

# Specific requests for a policy transition to promote investment in low-carbon technologies

**What regulatory measures can be devised to stimulate R&D and unlock the investment in low-carbon technologies needed to help deliver the energy transition for mobility in the EU?**

The development of disruptive (and not just incremental) technologies to reduce emissions in the EU economy requires huge financial and other resources. This consideration applies to steep GHG emissions reduction in refineries, to other energy-intensive industries and to the electrification of certain transport modes.

The role of the private investor is central, as it cannot be assumed that governments and public funds alone will be able to sustainably support the development of disruptive low-carbon technologies, particularly on a large scale. Private investors will only commit their resources if there is a reasonable expectation of a business case and the prospect of a profitable market. These two key investment enablers must be brought about through appropriate regulation.

The following analysis describes a proposal for an evolutionary trajectory for regulations on fuels and vehicles:

- In the short-term (until about 2030), a pragmatic approach is outlined within the existing regulatory framework (particularly the RED II – and Tank-to-Wheel-based vehicle emissions standards). This approach proposes short-term measures (regulatory adjustments or corrections) to stimulate the development and deployment of technologies for low-carbon fuels and efficient vehicles.
- In the medium-term (post-2030), the next steps would consist of creating a cross-sectoral approach with a single cost of carbon across the economy. The first step in this direction would be a move to a single CO<sub>2</sub> market for road transport.
- In the longer term, the regulatory framework will move towards a common CO<sub>2</sub> market for the whole economy, in a cross-sectoral approach based on a single carbon price.

**UNTIL 2030**  
ALIGN CURRENT VEHICLES  
AND FUEL REGULATIONS

**POST 2030**  
ESTABLISH A COMMON  
CARBON PRICE FOR  
VEHICLES AND FUELS

**LONGER TERM**  
A COMMON CARBON PRICE  
ACROSS THE ECONOMY



## 1. The regulatory framework in the short-term (until 2030)

EU legislators recently approved the RED II, which will shape the regulatory framework until 2030 for renewable energy and fuels and may support and stimulate investment in low-carbon fuel technologies. In parallel, the extension to 2030 of the existing regulation for vehicle emission standards for light-duty vehicles and the new EU emission standards for heavy-duty vehicles is in the approval process at EU level. It will continue to shape industrial business choices.

A new principle should be considered to moderate the previously described drawbacks of a regulatory approach in road transport that keeps vehicle and fuels regulations in separate silos. This principle generally maintains a current regulatory approach.

The basic concept is straightforward. The CO<sub>2</sub> molecules generated during the combustion of renewable or recycled fuel in a motor and released through a tailpipe are exactly those which were originally captured from the atmosphere or from another source of CO<sub>2</sub>. The overall result is therefore net zero emissions. In a holistic approach, therefore, a correction factor should be applied to the measurement of TTW GHG emissions when assessing a vehicle's compliance with an emissions standard.

The following proposals could be considered:

### **A. Tank-to-Wheel correction for RED II compliance based on a market average of fuels**

A correction factor can be calculated by taking the average EU percentage of all recycled carbon-based and renewable fuels placed on the EU road transport fuel market as a result of the RED II. This would reflect the share of resulting CO<sub>2</sub> emissions that should count as zero net emissions. All vehicle manufacturers should then be allowed to use this correction factor in

the calculation of their fleets' compliance with the vehicle emissions standard.

The above proposal would establish the first bridge between fuel and vehicle regulations. But it would not likely be effective at supporting investments to develop and deploy promising technologies at the steep end of the learning curve – that is, for the production of very low-carbon and sustainable fuels for use in road transport. Therefore, an alternative, more specific compliance pathway should be available for technologies that are not adequately incentivised by the current regulatory framework.

### **B. Alternative compliance credit system for promising fuels and technologies**

For more expensive but very promising fuel technologies, a correction factor could be further enhanced to support the development and early deployment of innovations. For this specific alternative compliance mechanism for individual vehicle manufacturers, the following tailored approach could be applied to certain fuels and technologies:

- A bilateral long-term contract is made between an individual fuel supplier and an individual vehicle manufacturer for the supply of fuel-based credits.
- The credits are generated from the production of the low-carbon fuel placed on the market by this individual fuel supplier.
- The credits are converted into a reduction of the vehicle manufacturer's fleet emissions value and are used by the manufacturer as an alternative mechanism for complying with the vehicle emissions standards.

