Investing in Solar PV innovation's scale up to deliver a secure and competitive EU economy

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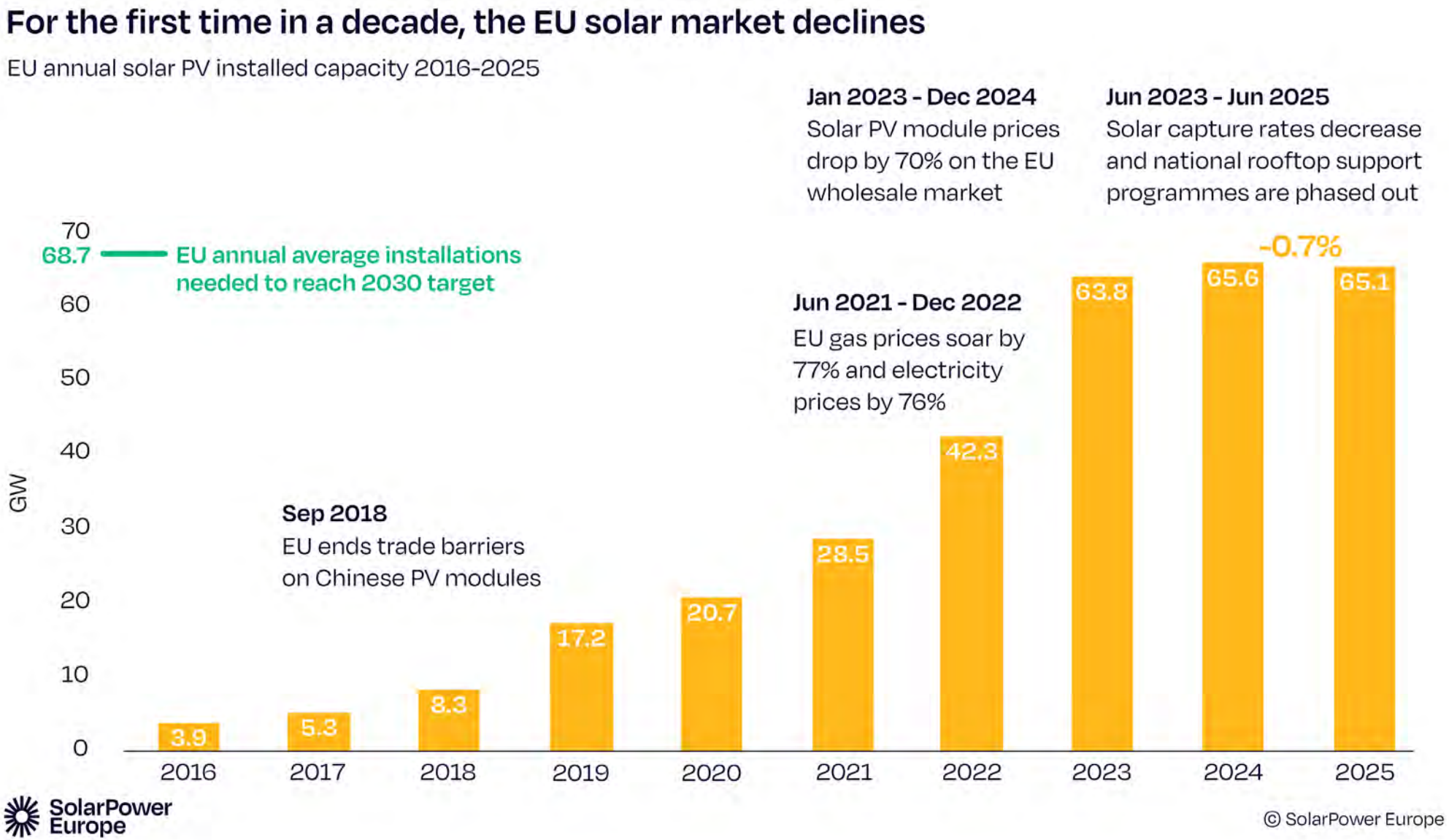
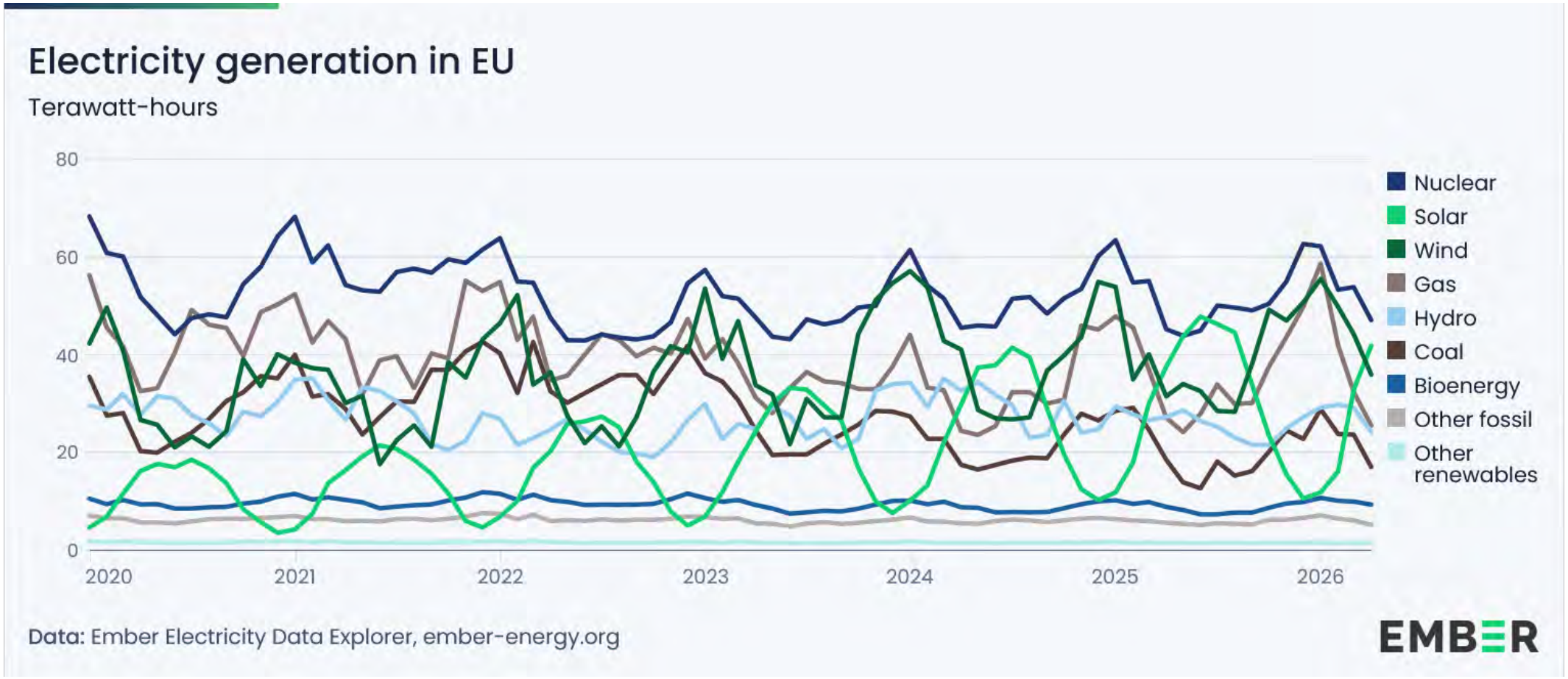
The European PV industry towards a TW age?

