



**Opinion of the European Economic and Social Committee**  
**Hydrogen – infrastructure, development needs, financing, use and limits**  
**(own-initiative opinion)**

(C/2024/6863)

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Plenary Assembly decision	18.1.2024
Legal basis	Rule 52(2) of the Rules of Procedure
Section responsible	Section for Transport, Energy, Infrastructure and the Information Society
Adopted in section	18.7.2024
Adopted at plenary session	18.9.2024
Plenary session No	590
Outcome of vote (for/against/abstentions)	171/0/2

## 1. Conclusions and recommendations

1.1. The EESC recognises the importance of a rapid roll-out of renewable and low-carbon hydrogen for the future energy system, as well as for the social and economic well-being of the EU, including its competitiveness with other economic regions. Due to significant challenges involved in creating supply, demand and infrastructure, the use of hydrogen must, in a first step, be targeted to hard-to-electrify sectors and as a means of energy storage.

1.2. In light of the EU climate targets and in line with the EU Hydrogen Bank funding criteria, primarily renewable hydrogen, as defined by Commission Delegated Regulation (EU) 2023/1184<sup>(1)</sup>, should be eligible for public funding. However, the EESC acknowledges that, especially in the transitional phase, other forms of renewable and low-carbon hydrogen and gases – as defined in the Hydrogen and Decarbonised Gas Market Package – will need to be used.

1.3. Apart from ensuring ecological criteria, certification schemes must also guarantee social standards. These standards must include fair and safe working conditions and compliance with labour, social and trade union rights. Certification and verification schemes must be implemented by a central EU body and must not be replaced by the participation of companies in voluntary certification schemes.

1.4. The EESC recognises the importance of pipeline infrastructure for the rapid roll-out of renewable and low-carbon hydrogen. Since building a transport infrastructure will entail significant costs, the EESC underlines the importance of an efficient allocation of resources. This will require smart and integrated planning, including across borders, and a regulatory regime that enables necessary investments in the infrastructure while promoting the environmental sustainability of the energy system as a whole and protecting network users from excessive network charges.

<sup>(1)</sup> Commission Delegated Regulation (EU) 2023/1184 of 10 February 2023 supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council by establishing a Union methodology setting out detailed rules for the production of renewable liquid and gaseous transport fuels of non-biological origin (OJ L 157, 20.6.2023, p. 11).

1.5. The EESC acknowledges that allowing gas grid operators to operate hydrogen grids could offer synergies in terms of know-how and skilled employees. However, this means that existing employees will need to receive appropriate training and the workforce will need to be maintained by offering good working conditions. For example, network operators need to be bound by customary collective agreements and working conditions need to be improved to attract skilled labour. The EESC calls for efficient and conclusive social dialogue in the gas sector at both European and national level.

1.6. In light of rising gas grid tariffs due to the decarbonisation of the energy system and the subsequent diminishing gas grid usage, additional burdens in the form of cross-subsidisation of the hydrogen grids by gas grid users certainly needs to be avoided. This is especially important since the future users of hydrogen grid infrastructure (i.e. specific industry sectors) differ considerably from today's gas grid users (industry, SMEs and households). It is therefore important to apply the user-pays principle as far as possible and thus to ensure that hydrogen infrastructure is primarily financed by the users of that infrastructure, including those feeding renewable and low-carbon hydrogen into the network.

1.7. In the early stages of hydrogen infrastructure roll-out especially, government funding could complement the user-pays-based financing via network tariffs. More specifically, government funding could help to spread network costs over time. However, it is important for such funding to be at an appropriate level, based on cost-benefit considerations, and for the user-pays principle to be maintained to a high degree. Subsequent network users must bear an adequate share of the costs of developing the infrastructure. Financial instruments that lead to the public sector bearing excessive risks while the profits from gas network infrastructure use are privatised must be avoided. In addition, pipelines that are in the common European interest should be funded, at least in part, by common financial resources. Support such as that currently provided through the PCI list should therefore be expanded. In any case, public financial support must be tied to social-ecological conditionalities.

