Technology Collaboration Programme
by IEA

International Energy Agency
Photovoltaic Power Systems Programme

Task 1 Strategic PV Analysis and Outreach

PVPS

National Survey Report of PV Power Applications in France

2025

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The International Energy Agency (IEA), founded in 1974, is an autonomous body within the framework of the Organization for Economic Cooperation and Development (OECD). The Technology Collaboration Programme (TCP) was created with a belief that the future of energy security and sustainability starts with global collaboration. The programme is made up of 6.000 experts across government, academia, and industry dedicated to advancing common research and the application of specific energy technologies.

The IEA Photovoltaic Power Systems Programme (IEA PVPS) is one of the TCP's within the IEA and was established in 1993. The mission of the programme is to "enhance the international collaborative efforts which facilitate the role of photovoltaic solar energy as a cornerstone in the transition to sustainable energy systems." In order to achieve this, the Programme's participants have undertaken a variety of joint research projects in PV power systems applications. The overall programme is headed by an Executive Committee, comprised of one delegate from each country or organisation member, which designates distinct 'Tasks,' that may be research projects or activity areas.

The IEA PVPS participating countries are Australia, Austria, Belgium, Canada, China, Denmark, Finland, France, Germany, India, Israel, Italy, Japan, Korea, Lithuania, Malaysia, Morocco, the Netherlands, Norway, Portugal, South Africa, Spain, Sweden, Switzerland, Thailand, Türkiye, the United Kingdom and the United States of America. The European Commission, Solar Power Europe and the Solar Energy Research Institute of Singapore are also members.

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What is IEA PVPS Task 1?

The objective of Task 1 of the IEA Photovoltaic Power Systems Programme is to promote and facilitate the exchange and dissemination of information on the technical, economic, environmental and social aspects of PV power systems. Task 1 activities support the broader PVPS objectives: to contribute to cost reduction of PV power applications, to increase awareness of the potential and value of PV power systems, to foster the removal of both technical and non-technical barriers and to enhance technology co-operation. An important deliverable of Task 1 is the annual "Trends in photovoltaic applications" report. In parallel, National Survey Reports are produced annually by each Task 1 participant. This document is the country National Survey Report for the year 2025. Information from this document will be used as input to the annual Trends in photovoltaic applications report.

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COVER PICTURE

Cahuzac-sur-Adour solar park, inaugurated in November 2025

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PHOTOVOLTAIC POWER SYSTEMS PROGRAMME

National Survey Report of PV Power Applications in France 2025

IEA PVPS
Task 1
Strategic PV Analysis & Outreach

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1 HIGHLIGHTS

France's photovoltaic market reached a new record in 2025. Around 7.4 GW DC (6.1 GW AC) of new capacity were connected during the year, compared with the previous record of 6.0 GW DC in 2024. Cumulative installed capacity reached approximately 37.6 GW DC (31.3 GW AC) at the end of 2025. The photovoltaic sector has become the largest in France in terms of installed capacity among all renewable electricity sources. Solar generation also increased (37.0 TWh, + 46% compared with 2024) and covered 7.3% of national electricity consumption.

However, the record level of annual additions did not reflect uniform growth across all market segments. The structure of annual additions remained broadly stable for installations above 500 kW, which accounted for around one third of newly connected capacity in both 2024 and 2025. The 9 kW to 36 kW segment also remained unchanged at 4%, while the 36 kW to 100 kW segment decreased only slightly, from 8% to 7%. The main changes occurred in the segments most directly exposed to the revision of the S21 support framework. The residential segment below 9 kW fell sharply, from 20% of annual additions in 2024 to 12% in 2025, following the reduction in support levels and the removal of the full-export option. The share of the 100 kW to 500 kW segment increased from 36% to 44%, reflecting a rush of projects before this segment was excluded from the open-access S21 feed-in tariff and shifted to a simplified tendering scheme.

Despite its strong market performance, the photovoltaic sector faced a less supportive policy environment. In March 2025, the S21 feed-in tariff framework for PV systems up to 500 kW installed on buildings was revised. For installations up to 9 kW, the full-export option was removed, while the self-consumption premium and the tariff paid for surplus electricity were significantly reduced. The latter dropped from 0.127 EUR/kWh in Q4 2024 to 0.04 EUR/kWh in Q4 2025. For the 100 kW to 500 kW segment, the open-access feed-in tariff was phased out and replaced by a simplified competitive tendering scheme. Only 43.5 MW were awarded in the first period of the simplified tender, compared with the 192 MW initially opened to competition.

Throughout 2025, the PV sector also faced a lack of visibility regarding France's long-term energy planning. Several drafts of the third Multiannual Energy Plan (Programmation Pluriannuelle de l'Energie – PPE 3) circulated during the year, with progressively less ambitious targets for photovoltaics. The PPE 3 was finally published in February 2026, after a three-year delay. It set a target of 48 GW AC of installed photovoltaic capacity by 2030 and 55–80 GW AC by 2035.

2 INSTALLATION DATA

The PV power systems market is defined as the market of all nationally installed (terrestrial) PV applications with a PV capacity of 40 W or more. A PV system consists of modules, inverters, batteries and all installation and control components for modules, inverters and batteries. Other applications such as small mobile devices are not considered in this report.

For the purposes of this report, PV installations are included in the 2025 statistics if the PV modules were installed and connected to the grid between 1 January and 31 December 2025, although commissioning may have taken place at a later date.

Data collection includes information on storage capacity, and the injection type is now collected by Enedis (total or partial self-consumption, full generation sales).

Official statistics report the AC power of photovoltaic fields, despite eligibility for Feed-in Tariffs and Tender support mechanisms being indicated in peak DC power thresholds. It may be useful for the reader to know that the average generation across France is 1 100 kWh/kW. Systems installed in the southern half of mainland France will generate more, up to 1 550 kWh/kWp, and in overseas territories up to and over 1 700 kWh/kWp. For the purposes of this report, all AC data has been converted to DC power, with a standard ratio of 1,2 (AC to DC) unless otherwise specified. In the particular segment of utility scale systems, some data is available on both DC and AC power and the reported DC power has been used.

2.1 Applications for Photovoltaics

The majority of photovoltaic applications in France in 2025 are grid-connected:

- **Residential** (house and multi-apartment) systems. These systems tend to range from one or two modules with self-consumption through to standard 3 kW, 6 kW or 9 kW systems. Around half of the current total capacity was installed during the 2009/2011" boom" and is building integrated – however, since 2017, new capacity is only building applied PV;
- **Commercial, agricultural or industrial** systems on buildings (36 kW to 250 kW AC or around 300 kW DC). A small proportion (3% of total new capacity) are systems between 9 kW and 36 kW, generally on public buildings such as town halls, primary schools or technical services buildings;
- **Industrial** building mounted or parking canopy systems (250 kW to 1 MW);
- **Utility scale ground mounted** systems (over 1 MW).

Small but growing segments include micro (balcony) kits, agrivoltaics and floating PV.

A very small amount of off grid systems has been installed in overseas territories (Guiana, etc.) or in mainland mountainous areas but there is no survey about that kind of systems.

2.2 Total photovoltaic power installed

- **Centralised:** any PV installation which only injects electricity and is not associated with a consumer (no self-consumption) over 1 MW;
- **Decentralised:** any PV installation which is embedded into a customer's premises (either with or without self-consumption) under 1 MW.

Cumulative PV installed capacity as of the end of 2025 reached 31 323 MW (AC or inverter power) or roughly 37.6 GW DC (module power).

Data collection process

Data supplied by all transmission and distribution grid managers is aggregated and published by the SDES: Service de la Donnée et des Etudes Statistiques, Ministry for the Ecological and Inclusive Transition. Data is segmented by systems size (< 3 kW, < 9 kW, < 36 kW, < 100 kW, < 250 kW, < 500 kW and above 500 kW). The data is 5 % accurate.

Capacity data published by the SDES and in the National register of electricity generation and storage facilities is given as the AC power of systems. The main DSO Enedis does not specify if the data is DC or AC, but it does tend to correspond to AC power, with the capacity of total self-consumption systems being unknown. If the difference between the DC and AC reported power in the past was not consequent, the divergence is now increasing, particularly considering the current world-wide trend to increase the DC/AC (module power to inverter power) ratio. See introductory notes on the conversion factors.

For the purposes of this report, we have considered the following hypotheses for data collected in 2025:

Grid connected distributed (decentralised) systems:

- **Residential:** up to 9 kW - no data was available concerning the split BIPV/BAPV for new systems from 2017 to 2022, the BIPV volumes with the bonus Feed-in tariffs are presumed to be the maximum allowed volumes in the feed in tariffs for 2022 and 2023 but do not include bespoke BIPV;
- **Commercial:** all systems 9 kW to 250 kW are Commercial BAPV (Building Applied Photovoltaics).

Grid connected centralised ground mounted systems:

- **Industrial:** all systems from 250 kW to 1 MW are Industrial or Ground-mounted. The split between Building-mounted and Ground-mounted is extrapolated from grid connection data published by the National register of electricity generation and storage facilities;
- **Utility scale systems:** all systems over 1 MW are Utility scale systems. For floating systems, installed capacity data are derived from Observ'ER's annual PV atlas, while agrivoltaic capacity data are derived from the Agrivoltaics Observatory operated by ADEME.

Off-grid PV power systems: There is no official data collection process for off-grid systems in France; any data presented are best-of-knowledge estimates.

Table 1: Annual PV power installed during calendar year 2025

		Installed PV capacity in 2025 [MW DC]
	Decentralised	5 010
	Centralised	2 351
	Off-grid	
	Total	**7 361**

Sources: SDES, Observ'ER PV atlas, National register of electricity generation and storage facilities, Agrivoltaics Observatory. Split is estimated by Observ'ER

Table 2: PV power installed during calendar year 2025

			Installed PV capacity [MW DC]	Installed PV capacity [MW DC]
Grid-connected	BAPV	Residential	5 010	884
		Commercial		3 926
		Industrial		199
	BIPV	Residential	Not tracked	
		Commercial		
		Industrial		
	Utility-scale	Ground-mounted	2 351	2 239
		Floating		89
		Agricultural		23
Off-grid		Residential	Not tracked	
		Other		
		Hybrid systems		
Total			**7 361**	

Sources: SDES, Observ'ER PV atlas, National register of electricity generation and storage facilities (Open data réseaux énergies - ODRÉ), Agrivoltaics Observatory. Split is estimated by Observ'ER

Table 3: Data collection process

If data are reported in AC, please mention a conversion coefficient to estimate DC installations.	All power data is given in AC power. The conversion coefficient is 1.2. For systems > 1 MW, the conversion coefficient is 1.20 based on survey of systems commissioned in 2025.
Is the collection process done by an official body or a private company/Association?	Data supplied by all transmission and distribution grid managers is aggregated and published by the Service de la donnée et des études statistiques, Commissariat au Développement Durable, the Ministry for the Ecological and Inclusive Transition. Enedis (national DSO) publishes segmented data. Author has further segmented data as required.
Link to official statistics (if this exists)	https://www.statistiques.developpement-durable.gouv.fr/les-energies-renouvelables?rubrique=21
Data quality	Data is of good quality, however provisional, and may be revised as grid operators provide additional information. Some divergence in capacity volumes may exist depending on the segments represented; the error source may be related to reporting dates, provisional data and/or collection methods. Historical data may be in DC.