Solar PV deployment in Europe

On track with the “TW age” or at risk of missing deployment trajectories?

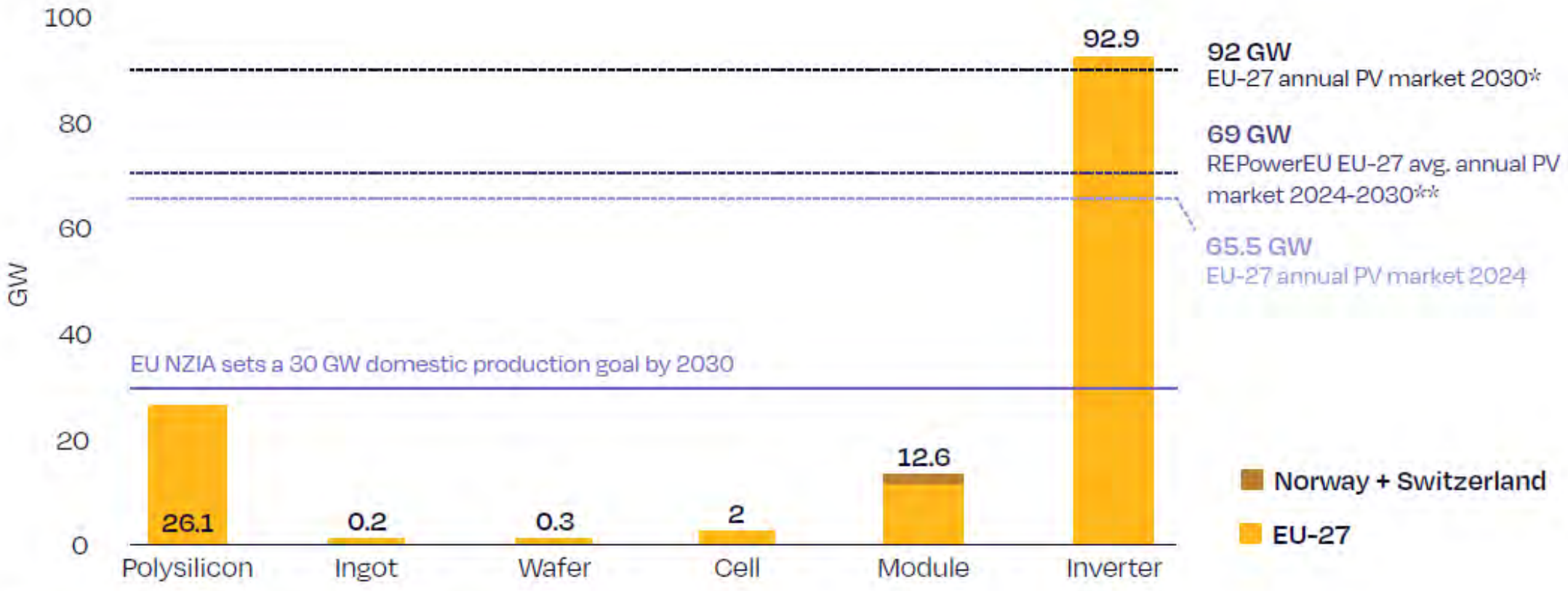


Solar PV still taking a leading role in the electricity system, despite challenges



Solar manufacturing

Europe is behind on its 30GW target by 2030



Note: not including suspended production in Norway.

*SolarPower Europe Medium Scenario projection to 2030

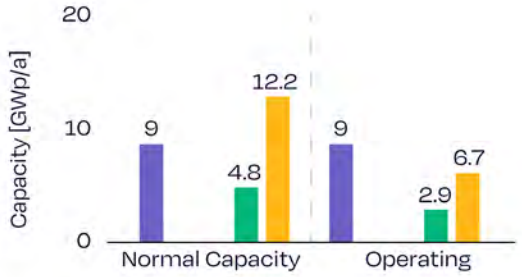
**Based on REPowerEU target of 750 GW_{DC} (600 GW_{AC}) installed PV capacity in EU-27 by 2030

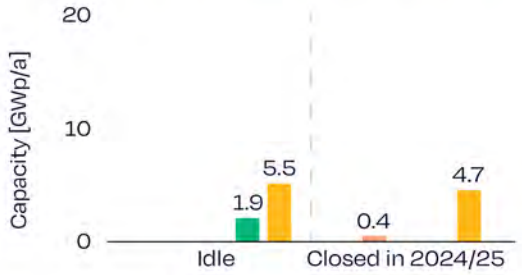
Scaling high efficiency Silicon technologies in Europe

