D4.3

Guidelines and good practices for obtaining permitting

Under Review

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D4.3

Guidelines and good practices for obtaining permitting

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Partners short names

ENVI	Parco Scientifico Tecnologico Per L'ambiente Environment Park Torino Spa
IMI	Institute For Methods Innovation
IME	Fundacion IMDEA Energia
APRE	Agenzia per la Promozione della Ricerca Europea
CNH2	Centro Nacional Del Hidrogeno
RIGP	Regionalna Izba Gospodarcza Pomorza
CLUSTER TWEED	Cluster Tweed
BH2C	Balkanski Vodoroden Klaster

Abbreviations

TECNIBERIA	Spanish Association of Engineering, Consultancy and Technology Services Companies
SNAM	Società Nazionale Metanodotti
H2IT	Italian Hydrogen Fuel Cell Association
PAS	Simplified Authorisation Procedure
HRS	Hydrogen Refuelling Station
IED	Industrial Emissions Directive
QRA	Quantified Risk Assessment
DVGW	German Technical and Scientific Association for Gas and Water
EIA	Environmental Impact Assessment
CNG	Compressed Natural Gas
LPG	Liquefied Petroleum Gas
PCI	Project of Common Interest
CERA	Cyprus Energy Regulatory Authority
PSG	Publicatiereeks Gevaarlijke Stoffen
WABO	Wet Algemene Bepalingen Omgevingsrecht
NMG	Ministry of National Economy
AUA	Single Environmental Authorisation
AIA	Autorizzazione Integrata Ambientale / Integrated Environmental Authorisation
ENAV	Air Navigation Services
AfU	Amt für Umwelt / Environment Office

Executive Summary

The HYPOP project (Hydrogen Public Opinion and Acceptance) is co-funded by the Clean Hydrogen Partnership under the European Horizon Europe programme (GA nr.101111933) and aims to raise public awareness and trust in hydrogen technologies and their systemic benefits. The aim of WP4 is to provide guidelines on permits, certification and safety, for the purpose of addressing information gaps in some countries. Following the structure of WP2, HYPOP countries, EU-13 countries and Frontrunner countries have been studied on the basis of three main pillars: the industrial, mobility and residential sectors. (Note that all the countries considered in this report are mentioned in the corresponding sections and this can be checked in the table of contents).

This document aims to offer guidelines on obtaining permits and to this end, a compilation of information has been prepared through workshops in the project countries (Spain, Italy, Belgium, Bulgaria and Poland) to analyse the main barriers and gaps everyone identified during the installation of hydrogen facilities. Meetings with stakeholders were also organised, where possible, and bibliographic searches have been conducted to collect as much information as possible.

Based on the information obtained from the aforementioned sources, the report concludes that in general there is no specific legal framework for the deployment of hydrogen projects and/or well-established procedures.

After presenting the legislative landscape of the countries, those with greater development or clear procedures are used as examples. Specific actions that might be considered in the creation of a process, or suitable rules, are also recommended, and can be seen in section 6, where steps suggested for the deployment of hydrogen projects are shown.

The discussion with the stakeholders and further research highlights that it is crucial to educate experts for the advancement of these technologies, also to create permitting procedures that facilitate safe and timely rollout. To this end, establishing cross-sector working groups—bringing together local and national authorities with industry actors in the chemical and renewable-energy sectors—will help address issues incrementally and translate solutions into clear, actionable permitting rules. It is also important to designate a lead competent authority to act as a single point of contact, coordinating dossier circulation to other bodies or directing applicants to the appropriate contacts after an initial project screening. Because requirements may vary by region and site, authorities there should be a well-defined, standardized process map that sets out responsibilities, documentation, and decision points to support consistent, efficient project approvals.

1 About the HYPOP project

The overall objective of the HYPOP project is to raise public awareness and trust in hydrogen technologies and their systemic benefits, focusing on industrial, mobility and residential applications.

This document was created as part of the project's objectives and contains information on the current practices applied in the countries covered by the project. It also provides information on how to implement hydrogen projects, depending on the area in which the hydrogen facilities are to be installed. The document emphasises the importance of establishing a regulatory framework, particularly in the industrial and mobility sectors, due to the lack of projects and permits in the residential sector.

As one of the main purposes of this project, this document has been put together to offer guidelines and good practices regarding a hydrogen-related procedure, addressed to stakeholders, citizens or any entity or person who may be interested in this topic.

2 HYPOP guideline documents

This deliverable is part of a set of guidelines focussed on each of the following topics:

- Permitting (this document)
- Safety (Deliverable 4.4)
- Certification (Deliverable 4.5)

Although permit procedures often relate to the compliance of safety measures and certification standards, each deliverable will offer details about its particular topics for the guidelines.

Depending on the reader's purpose, it may be necessary to check all three guidelines or just one in particular, as each guideline is specific to every topic (although there may be some similar aspects among them and links and cross referencing have been provided where possible).

The information provided in these guidelines is for informational purposes only and does not replace the current legal information of the countries studied in the project.

3 Methodology and data collection approach

The methodology behind WP4 involved collecting data that was missing from some countries during WP2, updating information and gathering more details from other countries (as discussed above), and holding national workshops with stakeholders from participating HYPOP countries. These workshops aimed to identify potential barriers that could be encountered when carrying out hydrogen projects.

For the data collection purposes, sections 4, 5, 6 and 9 include the references consulted during the research process. Meanwhile, in the national workshops, discussions were held with participants and conclusions were gathered using platforms such as Google Forms or Slido in the workshops in Spain, Belgium and Italy. Roundtable discussions were also held at the workshops in Belgium and Italy. In the workshops in Poland and Bulgaria, the discussions took the form of an open conversation.

Thus, during the workshops, stakeholders shared their experiences regarding the hydrogen value chain, as well as the differences and similarities between the countries in the consortium. All of this is shown in more detail in the following subsections.

3.1 Technical workshop: Spain

Two workshops were carried out in Spain, organised by CNH2 and represented by Gema Rodado and María Panadero on both occasions. The workshops mainly consisted of presentations on the HYPOP project and the status of each country in which the workshop was held.

The first workshop took place in person on the **10th of October 2024** at CNH2 premises, in collaboration with TECNIBERIA. Twenty-four participants from different companies in the energy and engineering sectors attended the workshop. The second workshop took place at the National Green Hydrogen Congress in Huelva, Spain, on the **6th of February 2025**, and was also carried out in person. More than 50 people attended, of whom 33 responded to the interactive questions shown during the workshop. In addition to companies from the energy and engineering sectors, the latter workshop also attracted attendees from regional authorities and the education sector.

Figure 1. Spanish workshop 1 at the CNH2 premises. Photograph by CNH2

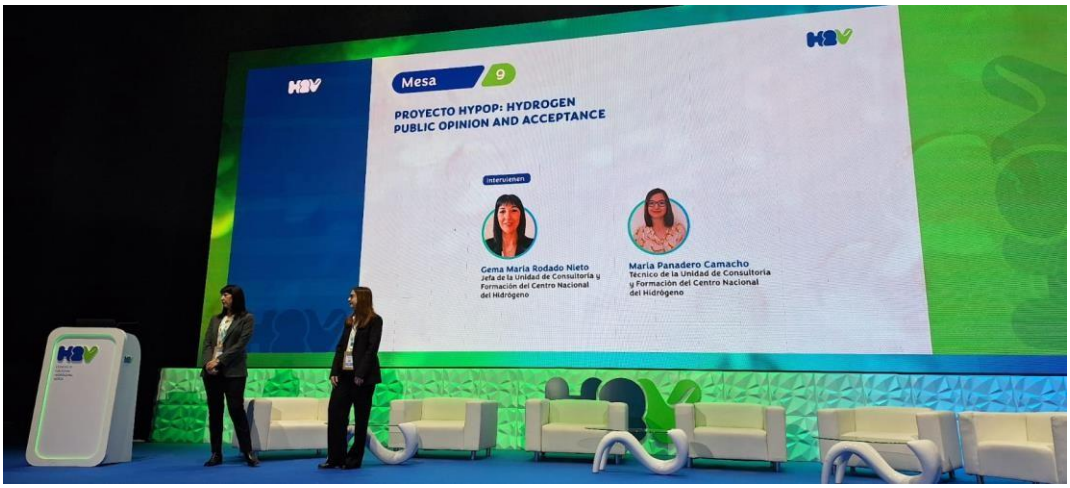

Figure 2. Spanish workshop 2 at the National Green Hydrogen Congress in Huelva. Photograph by CNH2

Moreover, the results obtained in WP2 were presented, putting the focus mainly on the Spanish regulations and requirements, but some highlights were given about other European countries analysed to emphasise the huge contrasts among countries.

To conclude the interactive questions, one final question was asked for the purpose of summarising the content of the entire presentation and exploring the main barriers faced by the audience in their respective projects and experiences.

As the audience was able to express their opinion in public in the last part of the workshop, they began by stressing a lack of coordination among the different authorities and local governments. Even at the same level of government, there were sometimes discrepancies between departments (such as the departments on industry or environment, among others). Other topics like certification were discussed, highlighting the difficulty of finding a certifying body, and the importance of proper training for authorities and certification bodies. The importance of unifying the different points of view and disseminating developments in the hydrogen sector was also highlighted.

In both workshops, CNH2 asked the same questions using Slido and Google Forms, shown in *Table 1*.

Table 1. Overview of the questions asked in the Spanish workshops

Questions asked in the Spanish workshops	
1	In which part of the hydrogen value chain do you work?
2	In which part of a hydrogen project have you been most involved?
3	Thinking about national projects you know of, can you tell us which authorities grant the implementation of those projects?

4	Which are the main challenges for demonstrating safety in hydrogen technologies?
5	What is your experience (directly or indirectly) in the process of hydrogen technology certification?
6	What barrier/s have you encountered during the installation of H_2 technologies?

1) In which part of the hydrogen value chain do you work?

Table 2. Summary of the results obtained in question 1 of the Spanish workshops.

Options given in question 1	Workshop 1		Workshop 2	
	No.	%	No.	%
Electrolysis	4	25	7	21
H2 production (alternative to electrolysis)	3	19	4	12
Generator sets (gensets)	1	6	2	6
Fuel cells	1	6	5	15
Storage of liquids/gases/solids	5	31	8	24
Hydrogen cylinders/ cylinder packs/ pressurised tanks for road transport (as a hazardous substance)	3	19	4	12
Hydrogen gas compressors	2	13	4	12
Regulation and permitting	-	-	10	30
Other	13	81	17	52

For question 1, people could answer with more than one option, obtaining the results shown in *Table 2*.

In answers marked as "other", the following responses were given: H_2 projects, equipment and deployment, research in hydrogen technologies, and safety authorities and firefighters.

2) In which part of a hydrogen project have you been most involved?

Moving on to **question 2**, the most common answer was "other" or "none of the above". Some people had been involved in permits, but there were fewer participants who had been involved in certification and safety.

Figure 3. Answers according to question 2 - Spanish workshop 1

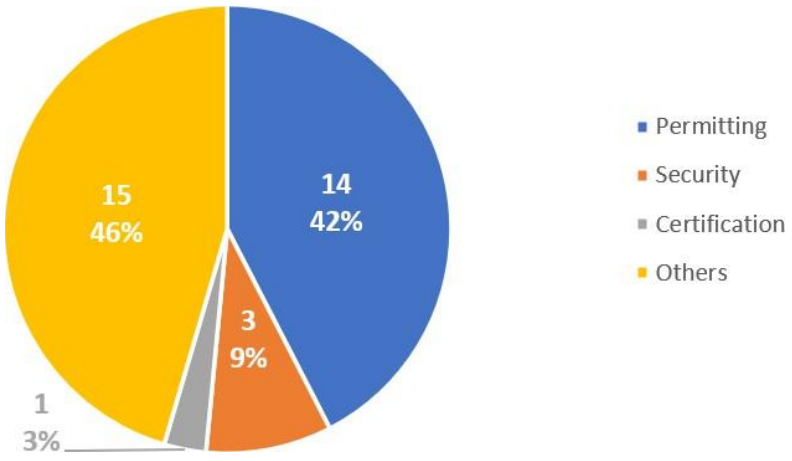

Figure 4. Answers according to question 2 - Spanish workshop 2

3) Thinking about national projects you know of, can you tell us which authorities grant the implementation of those projects?

This question was open, so people could add the authorities that they considered relevant. Most participants answered the authorities who they considered relevant, which are shown below:

- Regional government
- City Council (local government)
- Regional Industry Department (regional government)
- Ministry of Industry and Ministry of Energy (national government)
- Regional Environment Department (regional government)
- Hydrographic Confederation
- Ministry (national government)
- Regional authority
- Spanish Electricity Grid (REE)
- Ministry of Development (national government)
- Local/regional/national administrations, depending on whether or not powers have been transferred.
- Official State Gazette (BOE, Boletín Oficial del Estado)
- Ministry of Ecological Transition and the Demographic Challenge (national government)

4) Which are the main challenges in demonstrating safety in hydrogen technologies?

While most attendees of workshop 1 (13 people) answered with a more specific response, which was "use of hydrogen", the participants from workshop 2 (31 people) made comments related to:

- **Knowledge**: the general lack of information or awareness and the lack of a definition.
- **Public opinion**: credibility, social awareness (fighting false myths, raising awareness in society that H_2 has been with us for decades) and social issues.
- **Regulation and certification**: lack of specific regulations, lack of one single specific regulation, certification, standardised best practices and homogeneity.
- **Environmental prevention**.
- **Techno-economic issues**: costs, economic issues, demand, use of the technology, machinery operating hours, anticipation of storage equipment degradation, facility design, storage, distribution and making H_2 closer to people through HRS.
- **Safety**: General aspects about this topic, like explosive zones, the range of H_2 flammability, the pressure values in H_2 generation and storage, the lack of prior accident data (for validating safety levels), and developing, disseminating and applying passive and active safety measures.

5) a. Do you have experience in H_2 technology certification?

In this question, only one answer was allowed, but, in general, participants from both workshops did not have experience.

b. Do you know any guidelines or protocols for certification?

A few participants (a total of 11 people in the second workshop) knew any regulations. In this case, the regulations were:

- CertifHy, that is an initiative started in 2014 and funded by the Clean Hydrogen Partnership with the aim of taking Europe-wide green and low-carbon hydrogen certification to the next level: from concept to implementation.
- ISO standard 14687-2:2012 "Hydrogen fuel – Product specification".
- SAE J2719 standard "Hydrogen fuel quality for fuel cell vehicles".
- ISO standard 19880-1:2020 "Gaseous hydrogen – Fuelling stations".

6) **What barrier/s have you encountered during the installation of H_2 technologies?**

In workshop 1, 12 people responded, while in workshop 2, 22 people responded, specifying the barriers. The answers have been grouped into four categories:

- **Economic viability**: these included funding, competitivity without a grant, the supply-demand balance and cost rationalisation.
- **Knowledge**: lack of information and awareness (generally from the administrations), availability of previous infrastructures and lack of precedents were also shown to be an issue.
- **Safety**: ignorance about safety, safety itself and the difficulty in detecting hydrogen leakages were other topic addressed.
- **Permitting and certification**: the lack of regulation, regulation ambiguity and the discrepancies or differences in the criteria between different entities of the same government, the fear of risk, the lack of a certification process and the execution deadlines were emphasised by the participants.

When finishing workshop 2, one of the attendees highlighted the importance of disseminating the H_2 properties and the safety measures applied in H_2 usage, such as detection. Another expressed his concerns about hydrogen implementation, because there are many projects on paper but only a few were being implemented, and this participant also added that the green hydrogen price (€/kg) is not well defined.

3.2 Technical workshop: Italy

The Italian workshop was held on the **23rd of May 2025** and took place at Hydrogen Expo Piacenza. It was organized by ENVIPARK, which was represented by Mattia Miglietta, in collaboration with H2IT. The workshop was attended by private companies and public authorities.

A roundtable on authorised procedures for hydrogen was conducted to discuss the main barriers and future perspectives with the participation of Francesco Bonadeo (SNAM), Francesca De Falco (REGIONE CAMPANIA) and Francesco Vitali (TECHFEM).

It was shown that, in terms of permitting, it is essential that the project is presented in advance to authorities and administrations in order to gather comments and then develop a design for "fit for purpose" permits.

Permits drew considerable interest from the audience, sparking a lively debate on several features of the current regulatory framework. SNAM shared the example of a hydrogen valley project that successfully made it through the authorisation process. The project centres on a 2.5 MW electrolyser powered by a 6 MW photovoltaic plant and includes four loading bays for tube trailer filling. The steps and scopes are shown in *Table 3*.

Table 3. Strategy followed by SNAM for a hydrogen valley project

Step	Legal reference	Competent authority	Permit scope
Exemption from Environmental Impact Assessment (EIA) and from EIA Screening	Italian Env. Code, Leg. Decree 152/2006 – Art. 6-bis, Annex II, Part II; Art. 8 (l), Annex IV, Part II	–	Environmental
Derogation from Integrated Environmental Authorisation (AIA)	Leg. Decree 152/2006 – Art. 4.2.a, Annex VIII, Part II	Emilia-Romagna Regional Authority	Environmental
Single Authorisation (Autorizzazione Unica) under Art. 12 DPR 380/2003, issued pursuant to Leg. Decree 199/2021	–	ARPAE SAC Modena (Regional environment Agency)	Urban planning/building
Project assessment under Fire-Safety Regulations	DPR 151/2011 – Art. 3 (activities 1.1.C, 2.2.C, 3.3.C, 49.1.A)	Provincial Fire Brigade Command, Modena	Safety/fire
Single Environmental Authorisation (AUA)	–	–	Discharges, emissions, etc.
Permit to discharge water into a watercourse and sewer	–	–	Environmental
No objection from the Superintendency of Archaeology, Fine Arts and Landscape	–	–	Cultural, heritage and landscape
Declaration of no interference with ENAV (air navigation services)	–	–	Aviation

One of the main points added is the low experience and the perception of public authorities towards hydrogen: although pursuant to Legislative Decree 199/2021, the size of the electrolysis unit would have allowed for free construction or at least the PAS procedure, but as a precautionary measure the Municipality of Modena requested the possibility of voluntarily proceeding with a Single Authorisation, **resulting in a longer procedure.**

The new national environmental rules have cleared up previous doubts over interpretation: green hydrogen production projects are now explicitly exempt from an Environmental Impact Assessment when they involve refuelling stations or when the hydrogen is produced for downstream end uses. In addition, an exemption from EU legislation is expected that would remove this type of plant from the list of facilities required to obtain an Integrated Environmental Authorisation.

Similarly, **Techfem** outlined its own permit strategy for a hydrogen production plant. The company filed a single digital application through the **ZES Calabria One-Stop Shop** on the **30th of November 2023**, bundling the procedures shown in Table 4.

Table 4. Strategy followed by Techfem for a hydrogen production plant

Procedure	Description
Autorizzazione Integrata Ambientale (AIA) Regionale	Regional Integrated Environmental Authorisation
Autorizzazione Paesaggistica Ordinaria (interventions in areas subject to landscape restrictions, Art. 146, Leg. Decree 42/2004)	Ordinary Landscape Authorisation
Screening Valutazione d'Incidenza (VIncA)	Screening for Appropriate Assessment (Habitats Directive)
Valutazione Preventiva dell'Interesse Archeologico (VPIA)	Preliminary Archaeological Interest Assessment
Valutazione Previsionale di Impatto Acustico (Art. 8, Law 447/1995)	Forecasted Noise Impact Assessment
Dichiarazione Inizio Lavori Asseverata (DILA/CILA) for the photovoltaic plant	Self-Certified Start-of-Works Declaration for the PV array
Verifica di Compatibilità Idraulica – AdB Distretto Appennino Meridionale	Hydraulic compatibility check by the Southern Apennines River Basin Authority
Istanza di Valutazione Progetto to the Catanzaro Fire Brigade (DPR 151/2011)	Project Evaluation Request to the Catanzaro Fire Brigade Command (fire safety authorisation)
Valutazione Ostacoli ENAC/ENAV	Obstacle clearance assessment by the Italian Civil Aviation Authority (ENAC)/Air-Navigation Service Provider (ENAV)

It can be seen how both the strategies in Table 3 and Table 4 have similar procedures.

After that, the workshop was concluded with a Slido Q&A session, which some participants answered. Some questions related to permitting are shown in Figure 5.

