India-Europe solar manufacturing cooperation

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SolarPower Europe

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SolarPower Europe

solarpowereurope.org

What is SolarPower Europe?

We represent the **whole solar value chain**

320+ organisations

We work closely with **45+ national associations**

Raw materials	WACKER, GCL, TW SOLAR, STÄUBLI
Modules, wafers & cells	Trinasolar, First Solar, LONGi, MEYER BURGER, JA SOLAR
Building integrated PV	akuo, Autarq, Heliup, Roofit.solar, Kromatix, Enpal
Inverters	SMA, HUAWEI, Fronius, SUNGROW, ENPHASE
BOS	SCHLETTER, JUWI, K2 systems, CLENERGY, solaredge
Developers & EPCs	BayWa r.e., Statkraft, ABO ENERGY, plenitude, IBC SOLAR, SUNOTEC
Storage	TESLA ENERGY, sonnen, IBESA BATTERY & ENERGY STORAGE International Alliance, univers, CanadianSolar
IPP	lightsource bp, bp, SMARTENERGY, ENCAVIS, sonnedix, AMARENCO
Utilities	enel Green Power, ENGIE, fortum, e·on, Iberdrola
O&M, Asset Management	kiwa, greentech, Nomad Electric, above, SOLAR
Digitalisation	Flexidao, VIRTO, RatedPower A PART OF ENVERUS, 3E, Delfos
Research organisations	eurac research, Fraunhofer ISE, TNO innovation for life, JÜLICH FORSCHUNGSZENTRUM, EPRI
National associations	BSW SOLAR, Solar Energy UK, UNEF Unión Española Fotovoltaica, ELETTRICITÀ FUTURA imprese elettriche italiane, SWISSOLAR, Renewables Finland
Advisory	DNV, InfoLink CONSULTING, UL Solutions, CEA, DLA PIPER, TÜVRheinland

