The contribution of the HyLAW project Results to date and the need for future work

Nicolas Brahy

December 2018

HyLaw EU Workshop – Brussels

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December 2018

HyLaw EU Workshop – Brussels

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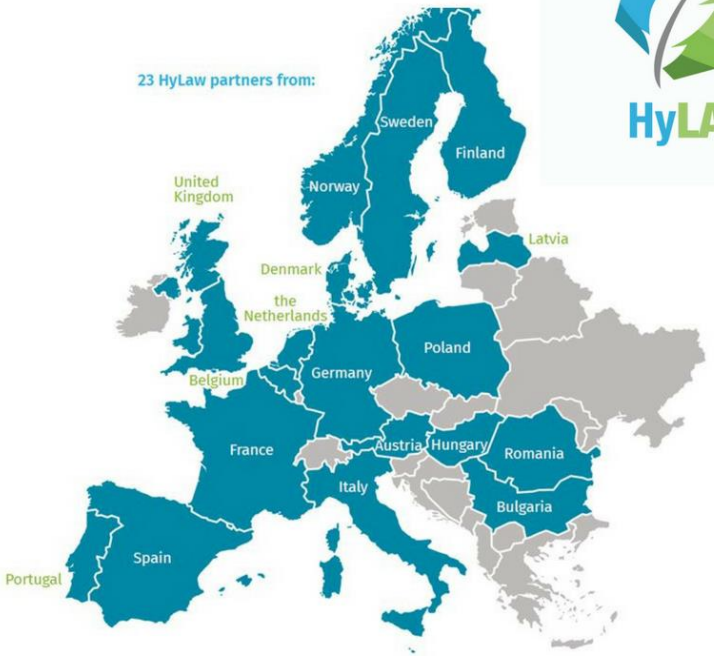
Grant Agreement No 737977

HyLAW EU Workshop

Brussels

06.12.2018

10:00-16:30



Join us on sli.do (www.slido.com) for questions

#HyLaw

Legal & administrative processes hamper the uptake of FCH technologies

Increasing deployment and appetite for fuel cells and hydrogen (FCH) technologies across Europe:

- more products better performance, reduced cost.

BUT…

1. Regulatory and legal administrative processes (LAPs) reflect incumbent technologies.

- Existing rules (or lack thereof) often create **unintended barriers** to the deployment of new products
  - No broad, in-depth, analysis to identify legal barriers to deployment of hydrogen technologies

2. Legal and Administrative barriers **increase time and cost of projects**, or **outright exclude** certain types of operation or business models

- No publicly available resource presents the rules applicable when deploying hydrogen technology
  - Knowledge restricted to a few experienced operators but limited in scope to certain applications within a clearly defined context.

HyLaw Objectives

Policy	Market
Identify regulatory barriers (and best practices) and advocate for better regulation to support the uptake of fuel cell and hydrogen technologies	**Describe legal and administrative processes** which apply when deploying key Hydrogen technologies (coherent, user friendly, online database)

Analytical documents
Policy Papers (Recommendations)

User friendly database

Communicate, Disseminate and follow-up

Scope

- ~55 Legal and administrative processes
- 20 hydrogen applications
- 8 categories
- ~55 000 data points

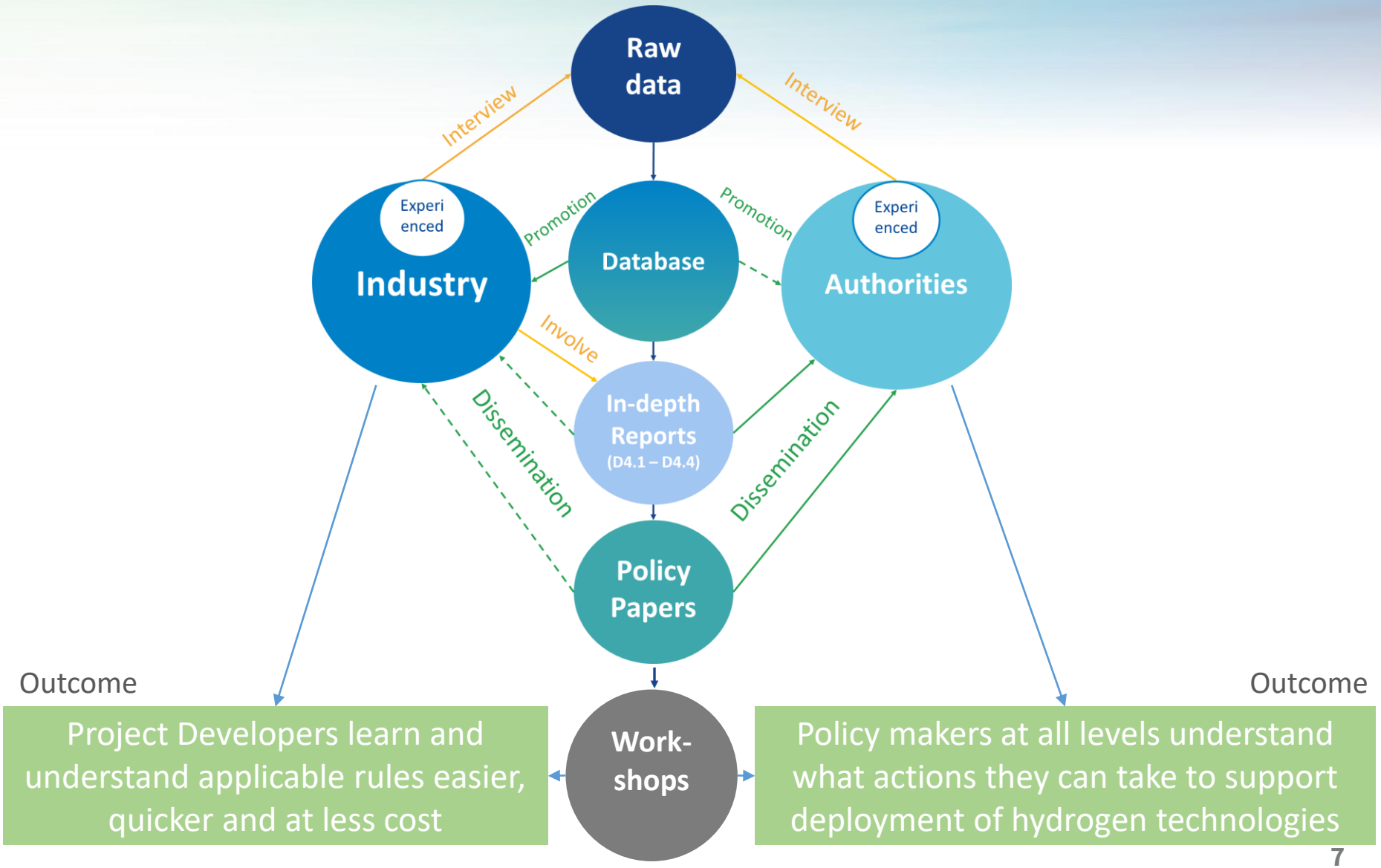
Categories of applications
1. Production of hydrogen
2. Storage of hydrogen
3. Transport and distribution of hydrogen
4. Hydrogen as a fuel and refueling infrastructure for mobility purposes
5. Vehicles
6. Electricity grid issues
7. Gas grid issues
8. Stationary power; fuel cells (other issues than gas grid and electricity)

Geographical coverage

- HyLaw's covered 17 EU Countries + Norway.

