EU Hydrogen Valley Days

17 - 18 June 2024

Summary and Outcomes Report
EU Hydrogen Valleys Days

17-18 JUNE 2024

The EU Hydrogen Valley Days 2024 were co-organised by the Clean Hydrogen Partnership and the European Commission - DG Research and Innovation, and took place on 17-18 June 2024, at the Hotel, Brussels. The event highlighted the successful work of the Clean Hydrogen Partnership with European regions and cities, including project development assistance and funding of 15 hydrogen valleys across Europe. This groundwork preceded the launch by the European Commission of an EU roadmap for Hydrogen Valleys and set the stage for the development by the Partnership of a facility to help early-stage Hydrogen Valleys mature. y.
The event agenda and a background document are available here.

Day1 - 17 June

SESSION 1 – INTRODUCTORY SESSION

OBJECTIVE
Introducing the event, welcoming participants and speakers and delivering key policy messages

OUTCOMES
The session provided a platform for delivering the key policy messages.

Valerie Bouillon-Delporte, the Executive Director of the Clean Hydrogen Partnership, opened the event. She highlighted the achievements to date of the partnership, noting that Hydrogen Valleys are at the core of the Clean Hydrogen Partnership activities.

In his keynote speech, Mark Lemaitre, Director General of DG Research and Innovation, highlighted that Hydrogen Valleys are a priority for the Commission, as steppingstones to a European and global hydrogen economy and that a more coordinated research and innovation framework bringing in national, regional and EU funding is needed. He also announced the upcoming publication of a Staff Working Document :" Towards a roadmap for accelerating the deployment of Hydrogen Valleys across Europe: challenges and opportunities", outlining the strategic priorities and actions that are ongoing or planned.

Arianna Sensi, representing the Committee of the Regions, stressed the role of the regions and remarked that local and regional authorities can act as facilitators for the development of the hydrogen economy and in the creation of hydrogen valleys. She also pointed out that supporting instruments need to be strengthened to provide additional technical assistance and capacity building, but also the need to better share successful experiences and lessons learnt. She also called for a stronger multi-level governance able to align priorities and funding between the EU, the Member States and the Regions.

EU Hydrogen Valley Days

17 - 18 June 2024

Clean Hydrogen Partnership

European Commission

SESSION 2.1 – DEVELOPING THE HYDROGEN ECONOMY ACROSS EU REGIONS: FROM POLICY TO PRACTICE

The policy context

OBJECTIVE

The objective of this session was to present the policy highlights and instruments that have set the basis for the development of the hydrogen valleys at European, national and global levels. It discussed the common elements as well as the differences, the results so far and the future developments, including further support for the development of the value chain from production to end-use, addressing non-technological barriers (knowledge sharing, skills, regulatory sandboxes), synergies with Member States and Regions and trends and highlights at global level.

OUTCOMES

A better policy environment

Rosalinde van der Vlies, Clean Planet Director at the Commission's Directorate-General for Research and Innovation (DG RTD), reinforced the message that Hydrogen Valleys are the steppingstones to a European hydrogen economy by bringing supply, storage, distribution and end-use together in one ecosystem. They are therefore one of the strategic priorities for the European Commission. She mentioned that R&I is important to provide support for the entire hydrogen chain (from production to end-use) and specially as a means to reduce the costs of the technology, and to ensure the EU remains a leader in the sector. She also emphasised that at the same time, non-technological barriers must be addressed (knowledge sharing, skills, regulatory framework). For the roll-out of Hydrogen Valleys, synergies with Member States and Regions are crucial, she said.

Accelerating Progress - from working with the regions to Hydrogen Valleys

Mirela Atanasiu – Head of Unit Operations & Communications at the Clean Hydrogen Partnership, provided a historical overview of the support the Partnership has provided to Regions. The details of this are available in the event background document. In addition, she announced the publication of two reports. The first report summarises the results achieved by the project development assistance (PDA II) initiative of the Clean Hydrogen Partnership. In addition, an update report on Hydrogen Valleys and the Mission Innovation Hydrogen Valley Platform was published during the EU Hydrogen Valleys days.