Manufacturing in Europe: existing capacity

The EU has limited existing solar PV manufacturing capacity

Solar PV manufacturing value chain capacity across the EU 2025





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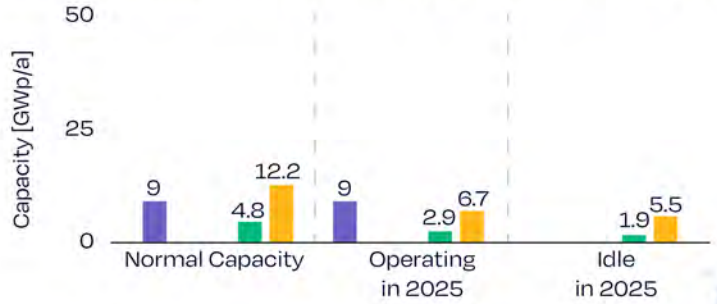
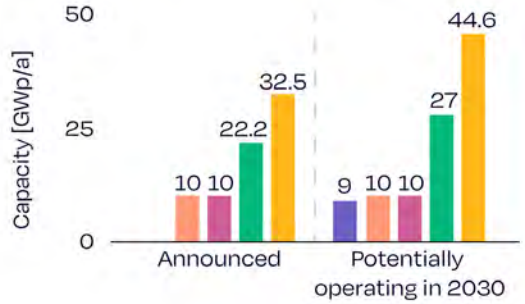
Source: Fraunhofer ISE

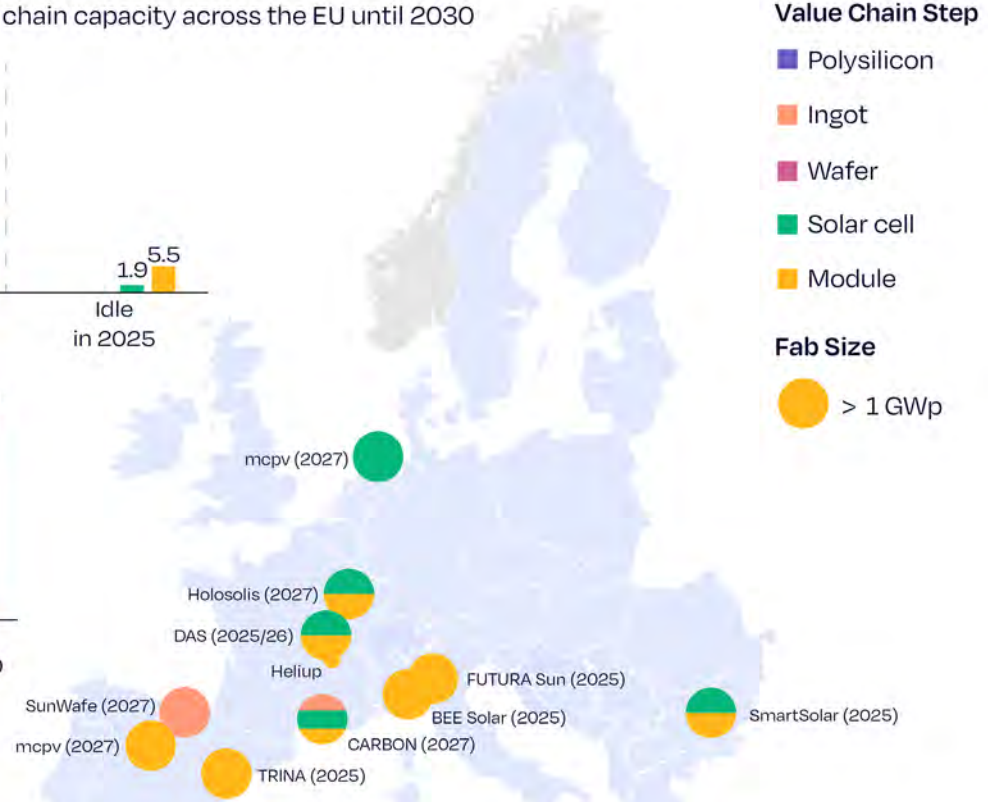
Manufacturing in Europe: planned capacity

The EU could add substantial manufacturing capacity across the solar value chain by 2030

Announced solar PV manufacturing value chain capacity across the EU until 2030







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Source: Fraunhofer ISE based on public company announcements

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ETIP PV KPIs for R&I in Silicon technologies

Technology	EU total production	% materials in EU value chain	Pilot production	Efficiency	Reliability (years lifetime)	Challenge
Single Junction Silicon PV	30 GW	>45%	10-100MW	>25,5%	40	CRM reduction: In, Si, Ag, Bi
Tandem PK/Si	1GW	>45%	100-500MW	>27%	>30 years	Stability, lead, upscaling, encapsulation, standardisation

Scaling up PV innovation: what are the barriers at the European level?

