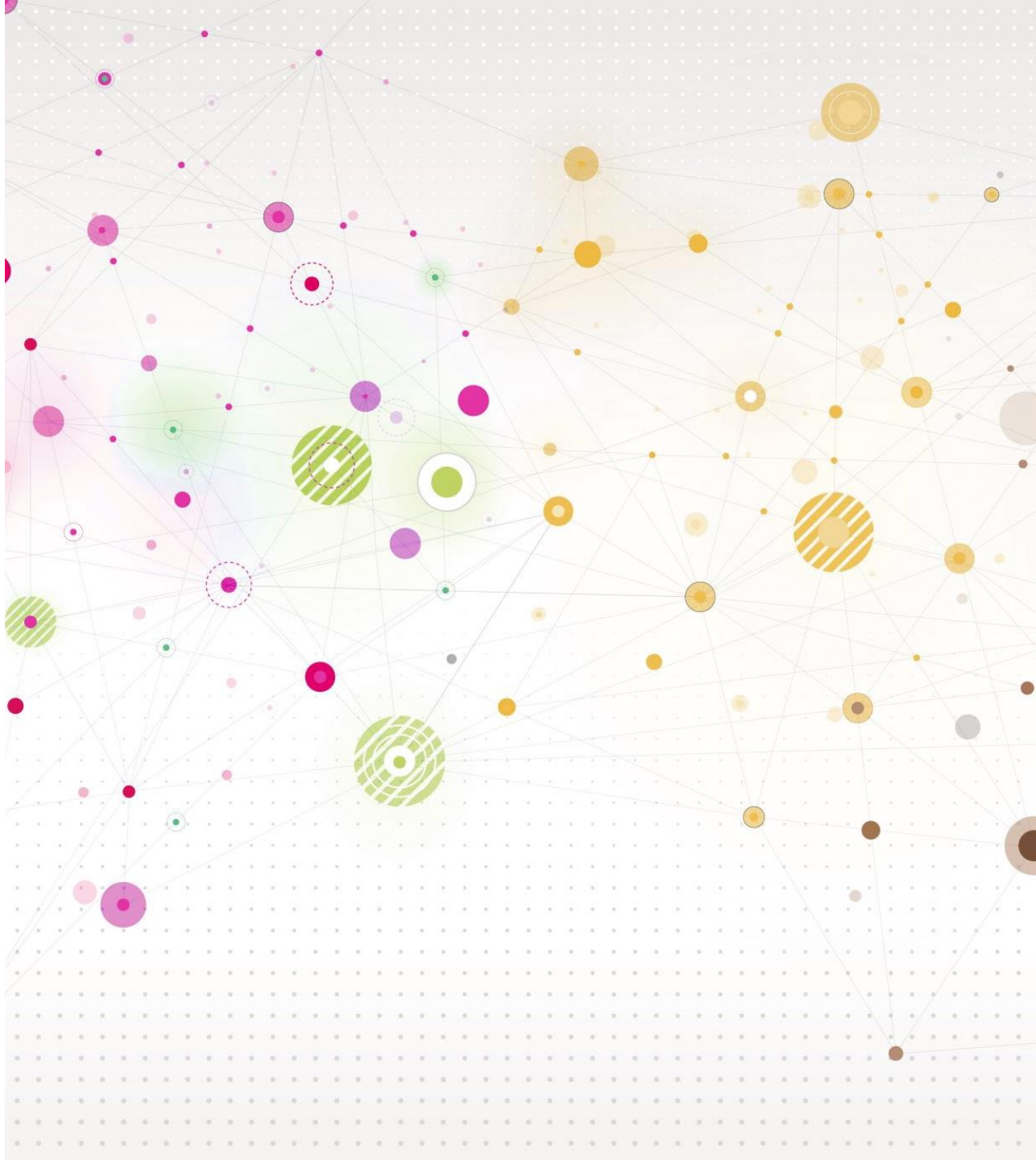
Nina Meglič, SRIP – Circular Economy

Building interregional clean hydrogen value chains – case of Vanguard initiative pilot on Hydrogen

EUROPEAN UNION
EUROPEAN REGIONAL DEVELOPMENT FUND
INVESTING IN YOUR FUTURE

REPUBLIC OF SLOVENIA
MINISTRY OF ECONOMIC DEVELOPMENT AND TECHNOLOGY

»Investment is co-financed by the Republic of Slovenia and the European Union under the European Regional Development Fund.«



Hydrogen Pilot – regions participating

- Lombardy, Italy (coordinator)
- Malopolska, Poland (coordinator)
- Slovenia (coordinator)
- Lower Saxony, Germany
- Saxony, Germany
- Norte, Portugal
- Gavleborg, Sweden
- Aragon, Spain
- Asturias, Spain
- Galicia, Spain
- Scotland, UK
- Wales, UK

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Hydrogen Pilot – Why?

