EUSALP EU STRATEGY FOR THE ALPINE REGION
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POLICY BRIEF: ALPINE REGIONS AS PIONEERS FOR GREEN HYDROGEN ECOSYSTEMS

July 2025

A hydrogen bus at a refuelling station in Auvergne-Rhône-Alpes. Source: Auvergne-Rhône-Alpes Énergie Environnement

Summary

Hydrogen can play a key role in the global shift toward cleaner, more sustainable energy systems. It enables large-scale renewables integration and can help decarbonise end-uses such as transport, industry and heat and power. The EU Hydrogen Strategy sets ambitious targets for the growth of the hydrogen economy in Europe, outlining a three-stage roadmap up to 2050. The Alps has already shown itself to be a pioneering territory for the development of hydrogen in Europe. Many alpine countries have elaborated a national strategy and regions across the territory are investing in innovative hydrogen projects and have established hydrogen valleys.

Regional policy can support the development of hydrogen in different ways. A regional hydrogen strategy helps to identify priority actions and coordinate stakeholders. Alignment with regional Smart Specialisation Strategies (S3) can help boost research and innovation and set regions on the path to becoming industrial leaders and technology suppliers for the hydrogen economy. With hydrogen technologies still at a low maturity, public funding is often needed to de-risk projects. Regions can offer funding or enter public-private partnerships to help launch projects for green hydrogen production, distribution and storage infrastructure or integration with end uses. Public procurement, of public transport for example, can help stimulate demand. Early hydrogen initiatives should be concentrated along future value chains or geographic clusters, to avoid spreading support thinly over the entire territory. Coordination at macro-regional level makes economic sense and should be pursued in view of developing a macro-regional strategic approach to infrastructure development and rollout.

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"With a culture of energy development dating back to the 19th century, the Alpine regions were quick to recognise the potential of hydrogen, which can be produced from renewable and low-carbon electricity, abundant in the Alps, play an interesting role in energy storage, and decarbonise energy-intensive industries and heavy-duty transport.

"All Alpine countries have adopted national hydrogen strategies, and almost all Alpine regions have also adopted regional strategies, showing strong political commitment to the development of this sector. At the Alpine level, within the framework of EUSALP, ten regional authorities (Auvergne-Rhone-Alpes, Baden-Württemberg, Province of Bolzano, Bourgogne-Franche-Comté, Friuli-Venezia Giulia, Liguria, Lombardy, Piemonte, Provence-Alpes-Cote d'Azur and Province of Trento) have signed in 2021 a letter of cooperation on H2, supporting each other in responding to EU calls, exchanging about funding opportunities and advocacy activities, connecting with EU networks such as Hydrogen Europe, showing that Alpine cooperation is important to create an alpine Hydrogen economy.

"To strengthen regional H2 economies, Alpine regional authorities have partnered with public and private actors in Clean Hydrogen Partnership Hydrogen Valley projects. Three of the seven large-scale Hydrogen Valleys (NAVH, IMAGHyNE, HI2) as of 30 June 2025 have been won by Alpine stakeholders, generating €762 million in private investment and €72 million in European funding between 2023 and 2030. These projects demonstrate the need for cooperation between public and private actors to finance H2 infrastructure (refuelling stations, pipes), support production technologies (electrolysers, storage) and uses (fuel cells, intensive industries, heavy-duty vehicles, retrofitting) and stimulate demand, with public authorities investing in public transport powered by H2.

"H2 cooperation is also implemented within Interreg projects (AMETHyST, H2MA) that bring together local and regional Alpine stakeholders and seek to educate them about the challenges and opportunities of H2 and support them in setting up concrete experiments, thereby laying the foundations for territorial H2 ecosystems and exploring the possibilities for production, storage, distribution and complementary uses between industries and mobility at local level.

