



H2CE

Transnational Strategy for H₂-ready Regions

Joint Spatial Planning Department Berlin Brandenburg



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List of Abbreviations

AFIR	Alternative Fuels Infrastructure Regulation
CCS	Carbon Capture and Storage
EHB	European Hydrogen Backbone
EIB	European Investment Bank
EL	Electrolyzer Capacity
ENNOH	European Network of Network Operators for Hydrogen
ENTSO-E	European Network of Transmission System Operators for Electricity
ENTSO-G	European Network of Transmission System Operators for Gas
ERDF	European Regional Development Fund
ETS	Emissions Trading System
H2CE	Interreg Central Europe project “H2CE”: Empowering H2-ready regions in CE
H2Med	Hydrogen Mediterranean Pipeline Project
HyPAe	Hydrogen Partnership Austria
IPCEI	Important Project of Common European Interest
LOHC	Liquid Organic Hydrogen Carrier
PPA	Power Purchase Agreement
RED	Renewable Energy Directive
RES	Renewable Energy Sources
RFNBO	Renewable Fuels of Non-Biological Origin
RRF	Recovery and Resilience Facility
S3	Smart Specialisation Strategy
SRU	German Advisory Council on the Environment
T&E	Transport & Environment (NGO)
TEN-T	Trans-European Transport Network
TSOs	Transmission System Operators
TYNDP	Ten-Year Network Development Plan



1 Introduction

1.1 H2CE Project

The Interreg Project H2CE tackles the challenge of integrating hydrogen solutions and renewable energy into the regional energy transition. Currently, available information and support primarily target project developers and industry stakeholders, while public authorities are often regarded as passive framework setters, rather than active drivers of the energy transition. Their expertise and mandate, however, hold great potential to actively drive transformation. H2CE seeks to encourage public authorities and administrations in Central Europe (CE) to take an active and sustainable role in integrating hydrogen into regional planning and development. This approach will accelerate the rollout of hydrogen infrastructure and improve the effectiveness of available funding. The project's key outcomes will include mechanisms that enable regional decision-makers to actively support a hydrogen-based energy transition, the establishment of a cross-regional and transnational network of H2-ready regions, and the development of a digital collaboration platform.¹

The partnership includes regions and partners from seven Central European countries: The Regional Development Agency Northwestern-Brandenburg, City and Regional Utilities Luebben, Energy Agency of Styria, Foundation "Dumni z Lubina", Institute for Transport and Logistics Foundation, Regional Union of Chambers of Commerce of Veneto Region, The Pomorskie Voivodeship, Economic and Social Council of the Ústí region, City of Zagreb, North-West Croatia Regional Energy and Climate Agency, and the Institute for Public Service Development. Project partners include regional authorities or their representatives, ensuring effective coordination, development, and implementation of the project outcomes. Their commitment and authority are critical for driving the regional energy transition and advancing the hydrogen agenda.

H2CE consists of three working packages (subsequently referred to as WP):

- WP1: „H2-ready for European and regional spatial planning and development“
- WP2: „H2-ready regions: Support mechanisms for energy system transition and participation“
- WP3: „Developing Central Europe Hydrogen network and Collaboration Platform“

The transnational strategy is embedded in WP1, which focuses on analysing and identifying common challenges and solutions in planning and governance processes for regions transitioning to become H2-ready (hydrogen-ready). It is divided into two main activities:

- A.1.1: Planning the transition in European regions: This involves creating a Fact Sheet of common indicators (D.1.1.1), conducting a regional analysis, and summarising the findings in a Summary of regional analysis (D.1.1.2). This step aims to understand the current situation and challenges in different regions.
- A.1.2: Strategy and action plan development: Based on the previous analysis, this activity provides Guidelines on hydrogen strategies and action plans (D.1.2.1). It leads to the formulation of regional, interregional, and transnational strategies (D.1.2.2) as well as specific regional action plans (D.1.2.3) to support the transition to hydrogen readiness.

A graphical representation of WP 1 can be found in Figure 1.

¹ Interreg Central Europe (2024a)

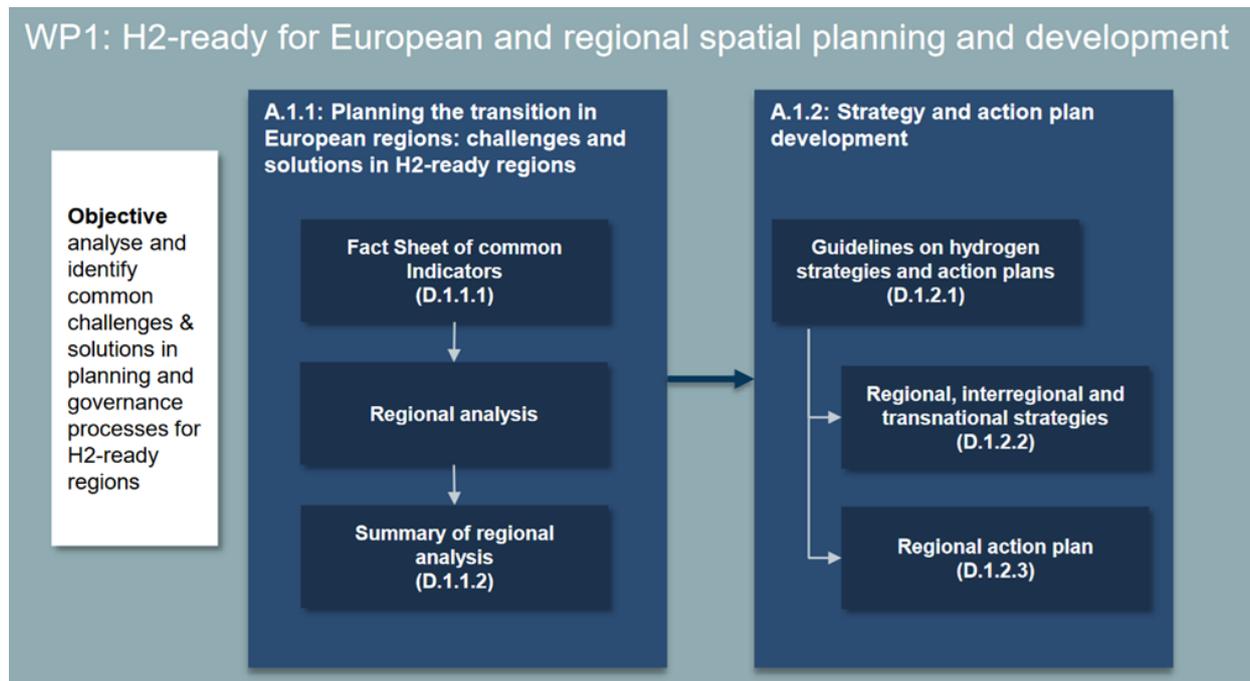


Figure 1: Overview of Working Package 1

1.2 The Transnational Strategy

The transnational strategy is embedded in the complex structure of transnational players and regions, which have an interdependent relationship with each other. It requires awareness of transnational interdependencies and the capacity to translate them into regional planning processes and action. The strategy offers guidance for regions to navigate the complexity of hydrogen regulation, infrastructure, and funding mechanisms, while fostering collaboration across national borders.

In the context of Interreg, “transnational” means cooperation between multiple regions across several countries. It focuses on shared challenges that require joint solutions, such as hydrogen infrastructure or regulation. Transnational projects like H2CE connect regions with aligned planning or strategic priorities.

On the macro level, the predominant transnational player in Central Europe is the European Union with the Commission and Parliament, setting framework conditions, financing programmes and coordinating transnational cooperation. The European Union as the legislative institution, also sets overarching objectives such as the establishment of almost a 40.000 km Hydrogen pipeline network across the European Union by 2040 or the production of 10 million tonnes of green hydrogen annually within the European Union by 2030².

