

19 April 2018

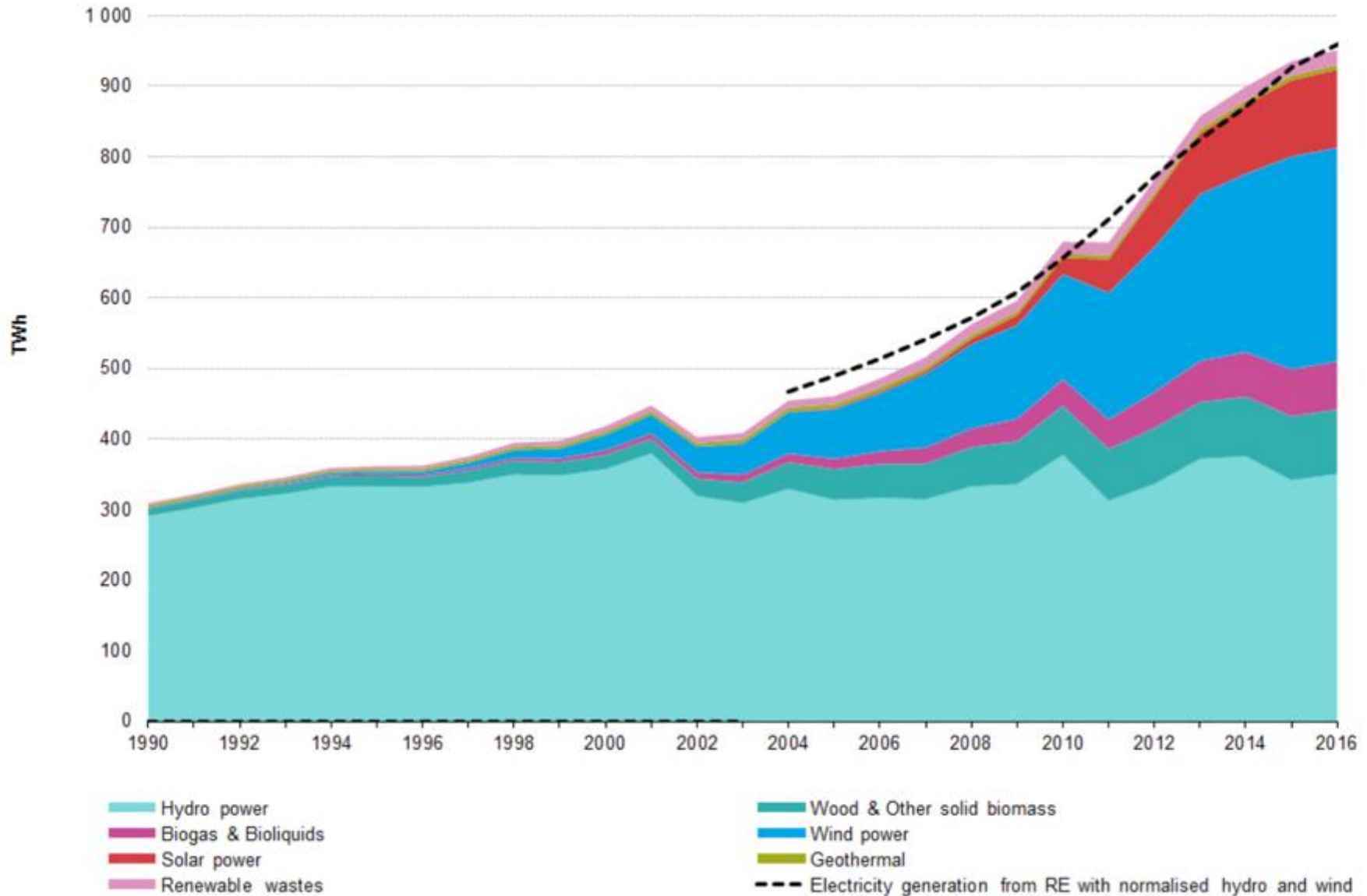
# Power system flexibility in Europe

Berlin think-tank workshop

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Edith Bayer

# Gross electricity generation from