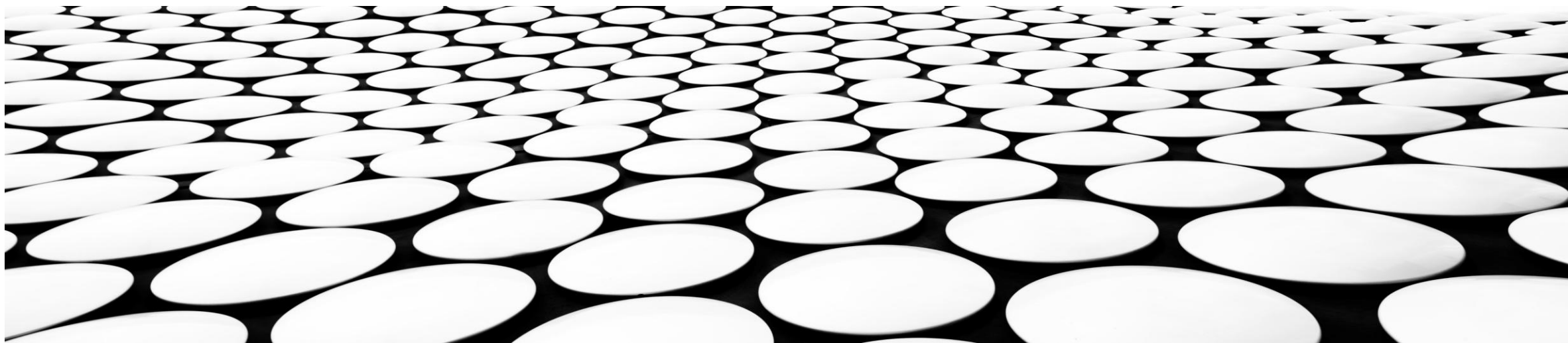


# PPA IN FRANCE : SOME INSIGHTS

What lessons from the french market?

MAY 2025



## WHO ARE WE ?



- CLEEE is an organization of major French industrial and tertiary consumers of power and gas. Through our actions with the French and European public authorities, we strive to preserve the competitiveness of our companies and to offer our members the best visibility on regulatory developments. We also train our members on how to cope with new regulations and market changes.
- Association CLEEE = 80 Companies are consuming together yearly 50 TWh of power and 25 TWh of Gas consumption yearly
- All sectors are represented : Industry, Transport, Tertiary business

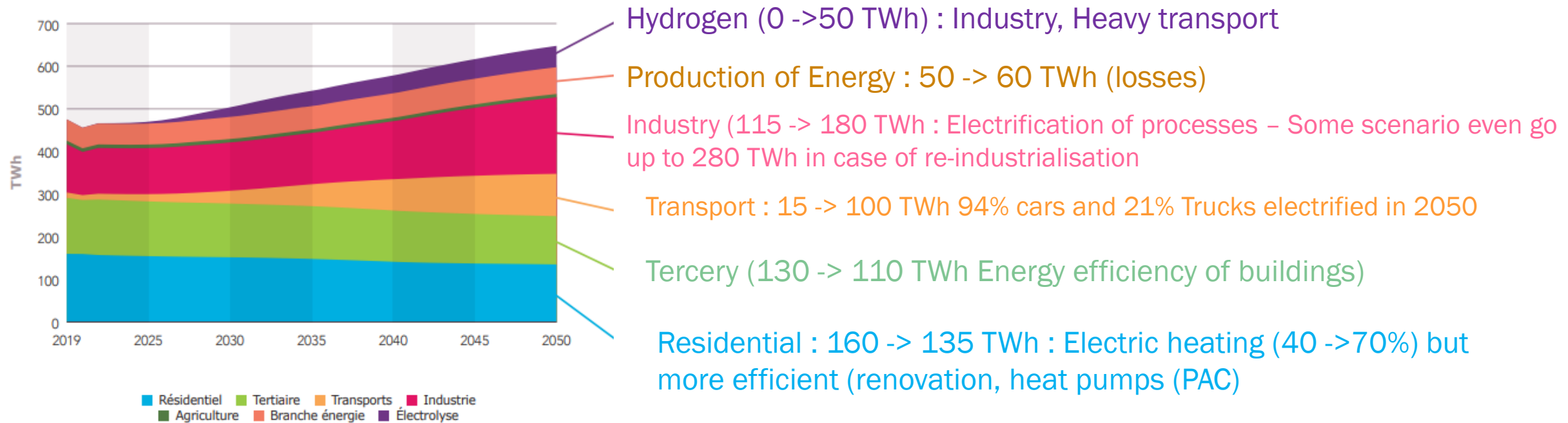
## MAIN POINTS

- 1) **PPAs in France : Global context** of decarbonization towards 2050 in France – Place of renewables in the global energy mix
- 2) **PPAs in France : Observations** : What do large french industry and tertiary consumers do on PPAs ?
- **Conclusion** : PPAs : Lessons from french markets for other european markets