HYDROGEN (H_2)
VANGUARD INITIATIVE

→ Contribution to Hydrogen Strategy for a Climate-Neutral Europe

→ Creation of knowledge and innovation community

→ Cross-value chain collaboration

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Hydrogen Pilot – How?

HYDROGEN (H_2)
VANGUARD INITIATIVE

→ Access to state-of-the-art H2 technologies

→ Facilitating scaling (special focus on SMEs)

→ Technology transfer

→ Promotion at transnational level

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Hydrogen Pilot - objectives

HYDROGEN (H_2)
VANGUARD INITIATIVE

→ Enhancing Competitiveness and European technology leadership in hydrogen

→ Transition to a clean and secure energy system

→ A just transition and stimulating regional innovation ecosystems

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Hydrogen Pilot – demo cases

HYDROGEN (H_2)
VANGUARD INITIATIVE

1. Standardisation of hydrogen pipelines and vessels in HYDROCOMP demo project

2. Replacement of fossil fuels for hydrogen in industrial processes – Slovenia leader

3. H2 Networks and Portfolios

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S B R A
Slovenian Business & Research Association

H2 developments in Slovenia

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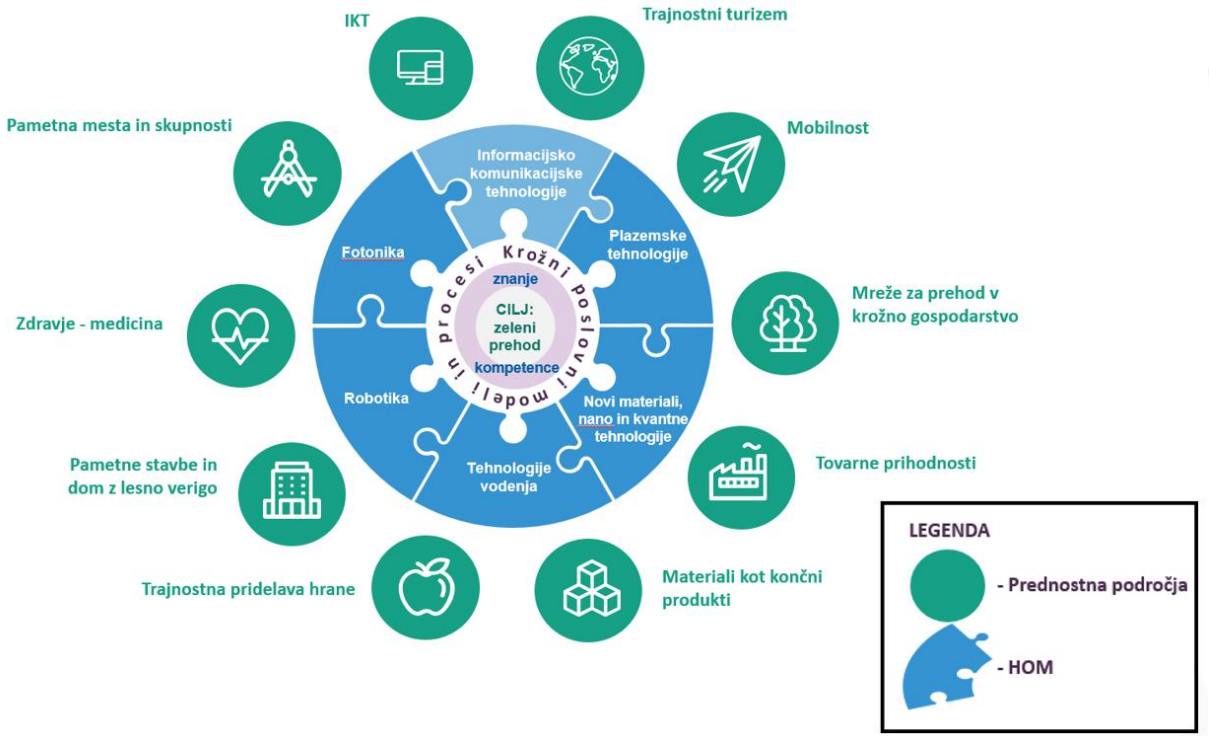
Slovenian Sustainable Smart Specialisation Strategy (S5)

Key strategic goal:

green transition as innovative, low-carbon, digital and knowledge-based transformation of economy and society



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Cofounders:

ŠTAJERSKA GOSPODARSKA ZBORNICA

Univerza v Mariboru
Fakulteta za kemijo in kemijsko tehnologijo

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Internationalisation

Human resources development

Business consultancy, environmental services

Technology transfer

Project consultancy

Administrative and technical support in project preparation.

