

# The need for long term contracts and market design evolution in the European Union

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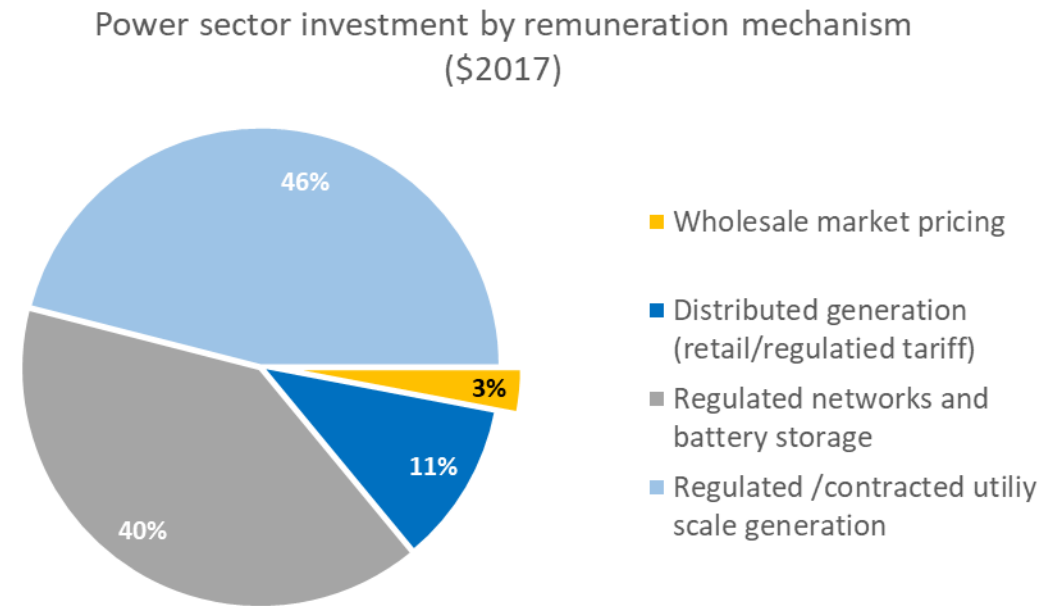
Part 1: Current challenges facing the EU electricity market

Part 2: Possible solutions

- Could more market fix the market?
- Need for long-term contracts

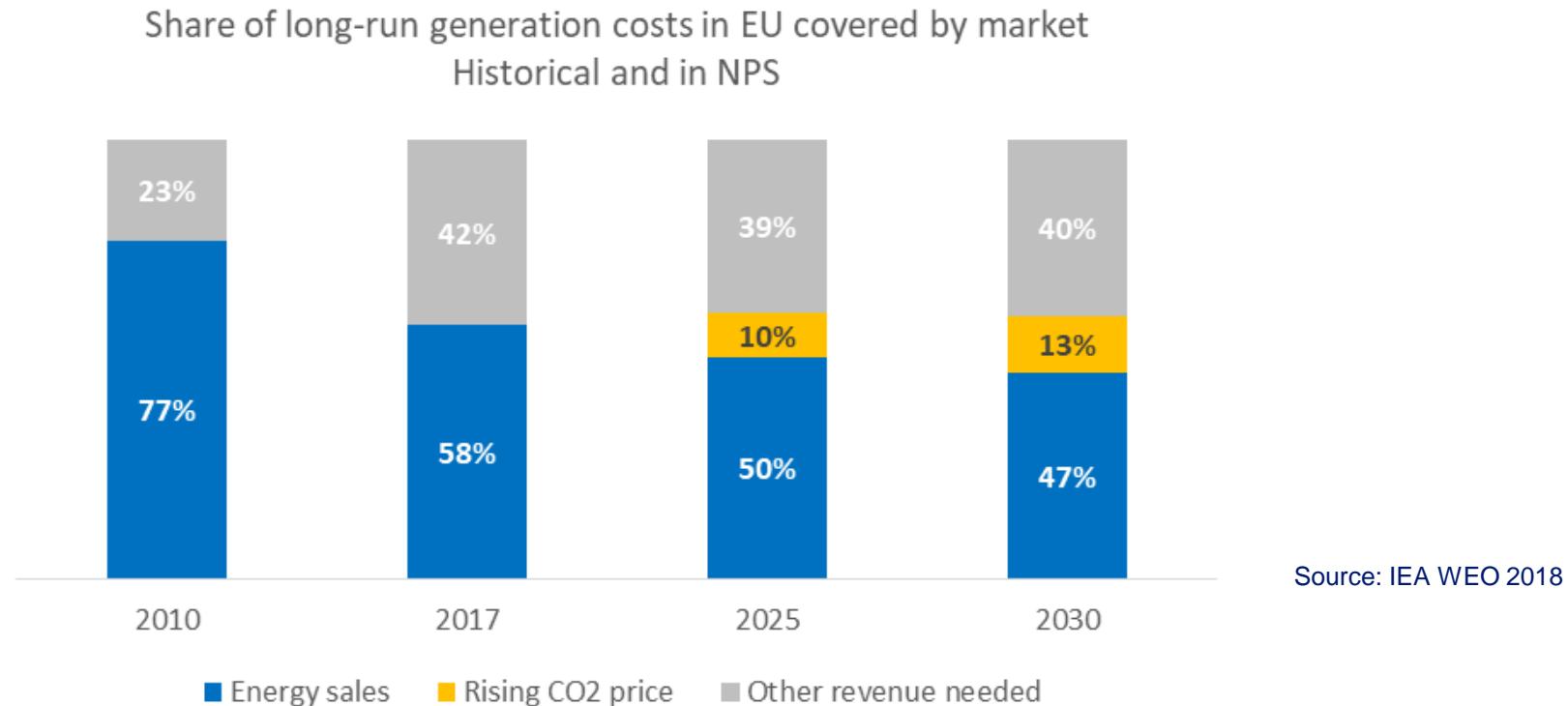
# Electricity market no more driving investment in the EU

