



WAVESTONE

Cost evolution and structure in PV tenders France – Germany comparison

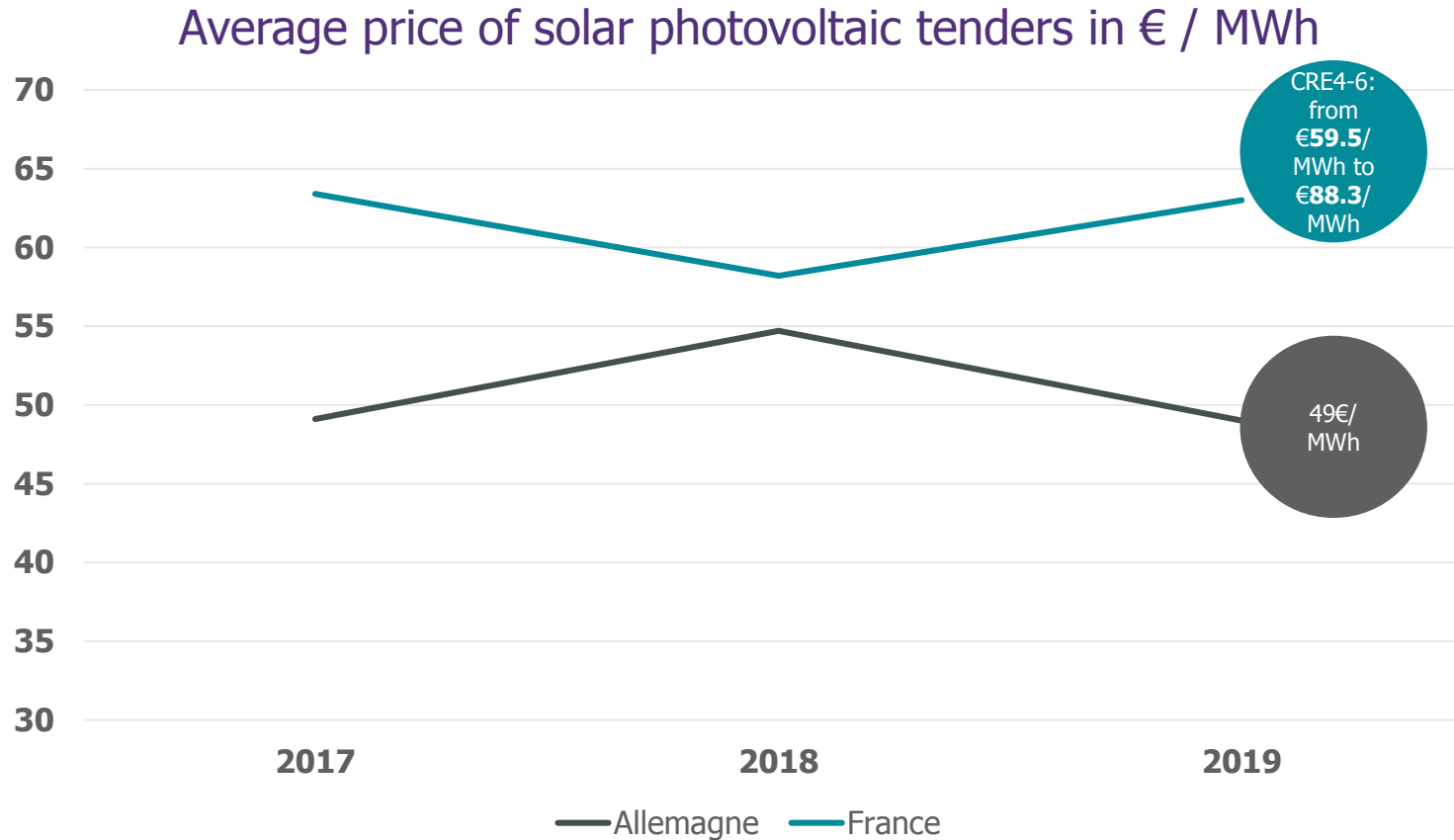
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Office franco-allemand pour la transition énergétique
Deutsch-französisches Büro für die Energiewende

Price of tenders: despite price convergence in 2018, German tenders remain more competitive



CONTEXT OF TENDERS

FRANCE

- > The CRE 4 tender for high-power solar installations (500 kWp and 30 MWp) was launched in 2016. The original goal was to award a **total volume of 3 GWp** over a period of **3 years including 6 application windows**.
- > In October 2019 two new application periods were added: the maximum power required is now **5.77 GWp**.

