

# THE LIFE AND TIMES OF LARGE ENERGY CONSUMERS IN NORWAY

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**Industry in Norway – who, what and why important**

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**Industry in Norway – who, what and why important**

**The power market**

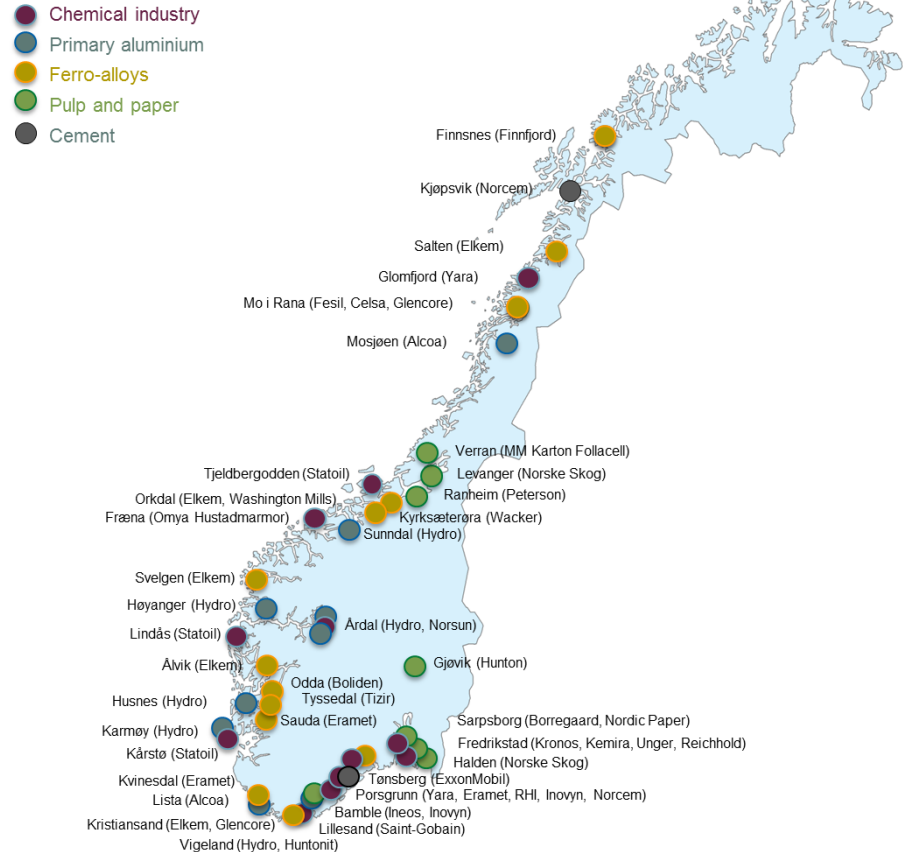
**The grid**

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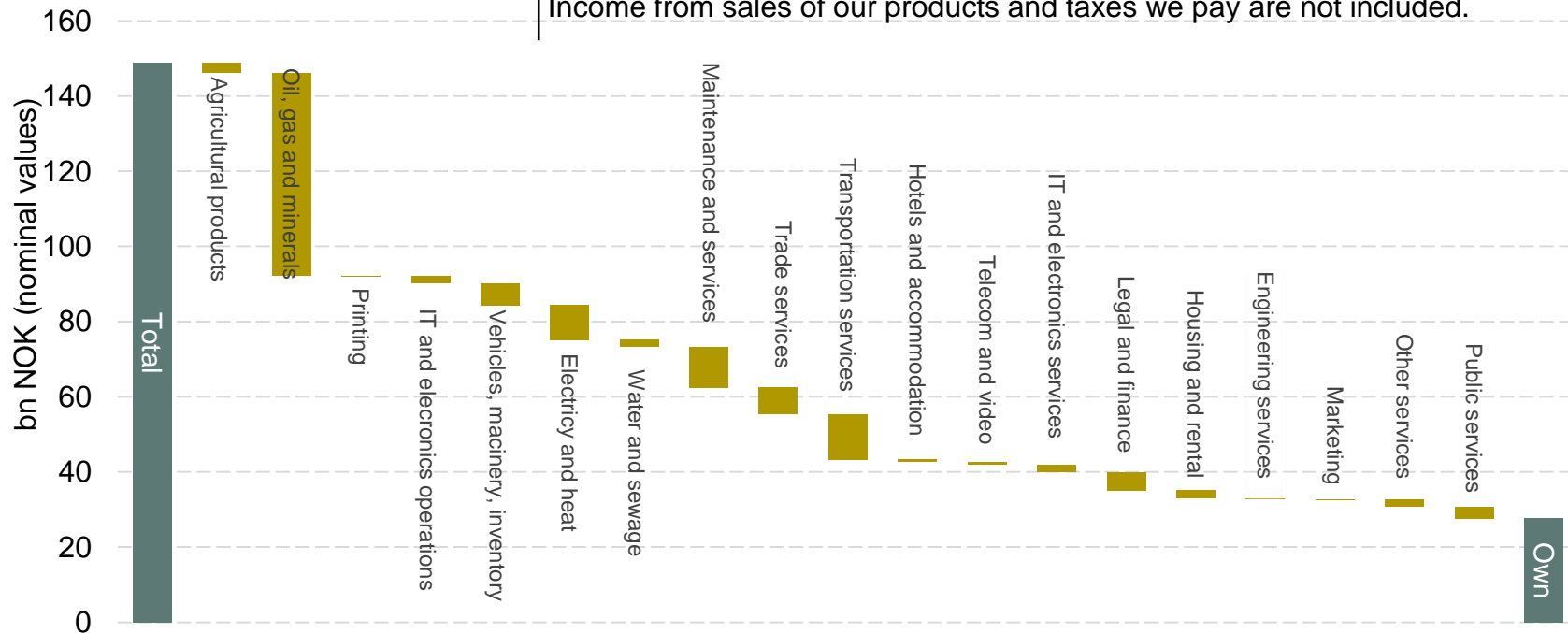
# The Norwegian process industries

- Wide range of different production techniques and products
- Located across the entire country
- Requires specialised skills and services, creates and nurtures innovation
- Strong links to higher education and research



# Our domestic impact on the economy

This is the amount of money we spend at home to make our products. Income from sales of our products and taxes we pay are not included.