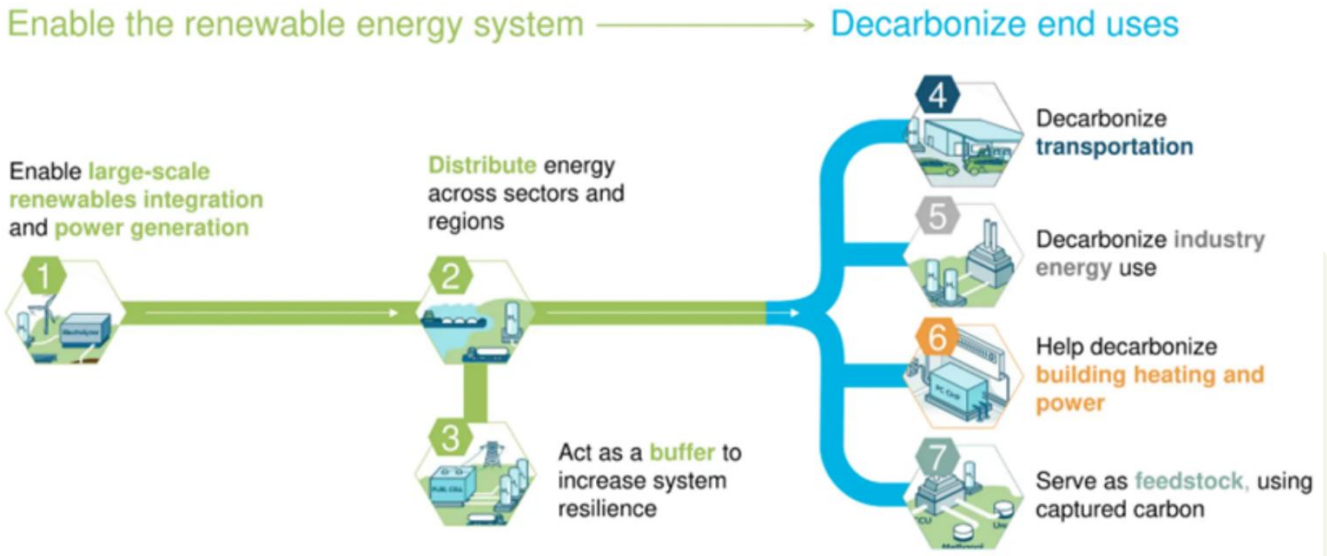
"These local, regional and national initiatives, combined with European funding, have enabled the implementation of around 30 Hydrogen projects in the Alps, covering the Alps with around one-hundred Hydrogen refuelling stations, production sites and consumers, making the Alps a pioneering territory for the development of hydrogen in Europe."

By Etienne Vienot, Head of European and International Affairs at Auvergne-Rhône-Alpes Énergie Environnement and Co-leader of the EUSALP Action Group on Energy

Hydrogen and its role in the energy mix

Hydrogen is the most abundant element in the universe but is primarily found in compounds like water. An energy intensive process is needed to extract it in its pure form, most commonly achieved through steam methane reforming (often powered by fossil fuels) or electrolysis, which splits water into hydrogen and oxygen using electricity. When electrolysis is powered by renewables the product is considered 'green hydrogen' a zero-emission energy source.

As an energy carrier, hydrogen can play a key role in the global shift toward cleaner, more sustainable energy systems. In conjunction with fuel cells, it can be utilised as a clean transport fuel that contributes zero tailpipe emissions. The potential is especially high as a replacement for diesel in heavy transport such as trucks, buses, trains and ships. It may be applicable as a solution for residential and commercial heating, either through hydrogen blending or hydrogen boilers. And it is expected to have an important role in decarbonising energy-intensive heavy industries, like steel and cement, replacing natural gas in high-temperature processes.



Seven roles for hydrogen in the energy transition. Source: Hydrogen Council

Hydrogen is also expected to have an important function in balancing the electricity grid. Firstly, for power generation, especially during peak demand, through hydrogen turbines or fuel cells. And secondly for energy storage. Hydrogen can help mitigate the fluctuating nature of renewables by utilising surplus production from wind or solar for electrolysis.

However, there is still a significant gap between ambition and action. Hydrogen accounted for less than 2% of Europe's energy consumption in 2022, with 96% of this capacity produced with natural gas. While policies have placed the focus squarely on renewable, or green, hydrogen, this has yet to be translated into action, with 98% of renewable hydrogen projects still in the planning or feasibility stages.