Finally, she announced the launching of the Call for Tenders of a 'Hydrogen Valleys Facility' aiming at accelerating the number of hydrogen valleys in Europe. The facility will include project development assistance to support Hydrogen Valleys at different level of maturity. Whilst the focus will be on European countries, such project development assistance may be extended to third countries, in line with the Commission policy priorities. In addition, it will include activities aiming to ensure that the knowledge gathered and the lessons learnt from Hydrogen Valley projects are retained, collected, analysed and widely disseminated and used in a structured and efficient way. The Facility will also be used to maintain and update the Mission Innovation Hydrogen Valley Platform.

HyLand: Working with Regions in Germany

Franz Lehner – Head of Division International Cooperation at NOW-GmbH, provided an overview of the work that NOW is doing with regions, through the flagship programme HyLand. He provided an update of the 3 categories of the programme: i) HyStarter for the development of concepts and local stakeholder networks (24 regions and concepts developed), ii) HyExperts for the provision of consulting and planning support for ready to implement regional hydrogen concepts (28 regions supported, and 282 MW electrolyser capacity, 14 new HRS and 500 vehicles expected by 2025) and iii) HyPerformer providing funding for the investments required by projects along the value chain of hydrogen for transport applications (3 regions supported to-date representing 183 MEUR investments, out

of which 60 MEUR refers to the funding provided by NOW). He also emphasised the long-standing and close collaboration between NOW and the Clean Hydrogne Partnership as well as the common lesson learnt among both programmes including lack of regulations, lack of specific (hydrogen) components, lack of vehicle supply availability as well as long lead times.

Hortense Lutz-Hermellin – Delegate of Auvergne-Rhône-Alpes Region in Brussels, provided an overview of the region's hydrogen strategy as well as of hydrogen projects taking place in the Auvergne-Rhône-Alpes Region. These include the Hydrogne Valley IMAGHyNE, supported by the Clean Hydrogen Partnership. The IMAGHyNE project brings together 42 partners and represents investment of EUR 200 million. As presented, it includes close to 60 MW of hydrogen production with electrolysis, storage of more than 40 tonnes of hydrogen, 13 hydrogen refuelling stations, 2 small-scale hydrogen pipelines, more than 200 fuel cell vehicles and 4 MWs of stationary fuel cell power generation.

Finally, Markus Kaufmann, Partner at Roland Berger, gave an overview of the state-of-play of Hydrogen Valleys in Europe and presented an update regarding the Hydrogen Valleys platform (H2V.eu). In June 2024, the platform featured 88 Hydrogen Valleys out of which 74 were in Europe. The Valleys in the platform can be typified in three archetypes, at different scale and with different strategic rationales: small-scale mobility driven, medium-scale industry-driven and large-scale supra regional Hydrogen Valleys. Hydrogen Valleys featured in the platform are still "early-stage", around 70% of projects under development have yet to take a final investment decision with some progress shown since the H2VP was first launched in 2021. Most of the Hydrogen Valleys focus on green hydrogen for various end-uses in mobility, industry, and energy sectors. Considering the Hydrogen Valleys included in the platform, the cost of hydrogen has decreased from EUR 6.4/kg to EUR 6/kg over since 2021. Funding remains the main barrier for hydrogen valley development and permitting has become a major real-world challenge for project promoters

SESSION 2.2 – DEVELOPING THE HYDROGEN ECONOMY ACROSS EU REGIONS: FROM POLICY TO PRACTICE

Barriers, challenges, and success factor. Insights from practitioners

OBJECTIVE

This session brought together hydrogen valleys promoters and practitioners across Europe, in order to provide a description of their projects, progress to date as well as to highlight main barriers, challenges and success factors for the implementation of their hydrogen valleys projects.

