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The PPE2 tender program

What's new since CRE 4?

v1.00

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PPE2 tenders, France's €30.5bn plan to auction nearly 29 GW of renewables by 2026



PPE2, France's new renewables tenders set for 2021-26

With the CRE 4 tenders reaching completion, France has announced a new tender program, called PPE2, to keep the renewables momentum

Background

- **Between 2017 and 2021**, France's renewables market was mainly enlivened by the **CRE 4 tenders**, that awarded **11,9 GW of renewables** projects in mainland France within 4 years;
- With the CRE 4 tenders program coming to an end this year, the French Ministry of Ecological and Solidarity Transition released in August 2021 its **new renewables tenders' plan to takeover**. Called "**PPE2**" due to its centrale role in France's second multi-annual energy plan (*Programmation Pluriannuelle de l'Energie*), this new program will include several tender rounds for nearly **29 GW called**, with applications **starting from 2021 and ending in 2026**;
- **Most CRE 4 segments will see continuity** under the PPE2 scheme, with relatively similar specifications besides some minor adjustments;
- While a single 200 MW session of onshore wind/PV bi-technology tender took place in 2018 under CRE 4, a new recurring format **technology-neutral tender is introduced under PPE2**. It will put in competition onshore wind, solar PV and hydro for a total of 2.5 GW over the next 6 years;
- These segments will also benefit from a **sharp increase in subsidized volumes** when compared to CRE 4 tenders (cf. slide 4):
 - + 850 MW per year in onshore wind capacity;
 - + 590 MW per year for PV ground-mounted;
 - + 650 MW per year granted to PV rooftops.

The birth of France's PPE2 tenders



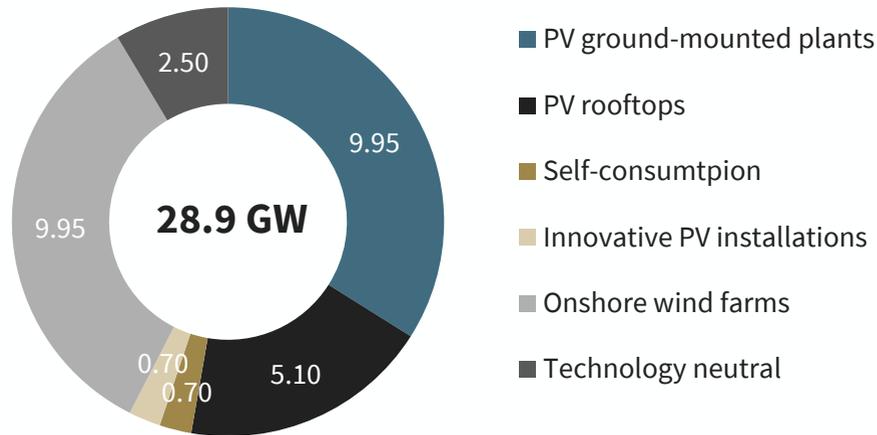
The total awarded capacity under PPE2 scheme

In the next 6 years, the PPE2 tenders will award nearly 29 GW of renewable projects

Background

Over the next 6 years, the PPE2 scheme will tender 28.9¹ GW through 6 different auctions:

- **Solar ground-mounted** assets between 500 kWp & 30 MWp;
- **Solar rooftops, green houses, barns and car parks** over 500 kWp;
- **Self-consumption** from solar or wind installations;
- **Innovative solar installations** between 100 kWp and 3 MWp;
- **Onshore wind farms** above 3 MWp with a least 6 turbines;
- **Solar, wind or hydro installations** under a technology-neutral tender framework



The PPE2 tendered capacity planning (in MW)

	2021	2022	2023	2024	2025	2026	Total
Ground-mounted PV	700 ¹	925	925	925	925	925	9 950 ¹
PV rooftops, greenhouses & car parks	300	400	400	400	400	300	5 100
Self-consumption	50	50	50	50	50	50	700
Innovative PV	140	140	140	140	140		700
Onshore wind farms	700 ¹	925	925	925	925	925	9 950 ¹
Technology-neutral		500	500	500	500	500	2 500
Total	1 890¹	5 690	5 590	5 590	5 590	4 550	28 900¹

¹ For the first periods of the onshore wind and the ground-mounted PV tenders, if the bidding capacity exceeds 700 MW, awarded capacity may be increased to up to 925 MW for each tender (+ 225 MW)



