EUROPEAN HYDROGEN VALLEYS PARTNERSHIP

SMART SPECIALISATION PLATFORM

European Hydrogen Valleys Partnership

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European Alliance Against Coronavirus

June 24th 2020

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Introduction to the Hydrogen Valleys S3P

Context of creation of the Hydrogen Valleys S3P

- **H2 is a key lever to decarbonize the EU economy**

- EU ambitious goal for 2050: to be the 1st climate neutral economy by 2050 (European Commission's communication« A Clean Planet for All », November 2018)
- Fuel cells and hydrogen (FCH) technologies have the potential to play a key role in this energy transition process
- But lack of commercial availability + challenge of producing « green » hydrogen

- **European local authorities play a key role in supporting the development of FCH technologies**

- Local authorities are involved in many FCH deployment projects (energy transition, air quality)
- But lack of visibility + weak influence capacity

Hydrogen Valleys S3P coordination

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- **4 coordinating Regions:**
  - Aragon (ES)
  - Auvergne Rhône Alpes (FR)
  - Normandy (FR)
  - Northern Netherlands (NL)

GOBIERNO DE ARAGON

Aragon is pioneer in H2 technologies in Spain. RIS3 Aragon includes explicit support for hydrogen in two strategic priorities: connectivity and resources efficiency.

La Région Auvergne-Rhône-Alpes

Hydrogen is part of two ARA Region RIS3 domains: energy and smart mobility systems and industry of the future. Regional clusters TENERRDIS (energy transition) and CARA (mobility solutions) are involved.

- **Technical support via the ReConfirm programme** under the Industrial Modernisation S3 Platform

RÉGION NORMANDIE

Renewable energies and zero-emission transport and logistics are among the strategic priorities of RIS3 in Normandy

- Official launch in **May 2019**

SNN SAMENWERKINGSVERBAND NOORD-NEDERLAND

The Northern Netherlands consider Hydrogen as an important building block of industry, mobility and buildings for a truly clean and sustainable economy .

EHV-S3P participating regions

13 Countries

&

*35 Regions**

* 19 clusters registered as members

Main objectives of the Hydrogen Valleys S3P

Strengthen the visibility and influence capacity of European Regions as key users of FCH technologies

⇒ Position paper on the future Clean H2 Alliance; Input to the future EU H2 strategy and the future sector integration strategy; Position paper to request the doubling of the future Clean Hydrogen Partnership

Facilitate joint investment projects

⇒ Mapping of capacities/projects/stakeholders in member regions (Summer 2019)

⇒ Launching of 12 thematic working groups covering the whole H2 value chain (November 2019)

⇒ Regular update on WG work during plenary meetings

⇒ Organisation of a « Projects & Funding Workshop » (April 2020)

Hydrogen Valleys S3P – Current state of play and next steps

- Partnership is still growing
- Setting up of a Transversal WG + communication activities
- Need to find a solution to scale up the partnership and its activities
- Reflection on the future of the partnership to improve the links with industrial players

- Next plenary meeting: Octobre 2020 (tbc)
- WG are still active/Getting ready for the next funding opportunities

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Overview of the projects being developed within the working groups

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H2 Production/Transport/Storage WG

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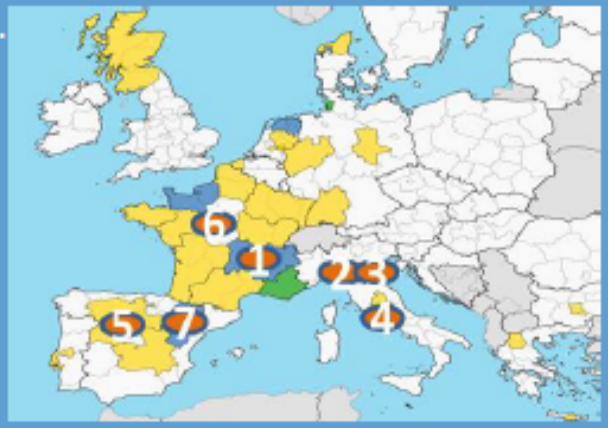
Coordination:

- Aragon H2 Foundation (Spain)
- CIDAUT - Foundation for Transport and Energy Research & Development, Castilla y Leon (Spain)

Partners: Almost 30 participants in the WG

1. CNR (FR): CNR – leading partner, Port of Marseille, VNF, ENGIE, In link with: Tennerdis, Cara, Zero Emission Valley partners, local SAB
2. CRPA (IT): PV/WP plants, EC suppliers, WM companies of anaerobic digesters, H2 S&T companies.
3. GRAF (IT): Graf Group, ASEF Srl (Modena HRS), Co.Ta.Mo (Modena taxi), ICI Caldaie, Hysytech, CRPA
4. UNIPG (IT): Biogas facilities, local gas network owners, gas processing companies, industrial/private users
5. CIDAUT (SP): CIDAUT, Castilla y León Energy public and local authorities, EC companies, Bioalcohol providers and HRS promoters.
6. HYBER Centrevaldeloire (FR): SDEI, the Châteauroux Métropole and the Department of Indre.
7. FHa (SP): Supported by a board formed by more than 75 members, including regional gov.



