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Targeted stakeholder consultation on a renewed EU Hydrogen Strategy

Fields marked with * are mandatory.

Targeted stakeholder consultation on a renewed EU Hydrogen Strategy

Introduction

The Commission intends to update the EU Hydrogen Strategy to reflect the market and geopolitical developments since its 2020 Hydrogen Strategy COM(2020)301. The strategy should focus on the role of hydrogen in strengthening Europe's competitiveness, resilience and security of supply, and contributing to climate neutrality, paying particular attention to hard-to-electrify sectors.
Since the publication of the first European Hydrogen Strategy in 2020, the EU has put in place a comprehensive regulatory framework. The EU has also introduced a dedicated financing framework to support research, innovation and the deployment of hydrogen, through in particular the Recovery and Resilience Facility, Clean Hydrogen Joint Undertaking and the European Hydrogen Bank. Despite these frameworks, market uptake has progressed more slowly than initially expected, with limited operational capacity and challenges in bringing projects to sufficient maturity.
The upcoming post-2030 framework will be important elements of the future regulatory landscape in view of contributing to the politically agreed target of reducing 90% of greenhouse gas emissions by 2040. The updated hydrogen strategy will promote the role of hydrogen and its derivatives and put forward additional non-legislative enabling measures to address barriers to the uptake of renewable and low-carbon hydrogen and derivatives, by adapting to market realities and international developments.
In this context, the Commission is launching a targeted stakeholder consultation to gather views from relevant parties, focusing on:

1. Horizontal aspects expanding across the entire value chain.
2. Production and demand
3. Infrastructure
4. International aspects and imports from third countries

5. Manufacturing (This section is addressed specifically to stakeholders with experience or expertise in this area. Other respondents may skip this section.)

The results of this consultation will serve as input to the preparation of the new Hydrogen Strategy.
You can save your replies as a draft and finish them later. You can choose to only answer the sections and specific questions which are relevant to you.

Contribution publication privacy settings

For reasons of transparency and openness, in principle, the Commission will publish all contributions to this public consultation. However, you can choose whether you would prefer to have your details published, to remain anonymous when your contribution is published or not to publish either your contribution or your details. **For the purpose of transparency, the type of respondent (for example, 'business association, 'consumer association', 'EU citizen'), country of origin, are always published. Your e-mail address will never be published.**

Select the privacy option that best suits you Additional

- (●) **Public**: Your submission will be published with your name and surname, respondent details, the name of the organisation on whose behalf you reply (where applicable), its transparency number, its size, its country of origin and with your contribution. Your identity and personal data will be also published.
- ( ) **Anonymous**: Your submission will be published without any personal data. Your name and surname, respondent details, the name of the organisation on whose behalf you reply (where applicable) and its transparency number will not be made publicly available. However, the type of respondent, its size, its country of origin and your contribution will be published as received. Please do not include any personal data or your organisation name in the text of the contribution. Also, please ensure that no metadata is included in any files you may attach.
- ( ) **No publication**: Your submission will not be published.

☑ I agree with the personal data protection provisions

About you

I am giving my contribution as

- ( ) Academic/research institution
- (●) Business association
- ( ) Company/business organisation
- ( ) EU citizen
- ( ) Non-EU citizen
- ( ) Non-governmental organisation (NGO)
- ( ) Public authority (national/ regional/local)
- ( ) Other *(please specify below)*

Other, please specify

Where is the main seat of your organisation located?

- (●) EU Member States
- ( ) European Free Trade Association countries (Norway, Iceland, Lichtenstein, Switzerland)
- ( ) UK
- ( ) Other non EU, non EFTA countries, but in Europe
- ( ) Other non EU, non EFTA countries, but outside Europe

Please specify in which country

Sweden

In which region is your organisation operating? [multiple responses possible]

- [x] European Union
- [x] European Economic Area (EEA)
- [ ] Energy Community
- [ ] Other *(please specify below)*

Other, please specify.