2.1

PPE2 tenders: What's new since CRE4 tenders?

i) New common features to all PPE2 tenders

ii) How CRE4 existing tenders were reworked under the PPE2 tenders scheme

iii) The introduction of a new technology-neutral tender



New common features to all PPE2 tenders

While the new PPE2 tenders could appear as an extension of the CRE4's, some new common changes were brought forward in the specifications

List of new common features to all tenders

The PPE2 tenders' specifications closely resemble the CRE4's: the structural integrity of the specifications is largely untouched. Though, key global adjustments were introduced across all PPE2 tender specifications when compared to CRE 4 (including the new technology-neutral tender). The items listed below - the most significant changes since CRE 4 - apply to any PPE2 tender round, regardless of the technology:

Impact	New features
High	<p>The average size of capacity called per tender has substantially increased since CRE4, for all technologies:</p> <ul style="list-style-type: none"> ▪ Solar ground-mounted: +245 MW per tender (+36%); ▪ Solar rooftops, green houses, barns and car parks: 180 MW (+82%); ▪ Self-consumption: +25 MW per tender (+100%); ▪ Onshore wind farms: +425 MW per tender (+85%)
High	<p>Financial guarantees will now be paid by project sponsors when applying to the tender and released if the project is not awarded</p>
Medium	<p>A technology-specific carbon footprint maximum was introduced in the specifications, preventing developers from bidding if the project pollutes too much:</p> <ul style="list-style-type: none"> ▪ Both rooftop & ground-mounted PV: 550 kg CO2 eq./kWp (also applies to PV self-consumption projects); ▪ Innovating PV: 500 kg CO2 eq./kW; ▪ Wind farms 1 200 kg CO2 eq./kW (also applies to wind self-consumption projects); ▪ Hydro (for the technology-neutral tender): 5 000 kg CO2 eq./kW
Medium	<p>New mechanism to ensure competitive bids, allowing the CRE to eliminate the worst bids in case of undersubscription:</p> <ul style="list-style-type: none"> ▪ $\geq 5\%$ if the total bid capacity is above or equal to 95% of the tendered capacity; ▪ $\geq x\%$ of the total bid capacity if the latter is above or equal to $100-x\%$ of the tender capacity, with x computed via linear interpolation; ▪ $\geq 20\%$ if the total bid capacity is below or equal to 80% of the tender capacity
Low	<p>Implementation of the Deggendorf rule: the project sponsor can not apply if currently subject to a State order for repayment for unlawful aid</p>
Low	<p>Removal of floor prices – these were never reached under CRE4 tenders</p>



2.2

PPE2 tenders: What's new since CRE4 tenders?

- i) New common features to all PPE2 tenders*
- ii) How CRE4 existing tenders were reworked under the PPE2 tenders scheme***
- iii) The introduction of a new technology-neutral tender*



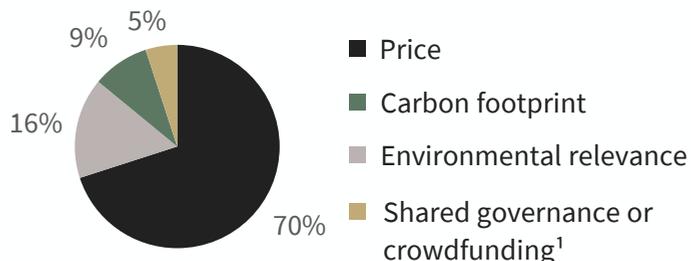
PPE2 tender for PV ground-mounted plants

With minor adjustments, the new PPE2 tender will takeover what was previously known as CRE 4 ground-mounted tender

Tender criteria

- Type: Ground-mounted installations
- Capacity: Between 500 kWp and 30 MWp

Rating:



Tender calendar

	Application deadline	Tendered capacity
1 st session	December 23rd, 2021	700 ² MWp
2 nd session	May 20th, 2022	925 MWp
3 rd session	November 30th, 2022	925 MWp
4 th & 5 th sessions	2023 TBD	2 x 925 MWp
6 th & 7 th sessions	2024 TBD	2 x 925 MWp
8 th & 9 th sessions	2025 TBD	2 x 925 MWp
10 th & 11 th sessions	2026 TBD	2 x 925 MWp

