

GREEN HYDROGEN HUBS

**PRODUCTION, STORAGE AND DISTRIBUTION OF GREEN
HYDROGEN AND RENEWABLE ENERGY**



**EUROPEAN CONSORTIUM
H2R HYDROGEN RENEWABLE**

AGENDA

- PROJECT GOALS
- UNIQUE VALUE PROPOSITION
- CONSORTIUM
- INVESTMENT PHASES
- POWERING PUBLIC TRANSPORT
- FINANCIAL REQUIREMENTS
- SOURCES OF FINANCING



PROJECT GOALS

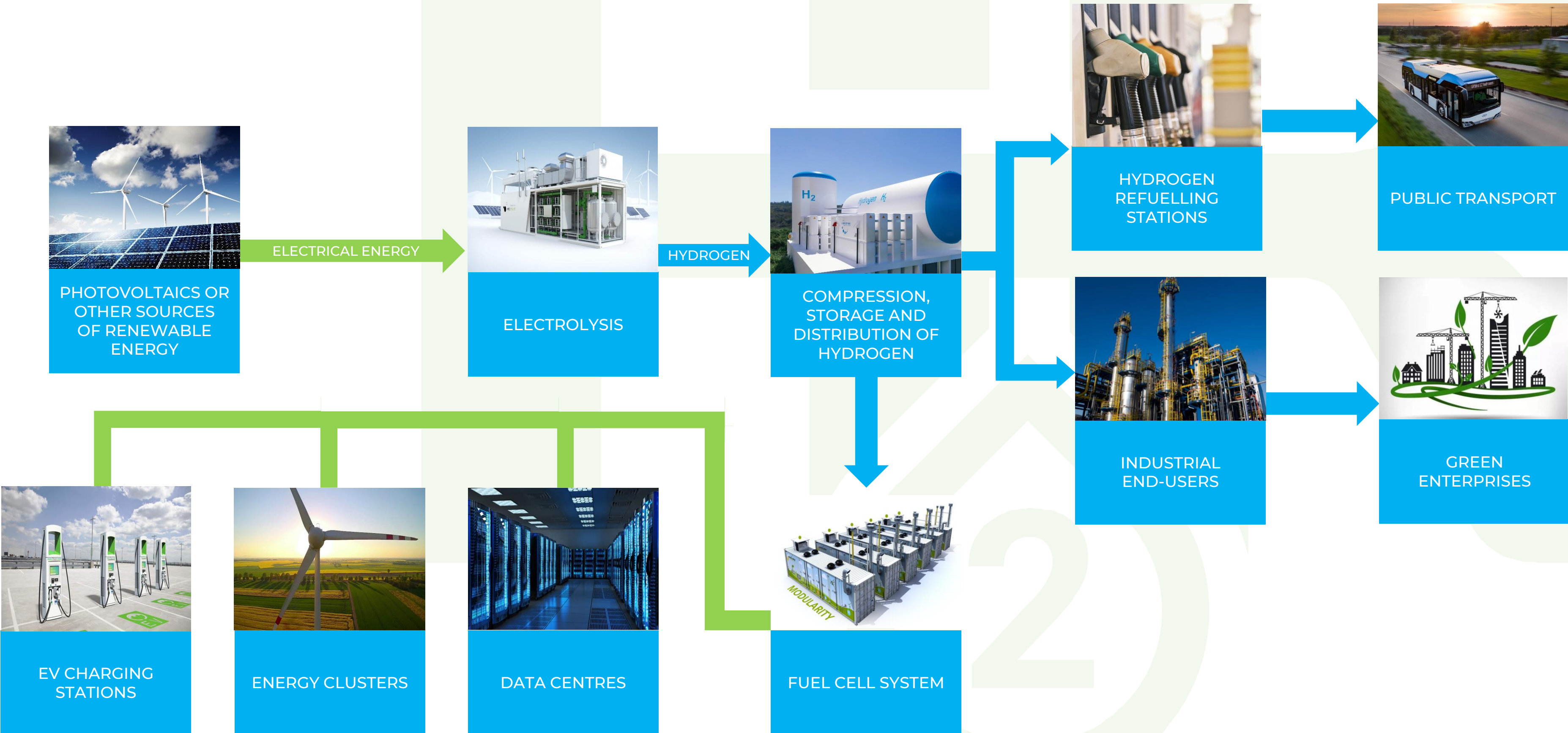
- Development, deployment and operation of a large-scale system for generation, distribution and consumption of green hydrogen. The model installation will provide a proof of feasibility and will become a basis for expansion of hydrogen usage in the energy management in Europe.
- Sustainable growth through hydrogen technologies and their applications as well as creation of green jobs throughout the hydrogen value chain.
- Improvement of renewable energy storage and distribution technologies through hydrogen compression, storage and delivery to end-users.
- Enhancement of existing hydrogen technologies, incl. fuel cells, electrolysers, storage methods and hydrogen refuelling solutions.
- Diversification of energy supply and creation of new, stable and secure autonomous energy ecosystems in the EU.
- Reduction of greenhouse gas emissions. The deployment of hydrogen technologies is expected to be one of the key factors in achieving the EU decarbonisation targets.