Table 4: The cumulative installed PV power in 4 sub-markets

Year	Off-grid [MW] (including large hybrids)	Grid-connected distributed [MW] (BAPV, BIPV)	Grid-connected centralized [MW] (Ground, floating, agricultural…)	Total [MW]
2011	29.4	2 690	842	3 562
2012	29.6	3 662	1 214	4 906
2013	29.7	4 145	1 517	5 691
2014	29.75	4 756	2 051	6 836
2015	30.15	5 108	2 782	7 920
2016	30.15	5 488	3 118	8 635
2017	30.15	5 982	3 701	9 713
2018	30.15	6 410	4 315	10 756
2019	30.15	6 955	4 945	11 931
2020	30.15	7 571	5 497	13 513
2021	30.15	8 873	7 865	16 960
2022	/	11 211	8 388	20 610
2023	/	12 188	12 387	24 576
2024	/	16 638	13 835	30 478
2025	/	21 613	15 976	37 589

Table 5: Other PV market information

	2025			
Number of PV systems in operation in France	Peak Power range	Installations (number)	Power [MW AC]	Power [MW DC]
	0 – 3 kW	694 042	1 740	2 088
	3 kW – 9 kW	509 888	2 899	3 479
	9 kW – 36 kW	56 068	1 274	1 529
	36 kW – 100 kW	46 993	4 031	4 837
	100 kW – 250 kW	35 577	7 011	8 413
	250 kW – 500 kW	1 261	505	606
	> 500 kW	3 404	13 864	16 637
	Total	**1 347 233**	**31 323**	**37 589**
Decommissioned PV systems during the year [MW]	Not tracked. No data available on decommissioned PV capacity in 2025.			
Repowered PV systems during the year [MW]	10 - 100 MW. Currently no official reporting of repowered volumes is published			
Unregistered capacity	Unregistered capacity may concern micro (balcony) systems.			

Sources: SDES, Observ'ER PV atlas, National register of electricity generation and storage facilities (Open data réseaux énergies - ODRÉ), Agrivoltaics Observatory. Split is estimated by Observ'ER

Table 6: PV power and the broader national energy market

	2024	2025
Total power generation capacities [GW]	Total: 155.5 GW of which • Nuclear: 61.4 GW • Fossil fuel: 17.4 GW • RES: 76.7 GW (see below)	Total: 164.5 GW of which • Nuclear: 63.0 GW • Fossil fuel: 17.3 GW • RES: 84.2 GW (see below)
Total renewable power generation capacities (including hydropower) [GW]	• PV*: 24.3 GW • Hydro: 25.7 GW • Wind: 24.3 GW • Other RES: 2.3 GW	• PV*: 30.4 GW • Hydro: 25.7 GW • Wind: 25.8 GW • Other RES: 2.3 GW
Total electricity demand [TWh]	449.2 TWh (gross value)	451.2 TWh (gross value)
New power generation capacities installed [GW]	Total: 4.8 GW of which • Gas: 0 GW • Coal: 0 GW • Diesel: 0 GW • Nuclear: 0 GW PV and other RES: + 6.7 GW (see below)	Total: 8.7 GW of which • Gas: - 0.2 GW • Coal: 0 GW • Diesel: 0 GW • Nuclear: + 1.6 GW PV and other RES: + 7.2 GW (see below)
New renewable power generation capacities (including hydropower) [GW]	• PV*: + 5 GW • Wind: + 1.7 GW • Hydro: + 0.00 GW • Other RES: < 0.1 GW	• PV*: + 5.9 GW • Wind: + 1.3 GW • Hydro: + 0.00 GW • Other RES: < 0.1 GW
Estimated total PV electricity production (including self-consumed PV electricity) in [GWh]	24 800 GWh	32 900 GWh
Total PV electricity production as a % of total electricity consumption	5.52%	7.29%
Average yield of PV installations (in kWh/kWp)	1 100 kWh/kWp	1 100 kWh/kWp

Sources: Annual electricity review, (RTE, 2024), Annual electricity review (RTE, 2025)
*Data in this table is provided by RTE and provisional PV **are AC power only**

2.3 Key enablers of PV development

Table 7: Information on key enablers.

	Description	Annual Volume	Total Volume	Source
Decentralized storage systems	Systems with conformity declaration	18 732 (Mainland) 3 870 (Overseas Territories)	140 MW (end. 2025)	Consuel Annual Report 2025 Annual electricity review (RTE, 2025)
Residential Heat Pumps [Number]	air/air + geothermal + air/water	759 500 + 3 140 + 181 750 = 944 390		Oberv'ER 2025 market survey
100 % Electric cars [Number]		363 130	1 663 365	AVERE Bilan 2025
Plug-in Hybrid Electric Vehicles [Number]		113 221	852 749	AVERE Bilan 2025

3 COMPETITIVENESS OF PV ELECTRICITY

3.1 Module prices

Table 8: Typical module prices

Year	Typical price of a standard module crystalline silicon* EUR/Wp			
	2022	2023	2024	2025
Average module price (all technologies)	0.25 – 0.4	0.15 – 0.3	0.09 - 0.22	0.07 - 0.14

Source: pvXchange
*VAT not included

Module prices stabilised at historically low levels in 2025. The downward pressure on prices was mainly driven by production capacity in China continuing to exceed market demand. In response to this situation, several Chinese photovoltaic manufacturers agreed at the end of 2024 to limit production, especially in the wafer segment. The aim was to reduce oversupply and stop the sharp decline in prices observed in 2023 and 2024. Production cuts and temporary factory shutdowns reduced module availability in early 2025, particularly for high-efficiency products. As a result, prices increased slightly during the first half of the year. However, these measures proved insufficient to address the structural overcapacity issue. As supply increased again, competition between manufacturers continued to put downward pressure on prices during the second half of the year.

3.2 System prices

Table 9: Turnkey PV system prices* of different typical PV systems

Category/Size	Typical applications and brief details	Current prices [EUR/W]
Residential BAPV < 3 kW	Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected households. Typically roof-mounted systems on villas and single-family homes. Equipment and labour.	2 (1.7 – 2.3)
Residential BAPV 3-10 kW	Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected households. Typically roof-mounted systems on villas and single-family homes. Equipment and labour.	1.74 (1.2 – 2.1)
Small commercial BAPV 10-100 kW	Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected commercial buildings, such as public buildings, multi- family houses, agriculture barns, grocery stores etc.	1.0 (0.62 – 1.4)
Large commercial BAPV 100-250 kW	Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected large commercial buildings, such as public buildings, multi-family houses, agriculture barns, grocery stores etc.	0.85 (0.75 – 1.2)
Industrial BAPV >250 kW	Grid-connected, roof-mounted, distributed PV systems installed to produce electricity to grid-connected industrial buildings, warehouses, etc.	0.8 (0.75 – 1.0)
Small centralized PV 1-20 MW	Grid-connected, ground-mounted, centralized PV systems that work as central power station. The electricity generated in this type of facility is not tied to a specific customer and the purpose is to produce electricity for sale.	0.75
Other	Parking canopy distributed >250 kW	1.0 – 1.25

Source: estimation Observ'ER based on limited market surveys. Special thanks are due to Enerplan for their support
*VAT not included

Table 10: National trends in system prices* for different applications

Year	Residential BAPV Grid-connected, roof-mounted, distributed PV system 5-10 kW **[EUR/W]**	Small commercial BAPV Grid-connected, roof-mounted, distributed PV systems 10-100 kW **[EUR/W]**	Large commercial BAPV Grid-connected, roof-mounted, distributed PV systems 100-500 kW **[EUR/W]**	Centralized PV Grid-connected, ground-mounted, centralized PV systems 10-50 MW **[EUR/W]**
2007	8.4	7.8		6.3
2008	8.2	7.6		6.2
2009	6.9	6.4		5.2
2010	5.9	5.5		4.5
2011	3.9	2.6		2
2012	3.7	2		1.6
2013	2.7	2		1.3
2014	2.6	2		1.3
2015	2.5	1.9		1.2
2016	2.41	1.58		1.1
2017	2.2	1.2		0.9 - 1.1
2018	2.2	1.2		0.7 - 0.9
2019	2	1.2	1.2	0.65 – 0.85
2020	1.9	1.1	0.9	0.65 – 0.85
2021	1.7 – 2.5	0.6 – 1.7	0.7 – 1.1	0.5 – 0.9
2022	2.2 (1.2 – 3)	1.1 (0.8 – 1.3)	0.7 – 0.9	0.65 – 0.95
2023	2.5 (1.3 – 2.9)	1.2 (0.9 – 1.5)	0.7 – 0.9	0.65 – 0.95
2024	2.3 (1.1 – 2.4)	0.8 (0.65 - 1.6)	0.6 – 1.1	0.6 (0.4 – 0.85)
2025	1.55 (1.2 – 1.65)	1.0 (0.62 – 1.4)	0.85 (0.75 – 1.2)	0.72

Sources: Previous IEA NSR-FR reports, Observ'ER, limited market surveys by Observ'ER. Special thanks are due to Enerplan for their support.
*VAT not included

Note: The table includes BIPV-IAB** systems up to 3 kW until 2012, BIPV-IAB systems up to 9 kW from 2013 to 2016 and BAPV systems up to 9 kW since 2017. The range of peak power for large commercial systems has been increased from 100 – 250 to 100 – 500 to reflect changing market conditions.

**IAB: completely building integrated; ISB: simplified building integration; BAPV building applied/roof top systems.

3.3 Cost breakdown of PV installations

Table 11: Cost breakdown for a grid-connected roof-mounted, distributed residential PV system of 5-10 kW

Cost category	Average [EUR/W]
Hardware	
Module	0.54
Inverter	0.4
Mounting material	0.11
Other electronics (cables, etc.)	
Subtotal Hardware	**1.05**
Soft costs	
Planning	0.5
Installation work	
Shipping and travel expenses to customer	
Permits and commissioning (i.e. cost for electrician, etc.)	
Project margin	
Subtotal Soft costs	**0.5**
Total (excluding VAT)	**1.55**
Average VAT	20%
Total (including VAT)	**1.86**

Source: Limited market surveys (Observ'ER).

Table 12: Cost breakdown for a grid-connected, ground-mounted, centralized PV systems of >10 MW

Cost category	Average [EUR/W]
Hardware	
Module	0.12
Inverter	0.04
Mounting material	0.16
Other electronics (cables, etc.)	0.16
Subtotal Hardware	**0.47**
Soft costs	
Planning	0.25
Installation work	
Shipping and travel expenses to customer	
Permits and commissioning (i.e. cost for electrician, etc.)	
Project margin	
Subtotal Soft costs	**0.25**
Total (excluding VAT)	**0.72**
Average VAT	20%
Total (including VAT)	**0.87**
Grid connection	**0.15**

Source: Evaluation du régime d'appels d'offres dit « PPE2 » à destination de la Commission Européenne (CRE, 2026), limited market survey and estimations by Observ'ER.

