North Adriatic Hydrogen Valley and projects in Croatia

Ulm, 8th July, 2024

The Danube Region at the Turn of Times
Economic Cooperation and Hydrogen Supply Chains along the Danube

Danube Region Programme
Co-funded by the European Union
Clean Hydrogen Partnership
Co-funded by the European Union
The project is supported by the Clean Hydrogen Partnership and its members.

Key aim of the NAHV

- Key aim of NAHV is to **create a market** for green (renewable) hydrogen o both the demand and supply sides.
- Key industry players from all three countries will develop pilot projects to produce **5,000 tonnes** of green hydrogen per year, destined for energy storage, distribution and use.
- It is expected that some of **20%** of the produced renewable hydrogen will be exchanged between participating countries, thus creating primary regional market for hydrogen.

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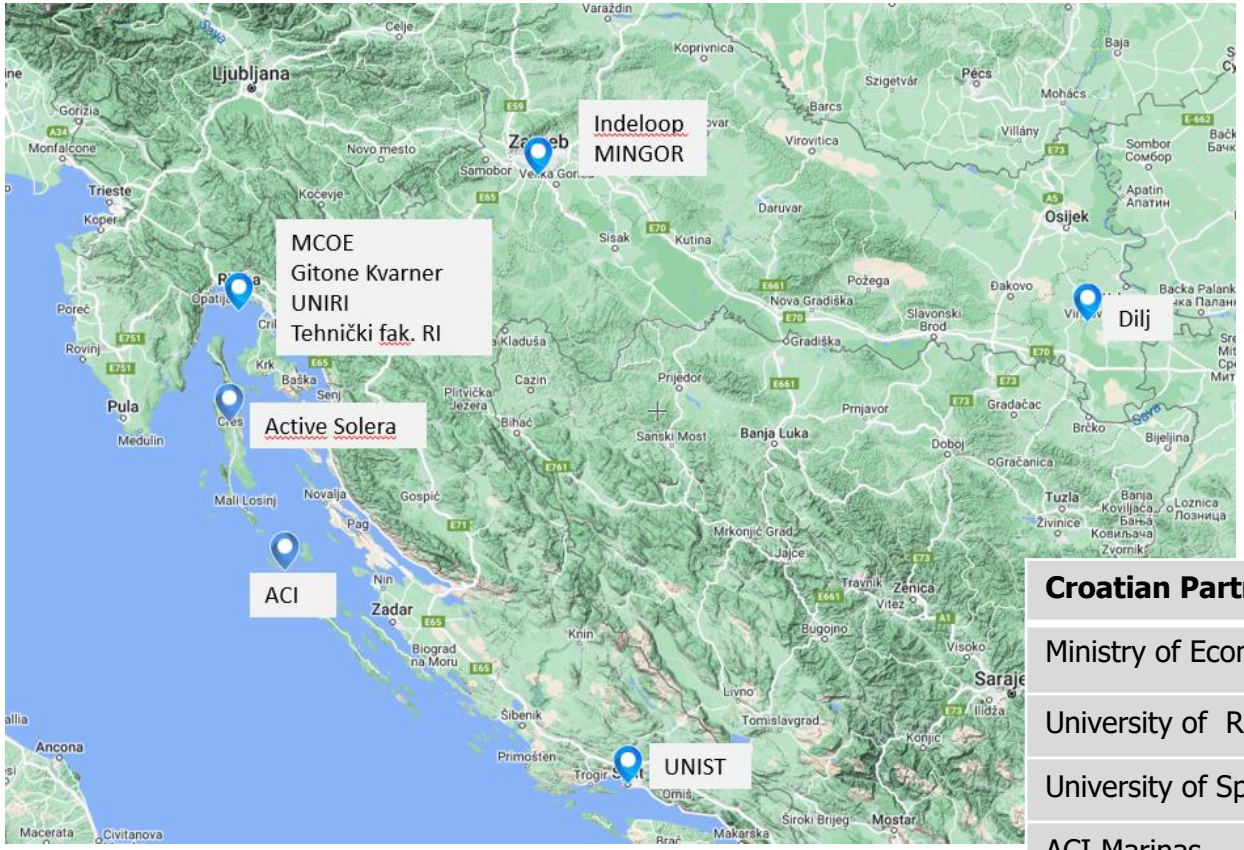
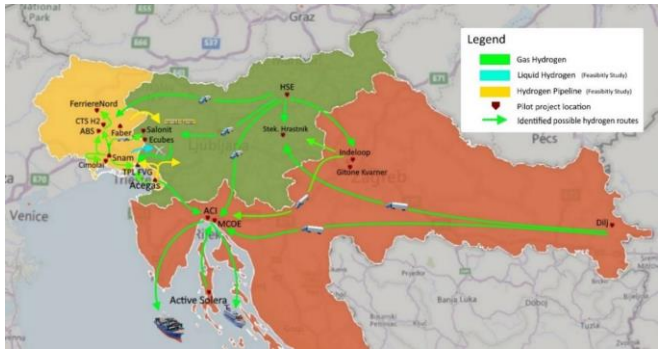
North Adriatic hydrogen valley (NAHV)