TARGET INSTALLATION PARAMETERS

Photovoltaic power plant:	300 MWp
Maximum hourly electricity production:	284 MWh
Annual electricity production:	360 GWh
Power of electrolyzers for the production of green hydrogen:	95 MW
Daily average production of green hydrogen:	16 tonnes
Annual production of green hydrogen:	5 820 tonnes
Daily average production of liquid oxygen:	99 tonnes
Annual production of liquid oxygen:	36 160 tonnes
Financing scale:	600 MM EUR
Employment:	100
Reduction of CO2 emissions per day:	600 tonnes
Reduction of CO2 emissions per year:	2 300 000 tonnes
Planted trees equivalent:	8 000 000



GREEN HYDROGEN PRODUCTION AND CONSUMPTION MODEL



UNIQUE VALUE PROPOSITION

OPTIMIZED HYDROGEN PRODUCTION

Maximized hydrogen production through the use of innovative solutions, such as powering electrolyzers with the use of a gas turbine powered by stored excess energy from PV in the form of compressed oxygen & PV panel mounting systems that allow for continuous optimization of the angle of inclination of the panels relative to the sun.

TECHNOLOGICAL DEVELOPMENT

The technological advancement generated as a result of the R&D works in the project will strengthen the European hydrogen value chain as well as improve accessibility to hydrogen solutions for end-users.



MODEL INSTALLATION

As a result of the project, a model green hydrogen generation, storage and distribution installation will be created that could later be replicated in other locations or serve as a major green hydrogen supply source for multiple end-users.

AVAILABLE RESOURCES

Ownership of approx. 400 ha of land where the PV power plant as well as hydrogen production, storage and distribution facilities will be located will significantly expedite the investment process. Currently, the investor is in the process of receiving necessary environmental and construction permits.

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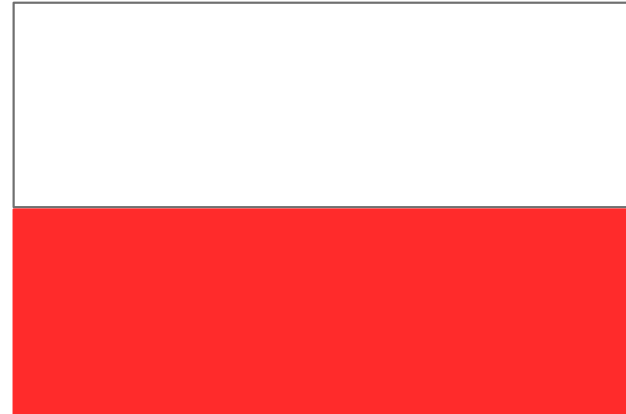
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CONSORTIUM



POLAND

Hydrogen Hub – Production, Storage & Distribution

Efficient and technologically innovative production of green hydrogen from RES. Energy security of the hydrogen ecosystem on the industrial scale of the installation together with the management model (location of the infrastructure of the Podkarpackie Hydrogen Valley). Model installation to be replicated in other locations across Europe.