In which sector do you/your members operate? [multiple responses possible]

- [x] Electrolyser and electrolyser component manufacturing
- [ ] Fossil-based hydrogen production
- [x] Renewable and low carbon hydrogen production
- [ ] Conventional hydrogen derivatives production
- [x] Renewable and low-carbon derivative production
- [x] (Potential) hydrogen off-take in industry
- [x] (Potential) hydrogen off-take in aviation or maritime transport
- [x] (Potential) hydrogen off-take in road transport
- [x] Transmission and distribution of hydrogen or derivatives
- [x] Storage of hydrogen or derivatives
- [ ] Other *(please specify below)*

Other, please specify:

Please provide a short description of your sector and activities in the above-mentioned areas:

200 character(s) maximum

Hydrogen Sweden (Vätgas Sverige) is the Swedish hydrogen association. Members cover production, infrastructure, industrial and transport end use, technology suppliers, regions and research.

I. Policy related aspects on hydrogen market development and infrastructure

A. General questions

This part of the survey contains questions on the current state of play in the context of the existing regulatory and financial framework, and on additional enabling measures that could be addressed in the updated hydrogen strategy.

1. To what extent do you agree with the following statement?

"Renewable and low-carbon hydrogen can make an important contribution to Europe's transition to a decarbonised economy by 2050, while also enhancing energy security, autonomy and competitiveness."

	Strongly disagree	Disagree	Agree	Strongly agree	No opinion
Please select your answer:	○	○	○	◉	○

Please explain your reply

300 character(s) maximum

Sweden's fossil-free power system and its steel, chemicals, refining and pulp industries make renewable hydrogen a realistic route to deep emission cuts. The contribution depends on cost: unless the price gap to fossil hydrogen is closed, volumes stay marginal.

2. In your view, what should the updated Hydrogen Strategy address in priority?

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- Improve the cost-competitiveness of renewable and low carbon hydrogen and derivatives versus fossil-based ones.
- Contribute to energy system integration, energy storage and energy efficiency
- Accelerate the decarbonisation of hard to directly electrify sectors and processes
- Accelerate the decarbonisation of hard to directly electrify sectors and processes
- Accelerate the scale-up of hydrogen production
- Prioritise the realisation of EU hydrogen pipeline and storage infrastructure
- Strengthen the industrial competitiveness of the EU hydrogen companies and value chain
- *Other 1 (please specify below)*

- *Other 2 (please specify below)*
- Foster innovation in hydrogen technologies
- Support circular economy and environmental sustainability

Other 1, please specify:

100 character(s) maximum

Stable rules: conclude the RFNBO review, then no further changes before 2035

Other 2, please specify:

100 character(s) maximum

Recognise biogenic CO2 as feedstock for hydrogen-based e-fuels and chemicals

Enabling measures

3. From your perspective, which existing measures and instruments have so far been most effective in promoting hydrogen supply and uptake?

Maximum 5 selection(s)

- [x] Sectoral mandates for consumption set out in EU legislation
- [x] Regulatory framework for market- and infrastructure development
- [ ] Criteria for sustainability and greenhouse gas emission performance
- [x] Financial support for research and innovation
- [ ] EU level financial support for market uptake
- [ ] National level financial support for market uptake
- [ ] Simplified permitting procedures
- [ ] Market transparency platforms (such as the EU Hydrogen Mechanism).
- [ ] Other *(please specify below)*

Other [please explain]

100 character(s) maximum

4. In your view, is the Commission's EU Hydrogen Mechanism, an efficient instrument to bring together buyers and sellers on an open and transparent platform?

- ( ) Yes
- (•) No
- ( ) I am not familiar with the platform

Please explain your answer

300 character(s) maximum

Matching buyers and sellers improves transparency, but the platform does not address why off-takers do not sign: they cannot pay the cost gap. To be effective, it needs to be linked to offtake support and other support mechanisms.