Unlocking the potential of hydrogen faces important challenges that require significant collaboration. Driving hydrogen development past the tipping point needs critical mass in investment, an enabling regulatory framework, new lead markets, sustained research and innovation into breakthrough technologies and a large-scale infrastructure for bringing new solutions to the market.

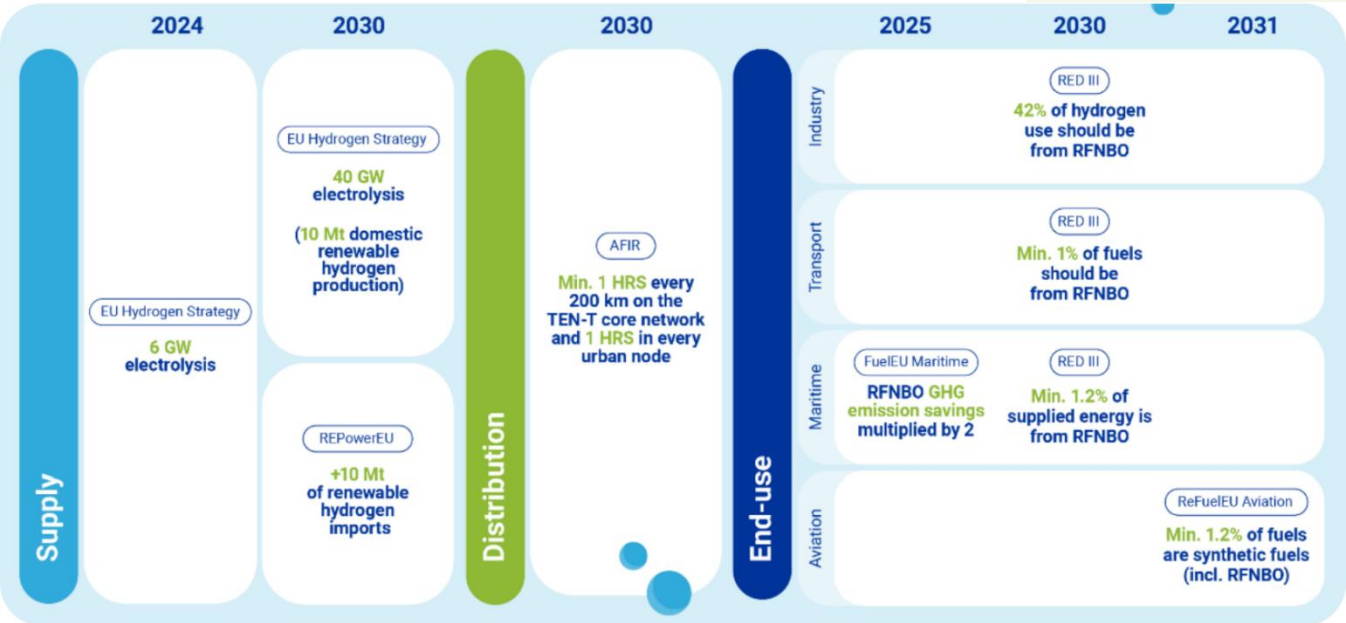
EU policy framework

The EU Hydrogen Strategy, launched in July 2020, outlines the European Commission's vision for hydrogen, describing how it can help the EU decarbonise its economy, achieve climate neutrality by 2050, and boost energy resilience. It places the emphasis firmly on green hydrogen and foresees the gradual phasing out of fossil-based hydrogen. The strategy outlines a 3-phase roadmap to 2050:

- **Phase 1 (2020-2024)** aims for at least 6 GW of renewable hydrogen electrolysers by 2024. Consumption would be mostly on-site and would serve industrial processes, such as steel and chemicals, and hydrogen refuelling stations for buses. There will be a need for low-carbon hydrogen in the short and medium term, which will require the deployment of carbon capture infrastructure.
- **Phase 2 (2025-2030)** has a target of 40 GW of renewable hydrogen electrolysers by 2030. Hydrogen will decarbonise steelmaking, trucks, rail and maritime transport applications and other transport modes. It would also serve for balancing: daily and seasonal storage, backup and buffering. The backbone of a European infrastructure will need to be designed to transport and distribute hydrogen, including a network for H2 refuelling stations and for heating in residential and commercial buildings.
- **Phase 3 (2030-2050)** sees renewable hydrogen technologies reach maturity and be deployed at large scale to reach all hard-to-decarbonise sectors where other alternatives might not be feasible or have higher costs. Hydrogen and hydrogen-derived synthetic fuels would further penetrate all hard-to-abate sectors such as maritime transport, aviation, and the heating system for buildings. Up to 25% of the EU's renewable electricity production will be used for hydrogen production.

