BECQUEREL INSTITUTE

Strategy Consulting in Solar PV

BIPV Industry Session

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Becquerel Institute at a glance

- Est. 2014 in **Brussels, Belgium**
- Est. 2022 in **France**
- Est. 2023 in **Spain**
- Focused on **solar PV and its related ecosystems** (storage, electro mobility, buildings)

Strategy Consulting

Applied Research

Support to organizations

Project Developers

TotalEnergies, EDF renouvelables, WÄRTSILÄ, innogy, BayWa r.e. renewable energy

Manufacturers

posco, SAINT-GOBAIN, ArcelorMittal, GSE Intégration

Associations

ETIP Photovoltaics, IEA PVPS, REN21 Renewable Energy Policy Network for the 21st Century, eit InnoEnergy

Research projects

VIPERLAB FULLY CONNECTED VIRTUAL AND PHYSICAL PEROVSKITE PHOTOVOLTAICS LAB, BIPV boost, ProLight, Seamless-PV, IBC4EU, NEXUS, SERENDIPV, VALHALLA, PROMISE

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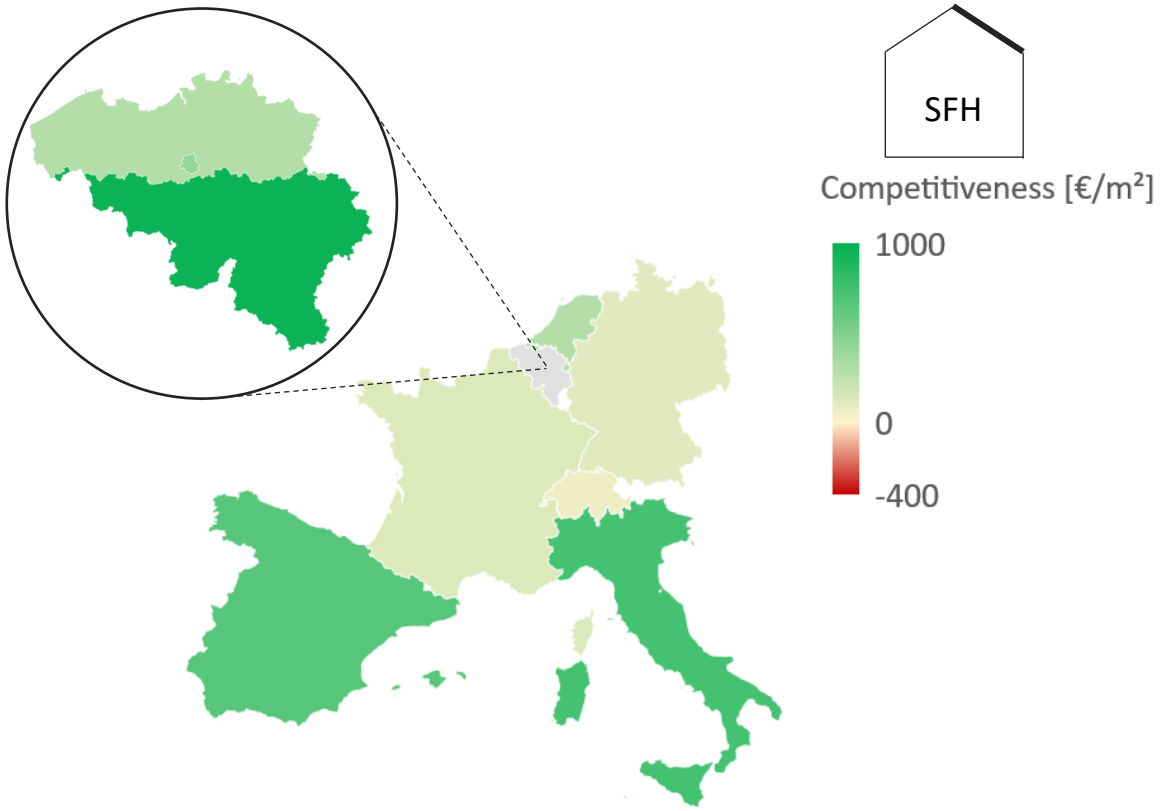
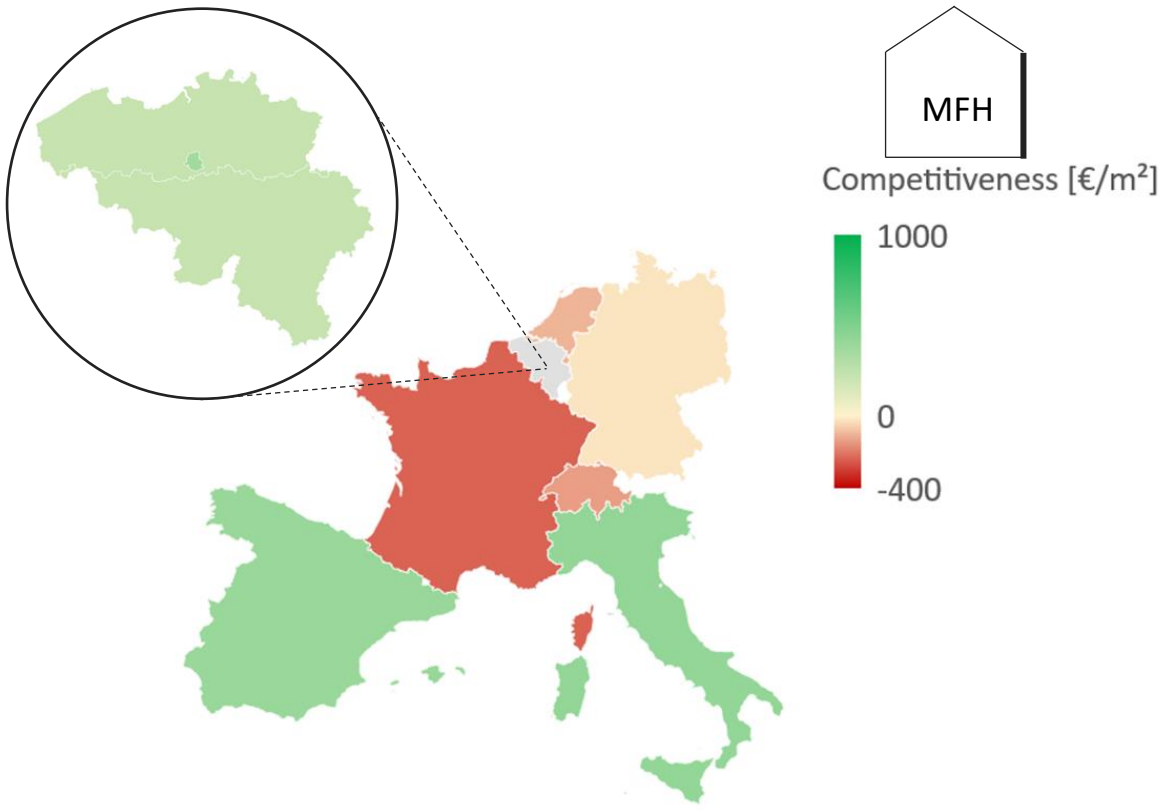
On roofs, residential BIPV systems show very competitive results, while when installed on facades the results are more nuanced, as the configuration is less optimal