RES for EU-28



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# 13 April, 2018

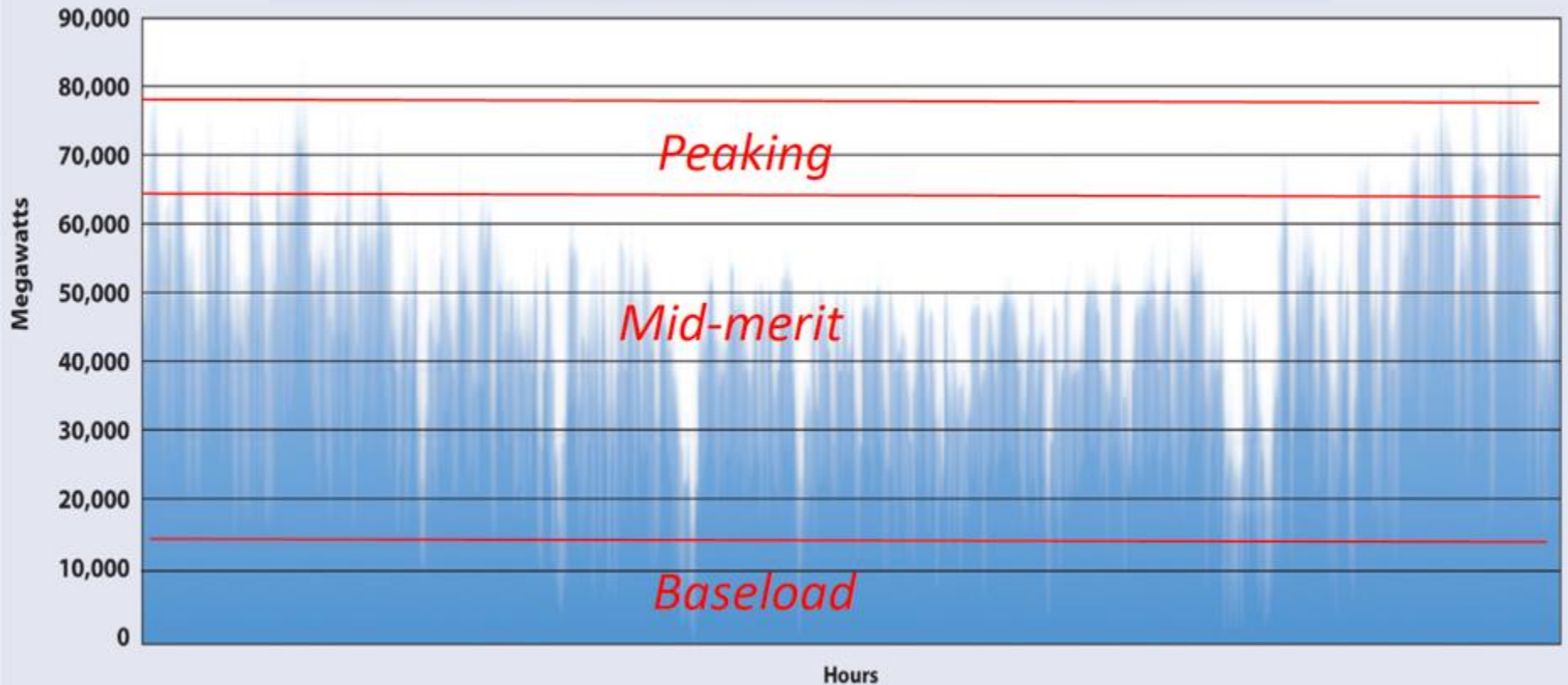
“EirGrid Group can now handle up to **65% variable renewable energy on the grid at any time**”