OUTCOMES

Hydrogen Valleys projects from 6 European countries were presented covering Finland/Estonia, Greece, Netherlands, Portugal, Poland and Belgium as follows:

- **Implementing cross-border hydrogen valleys | Best practice from BalticSeaH2 Hydrogen Valley**
- **Small-scale Hydrogen Valley as enablers of a larger Hydrogen Economy | Corinthia, Peloponnese Region, Greece, TRIERES Hydrogen Valley**
- **Hydrogen valley in the Northern Netherlands | HEAVENN Hydrogen Valley**
- **Hydrogen valleys in industrial hubs | MadoquaPower2X, Sines Energy Hub, Portugal**
- **Developing a Hydrogen Economy in the Pomerania Region | AMBER Hydrogen Valley, Poland**

- **Hydrogen Valleys around Port areas | H2BE Hydrogen Valley, Belgium**

Each of the projects is at a different stage of development and follow distinctive approaches for their implementation. Whilst most of the projects focus on the use of renewable energy (to produce renewable hydrogen), others (such as H2BE) are looking at blue hydrogen.

Each speaker highlighted the main barriers, challenges and success factors for the implementation of their hydrogen valleys. These includes aspects such as governance, regulation and skills and financing.

Hydrogen valley projects offer a unique opportunity to shape the hydrogen economy including elements such as skills and job creation. This requires coordination efforts which cannot be underestimated.

Industry and mobility are the two sectors that most of the Hydrogen valleys focus on.

Some of the earlier projects have already deployed part of their Hydrogen Valleys (i.e. HEAVENN). Others have already taken final investment decision (FID) and have already started to procure part of the equipment and infrastructure of their projects (e.g BALTIC-SEA-H2). Other are still at pre-FID stage. This shows that progress is happening.

Common risks and success factors were identified: governance and organisation, unclear regulatory framework, market barriers for implementation, failure in raising financing for the investments and social acceptance of hydrogen projects.

- Governance and organisation
    - There is a common agreement that Hydrogen Valleys where production and different end users are required (rather than projects with a single large off-taker) are complex projects to set-up and organise. To this end they need to involve many stakeholders, including a mix of public and private organisations as well as a wide range of actors, from hydrogen producers, off-takers as well as infrastructure providers.
    - Looking at the projects presented, it is observed that the main drivers or sponsors of a given project are quite different; ranging from dedicated private project developers (e.g refineries driven by decarbonising targets) or public authorities/public development agencies.
- Regulation and permitting
    - Despite the adopted two delegated acts outlining detailed rules on the EU definition of renewable hydrogen, there seems to be unclarity on what can be considered Renewable fuels of non-biological origin (RNFBOs). In some cases, this is a key barrier for the investment in certain projects (even if they are considered clean or green).
    - Permitting can still take long and delay project implementation (specially for this first-of-its kind projects). Some projects are also exposed to a lack of coordination between different authorities (Central Government, Regional and Local Administrations).
    - Lack of safety related standards was also seen as a challenge for some projects. There appears to be a need for further development at EU and national level standards, covering the whole hydrogen value chain (production, handling, storage) – to secure easier public acceptance and regulatory approvals
    - Hydrogen, in several end-use cases, is used to produce synthetic fuels (which require carbon for the synthesis process). Several speakers agreed in that current regulation fails to promote the circulation and effective use of CO2 in situations where emissions cannot be avoided. To this end, it was recommended that carbon should be circulated as long as possible rather than be permanently stored immediately after the first round of use. All in all, there was a call for a wholistic approach for the planning and development of hydrogen, electricity, and CO2 infrastructures.