Project ideas:

1. Electrolysis- Mobility: OH2 CNR (FR)
2. Electrolysis- Methanization: Bio-MetH2ane CRPA (IT)
3. Biogas Reforming – Mobility: Hydrogen from Biogas GRAF (IT)
4. Biogas Reforming – Mobility: Green Thumb UNIPG (IT)
5. Bioalcohol Reforming – Mobility: RenovH2 CIDAUT (SP)
6. Electrolysis- Mobility: HYBER Centrevaldeloire (FR)
7. Good practices and RCS (FHa)

Stage of the project: Some ideas Preliminary or Pre-feasibility study, i.e. HYBER more advanced, working on financial aspects

Next steps:

- Looking for stakholders around the regions; consolidation of technical aspects; encourage local R&D to large scale production
- Project submitted to a national call (OH2)
- Ordering and commissioning equipment (HYBER)

Costs: the cost of the H_2 production is 4-5 M€, but the total cost can reach since 8 M€ to 30 M€

Need from Europe: funding that contributes to reinforce the H2 business model for green production and industrial scale up.

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Industry WG

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Coordination:

- Northern Netherlands

Partners: Eastern Netherlands, Region Sud, Aragon, Piacenza, Emilia Romagna, Auvergne Rhône Alpes, North Rhine-Westphalia, Northern Netherlands, Region Heide.

Project ideas: Greening the chemical industry by using hydrogen as feedstock and use hydrogen for high-temperature process heat.

Stage of the project: exploratory, information sharing.

Next steps:

Step 1: share information and best practices from feasibility studies and pilot testing projects. Gather detailed data via a common tool and draw connections.

Step 2: notification and specification possible projects.

Costs: Current specific costs are yet unknown. Millions to billions within long-term timeframe for upscaling.

Need from Europe (funds, partners, technical support..): Technical support, ambition statements and fitting policy and regulations, funds and partnering organizations.

H2 Valleys & Islands WG

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Coordination:

- Gävleborg (Sweden)
- Perugia University (Italy)

Partners: Umbria (IT) Gävleborg (SE) Arnhem Nijmegen (NL) Heide (DE) Emilia-Romagna (IT) Western Macedonia (GR) Heraklion (GR) (Confirmed @23/04/20) Pending - Castilla y Leon – EREN (ES) Auverne Rhone-alpes (FR)

Project ideas: Hydrogen Valleys & Island Program

HyVisit: Increase awareness and engagement, create an interregional knowledge

HyEnergy Manager : Quantify and develop business models for value chains

HyInvest: Attract **portfolio** investments for multiple technologies in valleys or islands

Stage of the project: The projects/ program are early in development but are well anchored with partners and key regional stakeholders.

Next steps:

Detailed project development is the next step. Present the business cases in June/July. Financing Q4 2020 for implementation 2021 and engagement with MFF 2021-2027.

Costs: Estimate 2-4 million Euro for program

Need from Europe (funds, partners, technical support):

PDA support needed:

- Analytical: ReConfirm/ JRC.
- PM, Technical & financial: FCH JU

Funding: pre-study and project fund

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Ports & Boats WG

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Coordination:

- Brittany Region (France)

Partners: France (6 regions) , Greece , Norway , Belgium, Portugal, Netherlands

Project ideas:

- H_2UBS: Development of **maritime vessel fleets** and port logistics within a network of coastal ports
- H_2FLOW: Development of **river hydrogen corridors** (barges, logistics and refuelling platforms) in the main rivers: Seine, Danube, Rhine & Rhône.
- H_2OST: Development of a **hydrogen carrier** to supply strategic hubs located in coastal/river port areas with low-cost green hydrogen, imported from high RE production sites, particularly offshore.