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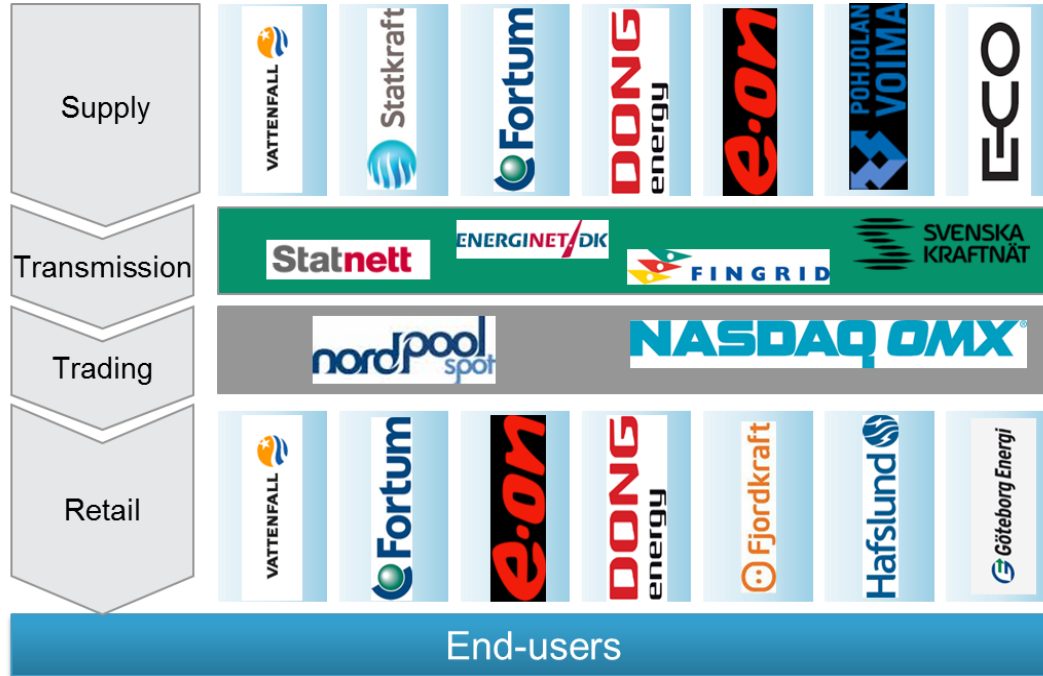
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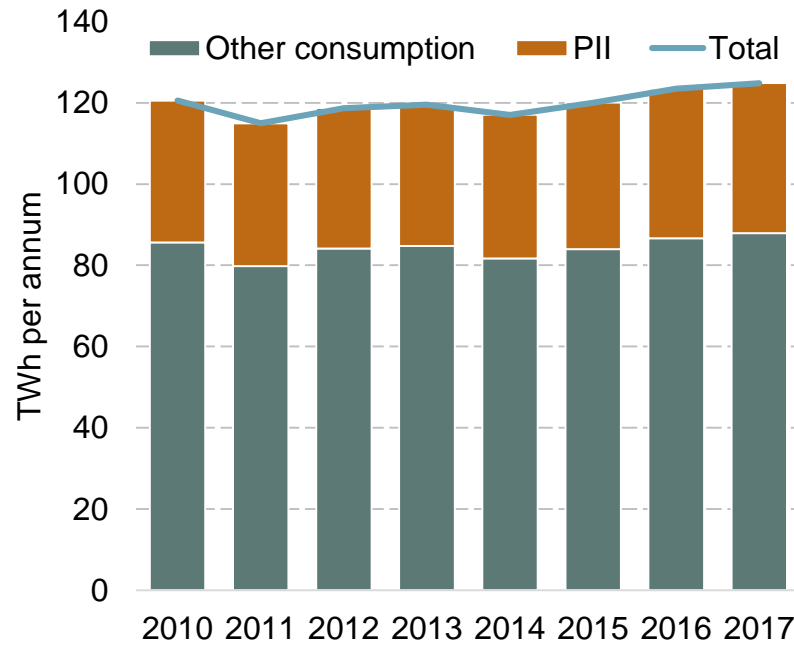
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# The Nordic market – who's who



- Supply: four national champions and **many, many mid-sized and smaller ones**
- Transmission: four TSOs that cooperate closely
- End-users: industry and other

# Electricity – we use a lot



- Annual consumption: 37 TWh each year
- A considerable amount of industry in Norway
- Electricity is used wherever it can be used
  - Electricity is preferred to fossil fuels because of competitiveness

