Public consultation on inter-temporal cost allocation mechanisms (ICA) for financing hydrogen infrastructure

Fields marked with * are mandatory.

Introduction

Why are we consulting?

The hydrogen and gas market Regulation enables member states to allow hydrogen network operators to recover the costs of the network over longer periods of time than usual (Article 5(3)). This approach, known as the intertemporal cost allocation mechanism, is intended to address the challenges of early-stage hydrogen network development. ACER has been tasked with providing a recommendation on the methodologies for this mechanism by 5 August 2025, with updates issued every two years if necessary.

To ensure its recommendation is informative and effective, ACER is seeking input from stakeholders on key elements of the intertemporal cost allocation mechanisms. The public consultation will run from **10 to 31 March 2025**. ACER will evaluate the feedback received and use it to inform its recommendation.

In case of additional questions on the public consulation please contact ACER at **PC_ICA@acer.europa.eu**
.

Why are intertemporal cost allocations useful?

In natural gas and electricity transmission networks, most investments are made by transmission system operators (TSOs) who have to offer the available capacity to all users. They then recover the costs to build and operate the network via network tariffs paid by network users. Regulatory authorities approve these tariffs, or the methodologies TSOs use to calculate them. Tariffs are normally adjusted regularly (often annually) to account for changes in network utilisation and operational costs. Network users thus guarantee that TSOs will recover their investment and operating costs over time. This approach has been successful due to the relatively predictable demand for electricity and gas in the short to medium term.

Hydrogen pipeline transmission networks are considered more efficient compared to alternative options such as truck transport for long distances, hence they make sense for the development of an integrated European hydrogen market. The EU hydrogen strategy and the national hydrogen strategies of several member states foresee the development of hydrogen transmission networks connecting hydrogen supply (including import terminals) and demand centres. The supply cost of renewable and low-carbon hydrogen will also vary depending on local conditions, availability of cheap resources (renewable energy or natural gas respectively) and proximity to infrastructure (import terminals, hydrogen storage, CO2 sequestration facilities). This further enhances the need for hydrogen networks.

Currently however, sustainable hydrogen is not competitive, leading to significant uncertainty regarding the future level and growth rate of demand. During the early stages of the sector development, demand for hydrogen will be relatively low compared to the capacity of the network resulting in disproportionately high initial network tariffs if traditional calculation methodologies are applied (1). This could further discourage users from transitioning to hydrogen.

The intertemporal cost allocation mechanisms are introduced to lower network tariffs during early stages, levelling them over an extended period. This ensures that the tariffs are affordable in the early stages and that the network costs are fairly distributed between current and future users. Notably, the hydrogen and gas market Regulation foresees the application of intertemporal cost allocation mechanisms only for hydrogen pipeline networks (i.e. other necessary hydrogen infrastructure, such as storage and terminals, is not included in the definition of hydrogen networks).

How does an intertemporal cost allocation mechanism work?

The only existing intertemporal cost allocation mechanism to date is the German WANDA scheme. The Danish regulatory authority (DUR), in collaboration with the hydrogen network operator Energinet, is also working on a similar mechanism that introduces a startup revenue cap. As hydrogen network development progresses, more member states may adopt intertemporal cost allocation mechanisms.

The primary goal of an intertemporal cost allocation mechanism is to mitigate high network tariffs during the ramp-up phase of the hydrogen market and to distribute the network costs in a fair way between the early adopters of hydrogen and future users. The mechanism works by shifting the recovery of a portion of the network annuities from the early years of operation to later periods. This is necessary since the revenues collected through the moderate tariffs set by the mechanism during the early years of low demand are not enough to cover the full costs. The deficits incurred during the initial ramp-up phase are typically placed in a separate regulatory account. This account is balanced over time as hydrogen demand increases and sufficient revenue is generated.
The intertemporal cost allocation mechanism may facilitate the development of the hydrogen market by keeping the network tariffs at affordable level during the early stages. However, this approach introduces significant risks for hydrogen network operators, as they are not able to recover their full costs during the initial years. This initial cost recovery gap can be financed by debt which is repaid with tariff over-recoveries in the future. Due to the high risks involved for hydrogen network operators, the intertemporal cost allocation mechanisms may also be complemented by additional support measures, such as state guarantees (2).