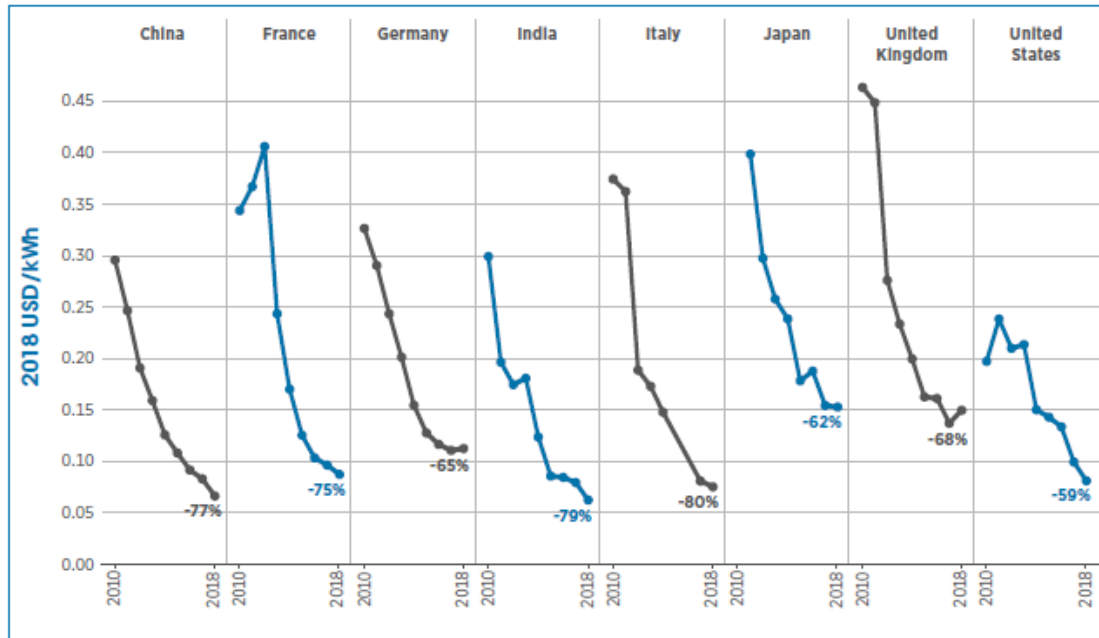
GERMANY

- > **27 projects** were selected for **153 MWp**.
- > The price ranged from **45.90 € / MWh to 52 € / MWh**.

Solar PV tenders: falling costs all over the world

PRODUCTION COSTS EXPERIENCE SHARPE DECREASE
WORLDWIDE SINCE THE 2010s'...

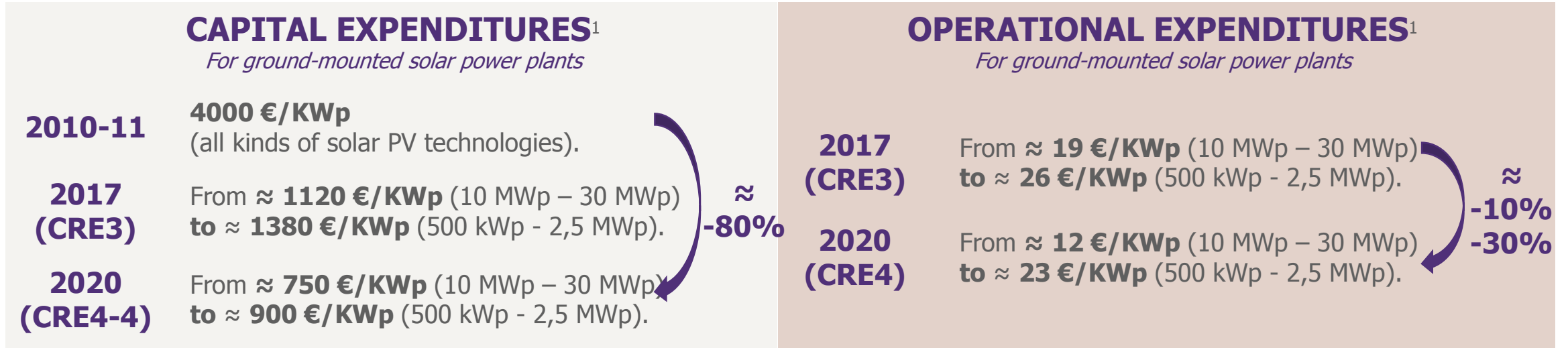
...LEADING TO RECORD PRICE LEVELS IN RECENT
AUCTIONS



Utility-scale solar PV weighted-average LCOE trends in selected countries,
IRENA, 2010–2018⁴

- / **United Arab Emirates, Novembre 2019**
→ \$16.953/MWh (≈ €15.37)
- / **Portugal, August 2019**
→ €14.8/MWh
- / **Brazil, July 2019**
→ \$17.5/MWh (≈ €15.87)
- / **United States, Los Angeles, July 2019**
→ \$19.97/MWh (≈ €18.11)

Solar photovoltaics in France: falling production costs since the early 2000s



LEVELIZED COST OF ENERGY¹

The average LCOE for the most competitive winners of the last periods of the CRE 4 tender is:
< 60 €/MWh