Competitiveness of the SFH reference case in key European countries



- High retail electricity prices
- High system power density (opaque solution)
- Tilted roof (good irradiation conditions)

Competitiveness of the MFH reference case in key European countries



- High retail electricity prices
- Relatively high system power density (opaque solution)
- Vertical tilt (poor irradiation conditions)

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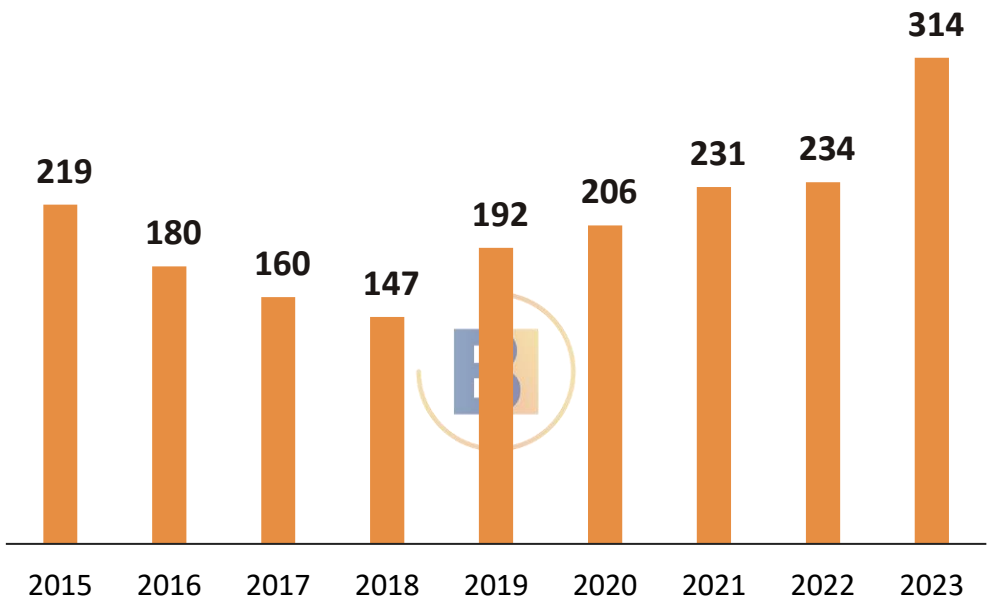
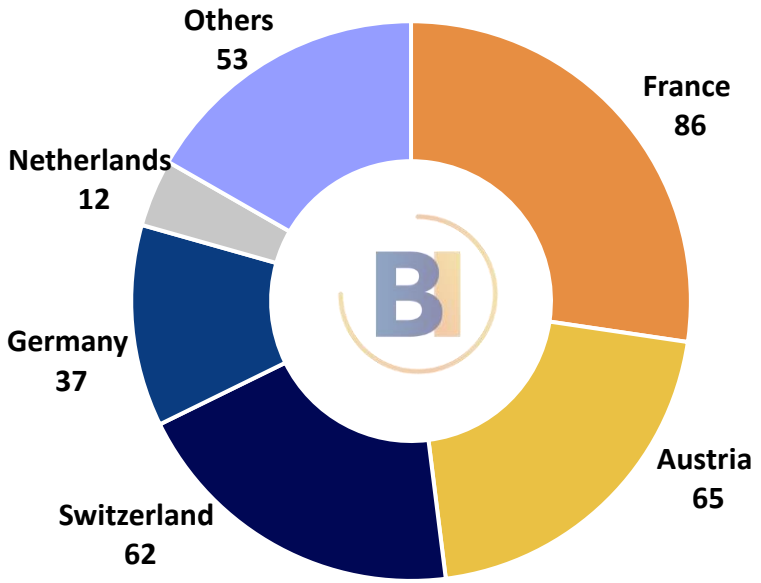
The BIPV market as seen many up and downs in the last decade, mainly explained by regulatory instability, but it has been steadily growing in the last 5 years

Annual BIPV market in Europe (MW)



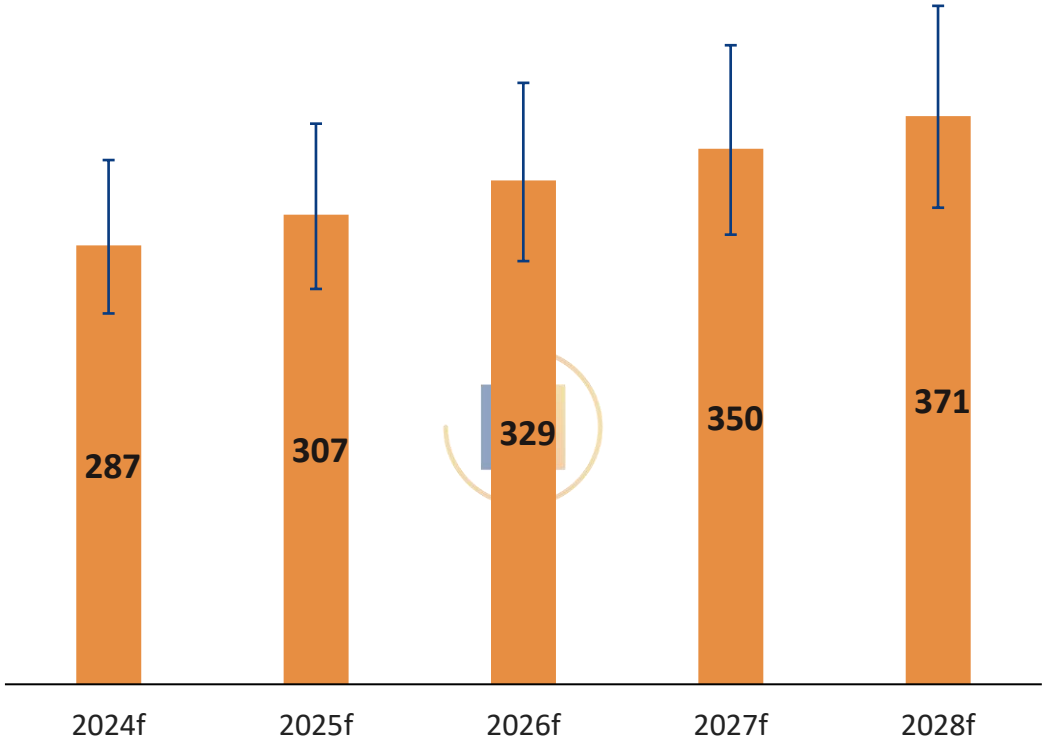
BIPV market per country in 2023 (MW)



