-carbon solutions is likely to be high. Therefore, appropriate measures will be needed to **safeguard the international competitiveness of EU industries** and avoid off-shoring of manufacturing activities to countries with lower climate ambitions, resulting in the increase of product imports and lower security of supply.