3.4 Financial Parameters and specific financing programs

Table 13: PV financing information in 2025

Different market segments	Loan rate [%]
Average rate of loans* – residential installations	6.1% in December 2025, excluding fees and insurance
Average rate of loans – commercial installations	3.54% in December 2025 for new bank loans to companies
Average cost of capital – industrial and ground-mounted installations	Around 3.95% in December 2025

Sources: Statinfo Crédits aux particuliers (Banque de France, Dec. 2025), Statinfo Financement des entreprises (Banque de France, Dec 2025), S&P Global, iBoxx € Corporates 10–15 – Annual Yield, ISIN DE000A0ME5S6
* For residential installations, the rate is based on the average interest rate for consumer loans

Financing conditions improved in 2025 for both residential and commercial installations. For households, the average interest rate on new consumer loans decreased from 6.42% in December 2024 2025 to 6.11% in December 2025. For companies, the average interest rate on new bank loans decreased from 4.18% in December 2024 to 3.54% in December 2025.

Please note that these indicators are not specific to photovoltaic installations but provide an indication of the general financing conditions.

3.5 Specific investments programs

Table 14: Summary of existing investment schemes

Investment Schemes	Introduced in France
Third party ownership (no investment)	Used for commercial and industrial systems (roof and land rental), but also to a lesser extent on new agricultural buildings.
Renting	Used for small-scale systems. A specialized company installs the photovoltaic system of the roof, retaining ownership of the panels. The company is also responsible for maintenance during the contract, and the customer pays a monthly rental fee.
Leasing	Leasing is a common financing instrument in France for commercial systems. “Sofergies” (Energy Financing Company) provide credit or leasing options for projects developed by municipalities, social housing organisations, commercial companies and agricultural companies.
Financing through utilities	Some electric utilities (more often their subsidiaries) develop and invest in PV systems, but they do not offer finance for third parties. Utilities can access all support mechanisms, including FiT and Tenders for systems that they develop or own.
Crowd funding (investment in PV plants)	Crowdfunding generally finances debt through crowd-funding platforms, however some platforms allow for equity financing. Examples of platforms: MiiMOSA, Enerfip, Lendosphere (in particular

	with AkuoCoop), Lumo, Lendopolis, Blue Bees, LITA.co, Flolend, Spear, etc...
Community solar	(See 4.4.1 about Solar Community)
International organization financing	No

The main financing organizations are commercial banks (both French and foreign), debt funds (French and foreign insurers) and institutional lenders (European and national).

Cleantech investments in France declined in 2025. 1.9 billion euros was invested through 126 transactions, down 20% compared with 2024 (2.3 billion euros). However, renewable energy remained the leading sector in both investment value and number of transactions, with 26 operations representing 670 million euros, or around one third of total cleantech investment. One of the main renewable-energy transactions was a 98 million euros fundraising by Solveo Energies, led by Mirova, to accelerate the deployment of its solar and wind projects.

Portfolio financing

Portfolio financing and refinancing can be used to finance several renewable energy projects together. The main public financial institutions active in this area are the Banque des Territoires, Bpifrance and the European Investment Bank (EIB). In 2025, France was once again the main beneficiary of EIB climate financing, with a record 8 billion euros, of which 4.5 billion was dedicated to the energy sector. In addition, the EIB provided a 100 million-euro loan to Bpifrance to support private renewable energy projects in France.

Bpifrance was also involved in one of the main photovoltaic portfolio financing operations of the year. Technique Solaire raised 302 million euros in senior debt from Bpifrance, the Crédit Agricole group and Société Générale. The financing covers 341 photovoltaic projects totalling 240 MW across France, Spain and the Netherlands, including 185 MW in France.

Project financing

Project financing is classically used for infrastructure projects. It is based on future cash flows generated by the project, which are used to repay the debt and provide a return on the invested equity. Private projects can be financed by commercial banks and Bpifrance, the French public investment bank. Public authorities can access from public long-term investors such as the Caisse des Dépôts (Deposits and Consignments Fund).

Project financing is also available through Sofergies (Sociétés de Financement des Économies d'Énergie). They are specialised financial companies that finance energy efficiency and renewable energy projects. They can provide loans or leasing solutions to private companies, municipalities, social housing organisations and agricultural companies.

Community solar (citizen investment)

Citizen investment is mobilised through specific citizen RES funds and crowdfunding platforms - financing both equity and debt. The principal organisations active in channelling citizen investment are crowdfunding platforms (debt and equity investments) and Energie Partagée. In 2025, 44 new solar community projects for 34.74 MW were commissioned by Energie Partagée (see also part 4.4.1).

Residential project financing

Residential systems are financed through different schemes: 100% owner capital, home renovation loans or consumer credit loans.

3.6 Merchant PV / PPA / CPPA

The French corporate PPA market slowed in 2025 after the strong momentum observed in 2023 and 2024. According to Capgemini Invent, 21 CPPA contracts were announced in France in 2025, compared with 33 in 2024, for an estimated annual volume of around 965 GWh/year, down from about 1 860 GWh/year in 2024. The decrease was particularly visible in the photovoltaic segment. In 2025, 7 CPPA contracts were signed for PV (5 for greenfield sites) for a cumulative volume of 439 GWh/year, compared with 19 contracts in 2024 (17 for greenfield sites) for a cumulative volume of 729 GWh/year.

The slowdown in PV PPAs mainly reflected less favourable market conditions. Lower electricity prices reduced buyers' incentive to lock in long-term prices. The growing cannibalisation of solar production and the increase in negative-price hours made the long-term value of solar output harder to assess. As a result, offtakers became less likely to engage with standalone PV PPAs.

3.7 Additional Country information

Table 15: Country information

Retail electricity prices for a household	Time of use contracts available. Eurostat Band DC (2 500 kWh < consumption < 5 000 kWh) **256.1 EUR/MWh**, all taxes and levies included
Retail electricity prices for a commercial company	Time of use contracts available. Eurostat Band IB (20 MWh < consumption < 500 MWh) **194.6 EUR/MWh,** excluding VAT and other recoverable taxes and levies
Retail electricity prices for an industrial company	Time of use, demand response, peak shaving contracts available. Eurostat Band ID (2 000 MWh < consumption < 20 000 MWh) **256.1 EUR/MWh**, all taxes and levies included
Liberalization of the electricity sector	France's electricity industry is highly concentrated but not vertically integrated in theory. However, the French State now holds the entire share capital and voting rights of EDF, who have a roughly 70% market share (number of clients) and own the distribution system operator that manages around 95% of the distribution grid.

Source: Eurostat [nrg_pc_204] and (nrg_pc_205) 2025S2.

4 POLICY FRAMEWORK

This chapter describes the support policies aiming directly or indirectly to drive the development of PV. Direct support policies have a direct influence on PV development by incentivizing or simplifying or defining adequate policies. Indirect support policies change the regulatory environment in a way that can push PV development.

Table 16: Summary of PV support measures

Category	Residential		Commercial + Industrial		Centralized	
Measures in 2025	**On-going**	**New**	**On-going**	**New**	**On-going**	**New**
Feed-in tariffs	Yes	Yes (changes to Feed in Tariff conditions)	Stopped	-	-	-
Feed-in premium (above market price)	-	-	-	Yes, (CfD in competitive Tenders)	Yes, (CfD in competitive Tenders)	Minor changes to Tender conditions
Capital subsidies	-	Yes (reduction of the investment premium for installations up to 9 kW)	-	-	-	-
Green certificates	-	-	-	-	-	-
Renewable portfolio standards with/without PV requirements	-	-	-	-	-	-
Income tax credits	-	-	-	-	-	-
Self-consumption	Yes	-	Yes	-	-	-
Net-metering	-	-	-	-	-	-
Net-billing	Yes	Yes (changes to Feed in Tariff conditions)	Stopped	Stopped	-	-
Collective self-consumption and delocalized net-metering	Yes	-	Yes	-	-	-
Sustainable building requirements	-	-	-	Yes (mandatory solar roofs on some buildings and car parks)	-	-

BIPV incentives	-	-	-	-	-	-
Merchant PV facilitating measures	-	-	-	Yes, guarantee fund for CPPA	-	Yes, guarantee fund for CPPA

4.1 National targets for PV

The framework for developing photovoltaics policies in France falls within the long term National Low Carbon Strategy (SNBC, 2050 horizon) and the 10-year Energy Programme Decree (PPE).

In February 2026, the new PPE Decree (PPE 3) was published, with a delay of more than three years. For the PV sector, the new action plan sets targets of 48 GW AC of installed capacity by 2030 and between 55 GW AC and 80 GW AC by 2035. For reference, the cumulative installed capacity amounted to 31.3 GW AC at the end of 2025.

In terms of electricity generation, the PPE 3 sets a target of approximately 59 TWh by 2030 and approximately 67 to 98 TWh by 2035.

The pace of PV deployment is to be managed through public support mechanisms, mainly competitive tenders and tariff orders. Until 2028, the annual volume of supported photovoltaic capacity may not exceed 2.9 GW AC per year. After 2028, the volume of capacity to be awarded or contracted is expected to be around 5 GW per year, but may be adjusted upward or downward depending on electricity demand forecasts, the development of flexibility solutions, the deployment of other generation technologies and the actual pace of PV development.

The support framework after 2028 is expected to rely on several tendering schemes. For ground-mounted PV, the PPE foresees two tenders per year, each for around 1 GW. For building-mounted PV, it foresees three tenders per year, each for around 300 MW. Small building-mounted PV installations between 100 kWp and 500 kWp would be supported through several calls per year, for a total of around 1.4 GW AC per year. These tenders would be complemented by an annual technology-neutral tender open to PV, hydropower and onshore wind, with a volume of around 500 MW after 2028.

The PPE 3 aims to promote a balanced development of the different PV market segments. The indicative distribution foreseen is 41% on small and medium-sized rooftops, 5% on small ground-mounted systems, and 54% on large installations, including 38% ground-mounted and 16% rooftop projects.

The industrial dimension of the policy has also been clarified in the PPE. For 2030, the indicative industrial capacity targets are 5 GW per year for modules, 5 GW per year for cells, 3 GW per year for wafers and 3 GW per year for ingots. By 2035, these targets rise to 5-10 GW per year for modules and cells and 3-5 GW per year for wafers and ingots.

4.2 Direct support policies for PV installations

4.2.1 Open volume feed-in tariffs for BAPV

Systems up to 100 kW on buildings, greenhouses and parking canopies are supported through an open-window scheme (S21 framework). This framework includes differentiated tariffs depending on system size and lump sums for smaller self-consumption systems (with net-billing) as well as specific building integrated products. Feed-in tariffs and net-billing tariffs are segmented according to system size and vary each trimester, with the variation pegged to grid connection requests for previous trimesters. For overseas regions, the tariffs are adapted to regional irradiation levels. Tables 17 and 18 detail 4th quarter 2025 tariff levels.

In 2025, major changes were introduced to the S21 open-window support scheme. For small installations up to 9 kW, the “full injection” option was removed. Installations in this segment can no longer sell all their electricity to the grid. In addition, the feed-in-tariffs were significatively cut down to 0.04 c€/kWh, as well as investment lump sums for self-consumption Projects between 100 and 500 kW, previously eligible for support under the S21 framework, were gradually moved away from automatic tariff support and towards a competitive tender process. In 2025, 4 284.7 MW of systems accessing the FiT were commissioned, nearly 30% more than in 2024.

