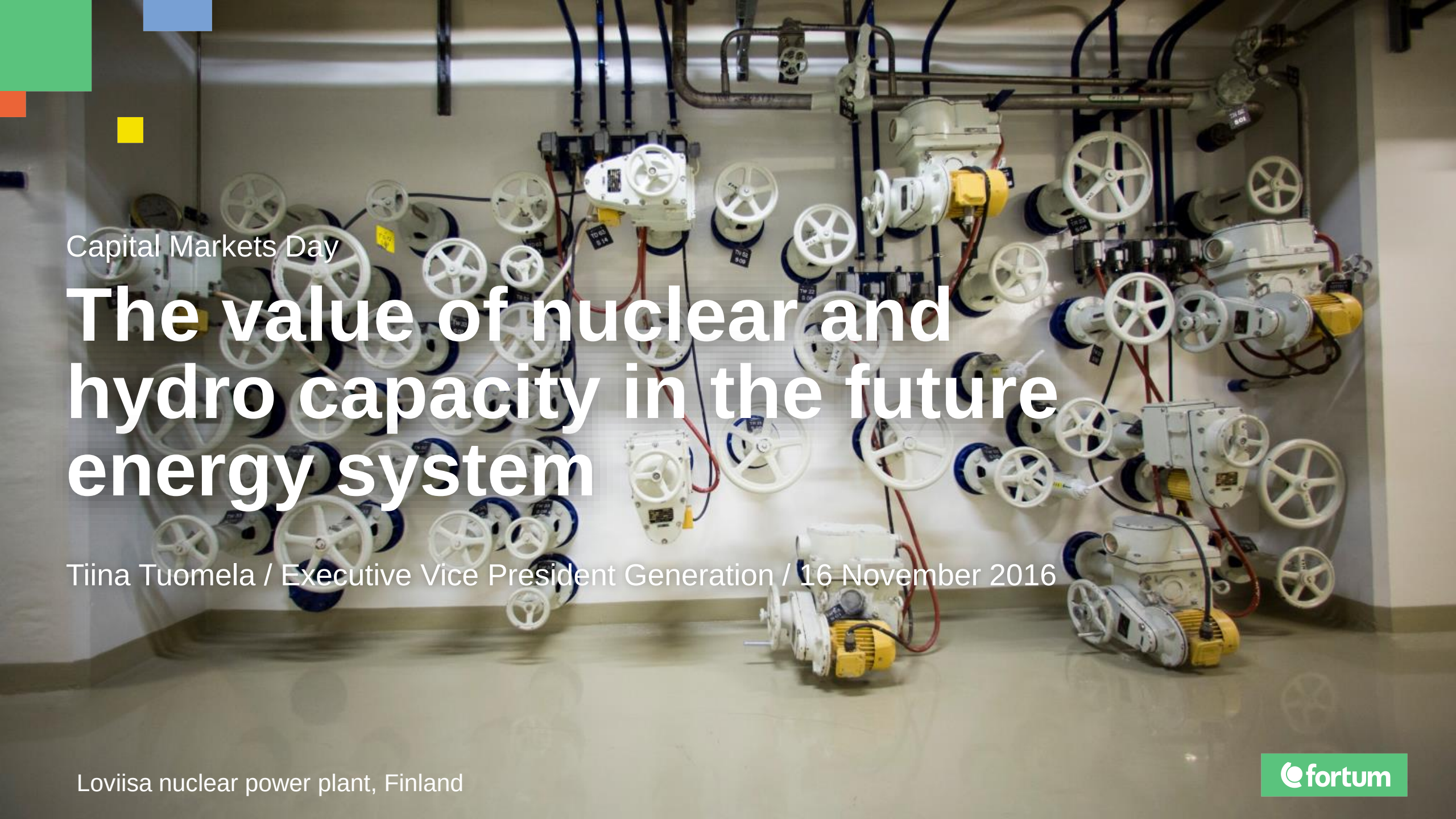

Capital Markets Day

The value of nuclear and hydro capacity in the future energy system

Tiina Tuomela / Executive Vice President Generation / 16 November 2016

Loviisa nuclear power plant, Finland

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Agenda

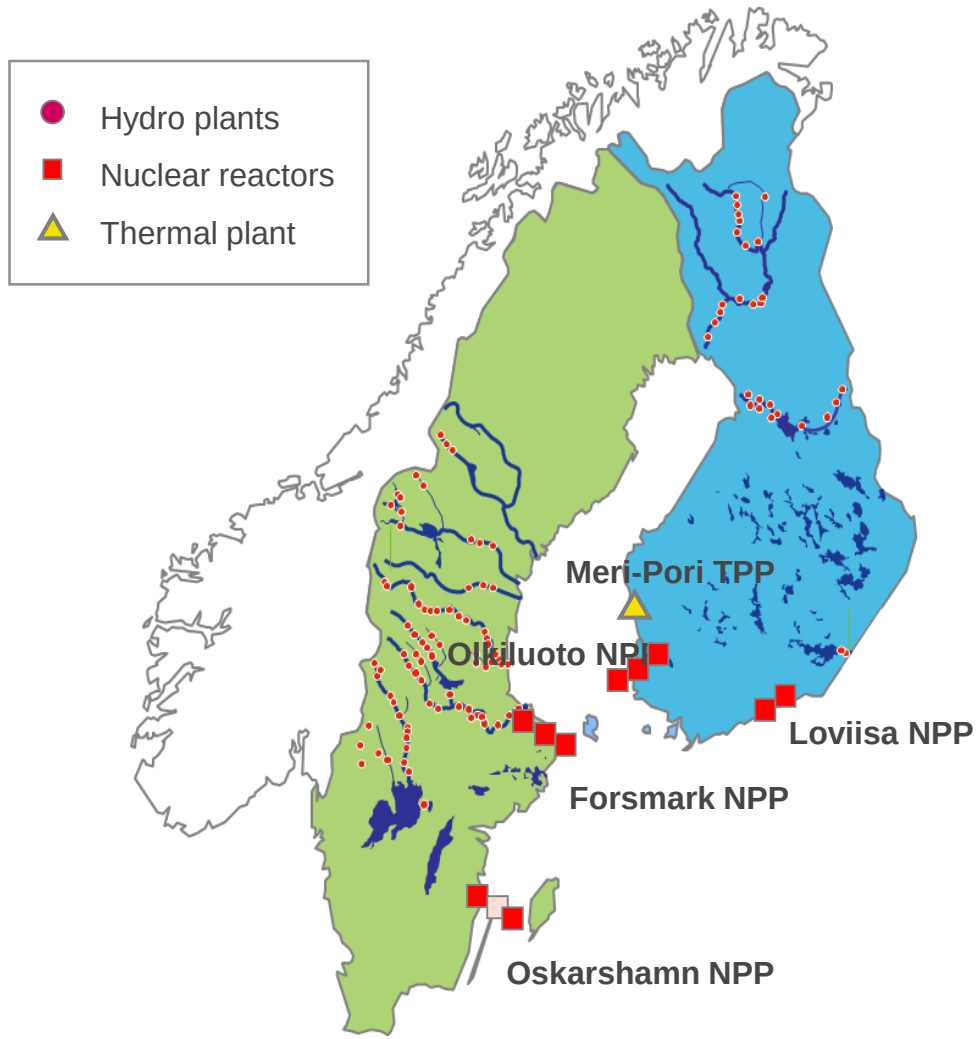
- Generation asset portfolio
- Key priorities
  - Value drivers
- Nordic power market
- Hedging
- Productivity
- Nuclear liabilities
- New revenue streams
- Summary