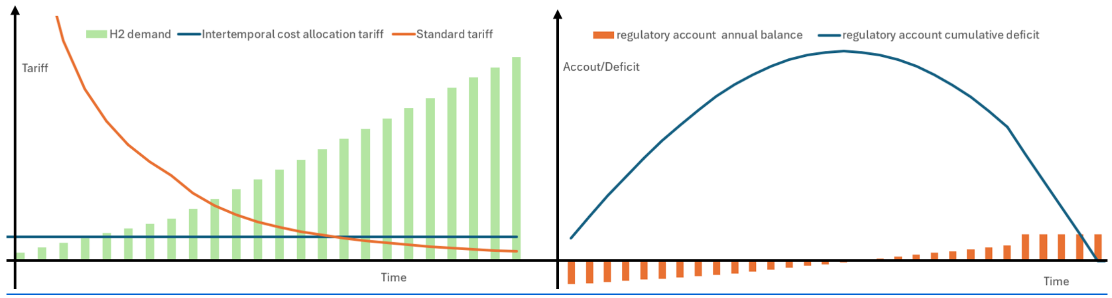
Notes:

(1) As a conceptual rule of thumb, the network tariffs can be considered as the division of the total network costs (e.g. in euros) divided by the utilisation of the network (e.g. in kWh/h/year).

(2) In the German scheme for example the liquidity is provided by the German development bank, KfW, via an “amortization account”. While the intertemporal cost allocation mechanism foresees the recovery of the provided liquidity by 2055 solely via the network tariffs, the German Federal State provides additional guarantees in case this is not possible, up to a maximum share of 74%.

Figure 1: Illustrative example of an intertemporal cost allocation mechanism depicting on the right the difference between the standard tariff and a lower fixed tariff for the entire duration of the mechanism and on the left the annual balance and the cumulative deficit of the regulatory account.

PC-ICA.png



Introductory questions

* **Name and Surname of the contact person**

* **Email address**

* **Name of organisation / company**

Type of organisation

- Governments,
- NRAs,
- Gas TSOs,
- HNOs,
- HDNOs,
- Gas DSOs,
- financial institutions (banks, funds etc),
- H2 producers,
- H2 users,
- H2 traders,
- industry associations consumer associations,
- academia,
- individual person,
- other (please specify)

* **Please specify "other"**

Type of industry/use:

- refineries,
- e-fuels producers,
- iron&steel,
- maritime transport,
- aviation,
- road transport,
- fertilisers,
- chemicals,
- electricity and heat,
- other (please specify)

* **Please specify “other”**

* **Country**

- EU-27
- Other

* **Please specify the country**

- AT - Austria
- BE - Belgium
- BG - Bulgaria
- HR - Croatia
- CY - Cyprus
- CZ - Czechia
- DK - Denmark
- EE - Estonia
- EU - European Union, for associations covering all EU
- FI - Finland
- FR - France
- DE - Germany
- EL - Greece
- HU - Hungary
- IE - Ireland
- IT - Italy
- LV - Latvia
- LT - Lithuania
- LU - Luxembourg
- MT - Malta
- NL - Netherlands
- PL - Poland
- PT - Portugal
- RO - Romania
- SK - Slovak Republic
- SI - Slovenia
- ES - Spain
- SE - Sweden

* **please specify the country**

Data protection

ACER will process personal data of the respondents in accordance with Regulation (EU) 2018/1725, taking into account that this processing is necessary for performing ACER's consultation tasks. More information on data protection is available on ACER's website and in ACER's data protection notice.

ACER will not publish personal data.

Consent to the processing of personal data

☐ Your personal data may be processed by the Agency.
Please refer to privacy statement to learn about such processing and your rights.

Confidentiality

Following this consultation, ACER will make public:

- the number of responses received;
- company names, unless they should be considered as confidential;
- all non-confidential responses; and
- ACER's evaluation of responses. In the evaluation, ACER may link responses to specific respondents or groups of respondents.

You may request that the name of your company or any information provided in your response is treated as confidential. To this aim, you need to explicitly indicate whether your response contains confidential information. **You will be asked this question at the end of the survey.**

☐ I have read the information on data protection and confidentiality provided in this section.