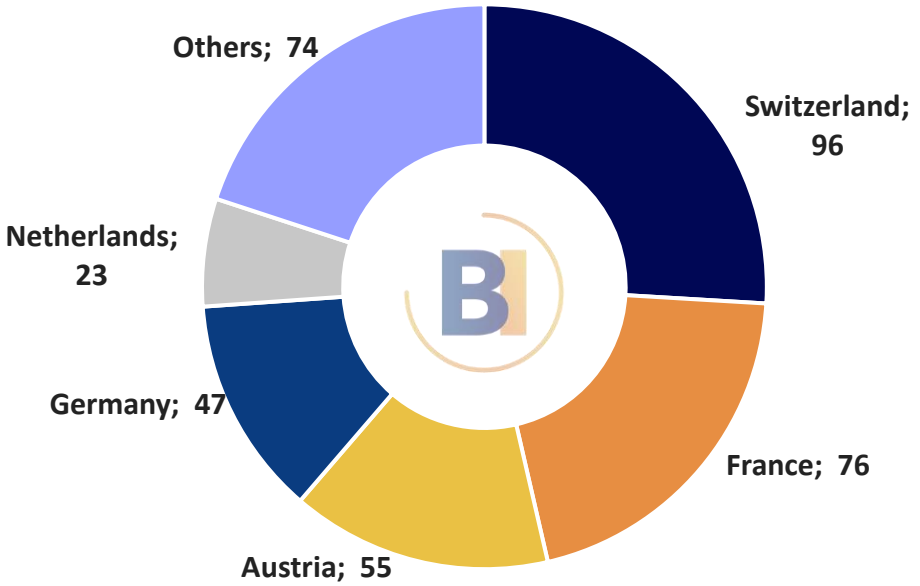
Sources: Estimations by Becquerel Institute, SUPSI

The BIPV segment will remain a niche in the short-term, with a slight slow down in 2024 and 2025 compared to 2023, but is on a trajectory of growth

Forecasted annual BIPV market in Europe (GW)



BIPV market per country in 2028 (MW)



