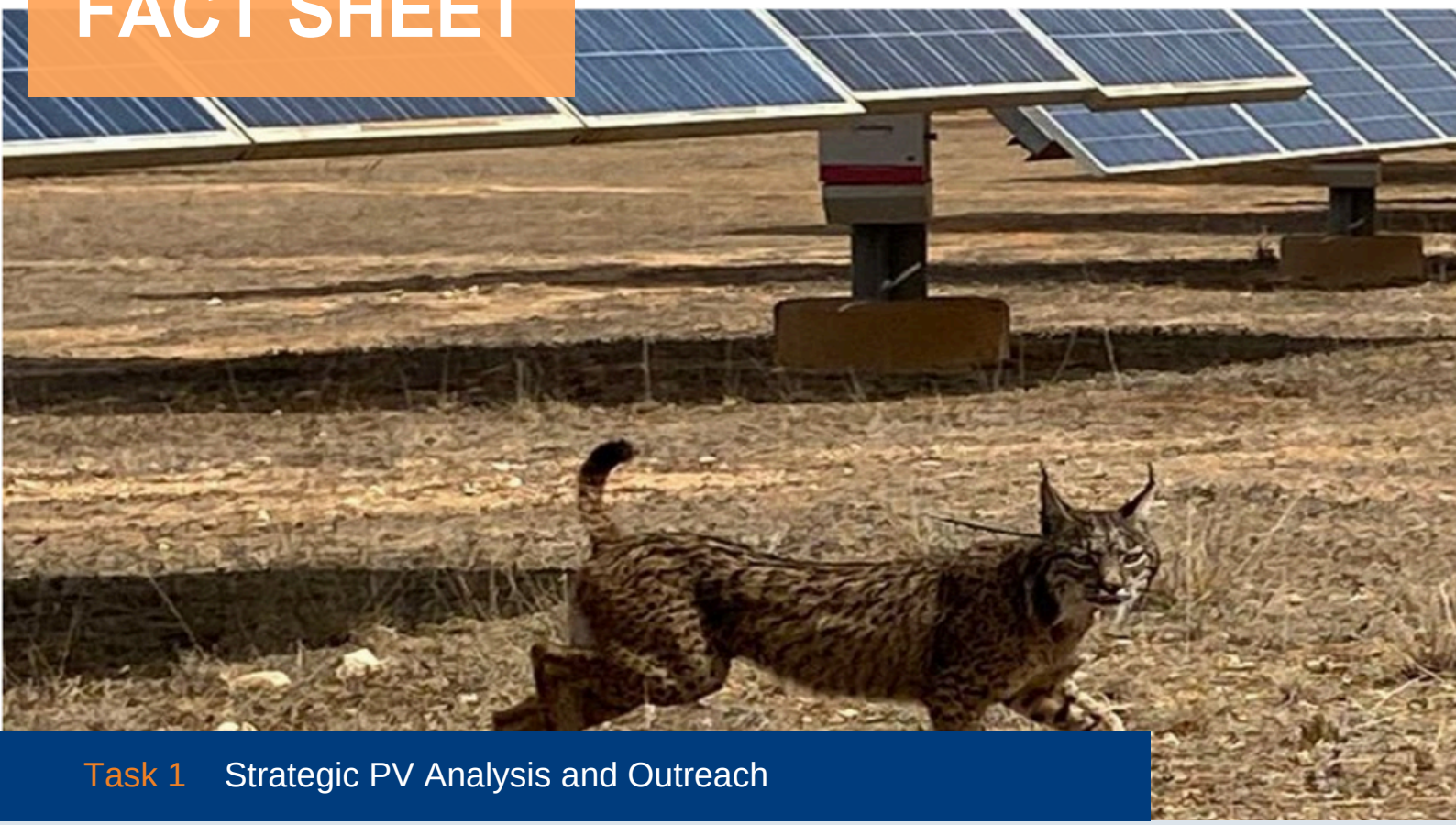
Technology Collaboration Programme
by iea