A. Risks underpinning the development of hydrogen networks

Infrastructure planning and development relies largely on demand forecasts over a long period of time. Long term commitments by network users can mitigate severe demand uncertainties and thus significantly improve projects bankability. In the case of hydrogen however, various risks discourage potential hydrogen users from agreeing to supply contracts with an adequately long duration to secure financing of hydrogen networks. Some commonly identified risks of the hydrogen sector are listed below:

- **Price risk**, driven by uncertainties over the competitiveness of green and low-carbon hydrogen as a feedstock or energy carrier. It is related to the cost of alternatives (e.g. cost of fossil fuels and CO2 emission allowances), the cost of technology (electrolysers, storage, carbon capture and sequestration, renewable electricity) and to some extent also to regulatory provisions (e.g. renewable hydrogen sustainability rules).
- **Technology risk**, both in terms of the cost reduction potentials of production technologies (through innovation and up-scale) and in terms of alternatives for end-use technologies (e.g. direct electrification technologies for iron production could eliminate the need for hydrogen in the sector).

- **Lack of infrastructure**, including pipeline network, terminals and storage facilities, that restricts the deployment of hydrogen and prevents the development of efficient trade.
- **Regulatory risk**, related to the uncertainty and lack of clarity over the market rules (e.g. regarding network tariffs) or the current lack of harmonised approaches across the EU (and the anticipation of harmonisation rules in the future). Over-regulation and over-harmonisation may also constitute a barrier to the market development in these early stages.
- **Policy risk**, related to changes in the European and national policies, global hydrogen market dynamics and potential de-prioritisation of the hydrogen economy.

1. In your view, what are the main risks faced the following parties:

- **hydrogen end- users?**
- **hydrogen suppliers?**
- **hydrogen network operators?**
- **other hydrogen infrastructure developers (storage, terminals)?**

Please elaborate.

1800 character(s) maximum

2. What are the main reasons preventing hydrogen end-users from signing long term hydrogen off-take agreements? Please elaborate.

1800 character(s) maximum

3. What are the main reasons preventing hydrogen suppliers from signing long term capacity booking contracts (e.g. ship-or-pay contracts)? Please elaborate.

B. Scope of intertemporal cost allocation mechanisms

Current market uncertainties prevent the development of hydrogen networks purely on market basis and hydrogen network is developed on a regulated basis. While the development of infrastructure is considered as an enabler of the EU hydrogen market, developing infrastructure in such uncertain framework, and with limited long-term commitments by network users, creates a risk for building a network that is later not fully utilised. Intertemporal cost allocation mechanisms could be enablers of network development however, they deal primarily with the demand ramp-up asymmetries and do not eliminate this risk. Developing infrastructure with a gradual ("incremental") approach (based on specific and more certain demand needs, possibly backed by binding commitments) might reduce the risk of future underutilisation. However, such an incremental approach could increase network development costs (untapped economies of scale) and prevent optimal market development.

4. What strategy is preferable for the development of hydrogen transmission networks?

- ○ **Gradual approach based on largely verified demand needs (e.g. binding off-take commitments).**

- Core network developed at an early stage to allow for market development.
- Other (please elaborate)

4.1. Please elaborate if other.

5. What criteria should be used to identify the infrastructure to be financed by inter-temporal cost-allocation mechanisms? Please elaborate.

6. What measures, besides binding open seasons, can enhance the accuracy of hydrogen demand projections over time and consequently optimize the planning of hydrogen networks?

7. Should an inter-temporal cost allocation mechanism be used for transmission networks, distribution networks or both? Please explain.

C. Intertemporal cost allocation network tariffs

By shifting network cost recovery to the future, intertemporal cost allocation mechanisms aim to ensure that hydrogen networks can eventually be funded by network tariffs paid by network users. These network tariffs shall reflect the network financing needs and the willingness to pay of the users. To provide appropriate signals and incentives to network users and enable booking commitments, intertemporal cost allocation mechanisms should be designed to provide clarity and certainty on the cost for transporting hydrogen over their whole implementation period. At the same time, regular re-evaluations and re-calculations could help minimising the risk of revenue shortfalls due to a mismatch between initial assumptions and real developments, although potentially affecting the long-term certainty.