Table 17: Systems commissioned accessing the FiT in 2024 and 2025 – Mainland France

Peak Power range	Power accessing FiT [MWp] in 2024	Power accessing FiT [MWp] in 2025
0 – 3 kW	213.7	123.3
3 kW–9 kW	707.4	548.5
9 kW–36 kW	129.2	166.1
36 kW–100 kW	237.4	235.7
100 kW–500 kW	2 025.1	3 211.1
Total	**3 312.8**	**4 284.7**

Source: Bilan du développement de projets (CRE, April 2025)

Table 18: Feed-in Tariff remuneration levels – Mainland France

Tariff category	Power of PV installation	Tariff Q4 2025* (EUR/MWh)
Continental France — building applied PV		
Ta (no self-consumption)	≤3 kW	Not allowed
Ta (no self-consumption)	3 kW to 9 kW	Not allowed
Tb (no self-consumption)	9 kW to 36 kW	104.9
Tb (no self-consumption)	36 kW to 100 kW	91.2

* Installations for which a complete request for connection was made between 01/10/25 and 31/12/25.

Table 19: Feed-in Tariff remuneration levels – Overseas France

Tariff category	Power of PV installation	Tariff end of 2025 (EUR/MWh)
Overseas France — building applied PV		
Sample system in Guadeloupe	2 kW	297.5
Sample system in Corsica	8 kW	203.1
Sample system in Réunion	50 kW	144.7

4.2.2 Feed-in tariffs and feed-in premiums in competitive tenders

Volume capped periodic competitive tenders for systems from 100 kW to 30 MW (no size limit for ground-based systems on waste land) are segmented according to size, application and separated between mainland/non-interconnected zones (i.e. islands). Contracts are Contract for Difference, allowing candidates to set a premium level (that, depending on market costs, could go below the market costs). Specific conditions for AgriPV system were introduced (height, exclusion of co-siting with sheep or cow pastures).

4.2.3 BIPV development measures

BIPV is a niche market in France. According to IEA PVPS Task 15 estimates, France was nevertheless one of the leading European BIPV markets in 2024, with around 100 MW of new BIPV capacity installed. This figure should be put into perspective. Across Europe, BIPV represented only around 350 MW in 2024, less than 1% of distributed PV additions.

In mainland France, there are currently no specific support measures for BIPV systems, following the phase-out of the landscape-integration premium (prime à l'intégration paysagère) for new connection requests after October 2023 in mainland France.

4.2.4 Merchant and corporate PV development measures

While the national deployment strategy remains centered on CRE tenders, a parallel ecosystem for unsubsidized and corporate-backed PV installations is developing.

Merchant PV projects—those not reliant on fixed feed-in tariffs or state-backed contracts—derive from developers willing to explore the open electricity market. On the corporate side, solar PV has evolved from a tool for stakeholder engagement and compliance with ESG standards to an active contributor to operational efficiency.

Merchant and corporate PV projects mostly rely on Power Purchase Agreements (PPAs), which enable businesses to secure long-term access to clean electricity at predictable costs. The improved bankability of PPAs in France facilitated the emergence of standardized contract templates and greater third-party investor participation. The Renewable Electricity Guarantee, operated by Bpifrance (the French public investment bank), was introduced in 2023 to facilitate long-term PPAs between renewable electricity producers and industrial consumers. The guarantee covers up to 80% of the producer's contracted revenues in the event of an industrial off-taker default, thereby reducing counterparty risk and facilitating the financing of greenfield renewable projects selling electricity under CPPAs. Eligible buyers are industrial companies based in France, with no strict size or turnover criteria, and with a flexible financial rating. In

2024, the minimum volume for single-buyer CPPAs was reduced to 5 GWh/year (versus 10 GWh/year previously) and multi-buyer CPPAs became eligible above an aggregated threshold of 10 GWh/year, with no minimum consumption threshold per buyer. This widening of eligibility helped make CPPAs accessible to a broader range of industrial consumers, including smaller industrial players. In 2025, the Renewable Electricity Guarantee supported its first multi-buyer CPPA, signed between VALECO and nine mid-sized industrial companies in Nouvelle-Aquitaine. Under the 15-year agreement, the nine off-takers will jointly purchase electricity generated by a new 23.4 MWp solar PV plant, scheduled for commissioning in the second half of 2026.

4.3 Self-consumption measures

Table 20: Summary of self-consumption regulations for small private PV systems in 2025

PV self-consumption	Right to self-consume	Individual self-consumption: the PV generator or a third-party owner can be the consumer. Participation in a collective self-consumption operation is limited to 3 use cases (see below). Virtual net-metering (virtual battery storage): the consumer must be the PV generator.
	Revenues from self-consumed PV	Lump-sum for partial self-consumption systems in association with net-billing FiT. Self-consumed electricity is not subject to tax for individual self-consumption. In case of partial self-consumption installed capacity is subject to capacity taxes, such as grid taxes. Since the 2025 finance-law changes, collective self-consumption can also benefit from a zero accise rate for renewable electricity from installations smaller than 1 MW.
	Charges to finance Transmission, Distribution grids & Renewable Levies	Systems with total self-consumption pay no connection or annual grid access costs. Systems in collective self-consumption systems pay grid connection costs and annual access fees.
Excess PV electricity	Revenues from excess PV electricity injected into the grid	Net-billing set by FiT (see below) or by Tender specifications (FiT or wholesale market + premium) or by PPA (Power Purchase Agreement). Systems may sell into collective self- consumption before selling excess within FiT framework.
	Maximum timeframe for compensation of fluxes	For single consumers: 5 minutes; in virtual collective self- consumption metering timesteps are 15 minutes (down from 30 minutes in October 2024.
	Geographical compensation (virtual self-consumption or metering)	Called “collective self-consumption” in France. Participation in a collective self-consumption operation is limited to 3 use cases: 1. Default case: PV installations and consumers located in the same building. 2. Extended case: injection and withdrawal points must be connected to the low-voltage grid and comply with the proximity criteria set by ministerial order. The standard distance criterion between the two furthest participants is

		set at 2 km. A derogation may be granted if all the participants are located exclusively in one or more rural or peri-urban municipalities in mainland France. The proximity criterion is extended to 10 km in this case. 3. Exceptional case: PV installations and consumers within a distance of 20 km, if the participants are located exclusively in one or more rural municipalities in mainland France. A new derogation was introduced in 2025 for extended collective self-consumption schemes involving inter-municipal authorities (EPCI) with own-source taxation. Under this derogation, the geographic scope may cover the EPCI territory, provided that at least one participant is either a municipality or an EPCI; all producers and consumers are public bodies, private entities entrusted with a public-service mission, or local mixed-economy companies and their subsidiaries; and all injection and consumption points are located within the relevant EPCI territory. In all cases, generators(s) and consumers(s) must be linked through a common legal entity (PMO – Personne Morale Organisatrice).
	Number of participants (individual or collective self- consumption)	Individual self-consumption limited to 1 participant. No limit in participant numbers for collective self-consumption, but there are generator capacity limits, the combined capacity of the generating facilities involved in the operation must not exceed 5 MW.
Other characteristics	Regulatory scheme duration	20 years for surplus (net-billing) sold in FiT, 10 years in Self- Consumption Tender. Collective self-consumption determined by private contract.
	Third party ownership accepted	Third party ownership is allowed but can be complex to manage.
	Grid codes and/or additional taxes/fees impacting the revenues of the prosumer	Grid connection fees for systems over 36 kVA. No grid access fees for total self-consumption systems without injection. Partially mutualised grid access fees for partial self-consumption systems with surplus injection. No energy taxes for individual self-consumption under the relevant conditions, even if the PV system is owned by a third party. Collective self-consumption may also benefit from a zero-excise duty rate for renewable electricity from installations below 1 MW.
	Regulations on enablers of self-consumption (storage, DSM…)	Electricity storage is considered as both a consumer and a generator when integrated into collective self-consumption.
	PV system size limitations	Automatic grid connection limited to systems < 36 kVA with no surplus injections and no grid fees. Other systems require approval. Systems up to 100 kW on buildings may access the self-consumption premium and surplus-injection FiT framework. Systems must be between 500 kW to 10 MW to access Tenders.

		In the case of “extended” collective self-consumption projects, the total PV volume is limited to 5 MW* mainland France, with a possible derogation up to 10 MW* for qualifying EPCI-based schemes. In non-interconnected territories, the total PV volume is limited to 0,5 MW*. *power is expressed in peak DC power.
	Electricity system limitations	Mainland, no limits. In non-interconnected zones (ZNI), self-consumption systems must comply with the same capacity and curtailment rules as feed-in PV systems. The curtailment threshold for intermittent renewable generation is set in the relevant territorial energy planning document.
	Additional features	Markets sales of surplus in the framework of Tenders require access to an Aggregator/Balancing Responsible Party. Collective self-consumption systems can access FiT for excess production sales.

4.3.1 Net-billing feed-in tariff and lump sum for BAPV systems under 100 kW

Table 21: Net billing Feed-in Tariffs for BAPV systems

Tariff category	Power of PV installation	Net-billing tariff (+ lump sum) Q4 2025 (EUR/MWh)
Continental France — building applied PV		
Pa (net-billing)	≤ 3 kW	40.0 (+0.08 EUR/W installed)
Pa (net-billing)	3 kW to 9 kW	40.0 (+ 0.08 EUR/W installed)
Pb (net-billing)	9 kW to 36 kW	61.7 (+ 0.16 EUR/W installed)
Pb (net-billing)	36 kW to 100 kW	61.7 (+ 0.08 EUR/W installed)

4.3.2 Net-billing with feed-in premium

Winning candidates in Self-Consumption Tender (systems from 500 kW to 10 MW) receive a bonus on self-consumption at the tendered rate plus net-billing set by tender specifications (wholesale market + premium). The last round of this Self-Consumption Tender was held in 2023.

4.4 Collective self-consumption, community solar and similar measures

Collective self-consumption operations may be implemented within a single building or, for the extended cases, within a defined geographical perimeter, generally 2 km and exceptionally up to 10 km or 20 km. When generators and consumers are in the same building, the PV installation can be connected to the medium voltage grid. In other cases, installations are connected to the low voltage grid. In 2025, the regulatory framework increased the maximum aggregated capacity in extended collective self-consumption schemes in mainland France to

5 MW. Also, a derogation allows collective self-consumption operations involving municipalities or inter-municipal authorities (EPCI) with own-source taxation to reach up to 10 MW. Under this derogation, collective self-consumption schemes may cover the whole territory of the EPCI, rather than being limited to the usual distance-based perimeter. To qualify, at least one participant must be a municipality or an EPCI; all producers and consumers must be public bodies, private entities entrusted with a public-service mission, or local mixed-economy companies and their subsidiaries; and all injection and consumption points must be located within the relevant EPCI territory.

Virtual metering is implemented by the grid manager and requires smart meters on all generation and consumption sites. Each operation must have a legal entity (Personne Morale Organisatrice or PMO), whose primary role is to provide to the grid manager algorithms or rules defining the distribution of the PV power, as well as an up-to-date list of the members of the operation.

The number of virtual metering collective self-consumption projects has grown at an exponential pace over the last few years. Registered operations more than doubled in 2025, compared with 2024. By the end of 2025, 1 625 operations were active (up from 698 at the end of 2024). Collective self-consumption attracted a broader participant base throughout 2025. The number of participants increased from 8 342 to 17 995 (+ 9 653) in one year. Of these, 15 577 were consumers and 2 418 were generators.