B. PRODUCTION AND DEMAND

Renewable and low-carbon hydrogen currently represents less than 4% of total hydrogen production in the EU. At this level of deployment, the EU would not be able to produce the 3 - 4 million tons required annually according to the estimates of the European Commission's 2040 Climate Target Plan Impact Assessment to meet the targets for consumption of renewable fuels of non-biological origin (RFNBO) in industry and transport sectors by 2030.
This section contains questions about the production of and demand for renewable and low-carbon hydrogen in the context of the EU's objectives of economic growth, industrial competitiveness, energy affordability and security of supply. It aims to identify key barriers and enabling conditions for the deployment of hydrogen in line with the existing and upcoming legislative framework.

Barriers to renewable and low-carbon hydrogen uptake

5. Please indicate, in your view, which have been the main barriers hindering the production of RFNBOs and low-carbon fuels?

	Not at all	To a small extent	To a great extent	Fully	I do not know
High electricity prices	○	◉	○	○	○
Volatile electricity prices	○	○	◉	○	○
High CAPEX costs	○	○	◉	○	○
Limited availability of renewable electricity generation	○	◉	○	○	○
Limited availability of PPAs	○	◉	○	○	○
Limited access to components or critical raw materials	○	◉	○	○	○
Limited willingness to sign long-term offtake agreements due to high costs of hydrogen	○	○	○	◉	○
Slow lead times for connecting to the electricity grid	○	○	◉	○	○
High grid connection charges	○	◉	○	○	○
Limited availability of hydrogen transport and storage infrastructure	○	○	◉	○	○
Complex and/or lengthy permitting procedures	○	○	◉	○	○

The efficiency of water electrolysers for hydrogen production	○	◉	○	○	○
Policy uncertainty at EU level	○	○	○	◉	○
Policy uncertainty at national level	○	○	◉	○	○
Insufficient know-how and skills	○	◉	○	○	○
Development of alternative technologies	○	◉	○	○	○
Other *(Please specify below)*	○	○	◉	○	○

Other, please specify:

100 character(s) maximum

PPA and correlation rules add cost in low-emission zones SE3–SE4 with little emission benefit.

Please explain your reply

300 character(s) maximum

Offtake is the main constraint in Sweden. Projects with low-emission power face buyers with limited willingness to pay, too little long-term risk-sharing and multi-year grid connection queues. In bidding zones SE3–SE4, PPA and correlation rules add cost with little or no emission benefit.

6. Please indicate, in your view, which have been the main barriers hindering the increase of demand for RFNBOs and low-carbon fuels in hard to electrify sectors?

	Not at all	To a small extent	To a great extent	Fully	I do not know
High costs of RFNBOs	○	○	◉	○	○
Limited availability of RFNBOs	○	○	◉	○	○
High costs for adapting end use processes to hydrogen	○	○	◉	○	○
Limited availability of hydrogen infrastructure	○	○	◉	○	○
Complex and/or lengthy permitting procedures	○	○	◉	○	○
Risk of carbon leakage	○	◉	○	○	○
Policy uncertainty at the EU level	○	○	○	◉	○
Policy uncertainty at the national level	○	○	○	◉	○
Insufficient know-how and skills	○	◉	○	○	○

Other *(please specify below)*	○	○	○	○	○

Other, please specify:

100 character(s) maximum

Please explain your reply

300 character(s) maximum

Industry exposed to global competition cannot pass on the hydrogen premium. Production support has not closed the gap at the buyer's end, and where the RED III industry target is not transposed nationally there is no obligation that creates willingness to pay.

Enabling measures

7. What additional enabling, non-legislative measures at EU level could help stimulate hydrogen production and/or demand in the EU by 2030 and beyond? [multiple responses possible]

- [x] Demand creation through lead markets
- [x] Financial support for offtake in end-use sectors
- [x] Financial support for production projects
- [x] Reinforced support by the Commission to Member States on effective implementation of the EU regulatory framework
- [x] Enhance support towards hydrogen valleys and industrial clusters (e.g. ports)
- [ ] Improve transparency and de-risking by bringing together suppliers and off-takers (e.g. via the Hydrogen Mechanism)
- [x] Improve integration of hydrogen in the electricity system and its flexibility needs
- [ ] Support the exploration and extraction of natural hydrogen
- [ ] Support hydrogen projects in non-EU countries with high cost-efficiency potential
- [x] Reinforcing financial support for Research & Innovation
- [ ] Other *(please specify below)*

If you selected "Demand creation through lead markets", please specify how and in which sector (s) lead markets should be developed.