Imatra hydro power plant, Finland

Generation – balanced portfolio of hydro and nuclear

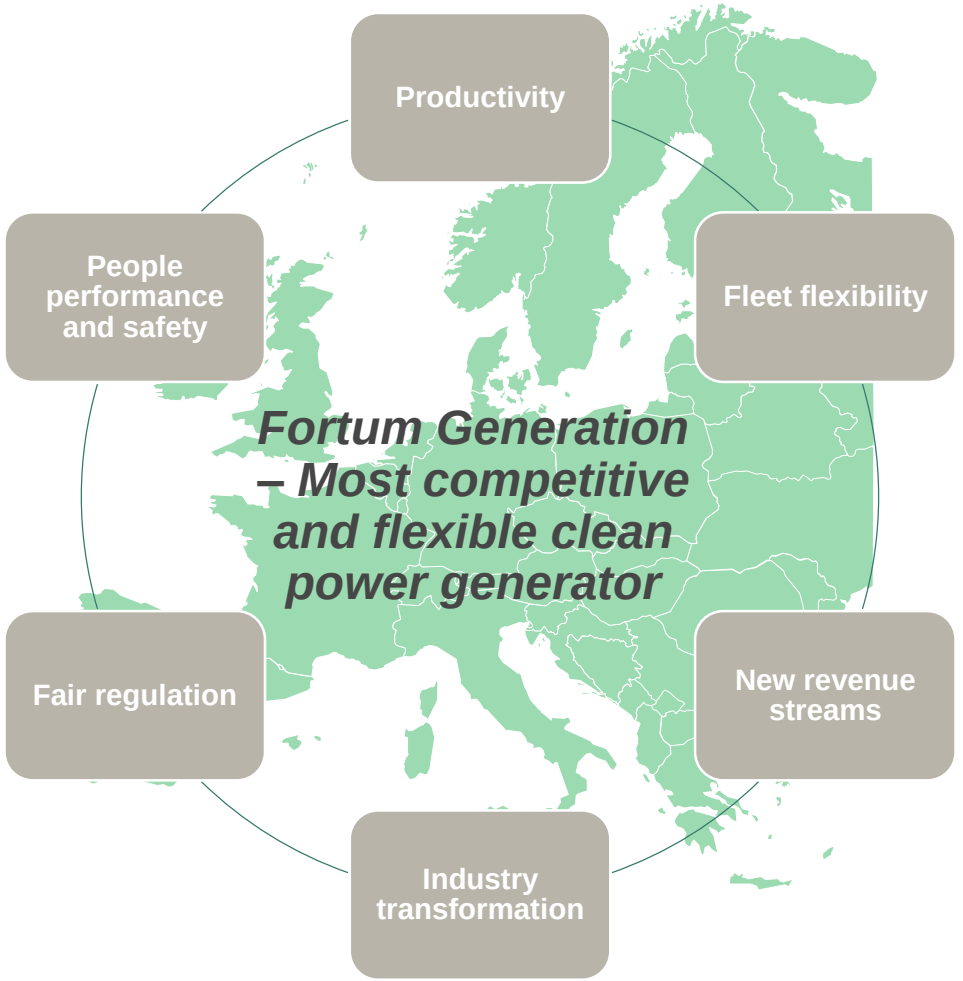
2015 figures	Total	Sweden (share of total)	Finland (share of total)
Capacity			
Hydro	4,623 MW	67%	33%
Nuclear	3,004 MW	51%	49%
Thermal	376 MW	-	100%
Production			
Hydro	25.0 TWh	66%	34%
Nuclear	22.7 TWh	48%	52%
Thermal	0.3 TWh	-	100%
Net assets*			5,913 M€
Investments*			203 M€
Personnel*			1,341

*Power and Technology segment



Generation’s key priorities

- Drive industry transformation and consolidation
- Drive productivity: cost and capex efficiency
- Increase value creation and find further fleet flexibility
- Enhance fair regulation
- New revenue streams from nuclear service and origination business



Generation value drivers

Revenue drivers

- Power price
- Production volumes and availabilities
- Trading and optimisation
- New revenue streams