- 23 Partners contributed to the work, providing details on the legal and administrative processes applicable in their countries

Hylaw Information and Knowledge Flow



HyLaw database

HyLAW Online Database

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Welcome to the HyLAW Online Database

HyLaw stands for Hydrogen Law and removal of legal barriers to the deployment of fuel cells and hydrogen applications. It is a flagship project aimed at boosting the market uptake of hydrogen and fuel cell technologies providing market developers with a clear view of the applicable regulations whilst calling the attention of policy makers on legal barriers to be removed.

The project brings together 23 partners from Austria, Belgium, Bulgaria, Denmark, Finland, France, Germany, Hungary, Italy, Latvia, Norway, Poland, Romania, Spain, Sweden, Portugal, the Netherlands and United Kingdom and is coordinated by Hydrogen Europe.

The HyLaw partners will first identify the legislation and regulations relevant to fuel cell and hydrogen applications and legal barriers to their commercialisation. They will then provide public authorities with country specific benchmarks and recommendations on how to remove these barriers.

Read more

©H2ME HyFIVE

Get involved

Deployment of hydrogen requires a massive collaborative effort to identify, reduce and eliminate regulatory burdens. HyLaw welcomes your input and contribution.

Create and Inform
HyLaw Database

- Database is online on www.hylaw.eu/database

HyLAW Online Database

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Home / Database

Database

Production of hydrogen | Centralised (Electrolysis, Steam-Meth | Please select a LAP

Database | Compare LAPs | Legislation

The HyLaw database is structured along the nine categories which can be seen below. Within each category, a number of relevant hydrogen applications and different legal and administrative processes (LAP's) are covered. These can be selected from the drop-down menu found below. Once selecting the category, application, legal and administrative process (LAP) and the country you are interested in, you will be directed to a page displaying the data collected in the course of the project.

Production of hydrogen

Centralised (Electrolysis, Steam-Methane reforming, and H2 liquification)
This application concerns the production of hydrogen at one location, in quantities to cover the needs of hydrogen over a relatively large geographic area for a relatively large number of points of use, implying hydrogen transportation

- Land use plan (zone prohibition)
- Permitting process (include former LAP: emission regulation)
- Permtting requirements (include LAP: safety-distances)

Localised (Electrolysis, Steam-Methane reforming, and H2 liquification)

Stationary Storage

Transport and distribution of hydrogen

Hydrogen as a fuel and refueling infrastructure for mobility purposes

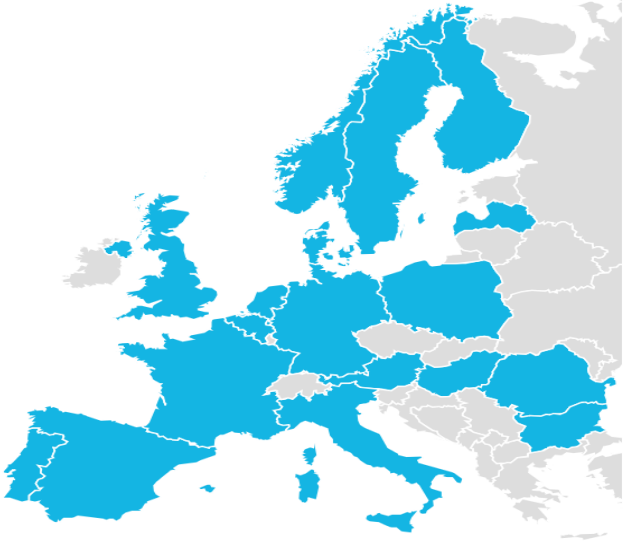
Vehicles

Electricity grid issues for electrolysers

Gas grid issues

Stationary power; fuel cells

Introduction of green hydrogen in Industry



HyLaw – Online Database preview

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Home / Database / Production of hydrogen / Centralised (Electrolysis, Steam-Methane reforming, and H2 liquification) / Land use plan (zone prohibition)

Land use plan (zone prohibition)

Production of hydrogen | Centralised (Electrolysis, Steam-Meth | Land use plan (zone prohibition)

Database | Compare LAPs | Legislation

Land use plan (zone prohibition)

This LAP refers to the land use plan and analyses the legal requirements for building a centralised hydrogen production facility (including potential zone prohibition), identifies the authority responsible for delivering the land use permit, gives an estimate of the time needed to change the land use plan, and finally highlights if the permit process is uniform throughout the country.

Germany

Expand all answers

a - What are the main regulations/requirements regarding land use plans for building a hydrogen production facility (e.g. permitting regime, agreement)?

b - Are there specific requirements or zone prohibitions for building a hydrogen production facility in the land use plans?

Which is the authority responsible for delivering the land use permit ?

The preparatory and legally binding land use plans are developed and adopted by the municipalities in the framework of national legislation.)

Is there a uniform permit process at local level throughout a country? (uniform interpretation?)

If needed, what is required and how much time does it take to change the land use plan?

Is it a barrier?	No
Assessment Severity	0
Assessment	The LAP is important for identifying the types of land use plans and their requirements resp. prohibitions for building of an industrial hydrogen production plant.

Show National legislation

Show EU legislation

Show Glossary

Show Pan-European Assessment

View Legislation Table

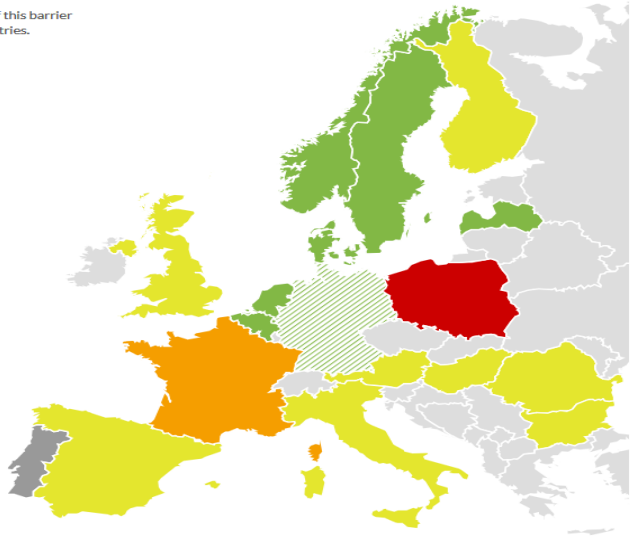
PDF Export | Excel Export

The information is correct | There are errors ...

Submit a suggestion for improvements

This map depicts the severity of this barrier across the HyLaw Partner countries.

- No barrier
- Low
- Medium
- High
- Data not available
- Selected countries



HyLaw – Online Database preview

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France

Expand all answers

a - What are the main regulations/requirements regarding land use plans for building a hydrogen production facility (e.g. permitting regime, agreement)?

b - Are there specific requirements or zone prohibitions for building a hydrogen production facility in the land use plans?

Which is the authority responsible for delivering the land use permit ?

Is there a uniform permit process at local level throughout a country? (uniform interpretation?)

If needed, what is required and how much time does it take to change the land use plan?