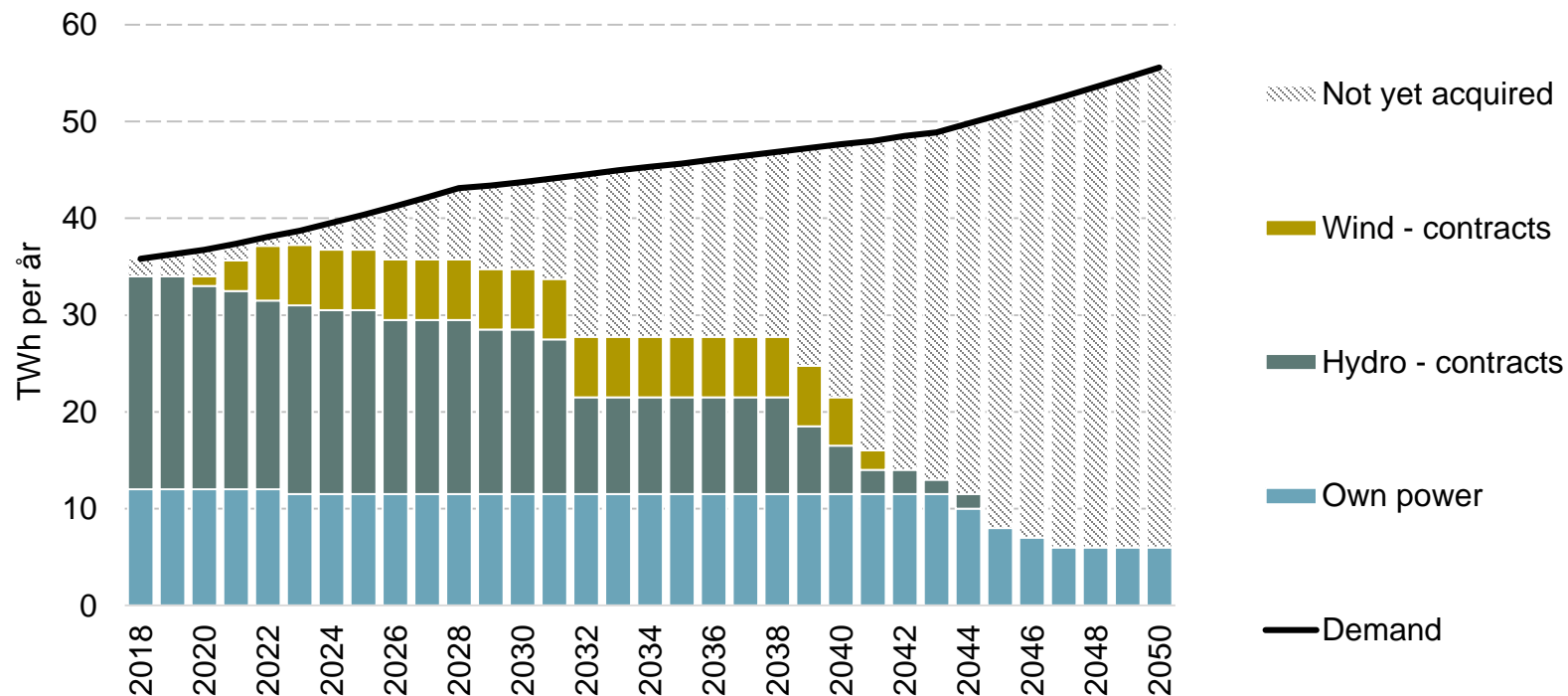


# Not just a power market



- This is where most of the action happens
- We (PIIs) buy a lot of power *outside* the market
  - Bilateral contracts with power producers
  - Prices usually linked to Nasdaq prices
- We are active in all markets, often as sellers

