



Hydrogen
Europe

Hydrogen Europe Position Paper

Funding for hydrogen mobility

November 2024

I. Executive summary

When it comes to fighting climate change, Europe is at crossroads. Time is running out and climate targets set by the previous Commission are yet to be fully translated into reality. This limbo opens the door for criticism and political backlash. This is especially the case for road transport, a sector that is extremely sensitive politically yet sorely needs support to decarbonize faster. **Hydrogen Europe is fully committed to contributing to the transition towards a climate neutral Union and, for this reason, believes that existing financing tools for the decarbonisation of road mobility should be updated and upgraded for targets to materialize.**

This paper highlights that **inconsistent and unsynchronized funding schemes form part of the reason why hydrogen in mobility is taking time to ramp up**. Instead, a coherent set of financial support measures, ideally coupled with other budgetary and non-budgetary tools, would unlock the potential of hydrogen and speed up the decarbonisation of private and commercial road transport. It is also important that the framework conditions are designed in such a way that they give companies planning security and technology openness. If certain criteria only apply for a limited time or to specific technologies, companies need to know at an early stage what will apply afterwards in order to design sustainable and scalable solutions. Funding programs should also not impose unnecessarily harsh restrictions, but rather give companies more freedom, which is particularly important in the ramp-up phase of the market.

A better coordination between funding programmes is also one of the suggestions put forward by the latest Clean Hydrogen Partnership report on hydrogen policies and funding strategies.¹ The European Green Deal and Fit for 55 package targets require a massive scale-up of annual hydrogen production, estimated by recent market reports from Deloitte and Goldman Sachs at around €1,2 to €2,6 trillion by 2050.² The industry is ready to commit to the challenge but currently discouraged from taking final investment decisions. Considering the upcoming start of discussions on the new Multiannual Financial Framework, it is high time to redesign existing instruments (including rules on state aid³), to provide a further push and speed up the hydrogen mobility transition. It is also important that national and EU funding programmes are evaluated across the EU to identify funding gaps.

This document identifies relevant financing instruments and examples available at national level deemed worthy of consideration across a wider number of Member States. Annex I also provides an overview of the funding streams that currently support the development of hydrogen road mobility: the Alternative Fuels Infrastructure Facility (AFIF), the EU ETS Innovation Fund, the Clean Hydrogen Partnership, the LIFE programme as well as relevant state aid rules.

Summary of recommendations:

- National governments: Complement existing mechanisms with OPEX support for both stations and vehicles. Inspiration should be taken from the German Deutschlandnetz, Dutch SWiM scheme, Austria's ENIN scheme or Norway's Enova programme.
- National governments: Work towards the creation of a fully consistent legal framework to minimize transition times and costs.

¹ Clean Hydrogen Partnership, [Synergies with Member States and Regions – Hydrogen Policies and Funding Strategies from European Countries' National Practitioners](#), 2023

² Hydrogen Europe, [Clean Hydrogen Monitor](#), 2023

³ Hydrogen Europe, [New State Aid Rules: a Boost for Hydrogen Tech and Deployment](#), 2023

- National governments: Update and bolster existing funding streams to ensure they are still fit for purpose and support industry competitiveness.
- European Commission: Address the low support for mobility projects in the Innovation Fund and H2 Bank with a Sustainable Transport Investment Plan (STIP) focused on OPEX.
- European Commission: Align the AFIF with the full 2021-2027 CEF Transport funding period, increase the level of ambition of AFIF beyond 2027 and include support for hydrogen powered fleets.
- Industry: Adopt a collaborative approach to project development.
- Industry: Ensure timely delivery of vehicles and infrastructure.

II. Current issues

The recent wave of legislative initiatives will require all new light duty vehicles and urban buses sold on the market to be zero emission by 2035, plus a 90% reduction of CO2 emissions from heavy duty vehicles in 2040. On top of that, the Alternative Fuels Infrastructure Regulation (AFIR) mandates an EU-wide hydrogen refuelling network to be fully deployed by 2030.

Within this context, the growth rate of hydrogen fleets is positive, but the absolute numbers are still very limited as costs are still comparatively high: the average annual growth since 2016 is 33,5% in the light duty segment and 41% since 2017 for heavy-duty vehicles. In contrast, the light duty fleet counts 5045 vehicles and the heavy duty one only 442.⁴ The same can be said for HRS: despite good growth rates, there are only 155 points across EU27 dispensing hydrogen at 700 bar and 114 at 350 bar.