Is it a barrier?	Yes
Type of Barrier	Structural barriers
Assessment Severity	2
Assessment	A hydrogen production unit cannot be installed everywhere; The PLU should be analysed before the planning of the project to choose the appropriate area. This means that the ground parcel on which the H2 production unit will be installed should be eligible for this activity. The process duration to change to land use plan is estiamted to be the longest from all other countries studied

Show National legislation

Show EU legislation

Show Glossary

Show Pan-European Assessment

View Legislation Table

PDF Export | Excel Export

The information is correct | There are errors ...

Submit a suggestion for improvements

Questions and Answers:

- A starting point to understand the process and requirements
- Future work (possible follow-up) could go deeper or answer additional questions

Assessment:

- Project partners tried to assess whether the process represents a barrier for industry
- Somewhat subjective, but reasoning is explained for each country and on pan-European level (see below)

Applicable Legislation (National and EU, incl. standards) as well as links to the legal acts where available

Glossary (to explain terms used) and **Pan European Assessment** (to explain the severity of assessment)

Export and other display functionalities

Stakeholder feedback (multiple functionalities, including editing)

HyLaw – Online Database preview

Gas grid issues | Injection of Hydrogen at transmissio | Legal framework: permissions and re

Database | Compare LAPs | Legislation

Legal framework: permissions and restrictions (and Ownership constraints (unbundling))

This LAP concerns the legal framework status covering authorised bodies overseeing and involved with the injection of hydrogen and varying hydrogen concentration levels in the TSO high pressure gas transmission system, along with potential changes to the regulatory framework to support enhanced hydrogen injection and utilisation

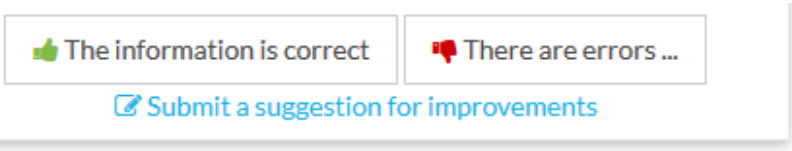
	The Netherlands	Germany
		Expand all answers
Which is the responsible authority/legal entity for the permission of the connection/injection of hydrogen in the gas grid?	Ministry of Economic Affairs is responsible for the Ministerial Decree 'Gas Quality'. Injection of hydrogen is only allowed within the maximum, specified in the Ministerial Decree. Since the TSO is regulated under the Dutch Gas Law and pure hydrogen does not qualify as natural gas the transport of pure hydrogen is not allowed for the TSO.	The respective gas network operator
What is permitted or restricted according to national legislation under your responsibility as TSO regarding the transport of pure hydrogen and mixtures of hydrogen and natural gas.		
Is there a maximum concentration defined that you are allowed to transport as a TSO? (e.g. are you allowed to transport 100% hydrogen)		
What is the maximum allowed concentration in your country for injection in the gas grid on transmission level?		
In case the maximum hydrogen concentration in your transmission grid (system) is less than 100%, is it allowed to inject pure hydrogen- 100%? into gas grid on transmission level (up to the allowed concentration)? If no, who is responsible for the blending with natural gas? Is there an obligation for the TSO to provide the necessary natural gas for blending the hydrogen (with several EU Directives transposed into national legislations the functions of gas grid operator and natural gas supplier are separated)		
Are there specific requirements for increasing or decreasing the admissible threshold of hydrogen concentration (upstream and downstream networks, infrastructure elements and appliances with lower tolerance)? If yes: please describe.		
Are there specific restrictions/permissions for the transport of hydrogen other than "concentration" and "quality", if yes which ones?		
If it can be guaranteed that the gas is on the required quality specification (on spec) at the next customer, is it allowed to feed in off-spec gas (read: a higher concentration of Hydrogen)?		
Which part of the connection facility (the injection installation is part of the connection facility) is owned by or under the responsibility of the TSO?		
0 As TSO, do you see legal and administrative restrictions with regard to the ownership of your part of the connection facility (the injection installation is part of the connection facility) of hydrogen into the grid?		
1 Is there a difference in legal and administrative restrictions between connections for hydrogen injection into TSO and DSO-networks? If so could you please specify the differences?		
2 Are there specific national (add-on) restrictions for the connection/injection of hydrogen in TSO networks compared to the connection/injection of natural gas? If yes: please name them. Are there other requirements for the injection of H2NG-blends compared to pure Hydrogen?		
3 Is it foreseen to review the current regulation to consider hydrogen injection into natural gas network and if yes on which term?		
Is it a barrier?	Yes	Yes
Type of Barrier	Regulatory	Structural barriers
Assessment Severity	3	3

HyLaw – Keeping database up-to-date

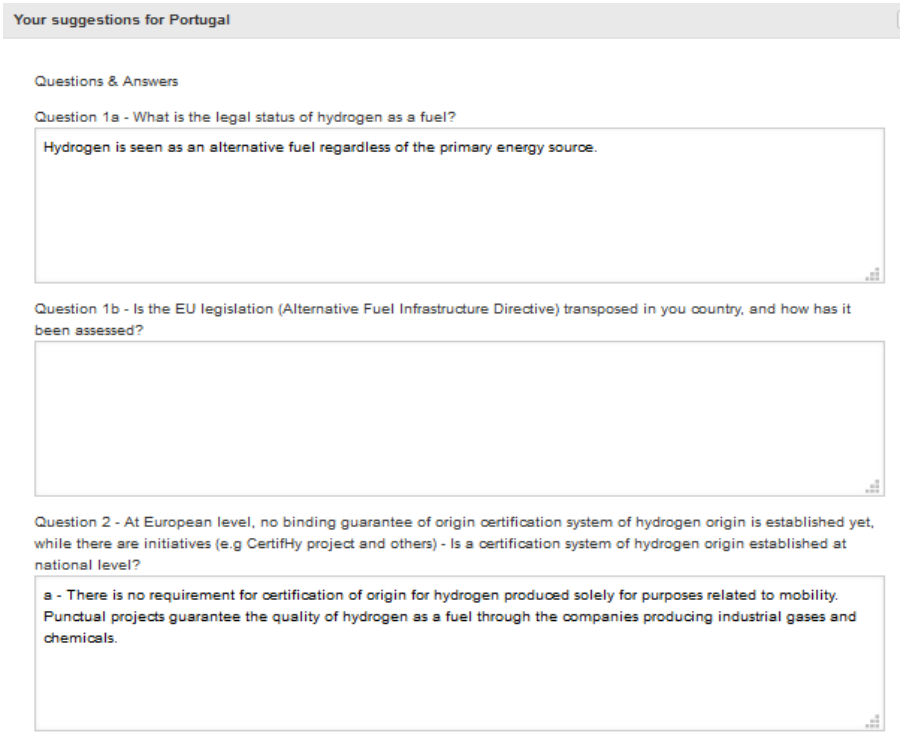
EDITS AND UPDATES BY PARTNERS

- Periodic (First update in 2019)
- Each Country Partner responsible to keep it up –to-date
- Commitment beyond the lifetime of the project:
  - further updating for 3 years post project completion
  - the portal to be available for at least 5 years post project completion