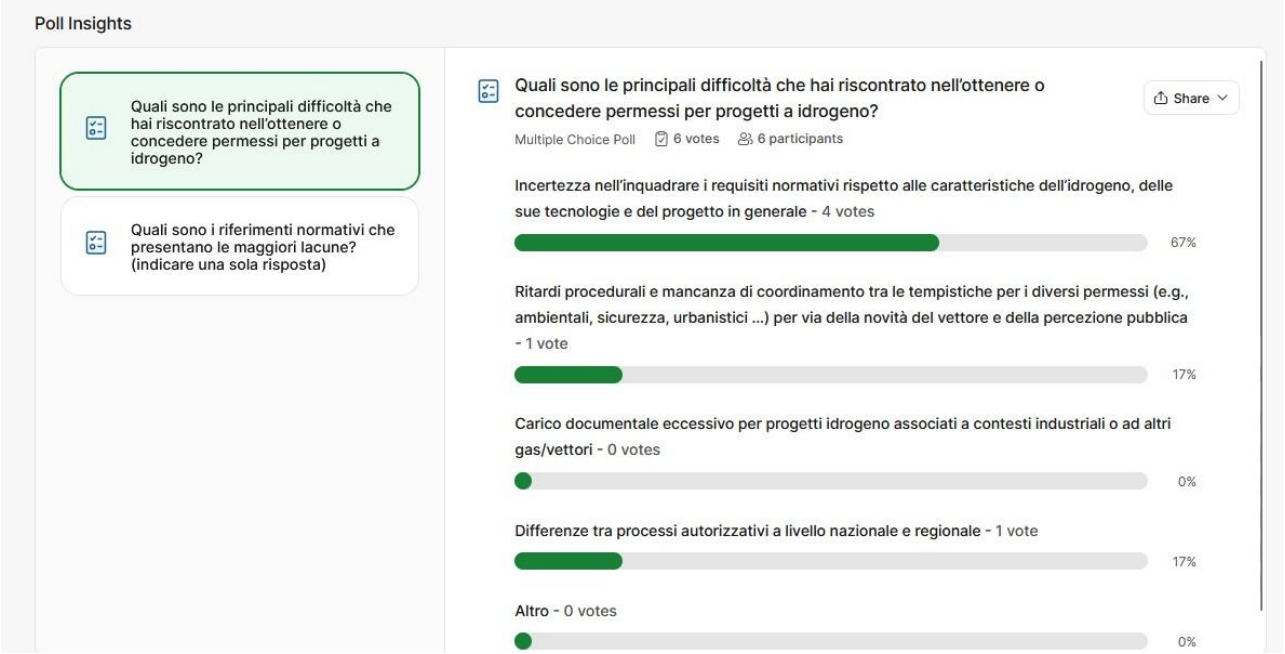

Figure 5. Questions answered about permitting in the Italian workshop

The two main takeaways regarding permits in the Italian workshop relate, first, to the uncertainty in framing regulatory requirements with respect to the characteristics of hydrogen, its technologies and the project in general, and second, to the fact that the main gaps in permitting procedures concern safety permits.

3.3 Technical workshop: Belgium

A total of 18 people attended the Belgian workshop, which was held online **on the 24th of January 2025**. There were two sessions. The first one was a presentation on the current state of permitting in Europe. During this session, Mattia Miglietta from ENVIPARK presented the HYPOP project, after which Simon Habran, from CLUSTED TWEED led a presentation focusing on the current situation in Belgium and neighbouring countries.

The second session was a roundtable discussion on the topic of "finding the right guidelines for new hydrogen facilities in Wallonia", in which stakeholders shared their experiences. The roundtable comprised **Sertius** (represented by Xavier Musschoot), a company involved in environmental and safety services; **Colruyt Group** (represented by Catherine Goormaghtigh), a **food store chain which has developed HRS (6 in Belgium)**; RESA (represented by Sébastien Dubois), a public company dedicated to the gas and electricity distribution network; and the **Free University of Brussels** (represented by Patrick Hendrick). After both sessions had finished, there was a brief Q&A session, the results of which are shown below:

Table 5. Overview of the questions asked in the Belgian workshop

Questions asked in the Belgian workshop	
1	**What are the main challenges you have encountered in obtaining or granting permits for hydrogen-related projects?**

2	**How does the environmental permit process for hydrogen projects compare to that of other energy technologies? What improvements do you suggest?**
3	**Have you experienced significant differences in permit processes between regions or municipalities? If so, how do these disparities affect project implementation? Additionally, what improvements would you propose to harmonise or streamline these processes?**
4	**What are the main challenges in demonstrating the safety of hydrogen plants?**
5	**What improvements would you propose to overcome regulatory barriers in your country?**

1) **What are the main challenges you have encountered in obtaining or granting permits for hydrogen-related projects?**

The administrative requirements in Wallonia are unclear. Public services generally fear this new technology. This is due to a lack of experience, as they are generally unfamiliar with hydrogen. In an effort to raise awareness regarding this technology, Colruyt invited the Walloon authorities to their first HRS in Flanders as part of the permit process in Wallonia, in order to raise awareness regarding this technology.

Training and raising awareness among authorities is essential, and the industry can primarily join in the process.

After obtaining a permit, **you need to insure your project**. This is also a delicate step, as the insurance company must have confidence in the project to avoid charging exorbitant prices or requiring additional safety measures. We are therefore faced with the same problem: **we need to raise awareness among stakeholders**.

There is a need for change in the classifications for permit procedures in Wallonia. For example, the Industrial Emissions Directive (IED) should not apply to hydrogen facilities, as is the case in Flanders. This directive is indeed very restrictive.

2) **How does the environmental permit process for hydrogen projects compare to that of other energy technologies? What improvements do you suggest?**

The same problem arose during the development of compressed natural gas stations. The Colruyt Group had to meet with the relevant authorities and firefighters in each municipality to convince them that the installation would be safe and would not pose excessive risk. Therefore, the problem is not the technology itself, but rather public and stakeholder awareness and perception of new technologies. **We can develop and implement multiple safety measures and technologies that eliminate risks, but people's perception of this new technology remains the major problem**.

3) **Have you experienced significant differences in permit processes between regions or municipalities? If so, how do these disparities affect project implementation? Additionally, what improvements would you propose to harmonise or streamline these processes?**

Subjectivity is a problem in administrative monitoring in Wallonia. While the administration does consult competent people, such as firefighters, there is no clear framework to follow. The

framework in Flanders is better defined, making it more objective. Flanders has a well-defined permit process, whereas Wallonia does not. As the administration lacks expertise in hydrogen, it often refers to SEVESO regulations, even for small projects. As there are no specific acceptance criteria, they follow the SEVESO criteria, which are very restrictive for HRS.

4) What are the main challenges in demonstrating the safety of hydrogen plants?

As stated before, the primary issue is not the technical aspect, but rather stakeholder acceptance upon demonstrating the safety of the product.

5) What improvements would you propose to overcome regulatory barriers in your country?

A regulatory framework that does not differ between the various member states. On this note, attendees wondered why there was not a regulatory framework.

Participants proposed the actions listed below to improve the development of hydrogen projects:

- The first action was to include insurance companies among the stakeholders. They are often overlooked, even though they are essential for the project's successful development. If an insurance company does not consider a project to be secure, it will not insure it.
- The next issue is the need for specific files and the best available technologies for hydrogen production.
- Following this, the permitting process in Wallonia is more subjective and lacks concrete practices, whereas Flanders takes a more objective and scientific approach. Stakeholders need a well-defined permitting process for hydrogen projects in the Walloon region.
- The need for change in the classifications for permit procedures in Wallonia. For example, the Industrial Emissions Directive (IED) should not apply to hydrogen facilities, as is the case in Flanders. So, Wallonia applies the IED but Flanders does not.
- Improve the experience and involvement of the Industrial Risk Departments (a department of the Walloon administration). This could result in shorter processing times and better project evaluations.
- Permit delays in Wallonia need to be reduced. Currently, the process can take up to a year or more.
- Develop a unified EU-level guideline for hydrogen technology permitting.
- Finally, improve social acceptance and trust in the safety of hydrogen projects. Additional safety measures are even more important than this.

Due to the lack of concrete permit processes in the Wallonia region, stakeholders need more concrete processes to implement hydrogen projects, as in the case of the Flanders region.

3.4 Technical workshop: Bulgaria

On the **27th of January 2025**, the Bulgarian workshop was held at the Bulgarian Academy of Sciences in Sofia. Vasimir Radulov, the BH2C representative, presented the HYPOP project to the participants. Attendees included representatives of the following organisations: the State Agency for Meteorology and Technical Supervision, the Bulgarian Academy of Sciences, various universities, municipalities, and the National Fire and Civil Safety Services.

The State Meteorological Agency representative provided a comprehensive overview of the measures adopted in Bulgaria and the most legislatively advanced countries regarding hydrogen. The participants then expressed their opinion that the state authorities should take a proactive approach and introduce legislative norms more quickly in order to enable businesses to adopt hydrogen on a large scale.

The National Fire Safety and Civil Protection Service informed participants of all the legal and regulatory requirements and practical examples related to the production, storage and use of hydrogen.

Finally, the BH2C and representatives of municipalities and universities presented all the perspectives and opportunities for using green hydrogen. **The possibilities of creating hydrogen energy communities on a local basis for the benefit of municipalities and businesses were discussed**.

In relation to safety related to hydrogen projects, representatives of the Meteorological Agency, the Fire Department and local authorities —the municipalities on whose territory such projects are being or will be deployed— discussed the matter.

In Bulgaria, hydrogen-related projects are carried out in accordance with the Spatial Planning Act and the Regulation on the Storage and Transport of Pressurised Gases. These documents set out the technical requirements for hydrogen facilities, as well as for the transport and storage of hydrogen. Each project is implemented in this way. One specific hydrogen project that has been implemented in Bulgaria in accordance with the aforementioned legislation is the modular refuelling station of the Bulgarian Academy of Sciences.

The topic of issuing permits for hydrogen projects and the use of hydrogen was also discussed by all participants.

Currently, permits for the production and use of hydrogen are issued in Bulgaria by the State Meteorological Agency. A working expert group is to be established within the Agency specifically for hydrogen project permits. Stoyan Sabev, the Chief Chemical Engineer of the BH2C, will lead this expert group, as he is one of the few experts with nearly 40 years' experience in hydrogen-related projects, having designed, built and exported various projects relating to hydrogen production, use, storage and transport. Participants expressed their hope that this group will provide positive momentum for hydrogen projects and their permits.

3.5 Technical workshop: Poland

The Polish workshop took place in Pomeronian Voivedato, Gdańsk on the **15th of May 2025**, and was also attended by 18 regional entities.

The meeting began with a display of the goals and framework of the HYPOP project. The geographical scope of the project and the team, which includes hydrogen clusters, research bodies and public communication groups, were explained. Special attention was given to the Social Life Cycle Assessment method, which helps pinpoint social issues in hydrogen initiatives. RIGP also shared effective methods for certification and safety that have been created at the EU level and talked about tools for implementation.

Participants that took part in the meeting were from sectors such as transport and logistics infrastructure, gas systems, providers of energy and technology solutions, hydrogen sector companies, environmental consultancies and the regional government authority.

In the discussion, attendees talked about their experiences, requirements and difficulties when implementing hydrogen projects. Main issues were identified and are shown below:

- Complicated and unclear administrative procedures,
- Absence of consistent local standards,
- Limited skills among officials in the technical and legal areas regarding hydrogen systems,
- Lack of effective public communication tools and ways to involve citizens,
- Untapped opportunities to collaborate with EU-funded initiatives,
- The necessity for common guidelines for the Pomeranian area.

The conversation showed both systemic and structural obstacles, but also highlighted areas where immediate action could be taken.

Based on the discussion, the RIGP colleagues concluded with the following aspects:

1) **The need to update the regional strategy**, where it was considered to include a social component that reflected citizens' attitudes, knowledge and readiness to accept hydrogen technologies.
2) **The improvement in local government capacity**, as there are gaps in public administration knowledge, specifically in the interpretation of technical procedures, such as technical standards, the environmental impact assessment, and the regulations and certification procedures.
3) **It was suggested that education and public communications be strengthened.**
4) **The involvement in national and EU projects**, allowing every region to actively join in the developing of hydrogen technologies, enabling the transfer of knowledge and mutual learning about the challenges and steps given for the project to progress.
5) **Developing participatory regional roadmaps and implementation scenarios**, which involve local authorities, sector professionals and investors that foster technological progress.

4 Overview of the European regulatory landscape

During the development of the final HYPOP permitting guidelines, activities carried out in Work Package 4 were accompanied by the research of additional information on the regulatory landscape. The objective was to find out more about the regulatory framework or installation procedures for hydrogen plants in countries not identified in Work Package 2. This was achieved by searching for relevant legislation and by contacting companies in the renewable energy or hydrogen sector, as well as public authorities that might be responsible for regulation.

This section has three sub-sections: industry, mobility and residential sectors. A brief review of the countries analysed in deliverable 2.2[1] was also conducted to compare the regulatory framework of all the countries involved in this project.

In sections *4.1 Industrial sector* and *4.2 Mobility sector* it was deemed appropriate to add tables (Table 6 and Table 7) as a preliminary overview of the situation in each country. The perspective was based on consultations with the European Hydrogen Observatory and, in general, also on searches and consultations carried out during the project, which are marked in the same table where they can be seen in more detail within this deliverable or in other deliverables of this project.

It should be noted that not all the supplementary information is specifically related to hydrogen; in many cases, steps have been identified that are being taken even though there is no specific legislation for hydrogen, and these have been considered relevant to the document.

During the HYPOP project, information was sought in the countries concerned on the existence of specific legislation for hydrogen in the industrial, mobility and residential sectors. Unfortunately, in the latter case, it has not been possible to find much information beyond that discussed in D2.2. However, in the case of industry and mobility, this section summarises the information discussed in D2.2 and seeks new information for those countries not covered. Thus, all the information has been consolidated in this section, divided into sectors and the information found for each country is discussed.

[1] https://www.hypop-project.eu/wp-content/uploads/2024/07/D2.2.pdf

4.1 Industrial sector

As can be seen in Table 6, based both in the European Hydrogen Observatory[2] and in the results of the HYPOP project, most countries do not have a specific framework for hydrogen. However, in some cases, which will be detailed in the subsections, the requirements that would be taken into account or that have been taken into account for the projects that have been developed have been revealed to the extent possible.

Table 6. Current outlook of the specific regulatory framework for H_2. Columns in purple - based on European Hydrogen Observatory [2]. Column in blue - based on the information collected during the HYPOP project from different resources.

	Official permit process for H_2 production projects	Legal framework for the operation of H_2 storage facilities within national energy law	Additional information about legal framework found during HYPOP research – regardless of [2]
HYPOP countries			
Belgium	No	No	-
Italy	No*	No*	More detail in D2.2 or section 3.2
Spain	Yes*	Yes*	More detail in D2.2
EU 13 countries			
Bulgaria	No	No	-
Poland	No	No	-
Croatia	No	No	More detail in section 4.1.2.3
Cyprus	No	No	More detail in section 4.1.2.4
Czech Republic	No	No	More detail in section 4.1.2.5
Estonia	No	No	-
Hungary	No	No	More detail in section 4.1.2.7
Latvia	No	No	More detail in D2.2 or section 4.1.2.8
Lithuania	No	No	-
Malta	No	No	More detail in D2.2 or section 4.1.2.10
Romania	No	Yes	-
Slovakia	No	No	More detail in section 4.1.2.12
Slovenia	Yes	No	-
Frontrunner countries			
France	Yes	Yes	More detail in D2.2 or section 4.1.3.1
Germany	Yes	Yes	More detail in section 4.1.3.2
Switzerland	Yes	No	More detail in section 4.1.3.3 and 6.d

[2] https://observatory.clean-hydrogen.europa.eu/hydrogen-landscape/policies-and-standards/national-policy [viewed in July 2025]

The Netherlands	Yes	No	-

Table 6 gives an outlook of the regulatory framework for purely hydrogen-based projects in the European Hydrogen Observatory, with the answers to the question available on the website "**Are there official permitting guidelines in place for H_2 production projects?**" and **"Is there a legal framework for the operation of hydrogen storage facilities within national energy law?"** for every country covered in the project. Note that in some cases this may differ from the information found during the HYPOP project. In the cases where this has been seen, this will be discussed in the corresponding subsection and marked with an asterisk in the table.

4.1.1 HYPOP countries

Bulgaria and Poland will be discussed in the next point (EU 13 countries) although both are HYPOP countries.

4.1.1.1 Belgium

As there are no specific regulations for hydrogen in Belgium, the Materhyum project (carried out by Beblue and the CRM group, which involved testing material using hydrogen) followed the French Guideline, the ***Guide pour l'evaluation de la conformité et la certification des systems à hydrogéne***, to validate their work and enable them to store hydrogen onsite[1].

In Deliverable 2.2[1], it was stated that hydrogen plants require a Quantified Risk Assessment (QRA) in order to obtain environmental permits, which determine the number and distance of facilities that can be built in that area. **Therefore, unless hydrogen is produced and stored at a hydrogen refuelling station, its production and storage are limited to industrial areas.**

4.1.1.2 Italy

The research carried out during this project has made it possible to find legislation in Italy, and two best practices were identified (*For further information, please see the D2.2[1]*). The first is related to an Italian project for replacing methane with green hydrogen in steel production. The main aspects of this project are developing an internal permit plan, cooperating with local permit granting authorities, preparing a preliminary risk assessment, and applying the prescriptive regulation for hydrogen production from electrolysis. The other best practice is related to the production of renewable hydrogen within a refinery located in the Autonomous Region of Sardinia. This involves presenting permits that demonstrate conformity with various perspectives, such as environment, urban planning and building[1].

4.1.1.3 Spain

There is no specific green hydrogen legislation in Spain. Hydrogen production is subject to the regulations referred to industrial chemical activities (RD 815/2013), regardless of the raw material[2]. The steps involved in granting permission for the Iberdrola plant in Puertollano (Community of Castilla-La Mancha) and the Green Hysland project (Community of Balearic Islands) are detailed and distinguishable. These steps are outlined in the land use declaration, which allows the development of such projects, as well as in the laws related to the spatial plan. However, it should be noted that licences to install and operate hydrogen technologies depend on the municipality and the local authority involved[1].

Following the environmental procedure, as discussed in D2.2, the environmental regulations in Castilla-La Mancha were aligned with national and European legislation, thus recalling procedures for obtaining Environmental Impact Assessments (EIAs), which, in the case of hydrogen, could be simplified. In addition to decrees regulating specific environmental assessments, the following are also needed. When it comes to the environment, the rules in the Balearic Islands are that environmental assessments, the legal regime for the installation, access and exercise of activities, and strategic environmental assessments are to be followed.

Finally, in terms of industrial safety, both projects adhere to European directives and national regulations, as outlined in the previous deliverable. These directives and regulations are similar for both projects[1].

4.1.2 EU 13 countries

4.1.2.1 Bulgaria (also a HYPOP country)

No legal framework for the operation of hydrogen storage facilities within national energy law nor official permit granting. To date, there is a roadmap known as Hydrogen Future for Bulgaria, which is valid until 2026[2].

4.1.2.2 Poland (also a HYPOP country)

Poland has a strategy for the hydrogen sector, named "Polish Hydrogen Strategy Until 2030 with an Outlook Until 2040" and defines the main goals of the developing hydrogen economy in Poland. There are no official guidelines nor legal framework to install hydrogen production projects[2].

4.1.2.3 Croatia

Currently, Croatia does not have a dedicated legal framework for hydrogen, nor the industrial, mobility and residential sectors. However, it is now developing the Sibinj Energy Park Project, which has a report available, drafted by EKONERG and known as "**Elaborat energetski park Sibinj**", specifying the main steps needed in this plant. A main idea of the regulations needed is given in Figure 6.

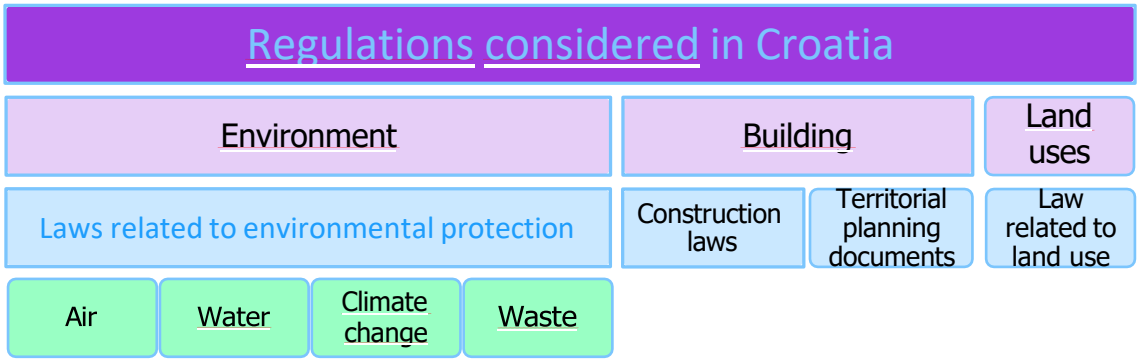

Figure 6. Main types of laws considered in the Sibinj Energy Park Study (Croatia). Collected from [3]

The Sibinj Energy Park[3] consists not only of hydrogen facilities, but also contains a solar park, an electric vehicle charging station and an energy storage component, such as batteries. Figure 7 shows

[3] https://mzozt.gov.hr/UserDocsImages/UPRAVA-ZA-PROCJENU-UTJECAJA-NA-OKOLIS-ODRZIVO-GOSPODARENJE-OTPADOM/Opuo/OPUO_2025/18_03_2025_Elaborat_energetski_park_Sibinj.pdf

the requirements that had to be taken into account for each part of the plant, such as in the case of the solar plant, where requirements related to the facility connections or the mounting substructure would be taken into account. For example, in case of the battery storage section, temperature controls or monitoring and control systems are important requirements. As concerns the HYPOP project, in terms of **hydrogen production**, there are different requirements related to cooling systems, danger zones and safety distances, connection to the electrical grid, and many more. Everything observed in Figure 7 can be found in more detail in the official document from which it was extracted. In addition, those procedures that were found in this report and that encompassed aspects related to the installation of the hydrogen plant, are listed in Appendix A. Additional information on applied regulations. Moreover, in reference to building law, it is considered both a county and local government area.