Carbon footprint's reference values for rating

Minimum	200 kg CO2 eq/kWp
Maximum	550 kg CO2 eq/kWp

¹ Shared governance and crowdfunding premium are mutually exclusive, with shared governance accounts graded between 0% to 5% while crowdfunding will be either 0% or 3% with no intermediate value

² For the first period, if the bidding capacity exceeds 700 MW, awarded capacity may be increased to up to 925 MW

Notable adjustments since CRE 4 ground-mounted tender

- Shade houses** are **no longer part of this tender** which now solely aims at ground-mounted PV;
- Compatibility** of the tender **with installations featuring storage system** - although the latter can not be subsidized under this tender;
- Ground-mounted **installations located in i) “constructible” areas of municipal maps (Carte Communale) or ii) “urbanized” or “to be urbanized” areas (Urbanisé or A Urbaniser) in municipalities with a local urbanization plan (Plan Local d’Urbanisme) are now eligible;**
- Rating criteria adjustments:** environmental relevance, shared governance and crowdfunding are now part of the overall rating:
 - **Environmental relevance** can either be maximum if the project is located on degraded lands, or null otherwise;
 - **Shared governance** accounts for the long-term ownership of the projects by local individuals or communities;
 - **Crowdfunding** accounts for the financing of the project by local individuals or communities. It is to be noted that the shared governance and crowdfunding ratings are mutually exclusive: one grade will always remain null.
- The tender no longer differentiates different categories of assets. Instead, for each tender, **priority will be given to projects below 5 MWp for up to 200 MWp of tendered capacity.** In case of undersubscription for this reserved capacity, the CRE will eliminate the worst bids accordingly with the mechanism described in slide 6;
- The **commissioning delay is increased** from 24 months to 30.



PPE2 tender for PV rooftops, green houses & car parks

The PPE2 tender for PV rooftops, shade & green houses is a straight-forward follow-up to the CRE 4 rooftop tender with some adaptations

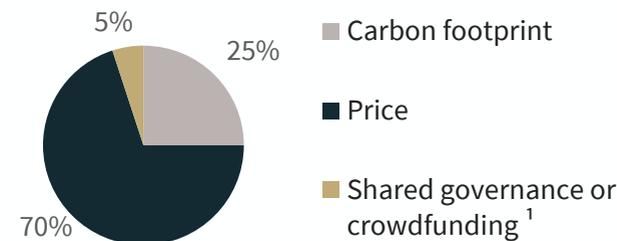
Notable adjustments since CRE 4 rooftop tender

Just as for the ground-mounted PPE2 tender, the PPE2 tender for rooftop PV has evolved from the CRE 4 rooftop tender:

- **Shade houses** are now **part of this tender** – under CRE 4, shade houses needed to apply to the tender for ground-mounted plants (IAS);
- **Compatibility** of the tender **with installations featuring storage system** - although the latter can not be subsidized under this tender;
- **Rating criteria adjustments:** shared governance and crowdfunding are now part of the overall rating:
 - **Shared governance** accounts for the long-term ownership of the projects by local individuals or communities;
 - **Crowdfunding** accounts for the financing of the project by local individuals or communities. It is to be noted that the shared governance and crowdfunding ratings are mutually exclusive: one grade will always remain null.
- The tender no longer differentiates different categories of assets. Instead, for each tender, **priority will be given to projects below 1 MWp for up to 50 MWp of tendered capacity**. In case of undersubscription for this reserved capacity, the CRE will eliminate the worst bids accordingly with the mechanism described in slide 6;
- The **commissioning delay is also increased** from 24 months to 30.

Tender criteria

- Type: Rooftops, green houses, barns & car parks
- Capacity: Above 500 kWp
- Rating:



Tender calendar

	Application deadline	Tendered capacity
1st session	October 22nd, 2021	300 MWp
2nd session	February 25th, 2022	400 MWp
3rd session	May 20th, 2022	400 MWp
4th session	October 28th, 2022	400 MWp
5th, 6th & 7th sessions	2023 TBD	300, 400 & 400 MWp
8th, 9th & 10th sessions	2024 TBD	300, 400 & 400 MWp
11th, 12th & 13th sessions	2025 TBD	300, 400 & 400 MWp
14th session	2026 TBD	300 MWp