Sources: Becquerel Institute, SUPSI

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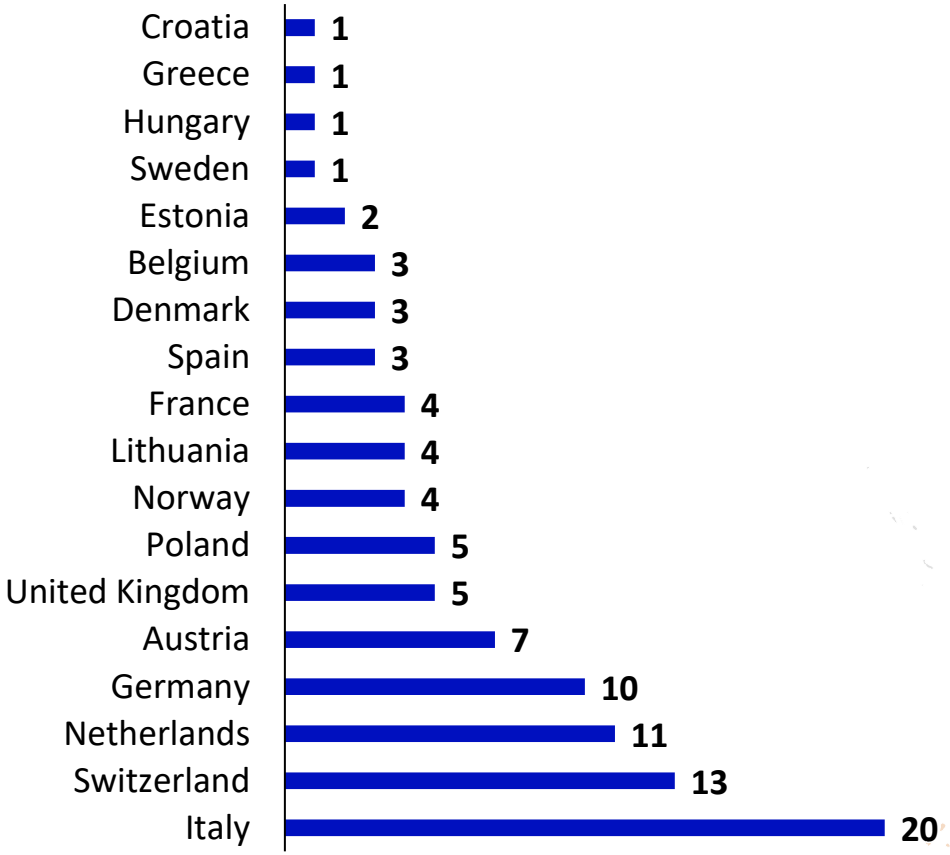
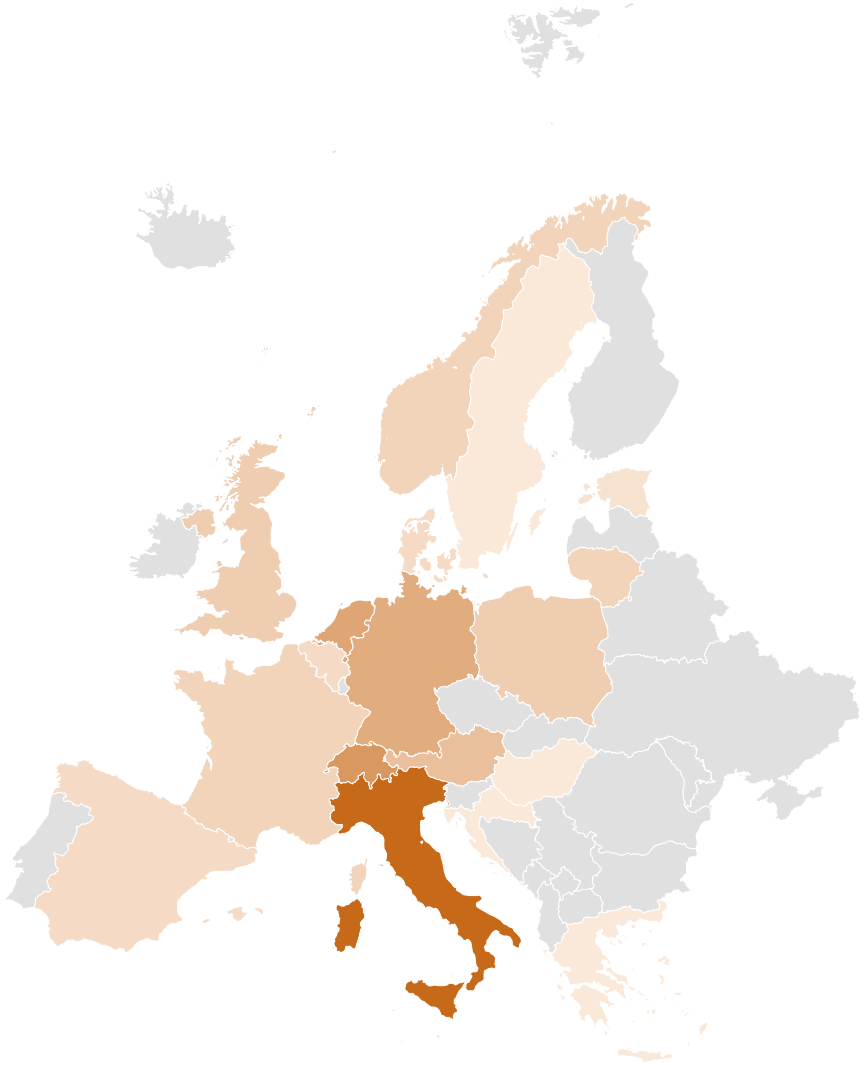
As other industrial sectors in Europe, including PV, the BIPV industry is going through difficult times, but many actors still exist, showing how dynamic this industry is