300 character(s) maximum

Green steel, fertilisers and e-fuels for shipping and aviation. Use EU-wide low-carbon product labels, minimum low-carbon content in public procurement (construction, infrastructure, defence) and in offshore wind auctions, and keep binding RED III sub-targets with penalties so buyers commit.

Other, please specify:

100 character(s) maximum

8. Which financing tools are better suited to leverage private investment in hydrogen production and/or demand in the EU? [multiple responses possible]

- [x] Investment grants for production and/or demand
- [x] Revenue support for hydrogen production to cover the price gap between fossil hydrogen and RFNBOs (e.g. Contracts for difference, green premium)
- [x] Carbon Contracts for Difference for industrial hydrogen use
- [x] Loan guarantees or other de-risking instruments
- [x] Other *(please specify below)*

Other, please specify:

100 character(s) maximum

Long-term cost-gap support for hydrogen users in shipping, aviation and heavy road transport

Please explain your reply specifying the level of the value chain at which this support should be given

300 character(s) maximum

Support should be given where the gap appears: CCfDs for industrial users, cost-gap support for transport users and a fixed premium for producers, designed to be stacked. Guarantees cut the cost of capital for first plants. Grants remain needed for CAPEX, including transport and storage.

9. What is the most effective way to allocate financial support to hydrogen producers and/or consumers in the EU?

- ( ) Direct award to specific beneficiaries
- ( ) Auction-based support schemes primarily based on price (e.g. single-sided and double-sided auctions)
- (•) Competitive support schemes primarily based on non-price criteria, (e.g. innovation, market maturity, access to infrastructure, secured offtake)
- ( ) Schemes not based on competitive bidding (e.g. first-come-first-served)
- ( ) Other

Other, please specify:

100 character(s) maximum

Please explain your reply

300 character(s) maximum

Price-only auctions have selected bids that later withdrew before FID. Weighting maturity, secured offtake, grid access and realisation guarantees directs money to plants that get built, while price can remain one criterion. Member States should be able to use EU auctions for national support.

10. In your view, should the updated hydrogen strategy prioritise specific end-use sectors for hydrogen and/or its derivatives?

- ○ Yes
- ◉ No
- ○ I do not know

Other, please specify:

100 character(s) maximum

Let binding targets steer use. Key uses: steel, refining, ammonia, shipping and aviation e-fuels

C. INFRASTRUCTURE

Barriers to hydrogen infrastructure

12. What are the main barriers hindering the development of infrastructure projects: pipelines, storages and terminals? [multiple responses possible]

- ☑ High costs limiting the uptake of hydrogen demand (i.e. commitments by demand off-takers)
- ☑ Limited development of renewable or low-carbon hydrogen production
- ☑ Uncertainty about future hydrogen policy landscape
- ☑ Complex or lengthy permitting procedures
- ☐ Insufficient access to skilled workforce
- ☑ High upfront capital costs (CAPEX)
- ☑ Limited cross-border coordination (including diverging regulatory regimes across Member States)
- ☐ Lack of technical standards
- ☐ Other

Other, please specify:

100 character(s) maximum

Enabling measures

13. Which of the following instruments or measures are key to accelerate the development of infrastructure projects?

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- ⠿ Focus support on production and/or uptake of renewable or low-carbon hydrogen.
- ⠿ Improved cross-border planning and coordination
- ⠿ De-risking instruments.
- ⠿ Prioritisation of permitting for strategic projects

- Improved transparency on supply and demand
- Instruments to enable access to debt financing (e.g., bank loans)
- Harmonised technical standards (e.g., for pipelines, ports, or storage)
- Other: *(please specify below)*

Other, please specify:

100 character(s) maximum

14. What de-risking solutions have you implemented at the project level, or do you intend to implement for infrastructure (pipelines, terminals, storages) development?