CRE : Commission de Regulation de l'Energie = Energy Regulatory Commission

## PPAS IN FRANCE GLOBAL CONTEXT

# ENERGY TRANSITION FRANCE : NEEDS TOWARDS 2050



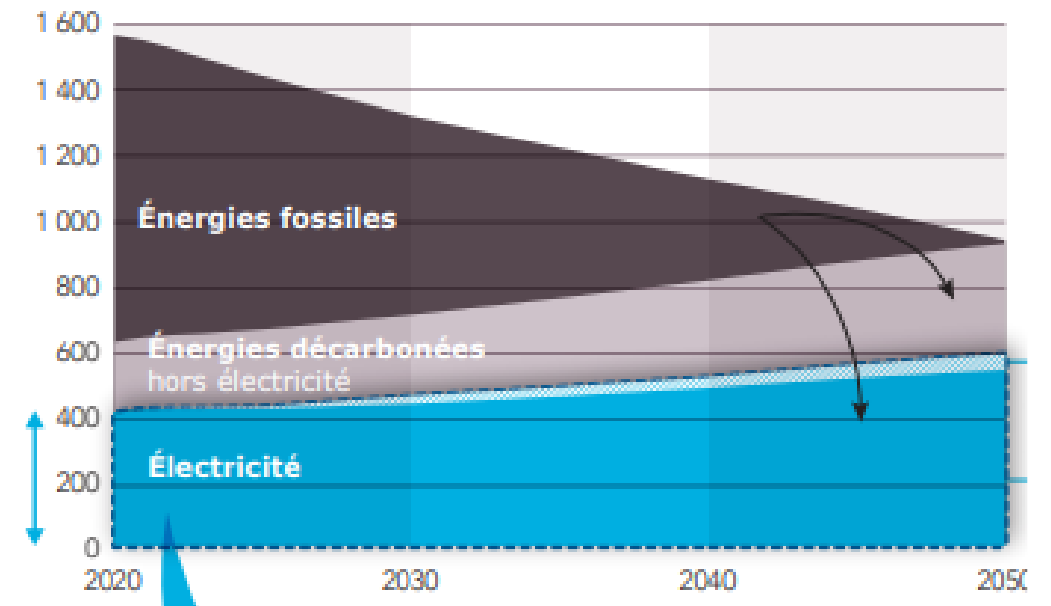
Source : RTE

# ENERGY TRANSITION : PRODUCTION OF ENERGIES



**Consumption in 2050 : -40% compared to 2020**

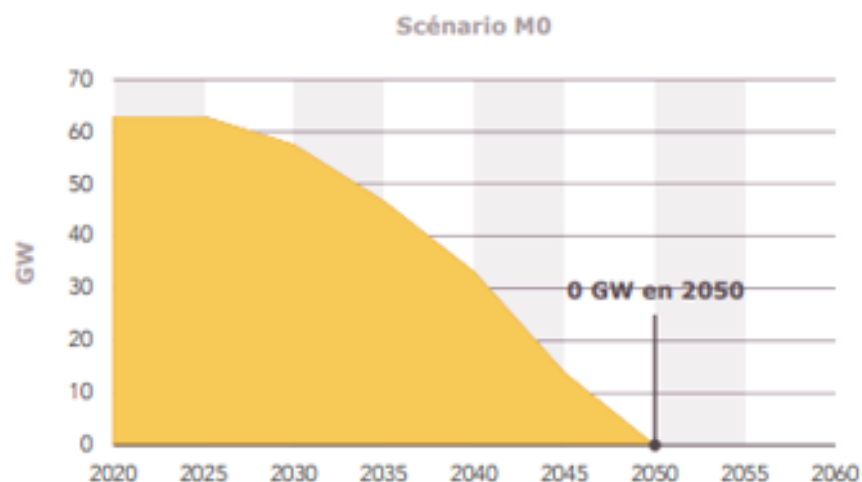
1. Volume effect: 70 millions inhabitants and +1.6% GDP/year.
2. Energy efficiency (building renovation)
3. Electric motors: improved efficiency x2 or 3
4. Heat pumps: improved efficiency x 3