Carbon footprint's reference values for rating

Minimum	200 kg CO2 eq/kWp
Maximum	550 kg CO2 eq/kWp

¹ Shared governance and crowdfunding premium are mutually exclusive, with shared governance accounts graded between 0% to 5% while crowdfunding will be either 0% or 3% with no intermediate value



PPE2 tender for self-consumption

The CRE 4 tender for self-consumption was adjusted to include extended self-consumption projects and to offer a fixed price for grid-injected electricity

Tender criteria

- Type: PV or wind installations with at least 50% of the electricity consumed on the site of production
- Capacity:
 - Between 500 kWp and 10 MWp for individual or collective self-consumption projects in the same building;
 - Between 500 kWp and 3 MWp for extended collective self-consumption projects
- Rating: 100% based on Price (€/MWh premium on self-consumed electricity)

Tenders calendar

	Application deadline	Tendered capacity
1 st session	November 26th, 2021	50 MWp
2 nd session	March 11th, 2022	50 MWp
3 rd session	September 16th, 2022	50 MWp
4 th session	October 28th, 2022	50 MWp
5 th , 6 th & 7 th sessions	2023 TBD	3 x 50 MWp
8 th , 9 th & 10 th sessions	2024 TBD	3 x 50 MWp
11 th , 12 th & 13 th sessions	2025 TBD	3 x 50 MWp
14 th session	2026 TBD	1 x 50 MWp

Notable adjustments since CRE 4 self-consumption tender

Following the recurring undersubscription of the CRE 4 tender sessions for self-consumption, the PPE2 tender offers a more favourable framework:

- **Compatibility** of the tender **with installations featuring storage system** - although the latter can not be subsidized under this tender;
- Consumption by **electric vehicle charging stations on site** is considered **self-consumption**;
- **The feed-in premium (FiP) formula on self-consumed electricity was adjusted to eliminate penalties on grid injection**: bidders are now required to submit a price premium on self-consumed electricity, knowing that electricity injected onto the grid will be sold at 50€/MWh;
- **Extended collective self-consumption projects**, gathering a group of consumers within a 2 km range, **are now eligible**. Interestingly, the French Energy Ministry may grant a derogation to rural projects in low density areas to extend the range to 20 km;
- For awarded solar projects, the **commissioning delay is also increased** from 24 months to 30.



PPE2 tender for innovative PV installations

The French PPE2 tender for PV innovating installations appears in continuity with the CRE 4 Innovation tender, initiated in 2017

Notable adjustments since CRE 4 innovation tender

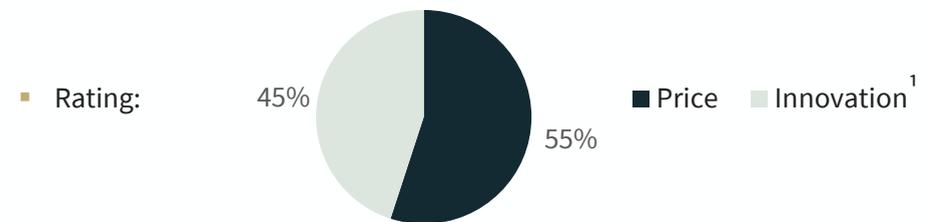
- Maximum capacity for eligibility is **increased from 500 kWp to 3 MWp**;
- Two different categories of projects** are considered, with **dedicated tendered capacities** for each:
 - The **1st category** targets **innovating PV ground-mounted plants** with capacity ranging from 500 kWp to 3 MWp and will see **60 MWp auctioned at each session**;
 - The **2nd category** is designed for **innovating PV rooftops, barns, agrivoltaic installations or car parks** ranging from 100 kWp to 3 MWp with **80 MWp of awarded capacity targeted at each session**.
- Agrivoltaic installations located in agricultural lands are eligible.** These installations must combine with synergies i) a main agricultural activity and ii) a “secondary” PV electricity production. The installation need to meet a clear agricultural need and the resulting synergies shall be demonstrable: a technical study describing the latter needs to be attached with the bidding form;
- The **commissioning delay is increased** from 24 months to 30.

Important:

The French Senate has recently passed a resolution² to foster agrivoltaism in France, expressing its desire to remove agrivoltaic installations from the PPE2 Innovative PV tender and implement a dedicated tender instead. This resolution has no legislative value but incentivizes France’s executive branch to consider the suggestion.