² Jens u.a. (2021)

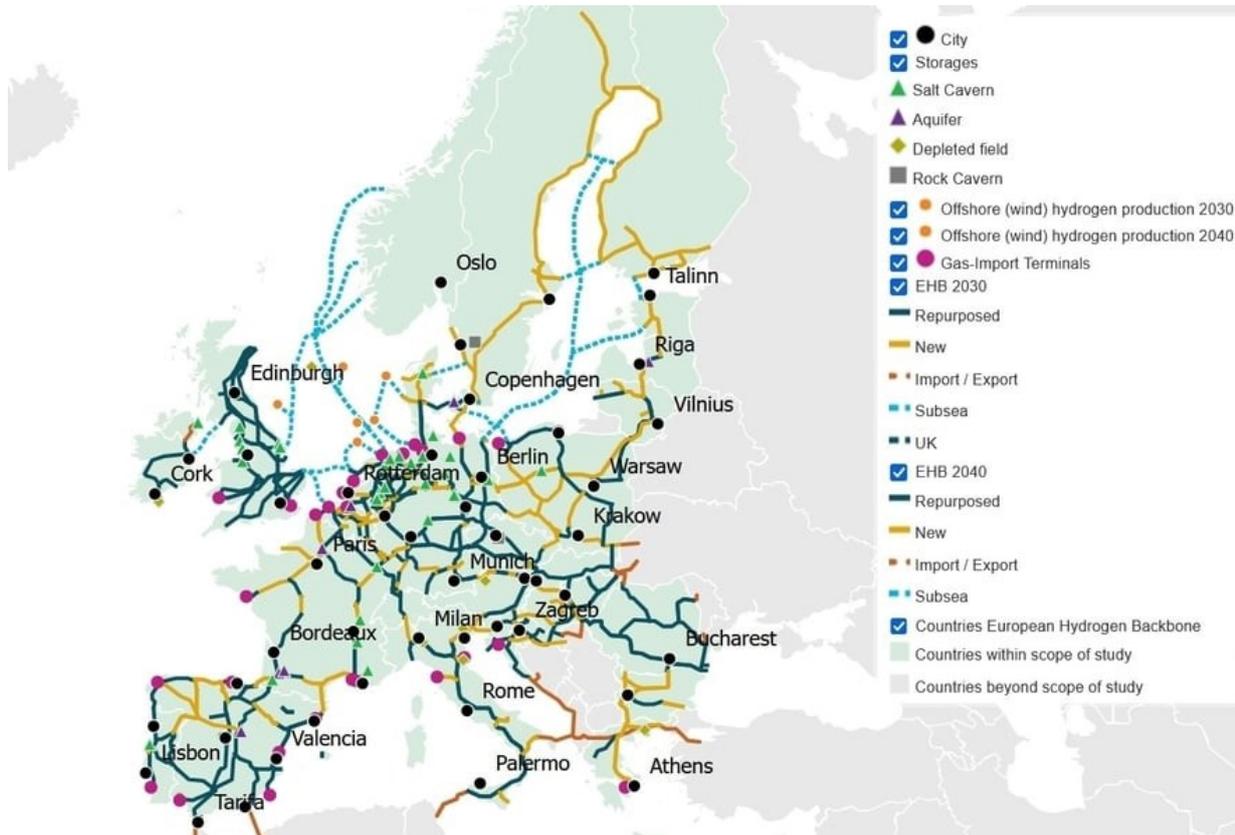


Figure 2: The Current Planning Status (As of 10/2024)³

On the micro level are the regions, which are in charge of implementing and carrying out concrete measures to achieve these objectives, such as hydrogen production or infrastructure deployment.

Both levels rely on each other through a system of reciprocal influence. The macro level sets strategic direction, provides funding, and establishes regulatory frameworks through a top-down approach, but depends on micro-level actors for implementation, innovation and societal acceptance. At the same time, the micro level relies on clear guidance, supportive policies, and structural resources from the transnational player. Through their practical actions, the micro level contributes to the broader strategy via a bottom-up contribution: Feedback and practical experience from the regions can inform and adjust high-level policies, making the relationship not only interdependent but also iterative and adaptive (top-down).

³ H2 News (2024)



This dynamic is illustrated in Figure 2 and raises two central questions:

- How can players such as the EU involve regions in transnational decisions affecting them?
- How can regions deal with and shape transnational developments?

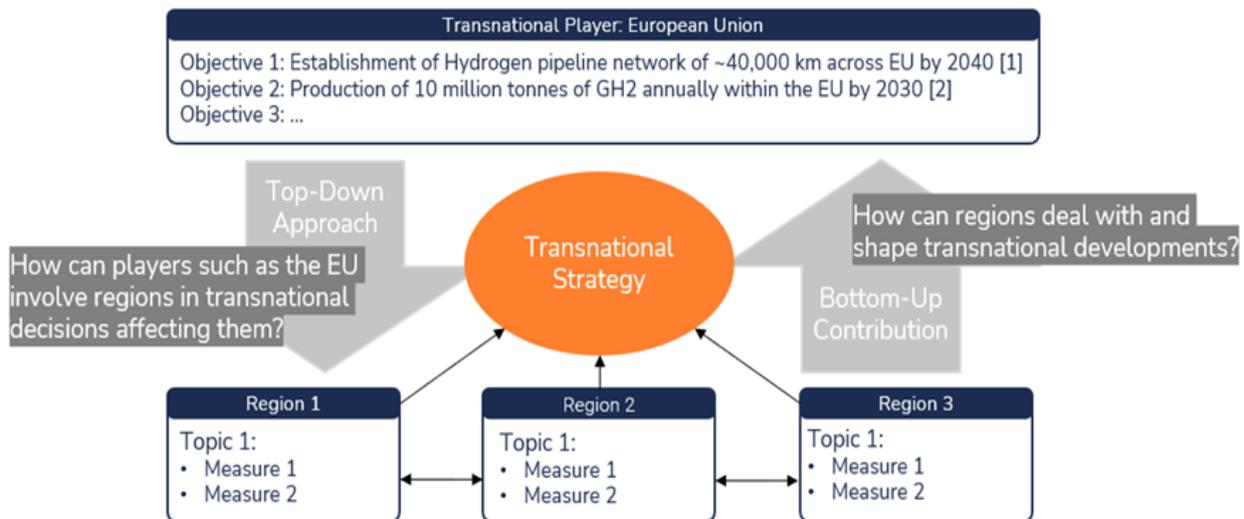


Figure 2: Structure and Logic of the Transnational Hydrogen Strategy

1.3 Methodology

This section outlines the methodology used to develop the transnational strategy.

We identified transnational fields of action regarding green hydrogen based on WP1: factsheet of common indicators and a literature review. These are described in Chapter 2 including *Hydrogen Infrastructure, Standards and Legislation, Networking and Cooperation, Funding and Innovation, and Planning Tools and Guidelines*. To involve the regions in developing the transnational strategy, we conducted a workshop to identify practical measures regions can implement to participate in and deal with transnational developments. The workshop took place on July 17th, 2025, in the City of Gdansk. It was organized by the Reiner Lemoine Institut and was carried out as part of a partner meeting. The aim was to collect information on how regions deal with and shape transnational developments. Participants included representatives from various Central European regions, including Poland (as the host country), Germany, Austria, the Czech Republic, and Croatia. The event began with an introduction to the concept of the transnational hydrogen strategy. The workshop agenda was structured into three key thematic sessions:

- **Transport Infrastructure:** including discussions on the European Hydrogen Backbone and the AFIR regulation, aiming to expand hydrogen refueling and pipeline networks.
- **Hydrogen Production:** exploring regulatory frameworks like RED II and RED III, and strategies to scale up renewable hydrogen production across member states.
- **Networks, Committees, and Collaboration Platforms:** focusing on initiatives such as the European Clean Hydrogen Alliance and Hydrogen Valleys to enhance cooperation and knowledge exchange.

Each session featured a short knowledge input with transnational developments and an interactive component where participants collected and discussed measures. They also evaluated them in terms of feasibility and relevance and presented their results to the group. The workshop concluded with a final ranking exercise, allowing participants to prioritize the most important topic. The measures developed by the project partners were formulated and expanded upon by the authors and are presented in Chapter 2.



