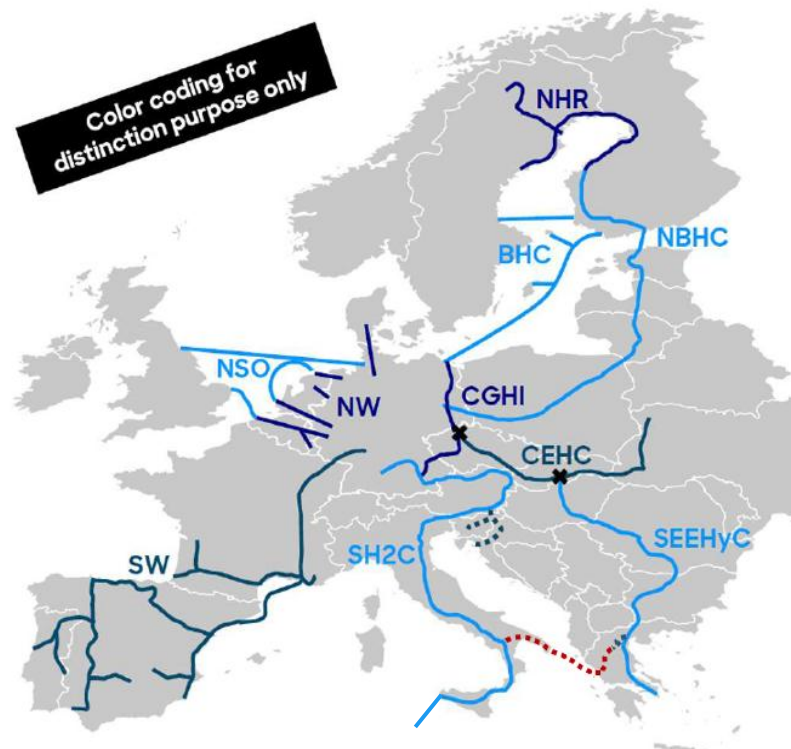


ENNOH's Continued Engagement in Development of an EU Mechanism for De-risking of Hydrogen Infrastructure Investments

Executive Summary

ENNOH continues its work towards an EU de-risking mechanism aimed at enabling affordable tariffs for early network users, facilitating binding commitments and investment decisions in anticipatory investment, thus supporting the development of a competitive European hydrogen market. Most recently ENNOH, with the support of the European Investment Bank (EIB), developed a model to assess the revenues the network operators of 10 supply corridors would need to receive as allowed revenues and the revenues they would collect from bookings only at the Interconnection Points (IPs). The gap between these figures (financial shortfall) has been modelled. Revenues coming from a domestic use of the supply corridors are not captured in this assessment. The evaluation results are indicative and highly dependent on the assumptions used to evaluate early-stage capacity demand, bookings scenarios and tariff methodology. In light of these indicative results together with the EU Energy Infrastructure Forum conclusions, ENNOH reiterates its call for swift introduction of dedicated de-risking mechanisms for hydrogen infrastructure.

Geographic overview of all corridors



- ✕ Project shared across corridors beyond this point
- In development, not included in the model
- PCI, not included in the model

General Context

Hydrogen infrastructure plays a decisive role in achieving Europe's energy transition, strengthening its energy sovereignty, resilience, and competitiveness. Furthermore, it needs to be developed ahead of a fully mature hydrogen market in order to accompany industries in their energy transition. This anticipatory nature of the investments brings substantial challenges to infrastructure developers, such as uncertainties around future demand, evolving business models, and initially limited user base. In a regulated market environment, transmission service providers are supposed to be able to recover their costs connected to creating and operating their transmission networks by charging cost-reflective tariffs for their transmission services. This is not (yet) the case for hydrogen, as expected in a nascent market, i.e. infrastructure investments may face temporary revenue recovery challenges during the ramp-up phase, as demonstrated by the work recently conducted with EIB support.

