eFuels for a Secure and Resilient European Energy Supply

Key Policy Asks

- **Fix the RFNBO production rules.** This includes postponing the additionality criteria until 2035, including grandfathering rules for projects already in operation and keeping a monthly correlation after 2030. In addition, eligible CO_2 sources should be broadened by allowing industrial CO_2 point sources after 2041 in the Delegated Acts of the Renewable Energy Directive, so that the full potential of Europe's renewable resources can be used.
- **Create clear market demand.** Introduce progressive and ambitious eFuel sub-quotas for each transport sector. Progressive sub-targets within the upcoming RED IV revision should be advanced to create the long-term demand signals that make private investment in production capacity commercially viable.
- **Integrate eFuels into resilience and defence planning.** Include eFuels in civil protection, critical infrastructure and military fuel strategies.
- **Utilise the countability of eFuel investments towards NATO spending targets.** Public and private investments in domestic eFuel production capacity are eligible defence-relevant expenditures under NATO's 5% of GDP commitment. eFuel production infrastructure reduces import dependency, sustains military readiness during supply chain disruptions and provides real economic utility in peacetime.
- **Strengthen the double-sided auctions mechanism with more funding and a widened product range to trigger investments.** Double-sided auctions simultaneously price supply and offtake contracts, creating a financial bridge between current production costs and long-term market prices without permanent subsidy. Availability of fuel is an externality that is not priced into current bankability assessments of eFuel projects. A double-sided auction can close that gap and price in the value of the availability of fuel. Further, the product range of these auctions should not be limited. At the moment, the early movers coalition is only focused on eSAF and no **double-sided auctions mechanism** has been held for products like eDiesel even though they are highly needed in a resilience context.

From Geopolitical Vulnerability to Structural Resilience

Secure, sustainable, competitive and affordable energy has long been a defining priority of the European Union. The EU faces a structural challenge that requires a coherent and forward-looking response: guaranteeing security of supply, reducing external vulnerabilities and decarbonising its energy system by 2050 must go hand in hand.

Recent geopolitical developments have reinforced the urgency of this agenda. The 2022 war in Ukraine and the 2026 conflict involving Iran have illustrated how dependent Europe remains on fossil fuel imports from few politically volatile regions. In 2024, imported fossil fuels still covered 57 percent of EU energy demand, while renewables accounted for only around 25 percent of final energy consumption.

This is where eFuels offer a significant and underutilised opportunity. As synthetically produced, energy-dense fuels compatible with existing infrastructure, eFuels can expand Europe's supply base beyond geographically concentrated fossil fuel reserves. They can be produced from renewable electricity in a wide range of countries, including reliable partners in Europe, North Africa and beyond, reducing structural dependencies without requiring a full transformation of the existing energy and transport system. Scaled appropriately, this approach could provide up to 200 billion litres of diesel equivalent in 2045.

Turning Global Renewable Potential into European Resilience

The answer to fossil fuel dependency is to restructure Europe's energy system around molecules that can be produced wherever renewable electricity is abundant, stored and transported through existing infrastructure, and used without modification in existing engines, vehicles, ships and aircraft. Today, chemical energy carriers like eFuels and advanced biofuels make this possible.

The renewable energy potential available for renewable fuels production, including eFuels and biofuels, is geographically far more diversified than fossil fuel reserves. Europe can systematically reduce its strategic exposure to a small number of fossil-fuel exporting states by building energy partnerships with a broader and more stable set of producer countries, converting abundant global renewable resources into a structural source of European resilience. In locations with particularly favourable climatic and geographical conditions,

such as Patagonia, where wind turbines operate at four times the full-load hours achievable in Central Europe, eFuel production can be exceptionally cost-effective.

Renewable fuels can not only be produced abroad but also locally in Europe. European pioneers like INERATEC, Repsol and Neste are already investing in stable renewable fuel supply for the European markets. It is important to adjust the policy framework so that these projects are protected and other market participants reach FID.

Civil Protection and Military Use

All essential services and mobility systems across Europe will remain reliant on liquid fuels for decades to come. The energy density required to power a main battle tank in combat cannot be met by battery storage. This also applies to civilian infrastructure that needs to be prepared for long power outages. A field hospital or an elderly residence needs reliable high energy density storage to bridge long disruptions in the electricity grid. This can currently only be achieved by liquid fuels. Energy grids are a strategic target in a war scenario while fuel can be stored decentralised on site for extended durations.