International Energy Agency
Photovoltaic Power Systems Programme

FACT SHEET



Task 1 Strategic PV Analysis and Outreach

PVPS

National Survey Report of PV Power Applications in Spain

December
2024

International Energy Agency
Photovoltaic Power Systems Programme

2023 National Survey Report of PV Power Applications in Spain

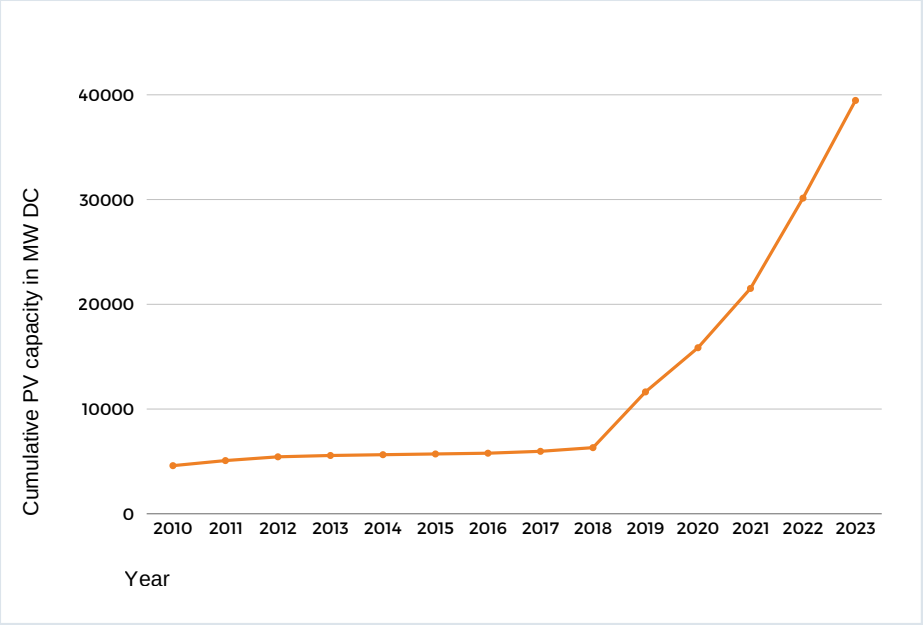
Key Highlights

- **Total Installed Capacity:** Spain added 9.3 GWdc of PV capacity in 2023, bringing the cumulative installed capacity to 39.4 GWdc. Ground-mounted systems accounted for the majority of new installations, with 7.2 GWdc added entirely without subsidies.
- **Economic Contributions:** The PV sector supported over 121,000 full-time jobs in 2023, while the total business value of the industry reached €6.8 billion, further solidifying PV's role as a key driver of Spain's green energy transition.
- **Self-Consumption:** The self-consumption segment saw 2 GWdc of installations, showcasing the growing adoption of rooftop PV, particularly within the industrial sector.

Breakdown of Installations

Type of System	Capacity Added in MW DC (2023)	Cumulative Capacity in MW DC
Decentralized (Residential, Commercial, Industrial)	2,019.6	8,346
Centralized (Utility-scale)	7,280	31,117
Off-Grid	27.6	86
Total	9,328	39,463

Cumulative PV Capacity in Spain (2010-2023)



Year	Installed PV Capacity (MW DC)
2010	4,595
2011	5,080
2012	5,439
2013	5,566
2014	5,641
2015	5,712
2016	5,784
2017	5,964
2018	6,314
2019	11,636
2020	15,853
2021	21,515
2022	30,136
2023	39,463

Added Installed Capacity by Segment

2023

			Installed PV capacity [MW]	Installed PV capacity [MW]
Grid-connected	BAPV	Residential	2,019.6	446.4
		Commercial		349.2
		Industrial		1,224
	BIPV	Residential	(optional)	(optional)
		Commercial		(optional)
		Industrial		(optional)
	Utility-scale	Ground-mounted	7,280	(optional)
		Floating		(optional)
		Agricultural		(optional)
Off-grid		Residential	27.6	(optional)
		Other		(optional)
		Hybrid systems		(optional)
Total			9,328	

2022

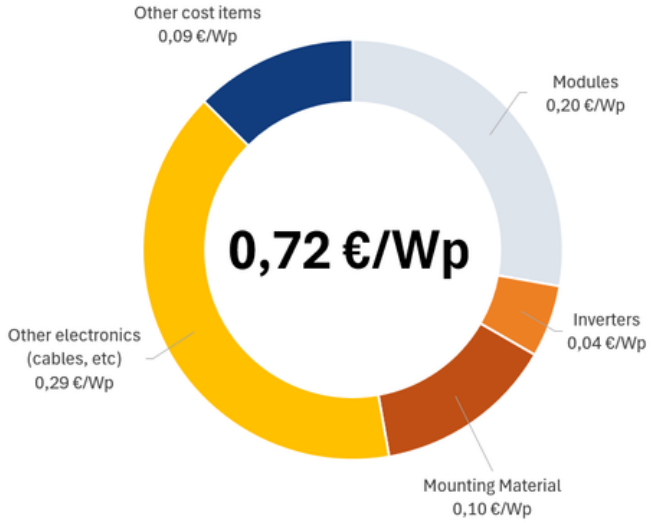
			Installed PV capacity [MW]	Installed PV capacity [MW]
Grid-connected	BAPV	Residential	2,978.3	962.7
		Commercial		601.7
		Industrial		1,413.9
	BIPV	Residential	N/A	
		Commercial		
		Industrial		
	Utility-scale	Ground-mounted	5,612.4	5,612.4
		Floating		
		Agricultural		
Off-grid		Residential	30.1	30.1
		Other		
		Hybrid systems		
Total			8,620.8	