GERMANY

Hydrogen Hub – Industrial & Business Hydrogen End-users

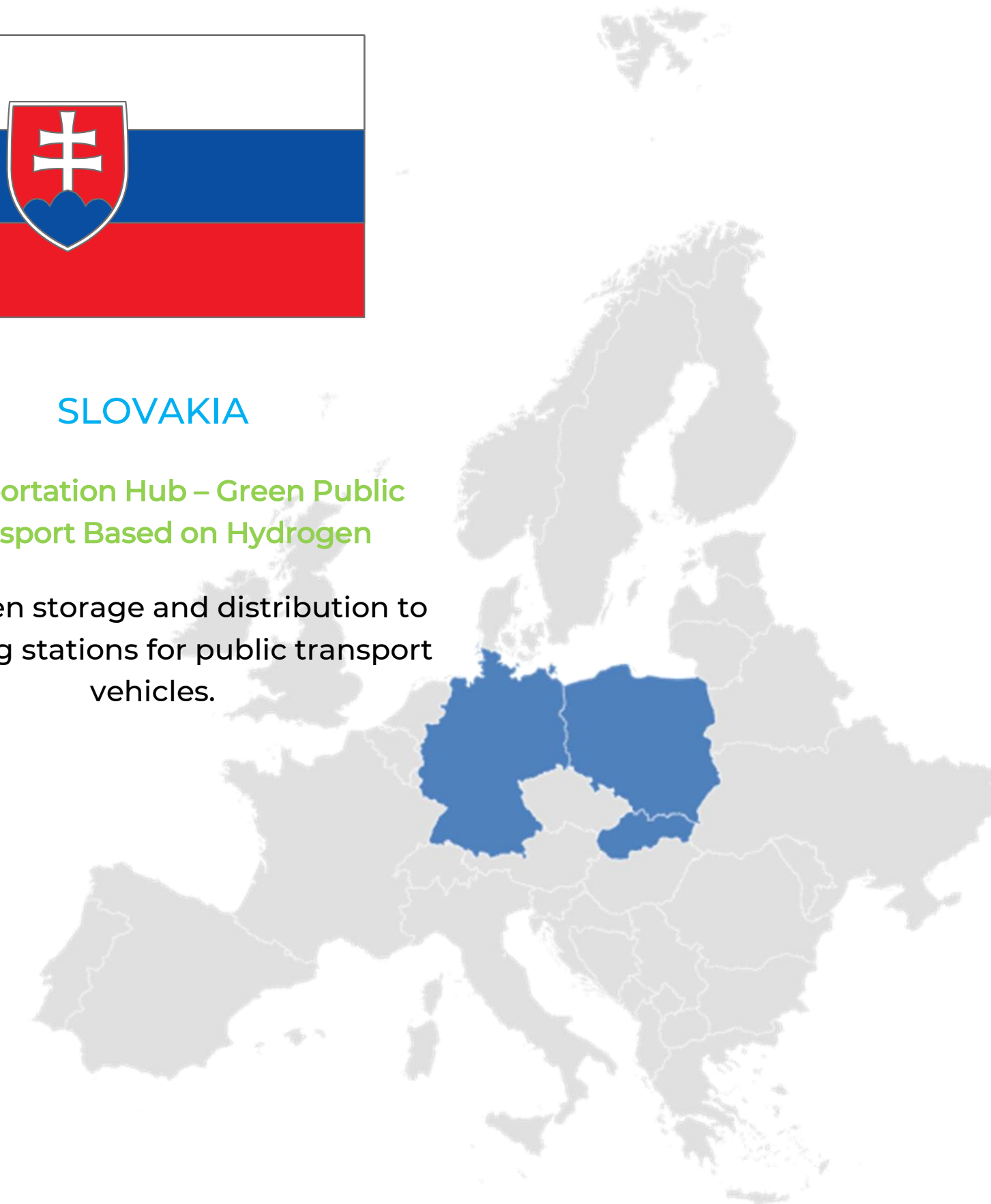
Implementation of the model solution on the German market. Scaling-up. Hydrogen supply to industrial and business users. Technology testing with various industrial partners and certification.



SLOVAKIA

Transportation Hub – Green Public Transport Based on Hydrogen

Hydrogen storage and distribution to refuelling stations for public transport vehicles.