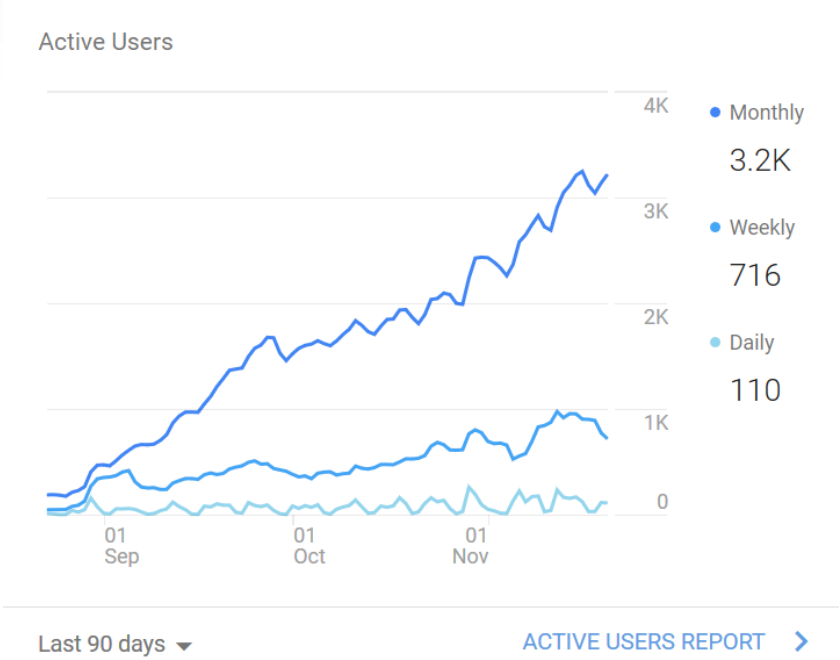
USERS CAN FLAG CONTENT

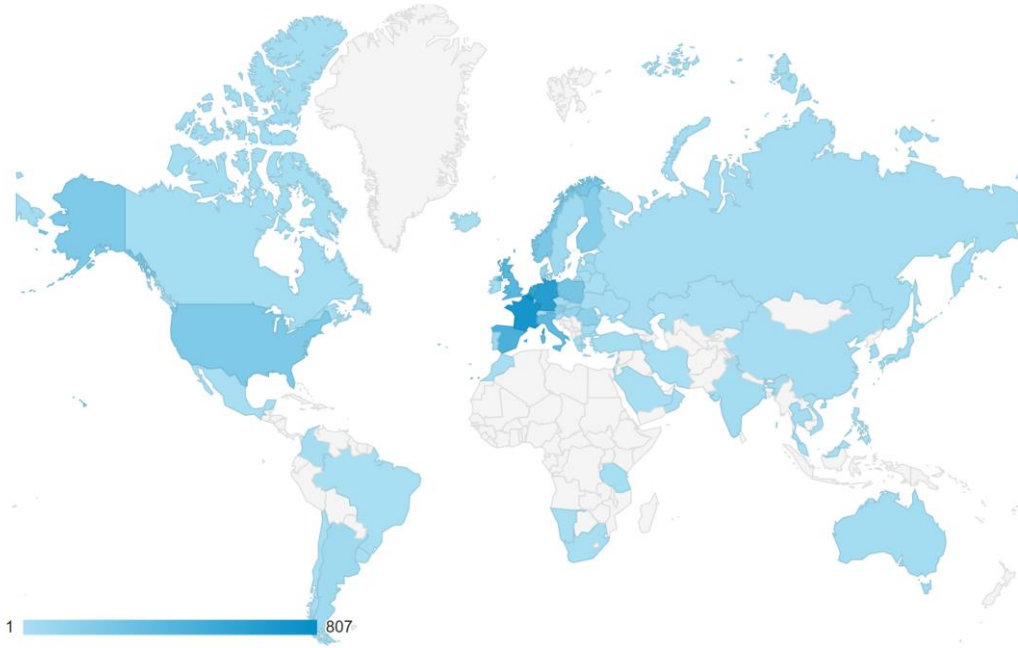


EDITS BY USERS



Interest in the database is extremely high!





1.	Belgium	807 (13.41%)
2.	France	717 (11.92%)
3.	Germany	636 (10.57%)
4.	Netherlands	571 (9.49%)
5.	Spain	459 (7.63%)
6.	United Kingdom	391 (6.50%)
7.	Italy	358 (5.95%)
8.	Poland	255 (4.24%)
9.	Norway	232 (3.86%)
10.	United States	210 (3.49%)

*data extracted on 20 November 2018

Measure and Compare
HyLAW: In-depth analytical reports

- D4.1: Detailed **cross-country analysis:** For each process
  - Presentation of the problem
  - Assessment of root causes
  - Recommendations
- D 4.2: **List of legal barriers**, prioritized by degree of severity
- D 4.3: **Horizontal position papers by application**
- D 4.4. **List of the most relevant EU legislation**

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D4.1 - Cross-country analysis -

- For each category
  - each application
    - each legal and administrative process
- The report
  1. Assesses the situation and whether there is a barrier
  2. Identifies the nature of the barriers and the impact of the barriers
     - Structural barrier
     - Operational barrier
     - Economic barrier
     - Regulatory gap
  3. Compares systematically European countries identifying good .. and bad practices
  4. Identifies sources of the problem (or solution)
     - EU regulation/directive
     - National rules/ national transposition of EU directive
     - Implementation by local authorities
  5. Makes recommendations

3. Best Practices and Barriers highlighted clearly

Example: permitting process for HRS

When considering the process of permitting the construction and operation of a HRS, there are very few countries where the regulations are specifically designed to regulate HRSs, the most advanced being Germany, Denmark, the UK and the Netherlands. Specific Regulations (AMPG) in France are also under development

Where explicit requirements exist, they invariably require a risk assessment to be carried out covering safety risks associated with fire and explosion, health risks and environmental risks. The risk assessments should also identify the control measures to be put in place to provide an adequate level of public safety for the proposed installations. The risk assessment should include an assessment of major accident hazards presented by the delivery, storage and dispensing of hydrogen at the site and identify controls and contingency plans.

Where specific regulations for hydrogen fuelling stations don't exist, it is expected that authorities will 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 and the permitting process carries some "regulatory risks" for the operator, as the interpretation and demands from the regional administrative authority can be different from one region to another. By contrast, the requirements for conventional fuel storage at refuelling station are very similar in all EU countries. The lack of experience for potential HRS operators as well as public authorities coupled with the lack of guidelines and instructions for local authorities can cause delays and extra costs and may lead to divergent interpretations from case-to-case, further complicating the obligations of HRS operators.

D4.1 - Cross-country analysis - examples

3. Country comparison and identification of good practices.

Table 9: Comparative list of incentives on hydrogen cars / buses in the partner countries

	Access to specific lanes	Free/ reduced fee parking	Tax incentives	Registration fee reduction	Toll charges exemption	Public proc. Rules	Others
Austria	✗	✗	✓	✗	✗	✗	✗
Belgium	✗	✗	✓	✓	✓	✗	✓
Bulgaria	✓	✓	✓	✓	✗	✓	✗ (✓)
Denmark	✗	✓	✓	✓	✗	✓	✗
Finland	✗	✓	✗ (✓)	✗	✗	✗	✗
France	✓	✓	✓	✓	✓	✓	✗
Germany	✓	✓	✓	✗	✗	✓	✓
Hungary	✗	✗	✗	✗	✗	✗	✗
Italy	✗	✗	✗	✗	✗	✗	✗
Latvia	✓	✓	✓	✓	✗	✗	✗
Netherlands	✗	✗	✓	✗	✗	✗	✗
Norway	✓	✓	✓	✓	✓	✗ (✓)	✓
Poland	✗	✗	✗	✗	✗	✗	✗
Portugal	✗	✓	✓	✗	✗	✗	✗
Romania	✗	✗	✗	✗	✗	✓	✗ (✓)
Spain	✓	✗ (✓)	✓	✓	✓	✗	✓
Sweden	✗	✗	✓	✗	✗	✗	✓
UK	✗ (✓)	✗ (✓)	?	✓	✓	✓	✓