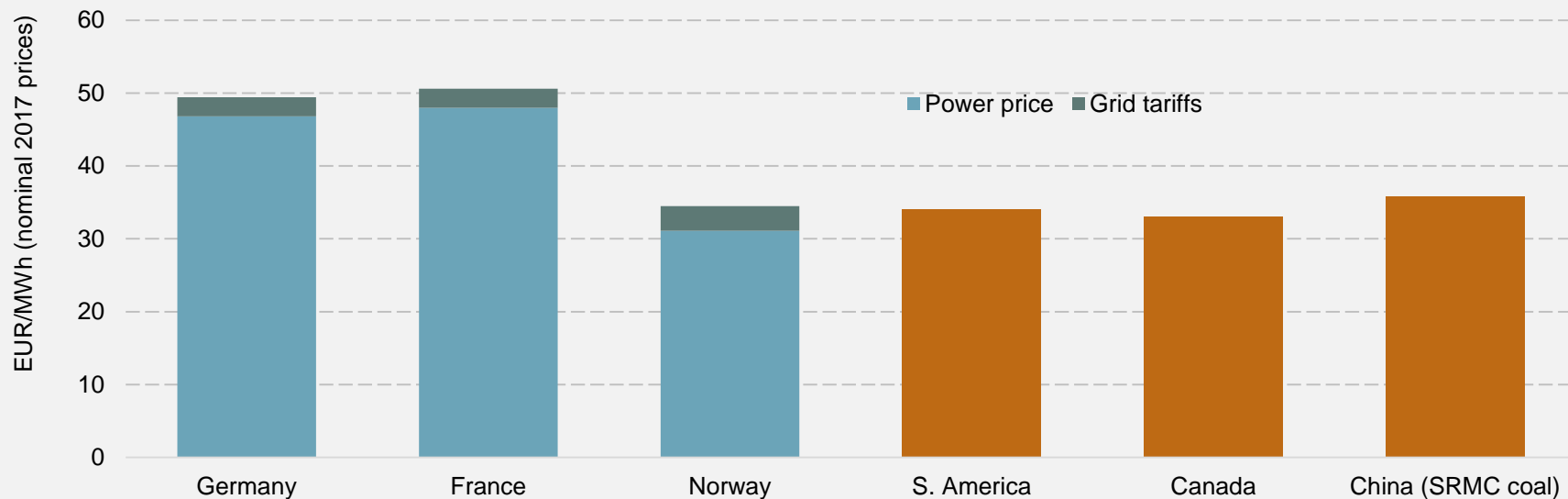
# Bilateral contracts



# Reselling opportunities

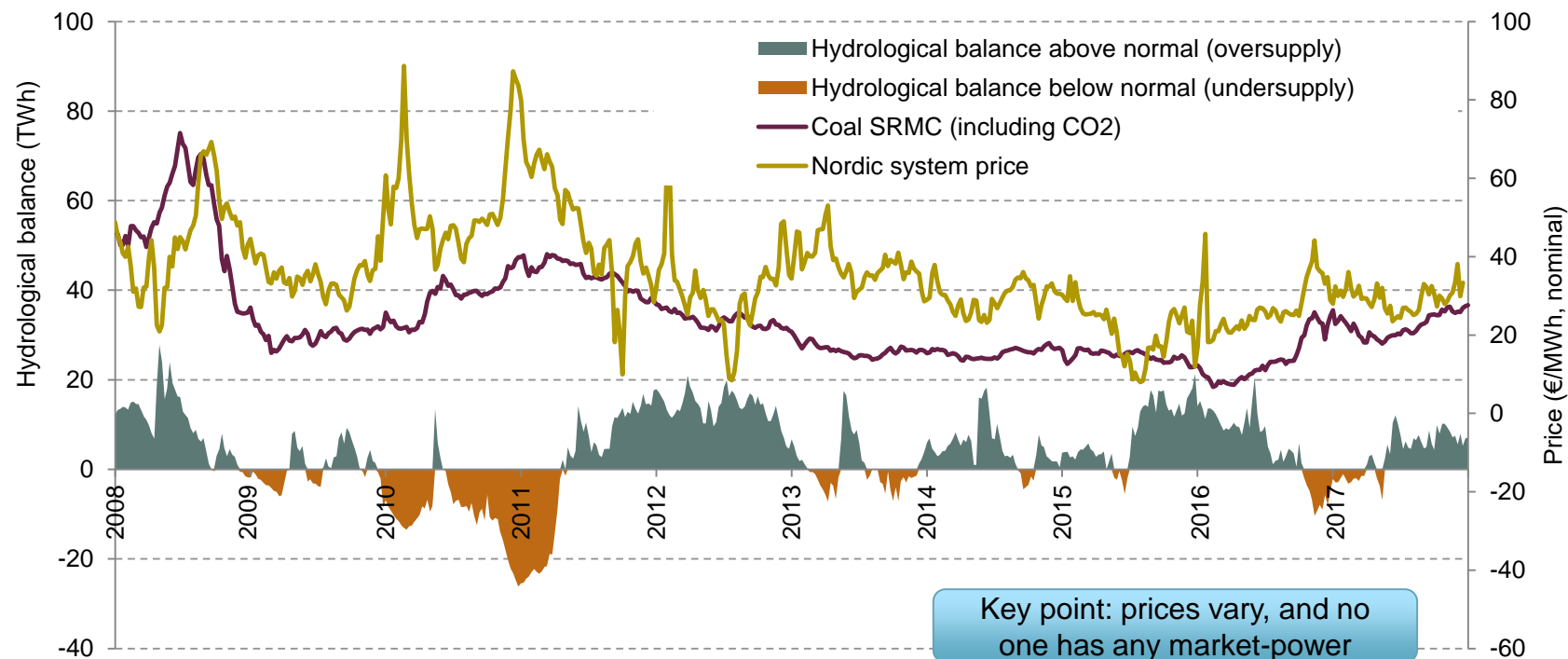
- ❑ All power contracts are 100% **take-or-pay**
  - But wholesale and forward markets are huge and highly liquid, so all contracted power can be **sold back** at market prices
  - Market prices not identical to contract prices
    - Sometimes higher, sometimes lower
- ❑ Power consumers with take-or-pay contracts have full flexibility of whether to use or resell power
- ❑ Power (capacity) can also be sold in reserve markets

