

# IMAGHYNE

## IMAGHYNE: INVESTMENT TO MAXIMISE THE AMBITION FOR GREEN HYDROGEN IN EUROPE



Project ID	101137586
PRR 2024	Pillar 6 – H <sub>2</sub> valleys
Call topic	HORIZON-JTI-CLEANH2-2023-06-01: Large-scale hydrogen valley
Project total costs	EUR 192 164 346.25
Clean H <sub>2</sub> JU max. contribution	EUR 19 996 911.75
Project period	1.1.2024–31.12.2029
Coordinator	Région Auvergne-Rhône-Alpes, France
Beneficiaries	Aéroports de Lyon, ANA Aeroportos de Portugal, SA, Arkema France SA, Association Cara, Atawey, Axelera – Association Chimie-Environnement Lyon et Rhône-Alpes, Bontaz Centre, Bouygues Energies & Services, Commissariat à l'énergie atomique et aux énergies alternatives, Communauté de Communes Faucigny-Glières, Commune de Bonneville, Compagnie Nationale du Rhône SA, Engie Energie Services, ERM France, Fundación para el Desarrollo de las Nuevas Tecnologías del Hidrógeno en Aragón, G. Jacquemmoz et Fils, GRDF SA, Green Corp Konnection, GRTgaz, Hyliko, Himpulsion SAS, Hynamics, Imagine..., Institut national de l'environnement industriel et des risques, Keolis, Lhyfe, Lhyfe Production 3, Manufacture Française des Pneumatiques Michelin, Nomads Foundation, Politecnico di Torino, PolyTechnyl SAS, SAS PUM, SATA Group, Societé Rhodanienne des cars Ginhoux, Storengy France, Storengy SAS, Symbio France, Syndicat Mixte des 4 Communautés de Communes, Technologies énergies nouvelles énergies renouvelables, Rhône-Alpes, Drôme, Isère, Savoie et Haute-Savoie, Transports LTR-Vialon, VINCI Airports, Watea, Zamenhof Exploitation

### PROJECT AND GENERAL OBJECTIVES

Imaghyne will dramatically accelerate the deployment of hydrogen technologies in Auvergne-Rhône-Alpes. The ambition is to activate a long-lasting hydrogen economy that is fully integrated into the wider energy system and addresses the needs of high-emitting sectors. Imaghyne will be deeply connected to European initiatives to further expand and accelerate synergies and enable quicker uptake of hydrogen innovations in Europe and beyond. In addition, Imaghyne will gather key public and private stakeholders, foster investments along the entire hydrogen value chain and create the conditions to achieve a pan-European hydrogen economy at scale. To achieve this main target, the project partners created the following list of objectives aligned with the call criteria.

- Deploy 57 MW of electrolysis capacity to produce 8 000 t/year of low-carbon and renewable hydrogen.
- Implement a flexible hydrogen supply chain securing local ecosystems by deploying 20 high-capacity tube trailers and a multitonne hydrogen storage system in an underground salt cavern.
- Deploy 13 multimodal hydrogen refuelling stations that will contribute to the cohesion, efficiency

and sustainability of the trans-European transport network and ensure there is a clear pathway to decarbonising public transport fleets.

- Deploy 199 on-road fuel cell vehicles (of various types) from public and private fleets.
- Deploy 63 off-road fuel cell vehicles and stationary equipment to decarbonise agricultural, mountainous and airport hubs; this will include the replacement of three emergency diesel generators with a 4 MW hydrogen stationary fuel cell for power generation to secure airport operations.

To create a real ecosystem, the project gathers a multiplicity of partners, including the production side, storage side and end-use side.

### NON-QUANTITATIVE OBJECTIVES

- Strengthen the robustness of the overall energy and hydrogen supply chain by integrating a flexible industrial player into the ecosystem.
- Design an efficient, pipeline-based, multiuser hydrogen system and provide evidence to help determine the optimum hydrogen transport and storage technology choice(s) for wider roll-outs.
- Prepare for additional large-scale deployment as part of the valley extension and its replication in Europe and beyond.



[www.imaghyne.eu](http://www.imaghyne.eu)

## PROJECT TARGETS

Target source	Parameter	Unit	Target	Target achieved?
	CO <sub>2</sub> emissions avoided resulting in the off-road mobility and energy-related actions	kt	6.5	
	Amount of hydrogen injected into and extracted from the salt cavern during the project	t	300	
	Off-road vehicles deployed during the project	number	Three farm tractors, five snow groomers, 61 GSE engines	
	CO <sub>2</sub> emissions avoided resulting in the industry-related actions developed	kt CO <sub>2</sub> eq	150	
	Stationary fuel cells deployed	number	1	
	Monitored operational period for each type of vehicle	months	> 24	
	Tonnes of low-carbon and renewable hydrogen used in Arkema's process	t H <sub>2</sub>	16 000	
	Average hours of operation per off-road vehicle per year	h/year	Farm tractors: 600 h/year; snow groomers: 1 300 h/year; average GSE: 540 h/year	
	Monitored operational period for off-road vehicles	months	> 24	
	CO <sub>2</sub> emissions avoided resulting in the mobility-related actions	kt	14.2	
	Electrolysis capacity deployed	MW	57	
	Underground storage capacity of hydrogen in salt cavern available for commercial exploitation	t	44	
	Average availability rate of the electrolyser	%	80–90	
Project's own objectives	Evaluation of H <sub>2</sub> deployment scenario (technical, economic, environmental, societal and safety/risk criteria)	number of scenarios analysed	2	
	40-ft tube trailers deployed	number	20	
	Total hours of operation across the entire off-road fleet	hours, days	Farm tractors: 7 200 hours, 1 000 days; snow groomers: 25 000 hours, 1 000 days; total GSE: 130 000 hours, 5 500 days	
	Regions/organisations targeted by replicability actions	number	5	
	Length of additional pipeline to be deployed secured by feasibility studies	km	40	
	Years of operation of the electrolysers	year	2	
	Amount of renewable hydrogen produced	t/year	4 000	
	Hydrogen distribution capacity available	t/day	10	
	Average distance driven per vehicle per year	km/year	Coaches/buses: > 40 000 km/year; light-duty vehicles > 35 000 km/year; trucks 100 000 km/year	
	Distance driven across the entire fleet	km	Buses/coaches: > 3 000 000 km; light-duty vehicles: 28 000 000 km; trucks: 7 000 000 km	
	Vehicles deployed	number	17 coaches/buses; 164 light-duty vehicles; 18 heavy-duty vehicles	
	Hydrogen refuelling stations deployed	number	13	
	Amount of low-carbon plus renewable hydrogen produced	t/year	8 000	
	Length of small-scale pipeline deployed	km	0.8–2.3	
	Amount of hydrogen delivered by tube trailers within the project	t	2 500	