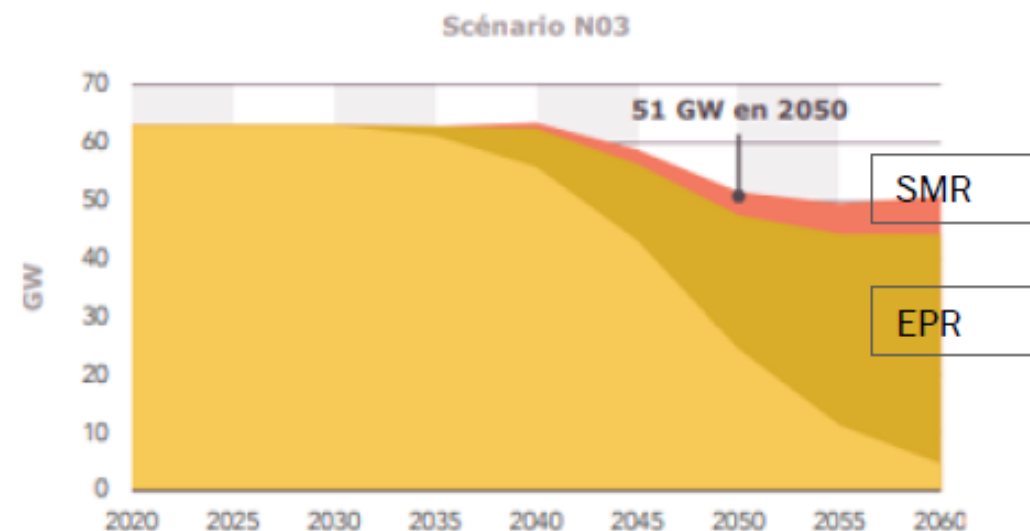
*Sobriety scenario RTE (-1°C heating, teleworking, smaller cars, etc.): -90 TWh additional*