4. Identifies the sources of the problem

- **EU regulation/directive**
- National rules/ national transposition of EU directive
- Implementation by local authorities

Example HRS permitting requirements

Although it may not be evident, given that permitting is under the competence of local or regional authorities, based on national legislation, the **permitting requirements applicable to HRSs draw heavily on obligations established at EU level**. In this sense, the relevant Directives which affect the permitting requirements for HRSs are the SEA[68] and EIA Directives, (including Directive 2014/52/EU) on the assessment of the effects of certain public and private projects on the environment[69] as well as Directive 2012/18/EU (SEVESO Directive)[70], Directive 2010/75/EU on industrial emissions[71] and the ATEX Directive (Directive 2014/34/EU)[72]. These Directives have been designed to regulate large scale, chemical, emission emitting industrial processes but end up applying also to small scale, non-emitting processes.

As also discussed in section 4.4.1, the scope of these Directives includes the production of hydrogen, irrespective of the production method. As a result, the production of hydrogen via electrolysis (which, depending on the methods of production of electricity, causes no direct emissions) is subject to the same requirements as industrial processes which have a strong environmental footprint. Furthermore, 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. an HRS with on-site production. Finally, although the threshold for application of lower tier requirements of the SEVESO Directive (over 5 tons) appears to be rather clear, Member States appear to have "gold-plated" transposition acts by establishing requirements for storage sites below 5 tons.

As an unintended effect, the obligations prescribed in these Directives (i) severely inhibit the deployment of HRSs with on-site production (despite their potential to reduce overall carbon emissions and low environmental risk) and (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.

5. Makes recommendation

Example: land use rules for HRS

- Issue:
  - Different zones for different activities
  - No explicit qualification of H2 local production
  - Authorities search for a qualification
    a) Or in EU texts (IED, EIA, SEA, …)
    b) Or in classification of activities (NACE code or Nomenclature des Activités Économiques dans la Communauté Européenne)
      - code: *20.11 - Manufacture of industrial gases*
      - *Or Code 20.13 - Manufacture of other inorganic basic chemicals*
- Problem
  - H2 local production ends up being treated as industrial activitity and HRS are limited to industrial zone.
- Recommendations:
  - In land use: treat HRS explicitly as conventional fuel stations
  - In NACE code treat HRS as conventional fuel stations
    - *Code 47.30 - Retail sale of automotive fuel.*

National Policy Papers

- **National Policy papers:**
  - Key messages and recommendations for each country

National policy papers

Building on the content of the database, National policy present the state of play of the Hydrogen Regulatory environment in each country and detail country specific recommendations.

Austria	Germany	Poland
Belgium	Hungary (EN) (HU)	Portugal
Bulgaria	Italy	Romania
Denmark (EN) (DK)	Latvia	Spain (EN) (ES)
Finland	Netherlands	Sweden
France	Norway	United Kingdom

EU policy paper

Analytical reports and other deliverables

HyLaw Workshops: Disseminating results and recommendations

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EU Workshop

A HyLaw EU workshop is scheduled to take place in Brussels on the **6th of December 2018** – for details, contact Alexandru Floristean: a.floristean@hydrogeneurope.eu.

Country	City	Location	Date	Contact Person	Contact Email
EU	Brussels	Hydrogen Europe, Avenue de la Toison d' Or 56- 60	06/12/2018	Alexandru Floristean	a.floristean@hydrogeneurope.eu

National Workshops

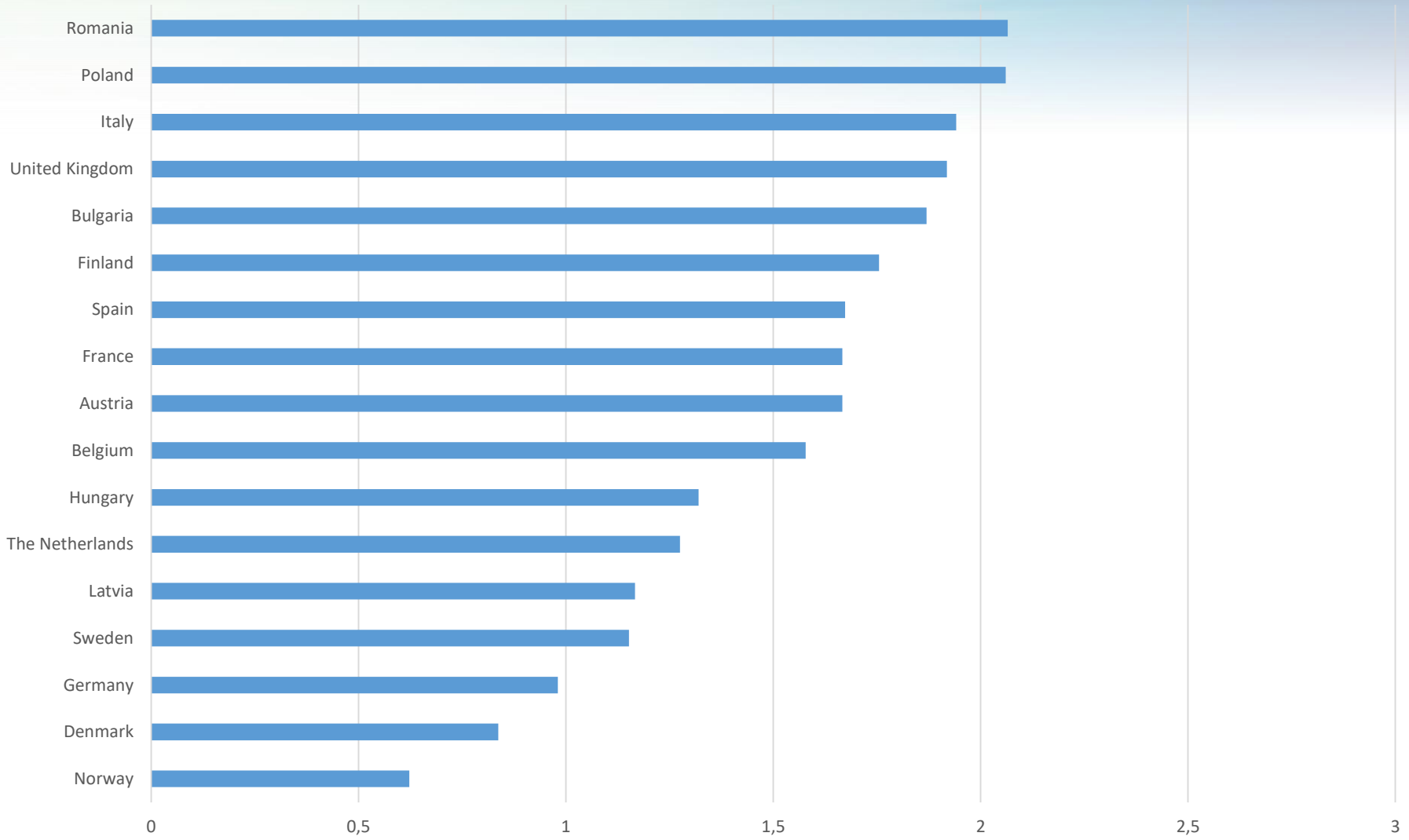
A key national workshop will be organised in each country to present the results of the HyLaw project . Please check below for a schedule of events.