Tender criteria

- Type: Rooftops, green houses, barns & car parks
- Capacity:
 - Between 500 kWp and 3 MWp for PV ground-mounted installations;
 - Between 100 kWp and 3 MWp for PV rooftops, barns, agrivoltaic installations & car parks



Tender calendar

	Application deadline	Tendered capacity
1st session	November 12th, 2021	140 MWp
2nd session	July 22nd, 2022	140 MWp
3rd session	2023 TBD	140 MWp
4th session	2024 TBD	140 MWp
5th session	2025 TBD	140 MWp

¹ When applying to the tender, bidders shall fill in an innovation description report (with a technical study on synergies with the agriculture activity for agrivoltaism). An independent committee appointed by the ADEME will then rate the innovation based on 5 criteria: Innovation degree (20 pts), Market positioning (10 pts), Technical quality (5 pts), Adequation with industrial ambitions (5 pts) & Environmental and social aspects (5 pts)

² “Vers des appels d’offres et permis de construire adaptés à l’agrivoltaïsme”, *Green Univers*, 05/01/2022



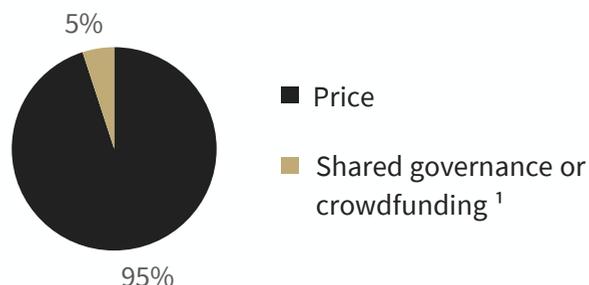
PPE2 tender for onshore wind farms

The PP2 tender for onshore wind farms provides continuity with what was offered to wind developers under the CRE 4 tender scheme

Tender criteria

- Type: Onshore wind parks with at least 7 turbines
- Capacity: Above 3 MW

■ Rating:



Tender calendar

	Application deadline	Tendered capacity
1 st session	November 26th, 2021	700 ² MWp
2 nd session	April 15th, 2022	925 MWp
3 rd session	October 14th, 2022	925 MWp
4 th & 5 th sessions	2023 TBD	2 x 925 MWp
6 th & 7 th sessions	2024 TBD	2 x 925 MWp
8 th & 9 th sessions	2025 TBD	2 x 925 MWp
10 th & 11 th sessions	2026 TBD	2 x 925 MWp

¹ Shared governance and crowdfunding premium are mutually exclusive, with shared governance accounts graded between 0% to 5% while crowdfunding will be either 0% or 3% with no intermediate value

² For the first period, if the bidding capacity exceeds 700 MW, awarded capacity may be increased to up to 925 MW

Notable adjustments since CRE 4 onshore wind tender

The new PPE2 tender specification for onshore wind parks has not evolved much from the CRE 4 tender:

- **Wind parks granted with a feed-in tariff with EDF OA** under December 13th, 2016, Decree for wind installations **may be eligible** under the below conditions:
 - The project has not yet benefited from its feed-in tariff;
 - The project has been extended to include more turbines: while the feed-in tariff scheme is available for wind parks with no more than 6 turbines, the tender only applies to projects with at least 7 turbines.
- **Rating criteria adjustments:** shared governance and crowdfunding are now part of the overall rating:
 - **Shared governance** accounts for the long-term ownership of the projects by local individuals or communities;
 - **Crowdfunding** accounts for the financing of the project by local individuals or communities. It is to be noted that the shared governance and crowdfunding ratings are mutually exclusive: one grade will always remain null.



2.3

PPE2 tenders: What's new since CRE4 tenders?

- i) New common features to all PPE2 tenders*
- ii) How CRE4 existing tenders were reworked under the PPE2 tenders scheme*
- iii) The introduction of a new technology-neutral tender***



PPE2 technology-neutral tender

A new recurring technology-neutral tender scheme was implemented in France to comply with the European regulation on energy