# WHAT ABOUT NUCLEAR POWER IN THE FUTURE?

- Existing nuclear



- New nuclear

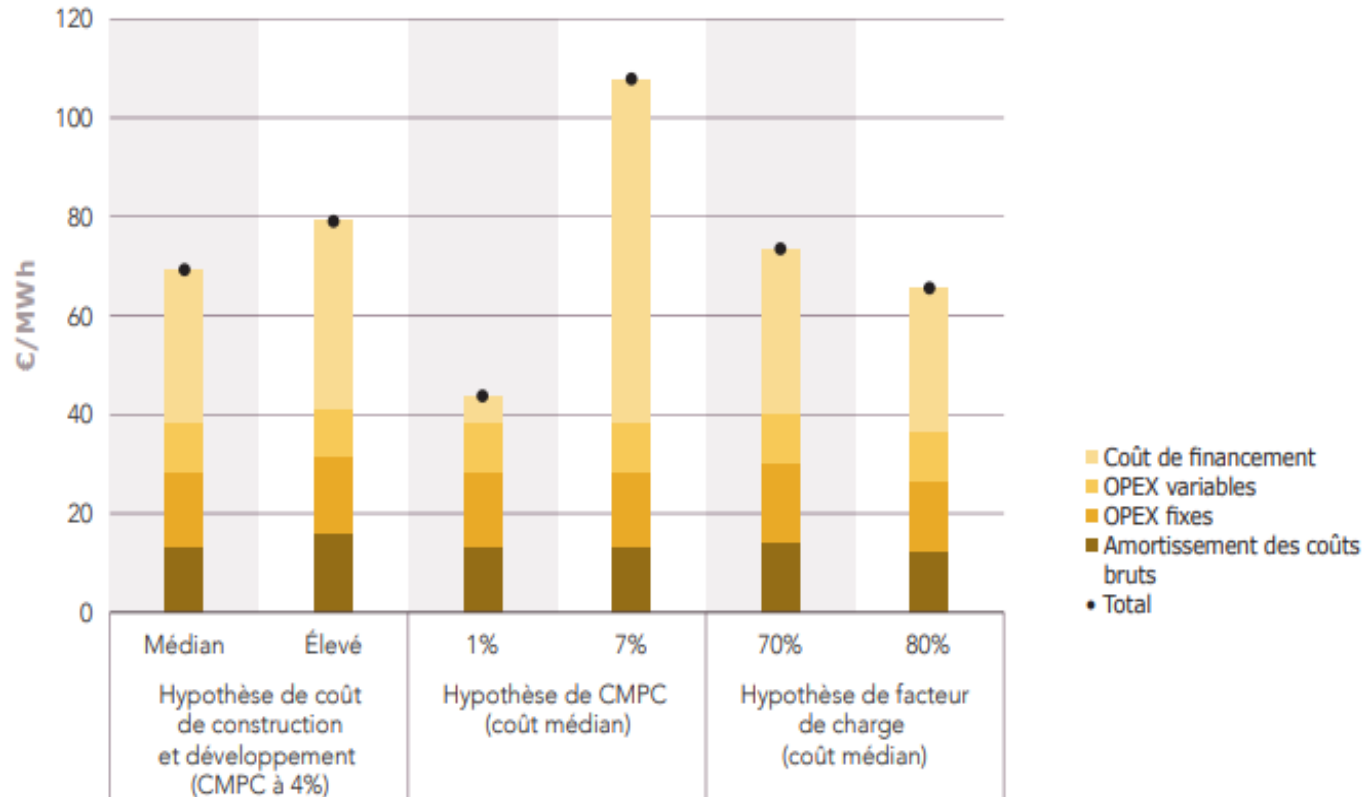


Source : RTE

SMR : Small Modular Reactor – EPR : Evolutionary Power Reactor

# WHAT ABOUT THE COST ?

## Nuclear

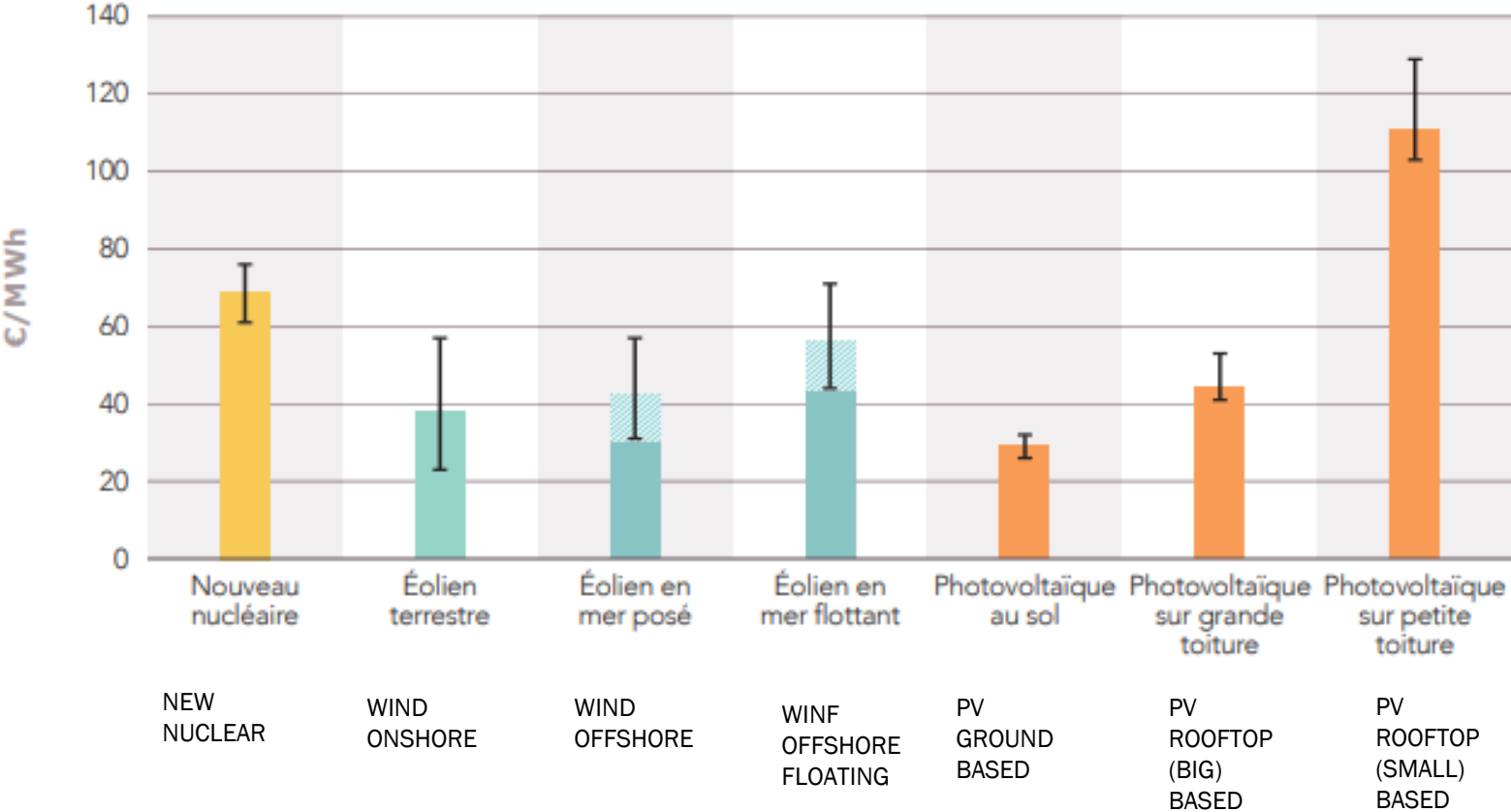


Cost of the new nuclear is especially depending from the cost of capital needed to finance it