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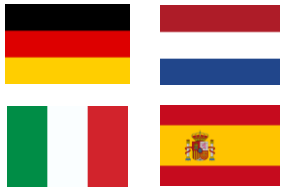
The lack of a coordinated policy frameworks across countries and their unpredictability is hindering the development of BIPV

	Push for BIPV?	BIPV applications	BIPV support scheme
	/	All	Same as BAPV
	+	- Roof - Others	- Specific investment support for listed products - Same as BAPV but with restrictions
 (Brussels)	++	- Facades - Roof	- Special regime - Same as BAPV
	++	- All BIPV - (near) Vertical tilt	- Increased tariffs compared to BAPV - Winter production bonus

Possible Consequences

- (BI)PV support mechanisms are not uniform and can be unpredictable, with limited vision on the long term

Possible Solutions

- Clear available information on country differences or minimum requirements
- Coordinated European policy guidelines for (BI)PV definitions, incentives and regulation
- Long term strategies

The normative framework in the EU is fragmented between the construction and electrical (PV) sectors, with no mandatory BIPV standards

Construction Products Regulation CPR 305/2011

- **hEN 14449** Glass in building – Laminated glass and laminated safety glass – Evaluation of conformity/Product standard
- **hEN 1279-5** Glass in building - Insulating glass units - Part 5: Product standard
- **hEN 13830** Curtain walling - Product standard
- …

Related to regular construction products

Low Voltage Directive LVD 2014/35/EU

- **hEN IEC 61730** Photovoltaic (PV) module safety qualification
- **EN IEC 61215** Terrestrial photovoltaic (PV) modules - Design qualification and type approval
- …

Not sufficient for BIPV applications

Possible Consequences

- Two CE markings required at product level
- The situation can be confusing, especially for new entrants in the market
- Re-certification needed if change in BOM or size

Possible Solutions

- Uniform European guidelines for BIPV certification process
- Harmonized mandatory BIPV standards

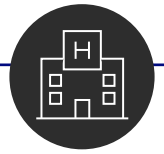
The Net Zero Industry Act will be a game changer, as significant parts of the EU solar (I)PV market will be protected for local producers (>30 GW), with the first effects to be felt already in 2025

ROOFTOPS

Volume Secured

> 15 GW

EU countries are allowed to develop incentive schemes for end consumers (5-15% of total system value).

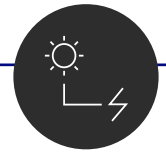


PUBLIC BUILDINGS

Volume Secured

> 5 GW

All public tenders will include a « made in EU » (« resiliency ») qualification criteria.