The option to enter this kind of contract would be time-limited, so as to incentivise early adopters who would establish the first plants and get them running.

This concept could be applied beyond low-carbon fuels, to fuel suppliers' production processes. For

example, a similar mechanism could be considered to provide incentives for enabling technologies such as CCS.

### **C. Alternative credit system for carbon capture and storage (CSS)**

Under a system to capture and store the GHG emissions generated by fuel producers, credits for alternative compliance with vehicle efficiency standards could be agreed as part of a bilateral contract between an investor in CCS and a vehicle manufacturer. It is important to stress that these credits could not at the same time be counted as an emission reduction in the ETS, as this would represent double-counting of the benefits from the CCS investment.

#### **In conclusion:**

Such minor changes to the existing main regulations would preserve predictability and consistency but also allow developing technologies to play a role in reducing transport emissions. They would thus start the transition to regulatory shifts with a more technology-inclusive approach.

#### **Another related consideration:**

As a general principle, if governments consider support through subsidies or other means, this should be done on a level-playing field that allows all low-carbon technologies to compete to bring about the greatest reduction in CO<sub>2</sub> emissions at the lowest cost.

## **2. The regulatory framework for the medium-term (post-2030)**

Once the short-term measures proposed in the previous chapter have resulted in the development and deployment of new technologies for low-carbon

fuels, the next step will consist of creating a cross-sectoral approach with a single cost of carbon across the economy. The move to a single CO<sub>2</sub> market for road transport (and the evaluation of how to extend this to other forms of transport) would be the first step in this direction. Such an evolution would be important not only for fuels but also for other energy-intensive sectors.

Also in the medium-term, it is important to recognise and accept that CO<sub>2</sub> savings can come from the application of innovative technologies to vehicles and fuels and from their combination in a single system. A holistic regulatory framework should be adopted to support the most efficient low-carbon technologies.

Incentives from carbon savings already exist in vehicle regulation. A penalty of €95 per gram of CO<sub>2</sub> in excess of the emissions standard for the average new vehicle corresponds to about €475 per tonne of CO<sub>2</sub>. The limitation of this measure to address is that such incentives are available only to vehicles, while neither fuels nor the combination of efficient vehicles and low-carbon fuels can access them directly.

How can this barrier be overcome to create a truly common CO<sub>2</sub> market for road transport? A fundamental shift in the regulatory approach is needed, consisting of an evolution away from a strict TTW approach in vehicle emission standards. Rather, standards should take into account the CO<sub>2</sub> emissions associated with the production of the energy used by the vehicle and with the manufacturing and disposal of the vehicle.

However, it is important not to underestimate the technical and regulatory complexity of accurately measuring the CO<sub>2</sub> emissions associated with WTT and LCA analysis. In fact, this involves a multiplicity of actors and process steps, often located in different countries inside and outside the EU. The lesson learned from the policy debate over the implementation of Article 7a of the FQD is that a simplified and pragmatic approach should be sought.

CO<sub>2</sub> emissions standards for vehicles offer the best opportunity for an effective and technology-neutral regulatory environment to create a holistic CO<sub>2</sub> market for road transport. Therefore, a CO<sub>2</sub> credit mechanism should be devised to make the reduction in CO<sub>2</sub> emissions generated on a WTT basis (and eventually from an LCA perspective) count for meeting vehicles' CO<sub>2</sub> targets. This proposal builds on one presented in the previous chapter, with two important new elements:

- a. The CO<sub>2</sub> credits generated from all steps in the WTT and TTW chain (and eventually from LCA) would count for the vehicle emissions standard.
- b. The vehicle emission standard would become the only regulatory instrument driving the reduction of CO<sub>2</sub> emissions in road transport. The RED II, ETS and other regulations would cease to be used for similar scopes, avoiding the risk of overlaps between different regulations. This would solve the problem of double regulation and regulatory overlap.

For the calculation of the CO<sub>2</sub> credit certificates – let's call them CO<sub>2</sub>CC – the following key points should be considered.

