Public Consultation on Draft ENTSOG Annual Work Programme (AWP) 2026

Stakeholder Feedback

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Q1: Does the AWP 2026 adequately identify activities which ENTSOG should prioritise? If not, please provide details.

The AWP 2026 outlines several important activities, particularly the inclusion of hydrogen in the Ten-Year Network Development Plan (TYNDP) and the establishment of the European Network of Network Operators of Hydrogen (ENNOH). However, while it highlights the integration of electricity and gas systems and acknowledges the importance of planning for hydrogen production centers and transmission capacities, there is no specific mention of prioritizing the storage of renewable hydrogen, and particularly on the underground storage for seasonal storage needs. The focus is more on the broader integration and flexibility offered by molecules like natural gas, and biomethane within energy systems.

We believe that since the development of the renewable hydrogen infrastructure is critical to decarbonizing the gas sector and, consequently, the European energy system, it is essential that this infrastructure be accompanied by massive storage systems that provides greater flexibility, optimization energy systems, and security of supply.

Incorporating renewable underground hydrogen storage systems into the future backbone network for the transportation and distribution of renewable hydrogen is crucial for several reasons such as:

- **Balancing Supply and Demand** considering that hydrogen production from renewable sources can be intermittent and variable. Thus, underground hydrogen storage allows surplus hydrogen to be stored during periods of high renewal resource to be used during periods of high demand, ensuring a steady and reliable supply. In addition, it reduces market price volatility, leading to a more competitive, predictable and stable pricing.
- **Enhancing Flexibility and Optimization**. Storage systems provide the flexibility needed to optimize the use of hydrogen by managing its availability and distribution according to real-time demands. This flexibility is crucial for integrating hydrogen into existing energy systems more efficiently.
- **Ensuring Security of Supply** in a 100% Renewable Energy Scenario. In energy systems based entirely on renewable sources, guaranteeing a stable and continuous supply poses a considerable challenge due to its inherent non-manageable nature. To mitigate periods of low renewable resources, the deployment of extensive energy storage solutions, such as underground hydrogen storage, becomes essential.
- **Stabilizing the Grid**. Green hydrogen stored underground can be used as a fuel to generate electricity in combined cycle power plants. These plants, equipped with

synchronous alternators, provide grid stability, offering a carbon-neutral solution to maintain the reliability of the energy supply.

- **Facilitating Large-Scale Deployment.** Massive hydrogen storage solutions enable more extensive deployment of hydrogen technologies across various sectors, including transportation, industry, and power generation.
- **Reducing Curtailment** when renewable energy production exceeds demand, avoiding clean energy or hydrogen wasted or curtailed and making energy systems more sustainable and efficient.
- **Achieving Complete Decarbonization** as hydrogen is one of the few viable alternatives for decarbonizing certain applications, such as heat-intensive facilities.
- **Meeting EU decarbonization goals** helping to integrate the 40GW of electrolyzer capacity announced in Fit for 55 for 2030 and contributing to the storage and supply of the 20Mt of green hydrogen consumption in EU by 2030, as proposed by RePower EU Plan.

By enabling a more responsive and resilient hydrogen infrastructure, underground storage is pivotal to realizing the full potential of renewable hydrogen as a key component of a sustainable energy future. These initiatives align well with the priorities for advancing hydrogen infrastructure and integration into the existing energy system.

Q2: Are there any other activities that should be included in the AWP 2026, or activities which should take priority within the document? If yes, please provide details.

To accelerate and boost the development of renewable hydrogen storage, we consider that there is some priority activities related with the importance of supporting hydrogen storage, that should be included in the AWP 2026.

Section 5 – Security of Supply

In line with objectives mentioned in section 5.1, and concretely, with regards to the goal of "Support the GCG and relevant stakeholders in the implementation of the security of supply measures and the assessment of European security of supply", two initiatives are proposed:

1. Conducting a study to assess the real needs for large-scale hydrogen storage capacity that would ensure energy supply security in 100% renewable scenarios
2. Conveying an analysis on European storage capacity with the shift of existing gas deposits into hydrogen storage facilities and match it with the additional capacity needed to assure security of supply

These two initiatives could be included among the "Key deliverables and activities" mentioned in section 5.2. to obtain a clear vision on the potential of large-scale hydrogen storage in assuring security of supply in Europe.