On the economic side, the 2025 Finance Law introduced a zero-rate excise duty for renewable electricity produced by installations below 1 MW and consumed within collective self-consumption schemes, but its practical application was subject to administrative uncertainty during the year. In the long term, however, economic models for collective self-consumption systems remain uncertain, as the competitiveness of collectively self-consumed electricity is structurally sensitive to retail electricity prices, electricity taxation and grid taxes.

4.4.1 Solar Community (Renewable energy or citizen energy communities)

Renewable Energy Communities (REC) and Citizen Energy Communities (CEC) are defined at the European level by the RED II Directive and the Electricity Directive respectively. RECs are entitled to produce, consume, store and sell renewable energy, and share the energy produced within it. They must be granted an access all relevant energy markets, both directly and through aggregation, in a non-discriminatory manner. A CEC has a broader scope: energy production, supply, consumption, aggregation, storage and sale of electricity. It can also provide its members with energy services (energy efficiency, recharging points, etc.).

EU Member States are obliged to transpose the texts of the Directive into their own legislation in order to provide a framework that promotes and facilitates the development of these renewable energy communities. In France, the process of transposition began in 2021, when the French government introduced the notions of renewable energy community and citizen energy community through Ordinances. Legislation on energy communities moved on in March 2023, with the Renewable Energy Acceleration Bill, which specified the communities' legal forms, along with certain governance rules. An implementation decree supplementing the March 2023 bill was enacted in December 2023. This decree specified in particular the concepts of autonomy, effective control and geographical proximity. RECs and CECs are currently defined in the French Energy Code. Energy communities have a framework for accelerating participative renewable energy projects led by local players. It distinguishes, as European law does, between renewable energy communities (RECs) and citizen energy

communities (CECs), and sets out their operating and control procedures: conditions of autonomy, geographical proximity criteria (for RECs), procedures for leaving a community, compensation for network operators, etc.

This text complements the citizen investment movement that operates in standard generation and electricity sales frameworks (see chapter 3.5 Community solar (citizen investment)).

The Énergie Partagée association plays a key role in the development of citizen energy projects. It organizes a national network that provides training and support to community groups, while also mobilizing funds to finance citizen projects. Énergie Partagée established the "Énergie Partagée" label, which defines the criteria for identifying citizen-led renewable energy projects that offer significant benefits to their local areas. As of June 2026, 480 citizen renewable energy projects had been awarded the label, 346 of which were operational.

4.5 Tenders, auctions & similar schemes

The energy minister establishes the Tender specifications, the CRE (Energy Regulator) manages the Tenders and transmits a list and analysis of the highest-ranking candidates to the Minister, who then determines and publishes the winning candidates. Since 2016, the winners of the calls for tenders are no longer supported by a feed-in - tariff but by a contract for difference mechanism (CfD). With the CfD, the generators of photovoltaic electricity sell their production on the market, and when the reference market costs are under the tendered costs, they receive additional remuneration from the state which compensates for the difference between the market price and the tendered cost. Conversely, when the reference market costs are above the tendered costs, operators are required to pay the difference back to the state. CfD remuneration is paid to operators by EDF (or, in certain areas, local public distribution grid managers, or other authorised organisations).

The CRE publishes a summary analysis after Tenders are awarded, making available aggregated and comparative information on the provenance of materials, average bids, etc. but also expected cost to the government. The current tenders have selection criteria on a lowest price basis for commercial and self-consumption systems, but price weighted with additional environmental or land use criteria (low module carbon footprints and degraded anthropized sites are benefited), or even innovation levels, for larger systems.

In 2025, France maintained its structured and competitive approach to scaling photovoltaic (PV) deployment through national tenders under the PPE2 framework (Programmation Pluriannuelle de l'Énergie). These tenders remain the primary mechanism for allocating support to large-scale PV projects, both for ground-mounted systems and for rooftop installations in the commercial and industrial sector.

Two tender rounds of 925 MWp were held for ground-mounted systems. The first one resulted in the allocation of 887.5 MWp across 103 projects, with an average awarded tariff of €79.09/MWh.The second one saw an increase in allotted capacity. 971 MWp were awarded across 165 projects, with an average awarded tariff of €79.48/MWh.

Three bids were held for rooftop installations above 500 kWp. Only one of these calls was sufficiently subscribed, with 301 MWp awarded (average awarded tariff of €96.48/MWh). The other two were well undersubscribed, with 220 MWp (average awarded tariff of €98.20/MWh) and 191 MWp (average awarded tariff of €97.53/MWh) awarded for 400 MWp called each time.

Two bids were held for installations in non-interconnected areas (mainly overseas departments and Corsica). In both calls, allotted capacity was well below targeted volumes (14.4 MWp and 32.6 MWp awarded for 99 MWp called in each bid). Average awarded tariffs set respectively at 112.52 EUR/MWh and 92.04 EUR/MWh.

The first round of the simplified call for tenders for building-mounted systems and parking canopies between 100 kWp and 500 kWp was held in October 2025. The awarded capacity was significantly below the initial target, with only 43.5 MWp allocated compared with the 192 MWp initially planned. The low subscription level was largely due to the transition from the S21 framework, as many developers had rushed to secure projects under S21 before its closure, leaving a thinner project pipeline for the simplified tender. In addition, CRE reported that a relatively high share of submitted projects was deemed non-compliant, despite the streamlined procedure.

4.5.1 Competitive tenders

Table 22: PPE2 (2021-2026) competitive tender volumes and results

System type and size	Building mounted systems, greenhouses and parking canopies	Ground-based systems and parking canopies	Systems located in non-interconnected areas (ZNI)	Technology neutral	Simplified tender for building mounted systems and parking canopies
Individual system size limits	From 0.5 MW No upper limit	0.5 MW to 30 MW No upper limit on degraded sites	From 0.5 MW (Group 1) and from 0.5 MW to 12 MW		100 kW - 500 kW
Volume	14 calls of 300 MW to 800 MW	10 calls of 700 MW to 925 MW	11 calls of 40.5 MW and 58.5 MW	5 calls of 500 MW	6 calls
Number of Bids	**9 th call:** 220 MW selected for 400 MW called **10 th call:** 191 MW selected for 400 MW called **11 th call:** 301 MW selected for 300 MW called	**7 th call:** 888 MW selected for 925 MW called **8 th call:** 971 MW selected for 925 MW called	**3 rd call:** 14.4 MW selected for 99 MW called **4 th call:** 32.6 MW selected for 99 MW called	**4 th call:** 507.7 MW (PV only) selected for 500 MW called	**1 st call:** 43.5 MW selected for 192 MW called
Average tendered price (or bonus for self-consumption)	**9 th call:** 98.20 EUR/MWh **10 th call:** 97.53 EUR/MWh **11 th call:** 96.48 EUR/MWh	**7 th call:** 79.09 EUR/MWh **8 th call:** 79.48 EUR/MWh	**3 rd call:** 112.52 EUR/MWh **4 th call:** 92.04 EUR/MWh	**4 th call:** 74.13 EUR/MWh (PV only)	**1st call:** 88.73 EUR/MWh

All systems are remunerated through CfD = Contract for difference = Market sales + Additional Remuneration Contract to reach tendered rate.

4.6 Other utility-scale measures including floating and agricultural PV

Floating agrivoltaic or solar power plants are developed through tenders issued by the French Energy Regulatory Commission (CRE), generally within the framework of a specific call for innovative systems.

Agrivoltaic systems are legally defined as dual-purpose systems. They consist of combining agricultural production (market gardening, livestock farming, vineyards, etc.) and electricity generation using photovoltaic solar panels on the same site, without significantly reducing agricultural yields or decreasing income from that production. They also aim to support the adaptation of farming systems to climate change (hail, heat, drought, or animal welfare). In France, agrivoltaics is regulated by Decree No. 2024-318 the Order of 8 April 2024. The decree stipulates that the decrease in agricultural yield caused by electricity production from installed photovoltaic panels must not exceed 10% compared to the average yield observed on a control plot. Furthermore, to ensure that agricultural production remains the primary activity in an agrivoltaic project, the land area covered by solar panels must not exceed 40%. Since 2009, INRA, IRSTEA, and the company Sun'R launched a research program called "Sun'Agri," dedicated to agrivoltaics. Before the April 2024 decree, the first agrivoltaic projects appeared in CRE calls for tenders for "innovative solar power generation installations." All agrivoltaic power plants are listed and monitored on the website of the Agrivoltaics Observatory, managed by ADEME: https://observatoire-agrivoltaisme.ademe.fr. This is done to track, analyse and support the development of this sector. Mid-May 2026, the Agrivoltaics Observatory had identified 237 projects, 163 of which were operational representing a capacity of 646 MW.

Floating photovoltaic systems consist of conventional photovoltaic modules installed on floating platforms that form islands, held in place either by anchors or mooring lines connected to the banks. These floating power plants are primarily installed on quarry lakes or unused bodies of water. This type of project is developing mainly in Asia, which, according to the IEA, accounted for 90% of the world's installed floating solar power capacity by the end of 2024 (with nearly 50% of that in China alone). In Europe, the Netherlands and France are active markets. The atlas of photovoltaic sites of 1 MW and above, compiled annually for Observ'ER (the Renewable Energy Observatory), listed 10 operational sites in France with a total capacity of 96.8 MW by the end of 2025. Among them, the Îlots Blandin power plant in Haute-Marne, inaugurated in 2025 and developed by Q Energy, is the largest floating power plant in Europe: 135 000 modules deployed over an area of 127 hectares for a capacity of 74.3 MW. As a new type of project, floating power plants are the subject of particular attention regarding their impact on biodiversity and the lake ecosystem. In October 2025, ADEME published a study on this subject, available here in its online library.

4.7 Indirect policy issues

4.7.1 Support for electricity storage and demand response measures

Electricity storage: There are no universal support mechanisms for electricity storage in France. However, battery storage has seen a continuous development in both the residential and commercial sectors, despite the low economic returns.

According to RTE, total battery storage capacity in service in France reached 1.6 GW at the end of 2025. Most batteries in service are still of modest size, typically around the MW scale, while just over 20 large batteries were connected to the transmission grid.

Conditions are not economically favourable for the development of small-scale storage in France. This is due to the absence of subsidies, historically moderate retail electricity prices and the mismatch between electricity demand and PV generation, as demand peaks in winter when solar output is relatively low. Small-scale and residential storage remains harder to track, yet data point towards an upwards trend in commissioning new storage systems in 2025. RTE estimates that 140 MW is installed in the residential/small professional segment. Another source of data is the Consuel, an independent body that manages electrical conformity, which is mandatory for grid connection. Consuel certificates therefore provide a useful proxy for the number of PV installations equipped with storage, although they do not provide information on installed storage capacity. In 2025, Consuel issued 22 600 new conformity certificates for residential PV systems with storage in France, compared with 8 400 in 2024.

Demand Response Measures: Time-of-use electricity rates are offered to consumers in France, with a particular historical emphasis on displacing winter peak consumption to late night/early morning. France has very high winter evening peak demand, reflecting the high penetration of resistive electric heating. In 2025, the off-peak pricing signal began to evolve, with the progressive introduction of midday or early-afternoon off-peak periods to encourage consumption during hours of abundant solar generation.

Demand response mechanisms (flexibility) include both reduction and increases in consumption to respond to specific conditions – either through equipment shutdown or storage; given the habitual consumption profile and nuclear generation capacity in France, most is for reducing demand. Projects offering less than 1 MW of flexibility must be aggregated with other projects, but projects offering over 1 MW can be certified individually. Projects must also certify that their CO_2 content for combustible fuels is below 550 gCO_2/kWh.

