



Hy2Use

Safety communication as a factor in permitting and public acceptance

Hydrogen economy driver and barrier



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Hy2Use is a consortium of hydrogen IPCEI projects.

Context and relevance

Public perception plays a significant role in the permitting of industrial installations, including hydrogen production facilities based on electrolysis. While hydrogen has been handled safely in industrial contexts for decades, large-scale electrolysis plants are still relatively new in many regions, and public familiarity with these installations varies across Europe.

Electrolysis projects often involve multiple actors, including plant operators, electricity grid and gas network operators, local authorities, and neighbouring industrial facilities. Effective communication between these actors is essential throughout the project: from plant design until end of operation. In regions with a long history of gas infrastructure or industrial hydrogen use, baseline familiarity with hydrogen handling may support smoother permitting processes. In other regions, hydrogen production through electrolysis may be perceived as unfamiliar or associated with higher perceived risk.

Safety communication and risk perception

Technical risk assessments are essential but may not be sufficient to address safety concerns arising during project development. Electrolysis facilities often combine hydrogen production, hydrogen storage, high-capacity electricity connections, and integration with other industrial processes. This can create uncertainty among permitting authorities and

local stakeholders who may have limited prior experience with such installations.

In addition, communication challenges may arise between project developers, grid operators, and authorities when defining safety responsibilities, operational interfaces, and permitting requirements. Where communication is reactive, fragmented, or overly technical, it can reinforce uncertainty and slow down decision-making.

Conversely, structured and transparent communication between project partners, authorities, and local communities can build trust and facilitate more predictable permitting processes through improved understanding and perceived safety.

Implications for deployment

Where communication between stakeholders is insufficient or where public familiarity with electrolysis projects is low, reduced public acceptance may lead to local resistance, more complex permitting processes, and reputational challenges. This does not necessarily reflect higher objective risk, but rather limited experience with these installations and uncertainty about their operational characteristics.

For IPCEI projects, differing levels of familiarity with electrolysis technology across Member States may also lead to uneven implementation timelines and additional coordination challenges between project partners.

What can be done

Actions at project, national, and EU level could include:

- Improving early communication between project developers, grid operators, and permitting authorities when defining project interfaces and safety responsibilities
- Developing clear and accessible information materials explaining electrolysis technology, hydrogen handling, and associated safety measures
- Early engagement with local authorities, emergency services and communities during project planning
- Facilitating exchange of permitting experiences and communication practices between permitting authorities and Notified Bodies with different levels of experience with electrolysis projects

Strengthening communication around electrolysis projects would complement technical compliance and help ensure more predictable and transparent permitting processes.

Electrolysis safety is rarely limited by technical standards alone: clear communication between project partners, authorities and local communities is often decisive for timely permitting and public acceptance.

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Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Commission or Member States.



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