Implementation of the EU Hydrogen Strategy has been fostered by a raft of supporting legislation. The updated Renewable Energy Directive (RED III) sets an EU wide renewable energy target of 42.5% by 2030 as well as sector-specific targets directly relevant for hydrogen. In industry, 42% of the hydrogen used should come from renewable fuels of non-biological origin (RFNBOs) by 2030 and 60% by 2035. There is also a minimum requirement of 1% of RFNBOs in the share of renewable energies supplied to the transport sector in 2030.

RED III also included two Delegated Acts related to green hydrogen. The first defines when hydrogen, hydrogen-based fuels or other energy carriers can be considered as a RFNBO. The second sets the methodology to calculate GHG emissions savings from RFNBOs and recycled carbon fuels. The Alternative Fuels Infrastructure Regulation (AFIR) establishes sets out minimum requirements and technical specifications for the roll-out of hydrogen refuelling points, and mandates the creation of one Hydrogen Refuelling Station (HRS) every 200km on the TEN-T Core network by the end of 2030.



Hydrogen targets and commitments established by EU policies. Source: The European hydrogen policy landscape (2025)

Hydrogen policy in the Alps

Hydrogen development is gaining momentum in the Alpine region. The EU strategy for the Alpine region (EUSALP) is driving the development of the hydrogen economy at the macro-regional level by fostering collaboration and cooperation between key stakeholders. A EUSALP H2 Focus Group has been established by 10 Alpine regions. It has three objectives:

1. Foster investments in hydrogen infrastructure, working with the Alpine hydrogen value chain and innovative companies producing fuel cells, electrolysis, hydrogen refuelling stations and new or retrofitted hydrogen vehicles.
2. Develop new hydrogen projects, specifically in mountain and urban areas, leveraging EU funding programmes.
3. Connect with other EU hydrogen initiatives, such as Hydrogen Europe, the Clean Hydrogen partnership, and other macro-regional strategies, to gain visibility and build networks.

National policies

	Overview	National strategy	Targets
	**Austria**'s hydrogen strategy prioritises renewable and climate-neutral hydrogen production. To stimulate production, Austria offers investment subsidies, green electricity allocations, and renewable gas quotas. In terms of end-use, Austria envisions hydrogen as crucial for transport, specifically heavy-duty transport (buses, freight), trains, aviation and water transport. Industrial applications focus on chemicals, steel, cement and glass.	Published (2022)	Electrolysis capacity 2030: 1 GW H2 injection in natural gas network 2030: > 10%
	The **French** hydrogen strategy aims to foster industrial leadership in hydrogen technologies and end use in mobility and heavy industry. In terms of industrial application, France is particularly focused on hydrogen as a replacement for fossil fuels in processes like fuel desulphurisation in refining and hydrogen use in chemicals such as ammonia and methanol production.	Published (2020)	Electrolyser capacity 2030: 6.5 GW
	The **German** hydrogen strategy targets decarbonisation in heavy-duty transport, industry (focus on steel and chemicals), and energy. Germany plans to support hydrogen-ready power plants and specific heating applications, particularly in areas not connected to heating networks. For transmission, Germany plans significant pipeline development and interconnections with neighbouring countries.	Published (2023)	Electrolyser capacity 2030: 10 GW H2 Pipelines 2030: 1800 km
	The **Italian** hydrogen strategy focuses on end-use in industry (steel, glass, ceramics, cement) and transport (freight, railway, maritime and aviation) with special focus also on manufacturing of vehicles and technologies. Italy is establishing hydrogen hubs nationwide and expanding hydrogen transportation pipeline networks.	Published (2024)	Renewable Hydrogen Consumption 2030: 0.252 Mton/year
	**Liechtenstein** does not have a formal national hydrogen strategy yet. Developments are happening in a decentralised manner led by industry.	NA	NA
	**Slovenia** does not have a dedicated national strategy but hydrogen features prominently in its National Energy and Climate Plan for 2030, and it is a lead partner in the transnational North Adriatic Hydrogen Valley (NAHV).	NA	Electrolyser capacity 2030: 100 MW
	The **Swiss** Hydrogen Strategy aims to establish a domestic hydrogen market using CO_2-neutral hydrogen in key sectors such as high-temperature industrial heat, peak/load balancing in CHP plants and heating networks, reserve power generation and heavy-duty transport (aviation, maritime shipping, heavy goods vehicles).	Published (2024)	NA