Introduction

- With PPE2, a **new multi-technology tender** is introduced for **solar PV, onshore wind and hydro electricity**. It resembles the Energy Regulation Committee (CRE)'s 2018 bi-technology tender that took place for solar and wind installations, awarding 203 MW;
- This new technology-neutral tender was implemented in line with the **European Commission's will to allow the direct and non-discriminatory competition between different renewable energy sources**;
- In the past, **the CRE has already spoken up against these multi-technology tenders**:
 - In a 2017 report¹, the CRE claimed that, by putting different sources of energy in direct competition, these tenders were grieving France's ability to meet its long-term renewables targets for each technology. Under these tenders, the good performances of one technology is detrimental to the others. According to the CRE, this could further burden the total cost of the energy transition; the good development of solar and wind energy sources are complimentary due to their very different baseload curves;
 - According to the CRE, these tenders can be redundant with the other already existing tenders (PPE2 onshore wind, ground-mounted & rooftop PV tenders for instance). They may allow arbitrage opportunities for developer which could, on the long run, slow down the cost decrease of the technologies.

Eligible technologies

- Ground-mounted PV** installations starting from 500 kWp and, unless projects are located on degraded lands, capped at 30 MWp – which can be equipped with storage but the latter is not subsidized under this tender;
- Rooftop, green house, barn & car park PV** exceeding 500 kWp – which can also be equipped with storage with the latter not being subsidized under this tender;
- Onshore wind projects** regardless of the capacity – possibly equipped with storage with the latter not subsidized under this tender;
- New **hydro plants** over 1 MW.

Tender calendar

	Application deadline	Tendered capacity
1st session	July 28th, 2022	500 MWp
2nd session	2023 TBD	500 MWp
3rd session	2024 TBD	500 MWp
4th session	2025 TBD	500 MWp
5th session	2026 TBD	500 MWp

¹ Délibération de la Commission de régulation de l'énergie du 20 avril 2017 portant avis sur le projet de cahier des charges de l'appel d'offres portant sur la réalisation et l'exploitation d'installations de production d'électricité à partir d'énergie so-laire photovoltaïque ou éolienne situées en métropole continentale



PPE2 technology-neutral tender - Continued

Each technology will be rated based on its own criteria to allow a better competitiveness

Key criteria under PPE2 technology-neutral tender

Under CRE 4's 2018 bi-technology tender, wind and PV assets were solely rated based on their bidding feed-in premium price. As onshore wind bids were, on average, 35% higher than PV¹, only PV projects were awarded. With the PPE2 tenders, the **rating criteria are different for each technology** to grant wind projects with some winning chances:

- **Shared governance and crowdfunding** are part of the overall rating for all technologies:
 - **Shared governance** accounts for the long-term ownership of the projects by local individuals or communities;
 - **Crowdfunding** accounts for the financing of the project by local individuals or communities. It is to be noted that the shared governance and crowdfunding ratings are mutually exclusive: one grade will always remain null.
- **Environmental relevance** will account in the **overall rating of wind and PV assets**:
 - For ground-mounted PV assets, it can either be rated maximum if the project is located on degraded lands, or null otherwise;
 - For other PV or onshore wind assets, it is rated maximum.
- An **environmental quality** criterion aims at assessing the impact of hydro projects on their direct surrounding. The complex calculation can be found in the tender specifications (cf. Appendix 3).

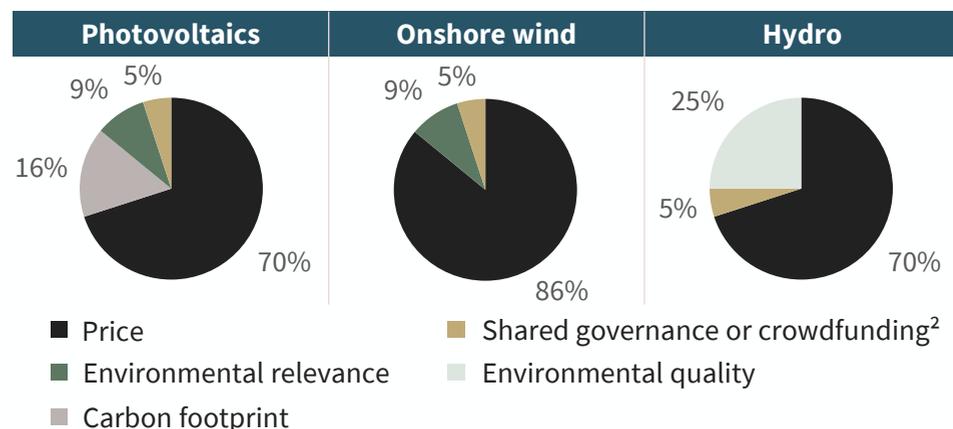
¹ Délibération de la CRE du 17 octobre 2018 relative à l'instruction des dossiers de candidature à l'appel d'offres portant sur la réalisation et l'exploitation d'Installations de production d'électricité à partir d'énergie solaire photovoltaïque ou éolienne situées en métropole continentale