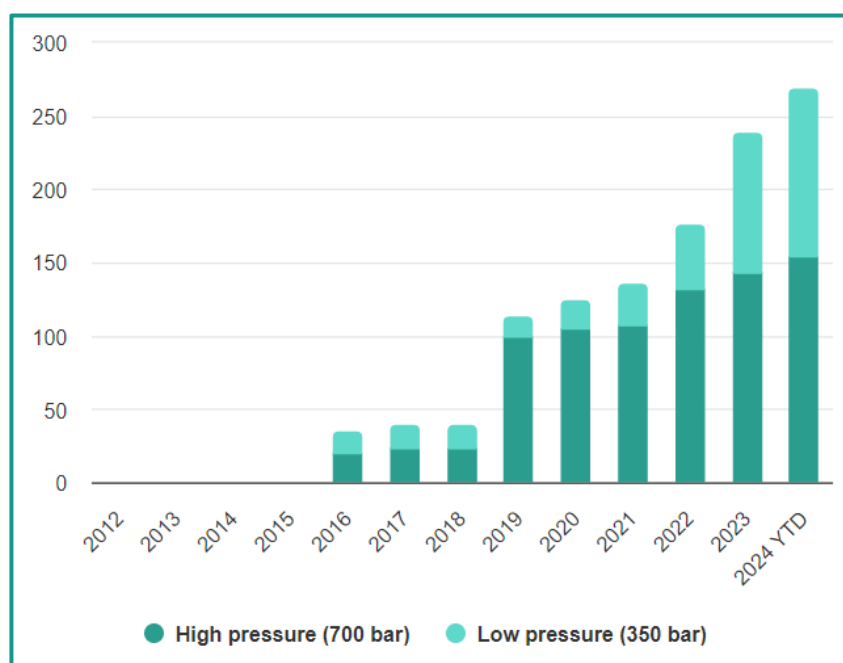


Figure 1: total number of hydrogen refuelling points in EU27 (source: EAFO)

⁴ European Commission, [European Alternative Fuels Observatory](#)

Back in 2021, AFIR impact assessment estimated⁵ CAPEX expenses for HRS to be around €4 million for a medium-sized station (one tonne of hydrogen per day, which eventually became the actual reference in the final law). That value is expected to decrease over time to below €3 million as of 2030. For stations half that size, the expected cost would be slightly over €2 million. For a single station those numbers constitute an important obstacle that has obvious consequences for business models and, eventually, end users. Lessons learnt from real life indicate that a station starts to be profitable when it serves 10 to 15 trucks per day⁶. As of today, deployment of stations is happening but adequate demand for each of them is yet to materialize. On the vehicle side, companies and private consumers face important capital costs and, currently, a limited choice.

Therefore, support to early movers is needed in the meantime to ensure the ambitious targets are reached: **facing tight deadlines, there is no place for inaction. Industry and policymakers must urgently work on ramping up hydrogen mobility in Europe to transition away from fossil fuels as fast as possible. At the current pace of deployment, the targets will not be achieved.** This in turn will make it unlikely for the industry to meet emissions reduction targets set in the CO2 Emission Standards regulations as well as miss the 55% greenhouse gas emission reduction target by 2030.

III. Overview of selected national funding instruments

The Netherlands

When it comes to hydrogen in the transport sector, the Netherlands is one of the most active Member States, having recently launched another funding stream to further encourage its ramp up. The Hydrogen in Mobility Subsidy Scheme (SWiM) aims at contributing to the objectives set in AFIR. Combining the acquisition of vehicles and the deployment of HRS, the programme ensures security of both demand and supply, with a view to making stations profitable as soon as possible. Interestingly, funding seekers need to apply as a partnership between HRS operator(s) and transport company/ies, and the partner running vehicles must commit to use 30% of the HRS capacity.

€125 million are being earmarked to support deployment of thousands of vehicles and set up 40 new HRS; the scheme started in March 2024 and will run until 2028. CAPEX costs for HRS are covered up to 40%, while the price difference between the hydrogen vehicle and its diesel equivalent is covered up to 80%.⁷ Despite OPEX are not covered, **a financing mechanism that simultaneously supports HRS and vehicles is increasingly considered as the right approach and should be extensively replicated.**

Norway

In April 2024, the government announced a restructuring of their national funding programmes for zero emission heavy duty vehicles, merging the two previous funding streams for hydrogen and battery vehicles.