Regional policies to support the hydrogen economy

Many Alpine regions are taking a leading role in the creation of hydrogen economies in their territories. This support takes a number of forms.

1. Developing a regional strategy

Without a clear strategy, hydrogen efforts risk being fragmented or underfunded. The creation of a dedicated regional hydrogen strategy is therefore an important milestone, helping to coordinate stakeholders and define priority actions. It should be tailored to the local circumstances, identifying the infrastructure needs and priority end-use sectors according to regional demand.

A well-articulated strategy signals a region's commitment to hydrogen and provides certainty to the hydrogen industry and investors. This can help unlock private capital and support access to EU funding programmes. It can also be an important opportunity to integrate civil society input and build social acceptance of hydrogen, by incorporating a participatory approach. Skills is an important enabler of the hydrogen economy and the elaboration of a regional strategy can encourage educational and vocational institutions to incorporate the topic in their curricula.

Good practice: Hydrogen strategy Région Sud - Provence-Alpes Côte d'Azur (France)

The *Plan Régional Hydrogène* from the Région Sud, France, was published in December 2020, just months after the EU Hydrogen Strategy. The plan was created following a series of stakeholder workshops moderated by a public/private steering committee and outlines a collective vision for hydrogen development in the region up to 2027 and 2032. Four priority areas are identified (decarbonisation of mobility, decarbonisation of industry, production of renewable and low-carbon hydrogen, and creation of regional jobs and growth) and 50 actions, with quantitative targets and budgets outlined for each. Chapter 3 of the plan - '*La region au service de la filiere hydrogene*' - explains the role of the regional authority itself, namely to: finance priority projects, support the mobilisation of other possible funding, raise awareness among stakeholders at regional, national, and European levels, direct investment in certain actions, and facilitate the sector.

2. Boosting R&I and industrial capacity

Hydrogen is still a nascent industry but is set to grow rapidly in the coming years and decades. The race is on for regions and countries to establish themselves as industrial leaders and technology suppliers, in the face of stiff global competition. In its national strategy France has outlined its ambition to be a technology supplier for the hydrogen transition and this has been taken up by French regions, many of which have included hydrogen in their research and innovation Smart Specialisation Strategies (S3). This includes the French alpine regions of Bourgogne-Franche-Comté, Provence-Alpes-Côte d'Azur and Auvergne-Rhône-Alpes. Indeed Auvergne-Rhône-Alpes was one of the four founding members of the European Hydrogen Valleys S3 Partnership, which aims to strengthen the development of hydrogen ecosystems including all elements of the European hydrogen economy. Hydrogen Valleys are an effective tool to increase industrial capacity, clustering multiple hydrogen applications. By building such an integrated ecosystem, supply and demand can become mutually supporting, creating a market by improving economic feasibility. They are also a proven vehicle to establish public-private partnerships, unlock private financing and attract European funding.

Regions can further encourage collaboration between research, industry and startups through the establishment of clusters, technology parks or living labs. Offering funding for pilot projects and demonstrators will support the exploitation of research. Skills is an important enabler and regions can collaborate with vocational schools, universities, and industry to offer hydrogen-specific curricula and

certification programs. Companies, and particularly SMEs and startups, should be supported to access EU research and innovation funding opportunities, a full overview of which is provided on page 10.

3. Supporting infrastructure development

Just like roads for vehicles or grids for electricity, the hydrogen economy needs production, storage and distribution infrastructure. The EU expects to see infrastructure spreading fast between now and 2030, by which time 40 GW of renewable hydrogen electrolysers should be in operation and hydrogen refuelling stations available every 200 km.

