

March 2019

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# Finland's Transmission System Operator

**FINGRID**

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# Executive summary





# Fingrid is the sole transmission system operator (TSO) in Finland

Fingrid transmits  
in its own network  
approximately

**75%**

of electricity transmitted  
in Finland

Fingrid manages  
cross-border  
connections  
between **Finland  
and Sweden,  
Estonia, Russia  
and Norway**

Fingrid continuously  
**ensures power  
system production  
and consumption  
balance** in Finland



# Fingrid's network covers entire Finland



14 300 km  
of power lines  
320 km  
of submarine cable



over  
46 000 towers



114 substation



10 reserve power  
plants  
> 930 MW reserve



# Fingrid has achieved its targets in 2011 - 2018

	2011	2018
Net profit	MEUR 33	MEUR 183
Return	Below regulatory allowed	At regulatory allowed*
Dividend	MEUR 7	MEUR 171
Efficiency	High benchmark study rankings	High benchmark study rankings
Investments	In schedule and budget	In schedule and budget
Fingrid has a proven track record of continuously executing its defined strategy		

\*Cumulative deficit MEUR -5 in 2016-2018



# Key investment considerations

<b>Regulation</b>	Fair, stable and predictable regulatory model
<b>Ownership</b>	The Finnish state owns 53% and Finnish financial institutions 47%
<b>Strategic importance</b>	Considered as strategically important holding to the Finnish state*
<b>Operating leverage</b>	Construction and maintenance of the network is outsourced
<b>Efficiency &amp; Quality</b>	Fingrid is one of the most cost efficient and reliable TSOs worldwide
<b>Financials</b>	Continuous solid operating profitability
<b>Rating</b>	Fingrid benefits from AA-/A+ ratings (S&P, Fitch)

\* Source: Prime Minister's Office, Finland. (2016). *Government resolution on state-ownership policy*.

**Fingrid provides a solid long-term investment in a stable operating environment**

# Company overview



31.3.2019



# Vision

We are a forerunner for electricity network operations

- We are respected and influential in energy matters in Finland and abroad
- We are a manifestation of professional skills and efficiency
- We are able to renew ourselves and we boldly embrace changes



# Mission

Fingrid is Finland's transmission system operator. We secure reliable electricity for our customers and society and shape the clean, market-oriented power system of the future.





# Our values

In all our operations, we are

transparent

impartial

efficient

responsible



# Balanced strategy

## CUSTOMERS AND SOCIETY

We secure reliable electricity and a well-functioning electricity market for society.  
We offer affordable services that meet our customers' needs.

## FINANCE

We operate cost-effectively and bring value to our owners.

## INTERNAL PROCESSES

### Adequacy of the transmission system

We carry out investments and maintenance safely and efficiently at the right time.

### System operation

We operate the national grid proactively and reliably.

### Promoting the electricity market

We actively maintain and develop the electricity market.

## PERSONNEL AND EXPERTISE

An open, collaborative, renewing and target-oriented work community.



# Corporate level strategic choices



## Focus on core operations

Outstanding execution of our core operations. We do not seek to expand into new businesses or to participate in competitive businesses.



## Customer oriented

We develop our business operations in a customer oriented manner and for the benefit of Finland.



## World class efficiency

We utilize innovatively the best available technologies and the possibilities of digitalization. We maintain the required core competences in-house. We cooperate with the best partners.



## Market oriented

We trust that well functioning markets produce the best and most innovative solutions in all areas.



## Integration oriented

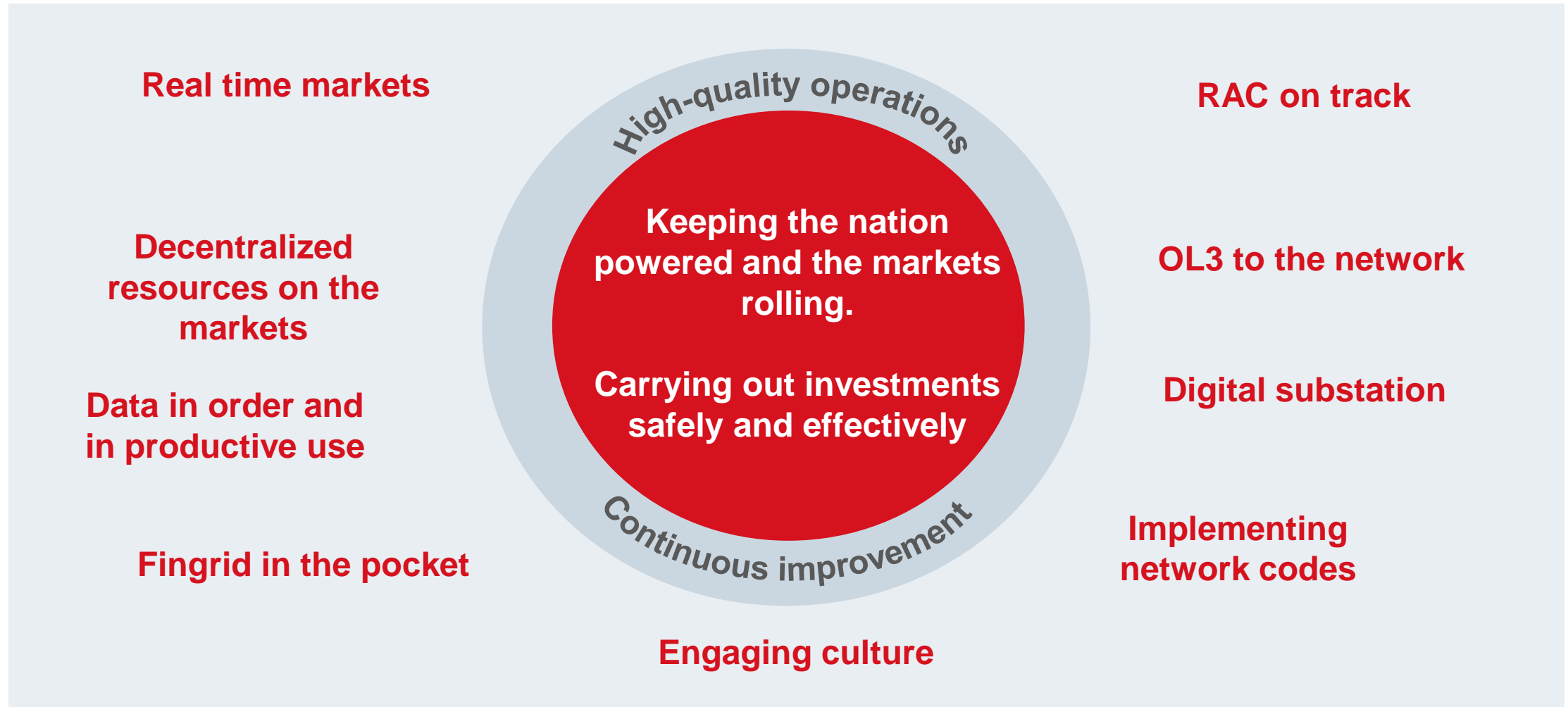
We actively promote the integration of European and Baltic sea electricity markets taking into account the interests of Finland.