Figure 3: The Five Transnational Fields of Action

Each chapter addressing the five transnational fields of action are structured like this: First background information is provided. Then altogether 26 measures are described, followed by a ranking regarding grade of impact and efforts for implementation. Additionally, we present best practices that have already proven helpful in this area.



2 Transnational Fields of Action for H2-ready Regions

2.1 Hydrogen Infrastructure

2.1.1 Background

The hydrogen economy is gaining momentum across Europe, with infrastructure emerging as a decisive factor for its success. Two major frameworks shaping this development are the *European Hydrogen Backbone (EHB)* and the *Alternative Fuels Infrastructure Regulation (AFIR)*. While both operate at national and transnational levels, their long-term success depends heavily on regional participation and connectivity.

European Hydrogen Backbone (EHB)

The *European Hydrogen Backbone* is a strategic vision for a pan-European hydrogen pipeline network. It aims to convert existing natural gas pipelines and develop new dedicated infrastructure to facilitate the large-scale transport of green hydrogen. This network will link hydrogen production hubs, import terminals, and industrial consumption centers across Europe.

Why does this matter to regional hydrogen economies?

For regional actors to participate in the hydrogen economy and benefit from cross-border trade, reliable access to this backbone is essential. The main pipelines function much like motorways – providing high-capacity, long-distance connections. However, just as roads require local access points, the hydrogen backbone demands regional distribution networks to enable uptake and integration at the local level. Without these secondary infrastructures, hydrogen remains inaccessible to regional users.

Timeline and corridor planning

The EHB is being implemented in phases. By 2030, key corridors are expected to be operational, including a major North-South corridor through Germany, connecting North Sea ports (such as Rotterdam and Wilhelmshaven) to industrial clusters further inland. By 2040, the network is projected to span over 50,000 km.⁴

AFIR - Alternative Fuels Infrastructure Regulation

The *AFIR*, adopted in 2023, is a regulatory instrument from the European Union mandating the rollout of infrastructure for alternative fuels. A critical component of AFIR is the development of a hydrogen refueling station network along the *TEN-T corridors* (Trans-European Transport Network). These are key transport axes designed to ensure seamless mobility across the EU.⁵

Relevance to regional hydrogen development

While these stations are primarily intended to serve long-distance freight and heavy-duty vehicles, their initial viability is often limited. Transit traffic alone rarely justifies the investment in hydrogen refueling infrastructure during early stages.

This is where regional stakeholders become crucial. Municipal transport operators, logistics companies, and local fleets can create baseline demand, helping to anchor hydrogen stations economically. In turn, this strengthens the case for early infrastructure deployment.

⁴ European Hydrogen Backbone (2025)

⁵ Council of the EU (2023)



Moreover, securing a stable supply chain is essential. Refueling stations will need reliable hydrogen deliveries, which can come either from connection to the national hydrogen network or through *on-site* or *nearby regional production*, such as electrolyzers powered by renewables.

2.1.2 Measure Description

M1 **Align regional infrastructure planning with transnational corridors** **Regions**

Coordinate regional planning with European hydrogen infrastructure strategies. By aligning local timelines and routes with broader corridor planning, regional infrastructure is ready when transnational pipelines are being built. This alignment enables regions to benefit from transnational infrastructure from the outset.

M2 **Gather regional demand and production data across borders** **Regions**

Collect data on regional hydrogen demand and production capacity, and share data with partner regions. Harmonized and aggregated data sets across borders help identify synergies, support corridor development, and guide investment decisions at the transnational level.

M3 **Identify early regional demand for refueling infrastructure** **Regions**

Identify early users of hydrogen (e.g., logistics, public transport) to estimate demand for refueling infrastructure. Transnational coordination of demand data enables joint planning of strategically located refueling stations along transnational transport corridors (e.g., TEN-T). Initial regional demand as an anchor customer can secure investments in refueling stations.

M4 **Organize regional hydrogen users into demand hubs** **Regions**

Bundle local hydrogen users into demand hubs to ensure high infrastructure utilization. By coordinating hub development with partner regions, transnational clusters can emerge, strengthening the overall network and justifying early infrastructure investment.



M5 Assess and coordinate regional hydrogen storage options Regions

Assess regional options for hydrogen storage (e.g. salt caverns, tanks) and identify opportunities for transnational storage cooperation. Shared strategies can increase the resilience and efficiency of hydrogen supply chains.

M6 Support interregional exchange on infrastructure planning Transnational Players

Establish platforms for interregional and transnational dialogue on infrastructure planning. Sharing best practices, aligning priorities, and identifying cross-border projects ensures coherent development across regions and accelerates the hydrogen rollout.

M7 Provide information on pipeline route and timeline Transnational Players

Ensure transparent communication of planned hydrogen pipeline routes and construction schedules (e.g., from the EHB initiative). Regional actors should actively engage with transnational planners, providing input and adapting local planning to match future connection points.

2.1.3 Measure Ranking

M1. Align regional infrastructure planning with transnational corridors

- Position: Very important, but relatively hard to implement
- This is essential for long-term connectivity with initiatives like the European Hydrogen Backbone. However, it requires coordination with national and EU-level stakeholders, making it administratively and politically demanding.

M2. Share regional demand and production data across borders

- Position: Important and relatively easy to implement
- Sharing harmonized data can greatly improve transnational planning. The measure is technically feasible and relies primarily on coordination and willingness to collaborate, not high investment.

M3. Identify early regional demand for refueling infrastructure

- Position: Important and easy to implement
- This can be done using existing data from transport operators, municipalities, and logistics firms. Regional authorities can send out a survey among the relevant companies to collect data. It's a practical step that helps justify early investment in hydrogen refueling stations.



M4. Organize regional hydrogen users into demand hubs

- Position: Important, moderately difficult to implement
- Hubs can improve infrastructure efficiency but require active coordination among regional actors and may face logistical or economic barriers in early stages.

M5. Assess and coordinate regional hydrogen storage options

- Position: Highly important, hard to implement
- Storage is crucial for supply security and flexibility, but site identification and permitting can be technically and legally complex, and often beyond the immediate control of regional authorities.

M6. Support interregional exchange on infrastructure planning

- Position: Important and relatively easy to implement
- Organising structured dialogue across regions requires modest effort but yields high impact by improving strategic alignment and reducing planning redundancies.

M7. Ensure transparent communication of pipeline routes and timelines

- Position: Important and easy to implement
- Transparency on the timing and routing of key projects (e.g. EHB) is a low-cost, high-impact measure that enables regional planning to align with long-term infrastructure rollout.

The measures aimed at the hydrogen infrastructure are illustrated in Figure 3. Measures in the top-right quadrant are considered both high-impact and easy to implement.

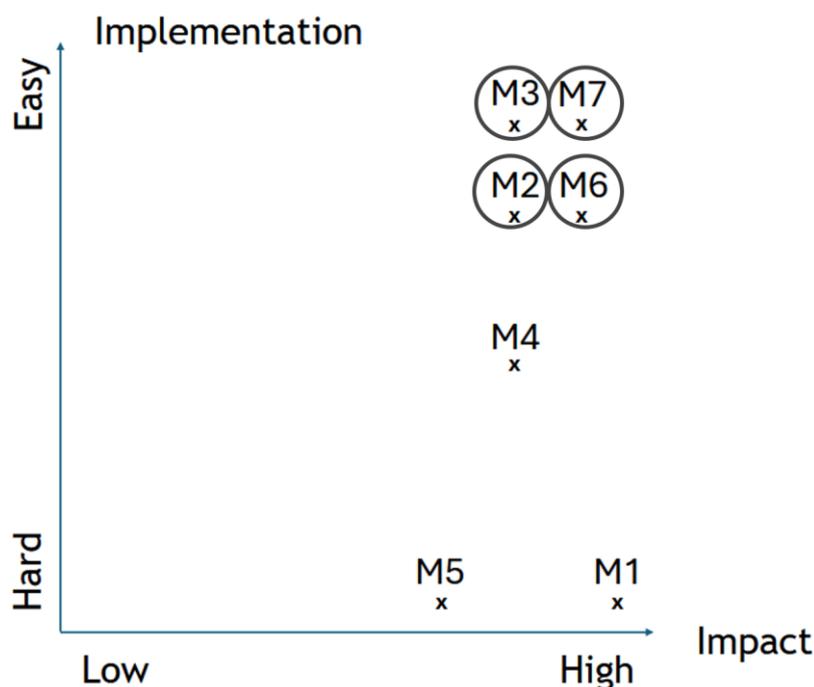


Figure 4: Assessment of hydrogen infrastructure measures, plotted by ease of implementation and expected impact.