400 character(s) maximum

As an association we do not build infrastructure. We recommend staged build-out around anchor off-takers in industrial clusters, state guarantees for anticipatory investment and cost allocation over time so early users do not carry the full network cost. Cross-border pipelines need joint demand mapping and cost sharing between Member States before routing is set, as in the Nordic-Baltic region.

D. INTERNATIONAL ASPECTS AND IMPORTS FROM THIRD COUNTRIES

General

15. Considering the EU's need for access to decarbonised, secure and affordable energy, what should be the priority to develop reliable supply of renewable or low-carbon hydrogen at competitive prices?

Use drag&drop or the up/down buttons to change the order or accept the initial order.

- Domestic production within the EU with significant cross-border trade across Member States
- Domestic production close to demand centres
- Imports to the EU from third countries
- Domestic production at national level with limited cross-border trade across Member States

Please explain your reply

300 character(s) maximum

Northern Europe can produce at competitive cost from fossil-free power and supply Central European demand by pipeline. Imports should complement, not displace, EU production that is permitted and close to FID. Trade between Member States lowers cost more than national self-sufficiency.

16. Which region(s) could offer the biggest potential for hydrogen exports to the EU?

Norway (EEA) and the UK, connected via the Nordic-Baltic and North Sea corridors. North Africa and the Middle East are also potential exporters to southern Europe.

17. In your view, what should be the main preconditions for imports to ensure security and reliability of supply of hydrogen while preserving sustainability and avoiding the creation of new strategic dependencies?

Maximum 3 selection(s)

- [x] Compliance with the EU certification rules to ensure a level playing field
- [x] Diversification of imports routes and suppliers
- [ ] Local value chain creation in the third country
- [ ] Cost-competitiveness
- [x] Environmental sustainability (including water use) and prevention of carbon leakage
- [ ] Availability of skills and workforce
- [ ] Resilience or 'EU-made' requirements for electrolyser components
- [ ] Other *(please specify below)*

Other, please specify:

100 character(s) maximum

Barriers

18. In your view, what are the main barriers hindering the investments in production of renewable and low-carbon hydrogen in third countries for export to the EU?

Maximum 3 selection(s)

- [ ] EU regulatory requirements and uncertainty about compliance
- [x] Limited predictability related to EU long-term off-take commitments
- [ ] Limited availability of renewable electricity capacity in potential exporting country
- [x] Geopolitical and supply chain risks
- [ ] Insufficient trade frameworks in potential exporting countries
- [ ] Inadequate infrastructure for exports in potential exporting countries
- [ ] Inadequate infrastructure for imports in the EU
- [x] High costs associated to transport to the EU
- [ ] Social and environmental sustainability concerns in exporting countries
- [ ] Financing and insurance challenges
- [ ] Other *(please specify below)*

Other, please specify:

100 character(s) maximum

Please explain your reply

300 character(s) maximum

Enabling measures

19. What additional non-legislative measures can facilitate imports from third countries to the EU and diversify potential sources of supply?

300 character(s) maximum

Apply the same certification and GHG rules to imports as to EU production. Design the international pillar of the Hydrogen Bank so it does not crowd out EU projects close to FID. Coordinate import corridors with EEA partners such as Norway and spread supply across routes for security of supply.

II. Questions on manufacturing [for electrolyser manufacturers only]

General

20. What types of electrolyser technologies does your company produce (or plan to produce)?

- ☐ Alkaline
- ☐ PEM (Proton Exchange Membrane)
- ☐ SOEC (Solid Oxide Electrolyser)
- ☐ AEM (Anion Exchange Membrane)
- ☐ Other *(please specify below)*

Other, please specify:

100 character(s) maximum

21. What is the average lead time for your electrolyser production (from order to delivery)?

- ○ <12 months
- ○ 12–24 months
- ○ 24-48 months
- ○ >48 months

22. What are the main causes of delays?

200 character(s) maximum

23. How does your organisation's manufacturing production cost compare to non-EU competitors (in EUR/KWh)?

- Significantly higher (>20% more expensive)
- Slightly higher (5–20% more expensive)
- Competitive (±5%)
- Lower than competitors
- I do not know

24. How does the levelized cost of hydrogen using EU electrolysers compare with that using electrolysers manufactured by non-EU competitors?