## Security and sustainability

During the transformation of the power system we maintain the current high level of system operation. Sustainability and safety are in focus in everything we do.

# Strategy implementation – continuous improvement and change initiatives



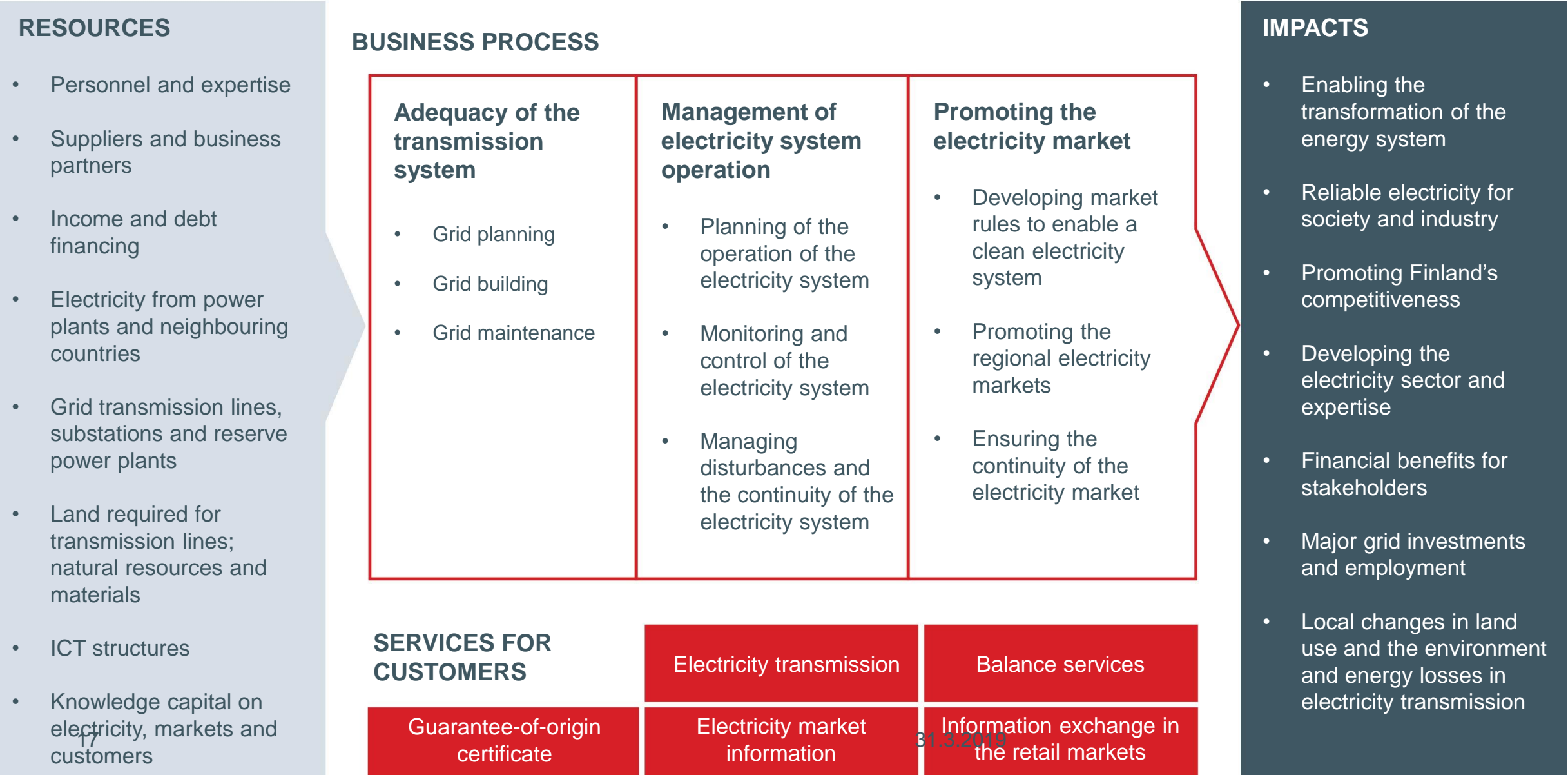


# Fingrid operates in a matrix organisation structure



\*Mr. Kari Kuusela will retire in July 2019 and will be replaced by Mr. Timo Kiiveri \*\*Ms. Asta Sihvonen-Punkka nominated as deputy CEO as of July 2019

# Fingrid's business model



# Corporate responsibility

- Corporate responsibility is an important and natural element of the company's way of operating.
- Corporate responsibility is part of Fingrid's strategy and an integrated part of all our operations.
- We are committed to responsibility for the economic, social and environmental effects of our operations.
- We require that also from our contractual partners.