Stage of the project:

Description of the joint project validated : objectives, scope and type of partners (first IPCEI submissions were made)

Next steps:

- May to July 2020 : Involve investor companies: specifications by workpackages
- Autumn 2020 : Co-writing with industrialists, complete the identification of the leaders and financing targets

Costs:

- 2021-2025 : Development of innovations : **300 m€**
- 2025-2030 : Industrialization & massification : **1 500 m€**

Need from Europe : Public funds (HEurope / Blending Facility/ ERDF / IPCEI) , Private investors , German partners

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Long-distance coaches WG

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Coordination:

- Sud Region (France)
- Medio Tejo (Portugal)

Partners: **regional authorities, innovation/mobility clusters and cities from 6 Member States (Portugal, Italy, France, Spain, Germany, Netherlands)**

- **Medio Tejo** (PT), **Sud Provence-Alpes-Côte d'Azur** (FR), **Auvergne-Rhône-Alpes** (FR), **Pays de La Loire** (FR), **Occitanie** (FR), **Véhicule du Futur** (Grand Est – FR), **City of Arnhem** (NL), **Alto Adige** (IT), **E-mobil BW** (Baden-Württemberg, DE), **Nouvelle-Aquitaine** (FR), …

Project idea: **accelerate the industrialization and deployment of H2 coaches in Europe**

- Use the accelerator role of local and regional public authorities to speed up the development and experimentation of H2 coaches in Europe, in response to public transport challenges
- Reduce the environmental and climate impact of long-distance and interurban road transport, contribute to the reduction of EU GHG emissions, consolidate the leadership of the European industry in H2 mobility applications

Stage of the project: **last meeting 25 March 2020 → set-up a platform of regions in FCH JU project**

- Oct19 –Feb20: survey about regional and local coach fleet and specific requirements
- From Mar20: discussion to set-up a platform of regions/cities (Observer Group) in the framework of the CoacH2 project (FCH JU call 2020 "Demonstration of FC Coaches for regional passenger transport")

Next steps (within 5 years): **prepare for coach demonstration, share results and good practices, set-up an investment platform, to rise public awareness for green-Hydrogen transportation.**

Costs: **to be determined.**

Need from Europe: **FCH JU co-funding (call 2020), InvestEU dedicated line.**

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Train WG

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Coordination:

- Piemonte Region (Italy)

Partners: Piemonte Region (+ Cluster Clever + University and Politecnico of Turin) Auvergne-Rhône-Alps Region, Emilia Romagna Region (+ University of Modena and Reggio Emilia),
Castilla y Léon Region (+ CIDAUT R&D centre),
Sud Provence- Alpes- Côte d'Azur Region
North Rhine-Westphalia Region *(New entry!)*
Project ideas: Co-design regional strategies able to evaluate the best conditions to start/speed up the introduction of hydrogen in train transportation.
Unlock the potential of the Regions as public local transport agencies (planning, public procurement actors) to promote new value-chains brought by hydrogen (re-skilling and tech transfer for new stakeholders in the value chain) through ESF plans 21-27 on innovative transational vocational training programmes
Stage of the project: concept idea
Next steps: to define bilateral agreements/strategies among regions (internships, regional personnel exchanges)
Costs: not defined yet
Need from Europe (funds, partners, technical support..): Technical and financial

Bikes WG

Coordination:

- Medio Tejo (Portugal)

Partners: Medio-tejo (PT) –Umbria (ITA)-Castilla y León (SP)

Project ideas:
CHYCLIST (Clean HYdrogen Cycle paths for Long dIstance Sustainable Tourism)

The project aims to Implement, demonstrate and scaling up H2 bikes routes
The long-term objective is to promote new form of sustainable tourism and, to contribute to the decarbonisation of mobility sector .

Stage of the project: Early stage

Next steps: reinforce the consortium and find financial mechanism
Costs: 300 K € /region

Need from Europe (funds, partners, technical support..):

Safety WG

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Coordination:

- NCSRD (Greece)
- CARA cluster (France)

Name of the project: **Adapting infrastructures to hydrogen mobility (AdInHYMob)**

Main objective: *Development of the methodological framework needed for safety decision making process and infrastructure adaptation to hydrogen vehicles so that resolutions on different types of infrastructures to be taken on common scientific basis and risk approaches.*

Partners of the working group:

1. NCSRD (Greece)
2. CARA (France)
3. INERIS (France)
4. CETU (France)
5. Heide Region (Germany)
6. Medio Tejo (Portugal)

- Project idea is in a good development stage

Issues:

- Lack of funding opportunities
- Thoughts about the next steps and how to seek for potential funds
- Transversal issues – Almost all WGs encounter safety issues. Safety can be a component in other WG projects.

Buses WG

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Coordination:

- Castilla la Mancha (Spain)
- CNH2 – National H2 and Fuel Cell Technology Testing Center (Spain)

Partners: Castilla-La Mancha Region (Spain), Castilla y León Region (Spain), Agglomération de Chaumont Region (France), Burgundy Franche Region (France), Nouvelle Aquitaine Región (France), Aura Region (France), Haut de France Region (France),Baden Wurtenberg Region (Germany), One River, One Territory in South Region (France).

