



Power2HyPe

Electrochemical synthesis of hydrogen peroxide from water, air and renewable electric energy



Funded by
the European Union

Key information

Funding scheme

Horizon Europe Research and Innovation Action

Budget

10 104 590€

Duration

48 months (January 2023 – December 2026)

Who are we?

The Power2Hype consortium is a multidisciplinary and well-structured partnership consisting of 11 legal entities located in:

- Germany
- Belgium
- The Netherlands
- Austria
- Spain
- Portugal

The consortium is made of solid, experienced, and leading industrial organizations, renowned universities, research institutes and technology developers as well a communication agency.



Our motivation

Hydrogen peroxide (H_2O_2) is among the 100 most essential chemicals globally. Like other industrial sectors, the chemical industry is highly energy-demanding and must transition to become CO₂-neutral. Therefore, a novel production route for H_2O_2 is required.

Such sustainable route utilizes mainly abundant materials, generates no toxic wastes, incorporates energy-efficient downstream processing (DSP), accommodates the inherent intermittent nature of renewable energies, and enables decentralised and small-scale production in an economically viable way.



Our mission

Power2Hype aims to establish a sustainable process for hydrogen peroxide production, utilizing air and water as feedstocks, powered by renewable energy, and enhanced through digitalization.

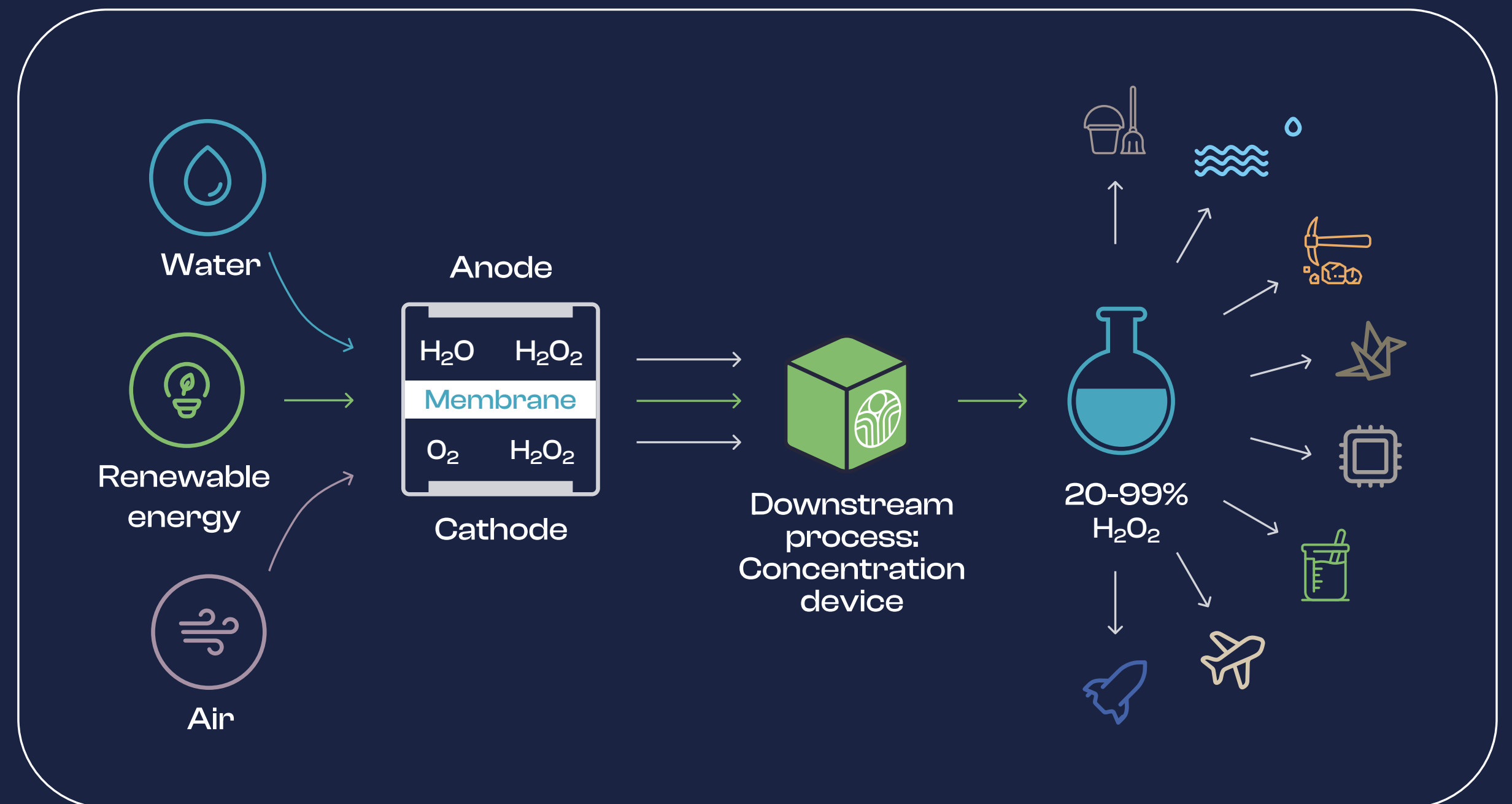
- **Develop and optimise cell components for large-scale electrochemical production of H₂O₂.**
- **Design, develop and integrate a new electrochemical process and reactor.**
- **Pilot and demonstrate the innovative electrochemical process.**
- **Evaluate the feasibility and sustainability of the new process.**
- **Create and implement an exploitation strategy for the project developments.**
- **Ensure the dissemination of the project results and promote the project through targeted strategies aimed at Power2Hype audience and key stakeholders.**