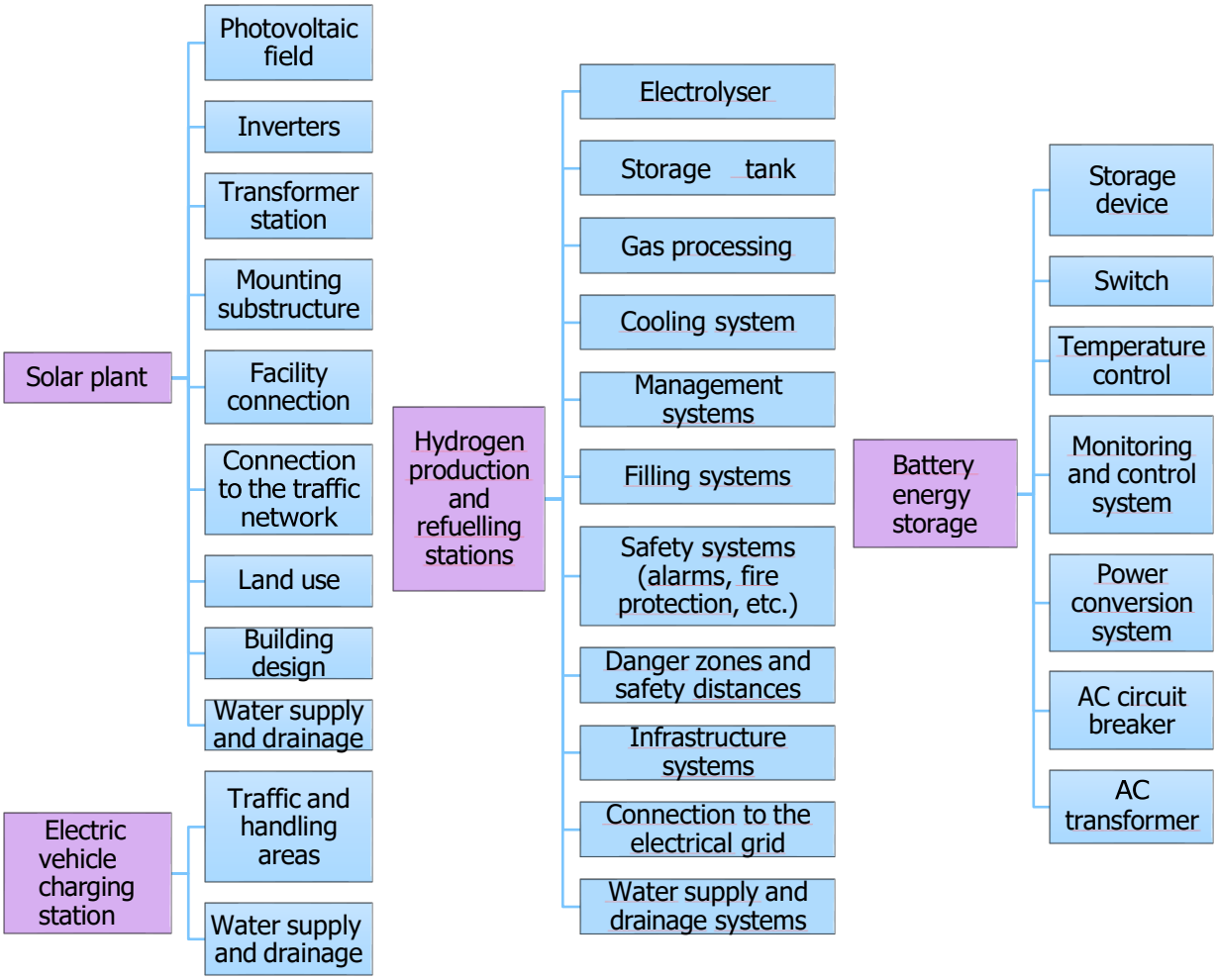

Figure 7. Aspects taken into account for the development of the plant in Croatia. Adapted from [3]

4.1.2.4 Cyprus

It was found that **there are no laws or regulations that concern hydrogen facilities. Moreover, the national legislative framework** is not harmonised with European Directive 2024/1788.

The Cyprus Energy Regulatory Authority (CERA) is responsible for promoting the development of an economically robust and efficient internal gas market, according to the Natural Gas Market Regulation Law. The aim of this law is to ensure the supply of natural gas following safety and quality aspects, which involve the possibility of incorporating biogas or other gases into the network and transporting them through it.

The incorporation of hydrogen to the energy mix is challenging because even the natural gas market is in the development phase. However, a hydrogen-related project, known as "**GreenH2CY**" was started and co-funded by the European Union. This project is one of the few initiatives in Cyprus that integrates the **production, storage and use of renewable hydrogen specifically for road transport**. Funded under the **2022 Innovation Fund call**, the project aims to include the following on the same site:

- The installation and operation of a 2-megawatt (MW) Proton Exchange Membrane (PEM) electrolyser consisting of two 1 MW electrolysis stacks (150 tons/year production capacity),
- A hydrogen storage facility made up of two storage units (2 x 500 kg),
- A hydrogen refuelling station at the same location.

Project stakeholders have been engaged in the permitting process for over two years, facing significant challenges due to the lack of hydrogen-related education among authorities, both at the local and national level. In contrast, public perception and community engagement have been very positive, with the project being described as an opportunity to decarbonise the transport sector.

The project coordinator of this project is **Future Fuels Ltd** and it contributed to the HYPOP project in relation to safety and permit procedures.

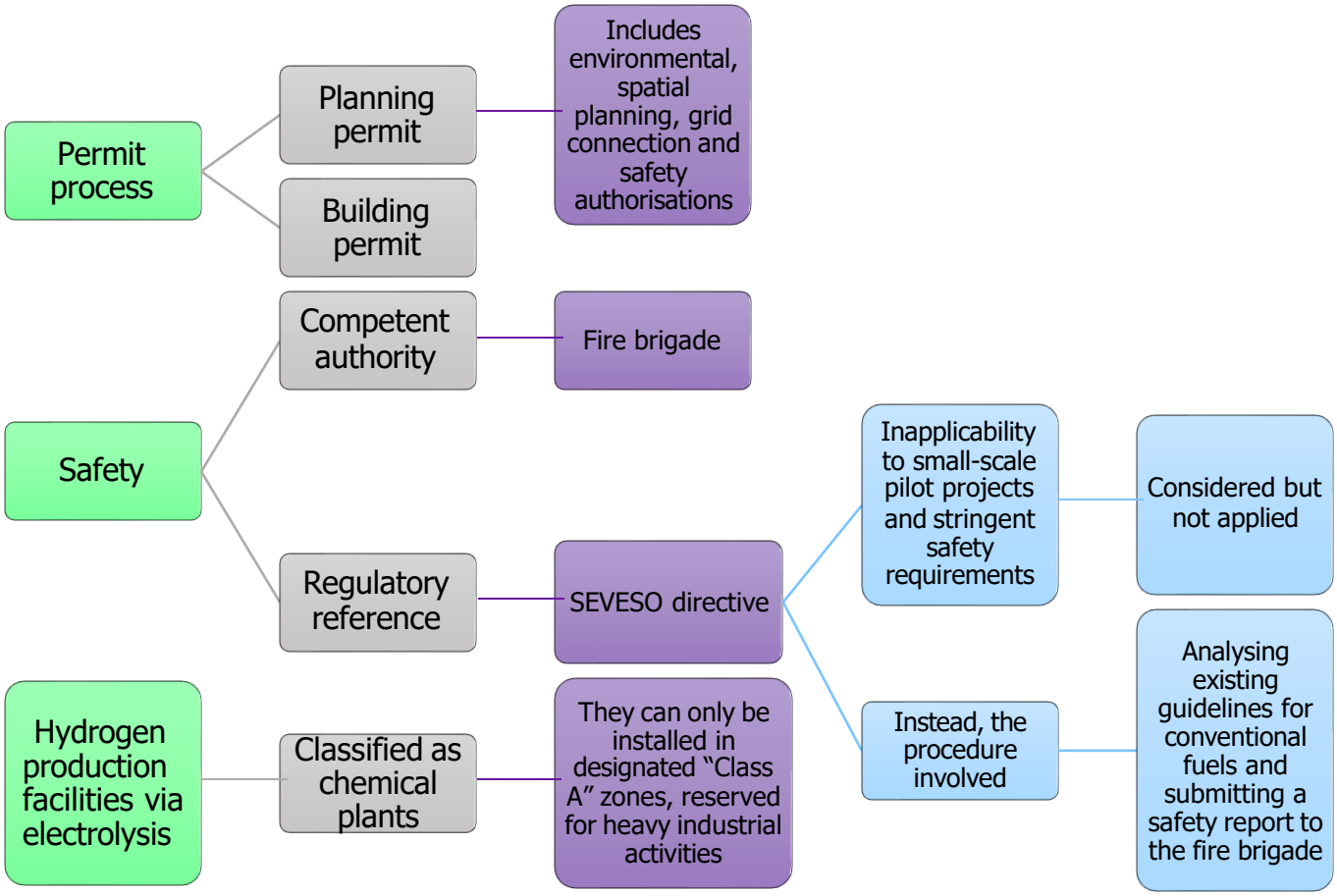

Figure 8. Permitting process carried out in the GreenH2CY Project (Summary of the information collected with the support of the stakeholders).

To conclude, on June 2025 the Council of Ministers approved the National Hydrogen Strategy, which is focused on planned actions for the development and promotion of the hydrogen market until 2030, especially in the mobility sector.

4.1.2.5 Czech Republic

Several meetings and investigations have been carried out during WP4 so as to comprehend the Czech approach to permitting.

At the moment, there are only a few active hydrogen-related projects in the Czech Republic. There are some HRS that have been built and are operational (see section 4.2.2.5), as well as a project involving hydrogen production through electrolysers powered by a photovoltaic park. However, these projects share the characteristic of being located in **industrial areas**, often on **private company land**, particularly within the **chemical sector**. This influences both the **type of public authorities**

involved and their **experience and perception** regarding such projects, while also highlighting a general **lack of experience** in public or urban contexts.

The hydrogen production project currently undergoing permitting is not encountering any major difficulties in terms of safety procedures, primarily because it is situated near areas where chemical companies routinely operate with other explosive gases. The **only challenge** encountered was the need to implement **additional safety standards and measures** to address concerns raised by the **firefighters** due to the site's proximity to **railway lines**.

Currently, there are **no specific national or regional safety regulations** for hydrogen projects in the Czech Republic. The permit procedure for hydrogen projects requires approvals covering **safety, environment, urban planning and construction aspects**. The authorisation to build and operate a hydrogen facility depends on receiving a **positive response from all relevant authorities**, which include: the **municipality** (for land use and urban planning), the **fire brigade** (for safety aspects) and **district-level authorities** (which include multiple municipalities and are responsible for environmental matters).

In general, there are **specific administrative procedures** for each type of permit, but there is also **flexibility in presenting a project** with the characteristics deemed most suitable. If objections are raised, the **entire project must be resubmitted** with the necessary modifications. While a **positive response is mandatory**, the overall process allows for some degree of adaptability.

- **Environmental permits**

From the **environmental permit perspective**, an **Environmental Impact Assessment (EIA)** is required. This can be simplified or full, depending on the type of project —a **full EIA is generally required** for hydrogen production plants using electrolysis. In cases involving **hydrogen production and photovoltaic plants**, difficulties have arisen due to the **proximity of the installation site to a protected area**.

Nevertheless, the HYTEP platform is actively working with the relevant Ministries to modify the national legislation on Environmental Impact Assessments (EIA). The initiative is inspired by the approach currently in place in Germany, which simplifies the EIA procedure for plants below a certain production capacity threshold. The Czech Republic's proposal is to raise the threshold to 10 MW for electrolytic hydrogen production plants, below which a full EIA procedure would not be required. Instead, a simplified process, involving the relevant regional or municipal authorities, would suffice. Beyond this initiative, no further national regulatory developments are currently planned.

- **Urban planning**

From an **urban planning perspective**, **zoning regulations** can pose a significant limitation to project development. Municipal authorities may oppose a project based on local land use plans, so **close cooperation and communication** with the municipality are essential to overcome potential barriers. In general, **hydrogen is mentioned** in territorial planning documents, but in some cases this reference is **not detailed or strong enough** to support practical implementation.

The installation of hydrogen systems in **industrial or private areas is generally unproblematic**, but the implementation of future projects in **public areas faces multiple challenges** from an urban planning standpoint. Moreover, **alternative mobility solutions** —such as **mobile or compact hydrogen**

refuelling stations— are currently **not permitted** because they are **not explicitly provided for in existing regulations**. These solutions may be approved **if implemented in private settings**, but **in public areas, new regulatory provisions are required**, which **do not currently exist**.

Similar to the challenges encountered with municipal authorities, there are also **significant issues related to public acceptance**, with many citizens expressing concerns or resistance. From a perception standpoint, National Hydrogen platform (HYTEP) reports a high level of openness and willingness from national-level public authorities, but possible barriers and limited awareness or acceptance at the regional level, depending on the specific administrations involved.

4.1.2.6 Estonia

Estonia neither produces nor consumes green hydrogen, so there is no specific permitting guideline for hydrogen[2].

4.1.2.7 Hungary

In Hungary, the creation of two hydrogen valleys was planned for 2030, known as the "**Transdanubia Hydrogen Ecosystem**" and the "**Northwest Hydrogen Valley**". Both areas are dedicated to the chemical and petrochemical industry, with significant hydrogen use. The process of **obtaining permits varied for each project, as it depended on its duration**. Moreover, some of the parameters that determined the actual timelines were the determination of the number of authorities that would be involved in the permitting process, the duration and what information would be required from the investor to apply for different permits.

Some of the legislation that guided the process related to:

- **Rules** for the administration of construction procedures in certain industrial facilities
- Various **decrees** on environmental impact assessment, protection against serious accidents, certification of equipment and protection systems for use in explosive areas, or the supervision of pressure equipment.
- Fire **regulations**.

More specific information on the legislation is detailed in deliverable 2.2.

4.1.2.8 Latvia

A hydrogen project in Latvia is considered as a set of facilities, with each technology following individual procedures with their own durations. **The overall permit requirements are building (planning), operation and environmental**, dealt with by municipal and local authorities and the State Environmental Services, as discussed in deliverable 2.2. Moreover, the main reference legislation is the Construction Law which regulates the building and operation permits. Before that, the project owner has to assess whether an Environmental Impact Assessment procedure is required.

Although there are no specific limits for a hydrogen production plant to be built**, it must only be located in an area destinated to be industrial** since it is considered a chemical production[1].

4.1.2.9 Lithuania

Lithuania states that there are currently no official rules or legal structures for running hydrogen facilities in the industrial sector. However, there is a plan for the advancement of hydrogen in the country set for 2024 to 2050. Also, the limit for H_2 in the gas grid is up to 2%[2].

4.1.2.10 Malta

The MelitaTransGasProject was in development, which required following a procedure for obtaining permits as outlined in the **Manual for the Permit Granting Process for Projects of Common Interest (PCI)**[4]. The **Planning Authority** serves as the Competent Authority in this scenario. The laws applicable to the PCI include general regulations, such as those focused on health and safety or transportation; additional laws relate to the environment, including those governing industrial emissions and environmental conservation; further regulations pertain to construction laws that address development plans; finally, there are laws concerning the management of energy and water services, along with regulations specific to the gas market. All these laws are detailed in the aforementioned manual.

4.1.2.11 Romania

To date, Romania lacks a specific national plan for the hydrogen industry, although it appears that one is under development. However, ANRE (National Energy Regulatory Authority) approved the order on the "Hydrogen Code", ANRE Order no. 63/2023[2].

4.1.2.12 Slovakia

The EASTGateH2 Valley was started in April 2025, which aims to install a total of 4 MW of electrolytic hydrogen production within a hydrogen refuelling station (HRS)[5]. Although it is not a legal framework for the operation of hydrogen storage[2], the main parts of the procedure (that have been under consultation which stakeholders from this country) will require, at least, one year in duration, are shown below:

- **Detailed technical report**, which includes the plant design, operation and technology interfaces.
  The project developer will have to prepare a comprehensive engineering report, where the technical aspects (including the characteristics of the electrolyser, compressor, etc. and the process flows or the control mechanism, for example) should be explained.
  The competent authority is the Technical Inspection Authority and the City Council.
- **Grind-connection permit**. A file about the electrolyser must be presented independently to the regional distribution-system operator to secure and establish protection parameters.
  The contract must be in hand before the construction can start.
  The competent authority is the grid operator or the energy authority.
- **Environmental permits**. The electrolyser requires a full EIA, which includes a feasibility study that focuses on water demand, wastewater, noise and the site's proximity to Natura 2000 habitats. It must be taken into account when locations fall beside protected zones.
  The competent authority is the District Environmental Office.
- **Urban planning consent**. This is not considered critical. In this case, the electrolyser may be built outside traditional industrial zones.
  The municipality is the competent authority in this case.

[4] https://www.pa.org.mt/en/projects-of-common-interest
[5] https://cordis.europa.eu/project/id/101192335/es

- **Building permit. This requires the consent of the landowner**. Once all procedures have been approved, and the landowner has given his or her consent, the authority issues a building permit, provided there are no objections.
  The responsible body is the Building Authority or the District Council.

4.1.2.13 Slovenia

Slovenia has no official legally binding limit, but the share of the limit is mentioned in the Gas Supply Act. According to Article 7 of this law, "the decision falls strictly on the distribution network operators, but in practice, no more than 10% of hydrogen should be introduced in the gas network"[2].

4.1.3 Frontrunner countries

4.1.3.1 France

The French national strategy has been updated in April 2025, updating the objectives set out in 2020. The official permitting guidelines for hydrogen projects are called "***Installations Classées pour la Protection de l'Envionnement*** (ICPE)". The classification obtained by the facility depends on the potential impact it may have on the environment[2].

The legal framework, that is the "***Régime legal des stockages souterrains***", takes into account hydrogen storage facilities within the fields of energy, mining, environment, ICPE safety standards and compliance with EU directives[2].

4.1.3.2 Germany

When it comes to industry, hydrogen networks were regulated by laws like the Energy Industry Act, the Combined Heat and Power Act, the German Technical and Scientific Association for Gas and Water Regulation (the DVGW Regulation is its acronym in German) and the Renewable Energy Act. You can find a summary of what each one deals with in Figure 9.

Hydrogen Networks Regulations
Energy Industry Act
This Act is all about how the electrolyser is connected to the grid.
The Combined Heat and Power Act
This Act says that there will be surcharge payments for the cogeneration of electricity.
DVGW Regulation
This sets out the general requirements for gases in public supply networks, allowing up to 10% vol. of hydrogen and the general rules affecting the technical requirements for hydrogen injection into the gas supply network.
Renewable Energy Law
This law contains a collection of articles about hydrogen, relating to the certification of origin and Power to Gas plants and CHP systems. You can see more articles about this in deliverable 2.2.

Figure 9. Hydrogen Networks Regulations in Germany [1]

The document known as the "***Cambridge handbook of hydrogen and the law***" shows the permit regime for the construction of pure hydrogen pipelines and is divided into regional planning, plan approval, environmental law, pipeline rights and land use agreements.

Under **regional planning**, it has been making efforts to enhance cohesion between regional planning and approval processes. Getting started with the **plan approval**, as large infrastructure projects often lead to conflicts of interest, the plan approval involves extensive participation by the authorities and, in most cases, the public[6].

Germany has two types of procedures, simplified or formal. If the procedure is formal, a public consultation, known as a plan approval decision, is required. However, when is simplified, this is not required and it is known as plan authorisation. **The main difference between the two procedures is the exclusion of mandatory public participation during the plan authorisation procedure, with the aim of accelerating the procedure**. The same happens with EIAs, which will be needed depending on the characteristics of the hydrogen pipeline, with public participation being mandatory[6]. Note that "in the case of a facultative plan approval, the advantage over plan authorisation would be that the specific acceleration regulations under energy law would apply, until 31 December 2025", stated in part *15 - Accelerating Permission*[7].