- Market and technology
  - Some projects mentioned as a 'barrier to success' the lack of OEMs and technology suppliers for specific end-uses as well as long delivery times (what in some cases leads to some off-takers to find alternative non- hydrogen solutions).
    Some of the projects that have already gone through the purchase of equipment, have concluded that there is a dependency risk in third countries due to manufacturers/technology suppliers starting to be based outside EU.
  - The above points raise a question on whether Europe's supply chain (e.g manufacturers, equipment providers) are ready to deliver on the high demand that the existing pipeline of projects will require.
  - In some cases, the technology did not work as expected and others reported a lack of off takers, what affected the viability of already installed refuelling infrastructure
- Funding Financing
  - There is a financial gap to be filled which requires public funding to make projects bankable. In some cases, the process to access and combine public funding (e.g. State-Aid, rules for combination of EU, national and regional funding) is not straightforward and this can lead to severe delays (to the point of risking and / or delaying FID). One example was given where one project (TRIERES) was successful in combining different EU supporting instruments (Clean Hydrogen Partnership, CEF-T, Innovation Fund, etc). Together with own funding, this helped the project to take FID as well as to increase the scale of the individual projects allowing them to develop a larger hydrogen valley.
  - Hydrogen Valleys are long-time projects in a pioneer market which will unavoidably be exposed to changes. Therefore, it is key to build flexibility into the project plan by focusing on end-goal or processes, more than only on technology
  - One Hydrogen valley among the ones presented managed to secure funding from the first pilot auction of the Hydrogen Bank.
- Working together to accelerate progress and maximising impacts
  - While it is acknowledged that Hydrogen Valleys are local projects subject to their own specificities, this session made it clear that there is plenty of room to learn from each other. Participants call on the various stakeholders to ensure that exchanges among Hydrogen Valleys projects are kept and intensified. This would include, but not be limited to, a (possibly) yearly event such as the one organised this year. This could be complemented by additional workshops on specific areas.
  - There was a consensus on the need to keep the exchanges among the Hydrogen Valleys community alive.

SESSION 3 – PROJECT DEVELOPMENT ASSISTANCE TO ACCELERATE THE UPTAKE OF HYDROGEN PROJECTS ACROSS EUROPEAN REGIONS

OBJECTIVE

The objective of this session was to present the policy highlights and instruments that have set the basis for the development of the hydrogen valleys at European, national, and global levels. Common elements as well as differences, the results so far and the future developments, including further support for the development of the value chain from production to end-use, addressing non-technological barriers (knowledge sharing, skills, regulatory sandboxes), synergies with Member States and Regions and trends and highlights at global level, were presented.

OUTCOMES

This session was moderated by Jeroen Schuppers – DG RTD, European Commission. The discussions were centered on the impact of the Clean Hydrogen Project Development Assistance (PDA) services and the current status and plans of four of the projects that received the support.

The first speaker, Nadine Holzinger, Managing Director of Spillet, provided an insightful overview of the PDA initiative, its objectives, and key learnings. She highlighted that the primary aim of PDA II was to address the unique challenges faced by cohesion and outermost regions, including islands. This initiative offered comprehensive support through technical, financial, and legal assistance, leading to the development of detailed project delivery plans. Notably, some regions have already pursued further funding following the completion of PDA services, underscoring the initiative's effectiveness and ongoing impact.

The four presenters underlined some of the key features of their plans. The integration of hydrogen into sustainable public transport systems is being actively pursued in various regions, each tailoring their approach to local needs and resources. In Cluj-Napoca, Romania, efforts are underway to incorporate hydrogen into public transportation, initially focusing on buses and expanding to include 20 fuel cell trains by 2027. The initiative also explores hydrogen applications in heating and cogeneration, aiming to support district heating with hydrogen by 2030, despite the challenges of pioneering such a project in Romania.

In the Central Sava Region, the H2Sava project is a crucial element of the broader transition from coal mining to sustainable energy, supported by the Just Transition Fund. The project intends to decarbonize the glass industry by producing 570 tons of hydrogen annually using a 6.5 MW electrolyser, powered by locally produced green electricity from photovoltaic sources. Valentia Island in Ireland, leveraging a decade-long commitment to hydrogen, is developing a blueprint for energy security and local economic regeneration, with plans for hydrogen-powered ferries. Meanwhile, in the Košice region, Slovakia, a phased approach to hydrogen production and infrastructure is being developed, initially involving 10 buses with plans to expand to 40 by 2030, and potential aviation applications, all supported by the PDA and grounded in early collaborations with universities.