UTILITY SCALE

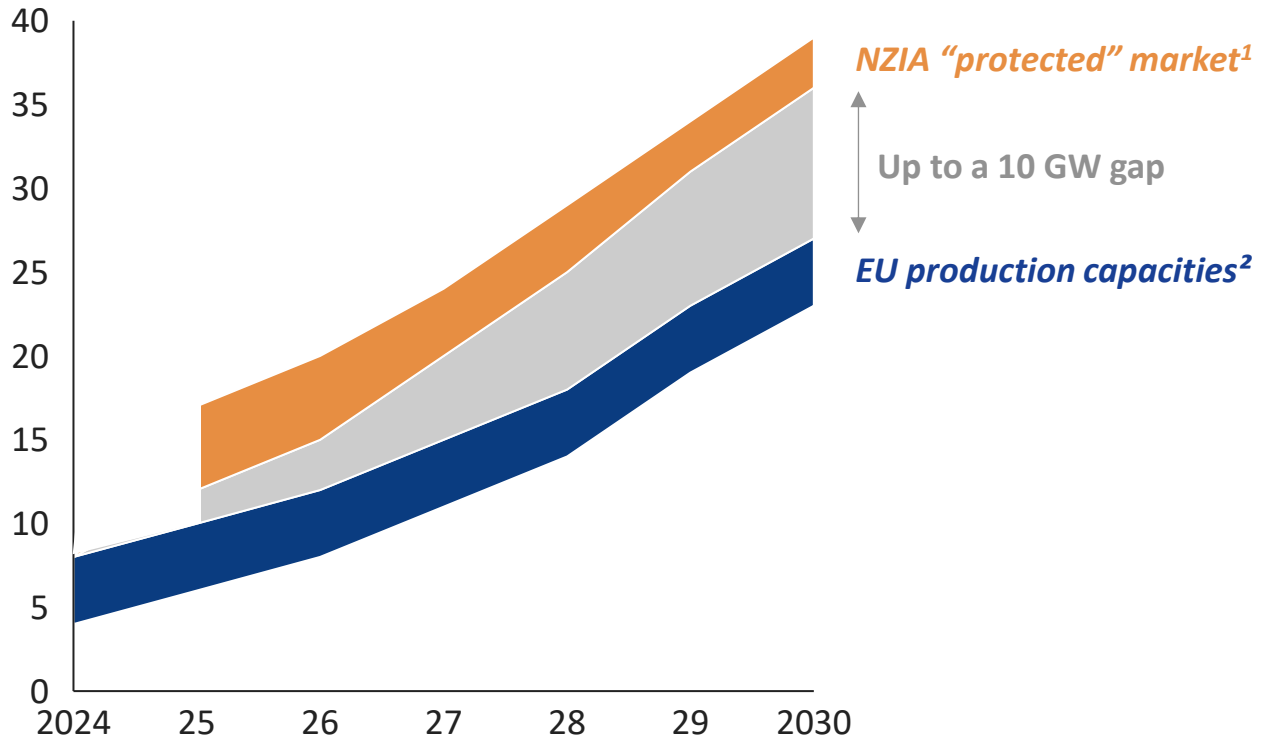
Volume Secured

> 10 GW

Up to 30 % of auctions will include resiliency qualification & award criteria.

The projected production capacities will be insufficient to meet the estimated “protected” market enabled by the Net Zero Industry Act… creating opportunities for growth

