

CEP response to the Call for Evidence of AFIR

Review of Regulation (EU) 2023/1804 on the deployment of alternative fuels infrastructure (AFIR)

1. General position

The Clean Energy Partnership (CEP) welcomes the review of AFIR and supports the European Commission's objective of ensuring a sufficient, user-friendly and future-proof network of alternative fuels infrastructure across the Union.

In road transport, this requires that AFIR continues to provide a credible minimum backbone for hydrogen refuelling infrastructure, while being refined to better reflect actual market needs - in particular for heavy-duty transport.

From CEP's perspective, the review should not weaken the existing 2030 hydrogen targets. These targets remain the minimum basis for planning certainty, investment decisions and cross-border operability. At the same time, early deployment experience shows that compliance with the minimum requirements set out in Article 6 does not necessarily ensure practical suitability for heavy-duty use cases. For example, stations may meet formal capacity thresholds but still face limitations in terms of refuelling performance, site accessibility or operational availability. AFIR-compliant stations should therefore be defined more precisely in operational and technical terms.¹

At a broader level, hydrogen mobility depends on the coordinated development of production, distribution and application. Infrastructure deployment should therefore not be assessed in isolation, but as part of a system in which availability, logistics and vehicle deployment evolve together. CEP therefore recommends a review approach based on six principles:

maintain the 2030 hydrogen backbone as a minimum baseline;

- refine Article 6 to better reflect operational requirements, especially for HDVs;

¹ <https://cep.expert/en/design-of-high-performance-hydrogen-refuelling-stations-for-heavy-goods-vehicles/>

- Establish 700 bar as an interoperable standard, complemented by LH₂ solutions for supply and refuelling;
- strengthen interoperability through clearer technical specifications and harmonised data requirements;
- ensure that compliance with technical specifications is validated by independent third parties, rather than relying on self-certification, across both hydrogen supply and refuelling infrastructure; and
- simplify implementation through clearer definitions and processes, rather than lower ambition.

2. Maintain the 2030 hydrogen targets

CEP considers the current 2030 AFIR hydrogen targets an essential minimum and recommends that they are neither weakened nor delayed.

At the same time, achieving these targets depends on enabling framework conditions and realistic implementation timelines. Hydrogen refuelling infrastructure projects involve complex planning, permitting and construction processes, which can take several years and are subject to constraints such as site availability, regulatory procedures and system integration. Regulatory stability and timely translation into national frameworks are therefore key to support implementation. Achieving these targets will also depend on the availability of adequate and continuous funding instruments at EU and national level, supporting timely infrastructure deployment in line with market development.

The 2030 targets should be treated as a minimum floor, not a ceiling. The review should focus on ensuring that the infrastructure deployed under AFIR is fit for purpose and usable in practice, rather than revisiting the overall level of ambition.

Experience from early deployment indicates that infrastructure development, vehicle uptake and hydrogen supply need to evolve in a coordinated manner. While early infrastructure availability is important to enable market entry, its effective use depends on the parallel development of vehicles and supply chains.

A more integrated and synchronised approach is therefore required, ensuring that infrastructure deployment is aligned with actual demand and operational use cases, thereby supporting both usability and economic viability.

3. Ensure practical usability for heavy-duty transport

A key limitation of the current AFIR framework is that formal compliance does not necessarily translate into operational usability for heavy-duty vehicles. CEP recommends refining Article 6 to ensure that stations counted towards AFIR targets are suitable for real-world HDV operations. This should include:

- maintaining 350 bar as an established solution in existing infrastructure and specific applications, while ensuring interoperability with 700 bar and LH₂ systems
- continuing the roll-out of 700 bar refuelling as the primary complementary standard for new HDV-focused infrastructure;
- Prioritise the roll-out of LH₂ refuelling infrastructure as an essential solution for high-throughput and long-haul heavy-duty transport;
- ensuring scalable infrastructure design, allowing stations to expand capacity in line with demand evolution;
- aligning capacity definitions with actual demand patterns rather than purely nominal 24-hour values;
- setting clear and realistic expectations for infrastructure scalability, ensuring that stations can expand capacity in line with demand;
- ensuring site layouts are suitable for heavy-duty vehicle access;
- enabling reliable back-to-back refuelling and predictable state of fill; and
- setting clear expectations for availability and uptime.