During the panel debate, participants explored the challenges and advantages of PDA-supported projects. Overcoming simpler obstacles involves early engagement with project promoters and experts in order to refine their initial ideas. There is a lot of appetite at local level for retrofitting of hydrogen infrastructure and vehicles. However, current programmes do not fully support it. Feedback from the four regions benefiting from PDA services highlighted key benefits. One region concentrated on setting a sustainable hydrogen price for local transport to ensure profitability, while another found PDA invaluable for both idea development and financial planning. External expertise was crucial for understanding the long-term integration of hydrogen and its societal benefits. Technical and legislative support also emerged as critical, revealing the many details and legal frameworks necessary for advancing hydrogen projects.

Collaboration between regions and industry was identified as essential for fostering innovation. One region's success with electric buses laid the groundwork for hydrogen vehicle initiatives, while another experienced a synergy between public authorities and the glass industry during their transition efforts. Tailoring hydrogen introduction to regional specifics was emphasised, with local workshops facilitating partnership creation and project development. Looking ahead, the next steps involve securing national and EU funding, effective project communication, and establishing local support schemes. Regions were advised to proactively prepare for hydrogen valleys by providing necessary training, enacting appropriate legislation, and addressing any gaps to turn hydrogen projects into a reality and engage more stakeholders.

Main takeaways:

- **Support Diverse Hydrogen Applications**: Emphasize hydrogen use in maritime, road transport, heat, and industrial sectors;
- **Prioritize Scalable and Region-Specific Projects**: Focus on developing projects tailored to regional specifics to avoid rapid scaling risks;
- **Foster Early Engagement and Collaboration**: Encourage early engagement with project promoters and experts, and foster collaboration between regions and industries;
- **Secure Funding and Legislative Support**: Secure national and EU funding, establish effective communication strategies, and enact appropriate legislation to facilitate hydrogen project development.

SESSION 4 – STRENGTHENING SYNERGIES BETWEEN EUROPEAN NATIONAL/REGIONAL RESEARCH & INNOVATION PROGRAMMES

OBJECTIVE

Building on the successful work of the Clean Hydrogen Partnership with regions and Member States, and in view of setting up a more structured cooperation mechanism between the JU and local Managing Authorities, the JU awarded a contract to identify and design a structured approach to generate and implement synergies on research and innovation activities between the Clean Hydrogen Partnership and managing authorities of Member States and Regions. In 2023, after an exercise to understand the state of the art on the Hydrogen R&I policies of the Member States and third countries associated with Horizon Europe, a Call for Expression of Interest was launched to select 10 regional or national Managing Authorities (MA) to foster a structured cooperation with the JU tailored to the needs of each MA.

Following the selection of the ten MAs, work started to develop an encompassing, tailored Memorandum of Cooperation with each MA. All MoC focus on cooperation on knowledge transfer, capacity building and financing, with different MAs valuing different perspectives.

OUTCOMES

Willingness to develop the Hydrogen Economy – Session 4 showed us the willingness of the regional and national managing authorities to create a backbone for the development of the hydrogen economy. There is a strategic focus on Hydrogen but at different levels of maturity across the different Managing Authorities.

Common challenges – Even though the selected MAs are at different stages of development, their challenges are far from unique. The main challenges range from the complexities of funding and attract investment to the qualifications of the workforce, policy and legal frameworks (both at national and cross-border levels), public awareness, risk management and overall need to strengthen cooperation with local stakeholders, EU institutions but also with other regions and having access to their lessons learnt. Being still a new market, the growth of the H2 economy must occur at European level, creating demand.

Need for cooperation with institutions at EU Level and between Managing Authorities – To overcome these challenges, the MAs have underlined the need for cooperation and coordination between regional and national authorities and institutions on EU Level, such as the Clean Hydrogen Partnership. They expect the cooperation with the Clean Hydrogen Partnership to act as a catalyst to further structure and develop their hydrogen economy.