- In 2023, photovoltaic systems connected to the grid reached higher volumes than in 2022.
- BAPV installations saw a notable decline in volume in its three sub-segments.
- The utility-scale segment saw significant growth in 2023.

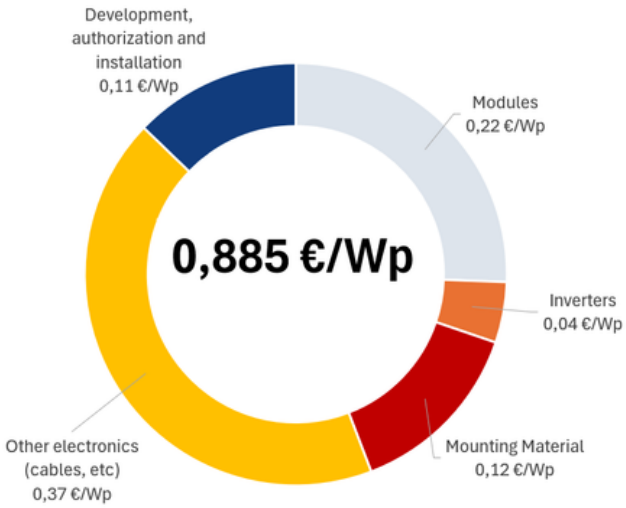
Competitiveness of PV Electricity

- In 2023, the typical price of a standard module crystalline silicon ranged between 0.19 and 0.22 €/Wp.
- Turnkey PV system average prices of different typical PV systems:
  - **Residential BAPV (5-10 kW)**: 1.4 €/W
  - **Small commercial BAPV (10-100 kW)**: 1.02 €/W
  - **Large commercial BAPV (100-250 kW)**: 0.8 €/W
  - **Industrial BAPV (>250 kW)**: 0.73 €/W
  - **Small centralized PV (1-20 MW)**: 0.89-0.90 €/W
  - **Large centralized PV (>20 MW)**: 0.70-0.71 €/W

Average breakdown of investment costs €/W (excluding tax) for a rooftop installation of 5 to 10 kW in 2023



Average distribution of investment costs in €/W (excluding tax) for a ground-mounted installation > 1 MW.



National Targets

- The targets for photovoltaic (PV) energy in Spain are outlined in the "**Integrated National Energy and Climate Plan**" (PNIEC). Its 2023 update sets the following targets for 2025 and 2030:
  - **Total PV Target for 2025:** 46.5 GWn
  - **Total PV Target for 2030:** 76.3 GWn
  - **Self-consumption PV Target for 2030:** 19 GWn
  - **Centralized PV Target for 2030:** 57.3 GWn

Policies supporting PV

- **Local Regulations:** While there is no nationwide mandate requiring the installation of PV systems on residential buildings or car parks, certain regional and municipal regulations have been implemented to promote solar energy integration, such as the Renewable Energy Law (2019) enacted in the Balearic Islands.
- **EU Framework:** In Spain, the transposition of the European Union's Directive 2024/1275 into national law is underway, requiring updates to existing building codes and regulations.
- **Self-consumption Incentives:** In 2023, Spain granted regional capital subsidies (phased out by year-end) and income tax credits to support self-consumption PV installations. New initiatives focused on encouraging self-consumption and prosumer participation

Outlook

In 2023 Spain was the second largest photovoltaic market in Europe in terms of annual installed capacity, due in large part to several regulatory changes that were implemented in the last few years. And while the PV market presents significant growth potential regarding ground-mounted plants, challenges in the financing landscape could temper this growth

Download the full report:

“National Survey Report of PV Power Applications in Spain 2023”

About IEA PVPS Task 1

IEA PVPS Task 1 facilitates the global exchange of technical, economic, environmental, and social information on photovoltaic power systems. It supports the overarching mission of enhancing photovoltaic solar energy's role in sustainable energy transitions, focusing on providing authoritative market and industry insights through its annual market reports. These efforts are essential in guiding policy decisions and industry strategies to promote the adoption and development of solar energy globally.