- Fragmented programmes for supporting innovation in PV and renewable energy technologies (between national and European level)
- Lack of a clear lab-to-fab pipeline that is easy to navigate for companies
- Disconnect between industrial and innovation policy: challenges for companies to upscale their R&D effort at the industrial level (especially for SMEs)

The 9th Framework Programme

- **Horizon Europe - 2021-2027 - EUR 93.5 billion**

1

Excellent Science

- European Research Council
- Marie Sklodowska-Curie Actions
- Research infrastructure

2

Global Challenges and European Industrial Competitiveness

- 6 clusters for tackling
- PV in Cluster 5: “Climate, Energy and Mobility”
- JRC

3

Innovative Europe

- European Innovation Council (New!)
- European Innovation Ecosystems
- EIT

EUPI-PV: strengthening in continuity

- Establishment of PV Partnership: increased commitment towards PV R&I and strategic involvement of PV industry and research in shaping programmes, providing more visibility and consistency between EU and private R&I plans
- 2025 work programme: EUR 68 million, 4 calls, 10 projects set for funding
  - Ingots & wafering, inverters, perovskite production equipment, lifetime extension
- 2026-2027: focus on scalability of innovation – larger calls with broader scopes
  - Si-Pv, tandems, production equipment, integrated PV, circularity, industrial electrification, reliability & bankability…
- The Green Industrial Deal Call: proposing an alternative pathway to scaling industrial innovation

The EUPI-PV partnership

- Officially signed in March 2025
- Commitment of 240 million EUR from Horizon Europe to photovoltaics research and innovation for 2025-2027 – with a commitment from the PV industry to match this with its own R&I expenditures
- Implementation of the EUPI-PV partnership to start with the publication of the Horizon Europe 2025 Work Programme

General objectives of EUPI-PV

- Support European industry, defend the EU’s open strategic autonomy, preserve its competitiveness on the global market, maintain a high level of employment and quality jobs in Europe and strengthen its ability to innovate;
- Actively support European leadership in an innovative and value-creating PV industry across the entire value chain;
- Reinforce and better coordinate the EU R&I efforts across the whole solar PV value chain through a co-created EU R&I strategy for PV

Implementation pillars of EUPI-PV

Definition of the EUPI-PV contribution to the Horizon Europe Work programme

- Coordination of representative inputs from the partners other than the Union
- Definition of priority areas for funding in line with EU priorities

Leveraging private investments into PV R&I

- Mapping private R&I spending in PV R&I in nature and in kind and evaluating against EU contribution to EUPI-PV
- Deliver periodic reporting on PV sector R&I efforts in the framework of EUPI-PV implementation

What next?

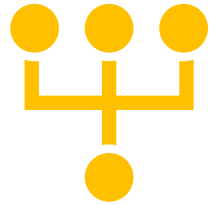
The key challenges for the 2028-2034 period and FP10

Stronger focus of the EU on dedicating 3% of GDP to R&I

which budget for Horizon in FP10?

Balancing the continuation of a mostly successful programme (Horizon) with evolving expectations

question of the preservation of pillar II and partnerships



Defining the right tools to allow for industrial scale up and deliver derisking

Evolution of the EIC? What will be the learnings of partnerships & the Green Industrial Deal Call?

The Industrial Accelerator Act: the need for a framework that delivers clarity for investors on Made in Europe

1. **Ensure a meaningful "Made in EU" approach:** The Union-origin definition should remain targeted (e.g. EU/EEA/CH/UK), avoiding overly broad extensions to FTAs and customs unions that dilute the objective of strengthening EU manufacturing. Made in Europe should really mean 'made from Europe'.
2. **Introduce a phased approach across market segments (procurement, auctions, support schemes):** Phase 1: PV Inverters, Phase 2 PV Inverters + Cells (or equivalent)
3. **For auctions specifically** Apply Union-origin requirements **only as award criteria**, not as pre-qualification, to preserve competition and avoid undersubscribed tenders.
4. **Ensure coherence with the Net-Zero Industry Act (NZIA):** To avoid overlapping or conflicting requirements and unnecessary administrative burden.
5. **Adopt a phased and proportionate approach to foreign direct investment (FDI):** To attract much needed international capital and enable scaling of EU manufacturing. FDI conditionalities should also be introduced in a phased approach to help build capacity while avoiding supply bottlenecks in the scale-up phase.
6. **Alignment with the Cybersecurity Act (CSA2):** Alignment with the Cybersecurity Act on high-risk suppliers is key. The IAA should not preclude any outcomes under the CSA revision.

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