CMPC : Coût Moyen Pondere du Capital = weighted average capital cost



# WHAT ABOUT THE COST ?



# ENERGY TRANSITION : INCREASED NEED FOR FLEXIBILITY

## Variability of renewable energies → need for additional modulation

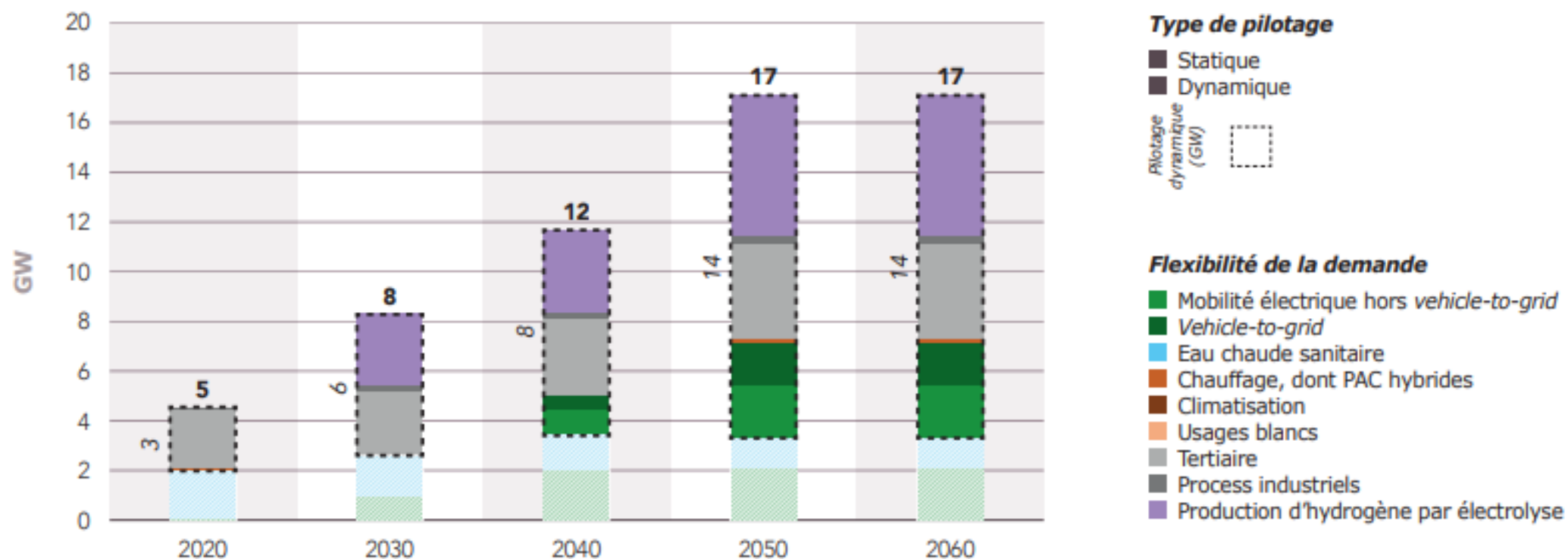
- Day-Night: Solar x1.5 to x4
  - On a few days – 1 week: Wind x1.8 to x4
  - Summer - Winter: Solar Wind
  - Year-over-year: Wind x1.2 to x2
- **Risk period: November to March, 5pm-9pm**

## What **solutions** ?

- Development of **wastewater treatment plants** (limited)
- **Flexibility of demand** : electric vehicles (day-night), H2 electrolyzers (over a few days), industrial load shedding
- **Expansion of** renewable energy Europe + development **interconnections** (39 GW)
- **Power to Gas to power** : efficiency 40% (0 to 30 GW depending on scenarios)
- Nuclear modulation
- **Biomethane** will be reserved for gas uses

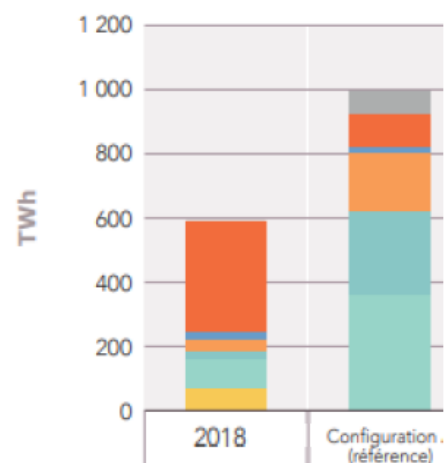
# ENERGY TRANSITION : INCREASED NEED OF FLEXIBILITY

**Figure 7.23** Évolution de la puissance moyenne effaçable de la demande d'électricité dans la configuration « flexibilité prudente » sur la demande d'électricité, de 2020 à 2060

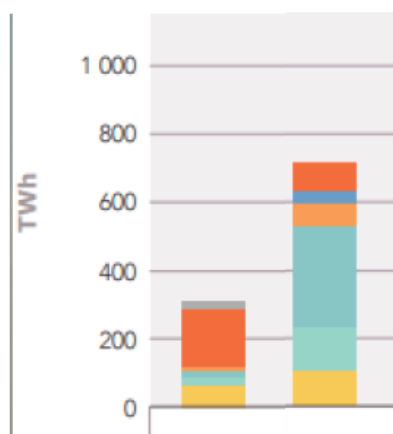


# PERSPECTIVES OF OTHER EUROPEAN COUNTRIES

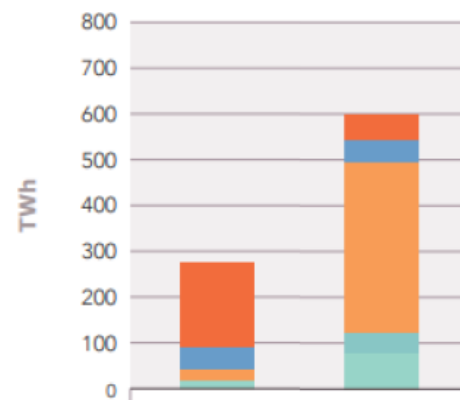
**Allemagne :** 100% ENR, importations d'électricité et de gaz vert