INVESTMENT SCHEDULE

PHASE II

Development and optimization of the green hydrogen production, storage and distribution ecosystem.

PHASE IV

Target Hydrogen Hub consisting of comprehensive & integrated hydrogen hubs in various locations in the EU.

12 MONTHS



18 MONTHS



24 MONTHS

12 MONTHS

PHASE I

Test installation of PV power plant as well as green hydrogen production, storage and distribution infrastructure.

PHASE III

Scaling up and implementation of the ecosystem model across various hydrogen hubs in the EU.



OUR ABILITY TO FUEL PUBLIC TRANSPORT



Alstom Coradia iLint

VEHICLE SPECIFICATIONS

Compressed H2 storage tanks: 350 MPa
Storage tank capacity: 180 kg
H2 consumption: 25 kg/100 km
Travel range at single fuelling: 720 km

OUR READINESS TO PRODUCE GREEN H2

2024: 1 500 kg/day → 8 trains*
2026: 6 500 kg/day → 36
2027: 13 500 kg/day → 75
2028: 16 000 kg/day → 89

**Assuming daily travel range of 720 km per train*

VEHICLE SPECIFICATIONS

Compressed H2 storage tanks: 350 MPa
Storage tank capacity: 38,5 kg
H2 consumption: approx. 10 kg/100 km
Travel range at single fuelling: 385 km

OUR READINESS TO PRODUCE GREEN H2

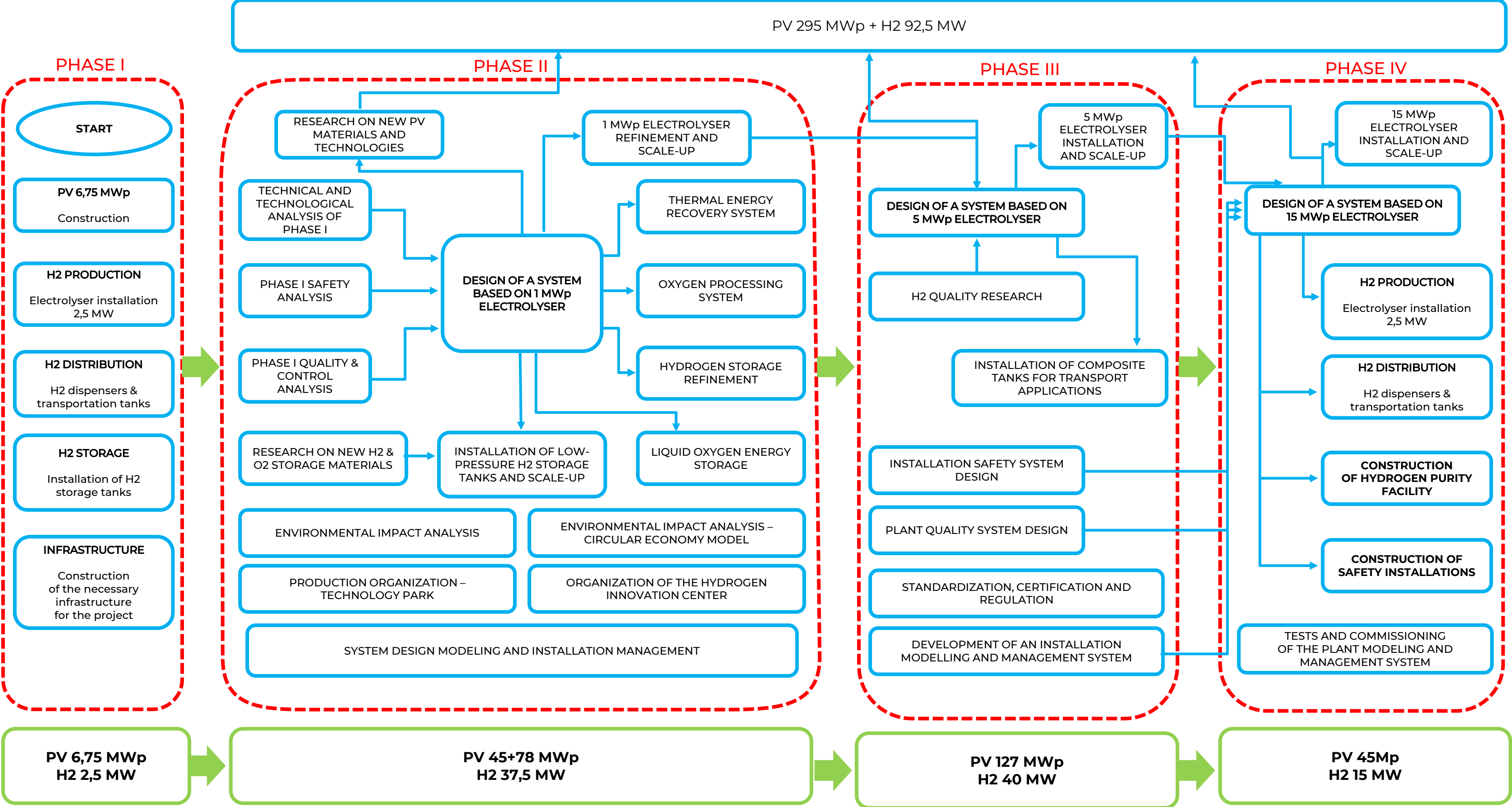
2024: 1 500 kg/day → 39 buses*
2026: 6 500 kg/day → 169
2027: 13 500 kg/day → 351
2028: 16 000 kg/day → 416