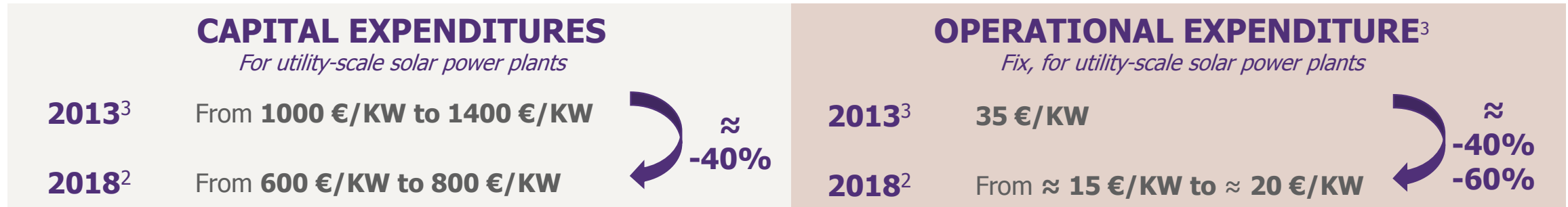
EXPLANATORY FACTORS:

- **Lower production costs for modules** related to the expansion of the industrial sector worldwide
- **Chain learning effect** in France (increase in volumes called)

Sources :

1. Commission de Régulation de l'Énergie, « Coûts et rentabilités du grand photovoltaïque en métropole continentale », February 2019

Solar photovoltaics in Germany: costs are on a decreasing trend



LEVELIZED COST OF ENERGY

In 2013, the LCOE for PV utility-scale energy was between **80 and 120 €/MWh³**

In March, 2018, PV utility-scale is the most competitive energy in Germany with:

39€/MWh < LCOE < 69€/MWh²

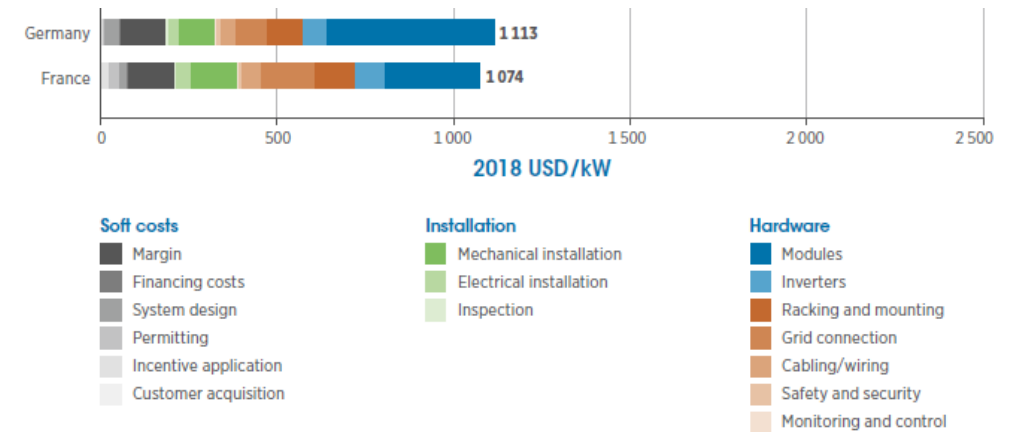
Sources :

2. Fraunhofer Institute For Solar Energy System ISE, "Levelized Cost Of Energy electricity, renewable energy technologies", March 2018

3. Fraunhofer Institute For Solar Energy System ISE, "Levelized Cost Of Energy electricity, renewable energy technologies", Novembre 2013

Explaining factors for price differences between France and Germany tenders

The system costs are not an explanatory factor for tenders prices divergence but rather **differences in the characteristics of the tenders**, the **fiscal environment**, the **legislation** etc⁴.



Detailed breakdown of utility-scale solar PV total installed costs, IRENA, 2018

HARDWER (CAPEX)

- / Modules and inverters prices do not seem to explain why the laureates of the German tenders offer more competitive prices. The calculation of these kind of costs is moreover very dependant on the selected methodology and can vary from one study to another.

GRIDS CONNECTION (CAPEX)

- / **Grids connection cost is higher in France** due to the mandatory participation in Regional Renewable Energy Connection Schemes (S3REnR) through the Quote-Part (QP)

DUES AND TAXES (OEPX)

- / **The level of taxation is more important in France** mainly because of the **IFER tax** which is a fixed taxation on network enterprises (7470€/MW/an).

LEVEL OF COMPETITION

- / **Strong competition in Germany puts downward pressure on prices.** Indeed, the volumes opened by calls for tenders are lower than those in France. As a consequence, there are fewer winners in percentage (example: 43% of the projects submitted were winners in France in 2017 versus 21% in Germany).

Sources :

4. OFATÉ DFBÉW, "Comparaison des cahiers des charges et des résultats des appels d'offres pour centrales photovoltaïques de grande puissance en France et en Allemagne, June 2018



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