The representative of Friuli Venezia Giulia Region, Italy, mentioned that they expect the work with the Clean Hydrogen Partnership to allow for the development of skills-oriented programmes using structural funds and better structure and evaluate calls for R&I Hydrogen projects. She also stressed the importance of connecting stakeholders and foster transborder collaborations, such as the one that led to the North Adriatic Hydrogen Valley.

The Croatian Hydrocarbon Agency representative underlined the importance of qualification and developing new skills as well as the importance of the transfer of knowledge from other regions and from successful JU projects locally implemented.
The representative from the Ministry of Innovation and Growth of Bulgaria, stressed that working together at local and European levels was key, because the challenges are not unique. One of the most common challenges is at financing and investment level, so dedication and willingness to take risks is important to all parties involved.

SIGNING OF MEMORANDUM OF COOPERATION BETWEEN THE CLEAN HYDROGEN PARTNERSHIP AND REGIONAL/NATIONAL MANAGING AUTHORITIES

OUTCOMES
The first 3 Memoranda of Cooperation were signed:

- **MoC between Clean Hydrogen Partnership and the Ministry of Innovation and Growth of the Republic of Bulgaria** Signed by Valerie Bouillon-Delporte – Executive Director, and Veselina Mincheva – Deputy Minister
- **MoC between Clean Hydrogen Partnership and the Croatian Hydrocarbon Agency** Signed by Valerie Bouillon-Delporte – Executive Director, and Marijan Krpan – President of the Management Board
- **MoC between Clean Hydrogen Partnership and ESF+ Managing Authority and ERDF Managing Authority of Friuli Venezia Giulia Region** Signed by Valerie Bouillon-Delporte – Executive Director, Ketty Segatti – Director of European Social Fund Plus and Other EU Funds Office, Central Directorate for Labour, Training, Education and Family, and Lino Vasinis – Director of the EU Funds Management Office, Central Directorate for Finance

EU Hydrogen Valley Days

17 - 18 June 2024

Clean Hydrogen Partnership

European Commission

Day 2 - 18 June

SESSION 5.1 – FINANCING FOR HYDROGEN VALLEYS
Boosting the funding for Hydrogen Valleys

OBJECTIVE

The objective of this session was to provide recommendations on how to boost the financing of hydrogen valleys by private investments based on successful examples and insights of existing Valleys and the experience of relevant actors.

OUTCOMES

This session brought experiences from hydrogen valleys across European regions (Pays de la Loire, Groningen, Castilla-La Mancha and North-West Germany). Representatives of valleys explained their individual cases and highlighted main challenges, as well as opportunities.

Main challenges include: lack of renewable energy on a local level, regulatory issues (including a clear definition of "green hydrogen") and learning on previous experiences for the industry, as well as manufacturers to minimise risks.

At the same time, the session concluded that there are significant opportunities emerging from hydrogen valleys. Especially, as they represent innovative means of bringing together producers and off-takers to match the production and demand.

Isidoro Tapia from the European Investment Bank (EIB) shared the EIB experience with hydrogen projects and highlighted different instruments available, such as venture capital, corporate and lending instruments, as well as InvestEU.

Two large-scale projects financed by the InvestEU were indicated as examples, H2 Green Steel project (production of green hydrogen for steel production) and an electrolyser project. Only last year, more than EUR 500 million were invested in hydrogen projects.

The conclusions of the session in terms of increasing funding opportunities for hydrogen valleys:

- finding more mature projects to be financed because funding instruments are already available
- making marketplace for buyers and producers a part of the hydrogen valleys
- more flexibility in European funding instruments to attract private investors.

SESSION 5.2 – FINANCING FOR HYDROGEN VALLEYS
Increasing financing for start-ups and scale-ups in Hydrogen Valleys

OBJECTIVE

Hydrogen including hydrogen valley projects is clearly a growth sector and a regional focus on creating a hydrogen economy should also trigger new and growing companies along the hydrogen value chain.