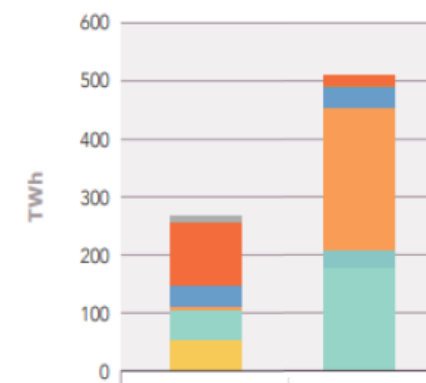
**UK :** Eolien en mer, nucléaire, exportations



**Italie :** solaire



**Espagne :** solaire et éolien



■ Nucléaire ■ Éolien terrestre ■ Éolien en mer ■ Solaire ■ Hydraulique et autres EnR (hors thermique)  
■ Thermique (décarboné en 2050) ■ Solde importateur

# PPAS IN FRANCE : OBSERVATIONS

# POLL

- According to you what are the reasons why PPAs in renewables are less developed in France?
- R1 : No need to decarbonize power supply in France
- R2 : Public support mechanism is very developed
- R3 : Consumers have less interest for PPAs in France

# PPAS ARE LESS DEVELOPPED IN FRANCE

Compared to other European countries (Spain / Germany...)

Why?

- Majority of French electricity mix is carbon-free and electricity prices are (to date) lower in France than in some other European countries (excl Spain/the nordics) reducing consumers' appetite for PPAs

									
	Eolien	Eolien en mer	Photovoltaïque	Hydraulique	Géothermie	Nucléaire	Charbon	Pétrole	Gaz
Émissions de CO2 (mont)	14,1 g	15,4 g	43 g	6 g	45 g	6 g	89 g	103 g	67 g
Émissions de CO2 combustion	0 g	0 g	0 g	0 g	0 g	0 g	969 g	628 g	551 g
TOTAL	14,1 g	15,4 g	43 g	6 g	45 g	6 g	1060 g	730 g	618 g

ADEME 2022

19/05/2025

# PPAS ARE LESS DEVELOPPED IN FRANCE

## Why?

- In addition, public support mechanisms for renewable energy in France are more developed than in other countries, which does not encourage producers to use PPAs.
- Two mechanisms exist : Feed-in Tariffs (small installations) and CRE Tenders

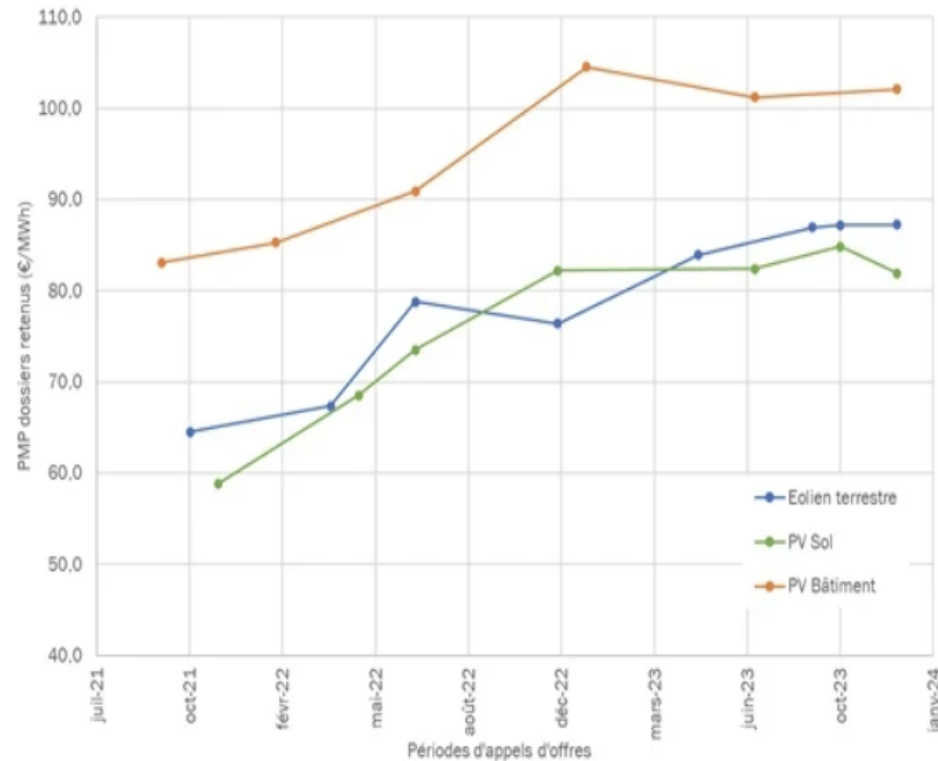
The panel's analysis confirms that the pace of development of renewable installations outside public support in France is generally low compared to installations benefiting from a supplementary remuneration contract or a purchase obligation:

**the CRE estimates that between 2019 and 2023, calls for tenders made it possible to commit around 7 GW of photovoltaic capacity and 5 GW of onshore wind capacity ,**

Source : CRE Study 2025



# CRE TENDERS



End 2023 : 14 GW in several (7) Tenders – 10 GW attributed.

Till 2026 : Goal : 28 GW for tenders (PPE2)

*Evolution des prix moyens pondérés (PMP) par la puissance des projets retenus aux périodes d'appels d'offres ayant eu lieu entre 2021 et 2023 par typologie d'installations*

# PPAS ARE TO DATE LESS DEVELOPPED IN FRANCE

## Why?

- Till 2025 a financial interesting mechanism for the consumer (named ARENH ) granted the french consumer a part of power at a regulated level of 42 €/MWh

Some of electro-intensive companies to date often use ARENH for usually half to 60% of their supply and the rest cover with spot (eventually adding blocs in Q1)



# BUT.....

- ARENH is ending 2025
- From 2026 no new support mechanism (on a much less protective one (VUN))
- Possibly more opportunities to develop on long term contracts

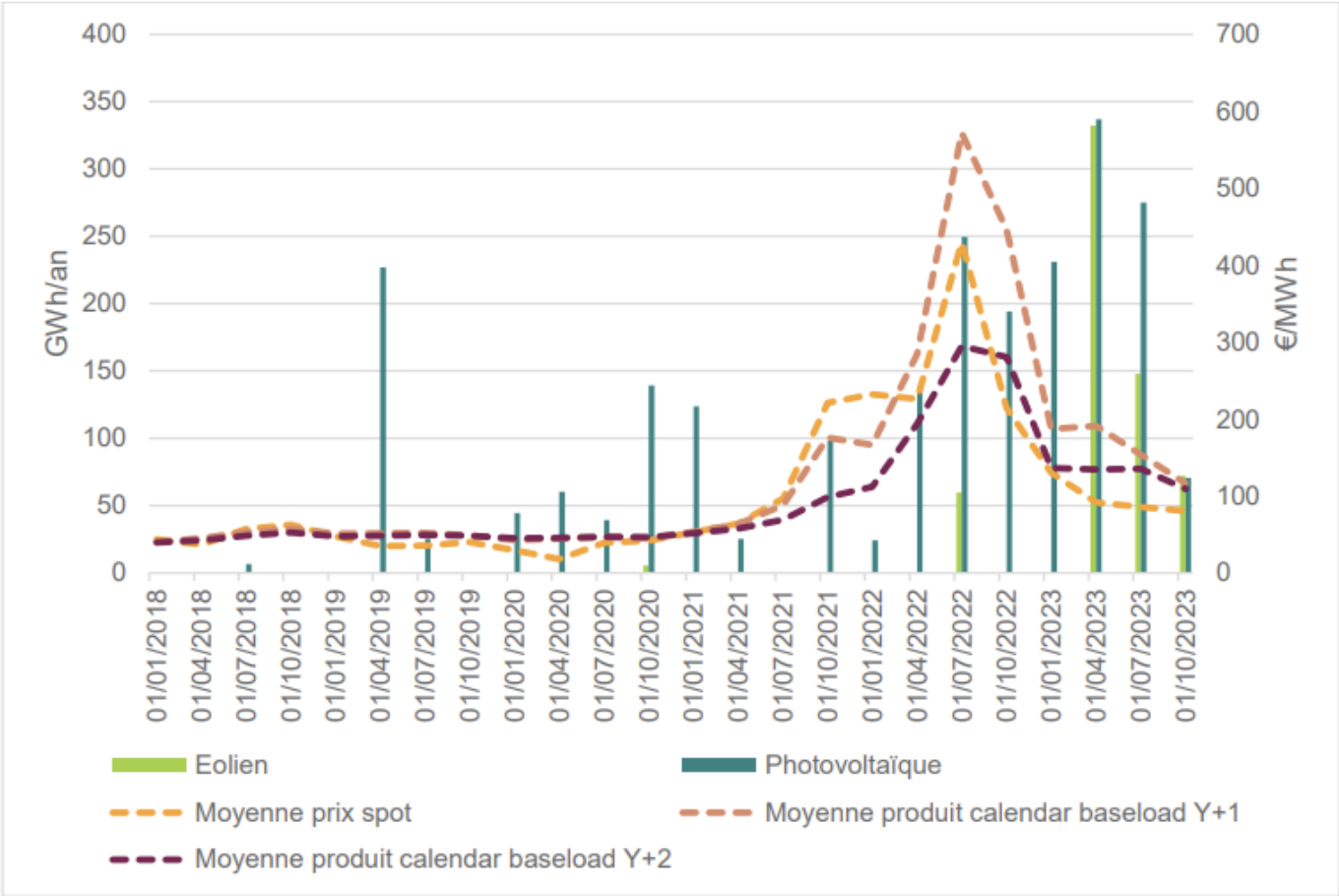
## MAIN FINDINGS (CRE STUDY)