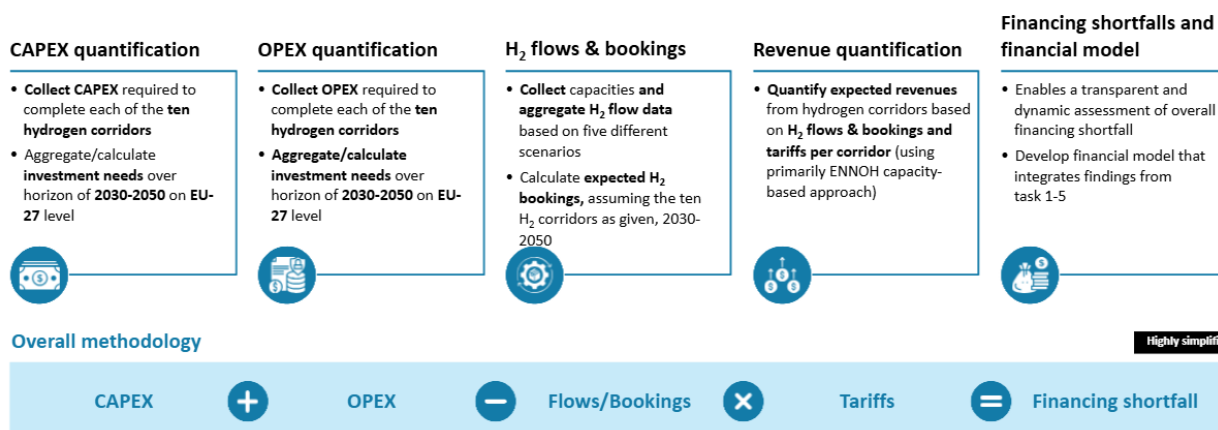
Scope of the Conducted Modelling

In the framework of an advisory service provided by EIB, a model was developed for ENNOH and its members allowing a first evaluation of a total revenue gap faced by the network operators (HTNOs) when developing an EU-wide hydrogen transport infrastructure and offering hydrogen transport services to the market under a range of market and regulatory assumptions. The analysis covered several infrastructure projects (grouped into 10 supply corridors, as shown on the map) currently under development by various HTNOs. It shall be highlighted that two more corridors under development have been identified; their inclusion in the subsequent analysis would further enhance the results and the outcome of the de-risking needs' assessment.

Based on relevant project-related costs and calculation of the forecasted booking levels according to ENTSO-E / ENTSG's TYNDP 2024 and 2026 scenarios, the amount of revenues expected from the provision of future cross-border transportation services could be quantified for the considered period up to 2050. Indeed, the assessment is based on revenues derived from cross-border flows as simulated in the ENTSG TYNDPs and does not yet include other potential revenue streams, such as the ones deriving from domestic network use. A set of agreed assumptions needed to be applied for this purpose, which may be adapted and supplemented depending on further market demand and project developments. The assessment was made based on the current market situation, i.e. without considering any hypothetical de-risking mechanisms.

The following scheme shows the five building blocks of the model.

Five tasks approach and overall methodology



Key Findings

Affordable tariff needed in the ramp-up phase

Because of the anticipatory nature of the investment and the limited maturity of the market, applying cost-reflective tariffs to early network users may not be compatible with market development objectives. The logic applied in the model is to charge a limited tariff at the beginning to support commitments of users towards capacity booking, and to eventually reach booking and tariff levels which would allow full cost recovery. Such mechanism recalls the Inter-temporal Cost Allocation as foreseen in the Regulation (EU) 2024/1789 (Gas and Hydrogen Regulation) at national level, i.e. not at EU-level. The key parameter is to set the initial tariff consistent with the willingness to pay of network users. When the willingness to pay is higher the revenue gap is lower.

Revenue gap identified in the ramp-up phase

The revenue gap represents a shortfall of HTNOs in recovering their network costs (both capital and operational) when providing transmission services only at IPs, during the hydrogen market ramp-up phase and under the current modelling assumptions. The simulations based on various hydrogen demand/booking assumptions, including several sensitivities, indicate the existence of a financial shortfall. The amount varies substantially depending on applied assumptions, in particular tariff assumptions, and can be a significant figure.

Turn-over point reached when market matures

The point of time when the revenue gap ceases to exist (turn-over point) can be reached when the market matures through increasing network utilisation and the progressive application of cost-reflective tariffs, allowing HTNOs to recover their allowed revenues and progressively reimburse early-stage revenue gaps. The turn-over year varies depending on simulations on demand development in different scenarios and on tariff assumptions.

Next Steps

ENNOH will continue to work on the de-risking needs of hydrogen corridors and further develop the model to:

- Cover additional already identified supply corridors and
- Reflect additional elements and revenue streams (e.g. revenues coming from domestic use of the supply corridors, ...).

The model will also feed ENNOH's assessment on the detailed features of the de-risking mechanism/EU guarantee ENNOH is working on.

ENNOH will continue its active engagement on elaboration of concrete solutions aimed at facilitating timely investment decisions and supporting the development of hydrogen infrastructure during the market ramp-up phase. ENNOH is ready to engage in the process led by the EU Commission towards an implementation roadmap mentioned in the Conclusions of the EU Energy Infrastructure Forum in May 2026.