² Shared governance and crowdfunding premium are mutually exclusive, with shared governance accounts graded between 0% to 5% while crowdfunding will be either 0% or 3% with no intermediate value

³ Computed with the following formula, based on PPE2 neutral tender specifications: $[(90 - \text{project bidding price}) / (90 - (\text{average price of the 10\% most competitive bids} - 5))] \times \text{criterion's percentage in overall grade}$

⁴ Computed with the following formula, based on PPE2 neutral tender specifications $(550 - \text{project emissions rounded to the nearest } 50x \text{ multiple}) / 350 \times \text{criterion's percentage in overall grade}$

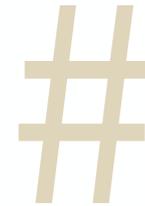
Ratings



Example:

- One ground-mounted PV and one onshore wind projects bid at the same tender, at 55€/MWh and 60€/MWh respectively
- At this tender, the average of the 10% best bids end up at 54€/MWh;
- Out of their "price" rating criterion:
 - The ground-mounted PV project gets c. 60%³ (out of 70%)
 - The wind project gets 63% (out of a maximum of 86% - cf. above)
- Out of their "environmental relevance" criterion:
 - The ground-mounted project, which is not located on degraded lands, gets by default 0% out of 9%
 - The onshore wind project automatically receives the maximum grade (9%)
- Out of its "carbon footprint" criterion, the ground-mounted project, emitting 550 kg CO2 eq/kWp (the median value of the bids from the last CRE 4 tender #10 for ground-mounted plants), receives a grade of 0%⁴
- Prior to even considering the financing structure of the two projects that may account for up to 5%, the wind project appears more competitive on this tender (72% vs. 60%).





Appendices



Appendix 1: France's Multiannual Energy Plan (PPE)

What's France's PPE?

- The *Programmation Pluriannuelle de l'Énergie* (PPE) – the multiannual energy plan – is a **steering tool for the French energy policy** framed by the law for energy transition and green growth (LTECV – *loi de transition énergétique et de croissance verte*). It provides the **basis on which French's energy future is defined**;
- The PPE covers the following :
 - **Security of energy supply** ;
 - Improvement of **energy efficiency** ;
 - **Renewables** development ;
 - **Grid, storage and energy transformation** expansion as well as **energy demand management** ;
 - **Clean mobility** development ;
 - **Consumer's purchasing power** and **energy competitive prices** protection ;
 - Assessment of the **professional resources needed** in the energy field.
- Each PPE plan should broadly cover 2 successive time periods of 5 years each, with a revision planned after the first period. By exception, France's first PPE plan was approved for the 2016-2018 period. In 2018, discussions around the second PPE (PPE2) were held for the 2019-2023 period. The PPE2 plan was later adopted with delay in 2020.
- The current Multiannual Energy Plan (PPE2) can be found on the [French Ministry of Ecological and Solidarity Transition's website](#).

The birth of France's last PPE



Appendix 2: France's 2028 renewables targets

France's total renewables capacity targets (to be installed by 31/12/2028 at the latest) according to the 2028 PPE decree¹ – in GW

Source	2023	2028 low	2028 high
Onshore wind	24.1	33.2	34.7
Solar	20.1	35.1	44.0
Hydro	25.7	26.4	26.7
Offshore wind	2.4	5.2	6.2
Biomass	0.27	0.34	0.41

¹ Décret n° 2020-456 du 21 avril 2020 relatif à la programmation pluriannuelle de l'énergie



Appendix 3: Link to PPE2 tenders' specifications

PPE2 tender specifications' links from the Energy Regulation Commission (CRE)'s website

- [PPE2 tender specifications for solar ground-mounted installations](#)
- [PPE2 tender for solar rooftops, green houses and car parks](#)
- [PPE2 tender for self-consumption](#)
- [PPE2 tender for innovative solar installations](#)
- [PPE2 tender for onshore wind farms](#)
- [PPE2 technology-neutral tender](#)





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