## 2. Background

2.1. To a certain extent renewable and low-carbon hydrogen, as defined by Commission Delegated Regulation (EU) 2023/1184 and the Hydrogen and Decarbonised Gas Market Package, will need to be used alongside electrification. This is true, for example, for production processes that are difficult to electrify, where renewable and low-carbon hydrogen is needed as a production factor, such as in the steel, chemical and cement industries, and for sustainable fuels for the aviation, heavy-duty transport and maritime sectors. Converting the electricity sector to renewable electricity generation will also, as it stands, require the use of renewable hydrogen. After all, since renewable electricity generation is volatile, renewable hydrogen can play a role in seasonal power storage.

2.2. Security of supply in the energy system, production and location decisions, and thus jobs, are all dependent on the success of ramping up production and distribution in Europe. In this regard, the EESC also refers to its opinion *Towards the European Hydrogen bank*.

2.3. The ramping up of hydrogen entails many uncertainties on both the supply and demand sides. These uncertainties are interdependent, and they exist not only within the EU but worldwide. By 2050, global installed electrolysis capacity will need to increase to 6 000-8 000 times the current installed capacity, while at the same time renewable electricity generation capacity will have to increase tenfold.

2.4. Hydrogen imports also raise questions concerning the possibility of avoiding dependency on individual third countries, and about the working and production conditions as well the impact on energy security in those countries.

2.5. The regions with the most hydrogen production potential differ from regions with the biggest hydrogen demand. Both the supply of (including imports) and demand for hydrogen are thus heavily dependent on future hydrogen infrastructure. Within the EU, transport via hydrogen networks predominates, which may involve converting existing gas pipelines to hydrogen transport or building new ones. The EESC has pointed out the importance of cross-border energy infrastructure in opinion TEN/823. Furthermore, supply and demand can also differ with respect to the time of production and time of use. Therefore, building up hydrogen infrastructure should also include the creation of storage facilities.

2.6. Energy infrastructure is currently often financed through user charges. According to the trilogue agreement on the internal gas market package <sup>(2)</sup>, this will also be the case for future hydrogen networks: the costs of investment, operation and maintenance will be covered by network users. The advantage of this form of financing is thus that, if properly designed, it reflects actual use.

2.7. However, there are problems with the distribution over time of the costs of financing hydrogen networks. At the outset, high costs will be faced by a small number of users, which does not provide conducive conditions for the roll-out of hydrogen production and use.

2.8. Furthermore, investment in the green transformation, such as investment in energy infrastructure or electrolysers, is currently facing difficult conditions now. Since central banks increased interest rates as a reaction to the increase in inflation, capital costs have been increasing.

2.9. In its latest report, the European Court of Auditors' <sup>(3)</sup> points out that the European Commission's targets for the production and use of renewable hydrogen by 2030 are too ambitious. The auditors call on the Commission to update its hydrogen strategy, in particular to make strategic decisions on the way forward after a reality check, without creating new strategic dependencies, to define an EU roadmap and monitor progress, to obtain reliable data on national funding and assess the adequacy of EU funding schemes accordingly, to monitor approval procedures in the Member States and to take a clear decision on support and coordination measures with and for the hydrogen industry. The EESC welcomes this report and sees it as confirmation of its thoughts on the creation of the hydrogen market. The entire value chain must be strengthened, and the necessary investments secured. In addition, hydrogen must be prioritised in those sectors where it is most urgently needed, as there will not be as much hydrogen available as the Commission originally expected.

### 3. General comments

3.1. In the EESC's view, a rapid roll-out of hydrogen is extremely important. To enable this roll-out, there is a need to scale up the manufacturing of electrolysers, deploy the required clean electricity production, have in place the appropriate infrastructure, and ensure a fair distribution of the associated costs and an efficient use of financial resources, as well as of hydrogen itself.

3.2. The limited availability, and the already significant challenges involved in creating supply, demand and infrastructure, mean that a cost- and resource-efficient approach will be necessary. This implies that the use of hydrogen must firstly be targeted at areas that are difficult to electrify.

3.3. To achieve the climate goals, the EESC believes that the hydrogen used should primarily be renewable, as defined by Commission Delegated Regulation (EU) 2023/1184 and the Hydrogen and Decarbonised Gas Market Package. At the same time, the EESC acknowledges that there are other forms of low-carbon hydrogen production processes which will be necessary to use during the transition phase, as hydrogen demand will most likely exceed supply during this transition phase. The EESC therefore encourages the evaluation of public funding for other low-carbon production processes in that time. Public funding should, in any case, only be granted to production processes with an overall emission intensity (including indirect emissions) that is comparable to the production of renewable hydrogen. Since future hydrogen demand will be partly met by imports, prioritization of renewable hydrogen must also extend to imported hydrogen.