Section 6 – Energy Transition

Considering the objectives and activities included in this section, additional initiatives related with the needs of the hydrogen storage systems could be:

1. **Development of a Regulatory Framework for Underground Renewable Hydrogen Storage**

   Objective: Establish clear regulatory guidelines and standards to facilitate the deployment and operation of renewable hydrogen storage systems within the European hydrogen network.

   Activities to cover:

   - ✓ Conduct a comprehensive review of existing regulations to identify barriers to underground hydrogen storage development and propose necessary amendments.
   - ✓ Collaborate with stakeholders, including gas suppliers, hydrogen producers, infrastructure operators, and technology providers, to draft guidelines that support smooth integration of hydrogen storage systems.
   - ✓ Organize workshops and roundtable discussions to gather stakeholder input and ensure harmonization across member states.
   - ✓ Develop a certification process for hydrogen storage technologies to ensure safety, reliability, and environmental compliance.
   - ✓ Define a clear remuneration system for underground hydrogen storage facilities, as occurs in natural gas network, to convey security to stakeholders, stimulate new projects, and construct a robust hydrogen network.
   - ✓ Establish a framework of obligations for the consumption of green hydrogen to ensure demand and foster the creation of a sustainable hydrogen market. Without such a framework, the current price disparity between grey and green hydrogen may deter interest in purchasing green hydrogen at its higher cost
   - ✓ Introduce pilot programs in partnership with member states to test the proposed regulatory framework and adjust based on feedback and outcomes.

   This initiative would be related with the implementation of the Decarbonized Gas Market Package and achieving a common understanding of Directive and Regulation and the revised TEN-E Regulation.

2. **Implementation of a European Underground Hydrogen Storage Innovation Fund**

   Objective: Establish a dedicated fund to support innovative projects and technologies in underground renewable hydrogen storage, catalyzing their deployment across Europe.

   Activities:

   - ✓ Allocate funding for research and development initiatives focused on cutting-edge hydrogen storage solutions, such as high-capacity storage tanks and advanced material innovations.
   - ✓ Launch competitive calls for projects that demonstrate scalable and efficient hydrogen storage technologies, prioritizing those that can be integrated seamlessly into existing gas networks at pilot level.
   - ✓ Partner with European research institutions and private sector companies to co-develop technologies that enhance storage efficiency and reduce costs.
   - ✓ Monitor and evaluate funded projects to identify best practices and successful models, facilitating knowledge transfer across the EU.
   - ✓ Create a network of innovation hubs to foster collaboration among project developers, technology providers, and academia, promoting rapid prototyping and commercialization of solutions.

This example could help by promoting innovation and providing the financial support necessary to overcome the technical and economic challenges associated with deploying renewable hydrogen storage systems.

Section 7 – Research and Development

Very closely related to the activity included in point 7.2.5. "HYDROGEN AND GAS QUALITY ASSESSMENT, INCLUDING SMART GRID SOLUTIONS", an analysis of the feasibility of integrating renewable gases, such as hydrogen, into underground reservoirs originally designed for natural gas could also be promoted. These reservoirs can be repurposed to support the new backbone network of renewable hydrogen with a considerable impact due to its high storage capacity,

Some examples could be:

- Launch collaborative research projects focused on promoting underground hydrogen storage technologies.
- Develop pilot projects to test and validate underground hydrogen storage on depleted gas deposits.

Q3: Do you have any additional general comments?

Projects to consolidate the underground storage of renewable hydrogen should be included within the priorities of ENTSOG because it is demonstrated that they will be crucial to accomplish with decarbonization goals of gas sector, guarantee the Security of Supply and to have an efficient, sustainable and optimized energy system.

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