Country	City	Location	Date	Contact Person	Contact Email
AT	Vienna	AEA Executive Committee	06/11/2018	Alfred Schuch	Alfred.Schuch@energyagency.at
BE	Brussels	Avenue de la Toison d' Or 56- 60	23/10/2018	Isabel Francois	isabel.francois@waterstofnet.eu
BG	Sofia	Sofia	06/11/2018	Daria Vladikova	d.vladikova@bas.bg
DK	Copenhagen	Danish Energy Association	25/09/2018	Chris Holst Preuss	TLJ@brintbranchen.dk
FI	Espoo	Dedicated Hydrogen Seminar	07/11/2018	Mikko Kotisaari	mikko.kotisaari@vtt.fi
FR	Paris	To be announced	06/11/2018	Christelle Werquin	Christelle.werquin@afhypac.org
DE	Berlin	Dedicated Workshop	08/11/2018	Dennitsa Nozharova	dennitsa.nozharova@encon-europe.de
HU	Budapest	MTA TTK building, XI.district Budapest, Magyar Tudósok krt. 2.	27/09/2018	Mayer Zoltan	mayer.zoltan@hfc-hungary.org
IT	Milan	National Forum on FC&H technologies, 2018	25/10/2018	Viviana Cigolotti	viviana.cigolotti@enea.it
LV	Riga	The Environment and Energy trade fair	19-21/10/2018	Dainis Boss	dainis@h2lv.eu
NL	The Hague	Dedicated HyLaw Workshop	09/11/2018	Remco Perotti	remco.perotti@nen.nl
NO	Oslo	Citybox, Prinsens gate 6	11/10/2018	Heidi Bull-Berg	Heidi.bull-berg@sintef.no
PL	Warshaw	HyLaw National Workshop	21/11/2018	Marcin Blesznowski	marcin.blesznowski@ien.com.pl
RO	Băile Govora, Vâlcea	Energy Storage Symposium	24-26/10/2018	Ioan Iordache	office@h2romania.ro
ES	Madrid	CDTI (Centro para el Desarrollo Tecnológico Industrial)	18/09/2018	Miguel Zarzuela	mzarzuela@hidrogenoaragon.org
SE	Stockholm	Tändstickspalatset, Västra Trädgårdsgatan 15, Stockholm	20/11/2018	Bjorn Aronsson	bjorn.aronsson@vatgas.se
UK	London	London City Hall	08/11/2018	Emma Fenton	Emma.Fenton@london.gov.uk

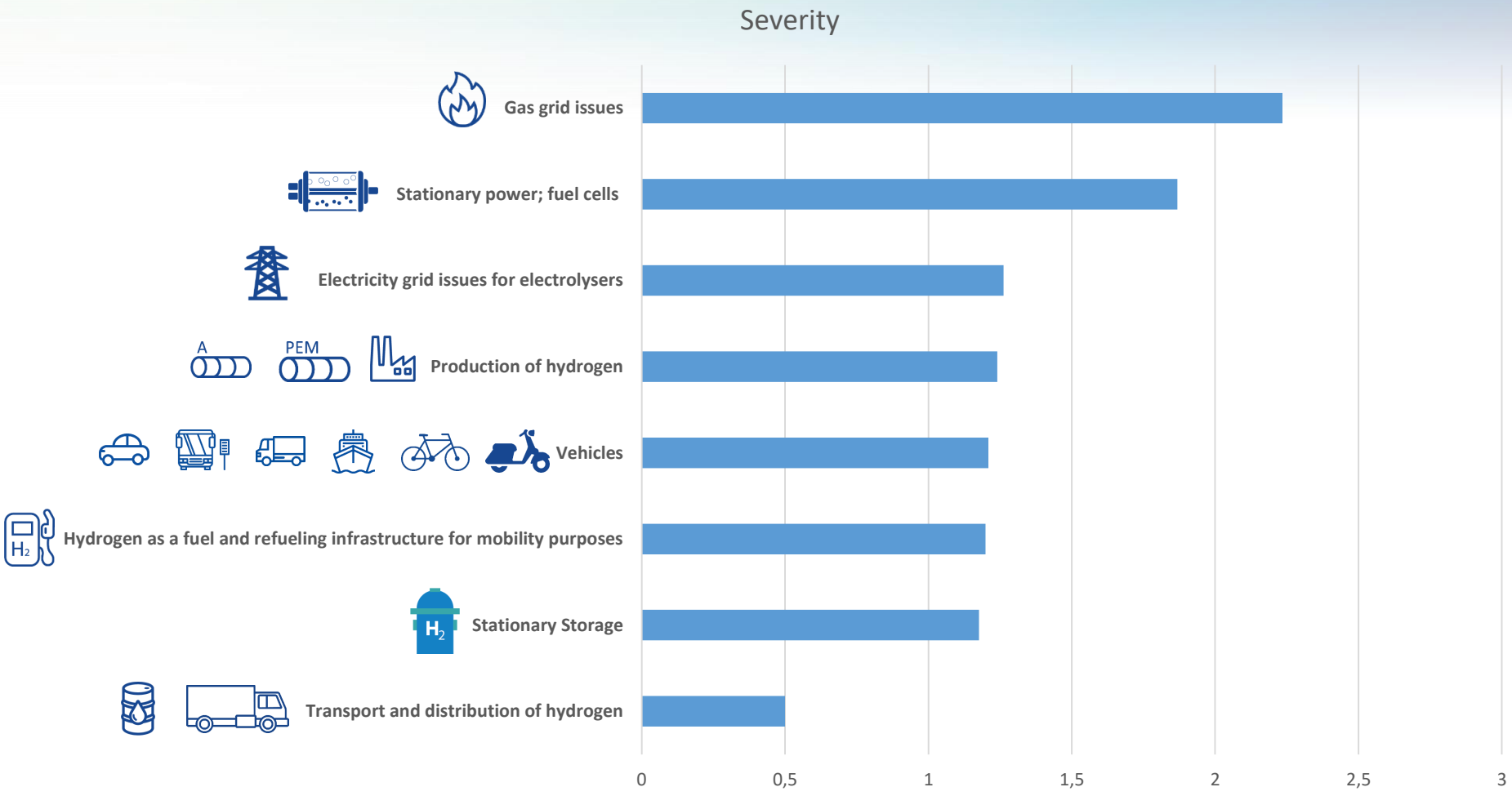
Findings

What are the findings?