Because the competent authority must first be aware of the proposed energy installation, the administrative opening control (which is what this procedure is called) requires that the developer submit an application for permission to inform the authority before constructing and operating an energy plant.

An EIA may or may not be mandatory depending on the specifications of the hydrogen grids. When not mandatory, it can be determined through an official assessment and checked relatively quickly. Moreover, **plan authorisation offers advantages over plan approval**, because both have the same legal effect, but the first has a less time-consuming requirements. In regards to the **environmental aspects**, a preliminary assessment can be made to quickly check if an EIA is needed because these procedures are generally quite time-consuming, taking an average of 16.8 months[7]. This is challenging for the fast development of a hydrogen infrastructure and will need to be studied in-depth. Lastly, **land use** should be taken into account, drafting agreements with landowners for the construction and operation of the pipelines (even though it is not specifically for hydrogen)[6]. **The requirement of an EIA also affects whether a plan approval or a plan authorisation is granted**[7] and it depends on the characteristics and scope of the hydrogen pipeline.

In the document mentioned above, it is reported that there is no legislative framework for underground hydrogen storage, more specifically in salt caverns, but according to the draft, the same requirements as for natural gas will apply. However, the construction of a hydrogen storage facility will require an EIA under the mining law, thus requiring planning approval.

[6] https://www.cambridge.org/core/books/cambridge-handbook-of-hydrogen-and-the-law/regulating-hydrogen-transport/5B1C65218B931C98A5D05528B03610EA (Part IV Regulating Hydrogen Transport)

[7] https://www.cambridge.org/core/books/cambridge-handbook-of-hydrogen-and-the-law/accelerating-permission/647CDCAB1A8708EAE1D0C58590894DF1 (15 - Accelerating Permission)

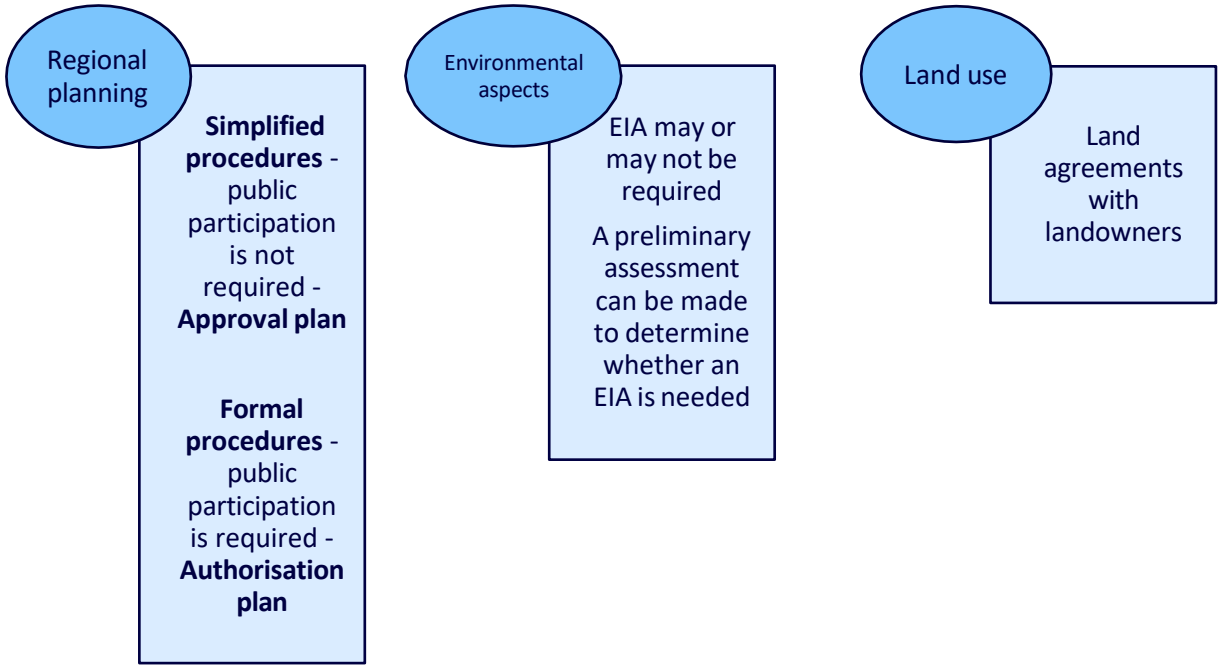

Figure 10. Main parts of the procedure for hydrogen pipelines in Germany. Adapted from [6]

4.1.3.3 Switzerland

In this case, it is worth mentioning that, even though there is no specific legislation for hydrogen technologies, there is cooperation between public authorities that issue different types of permits. Following the guidelines[8], there is also a **main authority** (the cantonal or municipality authority) that acts as a point of entry and provides support to stakeholders in the hydrogen value chain. Usually, the whole permit process is overseen by one authority, which serves as a central point of contact for stakeholders.

In this country, the principle of procedural coordination applies, which means that the main authority is responsible for reviewing all the documents, coordinating with the rest of the competent authorities and issuing all permits in a single decision. If this is not possible, the competent authorities can, at least, ensure the coordinated public disclosure of their decisions, provided that the designer ensures that all permits are submitted to the competent authorities in a timely manner and refers to the parallel application in both applications.

The main documentation you need to submit depends on the type of permit. So, we will need to do an environmental analysis (and get an EIA if that is needed). Then there are building permits and urban planning or regulations to think about. And, of course, there are safety requirements to consider too. This is because there is an official guideline for Switzerland[8], the steps of which are summarised in Figure *11* and in more detail in Appendix A. Additional information on applied regulations.

8 https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://pubdb.bfe.admin.ch/de/publication/download/11554

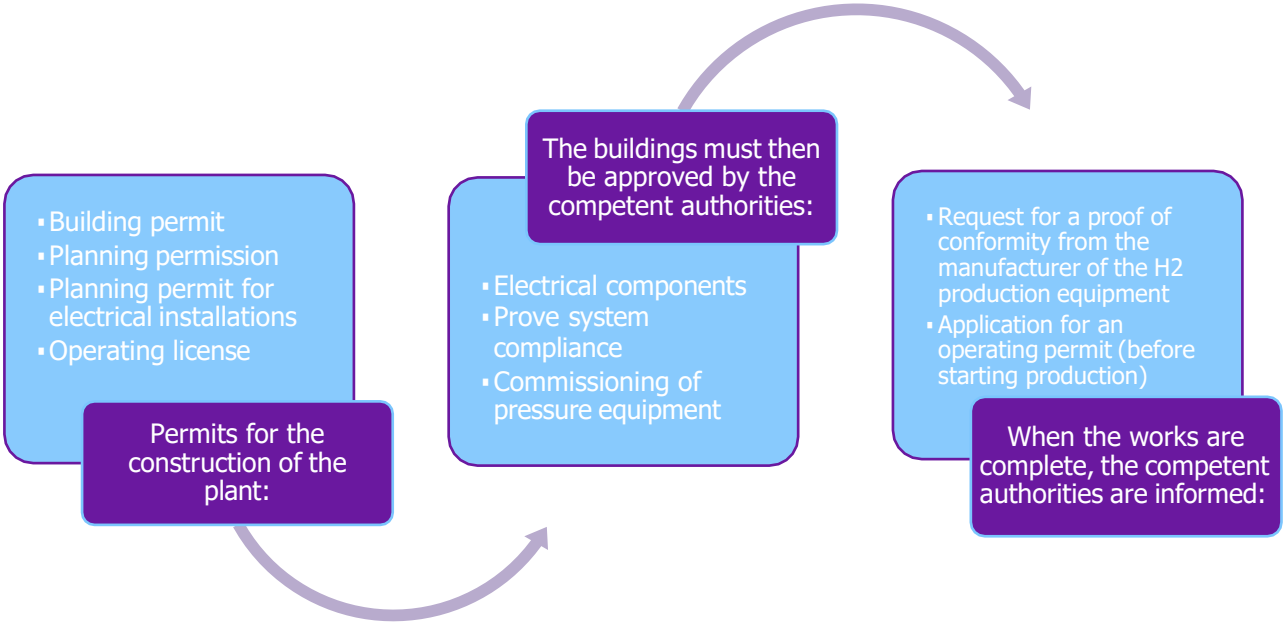

Figure 11. Overview of applicable procedures in the official guideline for Switzerland. Adapted from the guidelines[8].

The general process is followed by risks assessments, noise, fire and explosion protection, protocols for serious accidents and assessments related to standards and environment. In the last of these, it depends on the conditions of the facility, as shown in Figure 12.

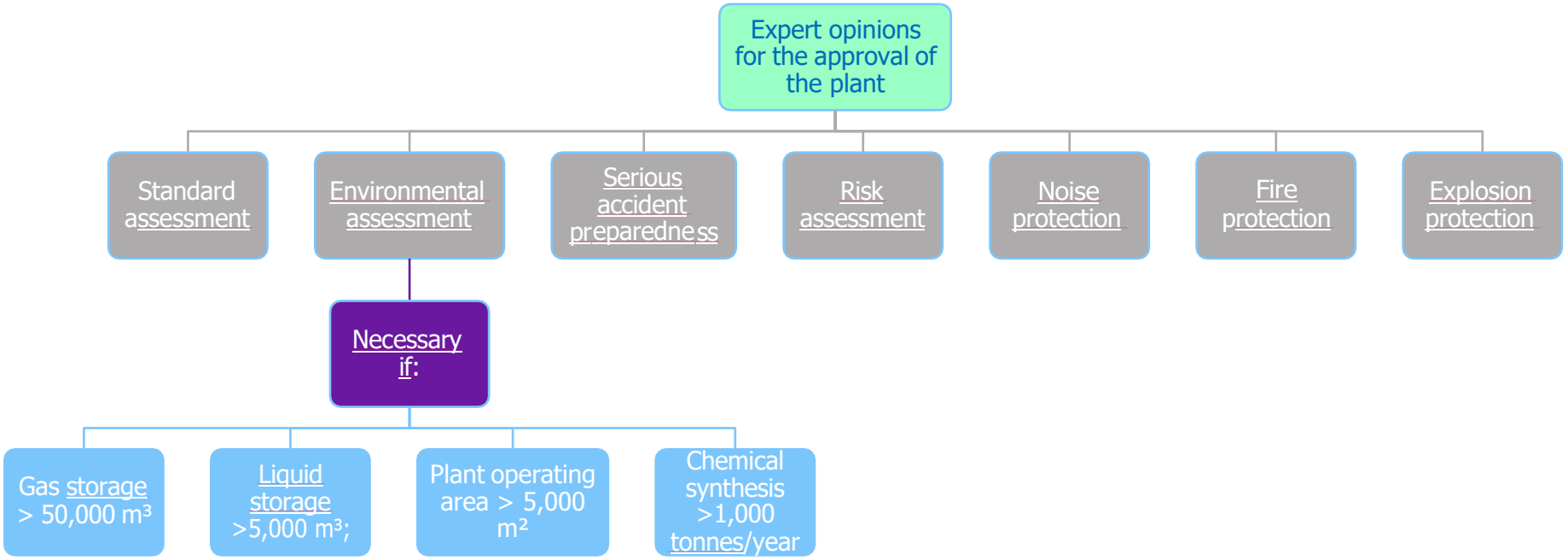

Figure 12 Expert opinions on the approval of the plan for the official guideline in Switzerland. Adapted from the guidelines[8]

4.1.3.4 The Netherlands

The permitting framework in the Netherlands includes various requirements for obtaining permits, such as environmental permits, which involves QRA to evaluate safety risks, building permits and water act permits[2].

There is a subsidy that can be applied to projects in which the hydrogen production installation is put into operation within four years of the subsidy being granted. So, this is the main condition to grant permits such as WABO[2].

4.2 Mobility sector

Table 7 shows an outlook of the regulatory framework for purely hydrogen-based projects in the European Hydrogen Observatory, following the answers of the question "***Are there official guidelines in place that cover permitting of HRS?***" for every country covered in the project. Note that in some cases this could differ from the information found during the HYPOP project. In cases where it has been seen, this will be discussed in the corresponding subsection and marked with an asterisk in the table.

Table 7. Current outlook of the specific regulatory framework for H_2. Column in purple - based on European Hydrogen Observatory [2]. Column in blue - based on the information collected during the HYPOP project for different resources.

	Official guidelines in place that cover permitting of HRS	Additional information about the legal framework found during HYPOP research – Regardless of [2]
HYPOP COUNTRIES		
Belgium	Yes	More details in D2.2 or 4.2.1.1
Italy	Yes	More details in D2.2 or 4.2.1.2
Spain	No*	More details in D2.2 or 4.2.1.3
EU 13 countries		
Bulgaria	Yes	More details in D2.2 or 4.2.2.1
Poland	No*	More details in section 4.2.2.2 or 6.b
Croatia	No	-
Cyprus	No	-
Czech Republic	Yes	More details in section 4.2.2.5
Estonia	No	-
Hungary	Yes	More details in section 4.2.2.7
Latvia	No	More details in section 4.2.2.8
Lithuania	Yes	More details in section 4.2.2.9
Malta	No	-
Romania	No	-
Slovakia	No	More details in D2.2 or section 4.2.2.12
Slovenia	Yes	-
Frontrunner countries		
France	Yes	More details in D2.2 or 4.2.3.1
Germany	Yes	More details in section 4.2.3.2
Switzerland	Yes	-

The Netherlands	Yes	More details in section 4.2.3.4 and 6.e

4.2.1 HYPOP countries

4.2.1.1 Belgium

As can be seen in D2.2, a regulation study was performed by HINICIO so as to consider the installation of a hydrogen refuelling station in the Francorchamps Campus of Technifutur. The list of directives and rules provided is shown in Table 8. Also, European Directives on safety are presented in Table 9.

In this country, hydrogen does not have sectoral conditions yet and is therefore subject to specific conditions within the framework of the environmental permit, so it was concluded that the general approach for the permitting of a HRS would need a **combination of specific risk assessed study and the application of the existing technical standards** for both environmental and safety aspects. In Flanders, the technical standards are specified in the Vlarem II (section 5.16.9) and in Wallonia in the Walloon government decree: "*les conditions sectorielles relatives aux installations de distribution d'hydrogène sous forme gazeuse destiné aux véhicules à moteur*".

Table 8. International and European standards considered for the implementation of HRS in Belgium [1]

Type of regulation	Scope	Reference	Subject	Description
Directive	Europe	2014/94/EU	Alternative fuel infrastructure directive (AFID)	Common directive to deploy alternative fuel infrastructure
Standards	International	ISO/TS 19880-1	General requirements for refuelling station	Technical specifications for public and private refuelling stations
	Europe	EN 17127	General requirements for refuelling station	European transposition of ISO/TS 19880-1
	International	ISO 14687-2 + ISO 19880-8	Quality conformity and hydrogen purity	Quality specification for hydrogen use for mobility
	Europe	EN 17268	Hydrogen purity	European transposition of ISO 14687-2+ and ISO 19880-8
	International	ISO 17268	Recharging connectors	Standards for the design, the security and the operations of refuelling connectors
Sector standards	International	SAE J2601-1 SAE J2601-2 SAE J2601-3 SAE J2601-4	Refuelling protocols for: Light Duty vehicles High Duty vehicles Forklifts Slow refuelling	Security and performance limits for refuelling stations (350 bar and 700 bar)

	International	SAE J2799	Communication between the vehicle and the refuelling station	Description of infrared communication between the vehicle and the refuelling station (350 bar and 700 bar). This communication system must also correspond to the SAE J2601 standard.

Table 9. European directives on safety for HRS in Belgium [1]

Reference	Subject	Description
2012/18/UE	SEVESO	CE conformity which is guaranteed by the builder of the refuelling station
IED-2010/75/EU	Industrial emissions	
ATEX95-94/9/EC	Explosive atmospheres	The system is not subject to the ATEX directive since it will not work under explosive atmospheres
ATEX137-99/92/EC		
MD-2006/42/EC	Machines	CE conformity which is guaranteed by the builder of the refuelling station
PED-97/23/EC, TPED-1999/36/EC	Pressurised equipment	
LVD-2006/95/EC	Low voltages	
EMC-2004/108/EC	Electromagnetic compatibilities	

4.2.1.2 Italy

To date, developing an HRS in Italy is subject to certain barriers and requirements summarised in Table 10.

Table 10. Requirements and barriers from the industrial field, local urban planning and safety regulations affecting HRS in Italy [1]

Hydrogen production for HRS
The connection with hydrogen production and distribution can lead HRS to be considered as industrial facilities where inorganic chemical products are generated **(barrier)**
Urban planning involving local authorities
• land use planning and environmental protection of natural habitat **(requirement and barrier)**; • connection to the electrical grid **(requirement)** • local noise emissions and acoustic regulations **(barrier)**
Application of the prescriptive regulation for hydrogen production from electrolysis and for hydrogen refuelling stations (see Deliverable 2.1)
When the two facilities are connected and installed on contiguous areas, strict safety prescriptions for industrial equipment, such as electrolysers, apply and safety distances can be difficult to satisfy **(requirement/barrier)**

4.2.1.3 Spain

It has been seen that, **in Spain, hydrogen is included as a fuel in the Supplementary Technical Instruction ITC-ICG 05 on filling stations for gas-fuelled vehicles (RD 542/2020 of 26 May amending and repealing various provisions on industrial quality and safety)**. Also, ISO 19880 on gaseous hydrogen must be taken into account.

Apart from this, it has been seen that ad hoc procedures are applied in the case of HRS: in the case of the H2PORTS project (Valencia), the permit restrictions were dictated and agreed together with the Port of Valencia's ownership body and management authority, whereas in the FCH2RAIL project (different parts of Spain), a customised permitting procedure was created to overcome the current gap in the Spanish framework that does not consider the refuelling of such innovative fuel cell-based vehicles (see Table 11).

Table 11. Customised mobile HRS registration protocol for H_2 rail vehicles (FCH2RAIL) [1]

1) Preparation of the technical documentation for the HRS prototype
Development of the project according to the regulation "ITC-ICG-05 Refuelling stations for gas vehicles";
The project must include a green light from an engineering college;
Development of a maintenance plan;
Firefighting project (if applicable)
2) Declaration of conformity and installation
Installation of the prototype on the selected site;
Obtaining a work certificate from an authorised engineer;
Installation of pressurised gas and low voltage. The certification is issued by a competent company (if applicable);
Inspection of the installation by a control body, which issues an inspection certificate. Documentary and onsite inspection of the installation;
3) Paperwork for permit procedure
Collection of all documentation and certifications; Initiation of the IT procedure to register the installation and payment of the fee for uploading the documentation produced.

4.2.2 EU 13 countries

4.2.2.1 Bulgaria (also a HYPOP country)

In terms of mobility, Bulgaria has an ordinance which specifies the requirements to be taken into account when designing an HRS, that may be constructed in such a way that they are either integrated within the area of an existing or newly constructed filling station or not.

It is known as the **specific ordinance for HRS RSHV- Conditions and Procedures for Design, Construction, Commissioning and Control of Refuelling Stations for Hydrogen Vehicles (No. RD-02-20-2 of 28 September 2020)**.

4.2.2.2 Poland (also a HYPOP country)

HYPOP research identified that in Poland, as mentioned in deliverable 2.2, **the Decree of the Ministry of Climate and Environment of October 7, 2022** (which is discussed below) could be followed for the

implementation of hydrogen stations. These infrastructures are becoming increasingly of interest due to the future construction of two HRS in Poznań and Katowice, and another in Włocławek, which will be a mobile station.

The permitting procedure for fuelling stations is characterised by **environmental**, **urban planning** and **safety requirements**. First, an environmental impact assessment is required, then a construction permit needs to be obtained. A consultation with the relevant authorities is required, as its approval for a connection to existing municipal infrastructure. The main requirements considered for HRS are Article 5 of the Law of July 7, 1994, the Construction Law, the Law on Electromobility and Alternative Fuels and local safety regulations[1]. A summary of requirements is shown in Figure 13.

The following laws must be also applied, in addition to the recommended application of the standards also described below[1]:

- The **Decree of the Ministry of Climate and Environment of October 7, 2022** presents specific technical guidelines for hydrogen stations. These guidelines cover safe functioning, maintenance and upgrades, adhering to ISO 19880-1 and PN-EN 17127 standards. Additionally, stations are required to meet ISO 19880-2 and PN-EN ISO 17268 standards, particularly concerning refuelling dispensers.
- A hydrogen station needs to have **essential technical documents, guidelines for usage in Polish, installation schematics and an analysis of explosion risks.** Technical checks must also be conducted, including reviews by the Office of Technical Inspection and the Transport Technical Inspection, recorded with reports.