- ❑ In the last ten years mostly off-market new capacities
  - ca 250 GW of net new capacity added in the EU between 2005 and 2017
  - o/w 220 GW was wind and solar PV not driven by market
  - A few thermal plants, driven by markets but investment decision before 2008
  - Currently almost all investment decision taken off-market
- ❑ Globally, in 2017, only 3% of power sector investment was remunerated by wholesale market pricing. One in two electrons was generated via non-regulated markets



Source: IEA WEO 2018

# A major remuneration challenge in Europe



- ❑ 2/3 of existing thermal plants will reach the end of their useful life by 2040 (370 GW out of 550 GW) and will have to be replaced or have their service life extended.
- ❑ USD 150 bn of asset write-downs by European companies from 2010 to 2016 (source: IEA WEI 2019)
- ❑ Potential to create security of supply issue

# Could more market fix the market?

Certain conditions would have to be met

## 1. Remove caps from the wholesale market

- Up to €20,000 / MWh of VOLL – in the EU, LOLP is ~expected 3 hours/year
- Avoid market power exercise

## 2. Generalize real-time pricing

- Implies more volatility
- More unpredictable net earnings, accentuated by sun and wind variability
- Blurred signals for capital-intensive downstream investment (energy efficiency, EV...)

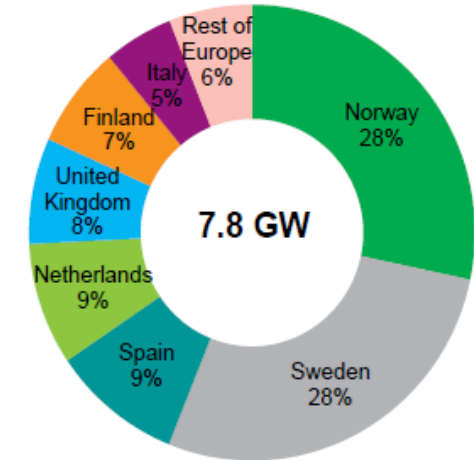
## 3. Generalize nodal pricing

- In practice, management of market power at congested nodes leads to ex-post regulator intervention
- With the development of variable renewables, number of nodes will increase dramatically and extend to the distribution network
- Without a ubiquitous and rapid IT system development, ex-ante regulation appears more effective

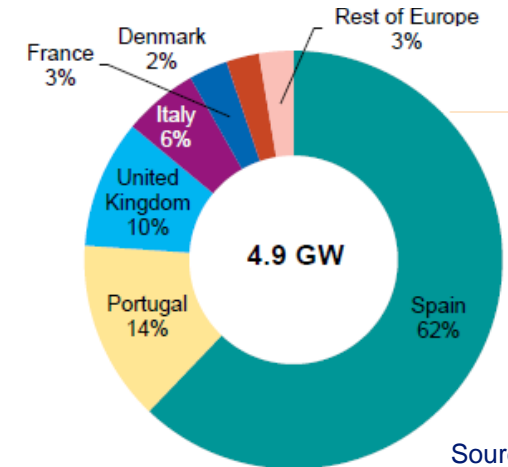
# Corporate PPA and capacity markets probably can't drive adequate investment