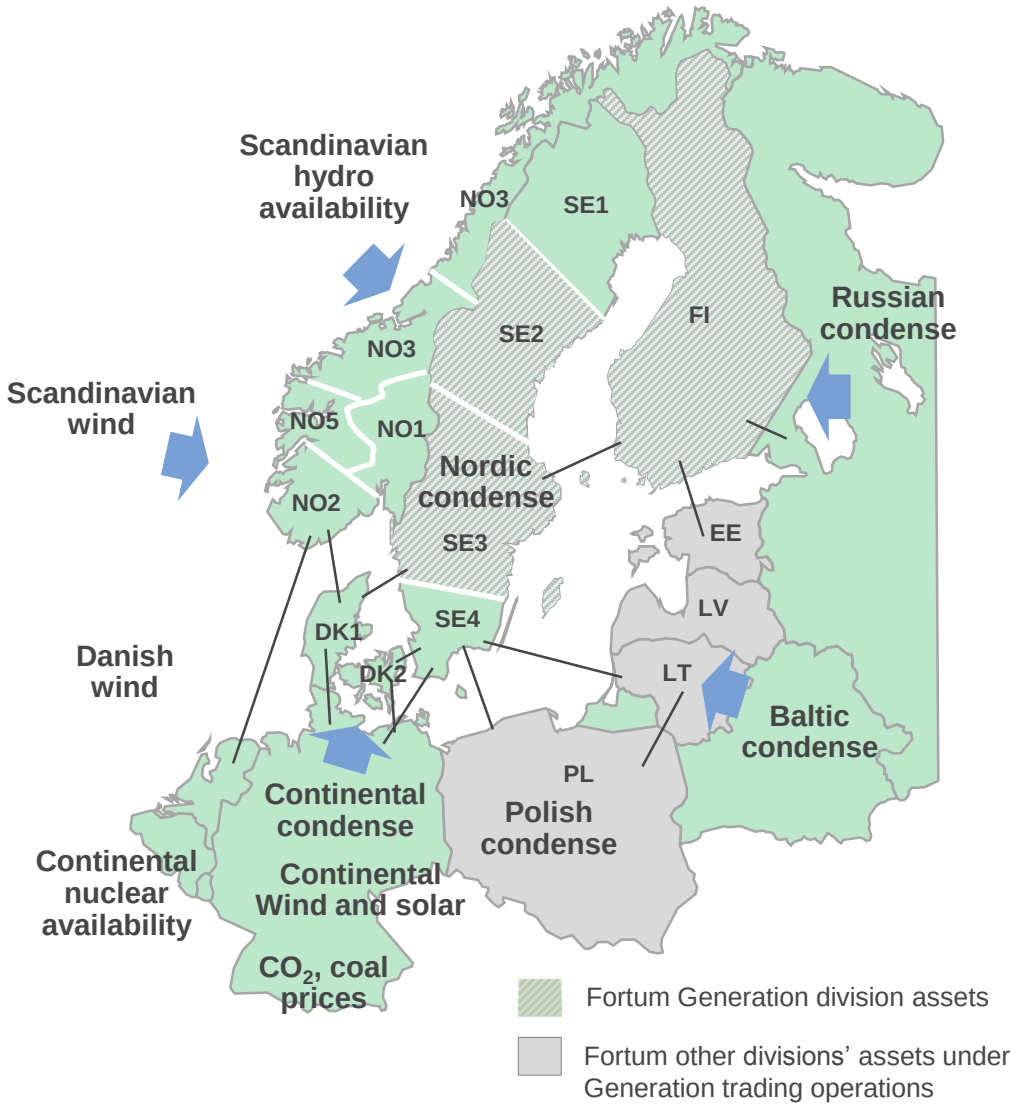
Cost drivers

- Production cost
- Investment level
- Taxes and transmission fees

Price drivers in Nordic power market

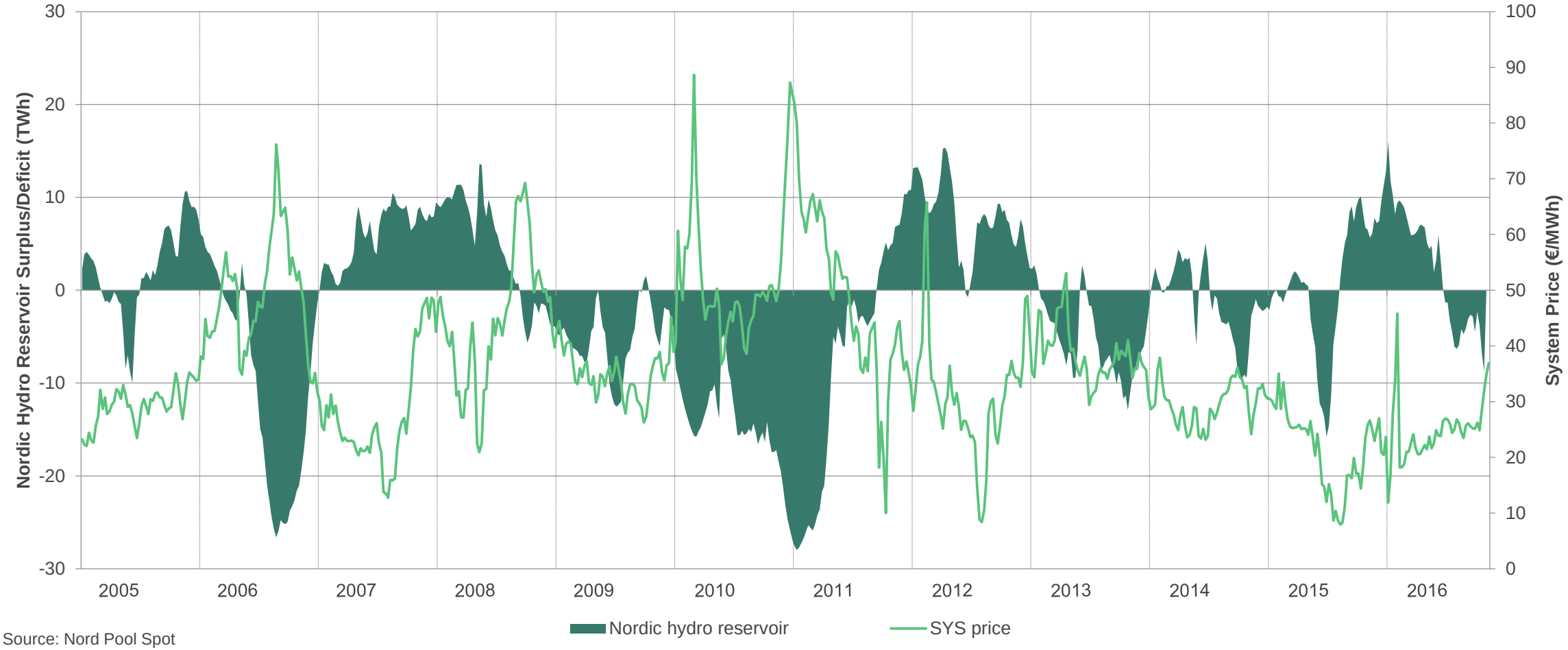
Nordic power price setters

- Nordic power price is determined by the supply and demand balance
- Supply is driven by hydrological variation, available RES, Nordic & Baltic coal condense prices as well as Continental and Russian imports
- Demand is driven by industrial activity, household electrification and export



Nordic power prices and hydro reservoir levels 2005–2016

Nordic prices driven by weather (hydrology and temperatures), coal SRMC and Continental prices



