

# NEW FLEXIBILITY IN POWER MARKETS: WHY AND HOW

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# The soon old and soon new world

## Historic luxury

- ✓ Very high flexibility from hydro dominating price formation...
- ✓ ...with Finland and Denmark a bit on the fringes
- ✓ Thermal power delivering residual power, reserve needs other ancillary services
- ✓ Nuclear power providing base load in Sweden and Finland

**Result: very flat duration curves and high operational security**

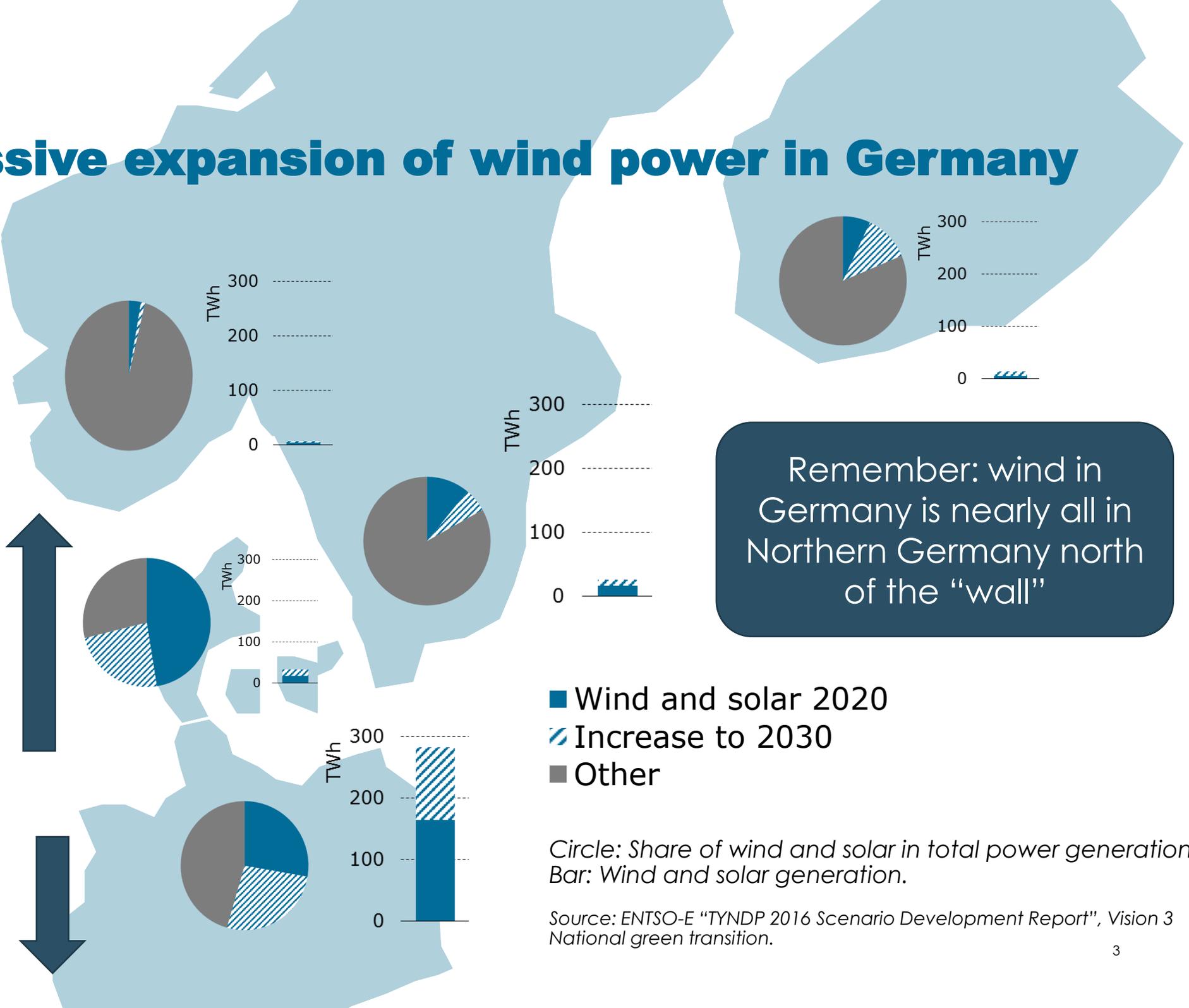
## The challenges

- ✓ Over capacity driven by RE subsidies undermines the economics of flexible thermal power
- ✓ Low coal and gas prices reduce incentives for hydro (re)investments (and in nuclear power)
- ✓ Other sources of flexibility such as demand-side assets not yet on track in bulk numbers (heat pumps, EVs)
- ✓ Massive expansion of intermittent power under way just south of Nordic region...

# Massive expansion of wind power in Germany

Will new German wind power go North...

Or South?



Remember: wind in Germany is nearly all in Northern Germany north of the "wall"

- Wind and solar 2020
- ▨ Increase to 2030
- Other

Circle: Share of wind and solar in total power generation. Bar: Wind and solar generation.

Source: ENTSO-E "TYNDP 2016 Scenario Development Report", Vision 3 National green transition.

# Improving market design is no-regret, but remember market principles

● Improve the functioning of intra-day and balancing markets	<ul style="list-style-type: none"><li>• Reduce length of trading intervals (e.g. 15 min)</li><li>• Introduce new products and income streams for flexibility and system services</li></ul>
● Stimulate flexible demand	<ul style="list-style-type: none"><li>• Review conditions for demand participation including aggregators and market design</li><li>• DSO reform: role and incentives</li></ul>
● Increase opportunities for trade	<ul style="list-style-type: none"><li>• Harmonise grid tariffs</li><li>• Avoid divergence in market design</li><li>• Adjust price areas as conditions change</li></ul>