Integration of knowledge and research infrastructure sharing

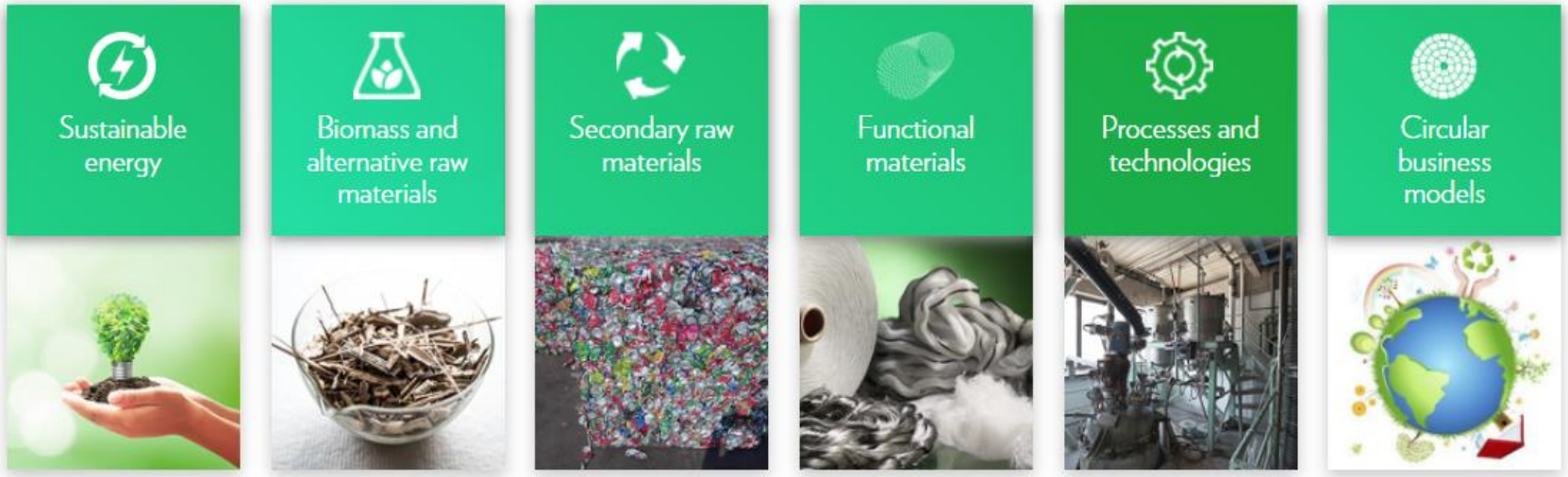
Development activities in collaboration with state institution representatives

Promotion of members

In ŠGZ print and online media, on ŠGZ social networks, events..

Provision of expert content related to circular economy

Organisation of workshops, public consultations, conferences.



93 members

58 companies
17 NGOs
18 RDI

STATE OF THE ART

- more than 30 national and international projects
- several courses at all levels of tertiary education
- yearly 2400 t of hydrogen is produced by the steam reforming of natural gas
- 1200 t are used for the production of hydrogen peroxide
- 1200 t are used in glass and steel industry for oxygen removal from various processes and for heat production in production processes