Source: Nord Pool Spot

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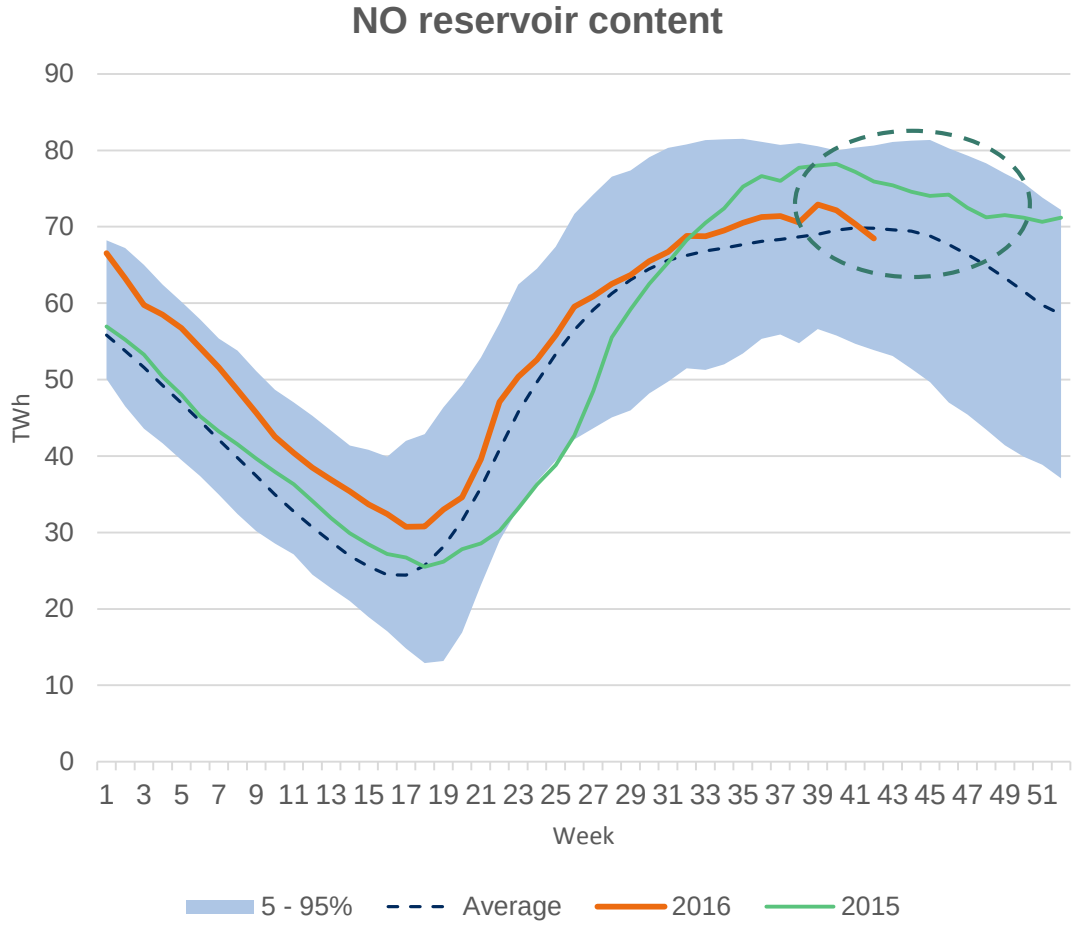
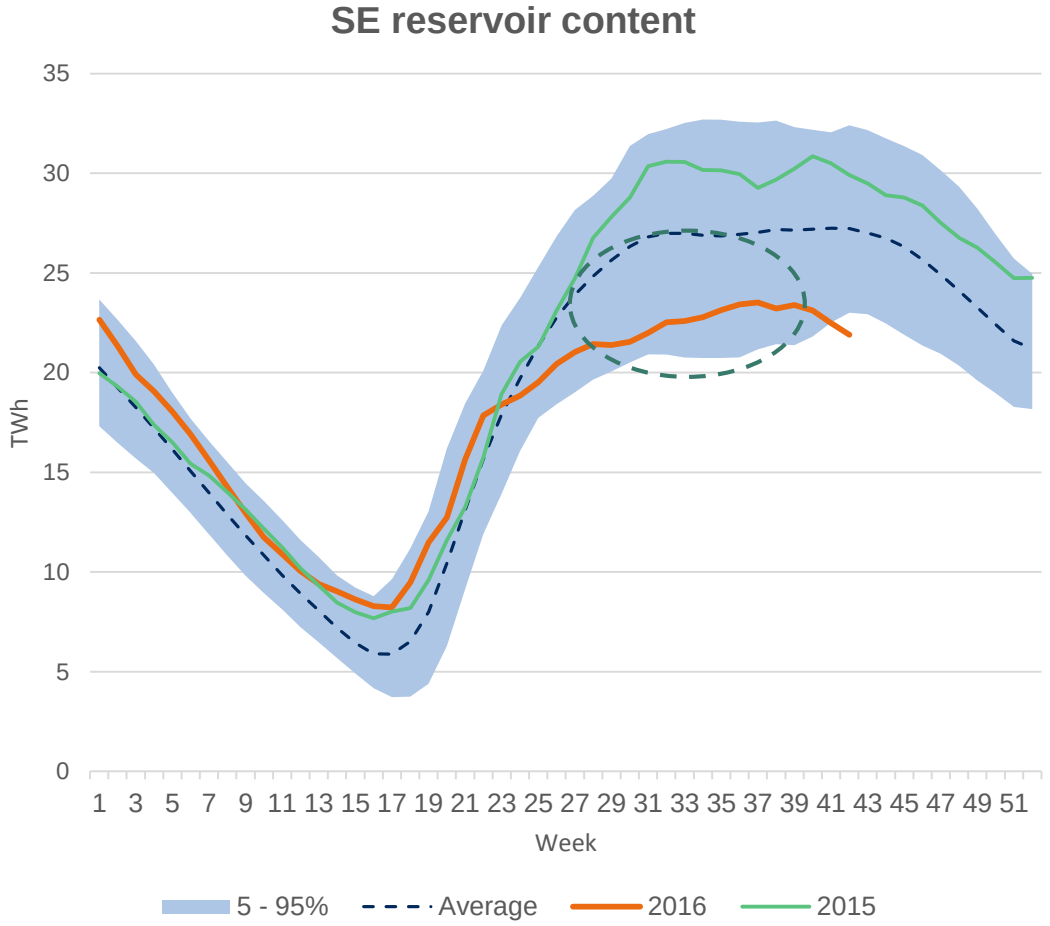
Weather has turned drier lately and dry outlook continues for the near term

Norwegian reservoirs currently close to normal levels, while a clear deficit in Swedish reservoirs