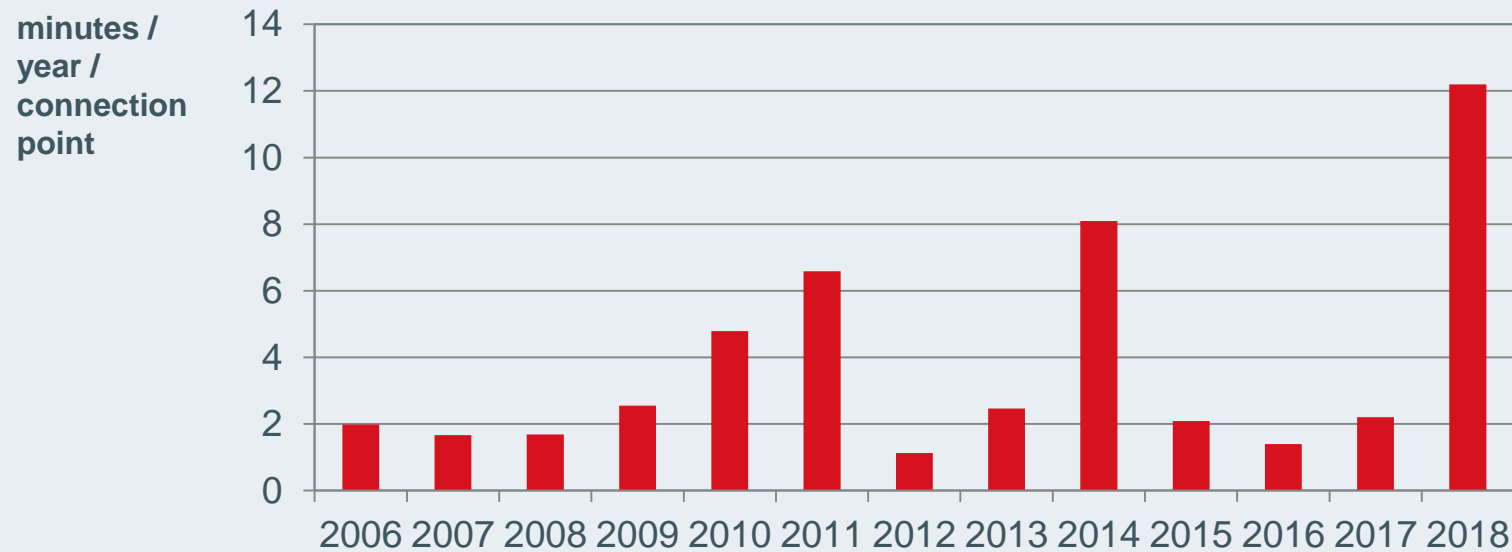


We report about responsibility as part of the annual report according to GRI Standards



# Excellent reliability in the grid

## Economic losses caused by disturbances

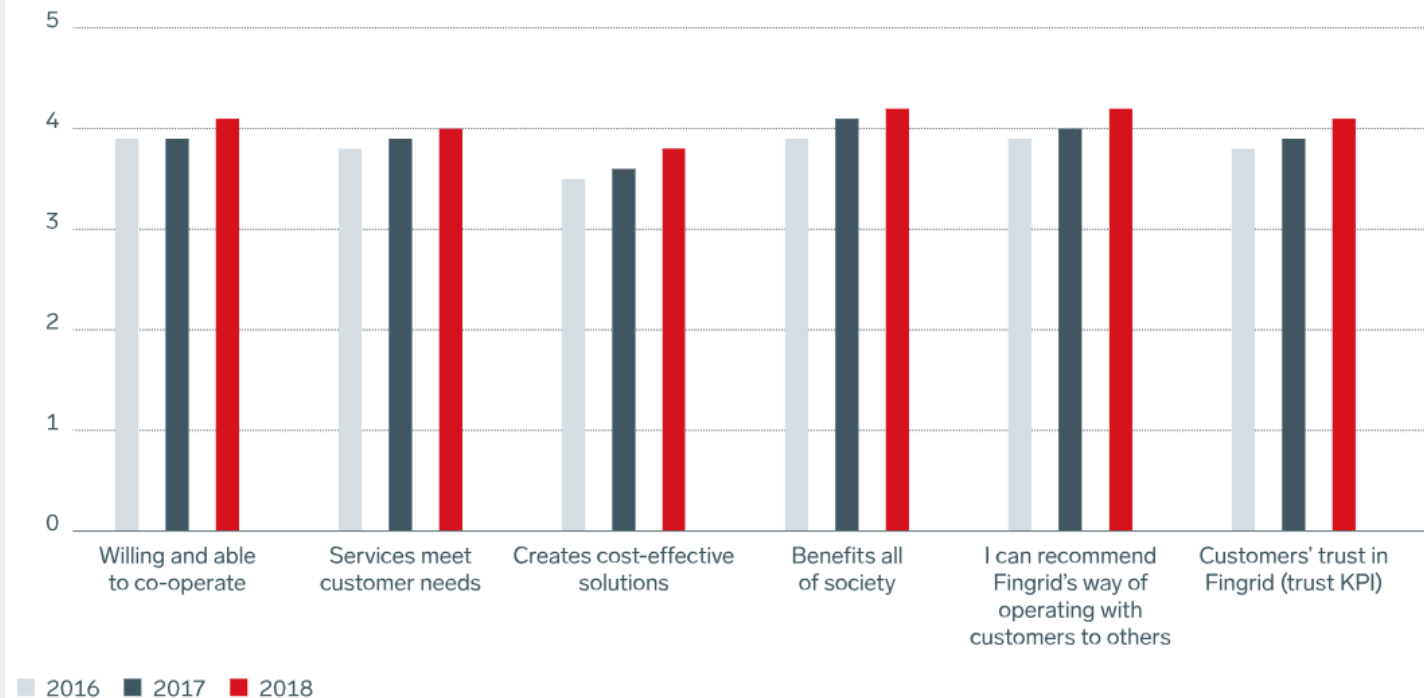


12.2 minutes outage caused by faults in the grid in 2018, which exceeds the ten-year average