# Norway broadly competitive

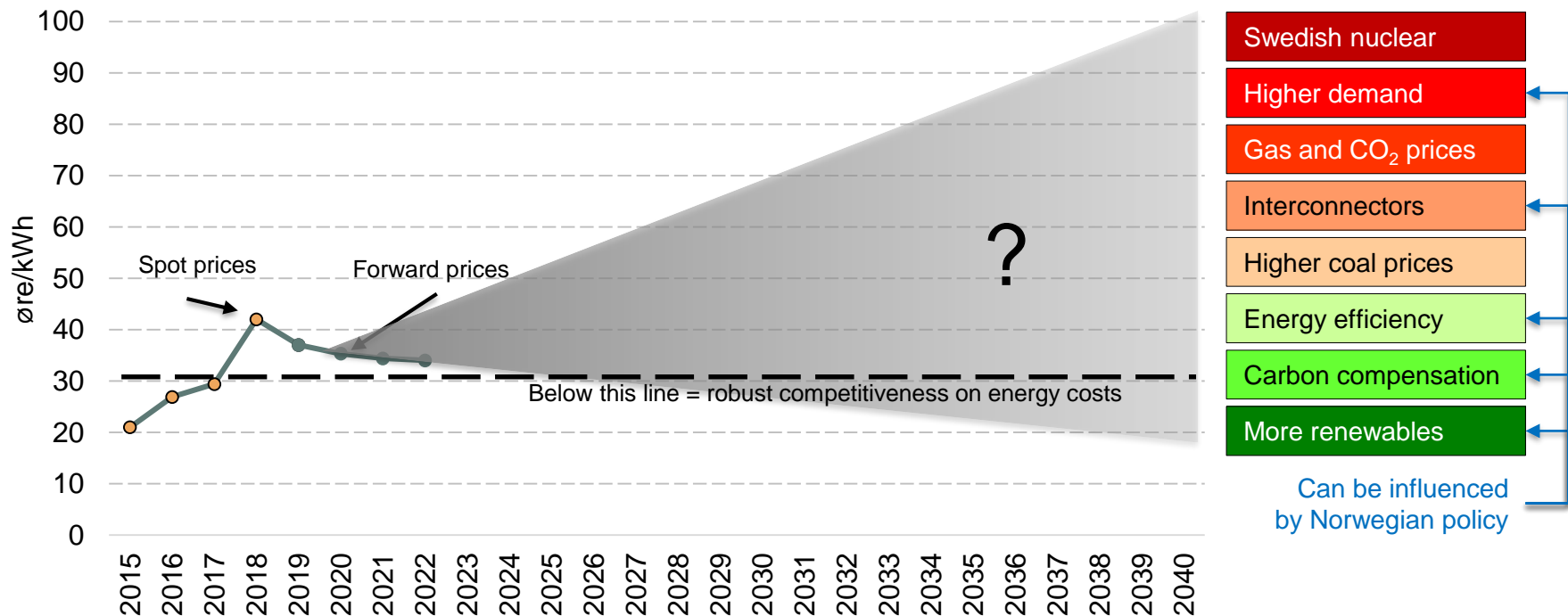


**Energy tax exemptions** and **carbon compensation** not included.

# What influences Norwegian power prices (simplification)



# What does the future hold?



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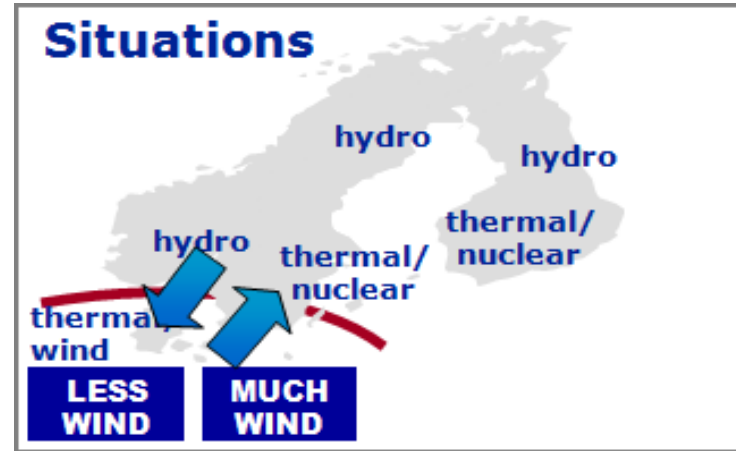
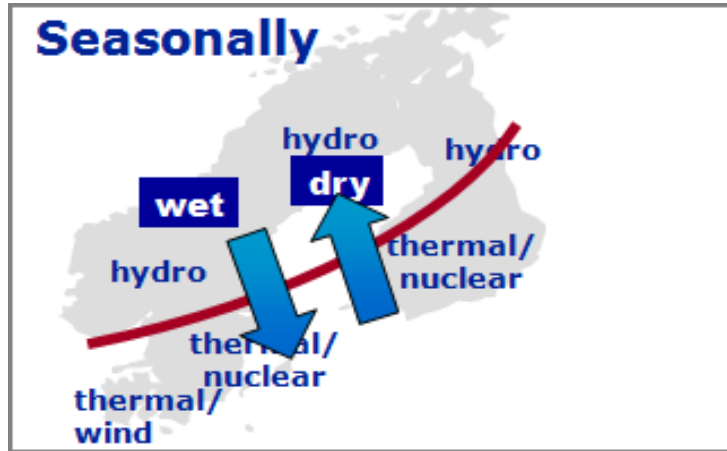
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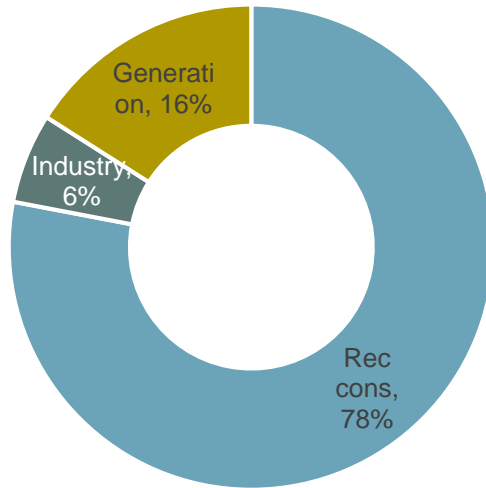
# Complementary features of the Nordic system



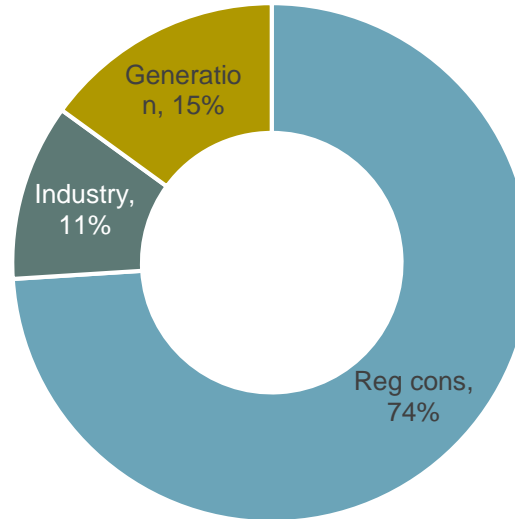
Each country has its distinctive features that **complement** the other systems.  
**Interconnection** capacity between the Nordic countries is robust.  
Full **competition** between and within the Nordic countries

# Tariffs comparably low, but on the rise

2018



Future



- A better grid means somewhat higher grid costs
- Tariffs for industry split in two
  - Fixed tariff
  - Variable tariff
- Grid costs for industry vary between companies
  - Most power-intensive companies: approx **1 EUR/MWh**