As long as the EU remains dependent on fossil fuel imports, the operational readiness of European armed forces and critical civilian infrastructure lies, in large part, in the hands of foreign supplier states and can be easily disrupted.

Renewable fuels reduce this vulnerability directly. As a drop-in solution, military equipment can begin using eFuels immediately without modification to the existing equipment and fleet. This can be compatible with NATO's One Fuel Policy, since the chemical composition of synthetic fuels can replicate that of F-35 jet fuel and standard NATO fuels. The British Royal Air Force has conducted successful tests with synthetic fuels. The U.S. Department of Defense, in cooperation with the private sector, has also tested synthetic fuels to diversify supply chains. Both found that eFuel use requires no alteration to legacy vehicle or aircraft fleets.

During crises, eFuels can be prioritised for critical infrastructure and defence, when fuel demand is acute. During peacetime, they reduce emissions in the transport sector by up to 90% and generate the commercial market volumes needed to sustain production capacity and recover investment costs.

Avoiding Regulatory Self-Sabotage

Europe is in the middle of a structural tightness in energy supply. Against this backdrop, the EU's current RFNBO Delegated Acts are counterproductive and prevent investment at scale.

The most immediate priority is simplifying the electricity criteria. The European Court of Auditors identifies restrictive production rules as the main obstacle to the hydrogen ramp-up. It estimates that the hourly temporal correlation alone raises costs by 25–35%. A study by the University of Duisburg-Essen shows that electricity criteria could reduce European electrolysis capacity in 2035 by 33% (29.85 GW instead of 44.52 GW). Our suggestion is to simplify this by extending the transitional period for additionality until 2035, to remove the change to the hourly correlation in 2030 and to keep a monthly temporal correlation after 2030.

Underpinning all of this is the question of investment security. Projects that have reached a final investment decision must be protected from subsequent regulatory changes for their entire operational duration. This is a basic condition for bankable project finance. The US Inflation Reduction Act has demonstrated that such a grandfathering mechanism is workable and effective in mobilizing private capital. Without an equivalent commitment in the EU framework, long-term investment decisions will continue to stall.

The upcoming revision of the Renewable Energy Directive (RED IV) also represents a critical political window. Progressive eFuel sub-quotas in the transport sectors would create the market demand signals that make private investment in production capacity commercially viable. Without clear long-term demand signals, no producer will commit capital at scale. The strategic function of RED IV quotas thus goes beyond climate policy. In peacetime, ambitious sub-quotas create the commercial market that refinances eFuel production investments. In crisis, that same production infrastructure becomes available for civil protection and military use. The two functions are inseparable: the commercial viability of the eFuel supply chain in peacetime is the precondition for its strategic availability in conflict.

Triggering Investment

Acknowledging the need for eFuels is not sufficient. The critical question is how to trigger the scale of investments required to build a viable supply chain before the next crisis.

In this context, the road transport sector can serve as a lead market to provide the necessary scale for the growth of sustainable aviation fuels (SAF) and sustainable marine fuels (SMF). This is particularly relevant given that fuel production facilities often co-produce fuels for multiple applications (such as road, maritime and aviation) within the same infrastructure. Such integrated production enables economies of scale and enhances cost competitiveness across fuel types. Therefore, recognising the role of renewable fuels in the

current revision of CO_2 standards is essential to unlock investment, accelerate scale-up, and ensure the timely availability of renewable fuels across all transport sectors.

The H2Global programme has demonstrated the effectiveness of double-sided auction mechanisms, which simultaneously contract for supply and offtake, bridging the gap between current production costs and long-term market prices. The European Commission endorses this approach, as reflected in its STIP Communication. Double-sided auctions provide producers with bankable revenue certainty without creating a permanent subsidy dependency, thereby attracting investment and accelerating scale-up while remaining compatible with state aid rules. Initiatives such as the eSAF Early Movers Coalition should therefore be adapted to account for demand from military and civil protection applications in times of crisis. This spending could then also be acknowledged under the 5% NATO spending obligation.

About the eFuel Alliance

The eFuel Alliance is an interest group working for the political and social acceptance of eFuels and for their approval. We represent more than 160 companies, associations and consumer organizations along the eFuel production value chain. We stand for fair competition and a level playing field for all relevant emission reduction solutions. We are clearly committed to greater climate protection and want to see the significant contribution of eFuels to sustainability and climate protection more widely recognised. Our goal is to enable the industrial production and widespread use of CO_2-neutral fuels from renewable energy sources.