3.4. The EESC takes the view that, when importing hydrogen, and when concluding any agreements with third countries necessary to that end, European values must be respected. Fair and safe working conditions on the ground and compliance with labour, social and trade union rights must be guaranteed. In addition, the geographical realities (e.g. a country's production and exporting capabilities and capacities) and the EU's strategic autonomy targets must be considered.

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<sup>(2)</sup> See provisional agreement on the Internal Gas Market Regulation and the provisional agreement on the Internal Gas Market Directive.

<sup>(3)</sup> *The EU's industrial policy on renewable hydrogen, Legal framework has been mostly adopted – time for a reality check*, ECA special Report, 11/2024.

3.5. One way to enforce climate, environmental and worker protection standards in relation to hydrogen could be dedicated social-ecological guarantees of origin for hydrogen. It is important for such guarantees to include mandatory requirements to avoid abuse and to ensure that hydrogen certified as 'renewable' does in fact meet the social and ecological criteria to be defined. While RED III does now contain clear rules on the classification of renewable hydrogen, the procedure for imports is still unclear. In the EESC's view, it is important that guarantees of origin reflect the actual use of renewable electricity to produce hydrogen, that there be physical and temporal proximity between electricity production and hydrogen production, and that other areas of application of renewable electricity not be crowded out. The EESC considers that the EU should, as far as possible, lead the way with clear uniform rules to become a global leader. Certification and verification schemes must in be used for imports by a central European body and must not be replaced by the participation of companies in voluntary certification schemes.

3.6. Hydrogen will also play an important role in stabilising the future electricity system. Renewable electricity production will often lead to excess electricity, depending on weather and seasons, however hydrogen can be used as storage in such cases. In addition, hydrogen production can also be used to stabilise the electricity network, as pointed out in opinion TEN/827. This can reduce the need to expand the electricity network and reduce the costs of expansion.

3.7. The conversion of existing gas network infrastructure and the expansion of hydrogen infrastructure entail significant investment costs. In order to minimise economic costs, a cost- and resource-efficient approach must be taken. This will require smart and integrated planning, including across borders (see opinion TEN/823); such planning should be coordinated with other relevant strategic plans, such as industrial decarbonisation strategies and energy-focused town planning, and should always be subject to a cost-benefit assessment.

3.8. To increase acceptance for the build-up of hydrogen infrastructure, including electrolysers and increased generation capacities, the EESC emphasises the importance of effective citizen participation, as has been pointed out in opinion TEN/827.

3.9. Like electricity and gas networks, hydrogen networks form a natural monopoly, giving network operators a monopoly power that would allow them to impose excessive user charges. Regulation is therefore needed to ensure a high level of security of supply and adequate compensation for network operators that enables necessary investment in the infrastructure while promoting the environmental sustainability of the energy system as a whole. In addition, regulation must protect network users from excessive charges and ensure that network operators' activities are cost-effective, thus ensuring affordability, a point recently reiterated by the European Court of Auditors. <sup>(4)</sup>

3.10. If hydrogen networks are, in future, operated by firms that already operate gas networks, this could offer synergies that bring benefits, if the know-how and appropriately skilled employees are available. However, this means that existing employees will need to receive appropriate training and the workforce will need to be maintained by offering good working conditions. For example, network operators need to be bound by customary collective agreements (see opinion TEN/827). Furthermore, in order to find skilled labour, attractive and high-quality working conditions are required. This could be done by introducing measures aimed at improving gender equality, quality assurance measures concerning safety and health, enforcing labour regulations and establishing workers' councils. The EU Social Dialogue is an important generator of this, which the Val Duchesse Declaration aims to strengthen. Social partnership action strengthens the economy and social cohesion. The EESC therefore calls for effective and meaningful social dialogue in the gas sector at the European and national level.

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<sup>(4)</sup> *Leakages remain in the EU's gas supplies*, ECA News, 24 June 2024.