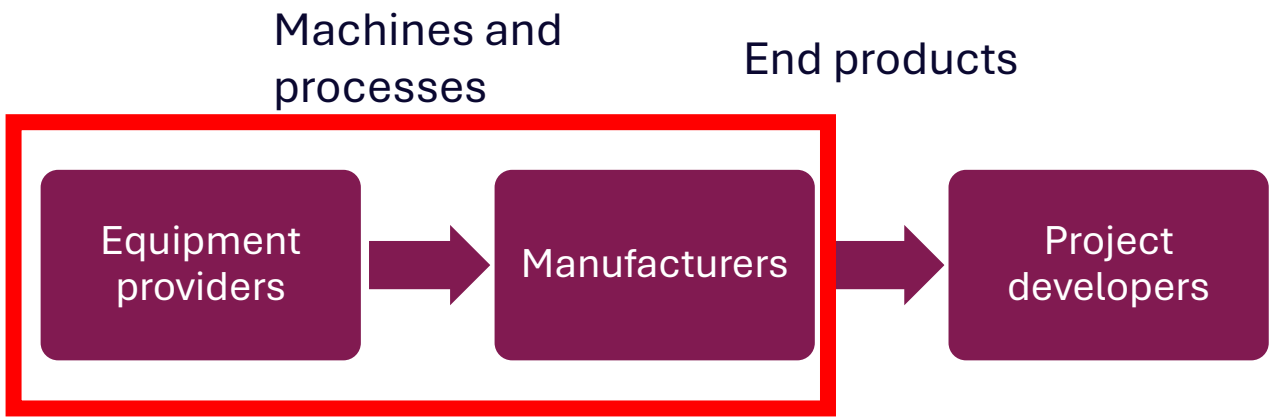
About ISMI

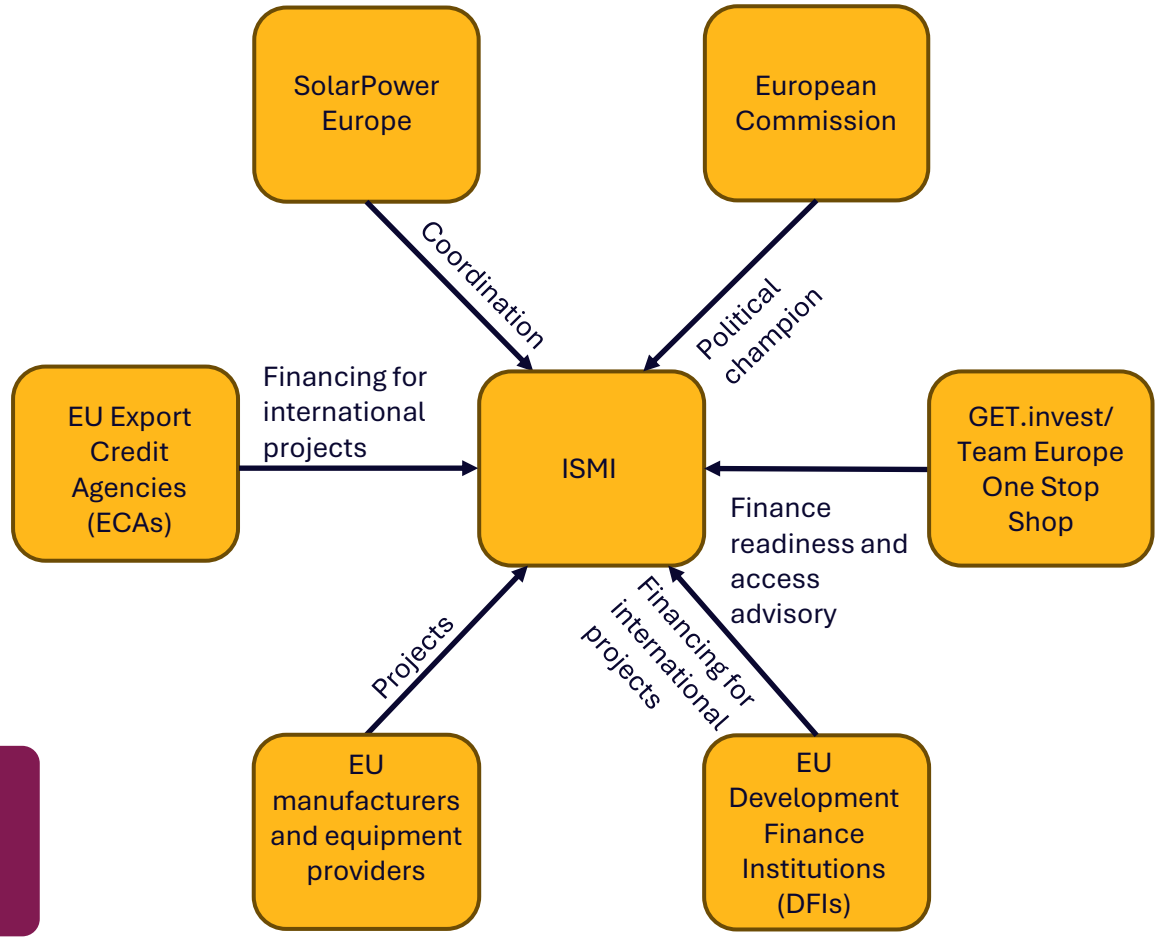
The International Solar Manufacturing Initiative (ISMI) helps European solar manufacturers and equipment providers maximise opportunities to do business internationally, with the support of EU initiatives such as the **Global Gateway**:

- Aim to mobilise up to €150 billion of investments in the climate & energy sectors alone
- Combining concessional finance, guarantees, and export finance to de-risk private sector investments
- A combined effort of all EU financial institutions and Member State development finance institutions (DFIs) and export credit agencies (ECAs)

Who does ISMI work for? How does it work?

ISMI focuses on finding business opportunities for equipment providers and manufacturers. The key difference between these two is that manufacturers make end products that are destined for project developers. These include, among others, components like modules, inverters, trackers, mounting systems, cables and connectors.





Resilience criteria in DFI mandates

NZIA resilience criteria

The EU Net Zero Industry Act (NZIA) establishes a threshold for resilient equipment in solar systems under public procurement, with at least 50% of eligible components coming from “outside the dominant source of supply”.

In DFI mandates

This could be applied in the context of EIB-financed projects internationally, where project promoters would receive a bonus, potentially in the form of better lending rates if they can demonstrate this type of resilience.