- **M1. Align regional infrastructure planning with transnational corridors**
- **M2. Share regional demand and production data across borders**
- **M3. Identify early regional demand for refueling infrastructure**
- **M4. Organize regional hydrogen users into demand hubs**
- **M5. Assess and coordinate regional hydrogen storage options**
- **M6. Support interregional exchange on infrastructure planning**
- **M7. Ensure transparent communication of pipeline routes and timelines**

2.1.4 Best Practices

An example of transnational cooperation on transport infrastructure is the border region between Lower Silesia, Ústí and Saxony. The three neighbouring regions are located in the centre of Europe. The key highway corridors in this region - including the A4 (PL/DE), D8 (CZ), and S3 (PL), are all part of TEN-T Core Network⁶. In recent years, they have begun to strategically network together to develop a cross-border hydrogen infrastructure and mobility applications. Several workshops and dialogue formats have brought together key actors from Saxony (hZwo e.V.), the Ústí Hydrogen Valley, and the Lower Silesian Voivodeship⁷. These exchanges aimed to identify shared needs in industry, mobility, and logistics, and to align regional strategies, particularly in areas such as hydrogen-powered rail, heavy-duty transport, and storage. In addition, the regions are discussing the development of an AFIR-compliant cross-border hydrogen refueling corridor along the Wrocław - Ústí- Dresden/Chemnitz axis. Pilot concepts for hydrogen trains and buses between Czechia and Germany have been jointly coordinated as part of this effort⁸.

⁶ Hy2 Market (2024)

⁷ H2ÚK (2025)

⁸ Steinebach (2024)



2.2 Standards and Legislation

2.2.1 Background

European legislation sets the legal, technical, and environmental framework for how hydrogen can be produced, used, and integrated into regional systems. For regional authorities, these boundaries directly shape what is possible on the ground: they determine what kind of hydrogen projects are feasible, fundable, and certifiable. This section highlights key EU directives and their practical implications for regional hydrogen planning. The focus lies on practical implications: What do regions need to know? Where are the opportunities? And how can they position themselves to meet regulatory requirements while driving local hydrogen development forward?

The **Renewable Energy Directive (RED II / RED III)** provides the legal definition of renewable hydrogen and sets binding targets for its use in key sectors such as industry and transport. Hydrogen is classified as renewable if produced with electricity from renewable sources and achieves a greenhouse gas reduction of at least 70% compared to fossil-based hydrogen. These definitions are linked to strict certification criteria, including additionality, temporal and geographical correlation between electricity generation and hydrogen production. For regional authorities, this has direct implications: investment planning, site selection, and infrastructure design must align with these requirements. At the same time, transitional provisions allow electrolyzers commissioned before 2028 to operate under more flexible rules until the end of 2037.⁹

The **Clean Vehicles Directive (CVD)** sets minimum quotas for the procurement of clean vehicles, such as hydrogen-powered buses, refuse trucks, or municipal service vehicles, by the public authorities. This creates an important demand-side stimulus for regional hydrogen economies. By integrating hydrogen into public fleets, municipalities can act as anchor customers and thus help reduce investment risk for infrastructure and production projects. In this way, public procurement becomes a strategic tool to initiate local hydrogen markets, particularly in sectors where hydrogen use is already technically and economically viable, such as heavy-duty or special-purpose vehicles.¹⁰

The **EU Industrial Emissions Directive (IED)** plays a key role in regulating environmental standards for hydrogen production facilities, particularly electrolyzers. The IED has been transposed into national permitting procedures, which often remain complex and time-intensive.¹¹

Finally, there is a close **interdependency between hydrogen planning and regional renewable energy strategies**. RED-compliant hydrogen production requires not only regulatory approval but also physical access to renewable electricity. This affects multiple aspects of regional planning. Hydrogen readiness therefore cannot be treated in isolation but must be embedded in an integrated energy and spatial planning framework that coordinates electricity and hydrogen sectors alike.

⁹ European Commission (2023)

¹⁰ European Commission (2021)

¹¹ European Commission (2024)



2.2.2 Measure Description

M1 **Establish regional hydrogen competence and connect to transnational frameworks** **Regions**

Appoint dedicated hydrogen contact persons within regional authorities to build internal expertise on hydrogen-related regulations and approval processes. Connect with partner regions and participate in transnational networks to coordinate regional approval procedures in a transnational context.

M2 **Develop approval guidelines and promote cross-regional consistency** **Regions**

Create clear and practical approval guidelines for hydrogen projects at the regional level, including designated contact persons and procedural steps. Share these guidelines with other regions to foster mutual learning and support the long-term goal of harmonizing permitting practices across Central Europe in line with EU directives such as the IED and RED.

M3 **Provide practical legislative information tailored to regions** **Transnational Players**

Develop, distribute, and disseminate summaries and guidance documents on relevant hydrogen legislation (e.g. RED II/III, CVD, IED), tailored to the needs of regional authorities. These materials should explain legal implications and be made easily accessible to ensure consistent understanding across regions, and may include compliance templates (e.g., RFNBO rules), and targeted support for permitting.

M4 **Enable regional participation in EU standard-setting and legislation** **Regions & Transnational Players**

Create structured processes for regional authorities to contribute to the development of EU hydrogen legislation and certification standards (e.g., RED delegated acts, CertifHy schemes, Hydrogen Market Package). This includes coordinated feedback rounds and joint position papers.



2.2.3 Measure Ranking

M1. Establish regional hydrogen competence and connect to transnational frameworks

- Position: High impact, moderate difficulty to implement
- Having dedicated hydrogen experts within regional administrations is essential for navigating complex legal requirements. Establishing this competence takes time and resources but enables long-term alignment with EU frameworks.

M2. Develop approval guidelines and promote cross-regional consistency

- Position: High impact, relatively hard to implement
- Approval clarity is crucial for project acceleration. However, developing consistent, shareable guidelines that fit various national systems requires coordination and legal expertise. It has strong transnational value but demands significant effort.

M3. Provide practical legislative information tailored to regions

- Position: High impact, easy to implement
- Compiling and translating complex EU legislation into user-friendly summaries is administratively manageable and highly impactful. This measure enables immediate improvements in regional understanding and capacity.

M4. Enable regional participation in EU standard-setting and legislation

- Position: Moderate-high impact, moderate to hard implementation
- Including regional voices in standard-setting improves the legitimacy and feasibility of EU legislation. Yet this requires structured processes, coordination across Member States, and political commitment, making it more challenging to execute.

The measures aimed at the hydrogen infrastructure are illustrated in Figure 4. Measures in the top-right quadrant are considered both high-impact and easy to implement.