- Significantly higher (>20% more expensive)
- Slightly higher (5–20% more expensive)
- Comparable (within ±5%)
- Lower than using non-EU competitors' electrolysers
- It depends on the efficiency of the technology, operating conditions or project configuration
- I do not know

25. What share of your electrolyser components listed under Commission Implementing Regulation (EU) 2025/1178 as regards the list of net-zero technology final products and their main specific components are sourced from outside the EU?

- 0–20%
- 21–50%
- 51–80%
- 80%

26. For which parts of the electrolyser supply chain are you most reliant on non-EU suppliers?

- Catalysts
- Membranes
- Bipolar plates
- Stacks
- Balance of plant components
- Other *(name below)*

Other, please name:

50 character(s) maximum

27. What is the dominant location of your non-EU suppliers, with regard to above components?

200 character(s) maximum

28. What are your organisation's top R&I priorities for electrolyser technologies?

200 character(s) maximum

29. What are your organisation's top R&I priorities for electrolyser technologies?

Maximum 3 selection(s)

- ☐ Improving efficiency (kWh/kg H_2)
- ☐ Reducing capital costs (€/MW)
- ☐ Flexible operation
- ☐ Longevity/durability
- ☐ Scalability
- ☐ Other *(please specify below)*

Other, please specify:

50 character(s) maximum

Barriers

30. What do you consider to be the main competitiveness challenges for EU electrolyser manufacturers?

Maximum 3 selection(s)

- ☐ Higher production costs (e.g., energy, labour)
- ☐ Public support/ Financing options for non-EU competitors
- ☐ Slower permitting/regulatory processes
- ☐ Low scale due to limited committed demand for electrolysers within the EU
- ☐ Dependency on non-EU suppliers
- ☐ Shortages of critical raw materials
- ☐ Logistical bottlenecks or disruptions
- ☐ Limited availability of skilled workers
- ☐ Other *(please specify below)*

Other, please specify:

100 character(s) maximum

Enabling Measures

31. In your view, which policy measures most effectively support electrolyser manufacturing in the EU?

- ○ Financial support (e.g., grants, loans) for scaling up production
- ○ Public procurement requirements for final products made using renewable or low-carbon hydrogen
- ○ Local content requirements (e.g. minimum share of EU-made electrolysers or components) in publicly supported projects, in line with international agreements
- ○ Non-price criteria based on durability and or efficiency
- ○ Other *(please specify below)*

Other, please specify:

200 character(s) maximum

Please explain your reply

300 character(s) maximum

32. What measures could help reduce the investment costs of electrolysers?

300 character(s) maximum

33. In your view, where should the EU focus its policy support for research and innovation? [multiple responses possible]

Maximum 5 selection(s)

- ☐ Improved flexible operation of electrolysers
- ☐ Increased lifetime of technologies under realistic operative conditions
- ☐ Reduced use of critical raw materials
- ☐ Reduced emission footprint of technologies
- ☐ Improved energy conversion efficiencies
- ☐ Hydrogen production
- ☐ Hydrogen distribution
- ☐ Hydrogen storage
- ☐ Hydrogen use in transport
- ☐ Hydrogen use in industry
- ☐ Scaling up technologies at high TRL, market uptake
- ☐ Pre-deployment activities, such as hydrogen valleys
- ☐ Safety
- ☐ Environmental sustainability (including water use)
- ☐

Other *(please specify below)*

Other, please specify:

200 character(s) maximum

Thank you for participating!

For any further questions, please contact ENER-EU-HYDROGEN-STRATEGY@ec.europa.eu

Contact

Contact Form