Intertemporal cost allocation mechanisms rely on investment and operating costs based on forecasts but uncertainties in demand and limited experience with developing hydrogen network might lead to significant differences between actual and projected costs. To facilitate network investments, operators can be safeguarded against such risk of cost overruns. However, this would possibly require a revision the network tariff levels which may have a negative impact on tariff certainty and stability.

8. What tariff levels can be considered affordable and competitive in the early stage of the hydrogen market development and what methodology can be used to calculate these levels?

9. What design elements of the intertemporal cost allocation mechanisms can facilitate recovering the full investment costs in view of the sector's uncertainties and the potential absence of long-term commitments?

10. How should the risk of potential cost overruns for infrastructure developed under intertemporal cost allocation mechanisms be dealt with and who should bear this risk (e.g. hydrogen network operators, users of the hydrogen network, state/governments)?

D. Cross border elements

The hydrogen and decarbonised gas market package defines that as of 2033 the European hydrogen markets shall be organised according to the entry-exit model, largely similar to European gas markets. The package also envisages the development of market rules, including rules for harmonised hydrogen transmission network tariffs. In the absence of harmonised rules, the conditions established in the intertemporal cost allocation mechanisms will impact hydrogen transported across EU member states (i.e. cross-border trade and market integration).

11. What are the relevant cross-border impacts to consider when designing intertemporal cost allocation mechanisms?

15. Should intertemporal cost allocation mechanisms be harmonised across the EU? If yes which elements of the intertemporal cost allocation mechanisms should be harmonised (e.g. assessment of needs, tariff structures, duration)? Please elaborate.

13. Are locational signals (tariffs differentiated depending on the location in the network) relevant for the development of the hydrogen market?

While the intertemporal cost allocation mechanisms are mostly national in scope, they may have cross-border effects as they influence cross-border trade and the EU market integration. Moreover, intertemporal cost allocation mechanisms may be designed to accommodate cross-border network infrastructure.

14. What negative impacts on cross-border trade and market integration can result from the application of national intertemporal cost allocation mechanisms?

15. What type of coordination at EU level is necessary to enable cross-border trade and market integration when using intertemporal cost allocatin mechanims?

16. What are the key elements that should be considered when using intertemporal cost allocation mechanisms for cross-border infrastructure projects?

E. Final questions

17. Which of the following elements of an intertemporal cost allocation mechanism are most important (select in order of importance, from high to low):

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

- Simplicity and understandability
- Transparency and reproducibility
- Stability and predictability
- Flexibility and adaptability (scalable tariffs to ensure cost recovery)
- Maintaining locational price signals (ensure cheaper supply routes are used first)
- Other (please identify)

17.1. Please elaborate if other.

18. Please provide any other view relevant to the topic of the consultation.

1800 character(s) maximum

Question on confidentiality

* **ACER evaluates and may publish the received input. Do you consent that the submitted input is published?**

- Yes, ACER may publish the submitted replies.
- Yes, ACER may publish the submitted replies **anonymously**.
- No, ACER may not publish the submitted replies.

* **Does your submission contain confidential information?**

- Yes

No

If your submission contains confidential information, you have to claim confidentiality according to Article 27 of ACER's Rules of Procedure.

How to do it:

1. download a PDF version of your submission (see upper right corner of the page);
2. redact confidential information and provide descriptions of the deleted information. Your descriptions must enable any party applying for public access to the documents to determine whether there are sufficient grounds to request ACER to grant access to the information claimed to be confidential. You may use a PDF editor or print out your submission and manually replace confidential information with descriptions.
3. upload the redacted (i.e. non-confidential) version of your submission;
4. upload a separate document where you provide justifications why the redacted information should be treated as confidential.

Please upload the redacted (i.e. non-confidential) version of your submission with the descriptions of the deleted information.

Maximum file size is 1 MB. If your file is bigger, please use the functional mailbox: gas_cam_nc@acer.europa.eu.

Please upload a document providing justifications to each of your confidentiality claims.

Maximum file size is 1 MB. If your file is bigger, please use the functional mailbox: gas_cam_nc@acer.europa.eu.