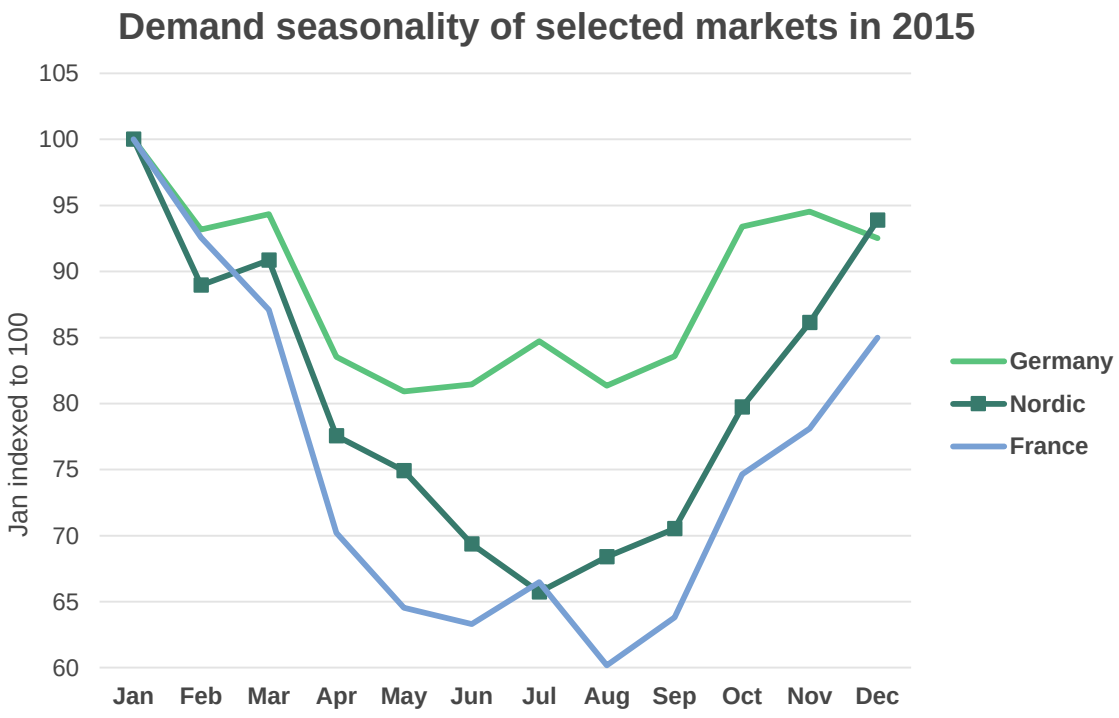


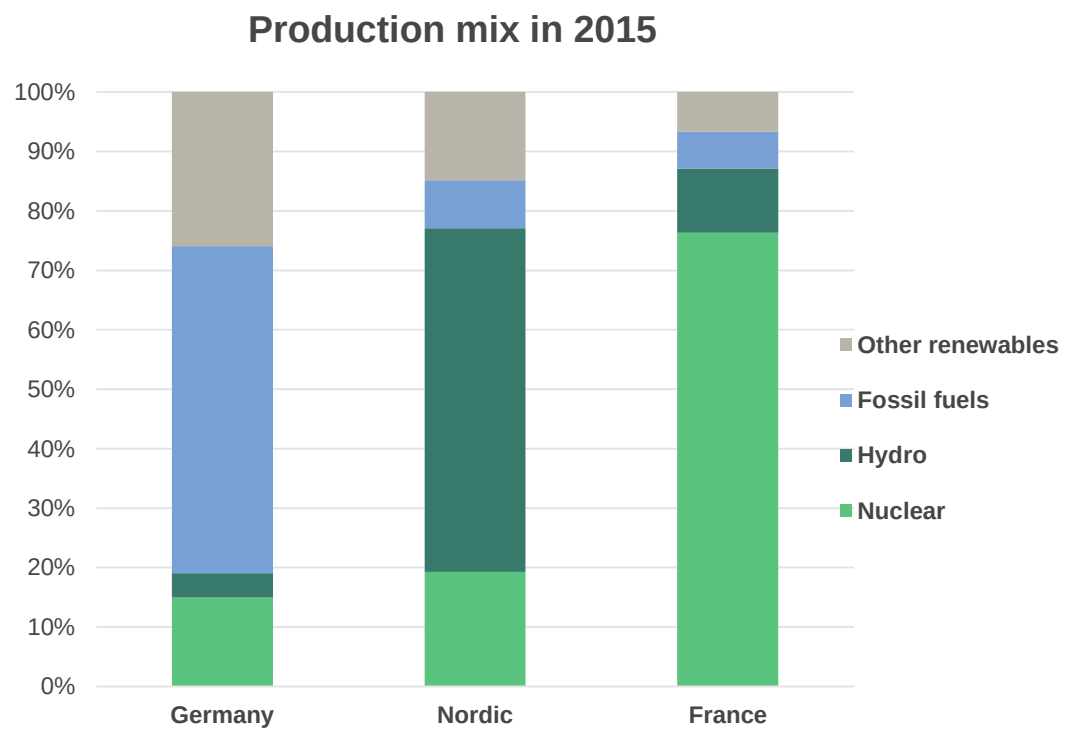


Source: MKOnline

Electricity demand is seasonal

Flexible production is valuable, in the Nordics it is primary hydro





Source: ENTSO-E Statistics

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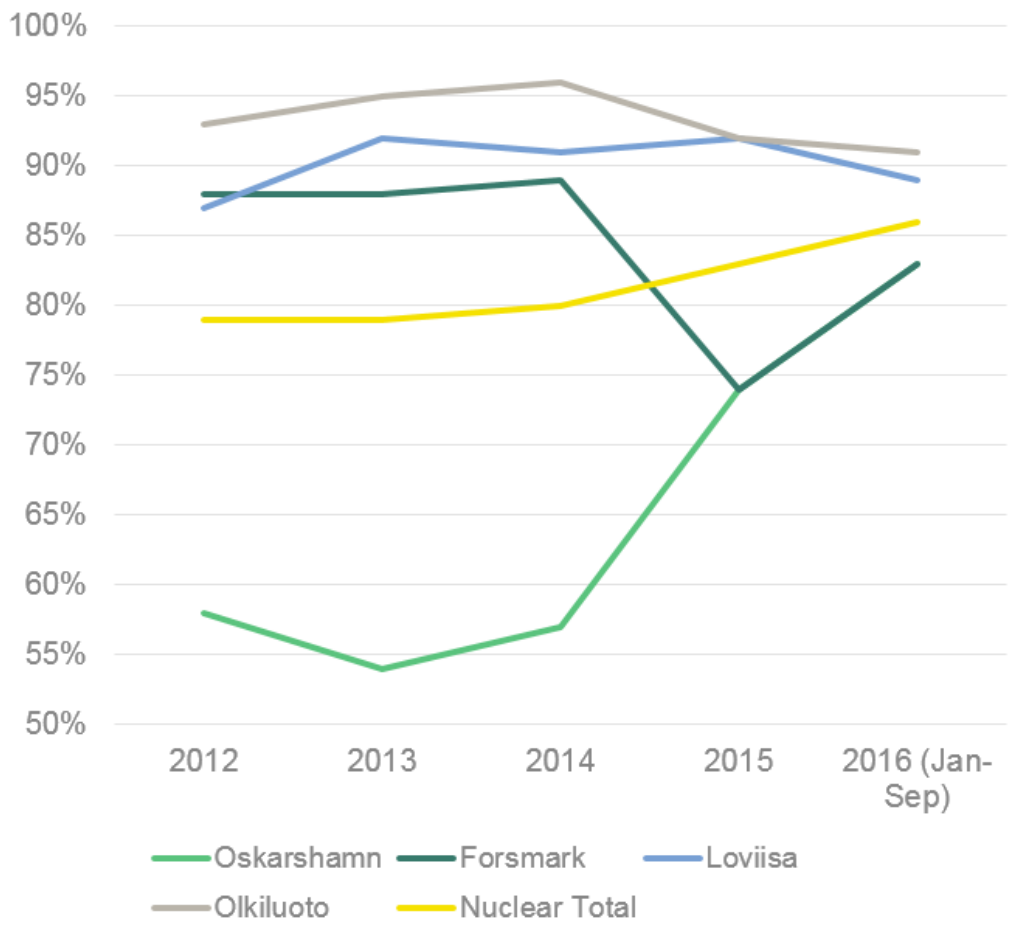
Nuclear fleet availability improved