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# Industry-friendly policy reflected in our energy costs



## Energy taxes and support

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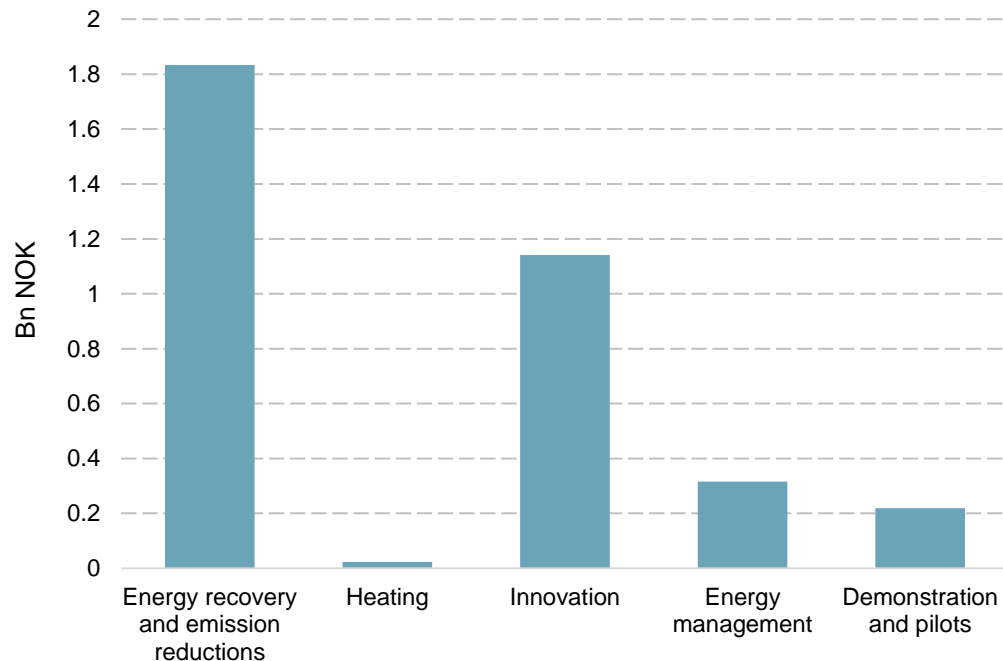
- ❑ Industry **fully exempt** from energy taxes, or pay a reduced tax, conditional to commitment to energy efficiency programs
- ❑ **Balancing costs** are **negligible** as industry's operations and electricity demand are regular and predictable
- ❑ Industry also **fully exempt** from **RES subsidies**, el-certificates, on grounds of competitiveness
- ❑ Benchmark industries in Norway fully entitled to **free carbon allowances**
- ❑ **CO2 compensation** paid in full (subject to EU rules) to benchmark industries
- ❑ **Energy efficiency and recovery efforts** supported by Enova

# Carbon compensation

- EU regulation permits partial repayment of carbon pass-through costs to *sectors exposed to carbon leakage*
  - Norway makes full use of this mechanism
- Uses a formula:  
**Compensation =**  
Power consumption \*  
Pass-through factor \*  
Carbon price \*  
Ceiling (%) \*  
Benchmark factor
- Pass-through factor in Norway = **0,67**

- **Example:**
  - Consumption 1 TWh
  - Carbon price: 25 EUR/tCO<sub>2</sub>
  - Pass-through factor 0,67
  - Ceiling 80%
  - Benchmark industry
- For 1 TWh consumption, total compensation = 9,5 mill EUR
- Or **9,5 EUR/MWh**

# Direct support for projects



- Total support 2012-2018 = 4 bn NOK
- Indirect support to industry projects not included
- More support expected for 2019/2020

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# Concluding remarks

- Norway is part of a fully deregulated power market
  - ....that works
- It is a good place for industry even with power price uncertainty
  - Bilateral power contracts protect from market risk
  - Carbon compensation hugely important
  - Grid tariffs manageable
  - Political and regulatory predictability to protect industry competitiveness
  - EU also supports industry competitiveness
- Policy: it stays that way
  - Best way to do so: higher power surplus by building more renewable power generation