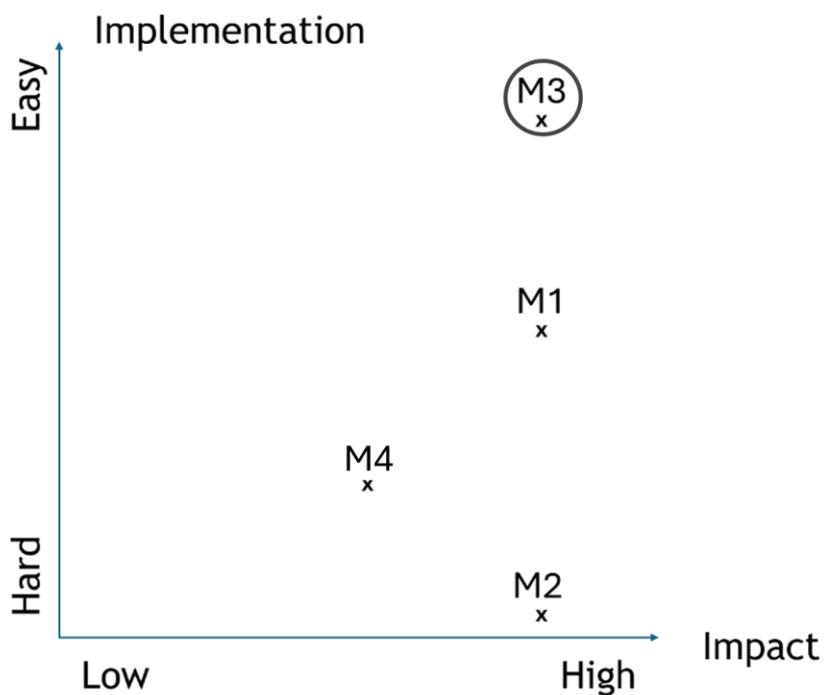


Figure 5: Evaluation of regulatory and legislative measures supporting regional hydrogen development

- M1. Establish regional hydrogen competence and connect to transnational frameworks
- M2. Develop approval guidelines and promote cross-regional consistency
- M3. Provide practical legislative information tailored to regions
- M4. Enable regional participation in EU standard-setting and legislation

2.2.4 Best Practices

A notable best-practice example is the development of regional approval guidelines for hydrogen production facilities in the Havelland region in Brandenburg/Germany. As part of the H2VL feasibility study, a comprehensive “Genehmigungsleitfaden” (approval guide) was created to support both public authorities and project developers. The guide translates national legal requirements, particularly in the areas of environmental protection, planning law, and industrial permitting, into a clear and actionable roadmap for implementing electrolysis and gasification projects. It includes structured process descriptions and instructions tailored to real-world permitting challenges. By offering procedural clarity and encouraging early coordination with permitting authorities, the H2VL guide has become a model for how regional tools can accelerate hydrogen development while ensuring compliance with complex legal frameworks. This approach demonstrates how regions can proactively build administrative capacity and reduce uncertainty for investors, two essential components of a functioning hydrogen ecosystem.



2.3 Networking and Cooperation

2.3.1 Background

Building a transnational hydrogen economy requires more than infrastructure and legislation – it also depends on strong cooperation between regions, stakeholders, and institutions. These networks and partnerships are key instruments for coordinating regional strategies, sharing knowledge, and aligning with EU policies. While EU directives define the legal framework, transnational platforms empower regions to actively engage, contribute their perspectives, and jointly develop project pipelines and investment agendas. European established cooperation frameworks supporting Hydrogen include:

Hydrogen Europe

Hydrogen Europe is the leading European industry association representing stakeholders across the hydrogen value chain. It works closely with EU institutions to shape hydrogen-related legislation, promote investment, and foster collaboration between industry, public authorities, and research. Through working groups and policy dialogues, regional stakeholders can gain early insight into legislative developments and contribute to market-shaping discussions.¹²

S3 Hydrogen Valleys Partnership

The Smart Specialisation (S3) Hydrogen Valleys Partnership connects European regions that aim to integrate hydrogen technologies into their territorial innovation strategies. The partnership supports joint project development, knowledge exchange, and interregional investment planning. It also creates a trust zone for policy alignment and connects regions with EU-level initiatives such as the Clean Hydrogen Partnership. Active participation allows regions to raise their visibility, coordinate their strategies, and access European funding more effectively.¹³

Interreg and Transnational Cooperation Projects

Interreg programmes have become important drivers for transnational hydrogen cooperation. Projects such as HyEfré¹⁴ demonstrate how coordinated regional action, supported by EU funding, can lead to the development of shared tools, common standards, and scalable pilot initiatives. Interreg offers both financial and institutional frameworks to foster cooperation among public authorities, researchers, and private actors across borders.

Such networks help bridge the gap between regional practice and EU policy-making. They enable coordinated responses to shared challenges, reduce duplication of effort, and create visibility for regional hydrogen activities at the European level. For regions, participating in such platforms is not only beneficial, but it is essential for shaping and accelerating the hydrogen transition.

¹² Hydrogen Europe (2025)

¹³ European Commission (2025a)

¹⁴ Interreg Central Europe (2024b)



2.3.2 Measure Description

M1 Join transnational networks aligned with regional strengths Regions

Regions should join transnational networks (e.g., Hydrogen Valleys S3, Clean Hydrogen Alliance) that reflect their technological focus, industrial base, or geographic position. Participation allows them to align their hydrogen strategies with other regions, benefit from funding synergies, and contribute to the development of transnational hydrogen corridors.

M2 Coordinate regional input into transnational initiatives Regions

Regions with similar or complementary hydrogen priorities should bundle their positions (e.g., via joint working groups or position papers) to influence EU-level initiatives more effectively and ensure their interests are reflected in transnational programmes and partnerships.

M3 Create regional contact points for network participation Regions

Assign dedicated staff to engage with transnational hydrogen networks, ensuring continuous participation, information flow, and alignment between local planning and European strategy development. These contact points can also serve as liaisons for joint project development.

**M4 Promote structured cooperation formats across regions Transnational
Players**

Facilitate structured and recurring formats for exchange (e.g., regional roundtables, joint funding applications, corridor-level planning workshops) to foster deep cooperation and coordination across borders. This ensures that regional strategies contribute directly to transnational hydrogen goals.

**M5 Avoid duplication and fragmentation by mapping existing networks
and building on them to ensure efficient resource use Regions &
Transnational
Players**

Before launching new platforms or initiatives, regions and transnational actors should assess existing cooperation structures and avoid redundant efforts. Strengthening and scaling successful formats is more efficient and increases collective visibility at the EU level.



2.3.3 Measure Ranking

M1. Join transnational networks aligned with regional strengths

- Position: High impact, relatively easy to implement
- Joining existing networks is administratively simple and strategically valuable. It enables regions to connect with peers, access funding opportunities, and position themselves in the European hydrogen landscape.

M2. Coordinate regional input into transnational initiatives

- Position: High impact, moderately difficult to implement
- Aligning regional positions to influence EU processes strengthens political voice and coherence. To develop joint positions or working groups requires consensus-building, coordination capacity, time, and financial resources.

M3. Create regional contact points for network participation

- Position: Moderate-high impact, relatively easy to implement
- Assigning staff to coordinate network engagement is low in cost but high in strategic benefit, as it ensures continuous participation and internal alignment. Still, its impact depends on integration with regional structures.

M4. Promote structured cooperation formats across regions

- Position: Very high impact, harder to implement
- Well-designed, recurring cross-border exchange formats are critical for operationalizing transnational hydrogen strategies. However, they require coordination, funding, facilitation, and long-term institutional support.

M5. Avoid duplication by mapping existing networks and building on them

- Position: High impact, relatively easy to implement
- Mapping existing initiatives avoids fragmentation and maximizes collective impact. It can be done with modest effort and contributes to more strategic, resource-efficient cooperation structures.

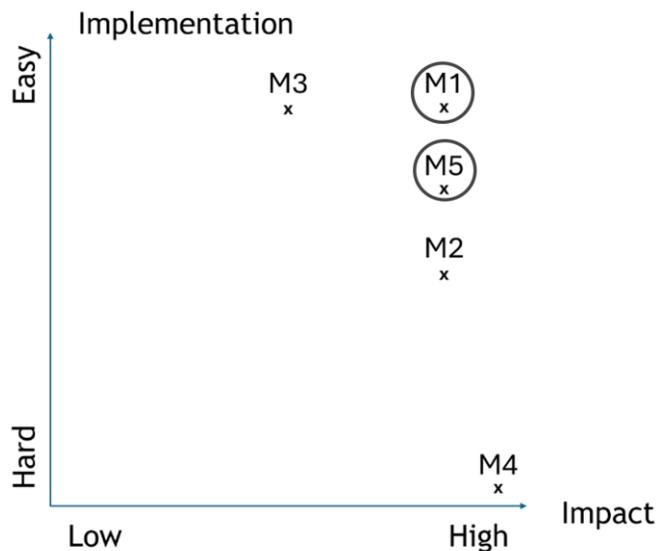


Figure 6: Assessment of cooperation and network-building measures for transnational hydrogen collaboration.