- Natural variance on annual availabilities due to varying outage scopes
- Loviisa and Olkiluoto located in Finland, are consistently among top NPPs globally in terms of availability
- In recent years good development in Swedish plants

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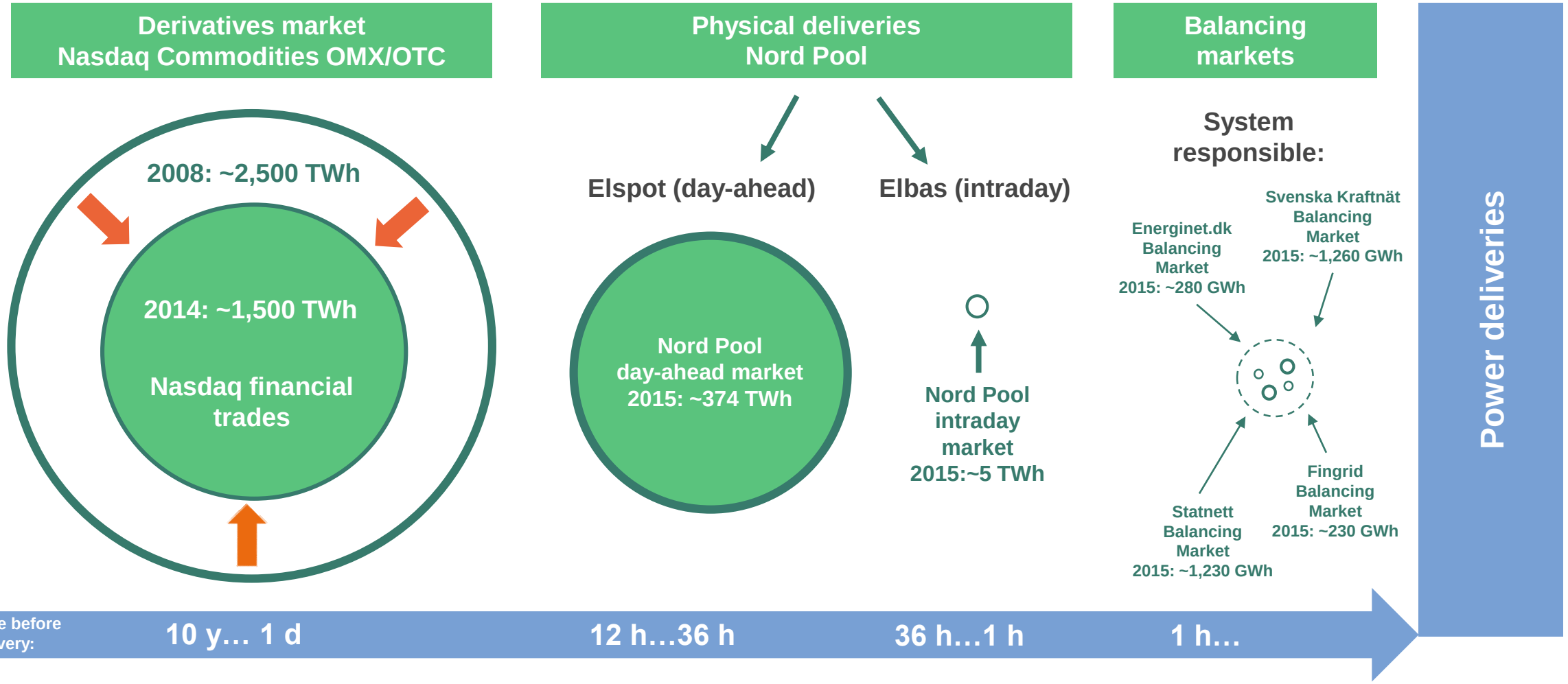
Nordic power market, several trading places

– base load generation hedged long prior to delivery, while reservoir based hydro has optional value closer to delivery



Wide toolbox for hedging but liquidity limits usability of some products

Nord Pool system forwards and options

- Cash-settled, cleared instruments against system price
- The main instruments for hedging
- Good liquidity in the front end

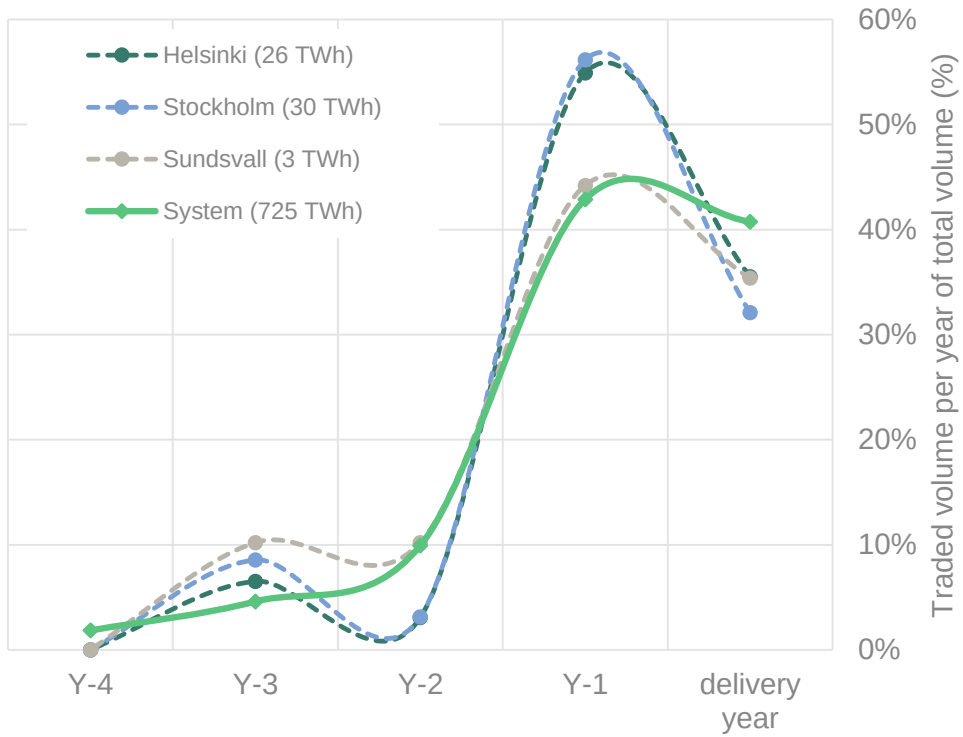
Electricity Price Area Differences (EPADs)