Regions can contribute to this goal by supporting green hydrogen production projects such as electrolysers (production), tanks, caverns, or containers (storage) and pipelines, trailers, and refuelling stations (distribution). Public support can be vital to de-risk early deployment, and can be the trigger for new and additional projects.

Good practice: Hydrogen "made in Bolzano" (Italy)

A hydrogen production plant was established along the Autostrada A22 to produce and store green hydrogen, the first of its kind in Italy. The plant consists of three modular electrolysers, which can produce up to 180 Nm³/hour of green hydrogen. The compressed hydrogen is stored in gaseous form and can currently supply up to 15 buses or 70 cars. The plant also has the capability to refuel hydrogen cylinders or tankers. There are plans to upgrade the plant to increase production capacity from 1 MW to 8 MW and to establish a rapid filling system. The project is an initiative of the Institute for Innovative Technologies Bozen Consortium Limited and Autostrada del Brennero SpA and has received funding from the European Regional Development Fund (ERDF). It forms part of the Hydrogen Valley South Tyrol, which aims to decarbonise the mobility sector and to connect the region with the main Italian and European economic areas along the Brenner Corridor.

Good practice: Green hydrogen in Auvergne-Rhône-Alpes (France)

Ground was broken in October 2024 on a large-scale green hydrogen production facility in Le Cheylas, Auvergne-Rhône-Alpes. Located on a former steelworks site, the facility will have an installed electrolysis capacity of 10 MW (around 4 tonnes per day). The site has received significant financial support from the EU Just Transition Fund, as part of the 2021-2027 European Regional Programme implemented by the Auvergne-Rhône-Alpes Region, as well as from the EU Clean Hydrogen Partnership, as part of the European hydrogen valley project IMAGHyNE. The facility owner Lhyfe has signed a ten-year sales contract with HYmpulsion, which runs a network of refuelling stations in the region. HYmpulsion is a private limited company with the Auvergne-Rhône-Alpes region as one of the main shareholders. All these activities support the region's Zero Emission Valley initiative, which aims to create a clean, economically viable mobility market throughout the Auvergne-Rhône-Alpes region.

4. Increasing demand

Supply without demand creates dead-end infrastructure. To make hydrogen infrastructure viable regions can directly, through procurement or grants, or indirectly, through incentives, support projects that increase the demand for hydrogen. Supporting early demand, be it for mobility, energy or industrial use, improves economies of scale, brings down unit costs and accelerates technology maturity. Implementing projects with visible end-uses, such as public transport or municipal vehicles, enables citizens to experience hydrogen safely, building public trust and acceptance.

Good practice: Mobility - Hydrogen-powered trains (Italy)

Passengers on the Brescia-Iseo-Edolo railway in the Italian Alps will soon be boarding hydrogen-powered trains. Fourteen hydrogen trains from manufacturer Alstom are expected to enter into service in the first half of 2026, at a total cost of €367 million. The challenging terrain meant electrification of the line would be time and resource intensive, making hydrogen an attractive option. Operator Ferrovie Nord Milano (FNM) will own and operate electrolysers in Brescia, Iseo, and Edolo, ensuring a reliable, local supply of green hydrogen. Funding was procured from the EU's post-covid Recovery and Resilience Facility (RRF), with further support coming from the Lombardy regional government. The initiative is part of H2iseO Hydrogen Valley, which aims to foster sustainable mobility and decarbonise public transport in the region.

The first hydrogen train arrives in Italy. Source: FNM

Good practice: Industry - Bavarian chemical triangle (Germany)

The 'ChemDelta Bavaria' is a region in southeastern Upper Bavaria which is home to around 25 chemical companies with more than 20,000 employees. The ChemDelta chemical triangle currently has a natural gas demand of six TWh per year, but a range of actions are underway to shift towards hydrogen as a more sustainable alternative. Under the leadership of the local authorities, a non-profit research and development organisation has been established to support companies with the integration of hydrogen and the creation of new technologies. €40 million of national funding has been secured to carry out research activities in collaboration with academic partners. In terms of infrastructure, a 15-kilometre-long pipeline system is being converted to hydrogen transport by the regional TSO (transmission system operator), connecting hydrogen sources and sinks. The network will then be gradually expanded and connected internationally.