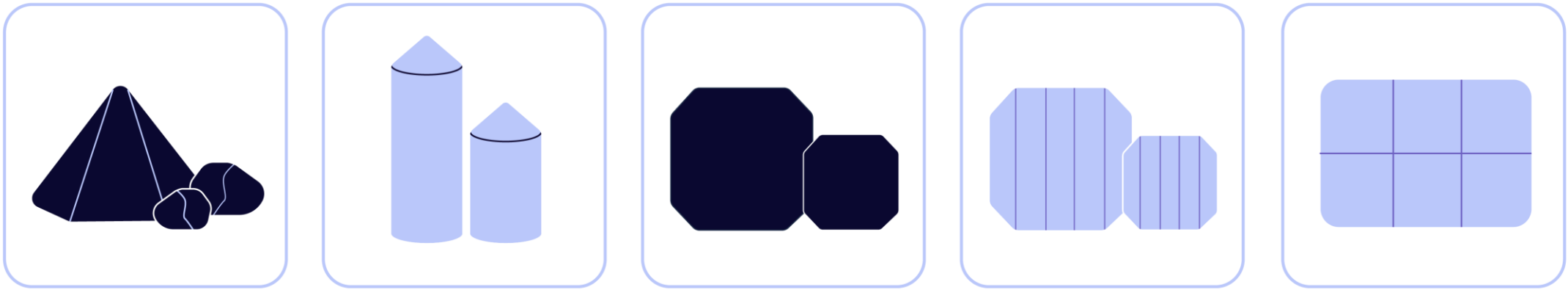
Cooperation between European and Indian companies

With resilience criteria applied, EU companies would be able to offer better payment terms, making technology more accessible to Indian manufacturers, supporting the further growth of solar manufacturing in India and opening up export opportunities globally.

Solar Production Equipment - Explained

- SolarPower Europe's **analysis of the market for solar production equipment in the EU** in each segment, featuring **Case Studies.**
- Conducted alongside ISMI to bring light to the Solar Production Equipment sector.

Solar Production Equipment along the value chain



Polysilicon

- Siemens reactors
- Fluidised Bed Reactors (FBR)

Ingot

- Cz ingot pullers
- Poly-Si cleaning & crushing equipment
- Cropping, squaring, grinding machines

Wafer

- Diamond wire saws
- Separation and fine cleaning equipment
- Wafer inspection/testing equipment
- Sorting and packing systems

Cell

- Wet chemical tools (texture, etching, etc.)
- Thermal tools: diffusion and passivation (LPCVD, PECVD, PVD)
- Laser tools
- Screen printers and firing equipment
- Cell testing and sorting equipment

Module

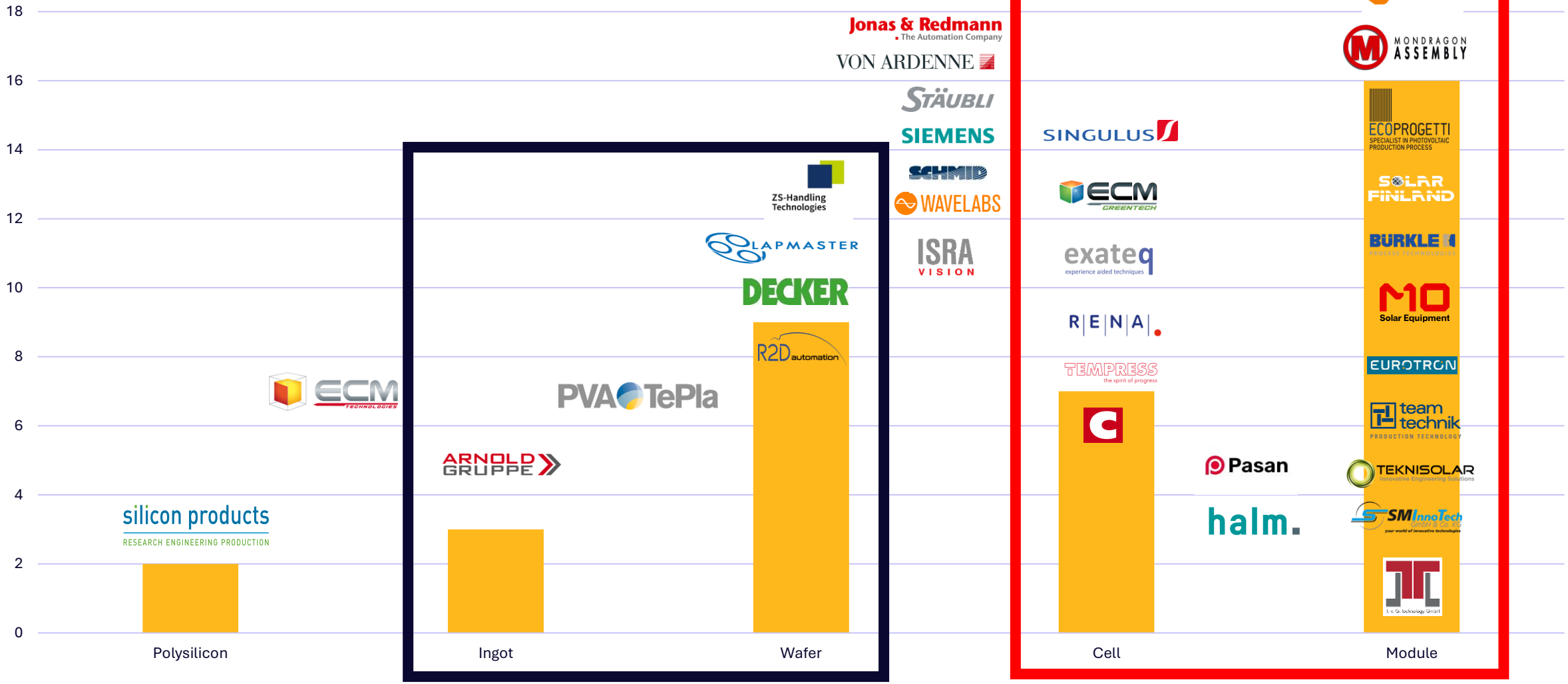
- Laser cell cutters
- Stringers
- Laminators
- Testing equipment (IV measuring, inline quality control)