- The development of PPAs in France is recent and has been mainly driven by the wholesale energy price crisis: volumes are still limited
- The evolution of PPA prices is influenced by the evolution of wholesale prices and the evolution of the costs of production technologies
- Buyers are mainly large consumers
- Nearly if not all PPAs observed in the study are physical PPAs

# CRE FINDINGS : INFLUENCE OF MARKET PRICES ON CONCLUSIONS OF PPAS



Figure 2 – Volumes annuels de PPA signés par trimestre (GWh/an), comparativement aux prix de l'électricité (moyenne trimestrielle, €/MWh)



# PPAS – OUR OBSERVATIONS



- Imbalance between demand (from buyers) and supply (from project leaders)
- Difficulty in finding "de-risked" projects » (building permits, purged of all appeals)
- Undeniable CO2 impact in many European countries but questionable in France
- \* Lack of training of purchasers on purchasers on this type of product

# PPAS – OUR OBSERVATIONS



- An increase in price (from €45-50 to +€90/MWh between 2020 and 2023, then down ~ €60/€70 (France))
- **Uncertain financial interest in these price conditions**
- Requires a purchase of the residual volume in block + spot so a block contract + spot with some exceptions
- \* To our knowledge : Especially physical PPAs are signed in the consumers we have been

# PPAS OUR OBSERVATIONS



What are the main issues while signing a PPA from the consumers side?

- The forecast : Difficult to forecast the consumption on 15-20 years. How will the business run? Will we have to shutdown facilities? This is not an issue with low PPA volumes but becomes difficult when above 50%
- The financial Warranty : Only very good rated companies may afford PPAS because bank will not be willing to commit if the financial ratings are not very good. Also bank will prefer financing a PPA from State (CRE Tender) than for private companies except those having very good financial ratios



# PPAS OUR OBSERVATIONS



What are the main issues while signing a PPA from the consumers side?

- Internal issues for purchasers : How to convince the financial department on the interest of having a PPA when we get negative spot prices as it occurs more and more often – Pedagogy is necessary to explain the long term view. Commitment of general management is key.
- Issues regarding the clauses of signing PPAs : Complex clauses
- Difficult to afford for Power intensive companies. Discussions are ongoing on nuclear PPAs (CAPN as we name them in France) but yet difficult to come to an agreement with french producer EDF.

## PPAS OUR OBSERVATIONS

- Only a minority of users in our association use PPAs, approx 10% of them : PPAs represent around 5% of global consumption - Within the industry only the bigger player cover one part of their consumption via PPAs
- Only very few consumers are close to 10% of consumption of electricity covered by PPAs or slightly above – They are Tercery companies.
- Most of the contracts are Pay as Produced contracts.
- Most if not all contracts concern important players with solid financial ratings

# WHO ARE THE CONSUMERS MOST INTERESTED IN PPAS?



According to what we see in our association

- Mainly Tercery consumers but also public consumers who have some objectives of implementations of PPAs
- They have a strategy where they need to know at least one part of the price they will pay.
- They are less sensitive to competition out of France
- The energy cost is not one of the main cost of their spends

# CONCLUSION : WHAT LESSONS CAN WE DRAW ON PPAS IN FRANCE

## REGULATORY :

Coming back to our poll : French Consumer less interested and lot of public support mechanism : it may change

- **Regulatory** : Change in regulation (End of ARENH at 42 €/MWh in 2026) : the resulting cost for french consumer will increase on power. It could increase appetite of consumers for PPAs in the future
- **Regulatory** : CRE tenders will include an mandory part for PPAs (CRE Findings)

# CONCLUSION : WHAT LESSONS CAN WE DRAW ON PPAS IN FRANCE

## PRICES

- But price of PPA has to be competitive : to date french market is not. Prices have to align.
- An alternative could be for french consumer to work with virtual PPAs to benefit from better prices (spain),

# CONCLUSION : WHAT LESSONS CAN WE DRAW ON PPAS IN FRANCE

## SEGMENTATION :

- Tercery and public organisation could be the most interested in developping PPAs
- For industry : Segmentation is key

## Coordonnées contact :



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<https://cleee.fr>