The rule also specifies that two separate power sources or a generator must be available. The facility must have tools to track the quantity of hydrogen being filled and should have safeguards against unauthorised entry, leaks, crashes and fire risks.

The specific laws applied can be consulted in Figure 25, Appendix A. Additional information on applied regulations.

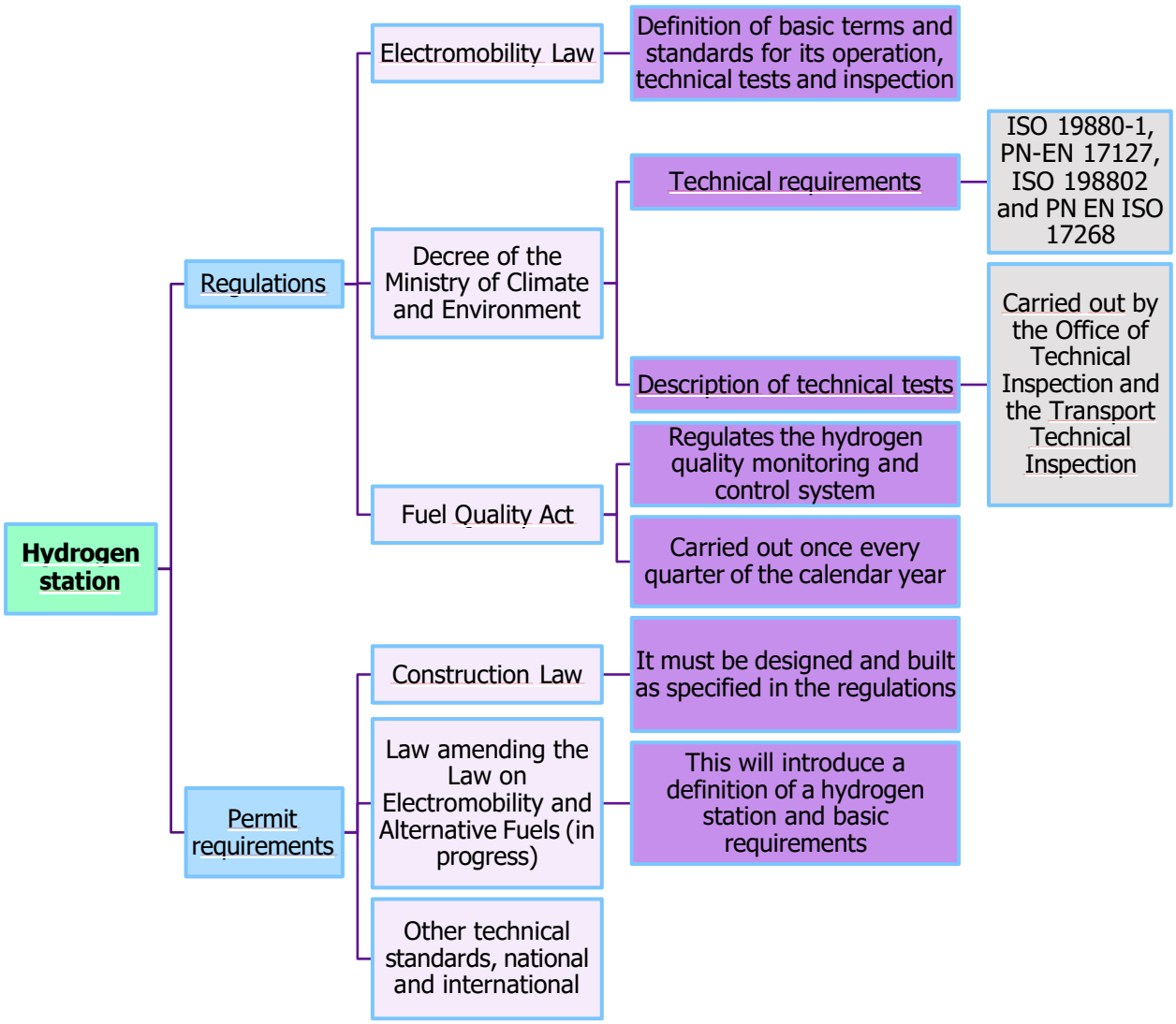

Figure 13. Summary of requirements for HRS in Poland. Collected from [1]

4.2.2.3 Croatia

Although there are no permitting frameworks or official guidelines for HRS, the national deployment target stated in the Hydrogen Strategy of the Republic of Croatia up to 2050 is a total of 15 HRS by 2030, after consulting in the European Hydrogen Observatory[2]. In *Appendix A. Additional information on applied regulations*, a general permitting framework can be considered as a basis when addressing a new hydrogen project (even if not H_2 specific).

4.2.2.4 Cyprus

Cyprus does not have official guidelines in place for HRS permits, nor a legal framework for the development of this technology[2].

4.2.2.5 Czech Republic

At present, the practical experience for hydrogen mobility in the country relies on four 700 bar hydrogen refuelling stations: one in Ostrava, operated by VÍTKOVICE, a.s., two (one in Prague and one in Litvinov) operated by ORLEN Unipetrol; and one close to Prague operated by ČEPRO, a.s.

According to the Czech Republic's National Hydrogen Platform, the development of new hydrogen projects is currently limited due to the high cost of green hydrogen production and unfavourable climate conditions. Despite not having a particular framework for hydrogen production facilities, a methodology for the construction of hydrogen refuelling stations was mentioned.

These guidelines[9] have been prepared in the absence of an official regulation and therefore serve, in effect, as a de facto standard. They set out a methodology that establishes the basic conditions for constructing new compressed hydrogen refuelling stations for mobile equipment, particularly for transport vehicles.

They also describe a range of methods —used individually or in combination— for accident prevention, damage mitigation and emergency-response procedures should flammable or explosive atmospheres arise. The document was produced through collaboration between public and private bodies, together with the independent certification organisation TÜV NORD, and it contains provisions on both fire safety and permitting procedures.

For site selection, design, construction, commissioning, operation and maintenance, it draws on the experience of comparable plants and on the regulations for CNG and LPG, as well as on lessons learned from designing, building, operating and maintaining the first (and, so far, only) compressed hydrogen refuelling station in Neratovice, and on internationally recognised technical standards adopted by the Czech Republic. The document does **not** cover onsite hydrogen production or the use of liquid hydrogen. Nonetheless, the methodology addresses various station types —public and private, with slow- or fast-fill capabilities.

The document is structured as follows:

- Definitions, terminology and applicable normative references
- Technical and administrative requirements for submitting a refuelling station project
- Recommendations on site characteristics and station design
- Tests for system validation

Some of the documentation required for planning and building approval which is included in the guidelines is listed below:

- **Act No. 133/1985 Coll.** on fire protection (as amended)
- **Act No. 505/1990 Coll.** on metrology (as amended)
- **ČSN 1127-1** – Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology
- **Decree No. 499/2006 Coll.** on building documentation (as amended)
- **Decree No. 169/2016 Coll.** on the scope of documentation for public works contracts and the inventory of construction works, supplies and services, as amended by Decree No. 405/2017 Coll.
- **ISO 26142** – Hydrogen detection apparatus — Stationary applications
- **IEC 61000** – Electromagnetic compatibility (EMC)
- **ČSN 73 0810** – Fire safety of buildings—General provisions

[9] https://hzscr.gov.cz/clanek/metodika-vystavby-a-provozu-plnicich-stanic-stlaceneho-vodiku-pro-mobilni-zarizeni.aspx

Moreover, a law amendment was recently applied to the hydrogen mobility sector in Czech Republic. Act no. 416/2009 Coll., on accelerating the construction of strategically important infrastructure, as amended, classified hydrogen filling stations as "energy infrastructure". The means of the acceleration described in this act include setting fixed deadlines and shortening the construction procedure[10].

4.2.2.6 Estonia

In the case of the mobility, there is no official guideline that covers permit procedures for HRS, although there are some projects that involved Estonia, as discussed in deliverable 2.2.[1] and according to the information available in the European Hydrogen Observatory[2].

4.2.2.7 Hungary

In Hungary, Min. Decree 2/2016 NGM was developed for CNG/LNG refuelling stations. For this reason, HRS are meant to be covered by this legislation, although it includes very little specific information about hydrogen.

Contrary to other European countries, risk assessment is not mandatory in order to obtain a permit in Hungary. However, safety measures and zone planning are required for the construction permit. As mentioned in D2.2, the risk assessment concerning hydrogen delivery and supply is the responsibility of the fuel supplier and not the HRS operator. The national legislation is as follows:

- **Ministerial Decree 2/2016.** NGM on pressure equipment, fuelling equipment and technical safety supervision of compressed gas fuelling equipment, as well as regular inspections of autogas containers (NGM represents the Hungarian abbreviation for Ministry of National Economy).
- **Ministry for National Development** (2016): National Policy Framework document (determined by Alternative Fuel Infrastructure Directive).
- **National Fire Regulations** (Ministry of Interior Decree 54/2014).

4.2.2.8 Latvia

The building authority requires that the documentation includes details about drawings, technical information, calculations and how the project's ideas and characteristics match the town's spatial plans and land use. After getting the building approval, the permits for operation must ensure that fire safety regulations are met.

In Latvia, **hydrogen production facilities and related storage systems need to be classified according to categories A, B and C** ("Regulation for the procedure by which Polluting Activities of Category A, B and C Shall Be Declared and Permits for the Performance of Category A and B Polluting Activities Shall Be Issued"). For HRS, individual storage units are needed to apply the pollutant emission legislation and the environmental categorisation, mentioned in WP2, is type C for HRS (also with onsite hydrogen production). Categorisation is based on the plant's rated thermal input. So, if the rated thermal input is from 0.2 to 5 MW, the category is C, but if it is from 5 to 50 MW, the category is B.

However, hydrogen storage units face prohibitions based on quantities, as follows:

- B category if the liquid or gas stored is above 1 ton or more;
- A category if above 1 ton of chemical substances stored.

[10] https://cms-lawnow.com/en/ealerts/2010/01/czech-republic-easier-construction-of-transport-infrastructure

Regarding the pollutant emission permits, there is no distinction between different production processes that can vary significantly in terms of pollutant emissions. Therefore, public authorities would evaluate HRS case by case, considering rules such as ISO 19880-1:2018 where applicable for HRS, or ISO 17268:2012 when connections exist between the fuel cell electric vehicle (FCEV) and the dispensing unit[1].

4.2.2.9 Lithuania

Although there are official guidelines in place for HRS in Lithuania, these only outline strategic objectives and do not provide detailed permit procedures[2]. On the basis of studies such as "*Hydrogen Refuelling Infrastructure concept in the pilot region*[11]", a scheme has been elaborated which represents the stages in the development of hydrogen refuelling stations infrastructure (see Figure 14) and a compilation of laws for the application of HRS (see Figure *26*).

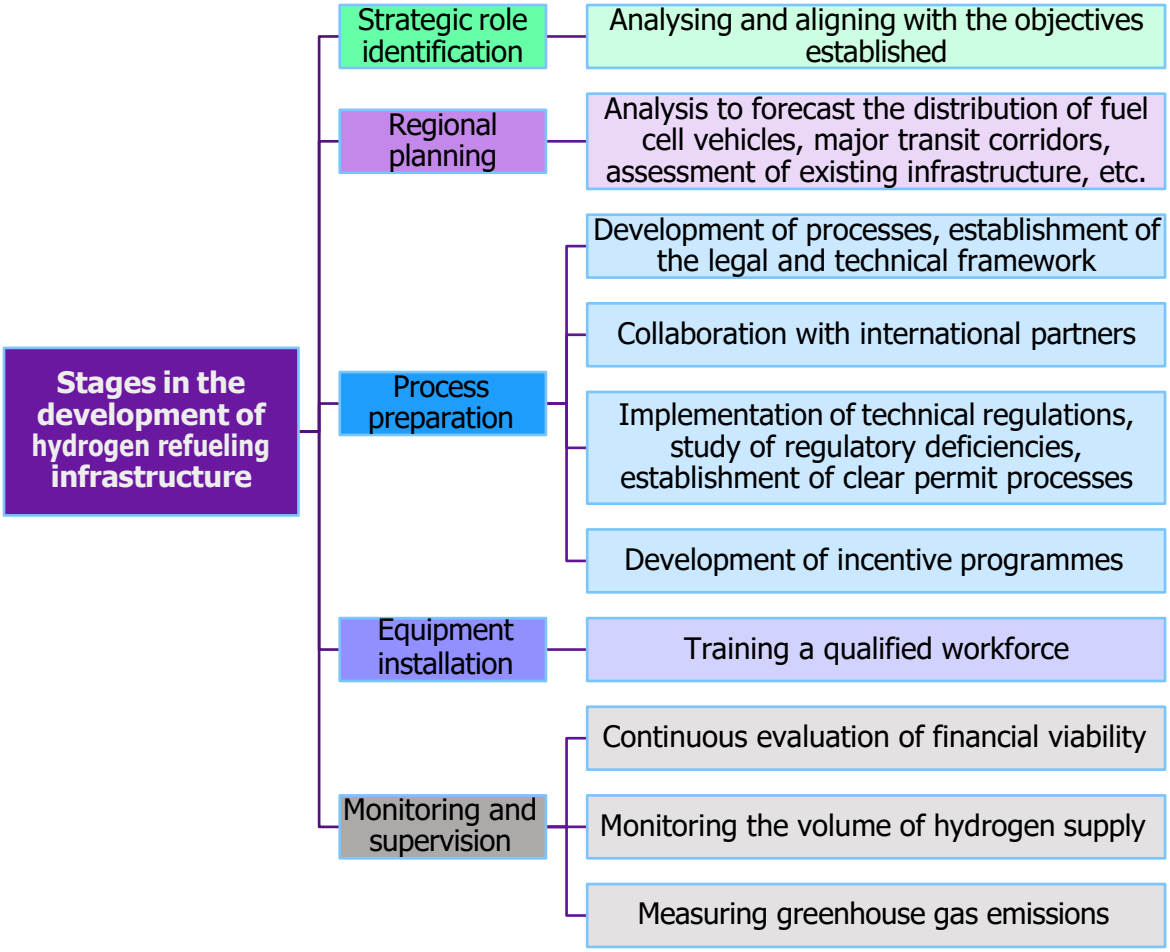

Figure 14. Stages in HRS development. Adapted from [11]

[11] https://sumin.lrv.lt/public/canonical/1736518104/12697/D2.2_RegionalSpatialDevelopmentConcept_Kaunas_Panevezys_LT_20241212_Final.pdf

4.2.2.10 Malta

Malta does not have any official guidelines in place for the permit procedure for HRS nor a legal framework for the development of this technology[2].

4.2.2.11 Romania

Although *law no. 237/2023 on the integration of hydrogen from renewable sources and with low carbon emissions in the industry and transport sectors*, aims to establish measures for fuel suppliers and industrial hydrogen consumers, there are no official guidelines in place that cover the HRS permit procedure[2].

4.2.2.12 Slovakia

Reviewing the European Hydrogen Observatory, there are no official guidelines that cover HRS permit procedures. However, according to the same project mentioned in point 4.1.2.12, for the installation of HRS, the following would be required:

- **HRS environmental position** on which the Ministry of Environment, which is the authority in charge, has already issued two positive statements; neither an environmental impact assessment for the HRS nor Natura 2000 impacts are required, but this will be reconfirmed as legislation evolves.
- **Urban-planning consent**. As noted earlier, the same applies here as with electrolysers; HRS do not need to be built in industrial areas; they can also be developed elsewhere.

4.2.2.13 Slovenia

There is an "***Act on infrastructure for alternative fuels and the promotion of the transition to alternative fuels in transport***" by way of an official guideline for HRS[2]. As mentioned in D2.2[1], the permitting procedures followed by the pilot projects related mainly to natural gas, rather than hydrogen.

4.2.3 Frontrunner countries

4.2.3.1 France

For HRS, the legal approval process can be a bit of a mix between the approval process for a hydrogen production unit and a hydrogen storage unit. This depends on the technical characteristics of the HRS (whether it is onsite production or only with delivered hydrogen). The permit process depends on that. If hydrogen is delivered and stored at the HRS, the process can be made easier. If we make the hydrogen ourselves on site, that depends on what the administration decides.

France has a specific regulation for hydrogen refuelling stations: the order of 22 October 2018. This made it possible to regulate HRS by means of general rules, so that this technology could be properly developed. This order also explained the specific safety distances depending on the flow rate of the HRS, which we talked about in Deliverable 2.1[12].

There is also the order of 8 December 2017, which is about the regulation of hydrogen as an energy source for road transport. This sets out the requirements for hydrogen as an alternative fuel. On top

[12] https://www.hypop-project.eu/wp-content/uploads/2024/07/D2.1.pdf

of that, a guideline known as "***Guide pour l'évaluation de la conformité et la certification des systèmes a hydrogène***" had France Hydrogen and INERIS's input.

As mentioned in section 4.1.3.1, the permitting framework is governed by ICPE, which regulates facilities based on their potential environmental and safety risks. So, for both the industrial and mobility sectors, the permit process is based on the potential danger that the project causes to the environment[2].

4.2.3.2 Germany

The pieces of legislation followed in Germany are shown below:

- **Building Code and Federal Land Use Ordinance.** Both relate to land use planning for hydrogen production, storage and refuelling stations.
- **Protection from the Harmful Effects of Air Pollution, Noise, Vibration and Similar Processes on the Environment Act** (Federal Emissions Control Act).
- **Ordinance on Permitting Facilities.** This relates to the authorisation process for hydrogen production, storage and refuelling stations, as well as road planning.
- **Environmental Impact Assessment Act**. This affects authorisation and safety requirements.
- **Dangerous Incidents Ordinance**. This affects the production process and safety, as well as HRS.

As mentioned in deliverable 2.2, the official guidelines[13] provide a flow chart that summarises the process, specifying the stakeholders involved: WHO (in grey), WHAT THEY DO (in blue) and WHAT IS NEEDED (in light blue). The main steps to follow[1] are shown below and summarised in Figure 15:

1. Identify the authority responsible for issuing the permit (may vary depending on the municipality and the type of procedure),
2. Preliminary phase, where certain documents are provided to the identified authority, which contain the definition of the layout of the site planned for the installation, the preparation of draft construction documentation and the consultations with the building authority,
3. Authorities responsible for the various permits provide feedback,
4. Evaluation of the compiled documentation (this procedure can be either concentrated or nonconcentrated),
5. If the procedure is concentrated, the documentation is sent to a specific authority that evaluates it and the applicant only receives confirmation of the positive outcome of the authorisation procedure.
   If it is non-concentrated, the procedure is longer and validated in parallel by two authorities: a building authority and a supervisory authority. Then, the two authorities involved can issue the permits.
6. Once the permits have been approved, construction activities begin, which may involve inspection.

13 https://rcs.now-gmbh.de/wp-content/uploads/2023/11/Approval-guide-for-hydrogen-for-Germany.pdf

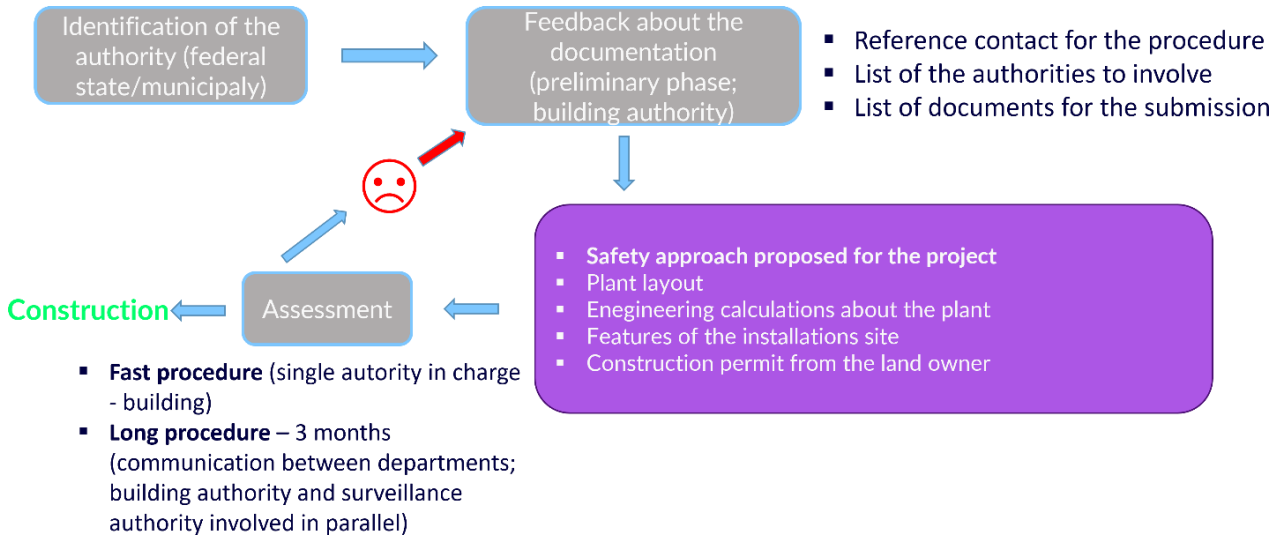

Figure 15. German guidelines as support for stakeholders. Layout of the stakeholder procedure (HRS <3 ton)[1]

Apart from that, hydrogen vehicles are also affected by the German Traffic Ordinance, which considers hydrogen in its section on. The hydrogen refuelling stations are affected by a standard known as "**CMS 70 Regulation (Version 1/2020). Generation of green hydrogen[14]"**, which defines the requirements of green hydrogen production.