Good practice: Energy - Connecting electricity, heat and gas grids (Austria)

The Power2X Kufstein project will construct an innovative sector coupling plant and hydrogen centre in Tyrol, Austria. Producing green hydrogen through modularly expandable electrolysers, the plant will serve the electricity, heat and gas grids as well as the mobility sector. Some of the hydrogen produced on-site will be fed directly into the natural gas network, while waste heat from the electrolysis will be utilised in the district heating network. The site will host hydrogen refuelling stations for cars, trucks and buses and additional hydrogen and oxygen produced during electrolysis will be used in the nearby sewage treatment plant. The project is overseen by state energy company TIWAG-Tiroler Wasserkraft AG and has received public funding from the Austrian Climate and Energy Fund. The project is located on the A12 motorway, part of the TEN-T corridor Scandinavia-Mediterranean.

5. Funding and incentives

Hydrogen is not yet cost-competitive with fossil fuels in most sectors. Public funding helps to reduce high upfront costs and mitigates risk for early adopters. Providing co-financing, grants, or tax incentives for pilot projects are possible measures to increase the roll-out of the hydrogen economy and can help unlock national or EU funds. Public-private partnerships or joint ventures can also be a way to share the cost, while maintaining a say in the governance of, large projects.

Good practice: Electrolyser funding programme (Germany)

The German state of Baden-Württemberg has launched a €100m subsidy programme to support local hydrogen production projects. The Electrolyser Funding Programme (ELY) directly promotes the construction of new or expanded electrolysers, as well as associated stationary storage facilities and compressors. Grants are capped at €10 million euros per project and fund up to 45 percent of the eligible investment costs. The programme was launched by the Ministry of the Environment, Climate Protection and the Energy Sector of Baden-Württemberg, initially covering the period 2025-2026. The State also operates other funding lines, including the Charging and hydrogen refuelling infrastructure for long-haul trucks (LWT) programme.

6. Cross-border ecosystems

Cross-border collaboration is essential for hydrogen development because hydrogen infrastructure, markets, and innovation ecosystems often extend beyond regional or national boundaries. Coordinated efforts across macro-regional areas such as the Alpine space can unlock efficiency, scale, and strategic impact, and can be an enabler for smaller regions and nations to participate in the hydrogen economy. The concept of Hydrogen Valleys is a collaborative ecosystem which can operate across borders and jurisdictions.

Good practice: The North Adriatic Hydrogen Valley (Slovenia & Italy)

The North Adriatic Hydrogen Valley (NAHV) is Europe's first transnational Hydrogen Valley, launched by the national ministries of Slovenia and Croatia and the Region of Friuli-Venezia Giulia, Italy. The NAHV aims to build up capacities for an annual hydrogen production of over 5000 tonnes and will activate 17 testbed applications for end-use, clustered in three main pillars – hard-to-abate industries, energy and transport. Education and training are also important aspects of the valley's activities to support the training of future professionals in the field of hydrogen technologies.

EU funding opportunities

The EU has made a significant amount of funding available to support the implementation of its Hydrogen Strategy.

Research and innovation

Funding for research and innovation is mostly concentrated in the Horizon Europe programme. Some relevant calls for proposals can be found in Cluster 5: Climate, Energy and Mobility, however the majority of funds are distributed via a dedicated sub-programme, the Clean Hydrogen Partnership, which publishes an annual call for proposals. In 2025 the total budget was €184.5 million and invited project proposals on:

- renewable hydrogen production
- hydrogen storage and distribution
- hydrogen end uses: transport, clean heat and power
- hydrogen valleys
- cross-cutting issues related to sustainability, safety, and knowledge dissemination.

Further research and innovation funding is on offer via the European Innovation Council (EIC) which aims to identify, develop and scale up breakthrough technologies and game changing innovations. Different types of grants are available for startups and SMEs, depending on their development stage. Funding for research and development projects looking into the usage of hydrogen at steelworks is available via the Research Fund for Coal & Steel (RFCS), while highly innovative technologies and flagship projects may be eligible for funding under the EU Innovation Fund.

