



ICARUS will be the driver for a new start of the **European PV industry**

ICARUS aims at turning the upstream process wastes, rich in highly pure Si and energy-dense, into a secondary raw material.

### *An ambitious project*

Gathering 6 Industrials, 6 SMEs, 3 RTOs and 2 Universities



Innovative eco-efficient processing and refining routes for secondary raw materials from silicon ingot and wafer manufacturing for accelerated utilisation in high-end markets

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Three **industrial pilots** producing silicon, silica and graphite raw materials:

- ▣ Pretreated and purified silicon, silica and graphite raw materials
- ▣ Pyrometallurgical process using recycled silicon, silica and graphite for high purity silicon
- ▣ Granular silicon feedstock for photovoltaic applications

One **industrial pilot** converting silicon waste into full value industrial commodities: green hydrogen, silica and silicates.

Different high-end product applications with strict raw material quality standards, to assess the technical and economic viability of different applications:

- ▣ Si-photovoltaics
- ▣ Al-Si alloys
- ▣ Thermoelectric modules and generators
- ▣ Lithium-ion battery cells
- ▣ Silicon carbide powders
- ▣ Fine-grained graphite

## Project objectives

Demonstrate **modular processing solutions** at industrial scale to retrieve 95% of high-value raw materials from **silicon ingot** and **wafer manufacturing**, through eco-efficient processing, refining, and transformation of industrial silicon, graphite and silica waste streams.

## ICARUS' value chain