4.2.3.3 Switzerland

Based on the findings from the construction of the first HRS in Switzerland, a guideline for the construction of HRS was produced and is known as "Guide to setting up hydrogen refuelling stations", but it is no longer up to date[2].

4.2.3.4 The Netherlands

In the Netherlands, the responsible authority varies depending on the plant location. The permit procedure is followed according to the WABO (Wet Algemene Bepalingen Omgevingsrecht), which is the General Provisions for Environmental Law Act.

The specific procedure for delivering hydrogen to vehicles and tools is the PGS 35, which is the guideline for the occupationally safe, environmentally safe and fire safety application of installations for delivering hydrogen in the Netherlands. The document includes testing periods and a practical maintenance schedule that can be seen in the guideline's annex[15].

A diagram of the procedure for installing an HRS in the Netherlands is shown in Figure 16.

More specific laws can be seen in more detail in Appendix A. Additional information on applied regulations.

[14] https://www.tuvsud.com/it-it/-/media/global/pdf-files/brochures-and-infosheets/tuvsud-cms70-standard-greenhydrogen-certification.pdf

[15] https://content.publicatiereeksgevaarlijkestoffen.nl/documents/PGS35/PGS%2035%20voor%20website%20ondertekend.pdf

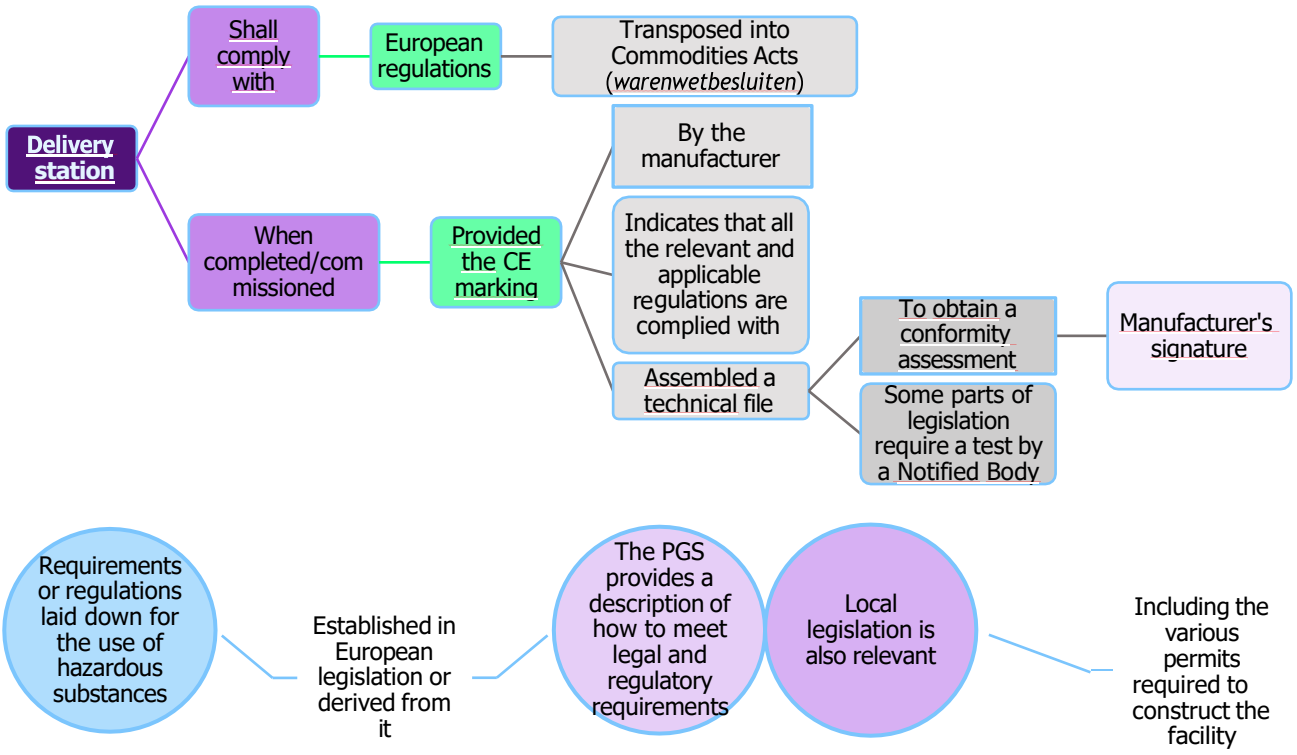

Figure 16. HRS procedure in the Netherlands. Adapted from Hydrogen Delivery Installations PGS 35:2015[15]

Following the guidelines[15] for this country, the government bodies involved are:

- **For the Environmental Licensing Act (Wabo), the competent authority is the municipality. For companies which could cause more severe environmental pollution because their size, it is the provinces**. In some cases, the Dutch Ministry of Infrastructure (for defence sites) and Environment or the Ministry of Economic Affairs (for mining activities and for oil gas extraction) may be the competent authority.
- In terms of **safety**, the **municipal and regional fire brigades** will be integrated as part of the fire service.
- The **working conditions** are supervised by the **Dutch Ministry of Social Affairs and Employment**.
- Regarding the **transport of hazardous substances**, **the Human Environment and Transport Inspectorate** is in charge.

4.3 Residential sector

Unfortunately, when searching for information on legislation in the residential sector, it was not possible to find any new information that was not already covered in Deliverable 2.2[1]. The only update that can be offered relates to the **Czech Republic**, which states: as previously mentioned, there are no specific national or regional safety regulations for hydrogen projects in this country. However, following an amendment to the Czech Energy Act, hydrogen is now subject to the same legislative framework as natural gas[12] for distribution through the pipeline network to customers. This update should facilitate the implementation of hydrogen, particularly with regard to mobility and residential applications, from a permitting point of view.

5 Key elements to foster the hydrogen economy at the regional level

In this section, we will start by discussing the steps set out in the guidelines developed by leading countries such as Switzerland (see section 5.1) and Germany (see section 5.2). Even if other permitting guidelines have been identified (for example for France and Netherlands), the Swiss and German cases have been taken as a reference due to their good structure and replicability in other countries. For the former, we will examine the projects that subsequently helped to develop Swiss guidelines. Regarding the latter, we will examine the steps set out in these guidelines for implementing a refuelling station in Germany.

5.1 Examples in industry that have been considered useful

The guidelines developed in Switzerland, which were mentioned above, presented five projects implemented in that country. Although they have some legislative differences depending on the area in which they were implemented, the common contact authorities are those presented in Table 12.

Table 12. Overall contact authorities found in Swiss guidelines [8]

Contact authorities
• Environment Office (City/Canton) • Building Insurance (Canton) • Civil Engineering Office (City/Canton) • Water Office (Canton) • Fisheries Office (Canton) • Waste Management Office (City) • Forestry Office (Canton) • Labour Inspection (Canton) • Monument Conservation (Canton) • Office of Construction and Land Use Planning (City/Canton) • Mobility Office (Canton) • Office of Agriculture, Rural Development Sector and Soil Protection (Canton) • Energy Office (Canton) • City Hall • Building Manager (City) • Consumer Protection Office (Canton) • Fire Department (City) or other specific safety authorities (Canton)

Depending on the municipality where they are located, some of the offices may have different names or be grouped under different names. Furthermore, depending on the location of the plant, the relevant authorities may be part of the canton or municipality. Each canton, however, will have its own building insurance. Finally, it should be clarified that some authorities will only be involved in certain locations.

One of the H_2 projects developed in Switzerland is the Gösgen project in the canton of Solothurn. In this case, responsibility for processing the various permits required for construction is divided

between the Department of Construction and Justice. The latter is divided into an environmental office that, depending on the application, will refer it to one department or another. The Department of Economic Affairs is divided into the Office of Economic and Labour Affairs, which is responsible for approving plans and building insurance. A diagram of the permitting procedure for this project can be seen in Figure 17.

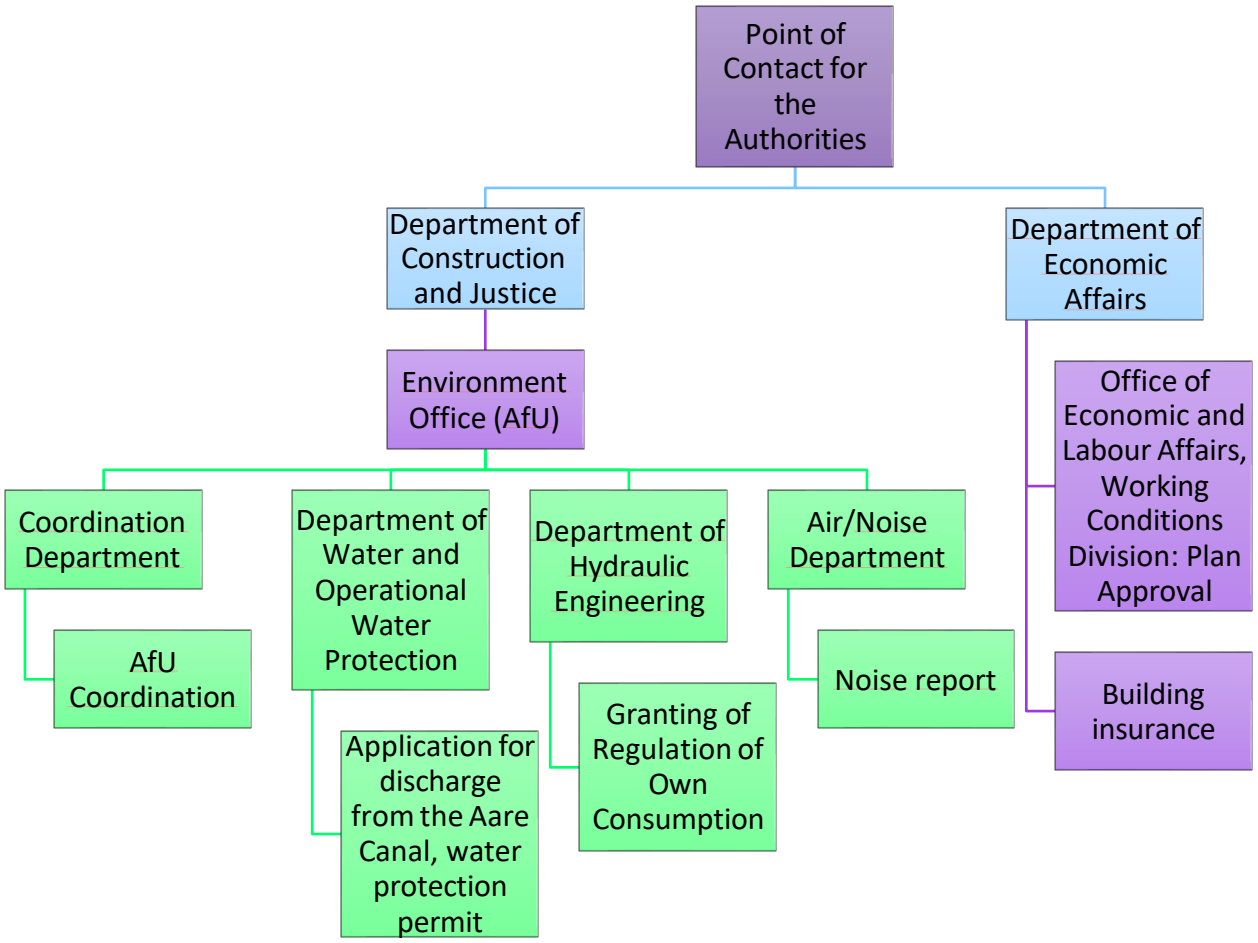

Figure 17. Diagram for the Gösgen project in the Canton of Solothurn. Collected from [8]

Anyway, a comparison of the projects described in these guides[8] revealed that the steps they had in common are shown in the corresponding Figure 18. The process begins with the building permit procedure and the submission of a feasibility study, which clarifies the location of the project and any potential conflicts of interest relating to environmental conservation, distance or transport for users, among others. Following submission of the building application, the result of the study is obtained from the relevant public authorities. If the results are positive, the designated competent authority will proceed to issue the permit, concluding with the implementation or planning of the project.

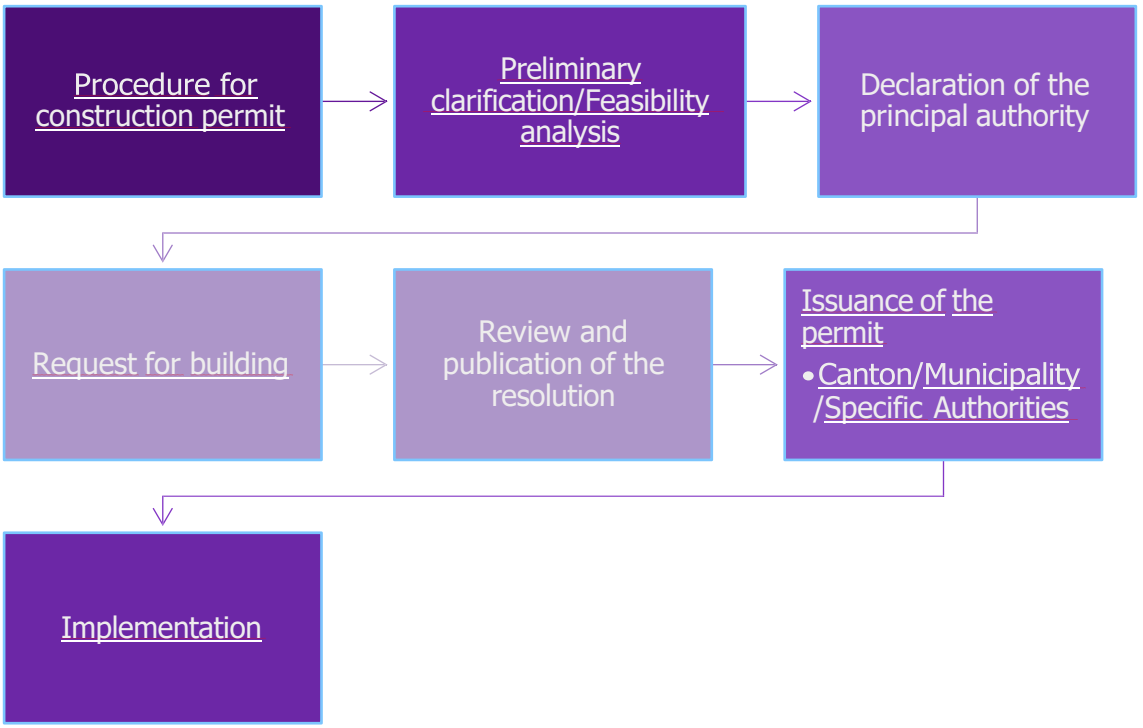

Figure 18 Overview of the procedure in Switzerland based on [8]

A diagram of the rest of the projects mentioned in these guidelines is shown in Appendix A. Additional information on applied regulations.

5.2 Examples in mobility that have been considered useful

The same applies to Germany[13], where the process begins by sending the applicant a site plan by email so that the approval process can begin. At this stage, **it is important for the applicant to identify the authority responsible for beginning the approval process so that the documents can be prepared as a sample building application**. Next, an initial consultation is held with the building authority and the labour inspectorate so that the applicant can present their pre-defined plan. After this consultation, the competent authorities inform the applicant of the documents with which the procedure should be continued.

Opinions are now commissioned, requiring the following documents:

- Opinion of the fire and explosion protection expert, including all relevant documents and expert opinions,
- Construction drawing and other items from the architect,
- An official site plan from the surveyor,
- Written consent from the property owner,
- The structural engineer's calculations.

Then, the inspection by ZÜS is carried out on the basis of the above.

Moreover, **if it is a "non-concentrated procedure" the document is checked by the building authority and the trade inspectorate and the processing time is three months from the date of receipt by both organisations**. A statement from the specialist authorities may be requested by the trade inspectorate, which includes:

- A fire brigade plan,
- An independent fire and explosion protection expert opinion,
- A fire brigade's expert statement on the expert's fire brigade plan.

Based on these, a decision can then be made on the granting of the operating permit and building permit. If the document is approved, **the building authority can issue the building permit** (with site specification conditions) and **the trade inspectorate can issue the operating permit** independently of one another.

However, **if the procedure is "concentrated" all the documents have to be presented to the trade inspectorate**, which forwards the documents to all relevant departments (including the building authority). Then, the applicant only receives a confirmation of receipt from the trade office.

If the procedure is approved by the competent authorities, the implementation planning is initiated by the architect, who instructs the applicant to commission further site-specific expert opinions for the implementation planning. The expert opinions that are required are described Table 13.

Table 13. Required documents when implementation planning has been initiated in the German guidelines. Collected from [13]

Required document	Expert in charge
A subsoil report	Building authority
An assessment of the supporting structure	The architect
A test structural analysis report	Structural engineer

Then, the applicant prepares a building notification for initiating construction and a building inspection is carried out by the building authority, concluding the building permit phase.

The applicant forwards the documents to the ZÜS (which is the approved monitoring body) for the installation certificate for inspection before the HRS is put into operation. The last step of the approval process is the submission of the test report (previously forwarded to the applicant by ZÜS) and the construction notification to the trade inspectorate. To conclude, the commissioning of the HRS can take place after these steps.

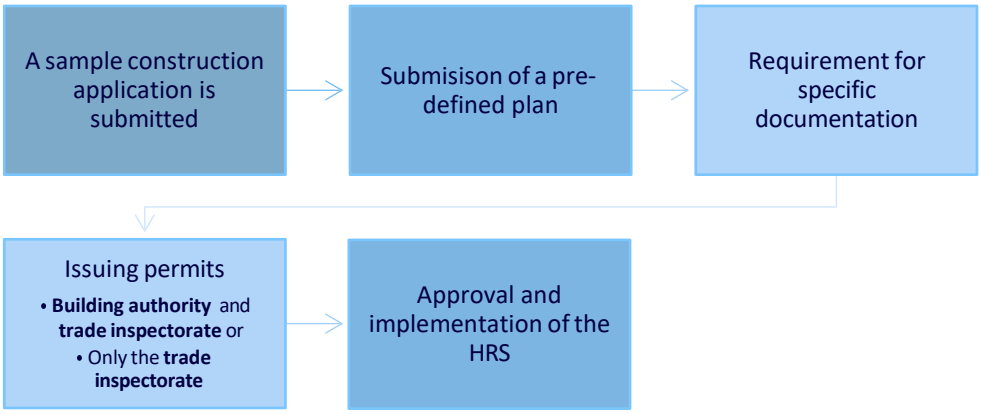

Figure 19. Overview of the procedure in Germany based on [13]

Although it has been possible to see how many countries work in terms of developing hydrogen facilities (even when there was no specific framework for hydrogen), these projects need to be supported during their deployment. For the frontrunner countries, as is the case of Germany and Switzerland, we know, for example, how they develop procedures to install these facilities, and an overview of this is shown in Figure 18 and Figure 19.

6 HYPOP recommendations to deal with hydrogen project permits in the EU

The purpose of this section is to provide recommendations supporting the overcoming of typical barriers identified in the HYPOP project.

The main barrier is the lack of a hydrogen-specific legal framework in many of the countries covered by this deliverable. To tackle this, procedures can be drawn on lessons from past or completed projects. When no hydrogen norm exists, companies may follow general laws, supplemented by government-defined hydrogen requirements. Over time, general permitting procedures should be adapted and codified into a dedicated framework for hydrogen, with clear thresholds that distinguish permit routes by applications. A regulatory framework and an official permit pathway enabling project deployment can then be created.

To facilitate the development of a hydrogen project, even when a country or region has no H_2 specific regulatory framework, the common steps for obtaining permits observed across various countries currently rely on land use and spatial planning rules, building codes and environmental legislation. The following documents are the most relevant when installing a hydrogen facility (see Table 14).

Table 14. Main requirements collected during Deliverable D4.3.