OUTCOMES

The session covered two topics: firstly, the identification of measures that most effectively promote private investment into the hydrogen valley companies and ecosystems and secondly, the use cases most popular with investors.
On the attraction of investment, the panellists suggested to showcase tangible demonstration projects and successful companies to investors, as the most relevant action. Investors want to see proof that successful investments are

possible. Setting quota for specific usage of hydrogen can also matter a lot. For example, the target quota for sustainable aviation fuels (SAF) created an offtake demand which projects with investor-backing are now going after. The pragmatic granting of permissions was seen as important. Public procurement with criteria boosting innovation quality over simply costs is also welcomed. Finally, it was strongly advocated to provide clarity and stability on the regulatory side.
On the second question, financial investors prefer hydrogen for industrial applications and usage, in line with hydrogen's progressive historic development. Besides SAF, heavy duty transport and mobility are also seen as good use cases where respectively transport and logistic companies and regional and municipal authorities are increasingly assessing hydrogen as an option. However, public or government-backed funds are seen as essential cornerstone investors, paving the way and ensuring the bankability, so as to crowding-in private investors by offering co-funding and risk optimisation schemes. Infrastructure funds or generally banks, can play a role to bridge the gap to go-to-market of the most advanced projects and companies. Venture capital investments typically are interested in the next generation of technology.

SESSION 6 – DEVELOPMENT OF HYDROGEN VALLEY PROJECTS: THE ROLE OF EUROPEAN INDUSTRY

OBJECTIVE
The objective of this session was to place the spotlight on the industrial partners involved in hydrogen valleys projects across Europe, in order to explore what are the opportunities, challenges, and strategies for developing successful H2 Valleys whilst strengthening the competitiveness of Europe's industry across the whole Hydrogen Value Chain.

OUTCOMES
The discussion was opened by Olivia Infantes Morales from CEPSA which gave a short presentation on the Andalusian hydrogen valley with two hydrogen production locations: Palos de la Frontera (Huelva) and San Roque (Cadiz). The success of this project relies on getting solid commitments from the off-takers as these locations will serve different industries, mainly ammonia and methanol production for the maritime sector.

Florian Chapalain from Ballard Europe emphasised the importance of original equipment manufacturers (OEMs) being identified as important stakeholders in hydrogen valleys projects. Their experience as partners in ongoing hydrogen valleys, is that they present an excellent platform for establishing partnerships and collaboration of many key hydrogen stakeholders.

Andrea Antenucci from Snam, expressed that market needs to be stimulated by regulators and policy makers and that projects in general go smoother when governmental institutions are involved. He also mentioned that some important projects of European interest (IPCEI) are experiencing delays in allocation of national funding.

Focus on the corridors and creating links between the valleys is key for Florentin de Loppinot from TEAL Mobility. It is the role of the vehicle operators to create refuelling stations along the corridors, in order to ensure seamless operation of vehicles across Europe.

Finally, Christopher Frey from Sunfire stressed the importance of the support provided by Clean Hydrogen Partnership over the past 15 years, to allow for a growth of the European based hydrogen industry. Sunfire, an electrolyser manufacturer, was involved in several projects supported by the Clean Hydrogen Partnership, for the development of multi-MW-range electrolysers.

The conclusion of the panel is that the European industry has an important role to play in all aspects of the hydrogen value chain: production of hydrogen, manufacturing of key equipment (such as electrolysers and vehicles), as well as off-take (such as industry and mobility sector).

Key takeaways:

- Hydrogen valleys are excellent platforms to establish cooperation and partnerships between key stakeholders in the hydrogen value chain.
- They are hotspots for the development of hydrogen markets, enabling large scale production which is key for reducing the price of hydrogen.
- Hydrogen valleys with strong off-take market allow for the establishment of stable hydrogen price which further enables stability and predictability of the market and can attract private investments.
- Regulation is the key in terms of certification, safety standards, permitting and asset management and having public administration bodies in hydrogen valley projects is extremely beneficial for the whole hydrogen valley eco-system.
- Funding is the key – currently there is no perfect instrument for the funding of hydrogen valleys. R&I fundingfrom the Clean Hydrogen Partnership has been key for reducing costs of key hydrogen technologies and to provide initial support for hydrogen valleys, but more flexibility and compatibility is needed in terms of combination of various public funds for future large-scale production and off-takers in hydrogen valleys.