# For the benefit of customers and society

## Customer satisfaction: High quality services

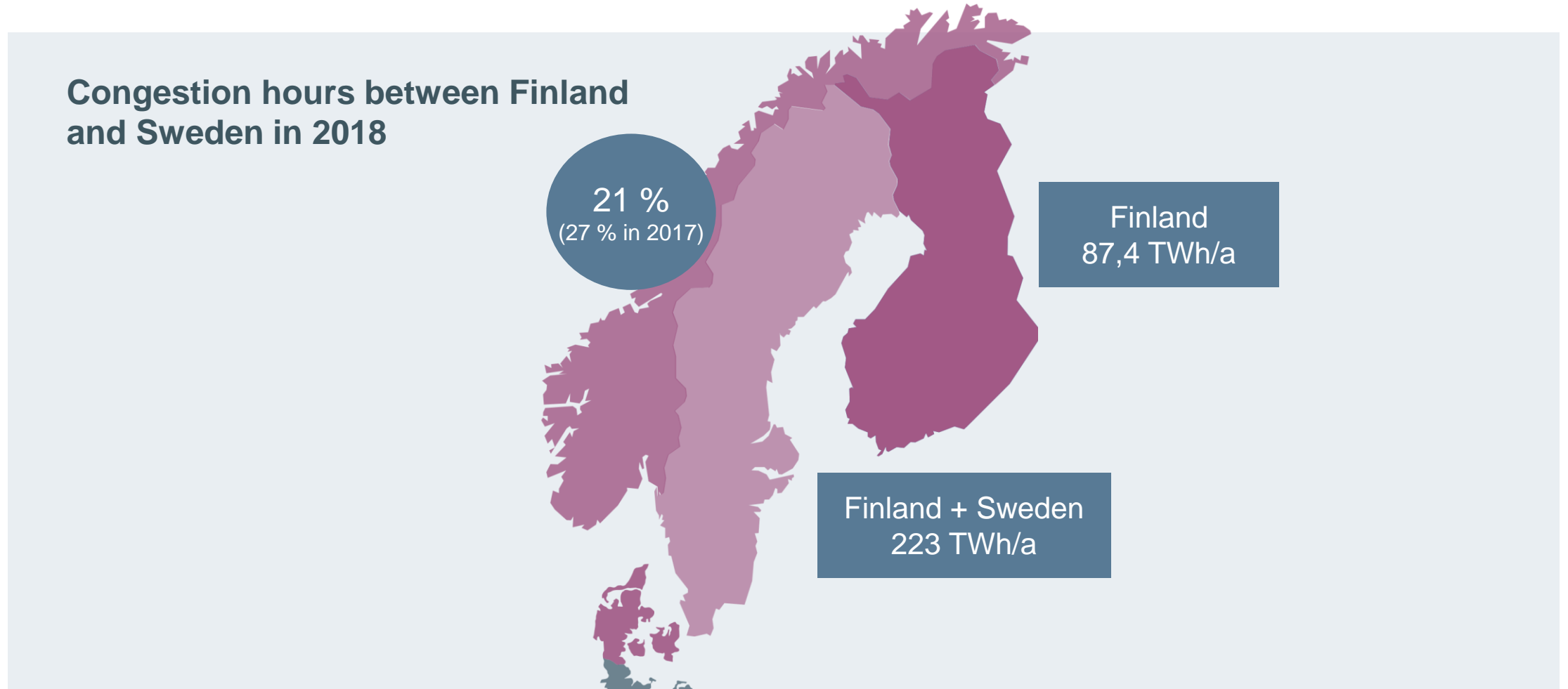
Customers' trust in Fingrid



Trust KPI: Average of customer satisfaction survey questions measuring implementation of the customer strategy and customers' confidence. (scale: 1=poor...5=excellent)

The company wide KPI 'customers' trust in Fingrid' was 4,1 (scale 1-5) in 2018

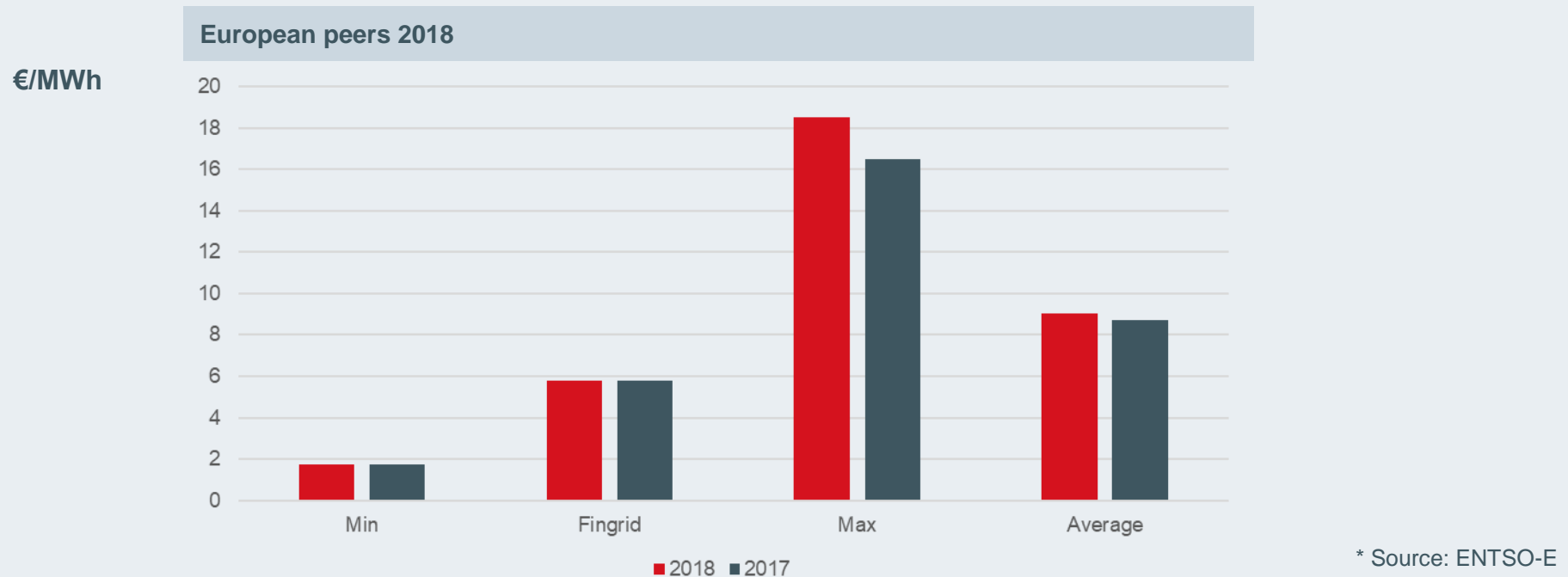
# Network bottlenecks: Functioning electricity market