In this context, capacity definitions require particular attention. In the context of AFIR, the concept of “minimum cumulative capacity” requires clarification, as current wording may lead to interpretations that are primarily based on storage volume rather than actual refuelling performance. This

reflects a structural limitation in the current definition, where capacity is not sufficiently linked to operational dispensing performance, which is the relevant parameter for heavy-duty usability. Nominal capacity alone is not a sufficient indicator of performance, as demand in heavy-duty applications is typically concentrated in shorter time windows.

At the same time, a more precise definition of capacity should not lead to a de facto tightening of requirements that would significantly increase costs or exclude existing stations from AFIR compliance. The objective should be to better reflect real-world operating conditions, not to raise barriers for infrastructure deployment. A more differentiated approach should therefore clarify:

- whether capacity refers to nominal or deliverable output;
- the relevant time basis for assessment;
- how peak demand and availability are considered;
- how different station configurations are treated.

More fundamentally, infrastructure performance should be assessed from a user perspective: what matters is not nominal daily capacity, but the ability to enable continuous and predictable refuelling under real operating conditions.²

4. Retain 350 bar, 700 bar and explicitly recognise LH₂ as an important hydrogen refuelling and supply technology

CEP supports maintaining 350 bar as the existing (legacy) standard for hydrogen mobility, alongside 700 bar as the primary interoperable standard for new deployments, while recognising LH₂ as an integral hydrogen refuelling and supply technology. This multi-standard approach remains essential for interoperability, continuity and market development.

At the same time, limiting AFIR implementation to a single refuelling concept would not reflect the operational realities of heavy-duty transport or recent technological progress. For long-haul applications, high-throughput corridors and intensive freight operations, liquid hydrogen (LH₂) offers clear advantages in terms of refuelling time, energy throughput, scalability and utilisation.

LH₂ should therefore be explicitly recognised within AFIR as a strategically relevant complementary option alongside 350 bar and 700 bar systems,

² See also: <https://cep.expert/en/design-of-high-performance-hydrogen-refuelling-stations-for-heavy-goods-vehicles/>

rather than as a niche or purely optional technology. Enabling combined station concepts that integrate gaseous (350/700 bar) and liquid hydrogen is essential to ensure flexibility, future-proofing and efficient use of infrastructure investments.

CEP therefore recommends:

- maintaining 350 bar as the established baseline standard, ensuring continuity of existing infrastructure and fleets;
- explicitly enabling and facilitating combined gaseous and liquid hydrogen station concepts;
- recognising 700 bar as the primary complementary standard for new HDV-oriented deployments;
- recognising LH₂ as a key solution for specific heavy-duty use cases, in particular long-distance and high-throughput operations; and
- avoiding overly rigid or prescriptive definitions that would constrain technological development and risk locking in sub-optimal infrastructure designs, while ensuring scalable expansion of infrastructure in line with demand.

5. Provide a post-2030 perspective (2035–2040)

The review should establish a clearer outlook beyond 2030. Infrastructure and vehicle investment cycles extend well beyond the current AFIR horizon. A longer-term perspective would improve planning certainty and support a more continuous and coordinated market development.

CEP therefore supports the introduction of indicative targets for the period beyond 2030, providing guidance for infrastructure development towards 2035, 2040 and beyond. Such targets should be aligned with expected vehicle deployment and operational requirements, particularly for heavy-duty transport, and should reflect the need for a progressive densification and expansion of the network over time.