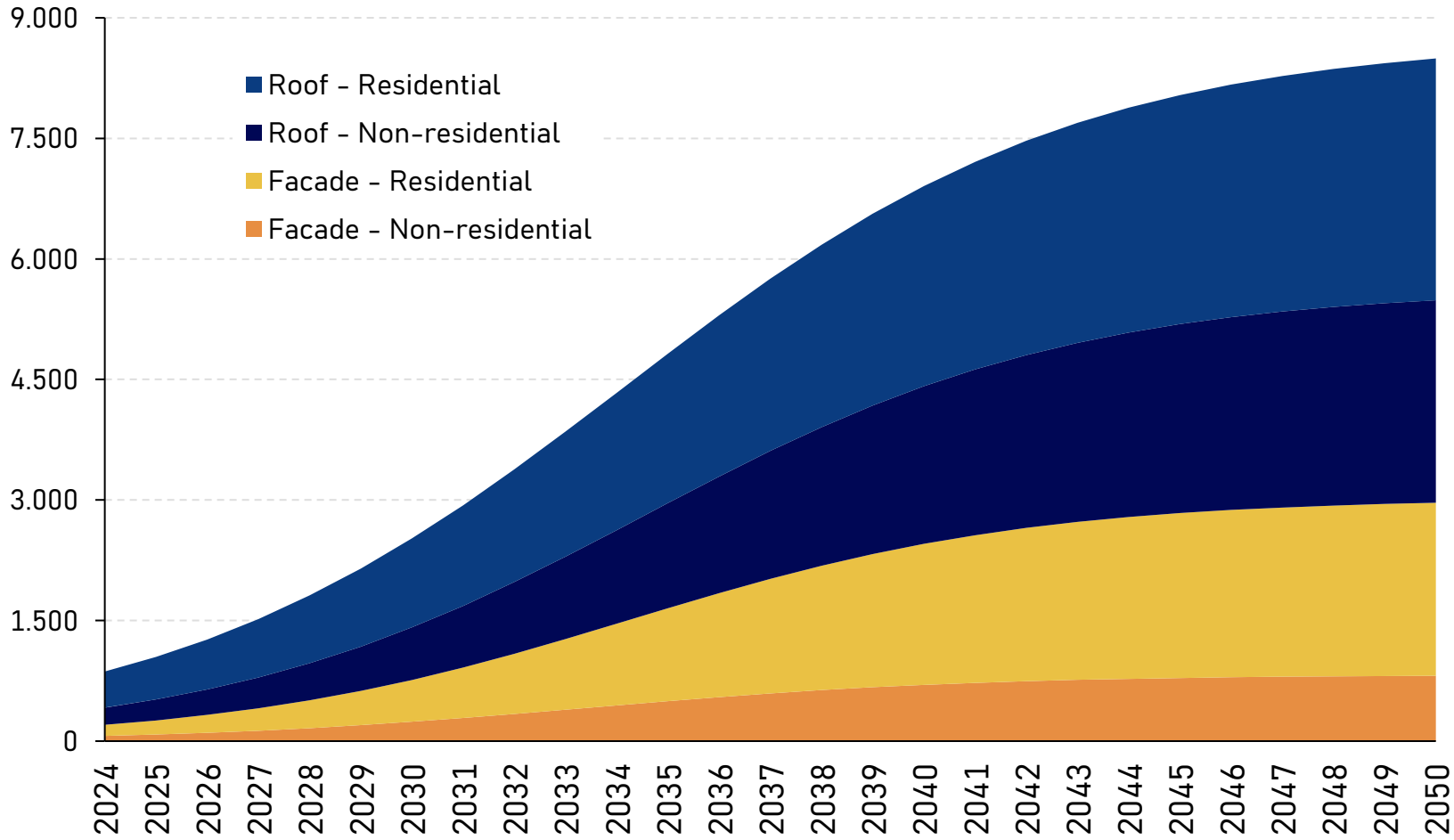
EU NZIA protected market vs expected local production capacities (GW)

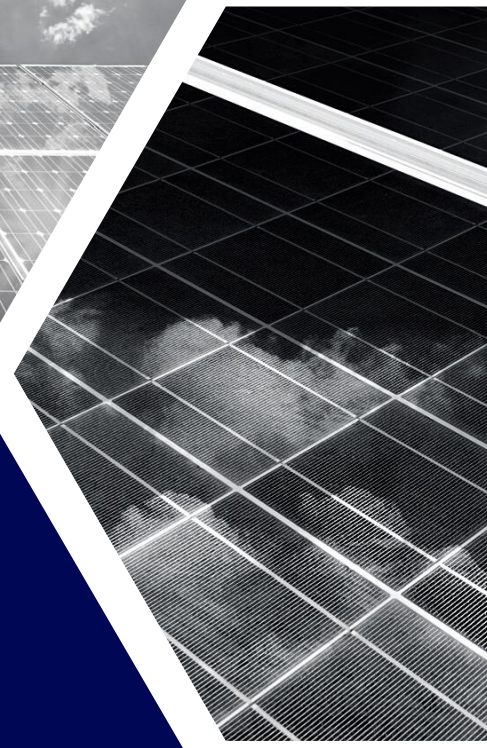


1. NZIA and its specific implementation measures are expected to be fully in place in 2025
2. Estimates based on 2024 announced projects

BIPV is not meant to overtake (BA)PV, but its unique features must be leveraged through regulation, education and communication efforts for an efficient uptake, so that it can achieve its potential…

Cumulative BIPV market potential in Europe (km²)





Your contact

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SEAMLESS-PV – Development of advanced manufacturing equipment and processes aimed at the seamless integration of multifunctional PV solutions, enabling the deployment of IPV sectors, is a Horizon Europe Innovation Action started in January 2023 that will continue through December 2026. Grant N°101096126

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