National flexibility mechanisms in France are mainly operated by RTE, while Enedis, the operator of the public electricity distribution network, manages local flexibility tenders. Enedis maps ongoing and potential future calls for local flexibility capacities. These calls are separated by locality and whether they are calling for increased consumption to absorb generation capacity or voluntary curtailment in specific zones to allow greater renewables capacity to be connected to the grid. The mechanism gained traction in 2024, with 51 local flexibility services selected across 44 opportunity zones. However, in 2025, the results were more mixed. While the first-semester tender led to some awards, the second-semester tender did not result in any selected offers.

4.7.2 CPPA/PPA market

The market for corporate PPA's keeps diffusing in France. The Commission de Regulation de l'Energie (CRE) issued a report in 2025 which describes the landscape for CPPAs at the end of 2023. The report pointed that PPAs in France remain largely driven by solar PV. It accounts for roughly 141 PV systems in corporate or utility PPA's (from 112 survey participants). The CRE identified 2.06 TWh/year of corporate PPA volumes backed by photovoltaic installations, compared with 0.80 TWh/year for onshore wind farms. Many PPA's were signed at prices up to 30% above initial CfD levels, whilst contracts remained in the order of 20 years - significantly above the estimated average length across Europe of approximately 13 years. The average power is 13.4 MW, very close to the average power of systems contracted in CfD support

mechanisms. Although nearly 50 are under 5 MW, and nearly all are pay-as-produced contracts, contrary to international trends in (for example) the USA.

On a conjunctural perspective, the French corporate PPA market slowed significantly in 2025 after the strong momentum observed in 2023 and 2024. According to Capgemini Invent, 21 CPPA contracts were announced in France in 2025, compared with 33 in 2024, for an estimated annual volume of around 965 GWh/year, down from about 1 860 GWh/year in 2024. The decrease was particularly visible in the photovoltaic segment. In 2025, 7 CPPA contracts were signed for PV (5 for greenfield sites) for a cumulative volume of 439 GWh/year, compared with 19 contracts in 2024 (17 for greenfield sites) for a cumulative volume of 729 GWh/year.

The slowdown in PV PPAs mainly reflected less favourable market conditions. Lower electricity prices reduced buyers' incentive to lock in long-term prices. The growing cannibalisation of solar production and the increase in negative-price hours made the long-term value of solar output harder to assess. As a result, offtakers became more less likely to engage with standalone PV PPAs.

4.7.3 Support for encouraging social acceptance of PV systems

On a general level, solar enjoys a good level of social acceptance and approval level. Recent opinion surveys confirm that solar PV remains positively perceived in France, particularly when installed on rooftops or existing buildings. According to an Ipsos bva survey for Réseau Action Climat published in October 2025, 75% of French respondents supported further development of renewable energies, including solar and wind on French territory, while 89% were favourable to the development of solar panels on already built sites, such as rooftops and car parks.

However, an increasing number of groups express continued disapproval for PV on agricultural lands, including a number of agricultural unions and local chambers – one consequence of this is the increasingly strict definition of AgriPV, now legislated. The multi-partner national observatory for "Renewable Energies, Biodiversity, Soil, Water and Landscapes", was included in the 2023 Law for the Acceleration of Renewable Energies and has been collecting information and planning industry wide meetings. It became more operational. Its first national meetings were held in May 2025 and focused on the impacts of renewable energy projects on biodiversity, soils and landscapes.

The government also has supported the development of citizen investment as a tool to increase social acceptance, and industry groups such as Enerplan regularly commission opinion surveys.

4.8 Financing and cost of support measures

Operator remuneration (through Feed-in tariffs, Additional remuneration for CfD, bonuses etc.) is paid to operators by a designated Co-contractor (EDF, other authorised organisations or, in certain areas, local public distribution grid managers). The Co-contractor is compensated for over-costs from a dedicated account in the national Budget (Energy Transition). This account is financed by a tax on petrol and its derivatives when used as an energy source for transport or heating.

Over-costs are calculated based on a typical production curve weighting of monthly average day time spot prices on the national electricity market. The total cost of compensation for

renewable electricity installations benefiting from feed-in-tariffs and CdD contracts in continental France was estimated at 6 504.8 million EUR in 2025, and 2 900.3 million EUR in 2024. For the photovoltaic sector, this cost amounted to 3 974.8 million EUR in 2025, up from 2 408.5 million EUR in 2024. These payments are part of France's public service energy costs, which cover the cost of public support schemes. Photovoltaics represented the largest share in 2025.

4.9 Grid integration policies

4.9.1 Grid connection policies

In France, initial grid connection costs are shared between a payment by the producer directly proportional to costs, and a portion paid by all grid users (Tarif d'Utilisation des Réseaux Publics d'Electricité – TURPE) and managed by the DSO. In addition, the producer pays annual fees, which are added to the TURPE.

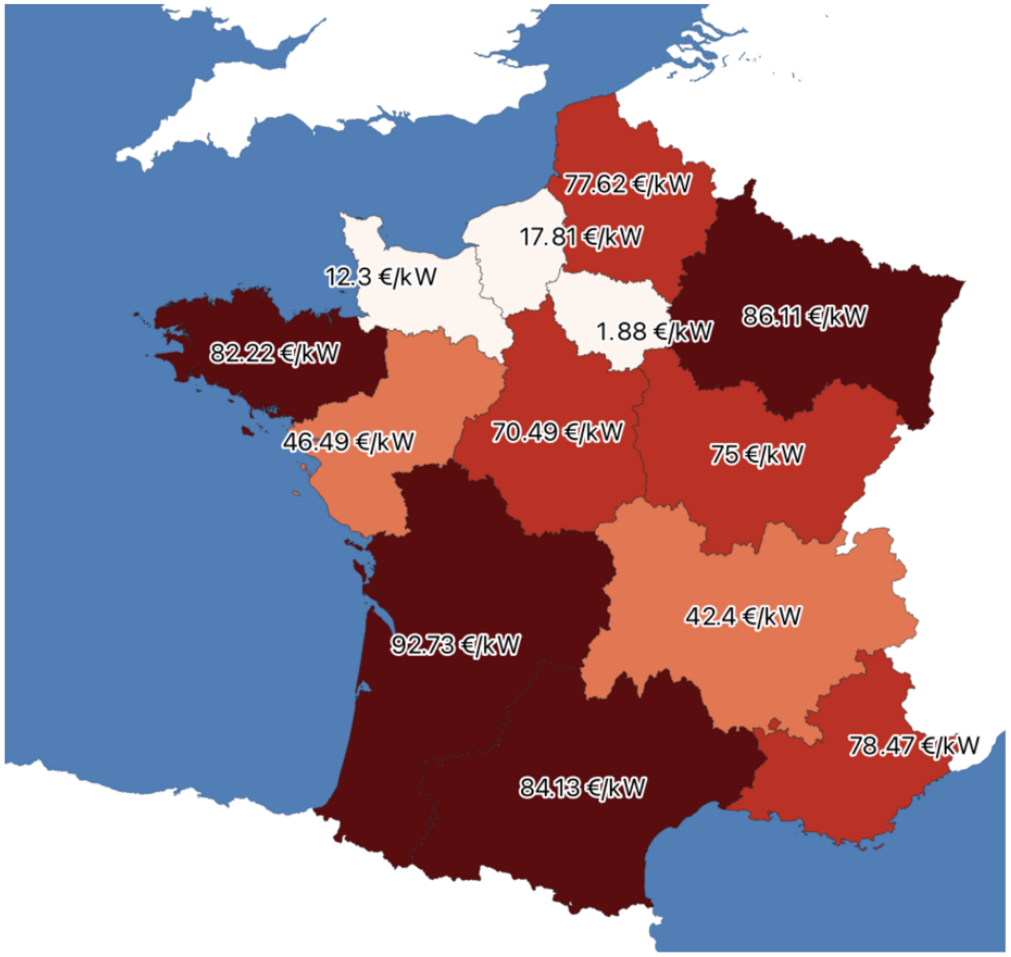
The cost to the generator depends on:

- the works needed to connect the system to the grid, determined by the DSO and based on the existing grid capacity and infrastructure, and the projects and works already in the grid connection queue.
- the cost of these works, part of which is based on a pre-established framework and part of which depends on the specific system and site, including any upstream network modifications required.
- the distribution of costs between the generator and the DSO. This distribution depends on the nominal voltage of the grid connection.

Costs can be mutualised if several systems are grouped together and connected in the same time frame.

Connections to the medium voltage grid and impacts on the medium and high voltage grid include contributions to regional funds (Schéma Régional de Raccordement au Réseau des Energies Renouvelables (S3REnR). These schemes finance future grid upgrades planned according to projected renewables growth, allowing for mutualised contributions to infrastructure costs such as high voltage grid reinforcements, new substations or adaptations to existing substations. The regional contribution is generally payable by renewable energy projects with a connection capacity above 250 kVA. The regional contribution is regularly updated and varies significantly from one region to another, depending on existing grid capacity, planned infrastructure, and projected growth in decentralised generation.

Regional Renewable Energy Grid Connection Plan (S3REnR — Schéma Régional de Raccordement au Réseau des Energies Renouvelables as of 1 February 2026.



Source: photovoltaique.info

The upfront costs can be significant, affecting project feasibility at all power levels, from residential systems to utility scale ground-based systems. These costs and the cost sharing framework between generators and DSO is a recurring source of conflict with calls for more transparency on methods but also more agility in adjusting the S3REnR considering growth in renewables.

In the past, single-phase grid connection costs for small residential systems were a real barrier to the development of the sector. However, the shift towards self-consumption, with generally simplified and low-cost grid connection procedures, has both lowered the overall cost of residential systems and accelerated grid connection times. Grid connection capacity is unlikely to be a barrier to the further development of small residential PV systems.

2025 saw an acceleration in the development of medium-sized photovoltaic projects, placing issues on grid connection capacities for commercial systems up to around 250 or 500 kW. Certain French regions—such as Centre-Val de Loire, Nouvelle-Aquitaine, and Bourgogne-Franche-Comté—are reporting grid saturation rates of between 85% and 98%. This does not mean the grid is physically saturated, but rather that all capacity allocated to renewable energy

has been contractually committed—either to operational projects or to those currently under development. In some cases, the capacity reserved under the S3REnR schemes was insufficiently ambitious; the significant upcoming surge in renewable electricity projects was not anticipated, which would have allowed for the necessary adjustments to planned transmission and distribution grid upgrades.

In response to connection constraints, the DSO (Enedis) has introduced changes to the standard method of determining transformer capacity in late 2023, which are likely to free capacity for more solar to be connected without triggering upgrades. Also, since early 2023 small-scale low-voltage generators below 250 kVA must meet new inverter parameter requirements. Enedis estimates that this measure might allow to connect 30% more capacity without upgrades. In 2024, Enedis has also adjusted some of its planning and voltage-management methods in order to make grid operation more favourable to distributed generation where possible. Efforts to improve visibility on grid connection costs in planning phases continued in 2025, with the operational deployment of grid capacity maps and online connection simulation tools. Whilst these services do not supply all information, they are providing a first level of service that facilitates project planning.

Still, the unpredictability of grid connection costs remain a factor in longer commissioning lead times and project abandonment. In addition, grid connection lead times can also affect project planning and feasibility.

