

Administrative and Regulatory Barriers to the deployment of Hydrogen Refueling Stations.

Alexandru Floristean

December 2018

HyLaw National Workshop – Brussels, Belgium



HyLAW
Hydrogen law



The HyLAW project has received funding from the Fuel Cells and Hydrogen 2 Joint Undertaking under grant agreement No 737977. This Joint Undertaking receives support from the European Union's Horizon 2020 research and innovation programme, Hydrogen Europe and Hydrogen Europe Research



Grant Agreement No 737977



Hydrogen Refueling Stations: Basic information

Hydrogen refueling stations can exist in different configurations:

- Different size (i.e. amount of H₂ stored)
- With or without on site production of H₂
- Various storage and dispensing pressure
- H₂ can co-exist with other fuels on the same site or not
- H₂ can be supplied by pipeline or transported to the station in tube trailers



Hydrogen Refueling Stations – Why do we need an efficient process?

- 2006 - First HRS commissioned in Europe in
- 2018 ~110 stations across Europe* ~50 of those in Germany
- According to National Plans submitted under the AFID, MS are committed to build ~800 HRS by 2025

	2018	2020	2022	2025	2030
Europe	100	-	-	(820~842)*	Tbc **
China	12	100	-	350	1000
Japan	100	160	-	320	(900)
USA	35	100	-	200~225	-
S-Korea	0	-	310	-	-



Fact: It took us 12 years to deploy the first 100 HRSs

Question: Can we build another 700+ in 7 years?

Answer: **Not at this rate!**



Let's start with the conclusion

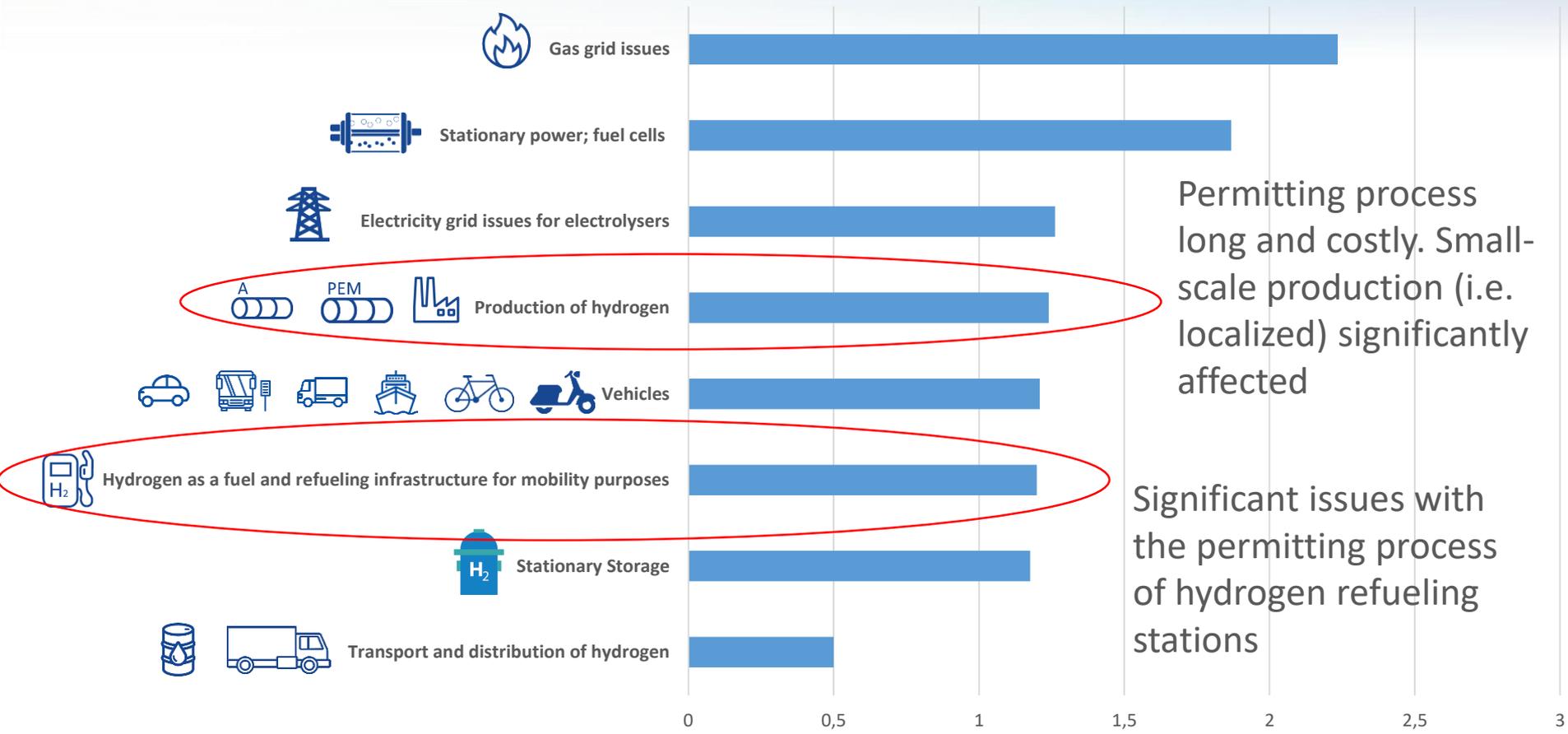
The permitting process for HRSs is long, costly, and its outcome is uncertain.