- **M1. Join transnational networks aligned with regional strengths**
- **M2. Coordinate regional input into transnational initiatives**
- **M3. Create regional contact points for network participation**
- **M4. Promote structured cooperation formats across regions**
- **M5. Avoid duplication by mapping existing networks and building on them**

2.3.4 Best Practices

One Best Practice Example is the strategic capitalisation call, launched by Interreg CENTRAL EUROPE, focusing on cross-border impact and synergies. This is not a regular call: These project formats bundle, further develop, and disseminate existing results from other Interreg projects. The aim is to create a more competitive and resilient Central Europe by reducing the impact of borders on operations and functional connections between regions. The overall budget is 23 million Euros and up to 1 million Euros per project. Projects can have a duration of 18 to max. 24 months. Proposals must explicitly integrate results from at least two Interreg Central Europe projects (2021-2027) and at least two cross-border Interreg cooperation projects (2014-2020 or 2021-2027) addressing internal borders.¹⁵

Although focused on the Scandinavian-Central European corridor, the Scandria@Alliance is an example of a multinational infrastructure initiative that includes hydrogen as a strategic component. It shows how alliances can integrate hydrogen into decarbonisation strategies and link regional actors to trans-European priorities, especially in the TEN-T context.¹⁶

A complementary example of effective network-building at the regional and national levels can be found in Austria through the Standortagentur Tirol¹⁷ and the Hydrogen Partnership Austria (HyPA)¹⁸. The Standortagentur Tirol serves as Tyrol's regional innovation and business agency and plays a leading role within HyPA. Austria's national hydrogen platform connecting industry, research, and public authorities

¹⁵ Interreg Central Europe (2025)

¹⁶ Scandria Alliance (2025)

¹⁷ Standortagentur Tirol GmbH (2025)

¹⁸ HyPA Hydrogen Partnership Austria (2025)



across the hydrogen value chain. Together, they form a structured cooperation mechanism that links regional innovation ecosystems with national and European hydrogen strategies.

HyPA functions as a coordination hub that aligns Austrian activities with EU objectives and supports participation in European partnerships such as the Clean Hydrogen Partnership¹⁹ and the S3 Hydrogen Valleys network²⁰. Through its involvement, the Standortagentur Tirol facilitates project development, funding access, and cross-sectoral knowledge exchange. This makes it an effective intermediary between regional implementation and transnational coordination.

The agency is also active in transnational cooperation projects such as *AMETHyST*²¹ under the Interreg Alpine Space programme, where it contributes to regional hydrogen working groups that strengthen collaboration across the Alpine area. This demonstrates how regional anchoring combined with transnational engagement can accelerate hydrogen deployment while fostering innovation and coherence across borders.

¹⁹ Clean Hydrogen Partnership (2025)

²⁰ European Commission (2025b)

²¹ Interreg Alpine Space (2025)



2.4 Funding and Innovation

2.4.1 Background

Achieving the goals of the European hydrogen transition requires substantial public and private investment across the entire value chain – from innovation and infrastructure to production and end-use. To support this, the European Union has developed various funding and financing instruments that address different stages of hydrogen development and enable regions to participate in cross-border projects, reduce risk, and accelerate implementation.

The EU offers a range of funding mechanism - from research to large-scale investment - that support all stages of the hydrogen value chain. The following instruments are particularly relevant for regional actors in Central Europe:

Horizon Europe is the EU's flagship programme for research and innovation. It supports hydrogen-related research, development, and demonstration through the Clean Hydrogen Partnership. Beyond individual calls, Horizon Europe also contributes through large-scale partnerships and missions such as the Hydrogen Valleys initiative, which integrates hydrogen production, storage, distribution, and use within regional ecosystems. It serves as a key entry point for innovation-driven stakeholders, including universities, startups, and regional consortia.²²

Innovation Fund: Financed through the EU Emissions Trading System (ETS), the Innovation Fund is one of the world's largest climate funding programmes. It targets capital-intensive hydrogen technologies and infrastructure by providing support through regular calls for small-, medium-, and large-scale projects. The fund is particularly relevant for high-risk or pre-commercial technologies and aims to reduce uncertainty in early deployment. It helps scale up renewable hydrogen and supports the rollout of pioneering applications across sectors.

The **European Hydrogen Bank** was created to accelerate the market development of renewable hydrogen. Through competitive auctions, it provides hydrogen producers with a fixed premium per kilogram of hydrogen, helping close the cost gap between renewable and fossil-based hydrogen. The bank offers a central mechanism to ensure predictable revenues and mobilise investment into hydrogen production. Its Auctions-as-a-Service feature also allows Member States to combine national and EU resources under a unified framework.²³

Important Projects of Common European Interest (IPCEIs) are coordinated EU-level initiatives that allow for significant public funding under special state aid rules. In the hydrogen field, IPCEIs aim to scale up industrial capacity, infrastructure, and value chains. They enable cross-border cooperation and promote large-scale projects involving multiple Member States. The projects are implemented in waves, covering different parts of the hydrogen value chain – from electrolyser manufacturing to mobility infrastructure and industrial use cases. Parts of the European Hydrogen Backbone have been financed through IPCEI.

²² European Union (2025)

²³ European Commission (2025c)



Interreg Central Europe plays a critical role in fostering regional cooperation on hydrogen. Projects such as HyEfRe and H2CE demonstrate how transnational funding can support hydrogen ecosystem development, the creation of planning tools, and improved coordination between public actors. Interreg does not only provide funding, but also a governance framework that enables knowledge exchange, long-term cooperation, and regional capacity-building across borders.

Together, these instruments form the backbone of the EU's hydrogen funding ecosystem. For regions, engaging with them means more than accessing financial support – it is a way to embed local efforts into a broader European strategy, align with transnational partners, and take an active role in shaping the hydrogen economy from the ground up.



2.4.2 Measure Description

M1 **Strengthen the role of regional multipliers and intermediaries** **Regions**

Identify and empower regional agencies, clusters, or energy agencies to act as intermediaries between local actors and EU funding instruments. These multipliers can support application processes, build partnerships, and translate EU calls into regional action.

M2 **Reduce access barriers to EU funding for regional actors** **Transnational
Players**

Simplify application procedures, provide multilingual guidance, and improve transparency in programme design (e.g. Innovation Fund, Horizon, Hydrogen Bank) to make them more accessible for regions with limited administrative capacity. This may include standardised application templates, language support and regional help desks.

M3 **Match funding programmes with regional project maturity** **Transnational
Players**

Provide targeted funding guidance to help regions identify suitable programmes based on the maturity of their hydrogen initiatives. This prevents mismatches and helps regions participate more effectively in EU funding schemes.

M4 **Actively involve regional representatives in funding design** **Transnational
Players**

Include regional voices in the design of EU funding calls by conducting pre-call consultations, needs assessments, and collaborative workshops. This ensures funding schemes better reflect regional realities and improve implementation success.

M5 **Promote transnational project development through Interreg and IPCEIs** **Regions &
Transnational
Players**

Encourage and facilitate joint project planning across regions. Programmes like Interreg and IPCEIs offer frameworks for transnational collaboration, increasing funding success rates and contributing to coordinated hydrogen deployment across borders.



2.4.3 Measure Ranking

M1. Strengthen the role of regional multipliers and intermediaries

- Position: High impact, relatively easy to implement
- Empowering regional agencies to act as funding intermediaries significantly improves access and application success. It requires modest institutional support and builds long-term capacity within the region.

M2. Reduce access barriers to EU funding for regional actors

- Position: Very high impact, hard to implement
- Many regions struggle with complex application procedures. Simplifying access and improving usability of funding programmes is essential but requires major administrative and legal reform at the EU level.