Our approach

Power2Hype aims to establish a sustainable route for hydrogen peroxide (H_2O_2) production using air and water as sole feedstocks, and renewable energy as the primary energy source.

H_2O_2 will be synthesized through paired electrolysis at both the cathode and anode, employing an innovative custom-made 200 % electrolyser. Power2Hype strives to electrify and decentralize the H_2O_2 production in the chemical industry, proposing a TRL 5-6 demonstration of electrolytic H_2O_2 production at any required concentration (from 20 to 99 %).

This versatile H_2O_2 production can be carried out on-site needed for application, such as for sanitation, bleaching or even as propulsion fuel.



Our target groups

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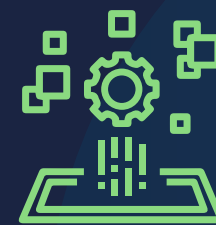
Industries using
hydrogen peroxide



Associations in the
chemical sector



Academic and research
institutions



European agencies and
platforms active in
sustainable processes



Regulatory and national
authorities

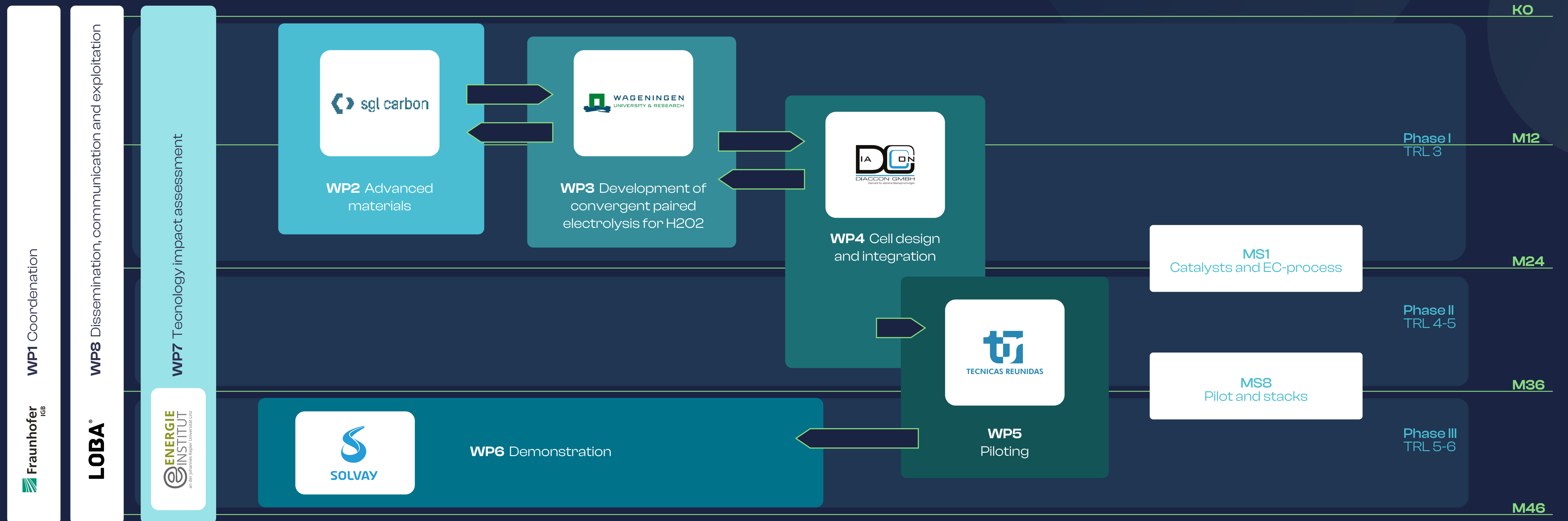


Third parties and
joint ventures



General public and
civil society

Our approach



Thank you

Consortium



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