- First cross-border hydrogen valley
- Targeting complete H2 value chain
- Partners from 3 countries - Friuli-Venezia Giulia region (Italy), Slovenia and Croatia
- 37 partners in total, 8 from Croatia, 2 of 6 industrial partners from Croatia are from Gitone group
- NAHV Horizon co-financing EUR 25 M, Private Investments over EUR 200 M; EU co-financing rate 9,46%
- Gitone and MCOE budget over EUR 5 million, with EU financig of EUR 500.000

Croatian Partners	**Sector**
Ministry of Economy and Sustainable Development	Institutional Partner
University of Rijeka	Research partner
University of Split	Research partner(Affiliated)
ACI Marinas	Maritime transport
Active Solera	Waste to energy
Dilj	Manufacturing
Indeloop	Waste to energy
Maritime Center of Excellence (MCoE)	Maritime transport
Gitone Kvarner	Education

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North Adriatic Hydrogen Valley – industrial partners

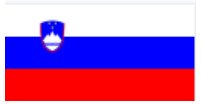
Lead partner:
HSE, Slovenia's largest electricity producer and trader

37 project partners

Over 120 participants directly involved in tasks and activities

17 testbeds were selected for the proposal with bottom-up approach

Critical to secure additional funds for NAHV projects

Territory	Company	Supply Chain position	Sector	H2 Production (t/a)	H2 Consumption (t/a)		
					Industry	Energy	Transport
SLOVENIA 	Holding Slovenske elektrarne	producer/end user/distribution	energy/transport/ grid balance	**3.000**	1.000	1.000	1.000
	Steklarna Hrastnik	producer/end user/distribution	hard to abate/ industry	**608**	608		
	Salonit Anhovo	end user/ producer	hard to abate/ industry	**50**	50		
	Ecubes	Producer/distribution	Energy/transport	**50**			50
CROATIA 	ACI Marine	end user/ producer/ distributor	transport	**22**			22
	Active Solera	producer	energy	**900**	500		400
	Dilj	end user	hard to abate/ industry	**/**			
	Indeloop	producer	hard to abate/ industry	**80**			80
	MCoE	end user	transport	**/**			
ITALY  Regione autonoma Friuli-Venezia Giulia 	Danieli Centro Combustion	end user	hard to abate/ industry	**/**			
	SNAM/ Halo Industry SpA	end user/producer	hard to abate/industry	**850**	850		
	Ferriere Nord, Pittini Group	end user/producer	hard to abate/industry	**/**			
	ACEGAS	producer/distributor	energy	**300**	100		200
	CTS H2	distributor	energy	**2**			2
	Cimolai	producer/end user	energy/transport	**72**		72	
	Faber Industrie	producer/distributor	energy				
	TPL FVG	distributor	transport	**55**			55
TOTAL				**5989**	**3108**	**1.072**	**1809**

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Project design covers entire value chain of renewable hydrogen use

The project design covers the **entire value chain** of renewable hydrogen use, from production, through storage and distribution, to its end use in various sectors, notably industry and land and maritime transport, creating leverage to accelerate the transition to renewables on three target pillars.

17 pilots to be developed in different locations

…in their related ecosystems clustered in **3 main pillars**:

- Hard to abate
- Energy
- Transport

These projects will act as real-life cases for piloting global hydrogen markets, moving from **TRL 6 to TRL 8** by the end of the project.

Four fuel cell applications in the energy and transport sectors will be demonstrated. Testbeds will then be scaled up to the industrial level as a replicable model.

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Testbeds and activities of Croatian partners

	INDELOOP	MCOE	Dilj	Gitone Kvarner	ACI	Active Solera	UNIRI and UNIST	MINGOR
Solar production	X		X		X	X		
H2 production	X (80 t/g)		X		X (22 t/g)	X (900 t/g)		
Innovations (TRL 6-8) / H2 usage	Energy – H2 by gasification of organic material (waste)	Transport – passenger ship on H2	Hard to abate – H2 usage inside a kiln in a roof tile factory		Transport – Maritime transport H2 vessels, H2 in marinas	Energy – H2 from waste through SMO (Solaire-MicroOndes) solar process		
Horizontal activities (educations, networking, regulations)				X		X	X	X
Budget Total / EU (EUR)	756.250 / 68.558	4.905.087 / 445.322	43.817.500 / 3.978.095	705.000 / 64.005	16.850.625 / 1.528.696	10.795.000 / 980.054	252.500 / 126.250	198.000 / 99.000

A platform for further investments in renewable technologies

The implementation of planned mature stage innovation activities is expected to unleash further investments in renewable hydrogen-related technologies in an amount of **more than €300 million**, destined to increase capacity of hydrogen production, storage, transmission and use.