M3. Match funding programmes with regional project maturity

- Position: High impact, moderate difficulty
- Ensuring that regions apply to suitable programmes reduces failure rates and accelerates project rollout. However, it requires tailored support services, detailed project tracking, and active guidance, which demand institutional effort.

M4. Actively involve regional representatives in funding design

- Position: High impact, hard to implement
- Including regional perspectives in programme design ensures relevance and better uptake. It improves long-term impact but requires structured dialogue formats and commitment from EU-level actors.

M5. Promote cross-border project development through Interreg and IPCEIs

- Position: Very high impact, moderately difficult to implement
- Joint transnational projects are essential for corridor-level hydrogen development. While frameworks exist (e.g. Interreg), initiating and aligning large-scale regional consortia takes time, capacity, and political will.

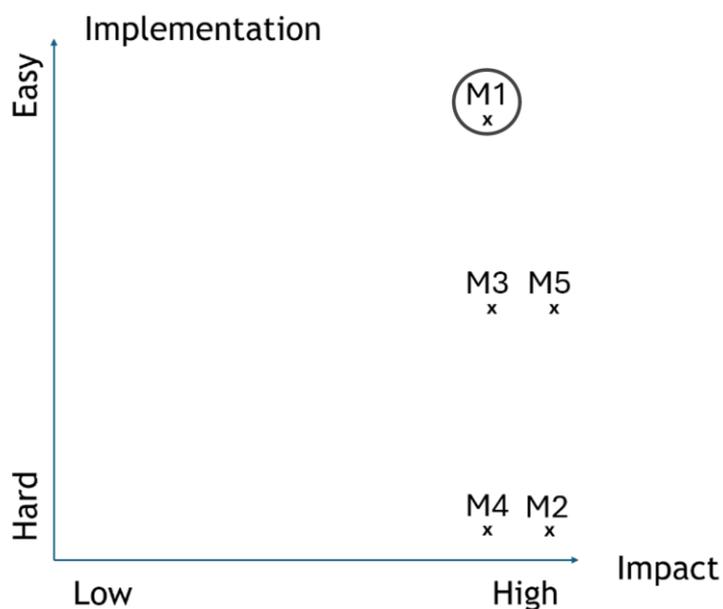


Figure 7: Analysis of funding-related measures by ease of access and potential impact for regions.

- **M1. Strengthen the role of regional multipliers and intermediaries**
- **M2. Reduce access barriers to EU funding for regional actors**
- **M3. Match funding programmes with regional project maturity**
- **M4. Actively involve regional representatives in funding design**
- **M5. Promote cross-border project development through Interreg and IPCEIs**

2.4.4 Best Practice - European Enterprise Network (EEN)

The European Enterprise Network²⁴ is a support network for small and medium-sized enterprises with international ambitions. EEN has become a valuable instrument for fostering hydrogen-related cooperation between regions, especially in the early stages of project development. The network combines over 600 organizations in more than 60 countries, including chambers of commerce, regional development agencies, innovation hubs, and universities. The European Enterprise Network supports regional stakeholders in identifying funding opportunities, forming consortia, and accessing international markets. Through tailored advisory services and a digital partner search tool, the network helps match regional authorities and companies with suitable partners for EU funding applications. One of the features is its Partnering Opportunities Database, which allows stakeholders to publish cooperation profiles or search for potential partners based on sector, technology, or project idea. Regular brokerage events and matchmaking sessions often organized around major EU calls further facilitate cross-border cooperation.

²⁴ Enterprise Europe Network (2025)



2.5 Planning Tools and Guidelines

2.5.1 Background

The integration of hydrogen presents new planning challenges that require cross-sectoral expertise and regional administrations. While many regional authorities already play a key role in spatial and energy planning, hydrogen requires cross-sectoral coordination, technical understanding, and integration into existing frameworks. For most regions, especially outside major industrial hubs, this represents uncharted territory.

Regional actors are expected to address a wide range of questions – from permitting and infrastructure to electricity supply, mobility, and storage – often without having in-house expertise on hydrogen-specific issues. This creates a high demand for practical planning tools, technical guidelines, and decision support instruments that are tailored to the regional level.

At the same time, transnational coordination is essential to avoid fragmented approaches and support consistent hydrogen rollout across borders. Shared planning approaches, common toolkits, and comparable data sets can help align efforts and enable synergies. This is especially important for infrastructure planning, where pipeline corridors, refueling stations, or storage capacities must connect seamlessly across regions and Member States.

Several EU-funded projects (e.g., HyTruck) have begun developing open-access tools and models to support local authorities. However, awareness and uptake remain limited, and many planning instruments are still fragmented or overly technical. Bridging this gap is crucial to empower regions as active contributors to the hydrogen transition, not only in project execution, but in shaping coherent strategies from the ground up.



2.5.2 Measure Description

M1 **Build internal planning capacity through practical tools** **Regions**

Use available planning instruments (e.g., scenario models, GIS-based mapping tools, potential analyses) to integrate hydrogen into existing energy and spatial planning processes. Regional authorities should assign responsibility and ensure tool literacy within their planning teams.

M2 **Develop tailored planning guidelines for local authorities** **Transnational
Players**

Provide practical and user-friendly planning guidelines that help regional actors understand hydrogen-specific requirements, including infrastructure compatibility, permitting, spatial needs, and integration with renewables. Guidance should be modular and adaptable.

M3 **Improve visibility and accessibility of existing tools** **Transnational
Players**

Create an open-access platform that collects and promotes existing hydrogen planning tools (e.g. from Interreg, Horizon, national agencies) in a structured and user-friendly format. This supports knowledge transfer and avoids duplication.

M4 **Co-develop planning methods across regions** **Regions &
Transnational
Players**

Facilitate transnational working groups or pilot projects in which regions co-develop and test planning tools, ensuring that outputs are practically relevant, interoperable across borders, and adaptable to different governance systems.



2.5.3 Measure Ranking

M1. Build internal planning capacity through practical tools

- Position: High impact, moderate implementation effort
- Integrating hydrogen into spatial and energy planning is fundamental for regional readiness. While many tools already exist, using them effectively requires internal training, awareness, and clear responsibilities within regional teams.

M2. Develop tailored planning guidelines for local authorities

- Position: Very high impact, hard to implement
- Local authorities need clear, hydrogen-specific guidance to make informed decisions. However, developing such modular and adaptable guidance for diverse regional contexts is resource-intensive and requires coordination across multiple levels.

M3. Improve visibility and accessibility of existing tools

- Position: High impact, easy to implement
- A central repository or open-access platform for planning tools would significantly improve uptake and reduce duplication. This is technically feasible and has immediate value for regions lacking awareness of existing resources.

M4. Co-develop planning methods across regions

- Position: High impact, relatively hard to implement
- Jointly developing and testing tools ensures that they are adaptable and effective across diverse governance systems. However, such collaboration requires coordination, piloting capacity, and long-term commitment, making it more demanding to implement.

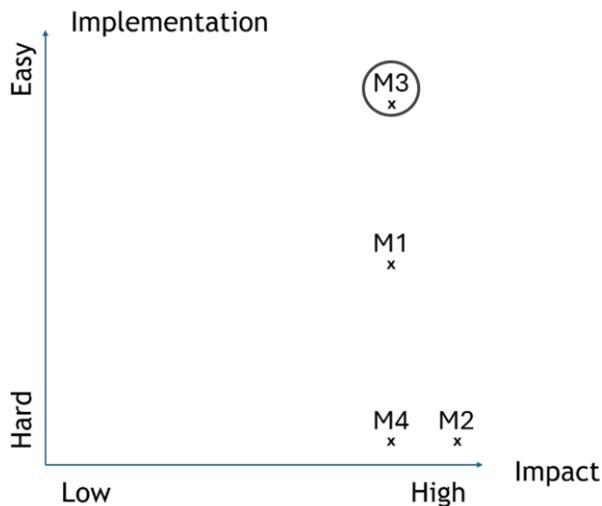


Figure 8: Planning support measures ranked by feasibility and relevance for hydrogen integration at regional level.