Ireland

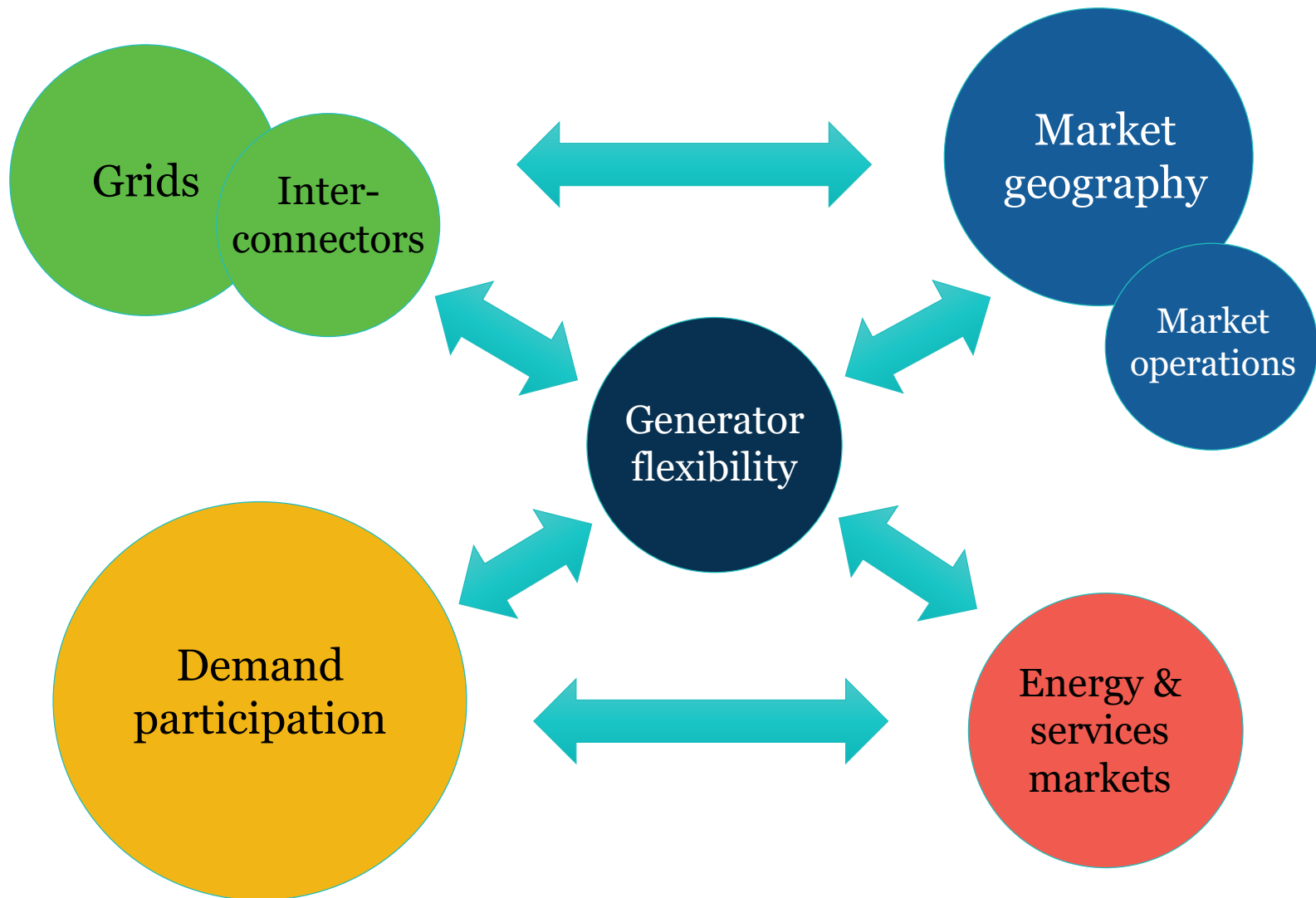


# How do we balance the system?

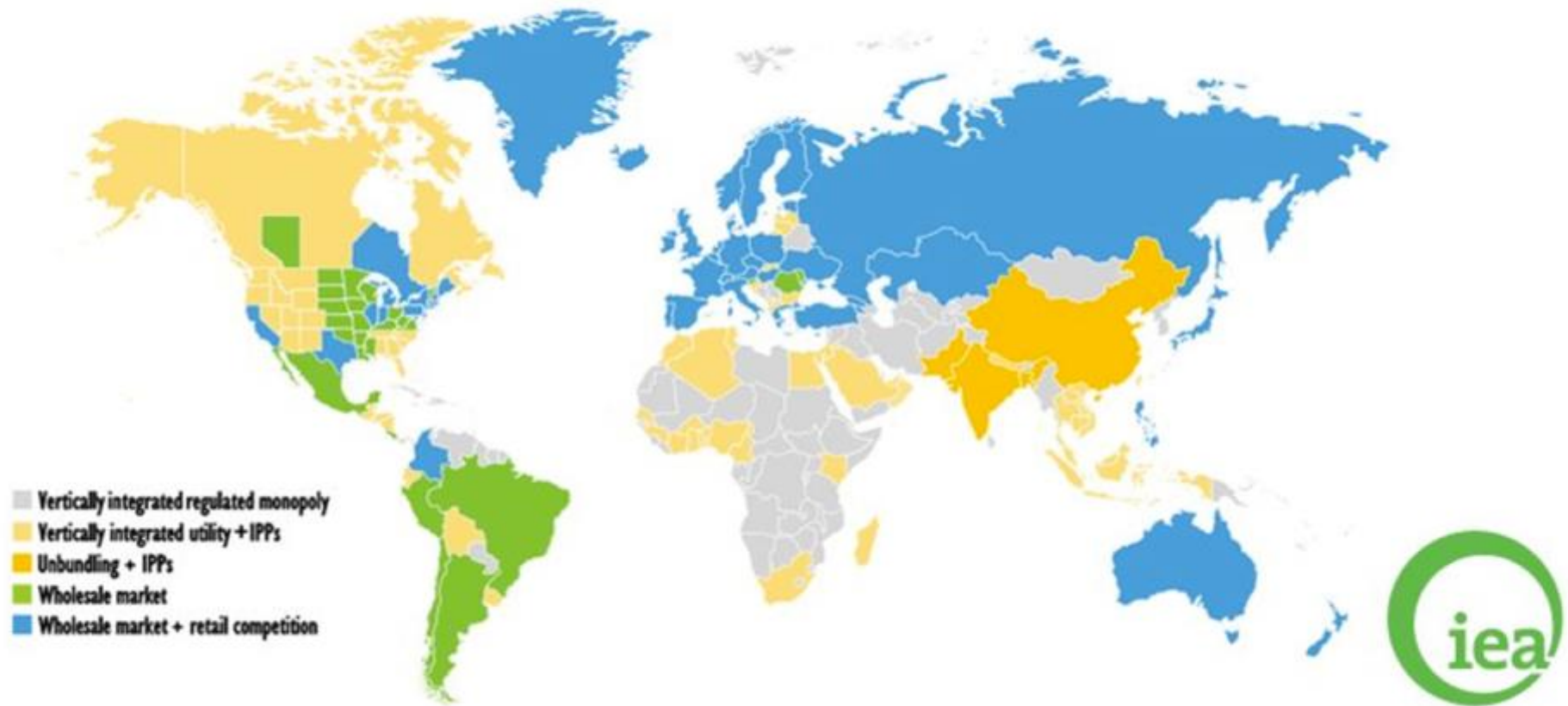
Net Demand (full year, 27% from variable renewables)



# Complementary sources of flexibility



## Map of the status of electricity market liberalisation



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# Status of market integration

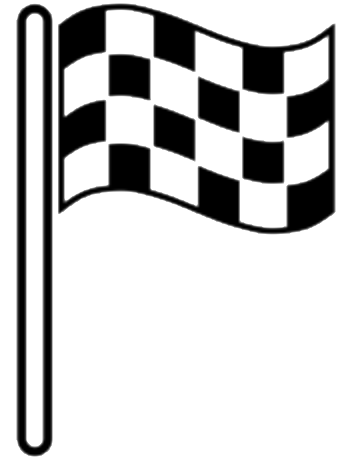
**Day-ahead market**



**Intraday market**



**Balancing market**



Created by Bakunetsu Kaito  
from Noun Project

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# Internal Energy Market

## Unbundling/liberalization

- competitive generation and retail supply; regulated networks.