Project developers and administrations themselves lack the sufficient knowledge to navigate the requirements smoothly and without significant efforts.

This increases the costs for developers and delays the deployment of hydrogen technology.

Severity of barriers in each category

Severity





Why does it take so long?

Why does the process take so long?



Why does it take so long?

Reason 1: **Lack of clear rules and procedures:**

- Only **Germany, Denmark, the UK and the Netherlands*** have rules specifically designed to regulate permitting of HRSs
- Where specific rules don't exist, authorities **draw on both the permitting process of conventional refuelling stations as well as the regulations applicable for (industrial) H2 storage and for H2 production****.
- This method of working generates requirements well beyond those applicable to conventional stations.



Why does it take so long?

Reason 2: **Different authorities responsible:**

- **Austria** and **the UK** operate with a one-stop-shop authority, in most other countries, the various needed permits (e.g. construction, environmental, operating, Seveso etc.) will have to be obtained from different authorities (e.g. local municipality, regional decentralized authorities, fire brigade, working environment authorities, etc.). **Up to seven authorities can be involved!**
- Moreover, the **responsible authorities vary within Member States or even within regions**, depending on the territorial organisation of the countries concerned, meaning that a learning curve cannot manifest itself.
- The interpretation and demands from the responsible authorities can be different from one case to another



Why does it take so long?

Reason 3: **Not enough administrative practice:**

- In the absence of clear rules and sufficient experience, competent authorities are forced to **interpret general requirements for each request**.
 - Individual risk assessments are required each time.
- Operators wishing to develop HRSs often have to engage in capacity building with competent authorities, incurring additional costs in the process.

Reason 4: **Not enough guidance provided to operators**

- Given the lack of administrative practice, operators wishing to deploy HRS's are **not provided with enough guidance** on how to proceed with the procedure.

Reason 5: **Significant requirements** on operators

- **Reasonable requirements** stemming from existing legislation at EU level
- Obligations which (may) **apply unintentionally** to hydrogen production and storage
 - Hydrogen production: same obligations irrespective of production method
 - SEA/EIA and IED obligations – (interpretation of industrial scale) – possible effect on small scale production (is it relevant?)
- **Unreasonable requirements** stemming from in-experience

What are the obligations on operators?
Why are they cumbersome?
Is there a link to EU legislation?

- The permitting requirements applicable to HRSs draw heavily on obligations established at EU level.
 - Risk Assessments (SEVESO Directive).
 - Health and Safety requirements and conformity assessment procedures, (ATEX Directive).
 - Integrated Environmental obligations, (IED)
 - Environmental Impact Assessment procedures, (SEA and EIA Directives).
 - Others obligations (with or without EU links)
- Transposed into national law.
 - Large room for discretion in application (do they apply or not / under what conditions)
 - Differences in efficiency of procedures.



- Directives designed to regulate large scale, chemical, emission emitting industrial processes end up applying also to small scale, non-emitting processes.
- The scope of these Directives includes the production of hydrogen, irrespective of the production method.
 - production of hydrogen via electrolysis subject to the same requirements as industrial processes with a strong environmental footprint.
 - the threshold for production (i.e. industrial scale according to the IED) is unclear and places high burdens on low volume production sites (e.g. a HRS with on-site production).



- As an unintended effect, the obligations prescribed in these Directives
 - (i) severely inhibit the deployment of HRSs with on-site electrolysis production
 - (ii) increase the overall costs and time required for development of HRSs (with or without on-site production) through the imposition of complex obligations even when hydrogen is stored (and produced) in small quantities.
- Has the link between the Directives and their national implementation been lost, forgotten?
 - TO DO: Identify those requirements which are superfluous (or unintended);
- Is there “gold-plating” involved?
 - TO DO: Identify those which go beyond the intended obligations prescribed in the EU acts
- REFIT process?





Other restrictions?

Are there other restrictions which impede development?

(Spoiler: Yes)



Damaging restrictions?

Objective:

Hydrogen refueling should be possible at alongside other fuels, to allow the **continued use and adaptation of existing infrastructure!**

Problem:

Multi-Fuel HRS exist, however, imposing unreasonable safety distances and other restrictions may *de facto* limit the possibility of co-locating hydrogen in existing refueling stations, thereby making use of existing infrastructure.

Question:

Are restriction based on facts or unreasonable fears?



What about on site-production?

What about on site-production?



On site production – Industrial Activity?

Objective:

HRS should generally be allowed to be located where such plans also allow conventional refuelling stations.

Problem:

On-site production of hydrogen (even when produced from processes without direct emissions such as water electrolysis) would result in the HRS being classified as an industrial activity, hence such an HRS would only be permitted in an area designated as an industrial zone*,

Why?

Lack of clarity on the scope of the EIA, SEA, IED and SEVESO Directives?

Definition of “industrial scale“?

NACE code under which the activity falls?

Lack of distinction between production methods?



Good practices?

Any good practice?



Good practices?

Yes 😊

- **Germany, the Netherlands and the UK** are some of the jurisdictions with the highest degree of maturity when it comes to the HRS permitting process*
- The German National Organization Hydrogen and Fuel Cell Technology (NOW) has developed **approval guidelines for HRS**, these have been made publicly available
- **The Netherlands** and the **UK** have since then developed and published **guidelines**, thus providing more support to project developers seeking to build and operate HRSs.
- Even so, situation is far from perfect, as significant effort is required.

Thank you for your
attention

Questions?



HyLAW
Hydrogen law



Grant Agreement No 737977