- Forwards used for hedging area price difference vs. system
- Cash-settled
- Liquidity decreases quickly with time

Forwards for variable cost items

- Variable cost components are mainly in coal and CO_2
- Used for securing price premium against cost of coal fired power plants Very liquid

**YR-15 product traded volume per year*
- Market liquidity on the market grows towards delivery**



*OTC trades not included.

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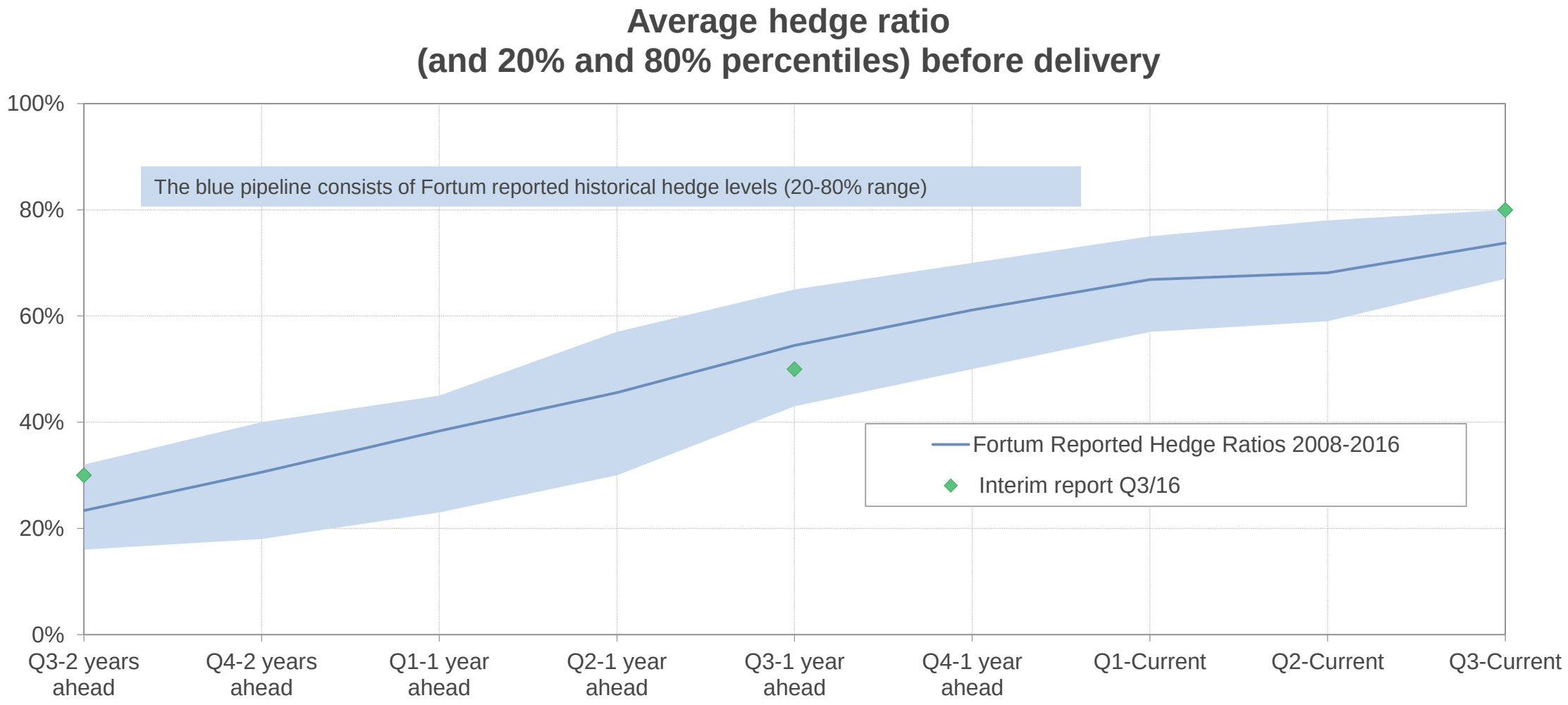
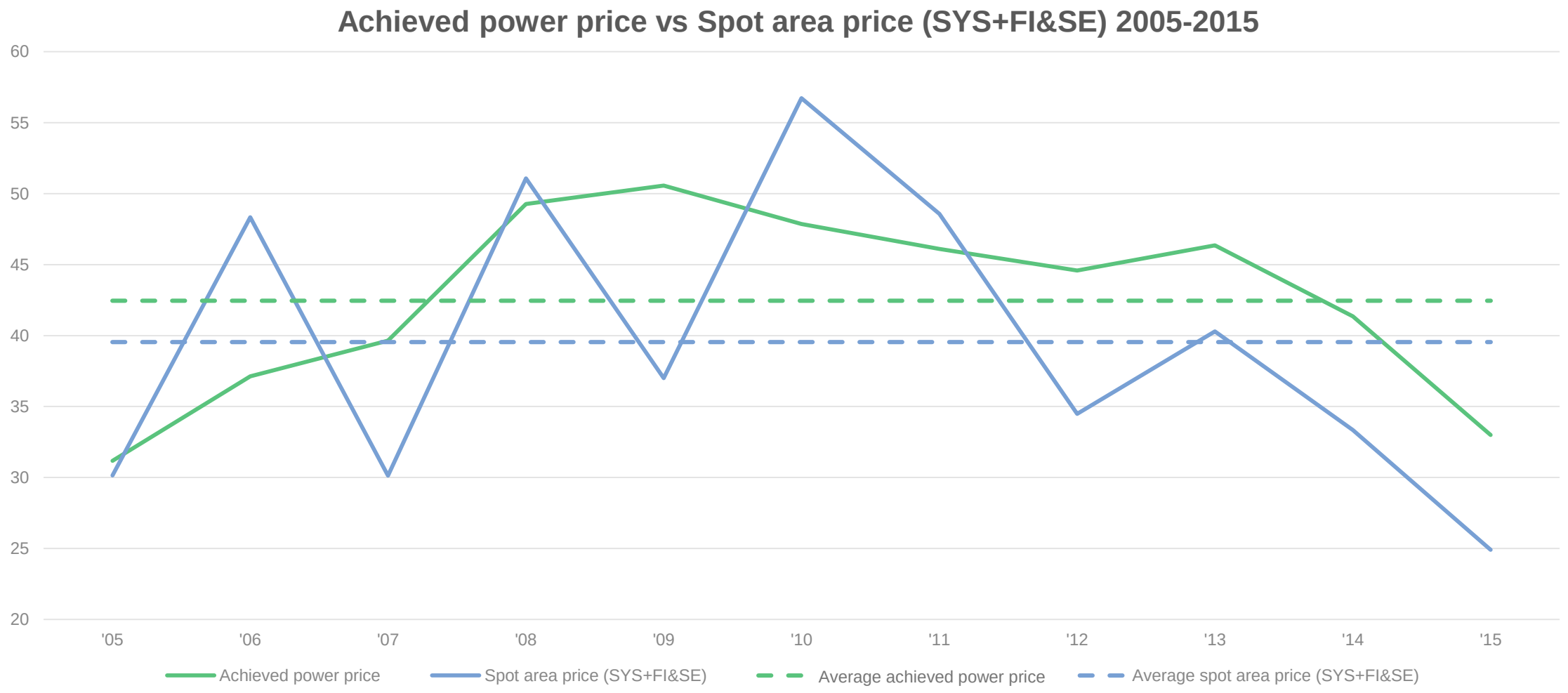
For Fortum's hydro and nuclear dominated fleet the hedge ratios have been around 60–80%