3.11. Alongside the benefits of synergies, however, this dual operation may lead to cross-subsidisation, with operating and maintenance costs being cross-financed through gas network funding. The trilogue draft of the Internal Gas Market Regulation would allow such cross-subsidisation in certain circumstances. This is problematic because the user groups for hydrogen infrastructure are different from those for gas infrastructure: smaller businesses and households will not use hydrogen in the future, and yet if cross-subsidisation occurs, they would be contributing to the costs of hydrogen infrastructure. In the coming years, gas network users will in any case face rising network charges, as the downsizing of gas networks and the progressive phasing out of gas will mean that the costs of gas network infrastructure must be borne by ever fewer users. This trend, which is also worrying from the point of view of consumer protection, is particularly problematic for users facing exit barriers (e.g. tenants or low-income households who cannot afford to replace their heating system). It is therefore important to apply the user-pays principle as far as possible and thus to ensure that hydrogen infrastructure is primarily financed by the users of that infrastructure. This will require the strict regulatory separation of fixed assets.

3.12. The user-pays principle also means that infrastructure should be financed not just by consumers but also by those feeding into the network, as it is clear at the current stage of hydrogen roll-out that both suppliers and consumers of hydrogen are dependent on infrastructure. In the EESC's view, the very unequal distribution of electricity grid costs between suppliers and consumers across the EU should be regarded as a negative example, as pointed out in opinion TEN/823 and opinion TEN/827. Therefore, network usage charges must be applied not only to offtake but also to feed-in, considering a balance that is in line with the 'user-pays' principle.

3.13. (Partial) start-up funding – especially in the early stages of hydrogen infrastructure roll-out – from tax revenue can also be part of a holistic solution and help to spread network costs over time. Such support could reflect the overall economic interest in expanding hydrogen infrastructure. However, it is important for such funding to be appropriate in level, based on cost-benefit considerations, and for the user-pays principle to be maintained to a high degree. Financial instruments that lead to the public sector bearing excessive risks, while the profits from gas network infrastructure use are privatised, should be avoided. Public funding must be accompanied by an appropriate return on investment for public authorities.

3.14. The energy transition, including the required investments in the hydrogen sector, is slowed down by the sharply increased capital costs due to higher interest rates. The European Central Bank (ECB) has options to intervene in this, because supporting the energy transition in the euro area and in the whole EU fits within the mandate of the ECB. With a green differentiated lending scheme the ECB has a potentially effective instrument at its disposal to both promote the energy transition and achieve its primary objective of price stability. This instrument can be taken in the form of a greener version of the previously successful instrument Targeted Longer Term Refinancing Operation (TLTRO) <sup>(i)</sup> as suggested by the network of central banks NGFS and considered in the ECB strategy review. This instrument allows the ECB to offer banks, as the main channel of lending in Europe, long-term financing on attractive terms and thus stimulates bank lending to the real economy. The EESC therefore encourages efforts within the ECB to develop a green TLTRO instrument to support the energy transition, without prejudice to primary objective of price stability.

3.15. Given that the regulation and funding of hydrogen networks has significant effects in terms of redistribution and macroeconomics, the relevant stakeholders must be involved in a democratic process to define this regulation and funding. As gas networks will often be converted into hydrogen networks, representatives of gas network users – such as the social partners – must be involved. A stronger focus on network codes, as discussed in the context of the internal gas market package, should be viewed critically, as it does not sufficiently involve the stakeholders concerned and gives excessive decision-making power to network operators and the Commission. The current process applied in the natural gas sector should also be provided for in the hydrogen sector. This may be achieved by empowering national energy regulatory authorities so that they oversee the emerging hydrogen market and review hydrogen tariffs from the perspective of the interest of end consumers.

<sup>(i)</sup> *Targeting a sustainable recovery with Green TLTROs: Green, Targeted and Long-Term Refinancing Operations*, by Jens van 't Klooster and Rens van Tilburg, Positive Money Europe & Sustainable Finance Lab, September 2020.

3.16. The EESC considers it important for the financial burden of developing hydrogen infrastructure to be balanced at a regional level. It is therefore important, firstly, for transit agents to bear an appropriate share of the costs of the pipeline infrastructure. In addition, pipelines that are in the common European interest should also be funded, at least in part, by common financial resources. Support such as that currently provided through the PCI list should therefore be expanded. Furthermore, funding should be made available at an early stage in project development to increase the chances of raising market-based funding. Socio-ecological conditions must be respected here. In addition to the need to comply with sustainability criteria, the EESC refers to the comments made in point 3.9.

Brussels, 18 September 2024.

*The President*  
*of the European Economic and Social Committee*  
Oliver RÖPKE

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