It is worth mentioning the new design of the programme⁸ that is based on a competitive bidding system and funding to applications that guarantee the “greatest CO2 reduction per krona”: bids asking the less support per kilo of avoided CO2 are ranked higher, meaning they are more likely to receiving funding. The maximum subsidy rate is 60% of the additional costs compared to a comparable diesel

⁵ European Commission, [Staff Working Document Impact Assessment Accompanying the Proposal for a Regulation of the European Parliament and of the Council on the Deployment of Alternative Fuels Infrastructure, and Repealing Directive 2014/94/EU of the European Parliament and of the Council](#), 2021

⁶ Fuel Cells Works, [Netherlands: Subsidy of 125 Million in Hydrogen Infrastructure for Vehicles](#), 2023

⁷ H2View, [The Netherlands Announce H2 Subsidy Scheme](#), 2023

⁸ ENOVA, [Tunge Nullutslippskjøretøy](#), 2024

vehicle; any heavy-duty vehicles over 4 tonnes (including buses) is eligible for support, as long as it is a brand-new vehicle. Hydrogen trucks can be awarded 40% more funding compared to BEVs because of a Competitive Readiness Index. This advantage is limited to 125 fuel cell and 125 H2ICE trucks. The programme has monthly deadlines to ensure faster processing times and allocation decisions. **Lastly, the serious effort to reduce deployment times as much as possible through faster bureaucratic procedures is much welcomed.**

Germany

As of today, many funding programmes targeting the mobility sector have either been cancelled or not extended. This is likely to be highly detrimental to the deployment of the technology and may jeopardize the reaching of the AFIR targets and the country's wider road transport decarbonization objectives.

However, a potentially attractive funding mechanism could be created based on the Deutschlandnetz, an existing scheme that aims at deploying recharging points for battery electric vehicles. The scheme consists of a tendering procedure that provides staggered fees over a contract term of 8 years to cover both CAPEX and OPEX. This way, the utilization risk would be partly on the State, whereas the operating risk remains entirely with the operator. Additionally, public funds used would be refinanced with a share of the operators' refuelling revenues. The mechanism is intended to ensure operators plan for the long term without only focusing on short-term profits.

Italy

Using money from the Recovery and Resilience Facility, the Italian government published two funding rounds for HRS in road transport over the course of 2023. A total of €230 million has been allocated for the deployment of a nationwide HRS network, to serve as a basis to meet the national AFIR target. 55 HRS will be operational by Q2 2026. Despite the programme only funds up to 50% of CAPEX and no vehicles, it lays down a solid basis for the country to progressively ramp up national HRS network, also in light of the 2027 intermediate target. **However, significant questions on how to keep operating such a developed network in the short term remain, as expenses for running those stations are not covered by any type of support. Priority should now be given to the implementation of derisking mechanisms.**

Austria

As part of its national hydrogen strategy, Austria has a number of national funding schemes which fund hydrogen projects. The funding programme 'Zero-emission Commercial Vehicles and Infrastructure' (ENIN) supports companies in converting their fleets to non-fossil-fuel-powered commercial vehicles and in setting up the refuelling infrastructure required for these commercial vehicles. These programmes have been financed by NextGenerationEU funding, with ENIN continuing with funding for hydrogen in road transport.

IV. Recommendations: Measures to support rollout

As the implementation phase of the decarbonisation effort starts and whilst the market is not yet mature, it is essential for the hydrogen industry to have access to funding opportunities that are fit for purpose. Previous streams were designed to kickstart the transition and encourage early rollout; they have worked but now need reinforcement to sustain a new phase of the process.

The absence of tools aimed at supporting **the scale-up and operation of vehicles and stations** increasingly appears as key stumbling block. **Economic support to help companies bear the OPEX of both stations and vehicles is urgently needed.** Such support, coming from EU, national and local levels, would be gradually phased out and eventually stopped as soon as the market reaches maturity, as has been the case in other OPEX funding programmes (e.g. RES). This should be integrated with updated incentives and funding programmes aimed at helping companies with CAPEX investment and to cover the cost premium of fleet operators. Exemptions from levies and taxes could also help minimize OPEX and should therefore be considered.

Due to the important economic effort, **it is crucial to minimise transition costs thanks to the enforcement of a coherent legislative framework throughout Europe.** OPEX of a hydrogen heavy duty vehicle could be greatly reduced with updated road tolls for zero emission vehicles and favourable taxation for hydrogen. To further reduce risks, other complementing measures should be taken; more vehicles in operation would generate higher demand and greater volumes, ultimately unlocking economies of scale.