Documents or aspects that could be required		
Building	**Environmental**	**Land use**
• Pre-defined plan • Related to fire safety (fire and explosion protection) • Construction drawing • Official site plan • Structural engineer's calculations	• Environmental impact assessments (depending on the facility's characteristics) • Laws related to water, nature, habitat protection, etc.	• Written consent from the property owner • Accessibility • Availability of basic services (water, electricity, etc.)
Others		
• Risks assessments • Noise protection		

The Figure 20 shows a diagram of the administrative framework proposed for hydrogen in "***Good legislative practices for the green hydrogen industry***" where an administrative framework is proposed which requires licenses to be obtained from the government to produce and distribute hydrogen[16].

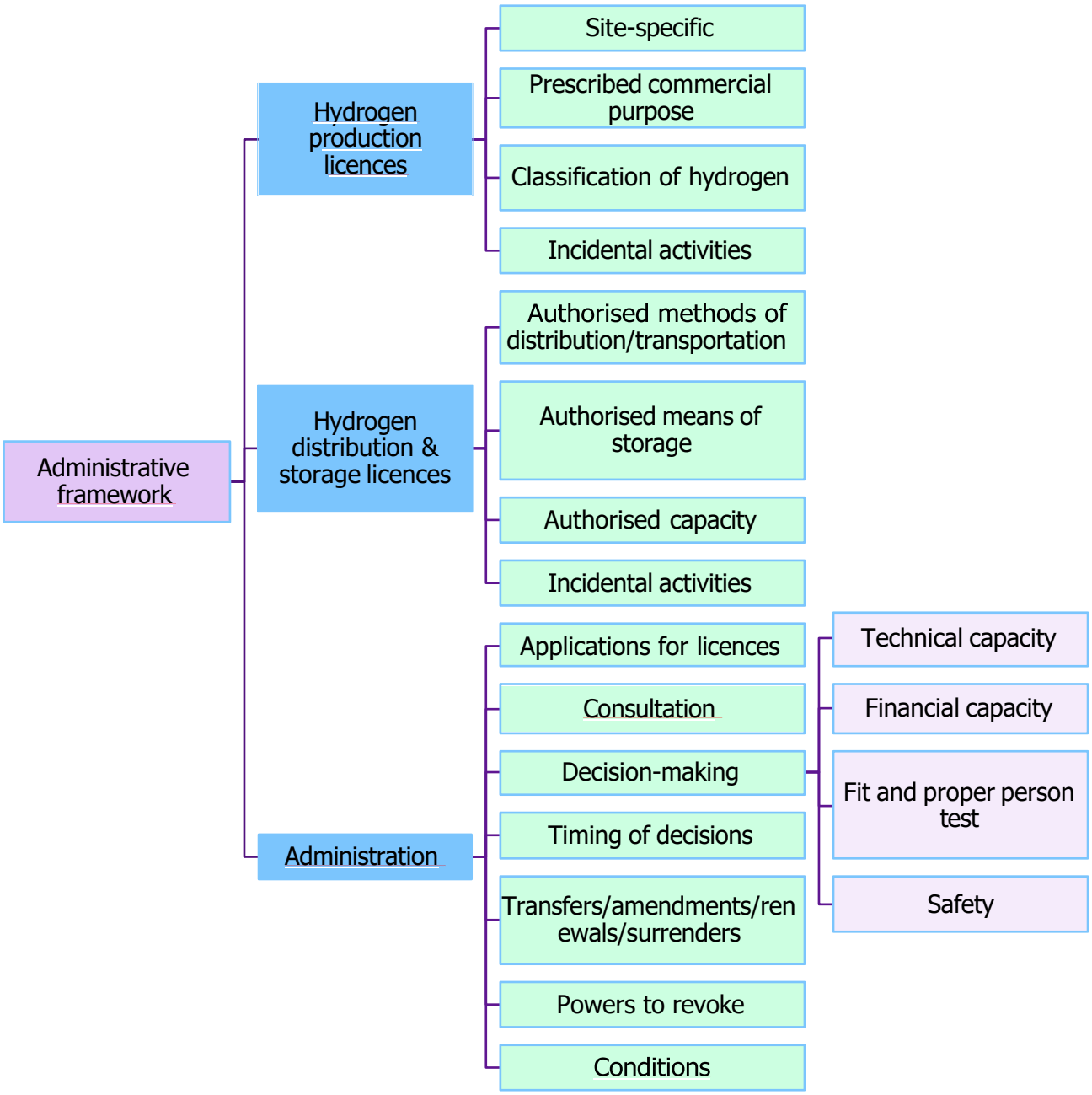

Figure 20. Key aspects of hydrogen permitting. Collected and adapted from [16]

Thus, Figure 21 details the aspects relating to hydrogen production licenses. In this case, the importance of determining the steps needed to obtain the licenses related to hydrogen production are highlighted.

[16] https://gh2.org/sites/default/files/2024-06/GH2_Best%20Practices%20Legislative%20Guidance_10062024.pdf#%5B%7B%22num%22%3A81%2C%22gen%22%3A0%7D%2C%7B%22name%22%3A%22XYZ%22%7D%2C70%2C550%2C0%5D

Hydrogen production licenses	Site-specific**.** Licences require that every project developer obtains a stake in the land related to the licenses, whether through buying or leasing, and must have all the required planning permissions to build and run the planned facility.
	Prescribed commercial purpose. Licences should only be required for certain commercial purposes. (for industrial or manufacturing use, or as part of an electricity generation process for sale, for example).
	Classification of hydrogen. The legal framework should specify the difference between the types of hydrogen production (green, brown, etc.) when obtaining the licences, if applicable.

Figure 21. Key aspects of hydrogen production licenses. Adapted from [16]

Furthermore, it is not only important to establish a legislative framework in line with production, but hydrogen distribution and storage must also be taken into account, as explained in the criteria shown in Figure 22.

Hydrogen distribution and storage licenses	Authorised methods of distribution/transportation. These outline the criteria for transporting hydrogen, based on how it is stored, detailing the technical standards needed for hydrogen transport and identifying the kinds of vehicles that can safely carry it.
	Authorised means of storage. The legislative framework should define the appropiate conditions for hydrogen storage, including the technical standards, as well as the permitted storage methods (such as pressurised containers or salt caverns, among others).
	Authorised capacity. The legal framework should take into account the scale of the distribution infrastructure or storage units when granting permits.

Figure 22. Key aspects of hydrogen distribution and storage licenses. Adapted from [16]

Another area for improvement towards the development of a hydrogen permitting framework for obtaining hydrogen permits is the administrative pathway (see Figure 23). Beyond the points already discussed, each country should clearly define the procedures and the competent authorities responsible for approvals. The same recommendation applies to the processes shown in Figure 21 and Figure 22.

Administration	Applications for licenses. Indentify the steps required for project developers to obtain the information they need to apply for permits, allowing the government to review and either approve or reject the relevant license.
	Consultation. Determine whether public consultations will take place after license requests are submitted. *In some countries, such as Germany, it depends on the characteristics of the plant when installing hydrogen grids, for example (as mentioned above).*
	Decision-making. The standards for accepting or rejecting the application should be outlined, so that the person responsible is restricted to checking whether the specified criteria are met. These criteria encompass: technical aspects, financial capacity, safety, and fit and proper person tests.
	Timing of the decision. A time limit for providing feedback to the applicant should be stipulated.
	Transfers/amendments/renewals/surrender. The framework should enable the license holder to seek government consent to transfer, modify, renew or give up any issued license.
	Powers to revoke. The framework should give the government the ability to cancel a licence if the government believes that the licence is not being used for its intended purpose or if the project leader breaches any of the licence's terms.

Figure 23. Key aspects of administration. Adapted from [6,16]

7 Conclusion

As we have seen, there are significant variations between European countries in permitting procedures related to hydrogen installations. In some instances, there may not be a clear legal framework, while in others, there is already one in place. In locations where frameworks or rules exist, these can vary greatly. It is often the case that the authorities to which permits need to be submitted are not clearly specified. Nonetheless, it is evident that these procedures take a long time and are complicated, and this can slow the development of hydrogen, either as a result of technical issues or financial factors.

While examining the current rules (or the absence of these) in the different EU countries, it was noted that shared criteria encompass land use, environmental regulations and safety, among others. Even though hydrogen technologies are advanced, promoting the growth of renewable hydrogen technologies at a local, national or European level needs to be supported by regulatory frameworks encompassing permitting, safety and certification aspects. To that end, it is essential to clearly identify who is accountable for each part of the process, to align the procedures across different countries and to consider the locations where these facilities will be set up. From the permit obtaining processes reviewed in this deliverable, a common backbone emerges —environment, land use/spatial planning and building approvals— but to make it workable across countries and regions, hydrogen-specific rules must be defined (e.g., context-dependent safety distances, allowable zoning beyond heavy-industry areas and pressure/capacity thresholds); without these parameters, green hydrogen projects face unnecessary friction and delays. One case that illustrates the point above relates to the installation of HRS, as it may be important to determine whether their setup would be required on industrial land or if it is allowed on building land, and if the latter is permitted, what characteristic that installation should have.

We can begin by following the actions listed in detail in the subsections from section 5 (*Key elements to foster the hydrogen economy at the regional level) and 6 (HYPOP recommendations to deal with hydrogen project permits in the EU)*. This helps us to understand what factors have been considered for certain projects and what aspects should be included based on the data gathered from other projects or references mentioned in this report.

Naturally, it is crucial to educate experts for the advancement of these technologies. We need to understand what hydrogen technologies consist of in order to implement them effectively, and, importantly, we need to create permitting procedures that facilitate their safe and timely rollout. To this end, establishing cross-sector working groups —bringing together local and national authorities with industry actors in the chemical and renewable-energy sectors— will help address issues incrementally and translate solutions into clear, actionable rules on obtaining permits. It is also important to designate a leading competent authority to act as a single point of contact, coordinating dossier circulation to other bodies or directing applicants to the appropriate contacts after an initial project screening. In view of the fact that requirements may vary between region and site, authorities should publish a well-defined, standardised process map that sets out responsibilities, documentation and decision points to support consistent, efficient project approvals.

8 References

Although the documentation consulted has been added to each page as a footnote, it is also included here:

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[2] European Hydrogen Observatory, July 2024, *National Policies and Legislation*. [Online] https://observatory.clean-hydrogen.europa.eu/hydrogen-landscape/policies-and-standards/national-policy [Consulted on July 2025]

[3] **EKONERG**, February 2025, *ELABORAT ZAŠTITE OKOLIŠA*. https://mzozt.gov.hr/UserDocsImages/UPRAVA-ZA-PROCJENU-UTJECAJA-NA-OKOLIS-ODRZIVO-GOSPODARENJE-OTPADOM/Opuo/OPUO_2025/18_03_2025_Elaborat_energetski_park_Sibinj.pdf [Consulted on May 2025]

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[11] Ministry of Transport of the Republic of Lithuania, 2024, *Hydrogen refueling infrastructure concept in the pilot region, Kaunas and Panevėžys regions*.

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[12] Hypop Project, May 2024, *D2.1 Report on safety requirements*. https://www.hypop-project.eu/wp-content/uploads/2024/07/D2.1.pdf [Viewed in July 2025]

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9 Appendix A. Additional information on applied regulations

a. CROATIA

Environment

- Noise Protection Law (Official Gazette 30/09, 55/13, 153/13, 41/16, 114/18) and 14/21)
- Air Protection Act (OG 127/19 and 57/22)
- Regulation on levels of pollutants in the air (Official Gazette 117/12, 84/17, 77/20)
- Environmental Protection Law (Official Gazette 80/13, Art. 202)
- Act on Climate Change and Ozone Layer Protection (OG 127/19)
- Regulation on the assessment of the impact of interventions on the environment (Official State Gazette 61/14 and 03/17)
- Waste Management Ordinance (Official Gazette 106/22)
- Climate Change Adaptation Strategy in the Republic of Croatia for the Period up to 2040 with a View to 2070 (NN 46/20)
- Low-Carbon Development Strategy of the Republic of Croatia until 2030 with a View to 2050 (Official Gazette 63/21)
- Seventh National Report and Third Biennial Report of the Republic of Croatia under the United Nations Framework Convention on Climate Change (UNFCCC)

Building

- Construction Law (Official Gazette 153/13, Official Gazette 78/15, 12/18, and 118/18).
- Spatial Plan of Brod-Posavina County ("Official Gazette of Brod-Posavina County") No. 4/01, 6/05, 11/08, 14/08 - consolidated text, 5/10, 9/12, 39/20, 45/20 - consolidated text, 33/23. and 1/24 - consolidated text)
- Territorial Development Plan of the Municipality of Sibinj ("Official Gazette of Brod-Posavina County" No. 8/03, 7/04 - correction, 2/07 - credible interpretation, 17/07, 27/14 - harmonization with By Law, 27/16 and 2/17 - consolidated text)
- Urban Development Plan of the Slobodnica Small Business Zone, Phase II ("Official Gazette of Brod-Posavina County" No. 29/07)

Land use

- Agricultural Land Law (Official Gazette 20/18, 115/18, 98/19, and 57/22)

Figure 24. Main regulations applied in Croatia to install an Energy Park. Adapted from [3]

b. POLAND

Regulation for the construction and design of hydrogen refuelling stations	The Act of July 7, 1994. - Construction Law
	The Act of October 3, 2008 on providing information about the environment and its protection, public participation in environmental protection and environmental impact assessments
	The Law of March 27, 2003 on spatial planning and development
	The Law of December 21, 2000 on technical supervision
	The Law of August 19, 2011 on the transportation of dangerous goods
	The Regulation of the Minister of Infrastructure of April 12, 2002 on the technical conditions to be met by buildings and their location
	The Regulation of the Minister of Transport and Maritime Economy of March 2, 1999 on the technical conditions to be met by public roads and their location
	The Regulation of the Minister of Infrastructure of January 16, 2002 on technical and construction regulations for toll highways
	Regulation of the Minister of Economy, Labor and Social Policy of July 9, 2003 on the technical conditions of technical supervision in the operation of certain pressure equipment
	The Regulation of the Minister of Development dated July 11, 2016 on requirements for pressure equipment and pressure equipment assemblies
	The Ordinance of the Council of Ministers of December 7, 2012 on the types of technical equipment subject to technical supervision

Figure 25. Main regulation for HRS in Poland. Adapted from [1]

c. LITHUANIA

About HRS

- Law on Alternative Fuels of the Republic of Lithuania
- Rules for the Installation and Operation of Gas Stations of the Republic of Lithuania, Order of the Ministry of Energy of the Republic of Lithuania on the Approval of the Rules for the Installation and Operation of Gas Stations
- Resolution of the Ministry of Energy of the Republic of Lithuania No 1-81 of 26 April 2024 "On Approval of Guidelines for Hydrogen Development in Lithuania 2024-2050"
- Resolution of the Ministry of Transport and Communications of the Republic of Lithuania No 3-105 of 10 March 2023 "On the Approval of the Guidelines for the Development of the Hydrogen Refueling Infrastructure and the Promotion of the Use of Hydrogen-Powered Road Vehicles in Lithuania"
- Law of the Republic of Lithuania on Special Land Use Conditions
- Law of the Republic of Lithuania on Natural Gas
- Law of the Republic of Lithuania on Construction
- Order of the Ministry of the Environment of the Republic of Lithuania on the approval of the environmental (except air) protection requirements for the design, construction and operation of liquid fuel filling stations (LAND 1-2003)
- Order of the Ministry of the Environment of the Republic of Lithuania on the technical regulation on construction, art. 1.01.03:2017 "Classification of Constructions"

Land

- Law on Roads of the Republic of Lithuania
- Law on Special Conditions of Land Use of the Republic of Lithuania

Construction

- Order of the Minister of Environment of the Republic of Lithuania No D1-878 of 12 December 2016

Environment

- Law on Environmental Impact Assessment of Planned Economic Activities of the Republic of Lithuania
- Order of the Ministry of Health of the Republic of Lithuania No V-362 of 10 May 2007
- Order of the Ministry of Health of the Republic of Lithuania No V-604 of 13 June 2011
- Order of the Ministry of the Environment of the Republic of Lithuania No D1-528 of 15 July 2013

Others

- Order No 4-791 of the Ministry of Economy of the Republic of Lithuania of 11 December 2015
- Order of the Head of the Lithuanian Metrology Inspectorate No 11V-24 of 31 March 2016
- Order of the Ministry of Economy of the Republic of Lithuania No 4-523 of 1 August 2014
- Order of the Ministry of the Environment of the Republic of Lithuania No D1-546 of 16 September 2009
- Law on Energy of the Republic of Lithuania
- Law on Metrology of the Republic of Lithuania

Figure 26 Process for obtaining permits applied in Lithuania based on [11,17]

17 https://data.kurklt.lt/wp-content/uploads/2023/04/6-gaire.-Rekomendacijos.pdf

d. SWITZERLAND

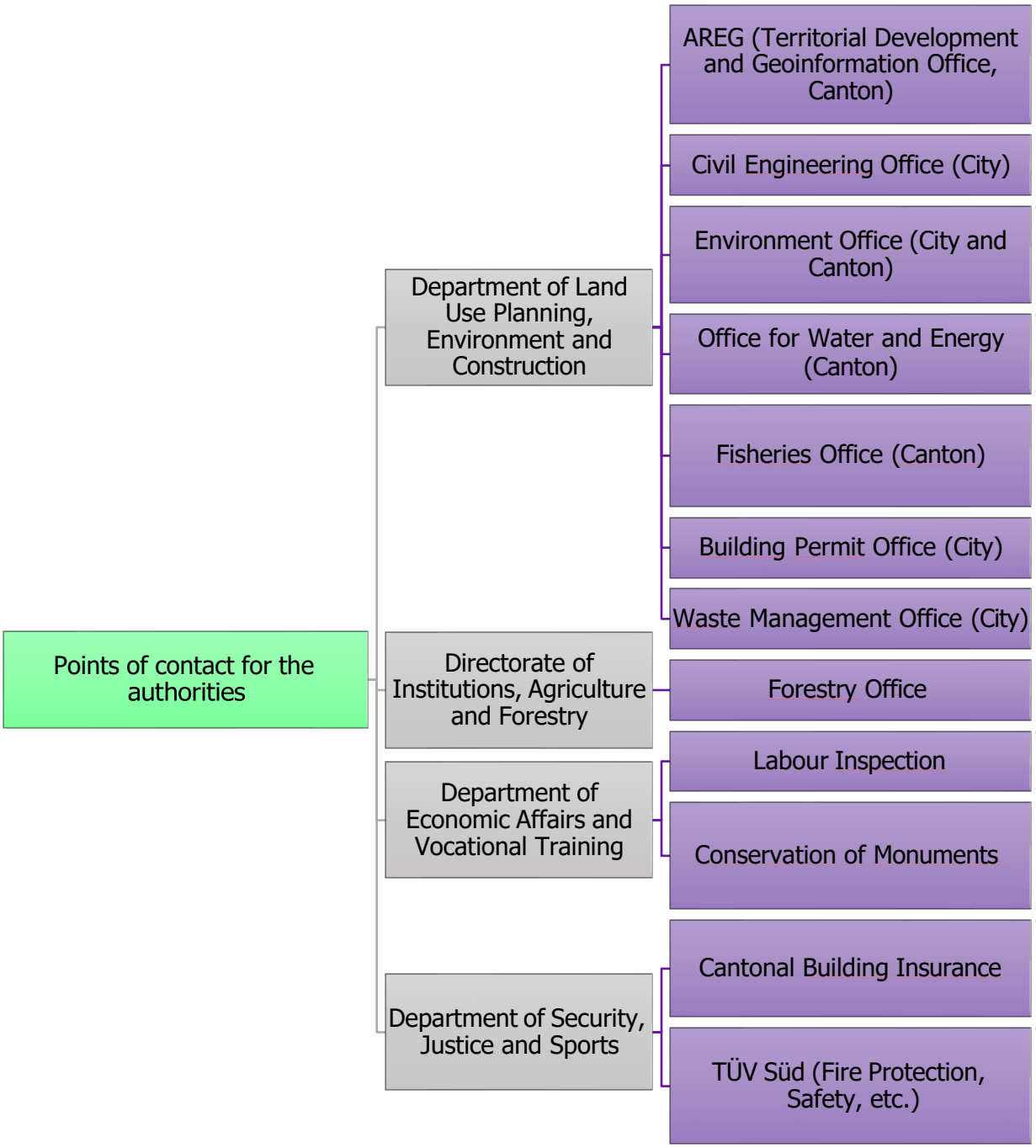

Figure 27 Kubel project in the canton of St. Gallen [8]