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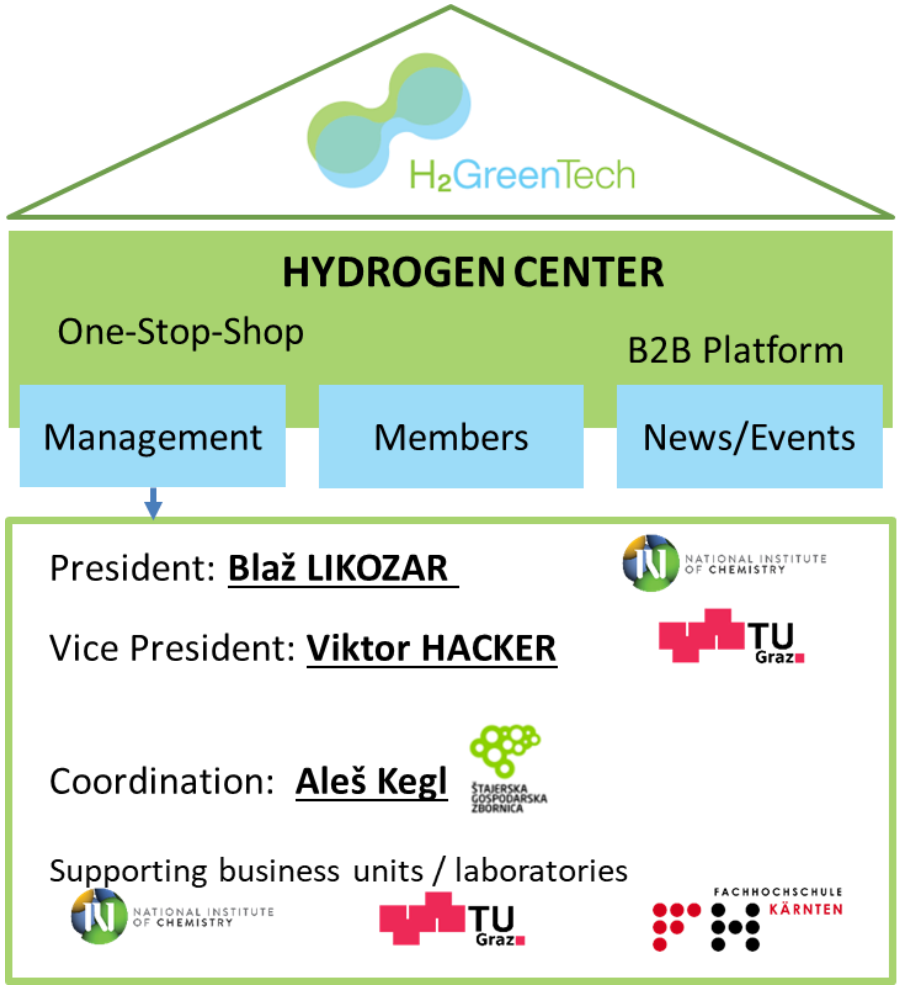
FUTURE HYDROGEN USE

- to generate high-temperature heat in steel, cement, brick and glass industry
- transport / mobility (city buses, railway)
- Big hydrogen valley currently in preparation (SI-IT-CRO)
- Hydrogen Center (SI-AT)
- national hydrogen roadmap in preparation …



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Web page: **b2b.h2greentech.eu**
E-mail: **hydrogencenter@stajerskagz.si**

PROJECTS

- North Adriatic Hydrogen Valley (SI-AT-IT)
- PDA Central Sava region (Fossil fuel phase-out)
- Replacement of fossil fuels for hydrogen in industrial processes (H2GLASS): production, storage, distribution and end-use
- Hydrogen skills; Center for Carbon-Free Technologies

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NORTH ADRIATIC HYDROGEN VALLEY

- Budget: 25 M€ (leverage effect: over 700M€ investments)
- Partnership: 34 organisations
- Integrated cross-border cooperation on the entire renewable supply chain
- Exchange of more than 20% of H2 annually (more than 5000 t/year)
- 3 strategic sectors: industry, energy and transport
- 18 pilot/testbed projects