Overall assessment across countries

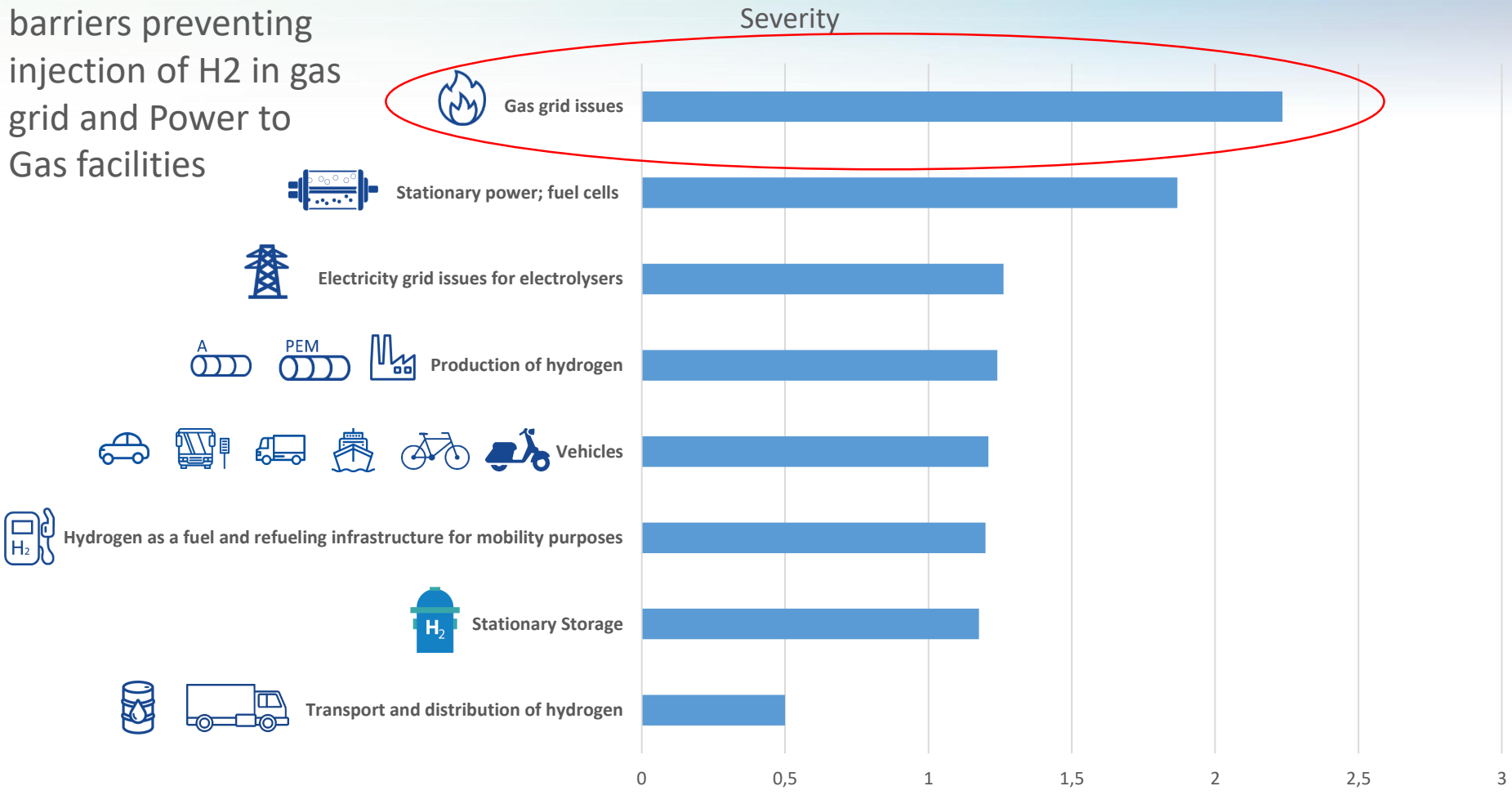


Severity of barriers in each category



Severity of barriers in each category

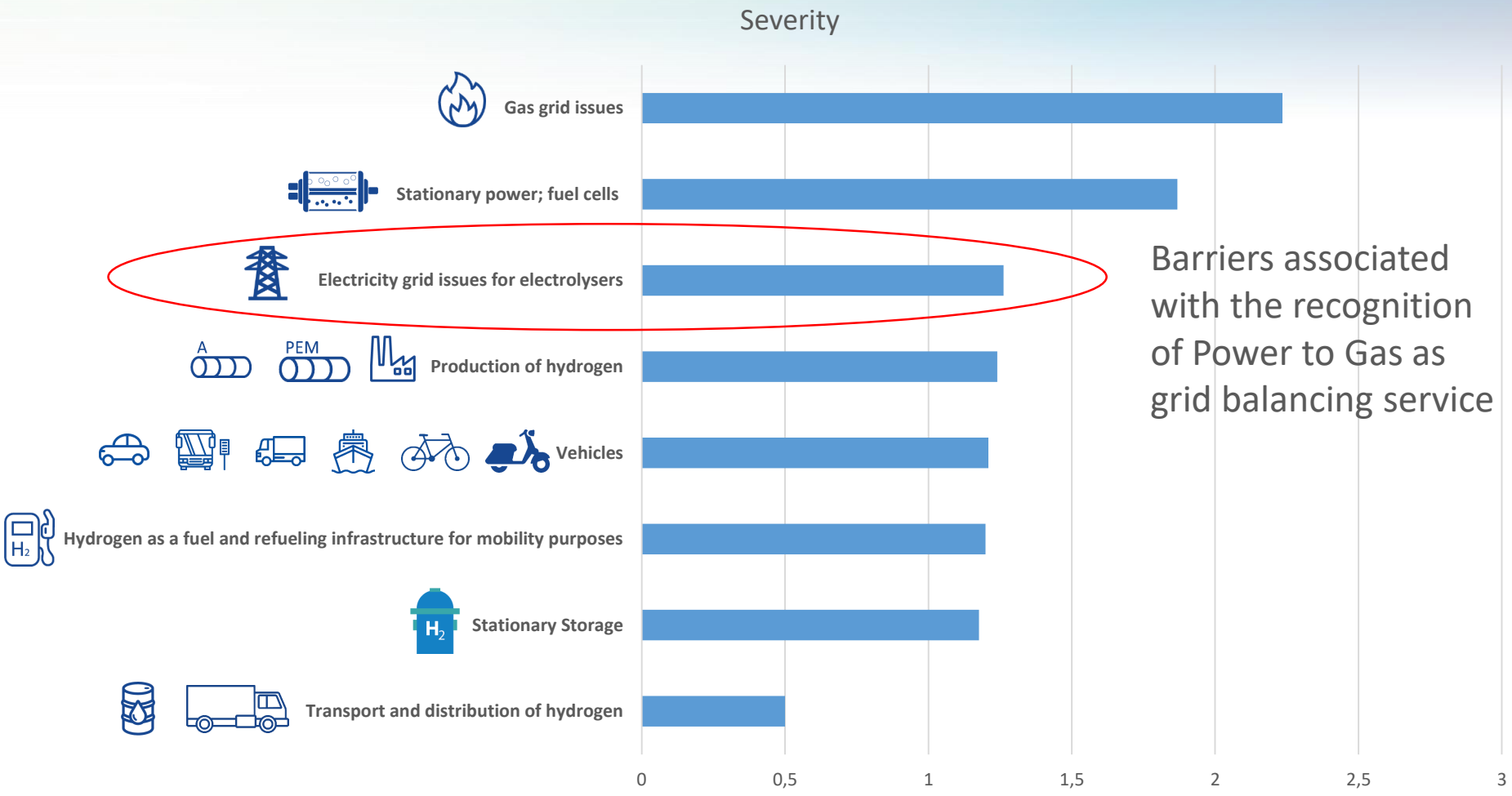
Major structural barriers preventing injection of H2 in gas grid and Power to Gas facilities