Additional investments are expected to be funded on top, both during the implementation and afterwards, from public and private sources in the form of follow up investments in the successfully implemented pilots in 17 testbed locations, as well as through new initiatives which will contribute to evolution of a social and economic ecosystem based on renewable hydrogen.

SEZIONI | CERCA

IL PICCOLO

VETRINA | ABBONATI | ACCEDI

CONTENUTO PER GLI ABBONATI PREMIUM

Valle dell'idrogeno transfrontaliera: al via la partita da 700 milioni tra Friuli Venezia Giulia, Slovenia e Croazia

Decollato con la prima riunione operativa a Portorose il progetto transfrontaliero: viene stimata una produzione di 5mila tonnellate all'anno, con il 20% scambiato fra i partner

GIULIO GARAU

Un'immagine di repertorio

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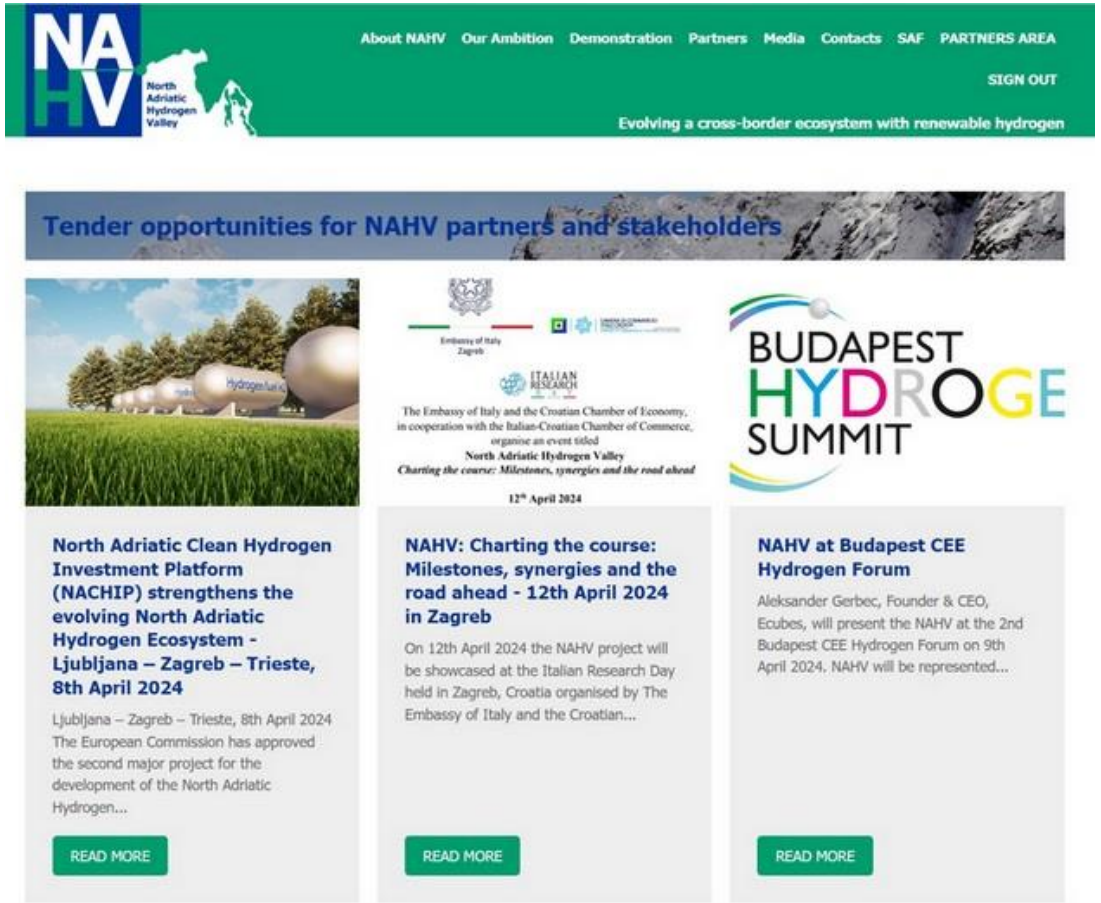
You can follow the NAHV and get involved

The NAHV web site:
https://www.nahv.eu/

The NAHV is on Linkedin:
https://www.linkedin.com/company/nahv/

Register for the NAHV Newsletter

…and write to us:
Communication@nahv.eu



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