Deployment and infrastructure

Funding for hydrogen deployment and infrastructure is available from the Connecting Europe Facility (CEF). CEF Energy funds projects of common interest and projects of mutual interest that help to achieve the broader TEN-E policy objectives and the CEF energy policy objectives. This includes cross-border hydrogen transmission and distribution projects, storage and large-scale electrolysers. CEF Transport supports the deployment of hydrogen refuelling stations through its Alternative Fuels Infrastructure Facility (AFIF). €1 billion is available for the 2024-2025 period, distributed through a rolling call for proposals.

The European Regional Development Fund (ERDF) and the Cohesion Fund (CF) can also support direct investments in hydrogen projects at regional and local level. The Just Transition Fund can provide funding for regions transitioning away from coal.

Technical support

Technical support is on offer via the European Investment Bank's ELENA - European Local Energy Assistance - facility, which can fund technical studies, business plans, legal advice, tender preparation and project bundling. While the JASPERS - Joint Assistance to Support Projects in European Regions - facility also supports the development of strategies and plans, project preparation, project appraisal, and capacity building in energy and transport.

Interreg Europe also provides free, tailor-made expert support services on a wide range of topics including hydrogen in the form of peer reviews and matchmakings. The calls are continuously open and can be requested through a short and easy application process.

Conclusions and recommendations

The EU has made it clear that hydrogen will be a key part of the EU's energy mix in 2050. A European Hydrogen Strategy has outlined a three-stage roadmap for its scale up in Europe, and key pieces of legislation have already been passed. With the industry still in its infancy, Europe has a chance to be a leader in hydrogen technologies if research and innovation is exploited fully.

Regional ecosystems are essential for the growth of the hydrogen economy, matching supply with demand and implementing the rollout of hydrogen infrastructure, and public authorities can play a key role. This policy brief has highlighted promising policies and associated good practices from the Alpine region, a pioneering territory for the development of hydrogen in Europe. The following recommendations can be derived:

- **Creating a regional strategy** like that of Région Sud - Provence-Alpes-Côte d'Azur (page 6) signals a region's commitment to hydrogen and provides certainty to the hydrogen industry and investors. It is a vital step to coordinate stakeholders and define priority actions. Alignment with regional Smart Specialisation Strategies (S3) can help boost research and innovation and set regions on the path to becoming industrial leaders and technology suppliers for the hydrogen economy.
- **Public support for hydrogen projects and infrastructure development** is needed for the hydrogen economy to reach a critical mass. With technologies still at a low maturity, public funding is often needed to de-risk projects for private investors. Regions can increase supply by providing direct funding (see the electrolyser funding programme on page 9) or entering public-private partnerships, as in Auvergne-Rhône-Alpes (page 7), and can stimulate demand through public procurement, for example hydrogen trains, as in Lombardy (page 8). Before embarking on hydrogen development, regions should assess whether they are well placed for the technology, for example having sufficient renewable energy availability and skilled workers.
- **Focus on regional ecosystems or valleys.** Early hydrogen initiatives should be concentrated along future value chains or geographic clusters, where supply connects with demand, such as the Bavarian chemical triangle (page 8) or the emerging hydrogen valleys. This concentration of support drives early technology development rather than spreading activities thinly over the entire territory.
- **Coordination at macro-regional level** makes economic sense and should be pursued in view of developing a macro-regional strategic approach to infrastructure development and rollout, harnessing the respective resources of each territory and serving their needs. Cross-border ecosystems and projects, such as the North Adriatic Hydrogen Valley (page 9), should be encouraged.
- **Cooperation with wider European hydrogen initiatives** is advisable to achieve further integration into the future EU hydrogen network and facilitate project development through access to EU funding and knowledge exchange.
- **Seek EU funds**. A significant amount of EU funding is available for research and development, demonstration, deployment and capacity building. Notably, the Clean Hydrogen Partnership within Horizon Europe publishes an annual call for proposals for research and innovation, while infrastructure projects are eligible for funding from the European Regional Development Fund (ERDF) and Connecting Europe Facility (CEF).

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