Smart fab/factory automation tools

Cz: Czorchalski PVD: Physical vapour deposition LPCVD: Low pressure chemical vapor deposition
PECVD: Plasma-enhanced chemical vapor deposition

Snapshot of production equipment capacities in Europe

Number of production equipment companies per value chain segment in Europe



Capacities exist, but these segments are less developed

Europe's technological strength lies here

EU-funded research projects at SolarPower Europe

ETIP Photovoltaics

Secretariat of the European Technology and Innovation Platform for PV, funded under Horizon Europe

SUPERNOVA

SUPERNOVA is a Horizon Europe funded project, aiming to establish quality and a high-performance for solar PV projects.

Increase

Accelerating the market uptake of building- and infrastructure-integrated PV technology, funded under Horizon Europe

ReSilex

Development of technological solutions for reusing Silicon, recycling PV modules and designing new products, funded under Horizon Europe

EVERPV

Developing solutions for handling end-of-life solar PV panels in the EU; and optimising PV recycling techniques, funded under Horizon Europe

COMPLIANCESERVICES

Helping companies comply with and understand the upcoming Ecodesign and Labelling regulation, through the development of guidance and tools, funded under LIFE

REALIZE

Accompanying successful Horizon projects in submitting Innovation Fund applications, funded under Horizon Europe

RESKILL4NETZERO

Create a Skills Strategy for specific high demand roles across renewable sectors, develop and test a VET training programme, and provide an EU recognised certification.

BREEZE

Support the implementation of the updated EPBD. In particular with a focus on maximising solar PV deployment in buildings by providing gudelines to Member States.

EU-India Cooperation on R&I

Solar innovation in the EU

- Perovskite solar cells (high efficiency, low manufacturing costs, flexibility and lightweight)
- Tandem PV modules (high efficiency, improved energy yield, versatile applications)
- Heterojunction cells (high efficiency, long lifespan, simplified production)
- Thin Silicon Wafers (reduced Si consumption, low manufacturing costs, higher Power-to-Weight ratio)

EU-India initiatives on R&I

- February 2023: establishment of **EU-India Trade and Technology Council** (Working Group on Green & clean energy technologies)
- EU-India Agreement on Science and Technology
- **EU-India Horizon Europe research projects** (hybrid energy storage, climate change, nature-based solutions, Sustainable Aviation Fuels (SAF), water scarcity, migration, health,...)
- Projects under Batt4EU Partnership

EU-India cooperation opportunities

- India is one of the largest and most dynamic solar markets, with a strong presence of European companies in the country.

European solar equipment providers can offer:

- Highly customisable equipment that can be integrated into modern production facilities;
- Higher machine yields and longer lifetimes
- Better after-sales service;

India excels at creating its own domestic solar manufacturing market:

- Supportive regulatory framework (PLI scheme);
- High domestic demand, Approved List of Models and Manufacturers (ALMM);
- Possibility to expand the export of panels globally

Joint initiatives to support industry cooperation:

- **India-EU Clean Energy and Climate Partnership (CECP)** designed to enhance EU-India collaboration on clean energy, clean-tech supply chains, and climate change.
- Ongoing negotiations for **EU-India Free Trade Agreement**.
- India-EU cooperation on solar **research & innovation**, such as under Horizon Europe

Thanks for listening

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