## Market integration (all timeframes)

- single “internal” electricity market for Europe

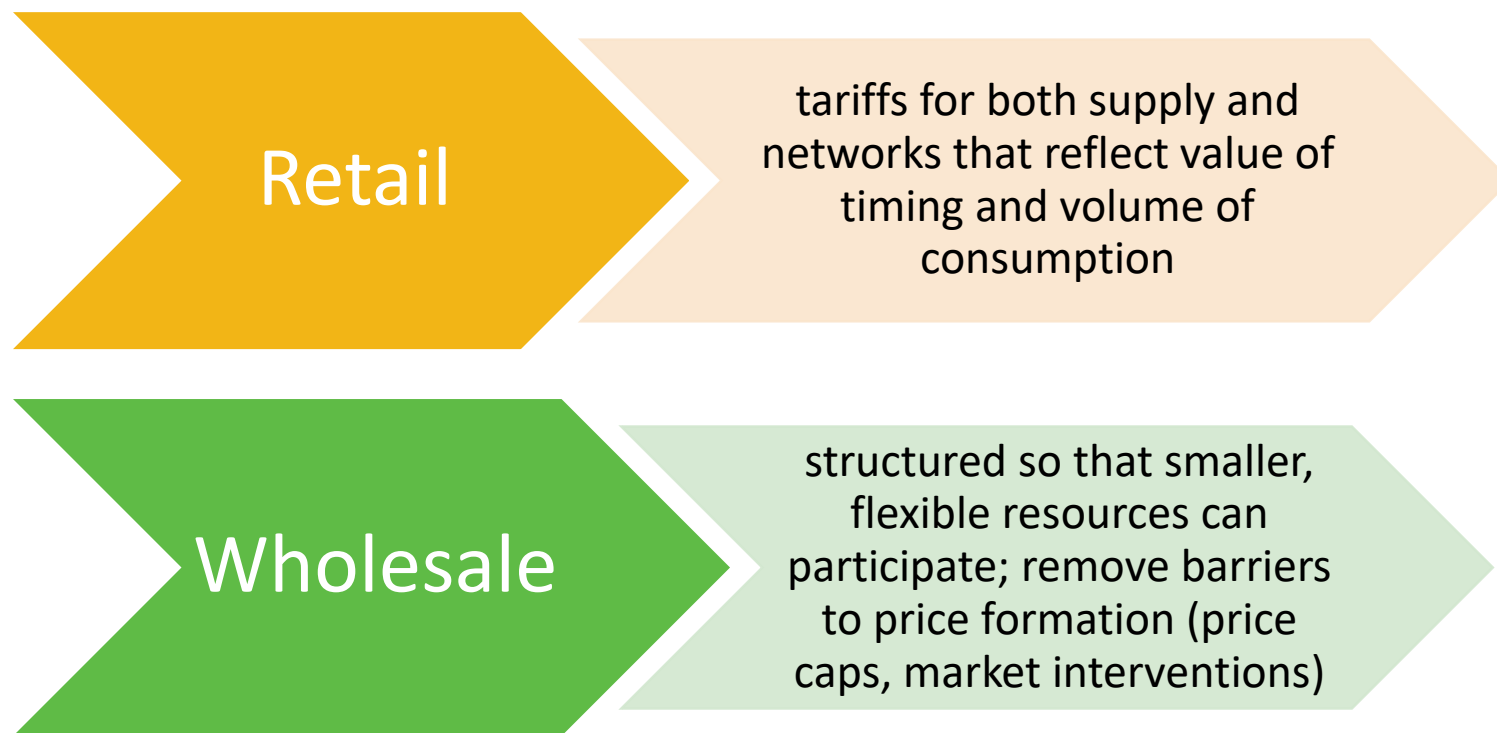
## Coordination of system operations and forecasting

- technical codes, standards



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# Flexibility requires properly functioning markets