SESSION 7 – SKILLS

OBJECTIVE

The objective of this session was to highlight best practices for developing hydrogen related skills across Europe, focusing on EU-funded projects and local initiatives. The session covered upskilling, reskilling, and vocational education efforts essential for the development of hydrogen valleys.

OUTCOMES

The session started with the presentation of Nikolaos Ntavos from CluBE-Cluster of Bioeconomy and Environment of Western Macedonia, which presented the project Green Skills for Hydrogen, Erasmus+ project launched in 2022, with 33 partners in 15 countries. The project is working on the design of an innovative vocational education and training (VET) curriculum and is defining a sectoral Skills Strategy bringing together industry stakeholders, VET providers, higher education and research organisations, local and regional stakeholders, regional, national and European networks as well as communication and skills experts.

Velaug Myrseth Oltedal from Western University of Applied Sciences in Norway, presented the H2CoVE project, funded by Erasmus+ (call for Centres of Vocational Excellence). The project, being coordinated by the commune Vestland Fylkeskommune, is expected to run until 2028 and has 19 partners. The focus is regional and the objective is to equip the European workforce with the right and necessary high quality vocational skills for industries in the emerging value chains for the hydrogen economy, through creating regional skills ecosystems.

Lorenzo Squintani, from Wubbo Ockels School for Energy and Climate of University of Groningen has presented the project HyAcademy.EU, funded by the Clean Hydrogen Partnership. This project will run from 2024 to 2028 and will build a network of over 100 universities offering qualification, specialisation and degrees in hydrogen technologies and a network of over 500 schools integrating hydrogen topics into their science teaching. The final objective is to prepare the European Net-Zero Hydrogen Academy.

HyResponder (European hydrogen train-the-trainer programme for responders in hydrogen safety) was presented by Sile Brennan from Ulster University. This 3-year projects funded by the Clean Hydrogen Partnership, which ended in 2023, included 16 partners from the industry, academia and firefighter schools. The main outcome of the project was that hydrogen is not less safe than other fuels, but just different and therefore requires different safety procedures.

Clement Maury from Afpa Grand Est presented the Green SKHy project – Green Skills and Knowledge for Hydrogen (2024-2026). This project is funded by Interreg North-West Europe and includes 17 project partners (business clusters, training centres and universities) and 70 associated organisations from 6 countries (Belgium, Luxembourg, Netherlands, France, Germany and Switzerland). Green SKHy contributes to the energy transition and promotes the development of the clean hydrogen sector by reducing obstacles to the European recognition of skills and by developing new transnational training schemes.

The conclusion of the session was that all educational levels, different professions and both public and private sector need trainings to develop additional skills needed for the transition to the hydrogen economy.

Key takeaways:

- There is a big opportunity to learn from each other and to understand which specific knowledge is needed for specific professions. Educational institutions of different levels and types should cooperate to foster exchange on engineering profiles, but also technicians, maintenance personnel, laboratory personnel etc.
- Safety – hydrogen is not more or less dangerous than other conventional fuels, just different and it is important to tailor the safety training accordingly to ensure that the right information gets to the right people.
- There is a gap in training for hydrogen valleys projects for public administration and policy makers. This is crucial for them to understand the complexity of hydrogen projects and prepare them for applying right procedures and policies.
- To cover all the necessary skills, it is important to create synergies between all the projects and other initiatives. It is also key to share best practices, also related to aspects of social awareness and public acceptance. A recent example in Norway is a project which faced opposition on off-shore wind due to a lot of misinformation and myths. This could also happen to hydrogen initiatives. Education of the general public, especially local communities, is very important.
- The industry and education/training institutions need to work together to bring the knowledge needed for the building-up of the hydrogen economy. Materials and expertise are already here. The European Hydrogen Observatory and Hydrogen Academy are important sources of information concerning hydrogen skills.