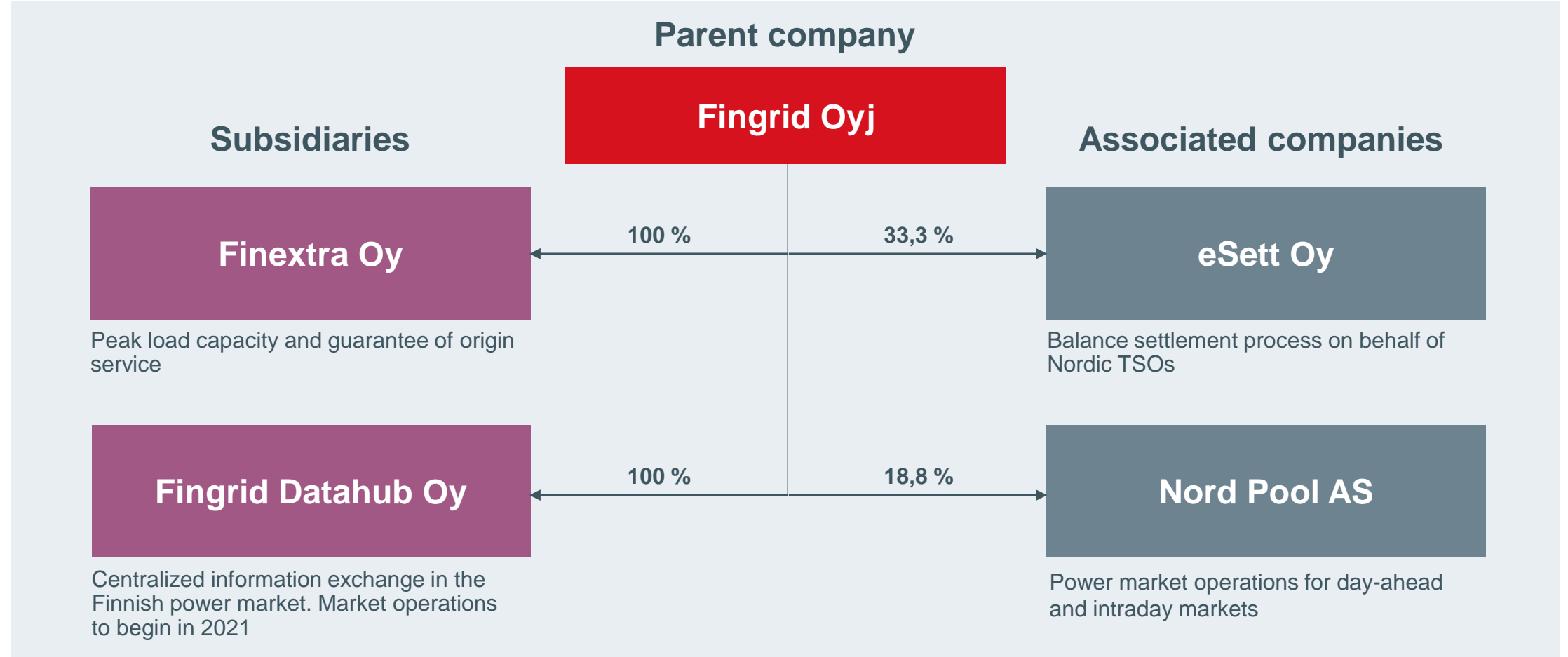
# Affordable fees for grid services

## ENTSO-E comparison on grid service fees

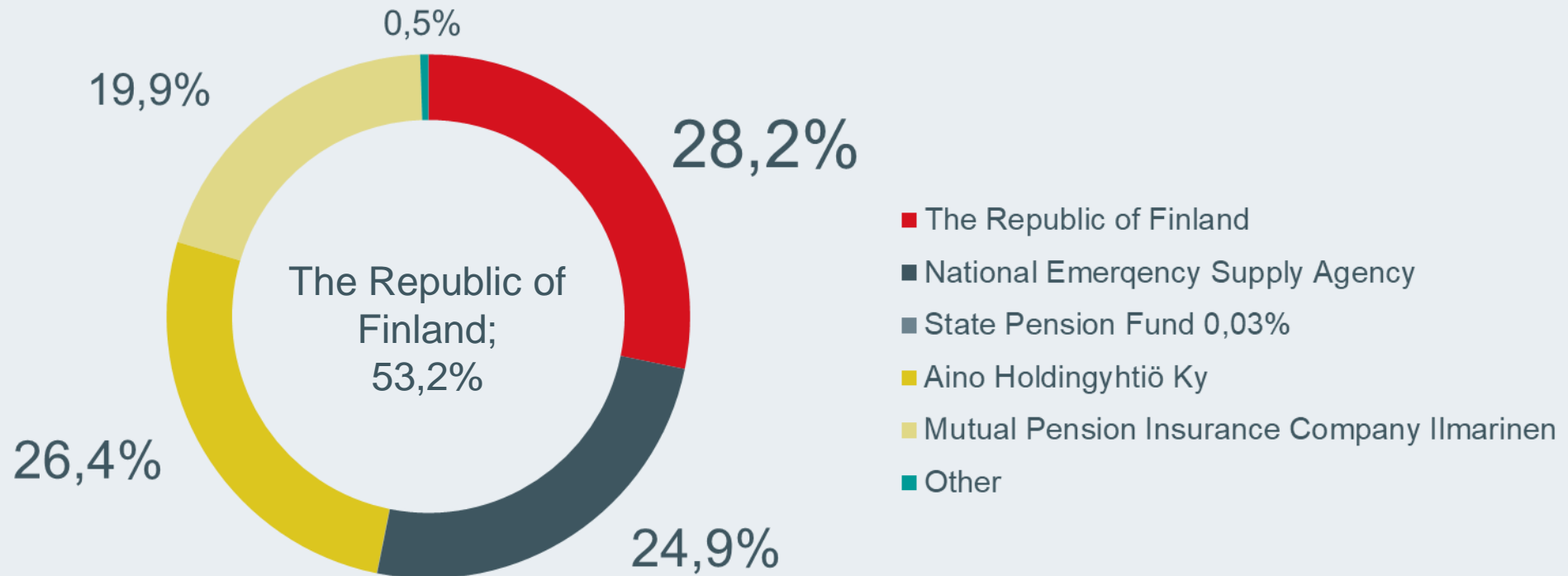


Operational targets are centered around cost competitiveness and customer service