Project ideas: Define optimal strategies to implement BUSES investments. Simplify/codify procurement rules and regulatory aspects. Engaging industrial players (bus manufacturers, H2 producers and energy companies). Involve citizens and authorities in environmental policy,. Crete a net of HRS in order to supply the needed hydrogen for the buses captive fleets and use it as an hydrogen seed market around it.

Stage of the project: Wait for new information from the regions involved or from new regions, to make a more accurate budget. Establishing contact with stakeholders (Buses manufacturers, Local transportation companies, Public authorities like regional governments)

Next steps: Try to engage more regions in order to have more hydrogen buses and more market volume. Try to integrate into the working group hydrogen buses manufacturers in order to put technical solutions on the table. Try to engage bus operators for different regions and explain all the advantages that hydrogen buses have.

Costs: 195 buses (in M€)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*TOTAL*
BUSES	3,20	20,35	7,66	16,53	13,25	3,20	11,89	6,49	1,46	1,89	1,80	***87,72***

Need from Europe (funds, partners, technical support..): All of them. Problem: co-finacing

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Trucks WG

SMART SPECIALISATION PLATFORM

Coordination:

- Castilla la Mancha (Spain)
- CNH2 – National H2 and Fuel Cell Technology Testing Center (Spain)

Partners: Castilla-La Mancha Region (Spain). Castilla y León Region (Spain). Burgundy Franche Region (France).

Project ideas: Define optimal strategies to implement TRUCKS investments. Simplify/codify procurement rules and regulatory aspects. Engaging industrial players (bus manufacturers, H2 producers and energy companies). Involve citizens and authorities in environmental policy,. Crete a net of HRS in order to supply the needed hydrogen for the TRUCKS captive fleets and use it as an hydrogen seed market around it.

Stage of the project: Wait for new information from the regions involved or from new regions, to make a more accurate budget. Establishing contact with stakeholders (TRUCKS manufacturers, Local transportation companies, Public authorities like regional governments)

Next steps: Try to engage more regions in order to have more hydrogen TRUCKS and more market volume. Try to integrate into the working group hydrogen TRUCKS manufacturers in order to put technical solutions on the table. Try to engage bus operators for different regions and explain all the advantages that hydrogen TRUCKS have.

Costs: 87 TRUCKS (in M€)

	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	*TOTAL*
TRUCKS	1,80	15,28	14,41	0,57	1,66	2,72	7,99	4,69	1,04	1,00	0,49	*51,65*

Need from Europe (funds, partners, technical support..): All of them. Problem: co-finacing

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Refueling stations WG

SMART SPECIALISATION PLATFORM

Coordination:

- Castilla la Mancha (Spain)
- CNH2 – National H2 and Fuel Cell Technology Testing Center (Spain)

Partners: Castilla-La Mancha Region (Spain), Castilla y León Region (Spain), Emilia Romagna Region (Italy), Alto Adige Province Region (Italy), Aura Region (France), Haut de France Region (France), Baden Wurtenberg Region (Germany), One River, One Territory in South Region (France)

Project ideas: Define optimal strategies to implement HRS investments. Simplify/codify procurement rules and regulatory aspects. Engaging industrial players (HRS manufacturers, H2 producers and energy companies). Involve citizens and authorities in environmental policy,. Crete a net of HRS in order to supply the needed hydrogen for the buses and trucks captive fleets and use it as an hydrogen seed market around it.

Stage of the project: Wait for new information from the regions involved or from new regions, to make a more accurate budget. Establishing contact with stakeholders (HRS manufacturers, Local transportation companies, Public authorities like regional governments)

Next steps: Try to engage more regions in order to have more hydrogen buses and trucks for more market volume. Try to integrate into the working group HRS manufacturers in order to put technical solutions on the table.. Study the case of the Creation of a European HRS´s network that vertebrates the EU and can serve as a hydrogen seed market around it

Costs: 28 HRS: 24 M€.

Need from Europe (funds, partners, technical support..): All of them. Problem: co-finacing

Fuel cells WG

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Coordination:

- DAM Group (France)

Partners: DAM GROUP

Project ideas: Improve production of fuel cell stack. Decrease cost, improve quality of FC

Stage of the project: Under construction, still looking for OEM partners

Next steps: Need clear idea about financial guideline and timeline

Costs:1.2M€

Need from Europe (funds, partners, technical support..): Funds,Partners

Thanks for your attention!

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Contacts

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