- **M1. Build internal planning capacity through practical tools**
- **M2. Develop tailored planning guidelines for local authorities**
- **M3. Improve visibility and accessibility of existing tools**
- **M4. Co-develop planning methods across regions**

2.5.4 Best Practices

The Interreg Central Europe project HyTruck (January 2023 - December 2025) demonstrates how EU funding can support regional authorities in designing and coordinating transnational hydrogen infrastructure. By helping them to organise a network of hydrogen refuelling stations for large trucks, it brings the Baltic Sea region closer to zero-emissions in road freight transport. The EU Alternative Fuels Infrastructure Regulation requires member states to provide for hydrogen refuelling infrastructure along the so called TEN-T core network by end of 2030. Although this is not far in the future, there are still a lot of issues to be resolved, such as what technology is most suitable, under which conditions hydrogen as a fuel becomes competitive, and how it can be incentivized. The project consortium consists of regional and national public authorities, scientific institutions, small and medium enterprises as well as business support institutions in a triple helix approach. All partners have designated roles in the project. The research institutions identified suitable locations with prototypes of tools and estimated the effect of different technological and environmental scenarios. They also provided guidance on how to set-up HRS development processes and transparently inform about the evolution of technological standards. The tools were tested in five pilot regions: Rostock region in Germany, Wielkopolskie region in Poland, Kaunas and Panevezys regions in Lithuania, Vidzeme region in Latvia and Helsinki region in Finland. To examine the current status, development pathways and obstacles, regional analyses and stakeholder dialogues were conducted. The results were published within a transnationally agreed spatial development concept and a memorandum of understanding, pointing towards actions to be taken at different policy levels to ramp-up hydrogen refuelling infrastructure in the Baltic Sea Region.²⁵

²⁵ Interreg Baltic Sea Region (2025)



3 Conclusion

The transnational hydrogen strategy within the H2CE project is a guiding framework designed to support regions in Central Europe in their efforts to become hydrogen-ready. It serves as a bridge between European-level goals, such as those defined by the European Commission, the European Hydrogen Backbone (EHB), and directives like RED III or AFIR, and the practical planning and implementation capacities of regional authorities. It has a dual function: to help regions navigate, shape, and contribute to transnational hydrogen developments, and to ensure that macro-level strategies are grounded in regional realities and capacities. The strategy recognises the interdependence between the EU and its regions. Hydrogen rollout cannot succeed through top-down legislation alone; it requires local ownership, coordination, and action. Conversely, regional planning benefits from a clear understanding of transnational objectives, regulatory frameworks, and infrastructure timelines. The two leading questions formulated at the beginning are answered subsequently.

How can players such as the EU involve Regions in transnational decisions affecting them?

The European Union, as the principal transnational actor, has multiple instruments at its disposal to ensure meaningful regional involvement. The transnational strategy identifies several key mechanisms:

- **Structured Dialogue and Consultation:** Transnational players such as EU institutions and associated bodies can establish formal channels for regional feedback during the design of hydrogen legislation, standards, and funding programs. Measures such as pre-call consultations, joint working groups, or position papers allow regions to express needs and constraints, improving the feasibility of EU policies.
- **Transparency and Guidance:** Providing clear, accessible information about EU legislation (e.g., RED II/III), funding instruments (e.g., Hydrogen Bank, Innovation Fund), and infrastructure plans (e.g., EHB route maps) allows regions to align with transnational priorities early on. This reduces uncertainty and empowers proactive planning.
- **Co-Financing and Tailored Support:** EU funding programs like Interreg Central Europe or Horizon Europe offer dedicated support for various stakeholders, including research institutions, businesses, and regional authorities. Funding structures are often time-consuming and complex. Simplified application processes help regions with limited administrative capacity to access resources and join transnational initiatives.
- **Platform Building and Network Facilitation:** Initiatives like the Hydrogen Valleys S3 Partnership or the European Clean Hydrogen Alliance create spaces where regional actors can connect with transnational institutions. These platforms are not merely symbolic; they enable collective agenda-setting, peer learning, and co-creation of transnational projects.
- **Empowerment of Regional Intermediaries:** The EU can strengthen the role of multipliers such as energy agencies or cluster organisations to act as mediators between regional authorities and EU instruments. These intermediaries translate complex regulations into actionable guidance and foster capacity-building.

Through these mechanisms, the EU not only involves regions in decision-making but also benefits from their practical knowledge and implementation capabilities. This helps to iteratively refine transnational strategies and ground them in real-world feasibility.



How can regions deal with and shape transnational developments?

Regions are active co-creators and not passive recipients of transnational hydrogen policy. The H2CE strategy outlines several ways in which regional authorities can influence, align with, and help shape developments beyond their territorial borders:

- **Strategic Alignment and Early Integration:** Regions can actively align their spatial and infrastructure planning with transnational hydrogen corridors such as the EHB or TEN-T. This includes mapping regional demand, identifying demand structures (e.g., public transport operators), and preparing local infrastructure to connect with transnational pipelines.
- **Regional Coordination and Hub Formation:** By bundling regional hydrogen users into demand hubs and coordinating infrastructure development across borders, regions can enhance the viability of transnational projects and create synergies that transcend administrative boundaries.
- **Active Participation in Transnational Networks:** Engagement in initiatives like Hydrogen Europe, the Scandria®Alliance, or Interreg projects allows regions to increase their visibility, shape shared agendas, and gain early access to innovation and funding.
- **Institutional Capacity and Knowledge Exchange:** Establishing regional hydrogen competence centers, appointing dedicated contact points, and participating in transnational workshops enable regions to keep pace with legal, technical, and financial developments.
- **Co-Development of Planning Tools and Guidelines:** Regions can contribute to the creation and testing of planning instruments such as GIS tools, demand modeling, or permitting guides that support shared approaches across borders. This ensures planning coherence and reduces duplication of effort.
- **Feedback and Advocacy:** Regional authorities should systematically feedback lessons learned from pilot projects and permitting experiences to EU-level actors. This creates a feedback loop that improves the design of future regulations and funding programs.



Immediate Action Programme: High-Impact & Easy-to-Implement Measures (“Low-Hanging Fruits”)

The subsequent measures can be implemented with minimal effort while delivering immediate benefits for transnational hydrogen planning. They mainly require coordination, transparency, and targeted organisation rather than major investment.

1. Share regional demand and production data across borders

Improving data sharing significantly enhances the quality of transnational planning. The measure is technically straightforward and depends primarily on coordination and willingness to collaborate.

2. Identify early regional demand for hydrogen refuelling infrastructure

Simple data collection from transport operators, municipalities, and logistics companies provides quick insights and strengthens the case for early infrastructure deployment.

3. Support interregional exchange on infrastructure planning

Structured dialogue formats between regions require modest effort but create high strategic value by reducing duplication and increasing alignment.

4. Ensure transparent communication of pipeline routes and timelines

Sharing clear information on routing and rollout of major infrastructure (e.g., EHB) is a low-cost, high-impact step enabling regions to align with long-term developments.

5. Provide practical, region-tailored information on relevant legislation

Summarising and translating complex EU legislation into user-friendly formats is administratively manageable and immediately improves regional understanding and capacity.

6. Map existing networks to avoid duplication and build on them

By identifying ongoing initiatives, regions can reduce fragmentation and maximise synergies. This requires limited effort but enhances strategic and resource-efficient cooperation.

7. Join transnational networks aligned with regional strengths

Joining established networks is administratively simple and provides immediate access to partners, knowledge, and funding opportunities.

8. Strengthen the role of regional multipliers and intermediaries

Empowering regional agencies to act as funding intermediaries requires modest support while significantly boosting regional capability and application success.

9. Improve visibility and accessibility of existing tools

Creating a central repository or open-access platform for planning tools increases their use and prevents redundant development efforts.

By taking these steps and measures immediately, regions move from adaptation to influence. They become not just implementers of European hydrogen goals but key actors shaping the future of a transnational hydrogen economy.



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