● Improve confidence in scarcity pricing	<ul style="list-style-type: none"><li>• Raise the price cap to (a level closer to) VOLL</li><li>• Ensure institutional anchoring and commitment</li><li>• Clarify market oversight and competition law</li></ul>
● Strategic reserve is an option	<ul style="list-style-type: none"><li>• Reduce crowding out</li><li>• Reduce distortion of prices</li><li>• Coordinate across Nordic countries</li></ul>
● Permanent subsidies for capacity (Capacity markets)	<ul style="list-style-type: none"><li>• Market prices should be primary source of revenue</li><li>• Ending up with new subsidies as a response to subsidy driven RE</li></ul>

# Some specific comments on Nordic TSO report/conclusions

## Key facts/observations

- ✓ Benefits of grid investments increasingly being harvested by third parties e.g. German wind producers:
  - ✓ so who puts the money in?
- ✓ Local balance issues on the rise (DG and flexible demand/supply):
  - ✓ Challenges traditional hierarchy between transmission/distribution grids
  - ✓ Increases need for TSO/DSO coordination
  - ✓ (more) Nodal pricing?
- ✓ Increased demand for flexibility and large scope for digitalisation
  - ✓ Case for lowering threshold to enter balancing market: how much and co-ordination needs?
- ✓ Cost-benefit analysis of new grid investments more scenario dependent
  - ✓ More explicit understanding of interdependencies

## Key questions to be explored

- Recommendations are very open, more direction than specific content.
- Some elements could be stressed
- Cost-benefit analysis of grid investments:
  - Strengthened sensitivity test around alternative scenarios including energy policy and external environment?
  - Discount rates for distant benefits to be raised ("stranded assets")?
- TSO versus DSO role
  - Can local distributed flexibility be relied upon in TSO-level balancing?
  - Risk of e.g. local bottlenecks or local BRPs counteracting the balancing intervention?
  - DSO: active role in balancing?
- Data access
  - What data is needed, when, and in what time resolution?
  - Balance between access and privacy?