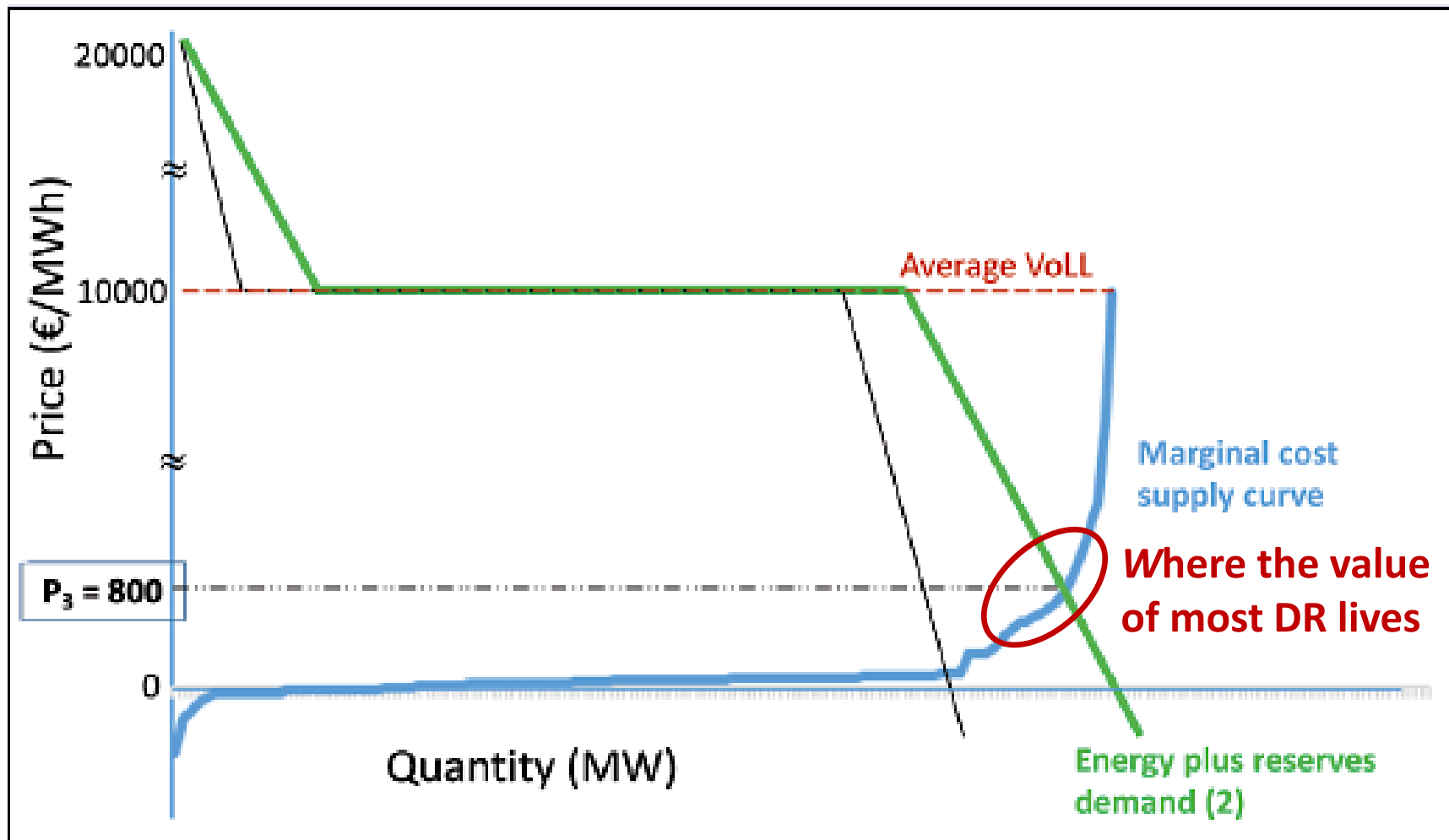
# State of the DR market in Europe



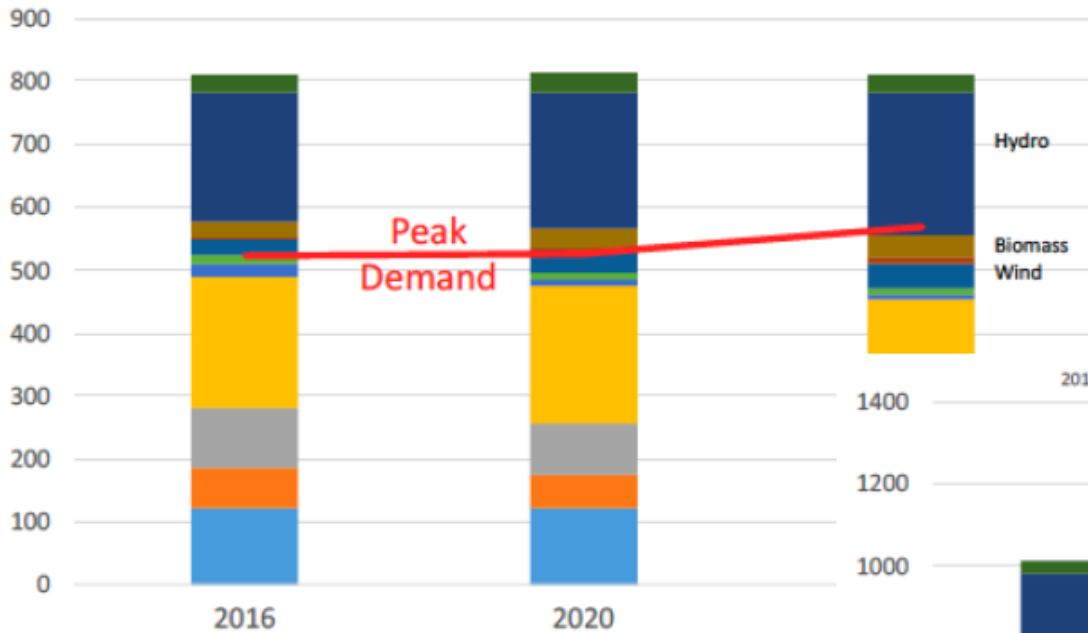
Many barriers block meaningful Participation of demand response In markets.

Source: SEDC Demand Response Map 2017

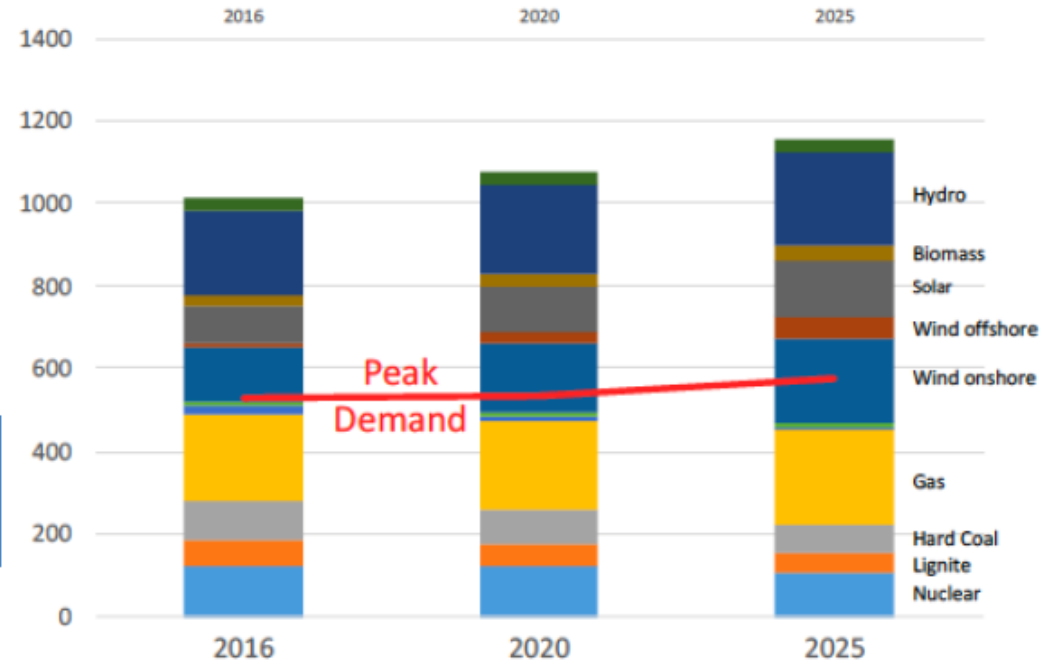
# Price formation is key



# Capacity surplus in Europe



EU28 (assumes zero capacity for PV, 20% for wind)



EU28 (full nameplate capacity for PV and wind)

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# Conclusions

- Market design and regional integration are key to flexibility
- European experience indicates important to:
  - Remove/limit price distortions to markets (capacity mechanisms; price caps; others)
  - Design markets to meaningfully enable participation of demand-side resources
  - Disinvestment strategy for legacy fossil is key

# About RAP

The Regulatory Assistance Project (RAP)® is an independent, non-partisan, non-governmental organization dedicated to accelerating the transition to a clean, reliable, and efficient energy future.

Learn more about our work at [raponline.org](https://raponline.org)



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