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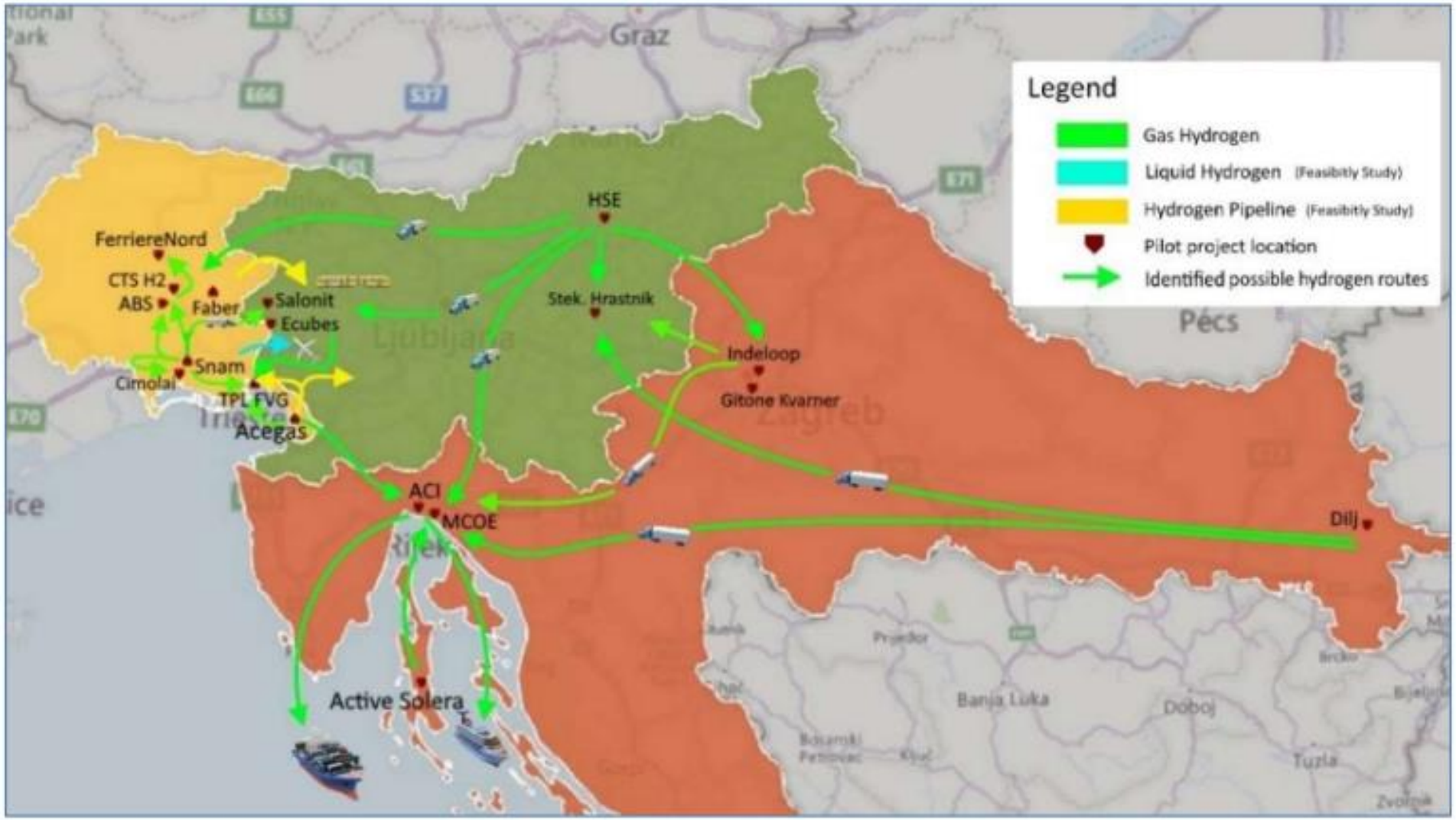

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PDA CENTRAL SAVA REGION

- focus on the industrial zone between the municipalities of Trobvlje and Hrastnik (Steklarna Hrastnik)
- target deployment of a total of capacity 9MW of electrolyser capacity
- establishment of local energy community in Hrastnik
- displacement 25% of the fossil fuel currently used in glass production at the Steklarna Hrastnik glassworks

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R&D projects at NIC – more than 20

The proposed **HYPER** System is a scaleable and flexible portable power platform technology representing significant advances in terms of fuel cell development, hydrogen storage and associated supply. R&D will generate both new scientific knowledge and new technologies for exploitation.

HySTrAm builds on developing physical H2 storage materials, enabling short term storage (buffering renewables dynamics), as well as the 3 structural corner stones of flexible low pressure NH3: decreased Ru content catalysts, high temperature NH3 sorbents and induction-heated support granting (optimal) responsiveness.

FReSMe will demonstrate novel CO2 valorization strategies in the steel industry by developing efficient capture technologies specially suited for subsequent methanol production from CO2 and H2 contained in steel mill flue gases.

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CONTACT

- Blaž Likozar, head of Department of Catalysis and Chemical Reaction Engineering, National Institute of Chemistry, www.ki.si/en, blaz.likozar @ki.si

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- Nina Meglič, coordinator of SRIP – Circular economy, www.srip-circular-economy.eu, nina.meglic@stajerskagz.si

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