# Legal structure



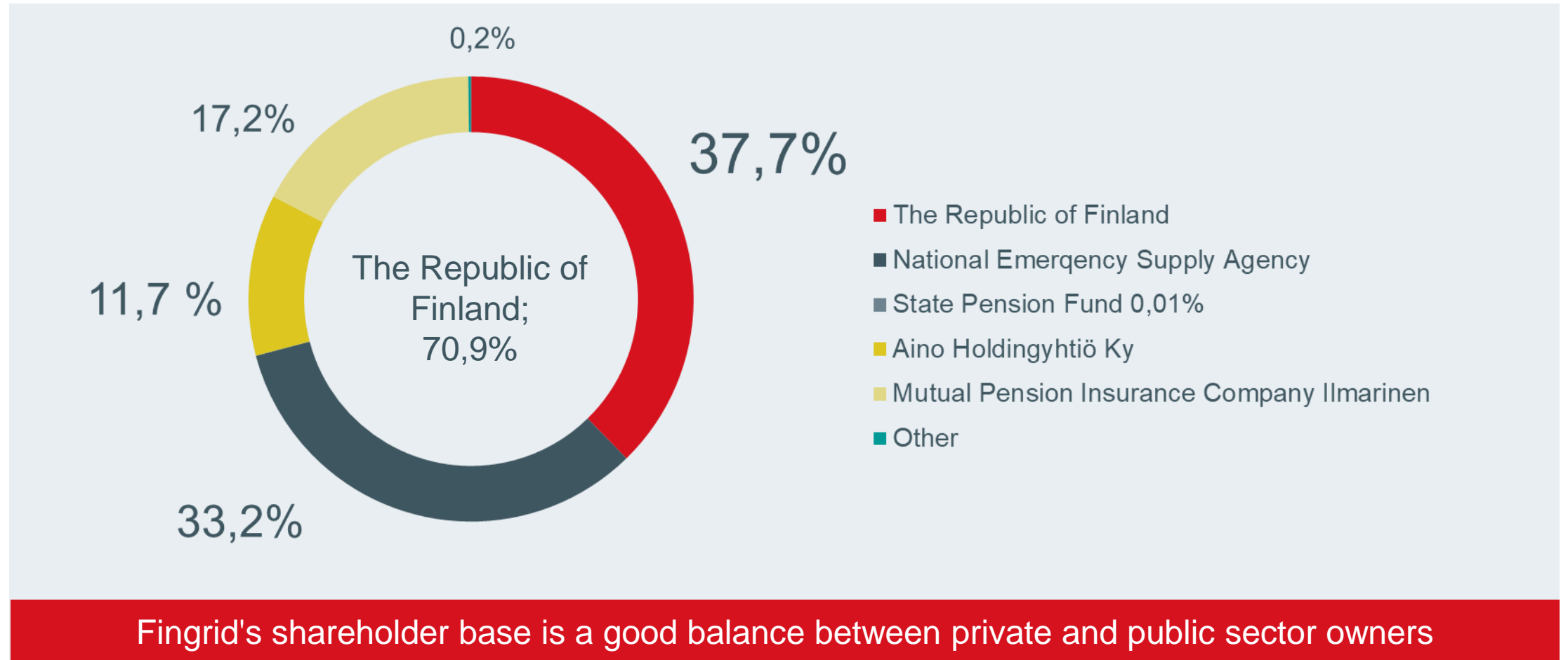
# Shares



The State's minimum shareholding requirement in Fingrid is 50.1%



# Voting rights





# Operations

## Description of operations

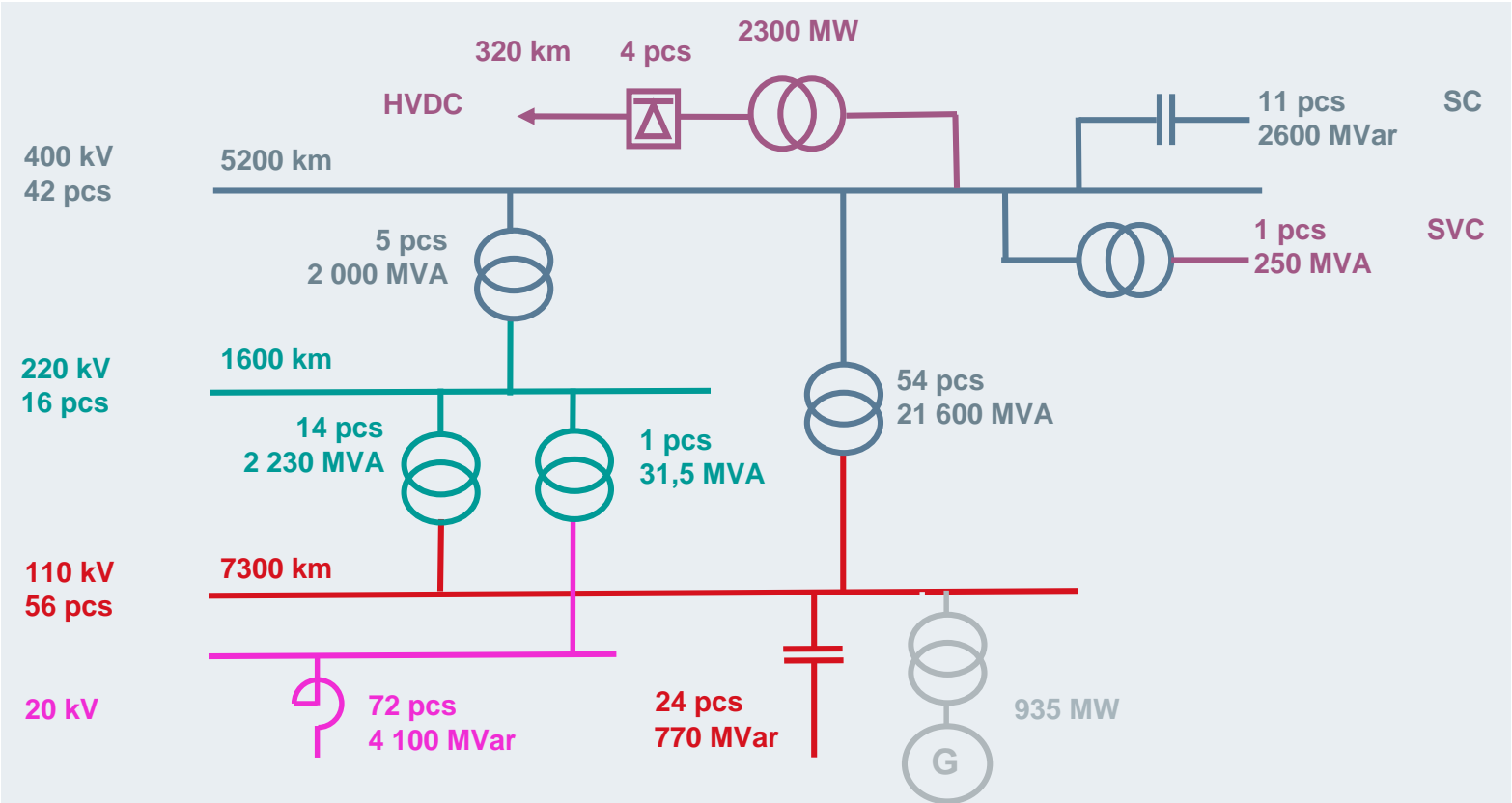




# Fingrid owns and operates the transmission network in Finland

Fingrid transmits in its own network approximately **75 %** of electricity transmitted in Finland

Fingrid is a part of ENTSO-E, European Network of Transmission System Operators for Electricity.