- The CO<sub>2</sub>CC would be issued by fuel suppliers, and consist of:
  1. Proven GHG emission reduction in the WTT phase of the production of fuels used in the EU road transport system (for example, the adoption of CCS and the use of renewable electricity and “green hydrogen”).
  2. Proven WTW GHG emissions reduction from the use of recycled or renewable CO<sub>2</sub> in the formulation of the fuel, which would count towards net CO<sub>2</sub> emissions from the production of that fuel (for example, the production of renewable PTL fuels and advanced biofuels).

### 3. Other measures for the short and medium term

Other measures could be considered to stimulate R&D and unlock investment in low-carbon technologies in EU refineries and their products over the short and medium term. The following (non-exhaustive) list is intended only for reference and will be the subject of future detailed analysis:

- **Fiscal measures:** A number of instruments based on lower taxation of low-carbon products could be used. While fiscal measures are a prerogative of Member States and EU-wide rules require unanimous approval at EU level, a common reference framework could be established linking excise duty – in the case of transport fuels – to the GHG emissions associated with each fuel.
- **Incentives for R&D and for early-mover investments:** The development of low-carbon technologies for refineries and for their products, both in the R&D phase and in the demonstration and early deployment phases, could be co-funded publicly. A public fund could be established at EU or country level or both, and the funding could be bid for at a public auction. So projects to develop low-carbon technologies would compete based on cost, the potential for GHG reduction and the likelihood of success.
- **Long-term contracts with public counterparties:** A public body (e.g. a government) could establish a penetration target for low-carbon fuels in the reference market – that is, a target for the annual supply of low-carbon fuels. A public auction could be held, where prospective suppliers would bid for a “contract for difference”. The bids would consist of an annual volume of fuel to be supplied as well as the price differential between the low-carbon fuel they would supply (“strike price”) and the corresponding fossil product (“reference

price”). The difference between strike and reference prices would reward the investment, and the auction would select the most competitive projects.

- **Public procurement:** Public agencies and other government bodies purchase goods and services, including fuels for transport and heating. Public procurement could stipulate that a given share of purchases consist of low-carbon liquid fuels from new, developing technologies. In this case, the contract should have a minimum duration of 15 years so as to provide more certainty to investors in low-carbon liquid fuels.

## 4. Regulatory development over the longer term

Three important elements need to be further studied and thoroughly analysed, in order to define the most effective and efficient long-term policy for carbon emissions reduction in the EU.

1. A comprehensive, holistic approach to GHG emissions linked to every activity and technology. As previously discussed with reference to road transport, appropriate consideration should be given to the greenhouse gases emitted during all the phases of an activity, based on a life-cycle approach. This principle is valid not only in transport but also in every other sector of the economy. The life-cycle analysis methodology needs to overcome issues related to its complexity. But it deserves all the necessary effort and time to make it a practical and reliable instrument for regulatory purposes, as it reduces the risk of sub-optimal decisions in investment and technology strategy.
2. An economy-wide carbon price applied to all sectors of the economy, as the sole and most cost-effective means to reduce carbon emissions in the EU. The progressive convergence of GHG abatement costs across the economy should be the longer term regulatory framework. The inclusion of effort-sharing sectors (transport, agriculture, buildings, etc.) under a cross-sectoral cap-and-trade system of some kind, or an economy-wide carbon tax, are amongst the possibilities. During the transition, moreover, a sectoral approach could be maintained, while allowing the trade of CO<sub>2</sub> credits (certificates) between sectors. In summary, there is ample scope to carefully study the different solutions, and the prize of an economically optimal system for carbon reduction in our society would justify the effort.
3. Protection of the international competitiveness of the EU industry and economy must remain a guiding principle of the policy framework, as the costs of climate regulations are significantly different in the EU and other competing world economies. In particular, during the transition towards a globally consistent carbon price, economies like the EU that are exposed to higher costs should be shielded from unfair competition. Effective carbon leakage protection should be looked at, as should border adjustment mechanisms for CO<sub>2</sub> embedded in imported products. competition. Effective carbon leakage protection should be looked at, as should border adjustment mechanisms for CO<sub>2</sub> embedded in imported products.



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