**Assuming daily travel range of 385 km per bus*

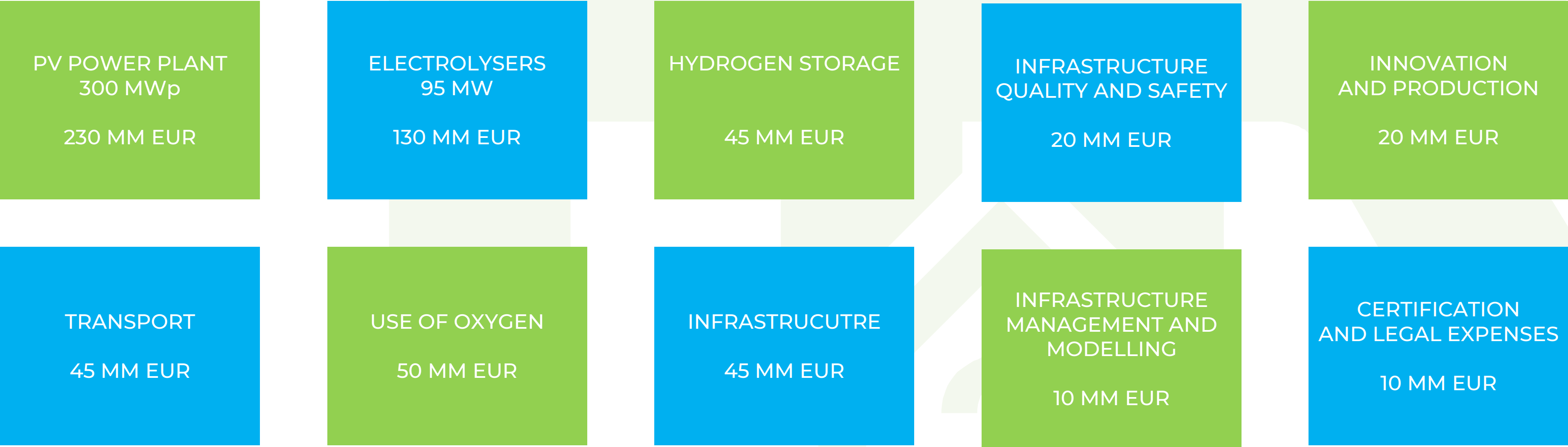


Solaris Urbino 12 Hydrogen

DEVELOPMENT PHASES OF THE **HYDROGEN ECOSYSTEM** INVESTMENT IN POLAND



FINANCING REQUIREMENTS



AVAILABLE FINANCING INSTRUMENTS

PRIVATE INVESTOR CONTRIBUTION

IPCEI

EIB

INNOVATION FUND

CEF

NATIONAL FUNDING PROGRAMMES





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