Indeed, lead times for grid connection are highly variable. They range from very short timeframes for residential self-consumption installations to several years for utility scale projects if TSO infrastructure is inadequate and require grid reinforcements. As a general rule, most commercial systems on the low voltage grid have lead times from 3 months to about 18 months, whilst delays for connection to the medium voltage grid are dependent on local grid capacity and project works.

To manage connection requests for generation facilities in the same zone, RTE and the public distribution system operators use a capacity reservation system known as the "Queue" (File d'Attente). RTE classifies connection requests with a view to prioritising them on a "first come, first served" basis. This can result in small projects wanting to connect to the low voltage grid being frozen out as larger projects immobilise all remaining capacity despite not being able to use the available capacity until upgrades on the medium or high voltage grid can be planned, often requiring several years to be completed.

In this context, both Enedis and RTE have increased their investment trajectories to support electrification, renewable energy integration and the expected acceleration of PV deployment under France's 2030 and 2035 energy objectives. Enedis states that it is investing over 10 billion EUR between 2022 and 2040—funds directly earmarked for the development of renewable energy—as part of a 96 billion EUR plan to develop and reinforce the grid. A major plan is in place to build 100 new primary substations by 2030, representing a fivefold increase in the current rate of construction for this type of infrastructure.

4.9.2 Grid access policies

Recurring grid access fees (Tarif d'Utilisation des Réseaux Publics d'Electricité – TURPE) are paid by all users with contributions calibrated to cover all of a DSO's operating and investments costs, including the cost of capital. The TURPE framework was updated in 2025, with TURPE 7 entering into force on 1 August 2025.

Access costs are determined according to:

- voltage level of the user grid connection.
- the type of user (consumer/generator).
- and for certain users, the time of use.

Unlike many other European countries, there is no geographical differentiation of tariffs.

The total cost of the TURPE is defined by the energy regulator (CRE), directly defining DSO's revenue for public service type missions. The energy regulator also defines the cost sharing between types of users, based on a study of the users' impact on the network and the costs they generate.

The fee structure is based on cost components and adapted to voltage level and type of user and the principal components for generators are:

- Annual management component (CG).
- Annual metering component (CC).
- Annual injection component (CI).
- Connection point grouping component (CR).
- Annual component of reactive energy (CER).

Costs have a significant capacity base but include an energy cost. Whilst grid access costs are generally not a significant part of OPEX costs, this does vary depending on the type of injection and the different legal entities attached to a system and consumption points - access fees for self-consumption systems are significantly lower than full sales systems as several cost categories are mutualised with the consumer fees.

The fixed part of annual access fees is approximately 9.6 EUR/year for self-consumption systems below 36 kVA and approximately 533 EUR/year (excluding VAT) for systems between 36 kVA and 250 kVA with full grid injection. For systems above 250 kVA connected to the high-voltage grid and operating with full grid injection, the annual fixed fee is approximately 876 EUR/year.

5 INDUSTRY

5.1 Production of ingots and wafers (crystalline silicon industry)

Photowatt (EDF ENR PWT) was founded in 1979 and had historically been active across the crystalline-silicon value chain. The company was a wafer manufacturer and module supplier specialized in low-carbon content solutions. It produced cast-mono silicon ingots, bricks and wafers (Crystal advanced process). However, its industrial presence gradually declined as the company faced increasing competition from Asian manufacturers. By 2024, part of its production facilities had been closed. Photowatt's owner, EDF Renouvelables, was seeking a buyer. Negotiations for a takeover were held with Carbon, but these did not lead to an agreement. In the absence of a viable alternative, the closure of the company was confirmed in early 2025.

ECM Technologies group, based in Grenoble and near Montpellier, focuses on supplying photovoltaic equipment manufacturing for the end-to-end value chain, from ingots to cells.

5.2 Production of photovoltaic cells and modules

Table 23: PV cell and module production and production capacity information

Cell/Module manufacturer	Technology (sc-Si, mc-Si, a-Si, CdTe, CIGS)	Production and/or capacity [MW/year]	
		Cell	Module
Wafer-based PV manufactures			
Voltec Solar	Sc-Si		500 (capacity)
Reden Solar	Sc-Si		200 (capacity) Closed down in 2026
Heliup	Sc-Si		100 (capacity)
S'tile	Sc-Si		35 (capacity)
CréaWatt	Sc-Si		/ In judicial receivership in 2025
Thin film manufacturers			
ARMOR	OPV	/	/
Dracula Technologies	OPV	/	/
Solems SA	a-Si	/	/
SolarCloth	CIGS	/	7 (capacity)
Soy PV	CIGS		/
Other products			
Edilians	Sc-Si (PV tiles)	/	/

ArcelorMittal		/	80 (capacity)
Dualsun	PVT	/	/
Total			**Approximately 680 MW**

Source: Le photovoltaïque: choix technologiques, enjeux matières et opportunités industrielles, French Ministry of Energy and Environment

The French photovoltaic industry is relatively small. Domestic manufacturers of conventional photovoltaic modules continued to struggle under pressure from low-priced imported modules. Several companies entered insolvency proceedings or ceased operations in 2025 and 2026 (Creawatt, Reden Solar). At the same time, several manufacturers chose to target specific niche markets, such as building-integrated products, lightweight modules, thin-film and organic photovoltaic products, and photovoltaic-thermal hybrid modules.

5.2.1 Small-scale producers of modules dedicated to the national or European market

Voltec Solar assembles modules on their Alsace site. Its production capacity is 500 MW/year. The company offers several products, with a particular focus on low-carbon modules. Its portfolio includes tile-coloured modules suitable for use in heritage-protected areas, as well as modules based on TOPCon cell technology. Voltec is also involved in a partnership with the Institut Photovoltaïque d'Île-de-France (IPVF) on the STaFF programme, which aims to industrialise 4T perovskite-silicon tandem modules in France.

Reden Solar manufactures modules and develops and operates photovoltaic and agrivoltaic power plants. At the end of 2024, the company inaugurated a new production line at its Roquefort site, replacing its former 65 MW/year line. The new facility had an annual capacity of approximately 200 MW. However, in July 2026, Reden announced the closure of its module manufacturing activity. The company stated that the activity had remained structurally loss-making and was no longer competitive with imported modules.

Heliup, a start-up founded in 2022 and originating from CEA-Liten, assembles lightweight, durable modules with thin glass protection and no frame. Their main product was launched in 2024 (5 kg/m2 module). In June 2025, Heliup inaugurated an automated production line at Le Cheylas, in the Isère department. The facility has an annual production capacity of 100 MW. The project represented an investment of approximately million euros and received support from the European Innovation Fund.

Creawatt, based in Ambilly, is focusing on the production of lightweight modules that can be attached to the roof using a grip, in partnership with the Chinese group Sunman. These products are intended for logistics and supermarket roofs. The company had announced plans to establish a French assembly line with a capacity of around 500 MW. Creawatt was selected in 2024 to receive 3.5 million euros by the French government under the France 2030 programme. However, CréaWatt and its subsidiaries were placed in judicial receivership in July 2025, following a decline in orders and growing financial difficulties.

5.2.2 Producers active on other markets (photovoltaic tiled roofs, photovoltaic thin films and aerovoltaic modules)

S'Tile manufactures customised crystalline-silicon photovoltaic modules at its site in Poitiers. The company serves several specialised markets, including building-integrated photovoltaics, solar-powered urban furniture, made-to-measure modules and replacement modules for existing installations. In 2025, S'Tile further strengthened its focus on the repowering and revamping of photovoltaic systems.

ARMOR developed and manufactured proprietary organic photovoltaic films under the ASCA brand, with part of the manufacturing process carried out in France before products were finished in Germany. The products target applications such as connected devices, wearable photovoltaics and building integration, including semi-transparent glazing. The German construction group HERING bought ASCA in 2023.

Dracula Technologies is a start-up developing printed organic photovoltaic cells (trademarked LAYER technology). These cells capture ambient light, whether natural or artificial, to power connected devices and sensors, reducing or eliminating the need for traditional batteries. Production takes place at the company's Green MicroPower Factory in Valence, which has an annual capacity of up to 150 million cm^2 of printed surface per year. In 2025, Dracula Technologies improved the power performance of its LAYER technology and raised 30 million euros to support the transition from sheet-to-sheet to roll-to-roll manufacturing and to increase annual production capacity to 600 million cm^2.

Solems SA manufactures thin-film elements and modules up to 30 cm x 900 cm for connected devices and self-powered automates and building elements.

SolarCloth develops lightweight and flexible photovoltaic modules based on CIGS thin-film technology for integration onto canvas (tourism and agricultural uses). In 2024, they supplied products used in the Paris Olympic precinct. With Soy PV, SolarCloth launched an R&D project in 2023 with a pilot demonstrator for an industrial sector, with the aim of going to commercial scale and producing 30 MW/year by 2030. In 2024, SolarCoth raised 500 000 euros via a participative financing platform and announced the arrival of a Rothschild & Co bank foundation in its capital.

Edilians, manufactures PV tiles (previously eligible for the BIPV bonus in the feed in tariff, that stopped in October 2023). They also put a red tile on the market.

ArcelorMittal entered the French BIPV manufacturing market in 2025 with the inauguration of a production line in Contrisson, in the Meuse department. The facility has a potential annual capacity of 80 MW, depending on market demand. The project represented an investment of approximately 15 million euros, with commercial deployment scheduled to begin in 2026.

DualSun develops and markets both conventional photovoltaic modules and photovoltaic-thermal (PV-T) hybrid modules. Photovoltaic modules are manufactured in Asia. For PV-T modules, the photovoltaic laminate is also manufactured in Asia, while the thermal component and final assembly are carried out in France.

5.3 Manufacturing projects

HoloSolis, a consortium including EIT InnoEnergy, IDEC (a French property developer) and TSE (a utility scale and agrivoltaic developer), is currently developing a large-scale cell and module manufacturing plant in Hambach, in the Moselle department. In January 2025, HoloSolis obtained the building permit and environmental authorisation required for the project. By November, it had secured more than 220 million euros in public and private financing. Construction is expected to begin in 2026, and production scheduled for 2027. The site is expected to gradually reach a production capacity of 5 GW/year by 2030.

DAS Solar, a Chinese manufacturer, progressed with its plan to establish its first European manufacturing facility in Mandeure, in the Doubs department. The construction of the plant officially began in April 2025 on a former automotive industrial site. The initial phase represented an investment of approximately 109 million euros. Three module assembly lines with a combined annual capacity of 3 GW are under construction.

Carbon was developing an integrated manufacturing project in Fos-sur-Mer, near Marseille. The project targeted an annual cell production capacity of 5 GW, together with approximately 3.5 GW of module capacity, and had been designated a Project of Major National Interest. The overall project represented an investment of 1.7 billion euros. However, Carbon was placed in judicial liquidation in May 2026 and announced the abandonment of the gigafactory project. The company attributed the failure of the project mainly to difficulties in securing financing and to unfavorable market conditions for photovoltaic products manufactured in Europe.

5.4 Manufacturers and suppliers of other components

Balance-of-system component manufacturing and supply represent an important part of the photovoltaic value chain. Several French companies with an international presence provide electrical equipment and solutions for the connection, conversion and management of photovoltaic systems.

