

## Dispatchable concentrated Solar-to-X energy solution for high penetration of renewable energy

### Background

Current energy infrastructures are challenged by integrating a large share of intermittent renewable energy sources. Carbon-neutral and high efficiency energy production adapted to local demands would be a breakthrough.

### 3 Key Technological Elements

SOLARX integrates three high concentration solar technologies and AI-based smart resource management, to produce – either directly with high efficiencies or through storage stages for maximizing revenues – mainly electricity, heat for storage and/or Solar Heat from Industrial Processes (SHIP), and green H<sub>2</sub> or Syngas in a carbon-neutral way. Three Key Technological Elements will be developed:

- a smart solar resource management algorithm which aims to meet local instantaneous energy demands
- a high efficiency Concentrating Photovoltaic receiver (CPV)
- and a carbon negative bi-energy H<sub>2</sub> receiver.

### Objectives

SOLARX's main goal is to demonstrate the technical, economic and social relevance, at the laboratory scale, of the synergetic efficient production of heat, electricity and H<sub>2</sub> from solar resource in a single facility, considering energy demands and market prices for a wide range of locations and application scenarios. SOLARX global assessment will demonstrate its role as a Game-changing RES within the framework of future implementation in a carbon-negative energy system. SOLARX will also provide power-to-X for larger integration of intermittent energy sources into the electric grid.



### Key Facts

#### AREA

Energy, Engineering, Environment, ICT, Manufacturing

#### DURATION

01.11.2022 – 31.10.2025

#### BUDGET

3 M€

#### PROGRAMME

HORIZON-CL5-2021



Funded by the European Union

Funded by the European Union under the Horizon Europe Framework Programme (Project name: SOLARX; grant number: 101084158). Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them. The project is also supported by the Swiss State Secretariat for Education, Research and Innovation (SERI).

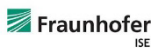
### Technological, environmental, economic and social assessment

The high efficiency concentration technologies allow to reduce the environmental impacts with respect to current technologies, as Life Cycle Assessment (LCA) study will demonstrate. Also, social acceptance and socioeconomic impacts will be assessed, on the basis of, among others, previous high concentration experiences. The regulatory frameworks will be considered within the roadmap towards the technology commercialization and policy recommendations will be published. The share of SOLARX in the SHIP, electricity and renewable H<sub>2</sub> global market by 2050 is expected to be 2-5%, 2-5% and 1-3%, respectively, while reducing the emissions by 1.5 GtCO<sub>2</sub>/year.

# SOLAR

## Consortium

The SOLARX consortium brings together 8 partners from 6 countries including academia (Universitat de Lleida, Technical University of Denmark), research and technology organisations (CNRS, Fraunhofer ISE) and private companies (EMD, accelopment, ACCIONA, HyGear). Each of these partners contributes their unique and complementary expertise to maximise the impact of the SOLARX project.



## Coordinator

Universitat de Lleida, ES

## Partners

- HyGear B.V., NL
- ACCIONA SA, ES
- EMD International A/S, DK
- Fraunhofer - Institute for Solar Energy Systems (F-ISE), DE
- Danmarks Tekniske Universitet, DK
- Laboratoire Nanotechnologies et Nanosystèmes (Université de Sherbrooke/CNRS), FR
- accelopment Schweiz AG, CH

8

PARTNERS

6

COUNTRIES

4

RESEARCH INSTITUTIONS

3

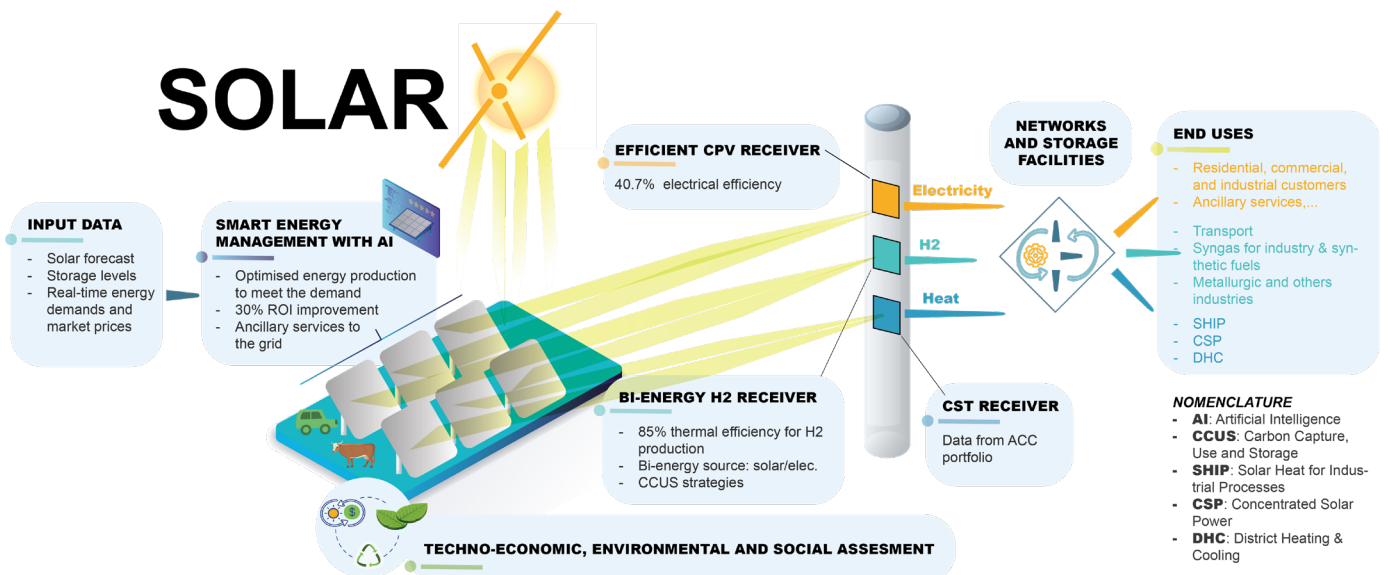
SMEs

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INDUSTRIAL PARTNER

## The concept

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## Contact

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