- ❑ Corporate PPA: recently drawing interest in Europe
  - Since 2014, 7.8 GW onshore wind and 4.9 GW solar PV capacity procured
  - High concentration in Spain (solar PV with very specific market conditions) and Northern Europe (wind)
- ❑ But PPAs face major limiting factors:
  - Non-convergence of rational expectations on long-term forward prices
  - Cannibalization of variable renewables
  - Scalability issue: increasing credit risks with higher volumes
- ❑ Capacity market: probably not a long-term solution with current design
  - Identifying overcapacity rather than curing it
  - Very short term (notice and term of contract), existing power plants (CT, CCGT eventually)
  - Trend towards longer term contracts : cf. UK, 15 years for new plants

Onshore wind capacity procured since 2014



Solar PV capacity procured since 2014



Source: IHS Markit

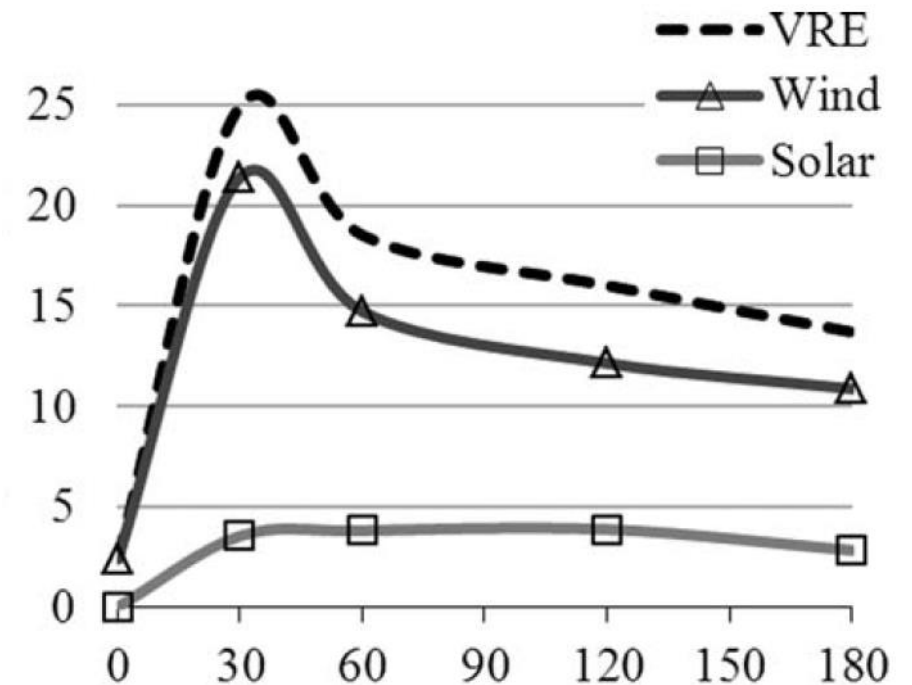
# EU can't meet renewables targets via market

- ❑ The European Commission calls for a carbon-neutral Europe by 2050
  - ❑ Electricity generation should rise : x 2 – 2,5 by 2050
  - ❑ High share of wind and solar : ca min. 70% of electricity generation by 2050

*Source : 2050 Long Term Strategy of the UE - 2018*

- ❑ Optimal share of VAR REN appears to be significantly lower
- ❑ A dilemma for Europe
  - If REN investment driven by the market → objectives cannot be reached
  - To reach REN objectives → need for continued support

Optimal wind and solar shares  
with different CO<sub>2</sub> prices, assuming steep cost  
reduction



source: Lion Hirth The Energy Journal,  
Vol. 36, No. 1. Figure 14

# Short-term markets together with long-term contracts for all generation plants

- ❑ To maintain adequate existing capacity levels and build required new capacity
  - Brazil: planning authorities + tenders and LT contracts for investments, short-term market for dispatching and balance
  - UK: indicative planning + CfD for new zero-carbon plants + capacity market + day-ahead and real-time markets
- ❑ More fundamentally, structural change in technology landscape
  - In 1990s, CCGTs were the main technology rolled out: low capital investment, “short” construction and life time, dash-for-gas
  - Different technologies are needed today: zero-carbon plants and energy efficiency are highly capital-intensive and have long lifespans
- ❑ There is no “right” market design: all depends on the underlying technology portfolio