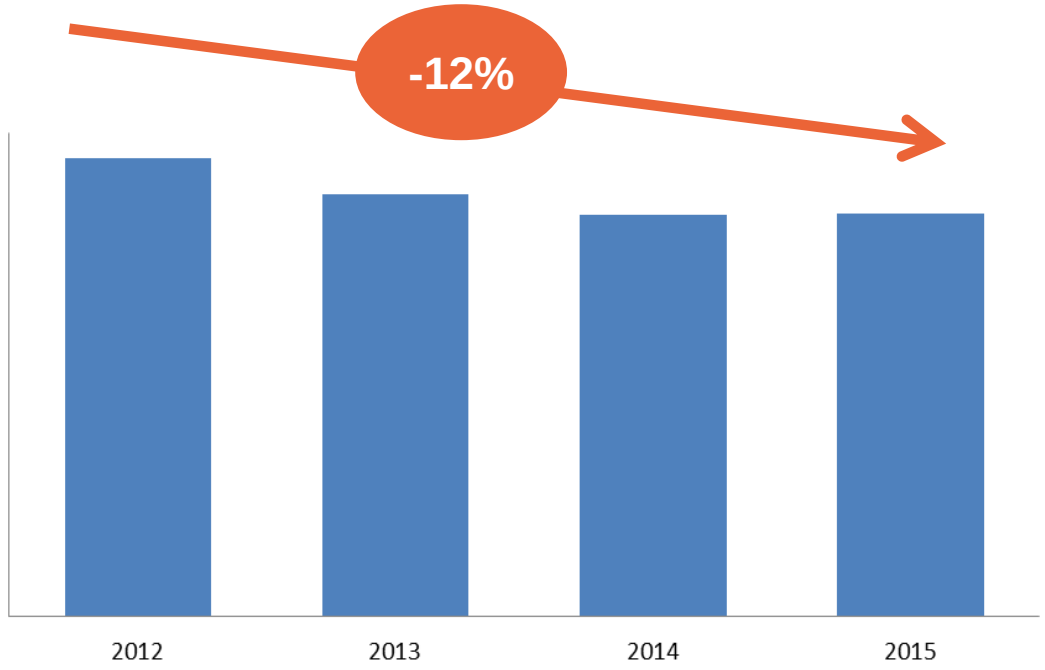
Reported hedge ratios in Interim reports 2008-2016.
Q3/16 current year 80%, next year 2017 50% and two years ahead 2018 30%.

Fortum’s hedging has reduced volatility and increased achieved power price over time



Spot area price = SYS + (40 % FI + 40 % SE3 + 20 % SE2)

Focus on productivity – Operative fixed cost trend downwards



*Operative fixed costs excluding taxes

- Outsourcing of O&M
  - Hydro
  - Thermal
- Constant portfolio optimisation
- Procurement savings
- Flexible use of resources

Positive progress in taxation but still need for active influencing

- Swedish energy policy agreement in June 2016
  - Nuclear capacity tax will be reduced to 1,500 SEK/MW per month from 1 July 2017 and abolished on 1 January 2018.
  - Decrease the hydropower real-estate tax rate over a four-year period beginning in 2017, from todays 2.8% to 0.5%.
- Real estate taxation in Finland
  - Power plants subject to higher real estate tax rate (3.1%) than other properties (~1%)
- Water framework directive
  - Possibly could mean additional costs in Sweden
- Nuclear waste management

Nuclear waste management

In Finland and Sweden

- Infrastructure for waste management well-established
- Cost estimates based on detailed technical plans, experience, scientific findings and tenders received from suppliers
- Funds transparently accumulated in segregated external funds

- Liabilities based on annual cost estimates and technical plans updated every third year
- Finland: Plan & estimates updated Jun 2016, Government decision by the end of 2016
- Sweden: Plan & estimates to be submitted Jan 2017, Government decision Dec 2017
  - Impact of Oskarshamn unit 1 and 2 closures
  - Calculation period likely to increase from 40 to 50 years

Nuclear assets & total liabilities status 30 Sep 2016	**Liability,** MEUR	**Available funds,** MEUR	**Coverage** from IFRS perspective
Loviisa	836	1,094	131% EUR +258 million
TVO	962	1,369	142% +407 M€ Fortum's net share EUR +108 million
OKG and Forsmark	3,125	2,976	95% -149 M€ Fortum's net share EUR -61 million

New revenue streams and growth

Nuclear services

- Continue building a strong new leg in addition to nuclear generation business
- Focus on scalable offerings in selected niche areas where strong nuclear expertise is a necessity
- Several orders received and significant additional sales pipeline built
- Increased scalability through strategic partnerships, potential acquisitions

Origination

- Provide commodity market products and services to B-to-B customers
- Expand existing origination offering in home markets
  - Green products
  - Virtual power plants
  - Asset management
  - Demand response
  - Risk management tools and support for customers' investments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