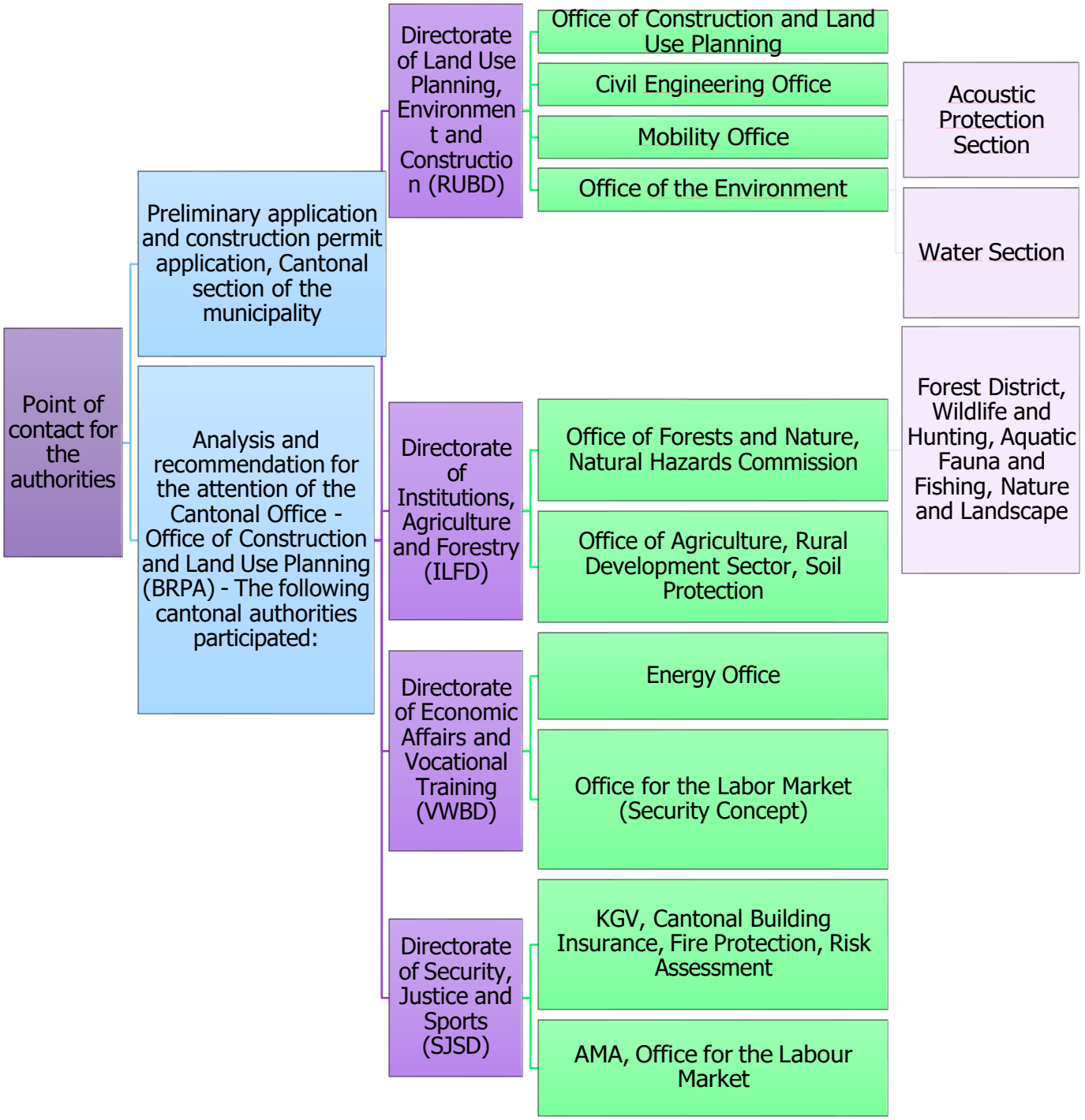

Figure 28 Schiffenen project in the canton of Fribourg [8]

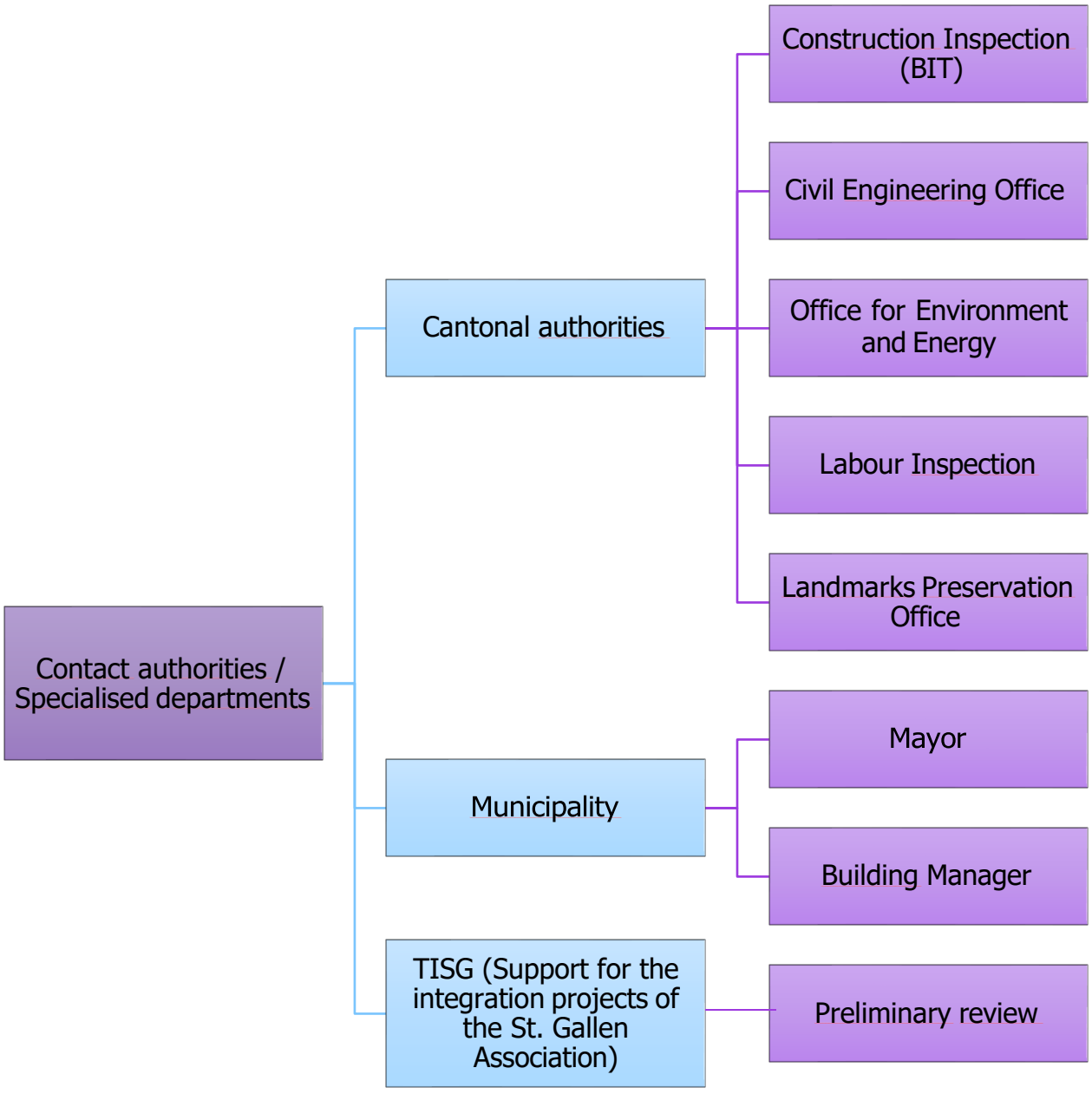

Figure 29 Birsfelden project in the canton of Basel-Landschaft [8]

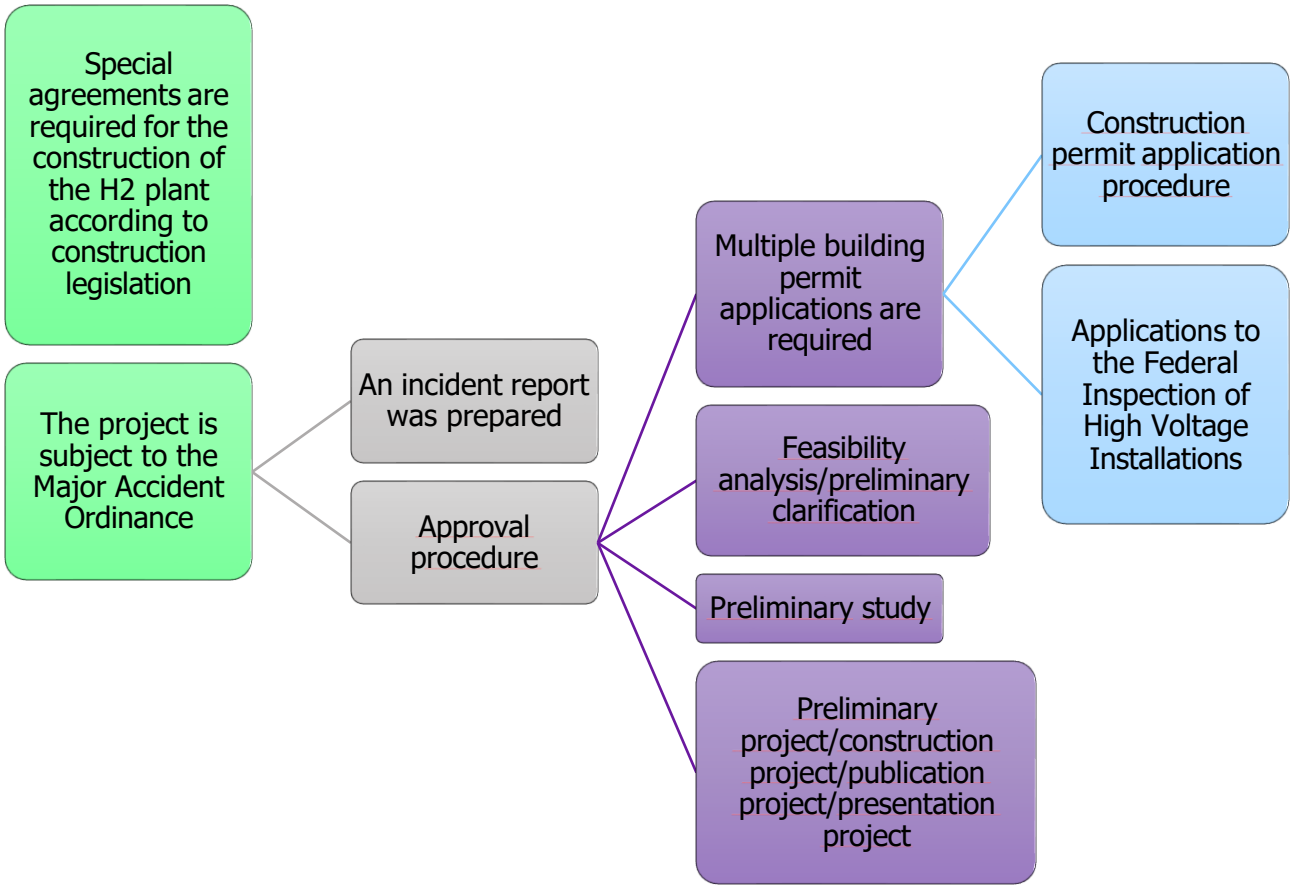

Figure 30 Wildegg-Brugg project in the canton of Aargau [8]

Table 15. Description of applicable procedures. Collected from [8]

Permits for the construction of the plant	**Building Permit**	Cantonal legislation	It is presented in the municipality where the project is located
	Planning Permission	Federal Labour Law	
		Authority: Cantonal Control Body (Cantonal Labour Inspectorate)	
	Planning Permit for Electrical Installations	Federal Electricity Law	
	Operating license	Federal Labour Law	
		Authority: Cantonal Authority	
Building approval	**Electrical Components**	Notify to: Federal Inspection of Heavy Current Facilities (ESTI)	
	Prove system compliance	Product Safety Act (PrSG)	
		Certifies: Cantonal Control Bodies	
	Commissioning of pressure equipment	Ordinance on the Use of Pressure Equipment (DGVV)	Swiss Occupational Health and Safety Insurance (SUVA)
		Equipment inspection	Boiler Inspection, a specialised department of the Swiss Association of Technical Inspections (SVTI)
When the works are completed	**Notify the competent authorities to accept the different components of the building and facilities for which permission has been requested**	Equipment compliance testing	Apply to: Manufacturer
		Application for operating permit before starting production	Issued by the cantonal authority
	Copy of conformity of the notification of the pressure equipment and the operating permit	ETSI	
CE certification of the entire system	**Applicable regulations**	DGV SR 930.114	
		National regulations	
		Cantonal regulations	
		DGV SR 930.11	Ordinance on Low Voltage Electrical Products NEV SR 734.26
			Ordinance on electromagnetic compatibility VEMV SR 734.5
			MaschV Machinery Safety Ordinance SR 819.14
			Regulations on Protective Equipment and Systems for Use in Potentially Explosive Atmospheres VGSEB SR 734.6 Areas
	Compliance Body	CE approved body	

Table 16 Expert opinions for plant approvals. Collected from [8]

Standard assessment	The buildings must correspond to the intended use of the area and be on urbanised land		
Environmental assessment	**Competent authorities**	Federal Office for the Environment (FOEN)	
	Applicable regulations	Environmental Protection Act	
		Rules relating to: Nature and heritage conservation; Landscape protection; Water protection; Forest conservation; Hunting; Fishing; Genetic engineering	
	If not subject to an EIA	Simple Environmental Statement	
	Procedure regulated by	Chapter 3 of the Environmental Protection Act and the Environmental Impact Assessment Ordinance	
Serious accident preparedness	**Applicable regulations**	Major Accident Regulations (StFV)	
		Serious Accidents Ordinance	Implementing authority - Swiss Federal Office of Energy (SFOE)
			Supervisory Authority for Implementation - FOEN
Risk assessment	**Applicable regulations**	Labour Law	
		Accident Prevention Ordinance	
		Ordinance on the Protection of the Safety and Health of Employees When Using Pressure Equipment	
	Be part of	Building and Facility Use Protection Act (PGV-ArG)	
Noise protection	**Applicable regulations**	Noise Protection Ordinance (LSV)	
Fire protection	**Applicable regulations**	VKF Fire Protection Regulations	Authority: Association of Cantonal Fire Insurers
Explosion protection	**Be part of**	PGV-ArG	
	Applicable regulations	VUV (German Ordinance on the Use of Buildings and Facilities)	Refers to the ATEX Works Directive 1999/92/EC
	Legal procedures specification tool	Suva Brochure 2153-d, "Explosion Protection: Principles, Minimum Requirements and Zones"	

e. THE NETHERLANDS

General

- Environmental Licensing (General Provisions) Act (Wet algemene bepalingen omgevingsrecht – Wabo)
- Best Available Technology (BAT)
- Activities Decree (Activiteitenbesluit)

Requirements for technical integrity

- Pressure Equipment (Commodities Act) Decree (Warenwetbesluit drukapparatuur – WBDA)
- Legislation on explosive atmospheres (ATEX 95)

Operation

- Legislation on explosive atmospheres (ATEX 137)
- Pressure Equipment (Commodities Act) Decree
- Risk inventory and evaluation (Risico inventarisatie en evaluatie – RI&E)
- Working Conditions Act (Arbeidsomstandighedenwet)
- In-house fire service (Bedrijfsbrandweer)
- National and international standards for operation

Requirements for spatial context

- Building Decree (Bouwbesluit)
- External Safety (Establishments) Decree (Besluit externe veiligheid inrichtingen – Bevi)

Transport

- Transport of hazardous substances act (Wet vervoer gevaarlijke stoffen)
- Ships Act (Schepenwet)
- Regulation on transport of hazardous substances by land (Regeling vervoer over land van gevaarlijke stoffen – VLG)

Figure 31. Main regulations applied in the Netherlands to install HRS. Adapted from [15]

Table 17 Relevant legislation in The Netherlands. Collected from [15]

General		
Environmental Licensing (General Provisions) Act (Wet algemene bepalingen omgevingsrecht – Wabo)	*Environment Law Decree (Besluit omgevingsrecht - Bor)*	
	Ministerial Regulation on Environmental Law (Ministeriële regeling omgevingsrecht - Mor)	Annex 1 of the Bor indicates the establishments that require an environmental licence
Best Available Technology (BAT)	According to Article 9.2 of the Mor, the competent authority shall take into account the BAT when awarding a license	
Activities Decree (Activiteitenbesluit)	• Also called *Decree on general rules for environmental management of establishments (Barim: Besluit algemene regels voor inrichtingen milieubeheer* • Provides overarching environmental guidelines for organisations that do not require a license. • This classifies three types of establishments: A, B and C. • Type A and B establishments are fully governed by the general rules of the Activities Decree. • Type C establishments must have a license, where for certain activities some rules of the Activities Decree are directly applicable.	
Requirements for technical integrity		
Pressure Equipment (Commodities Act) Decree (Warenwetbesluit drukapparatuur – WBDA)	• Has been transposed in the *Pressure Equipment (Commodities Act) Decree (WBDA)* • Establishes the criteria for the technical reliability of systems utilised for the storage and handling of pressurised gases or liquids • Certain things are not regulated in the Decree. This means that the Working Conditions Act apply • In cases where neither of these laws apply, a manufacturer's product liability towards his customers shall suffice • The Ministry of Social Affairs and Employment (SZW) designates national inspection agencies, referred to as 'AKI' in Dutch	
Legislation on explosive atmospheres (ATEX 95)	• Transposed in the *Explosion-safe equipment (Commodities Act) Decree* • Addresses technical integrity and establishes specific regulations for devices and safety systems used in atmospheres that may pose an explosion risk	
Legislation on explosive atmospheres (ATEX 137)	• For companies with an explosion risk • Established in the *Working Conditions Ordinance (Arbeidsomstandighedenbesluit* • Describes the minimum requirements for creating a safe and healthy working environment for employees	

	• These guidelines are included in the Health and Safety legislation and regulations (ARBO) • The person responsible must prepare a safety report. This report is a component of the RI&E	
Operation		
Pressure Equipment (Commodities Act) Decree	Includes technical integrity requirements and some operational requirements, but does not address specific competencies for working in facilities with hazardous substances	
Risk Inventory and Assessment (RIsico-inventarisatie en evaluatie – RI&E)	Every company must determine whether work may pose a hazard or cause harm to the health of employees. This is called RI&E and must be recorded in writing, in accordance with Article 5 of the Occupational Health and Safety Act	
Working Conditions Act (Arbeidsomstandighedenwet)	• Establishes the rights and obligations of both employers and employees regarding working conditions • *Working Conditions Ordinance (Arbeidsomstandighedenbesluit)* • Establishes additional rules that both employers and employees must comply with to prevent health and safety risks (specific regulations) and contains different and additional rules for various sectors and employee categories • Employers and employees reach agreements on how to comply with the regulations, which can be reflected in so-called Health and Safety Catalogues • If a sector does not take the initiative to develop one, the Social Affairs and Employment Inspectorate (SZW) can take the initiative to develop a Health and Safety brochure for the sector	
In-house fire service (Bedrijfsbrandweer)	This determines which establishments are required to have their own fire department	
	The Internal Fire Service Guide (werkwijzer Bedrijfsbrandweren) is a guide for designating an internal fire department	
National and international standards for operation	These standards describe a method for safe operation using a safety management system	
	Examples	
	Occupational Health and Safety Assessment Series (OHSAS) 18001 for OHS management systems	Dutch Technical Agreement NTA 8620 for safety management systems of Brzo companies

Requirements for spatial context	**Building Decree (Bouwbesluit***	Includes general rules for fire safety in buildings and their use
	External Safety (Establishments) Decree (Besluit externe veiligheid inrichtingen – Bevi)**	

Transport

- Regulated by international conventions, which are found, along with their transposition, in ministerial regulations in the **Dangerous Substances Transport Act (Wet vervoer gevaarlijke stoffen) and the Ships Act (Schepenwet)**
- The following international conventions are important in this regard:
  - **ADR for Road Transport**
  - **Accord européen relatif au transport international des marchandises Dangereuses par Route** *(Regeling vervoer over land van gevaarlijke stoffen - VLG)*
  - Contains specific regulations for the transport of hazardous substances by road

*: This establishes fire compartmentalisation to control fires, allow safe escape and prevent fires from spreading to other buildings. For new constructions, buildings must be divided into a usable area of no more than 1,000 m², and in some cases up to 2,500 m² (for packaged hazardous substance storage facilities, the limit of 1,000 m² is PGS 15). For larger usable areas, equivalent safety must be demonstrated. This can be done using the "Fire Control Method" assessment report (2007 edition). The NEN 6068 standard establishes how this resistance to the passage of fire and to flashover (WBDBO) will be determined.

**: This is linked to the *Environmental Management Law* and aims to limit the risks to which citizens are exposed in their living environment due to activities involving hazardous substances carried out in establishments, up to a set limit. Pursuant to this, a ministerial decree (REVI) establishes the distances that must be observed in various industrial sectors. In the case of other companies, such as Brzo, the distance required will be defined through a risk analysis applying the calculation standards stipulated in the BEVI.

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