To get there, some key issues are still missing (non-exhaustive list):

- **Swift implementation of EU legislation at national level: AFIR first, then the new regulations CO2 emission standards for all vehicles,** the revised Weights and Dimensions Directive (once adopted) and the transposition of RED3 transport targets.
- **Purchase incentives** would help overcome the high upfront costs of hydrogen LDVs and HDVs. Those incentives should be progressively phased out in line with market penetration levels, ensuring affordable support schemes and encouraging innovation and cost reduction overtime.
- Implementation of the Eurovignette Directive and **updated road charging schemes** would create an immediate incentive for companies interested in switching to zero emission vehicles, who would benefit from reduced road charging tolls.
- **Leasing agreements** can be designed in different ways and range from full repayment and purchase of the vehicle at the end of the contract or a more basic renting model.
- Development of **service-based models:** some vehicle manufacturers start to offer vehicles as part of a broader package of services that includes maintenance, supply of hydrogen and/or customer support in exchange for a monthly subscription. The customer does not own the vehicles but is free to operate a hydrogen vehicle.
- Vehicle and infrastructure deployment has an intrinsic local dimension. **Coordination with local and regional authorities should be improved,** especially in cross-border areas.

V. Annex I: EU funding instruments

The abovementioned changes would complement the current support made available by the EU through different programmes. Hereunder a summary of existing funding streams that can support the development of hydrogen road mobility. A detailed analysis can be found in Hydrogen Europe’s November 2023 issue of the Clean Hydrogen Monitor.⁹

Alternative Fuels Infrastructure Facility (AFIF)

Part of the broader Connecting Europe Facility (CEF) funding stream, AFIF is the flagship funding programme dedicated to supporting the deployment of alternative fuels infrastructure across all modes of transport. The last phase of the programme (2021-2023) made €1,3 billion available¹⁰, and eventually contributed to the construction of 200 hydrogen refuelling stations (HRS) and 32 electrolyzers. In February 2024, the European Commission announced the opening of the second phase¹¹ making €1 billion available, split into €780 million under the General envelope and €220 million under the Cohesion envelope. This was followed by subsequent announcements¹² on results of the fifth and final cutoff date from phase one, where additional 48 stations and 3 electrolyzers have been granted a total of €127 million. Lastly, it is important to point out that only 25% of total AFIF funding has been allocated to HRS, as our calculations show in the table below. At the same time, the demand for support of alternative fuels infrastructure deployment keeps growing: the last CEF cutoff date saw requests for funding that totaled €609 million.¹³

Cut off date	Number of projects	Selected H2 projects + number of HRS	Total funding	AFIF funding for HRS	% funding for HRS
1 st (Jan. 2022)	15	3 projects – 3 HRS	86,498,692€	8,025,214€	9.3%
2 nd (June 2022)	24	10 projects – 57 HRS	292,532,177€	99,143,726€	33.9%
3 rd (Nov. 2022)	26	12 projects – 64 HRS	188,829,989€	98,331,653€	52%
4 th (April 2023)	26	6 projects – 18 HRS	352,060,575€	27,208,956€	7.7%
5 th (Nov. 2023)	42	11 projects - 48 HRS	420,745,307€	124,210,629€	29.5%
Total funding	133	42 projects – 190 HRS	1,340,667,000€	356,929,178€	25,3%

Figure 2: Share of AFIF funds allocated to HRS (Source: European Commission; Hydrogen Europe elaboration)

Whilst AFIF enjoys high support from regions and industry active in hydrogen mobility, commitment should be aligned with the 2021-2027 CEF Transport funding period. Short-term commitments of only 2 or 3 years are insufficient for project developers to fully engage with the sector and for investors to gain the long-term visibility needed. A longer funding horizon is essential to foster confidence and ensure sustained investment in the hydrogen refueling network.

⁹ Hydrogen Europe, [Clean Hydrogen Monitor](#), 2023

¹⁰ CINEA, [CEF Transport Alternative Fuels Infrastructure Facility Call for Proposal](#), 2021

¹¹ CINEA, [CEF Transport Alternative Fuels Infrastructure Facility \(AFIF\) Call for Proposal](#), 2024

¹² CINEA, [Transport Infrastructure: Over EUR 424 Million of EU funding to Boost Zero-Emission Mobility](#), 2024

¹³ CINEA, [CEF Transport: Over €609 Million Requested for Alternative Fuel Supply Infrastructure](#), 2024

The European Commission should increase the level of ambition of the Facility beyond 2027, as it is a key instrument to ensure the deployment of HRS across the EU TEN-T network. Total committed money (including the €1 billion announced for 2024/2025) for AFIF represents less than 10% of total CEF T budget.

Approximately €356 million, representing only around 25% of the total AFIF budget (and barely 1% of CEF T budget) has been allocated to support hydrogen refueling stations (HRS). This indicates that the effective financial support for HRS deployment is relatively small compared to the overall funding pool. Given the substantial costs involved in establishing and operating HRS infrastructure, this limited allocation falls short of addressing the growing need for a robust hydrogen refueling network, especially as Europe aims to scale-up hydrogen mobility in both light and heavy-duty transport sectors.