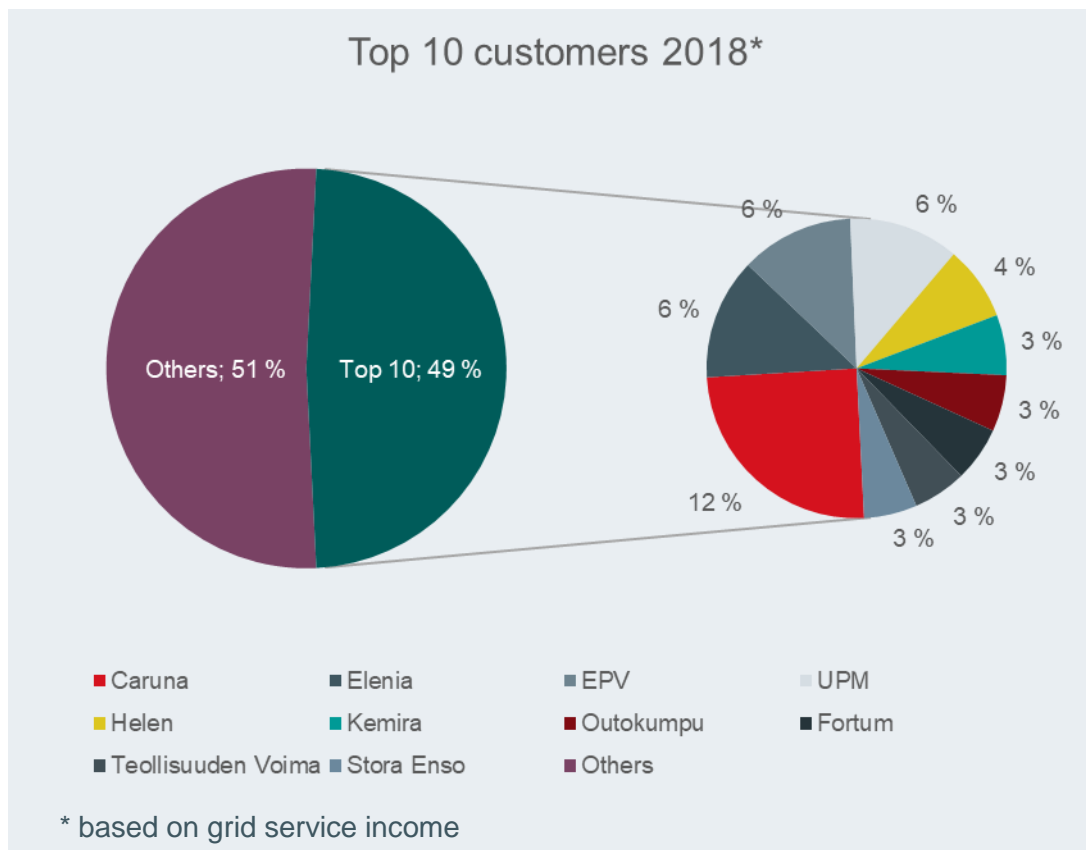


Fingrid's 400 kV power lines form the backbone of the transmission network in Finland



# Grid service customer base consists of around 130 entities

- Customers comprise mainly of electricity producers, process industry and electricity distribution companies
- Fingrid is obligated to provide its customers a network connection point
- Ten largest customers account for 49 percent of grid service income