PV inverters (for grid-connection and stand-alone systems)

Only a limited number of French companies manufacture photovoltaic inverters. IMEON Energy is one of the main remaining French specialists, focusing on hybrid inverters for self-consumption and battery-storage applications.

Storage batteries

France hosts several industrial battery manufacturers, such as Saft, which produces batteries and stationary energy-storage systems for industrial and grid applications. In northern France, several gigafactories are either operational or under development in the “Battery Valley”. This cluster includes operational manufacturers such as ACC, EnerSys, AESC/Envision and Verkor. The latter two inaugurated their factories in 2025. The projects led by ProLogium and Tiamat are currently under development. The area is also home to battery-recycling companies, such as the French start-up Battri, which opened its first plant in 2025. However, most of this industrial capacity is primarily intended for electric vehicles rather than stationary photovoltaic storage.

Supporting structures

France has a diversified industrial base for photovoltaic mounting and support systems. For rooftop applications, GSE Intégration and IRFTS are active in the residential market, while Dome Solar and Mecosun address the commercial, industrial and agricultural segments. As for ground-mounted photovoltaic plants, AdiWatt supplies fixed mounting structures, in addition to its rooftop and canopy products. Several French companies design and manufacture photovoltaic carports and large parking canopies using steel, aluminium or wood. These include AdiWatt, Mitjavila, Dome Solar and Mecosun. Ciel & Terre is a French specialist in floating photovoltaics. The company designs and supplies floating structures, anchoring systems and related engineering services for floating PV projects in France and abroad.

5.5 Recycling

In France, the collection and treatment of end-of-life photovoltaic modules are organised by SOREN under the national extended producer responsibility scheme for waste electrical and electronic equipment. At the end of 2025, SOREN had 600 registered producer members, up from 549 in 2024. SOREN collected 13 760 tonnes of used photovoltaic modules in 2025 (9 477 tonnes in 2024). A total of 12 736 tonnes were treated. Of this volume, 10 684 tonnes, or 83.9%, were recycled.

6 PV IN THE ECONOMY

6.1 Labour places

Table 24: Estimated PV-related full-time labour places in 2025

Market category	Number of full-time labour places*
Research and development (not including companies)	
Manufacturing of products throughout the PV value chain from feedstock to systems, including company R&D	≈ 6 500
Distributors of PV products and installations	≈ 45 500
Other including operations and maintenance	≈ 13 000
Total	**≈ 65 000**

Sources: Marchés et emplois concourant à la transition énergétique (ADEME, 2025), EU Solar Jobs Report (Solar Power Europe, 2025). Observ'ER estimates.
*direct and indirect FTE

Employment in the photovoltaic sector has increased strongly since the early 2020s, in line with the acceleration of PV deployment. Employment remains largely concentrated in downstream activities, especially system installation, which accounts for most jobs in the sector. By contrast, the share of jobs linked to PV equipment manufacturing has continued to decline. Manufacturing accounted for close to 20% of sector employment in the mid-2010s, compared with less than 10% ten years later. This trend reflects the gradual weakening of the French manufacturing base, which has faced strong competition from imported equipment and the closure of several production sites. The closure of Photowatt in 2025 and the abandonment of the Carbon gigafactory project in May 2026 are recent examples of this trend.

Although annual grid connections reached a record level in 2025, political and regulatory developments weakened the employment outlook for the sector. The delay in the publication of the third Multiannual Energy Plan left companies with little visibility. In addition, extended gaps between tender periods weighed on project development. This uncertain environment affected developers and manufacturers and contributed to several business failures, restructuring measures and job losses. In early 2026, employees and project developers demonstrated to demand the rapid adoption of the Multiannual Energy Plan and greater visibility on future market conditions. Protesters also denounced recruitment freezes and the non-replacement of departing employees.

In parallel, the revision of the S21 support scheme in March 2025 sharply reduced support for small-scale systems and changed the conditions for rooftop projects between 100 kW and 500 kW. The changes introduced in the S21 framework had a particularly strong impact on the residential market, where many small installation companies faced growing financial difficulties. A survey conducted by Observ'ER and Enerplan in late 2025 showed a decline in employment among installers operating in the 0–36 kW segment. Employment fell by 6% between December 2024 and December 2025. The decline reached 17% among small companies employing between one and four people. Regarding the outlook for 2026, 22% of respondents expected to reduce their workforce, while 66% anticipated stable employment and only 12% planned to recruit.

The publication of the third Multiannual Energy Plan in February 2026 partly improved visibility. However, the deployment pathway set out in the plan remains significantly below the level of annual capacity additions recorded in recent years. This continues to create uncertainty over future activity levels and employment in the French PV sector.

6.2 Business value

Investments and turnover are studied by ADEME every year in the study “Marchés et emplois liés à l’efficacité énergétique et aux énergies renouvelables”.

The market value for 2025 (below) has been estimated based on 2025 trending prices and rectified 2025 grid connection volumes. Data accuracy may be compromised by the use of trends costs (these costs are from a reduced sample across France and may not accurately reflect real costs) and the volume estimate spread across segments for industrial systems with power above 250 kW and ground-mounted systems. The following table represents the value of investments in commissioned PV systems, and not the value of the market itself that includes future systems, services, research and other sectors.

Table 25: Rough estimation of the value of the PV business in 2025 (VAT is excluded)

Sub-market	Capacity installed in 2025 [MW DC]	Average price [EUR/W]	Estimated value M EUR
Residential < 3 kW	191	2	382
Residential < 9 kW	694	1,74	1 207
Commercial < 100 kW	805	1	805
Commercial < 250 kW	3 121	0.85	2 653
Industrial 250 kW - 1 MW	199	0.8	159
Grid-connected distributed	**5 010**		**5 206**
Grid-connected centralized	**2 351**	0.75	**1 763**
Estimated value of PV investments in 2025			**12 175**

Source: SDES, Enedis, Observ’ER.

Beyond the investment value associated with commissioned systems, the PV sector also contributes to local public finances. In 2026, the French Renewable Energy Association (Syndicat des Énergies Renouvelables) and Columbus Consulting published a study on the topic. They estimated that photovoltaics generated 296 million euros in local tax revenues in 2024. Municipalities and inter-municipal authorities received 188.9 million euros, or nearly two thirds of the total. Departments benefited from 69 million euros, while regions were allocated 38.1 million euros.

These revenues came from direct taxes on installed PV systems, taxes paid by companies along the value chain and the share of VAT on residential PV systems allocated to local authorities.

7 INTEREST FROM ELECTRICITY STAKEHOLDERS

7.1 Structure of the electricity system

The French electricity system is highly concentrated around EDF (Electricité de France), an historical operator which is currently fully owned by the French State. EDF is the principal generator and electricity retailer and operates an extensive portfolio of nuclear and renewable energy sites. Through its different wholly or partially owned subsidiary companies, EDF is also involved in both transport and distribution grid management. In response to the open market European Directives, the different entities are legally separate, with grid management missions run as “delegated public services”.

Although EDF remains the dominant operator, other major market operators include Engie, TotalEnergies. A range of alternative operators is also active in electricity supply and/or generation. Despite the opening of the electricity market to competition following the 1996 European Directive, historical suppliers continue to hold a strong position, particularly in the residential segment. At the end of 2025, regulated electricity tariffs still accounted for 55.8% of residential sites, while alternative suppliers accounted for 31.8% and market offers from historical suppliers for 12.4%.

Network activities remain regulated and legally separated from competitive market activities. In mainland France, RTE operates the public transmission network, while Enedis, an EDF subsidiary, operates the public distribution network over around 95% of continental France. The remaining areas are served by local distribution companies.

The National Energy Regulator, Commission de régulation de l’énergie (CRE) is an independent administrative authority and supervises market regulations, grid access conditions and manages competitive tender processes based on rules established by the government. They also judge grid access conflicts and are a mandatory consultative body for changes to the legislative and regulatory energy framework.

7.2 Interest from electricity utility businesses

In France the only private electricity utility is EDF (fully owned by the State as of June 2023 after a buyback of remaining stock in 2022), that covers 95% of the population - all other utilities are (generally very small) public entities – a legacy of the post-war nationalisation of private electricity companies.

EDF and its subsidiary companies are major players in photovoltaics, with branches dedicated to different market segments present in France and across the world. EDF Renouvelables (EDF Renewable for the international branch – centralised photovoltaics), EDF Solutions Solaires (EDF Solar Solutions), Sunzil (operating in the Caribbean and other isolated/off grid areas) and Agregio Solutions (electricity aggregation for the market and keep the electricity grid balanced even with variable renewable energies) are all active in France. EDF is also active in R&D activities through both EDF internal research departments, research partnerships with public research organisations.

Through its different subsidiaries, EDF has a worldwide installed capacity of 120 GW, and a net installed renewable capacity of 41 GW worldwide, of which 7.2 GW of solar at end-2025.

Engie is a gas utility also present in the development and generation of electricity capacity and has a solar portfolio of 10.6 GW installed worldwide

7.3 Interest from municipalities and local governments

The national renewable energy targets set under the PPE 3 (Programmation pluriannuelle de l'énergie, France's Multiannual Energy Plan) are expected to be broken down into regional objectives. Once these regional targets are defined, Regions will have to update their main regional planning framework, the SRADDET (Schéma régional d'aménagement, de développement durable et d'égalité des territoires), which covers issues related to land-use planning, infrastructure, environmental protection and energy transition priorities.

In parallel, the 2023 APER Law introduced a bottom-up planning layer at the municipal level through the creation of renewable energy acceleration zones. In this setting, municipalities define areas they consider suitable for renewable energy development, after consultation with local residents and in coordination with inter-municipal authorities. These zones do not replace permitting procedures and do not automatically guarantee project approval. They are intended to indicate where local authorities would prefer renewable energy projects to be developed. They should also contribute to the achievement of regionalised renewable energy objectives.

By the end of 2025, more than one million acceleration zones had been identified by municipalities. Their breakdown by technology shows that PV is the most popular, with PV-related zones accounting for more than half of all identified zones. Rooftop PV represented the largest category, accounting for 49% of all zones, followed by parking canopy PV at 5% and ground-mounted PV at 4%.

8 PROSPECTS

Following a record year in 2025, annual additions are expected to remain strong in the short term. The pipeline built up in previous years, including projects already under development or awaiting grid connection, should continue to support commissioning volumes in 2026. At the end of March 2026, 36.1 GW were awaiting connection to the electricity grid, of which 8.4 GW already had a signed connection agreement. However, these figures represent the volume of connection requests submitted to the grid operators. This does not necessarily correspond to the volumes that will actually be commissioned, as the rate of abandonment before commissioning is significant and depends in particular on the volumes supported by the government in the coming years.

In the medium term, the outlook is more uncertain for new projects as regulatory changes occurred in 2026. The S21 framework for installations up to 100 kW was further revised in June 2026. Investment premiums were removed and a single low tariff of EUR 11/MWh was introduced for electricity injected into the grid, regardless of the system size or sale arrangement. At the same time, the simplified tender for installations between 100 kW and 500 kW was extended from buildings and parking canopies to all photovoltaic installations, including ground-mounted and agrivoltaic projects. This change provides support for small ground-mounted installations, but it also places projects with different cost structures in direct competition. Lower-cost ground-mounted systems may therefore reduce the prospects for rooftop and parking canopies projects. Overall, the recent reforms might slow the renewal of the project pipeline, with their effects on annual connections likely to appear gradually.