Expanding the eligibility of costs to include hydrogen-powered fleets would provide strong momentum for stakeholders to advance their decarbonization efforts. This measure could help address the “chicken and egg” challenge of infrastructure facing a lack of secured off-take due to missing hydrogen-powered vehicles, and vice versa. Following the model of waterborne transport, the funding could be limited to the cost difference between the cost of the propulsion system of a fossil-fuel vessel and a zero-emission vessel.

Innovation Fund

The EU ETS Innovation Fund is another funding instrument available for companies to get financial support for the deployment of innovative net-zero technologies. Results from the 2023 call for proposals¹⁴ have been just announced. The European Commission highlighted that the requests for funding amount to €24,6 billion, over six times the available budget. Out of 337 applications, only 34 of them are on mobility, including land transport, hinting at a possible mismatch between the financing tool and the sector’s needs. The low success rate of mobility related projects, including road transport, supported by the Innovation Fund should be assessed in detail and contribute to the design of an upcoming Sustainable Transport Investment Plan. Such plan should focus on scaling-up and prioritise investments in transport decarbonization solutions. The fund can be used to support all types of clean hydrogen production projects and the end-use of clean hydrogen or clean hydrogen-based products in all parts of the value chain, including HRS. Hydrogen transmission and distribution projects can be funded either indirectly or even directly but, on the condition, they are integrated within a larger production or end-use project.

Clean Hydrogen Partnership

The Clean Hydrogen Partnership supports hydrogen R&I to develop the European renewable hydrogen value chain with a budget of €2 billion, provided by the EU and private sector investments respectively. The 2024 call for proposals makes €113.5 million available for projects to support the development of hydrogen technologies across the whole hydrogen value chain, including transport applications.

¹⁴ CINEA, [Innovation Fund: Overwhelming Response to the 2023 Net-Zero Technologies Call](#), 2024

EU LIFE programme

The LIFE programme is the EU's funding instrument for the environment and climate action. This programme is an important funding source for hydrogen projects: the Climate Change and Mitigation sub programme finances projects which focus on 700 bar HRS, including green hydrogen production and the demonstration of innovative and cost-effective hydrogen technologies and processes.

VI. Annex II: State Aid rules: GBER and CEEAG

The General Block Exemption Regulation (GBER)¹⁵ is meant to enable Member States to give higher amounts of public money to companies without having to request prior permission from the European Commission. This instrument is expected to have a positive impact on the deployment of hydrogen as it covers, among others, the deployment of fleets and hydrogen refuelling stations (HRS, using renewable and low-carbon hydrogen). State aid measures are divided into different categories, two of which being the acquisition and leasing of clean vehicles and the deployment of recharging or refuelling infrastructure.

For what concerns HRS, the following applies:

- Notification thresholds: €30 million per undertaking per project and, in the case of schemes, an average annual budget of €300 million
- Aid intensity: in case of a bidding process, funding could cover up to 100% of CAPEX costs. If not, aid intensity varies between 20% and 50% based on company size.
- Requirements: hydrogen supplied at HRS can be of any type until 2035 at the latest; after that date, only renewable hydrogen (except for biohydrogen) is eligible. It is important to note that in Member States where vehicles powered at least partially by hydrogen represent less than 3 % of the total number of vehicles of the same category registered, the necessity of the aid shall be presumed.

For vehicles, the following applies:

- Aid intensity: in case of a bidding process, funding could cover up to 100% of costs. If not, it's 20% of eligible costs +30% for small undertakings or +20% for medium-sized undertakings.
- Requirements: purchase or leasing of light- or heavy-duty vehicles

Updated EU State aid Guidelines on Climate, Environmental Protection and Energy (CEEAG)¹⁶ are in force since January 2022; they address larger individual state aid measures and schemes that are not exempted under GBER and require, by means of a notification, a positive assessment from the European Commission before implementation. Categories replicate those listed in the GBER, meaning that hydrogen vehicles and HRS can get additional support. However, it should be again pointed out that eligible costs for HRS are only related to their construction, installation, upgrade or extension.

¹⁵ European Commission, [Commission Regulation \(EU\) No 651/2014 of 17 June 2014 Declaring Certain Categories of Aid Compatible with the Internal Market in Application of Articles 107 and 108 of the Treaty](#), 2014

¹⁶ European Commission, [Communication from the Commission – Guidelines on State Aid for Climate, Environmental Protection and Energy](#), 2022

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