Severity of barriers in each category

Barriers are mostly economic in nature, rather than regulatory

Severity of barriers in each category



Barriers associated with the recognition of Power to Gas as grid balancing service

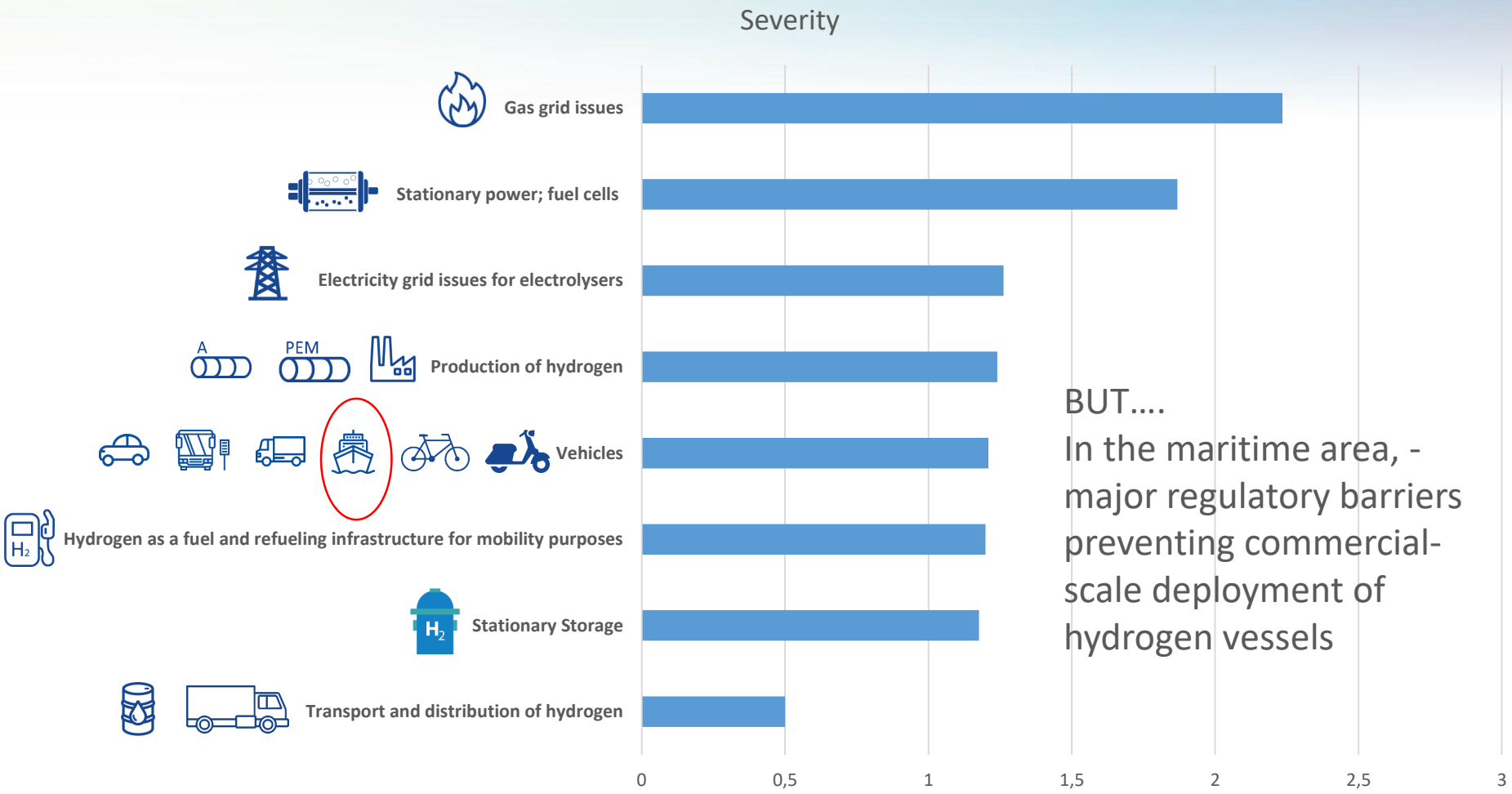
Severity of barriers in each category

Permitting process long and costly. Small-scale production (i.e. localized) significantly hampered

Severity of barriers in each category

For road vehicles, no major regulatory barriers, although lack of consistent incentive policies affects large-scale deployment

Severity of barriers in each category



BUT….
In the maritime area, - major regulatory barriers preventing commercial-scale deployment of hydrogen vessels

Severity of barriers in each category

Significant issues with the permitting process of hydrogen refueling stations,

Severity of barriers in each category

Standards for compressed hydrogen receptacles (e.g. trailers) need to be adapted to world with a higher demand for Hydrogen. Current limitations to pressure and volume will quickly become insufficient

What is next?

What is next?

- Each barrier identified by HyLaw requires bespoke solutions (there is no silver bullet).

- Different stakeholders need to act in a concerted manner.
  - The European Commission,
  - Member States,
  - Regional and Local authorities,
  - Industry,
  - Standardisation bodies,
  - Researchers,
  - the FCH JU

- Recommendations target everyone! –
  - Policy papers summarize actions required
  - D4.1. goes into details

What is next?

And us?

What is next?

- We will continue to develop the database
  - Provide updates
  - Work with stakeholders to ensure that user take ownership and contribute to development
  - We will answer questions and provide a service based on the knowledge generated

But it is not enough!

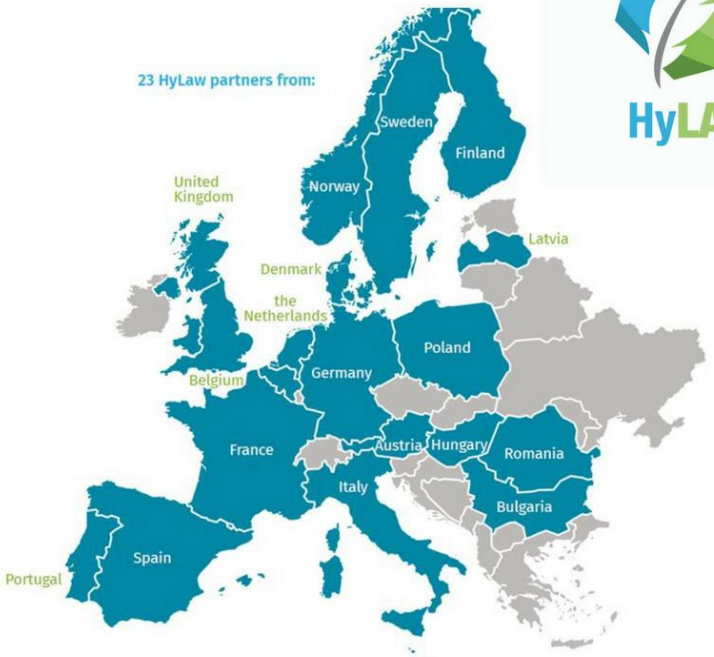
- We need to go deeper in priority topics and contribute towards short and long term solutions!
  - We must follow-up on key recommendations and support industry and policy makers with additional analysis and explanations (e.g. guides)
    - What should be our priorities?
      - Workshop follow-up survey to be launched!

HyLAW EU Workshop

Brussels

06.12.2018

10:00-16:30



Join us on sli.do (www.slido.com) for questions

#HyLaw

Thank you for your attention

Questions?

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