In addition, the current corridor-based approach could be complemented by more demand-oriented planning elements, for example by considering regional fleet concentrations, traffic volumes or capacity needs where appropriate. A forward-looking framework should therefore include:

- a gradual increase in network density along the TEN-T core and compre-

- hensive network, reflecting growing demand and utilisation;
- continued development of TEN-T coverage beyond the core network;
- stronger consideration of urban and regional nodes with growing fleet demand;
- increased capacity and redundancy in high-traffic corridors where justified; and
- a closer alignment with vehicle deployment trajectories and operational requirements.

This would support a more predictable, demand-oriented and scalable infrastructure rollout across the European Union.

6. Strengthen interoperability through technical clarity

Interoperability is a central objective of AFIR and should be reinforced in the review.

CEP recommends giving greater visibility to relevant technical standards that ensure compatibility and cross-border usability, including:

- Adaptation to new refuelling protocols (e.g. further development of SAE J2601 or ISO standards)
- Updating of refuelling tables and control logic
- Implementation of new/adapted vehicle interfaces
- Integration of new vehicle requirements or pressure/temperature profiles
- New communication technologies (Advanced Communication as described in the forthcoming ISO 19885-2)

A technology-neutral approach should be maintained but accompanied by sufficient technical clarity to ensure interoperability in practice.

7. Clarify responsibilities for site analysis and permitting

AFIR requires an analysis to determine suitable station locations, but the governance framework remains unclear.

CEP recommends clarifying:

- the responsibilities of Member States and relevant authorities;
- the minimum criteria for site selection;
- coordination mechanisms with industry and local stakeholders; and
- the integration of cross-border corridor considerations.

In addition, experience from project development shows that permitting complexity and unclear system classification of hydrogen refuelling stations can delay deployment. Clearer definitions and streamlined procedures would accelerate implementation without compromising safety.

8. Improve hydrogen data requirements

CEP strongly supports strengthening hydrogen-specific data requirements under AFIR.

In addition to general AFIR data, hydrogen infrastructure requires more detailed technical information to enable routing, interoperability and efficient operation.

CEP recommends developing a harmonised data framework covering, for example:

- fuel type and pressure level;
- connector type and applicable standard;
- refuelling protocol;
- vehicle class compatibility;
- station capacity and number of dispensers;
- maximum refuelling quantities;
- Open source geographical information for use in navigation systems and
- availability and low-stock indicators.

Data definitions should be clear, consistent and suitable for automated processing.

9. Simplification through clarity

CEP supports the objective of simplification and burden reduction.

In the context of hydrogen infrastructure, simplification should primarily be achieved through clearer and more harmonised rules, including:

- consistent definitions of station capability and capacity;
- standardised planning approaches;
- harmonised technical specifications; and
- improved transparency through monitoring and reporting.

This would reduce complexity for both authorities and investors without lowering the level of ambition.

10. Conclusion

The AFIR review should reinforce the existing framework while making it more practical and future-proof.

A predictable and reliable infrastructure is a prerequisite for both decarbonisation and economic resilience. Reducing dependency on volatile fossil fuel markets requires infrastructure that enables stable and controllable operating conditions for transport operators.

CEP recommends maintaining the 2030 hydrogen targets as a minimum baseline, while refining Article 6 to ensure real-world usability - particularly for heavy-duty transport.

Key priorities include:

- preserving the 2030 backbone;
- strengthening HDV-specific operational requirements for hydrogen refuelling stations, including throughput, reliability and availability;
- maintaining 350 bar and 700 bar gaseous refuelling as a baseline, while explicitly recognising LH₂ as a strategically relevant complementary solution for high-throughput and long-haul use cases;
- improving interoperability and data transparency; and
- enhancing clarity in definitions, planning and implementation.

This approach would support a coordinated, scalable and user-oriented deployment of hydrogen infrastructure, ensuring that AFIR requirements translate into infrastructure that is not only compliant, but also fit for purpose for heavy-duty transport across the European Union.