Credit quality of customer base is strong

# Fingrid continuously maintains production and consumption balance

- Fingrid fulfils responsibility to maintain real-time balance in all market conditions
- Holders of electricity production and loads can submit bids to the balancing market concerning their capacity
- Fingrid has created a common Nordic balancing market together with other TSOs in the region
- Fingrid's core task is to ensure network functionality with automatic and manual reserves in imbalance situations

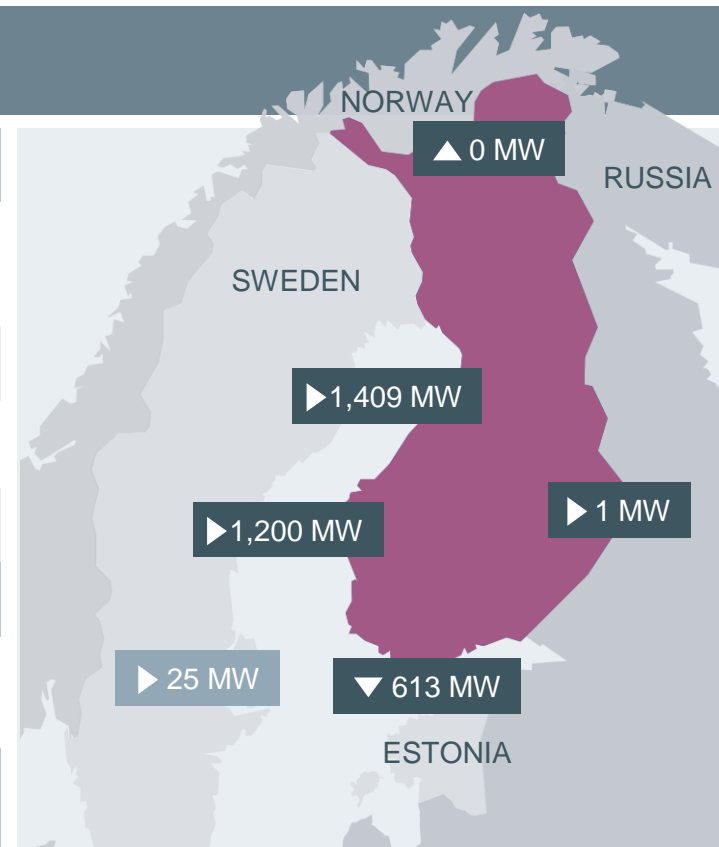


Fingrid procures the needed amount of reserve capacity to maintain the balance of the power system

# Fingrid continuously maintains production and consumption balance

## State of the power system – *illustrative example*

Consumption and production in Finland Info		Power balance	Info
Consumption	11,172 MW	Production surplus/deficit in Finland	91 MW
Production	9,210 MW	Surplus/deficit, cumulative	153 MWh
• Hydro power	2,382 MW	Instantaneous freq. measurement	49,89 Hz
• Nuclear Power	2,774 MW	Time deviation	11,60 s
• Condensing power	10 MW	<b>Electricity price in Finland</b> Info	
• Cogeneration district heating	2,113 MW	Elsport area price	31,48 EUR/MWh
• Cogeneration industry	1,455 MW	<b>Normal power balance</b> Info	
• Wind power (partly estimated)	406 MW		
• Other production (estimate)	70 MW		
• Peak load power	0 MW		
<b>Net import/export</b>	<b>1,962 MW</b>		

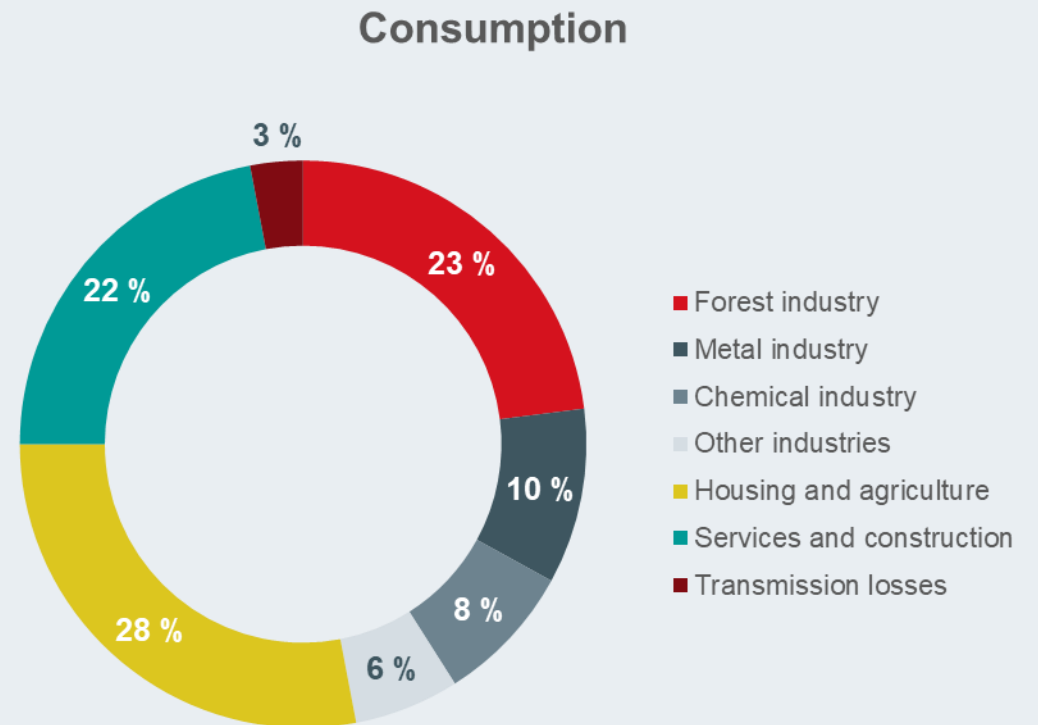


Fingrid procures the needed amount of reserve capacity to maintain the balance of the power system

# Electricity consumption in Finland

Fingrid continuously maintains production and consumption balance

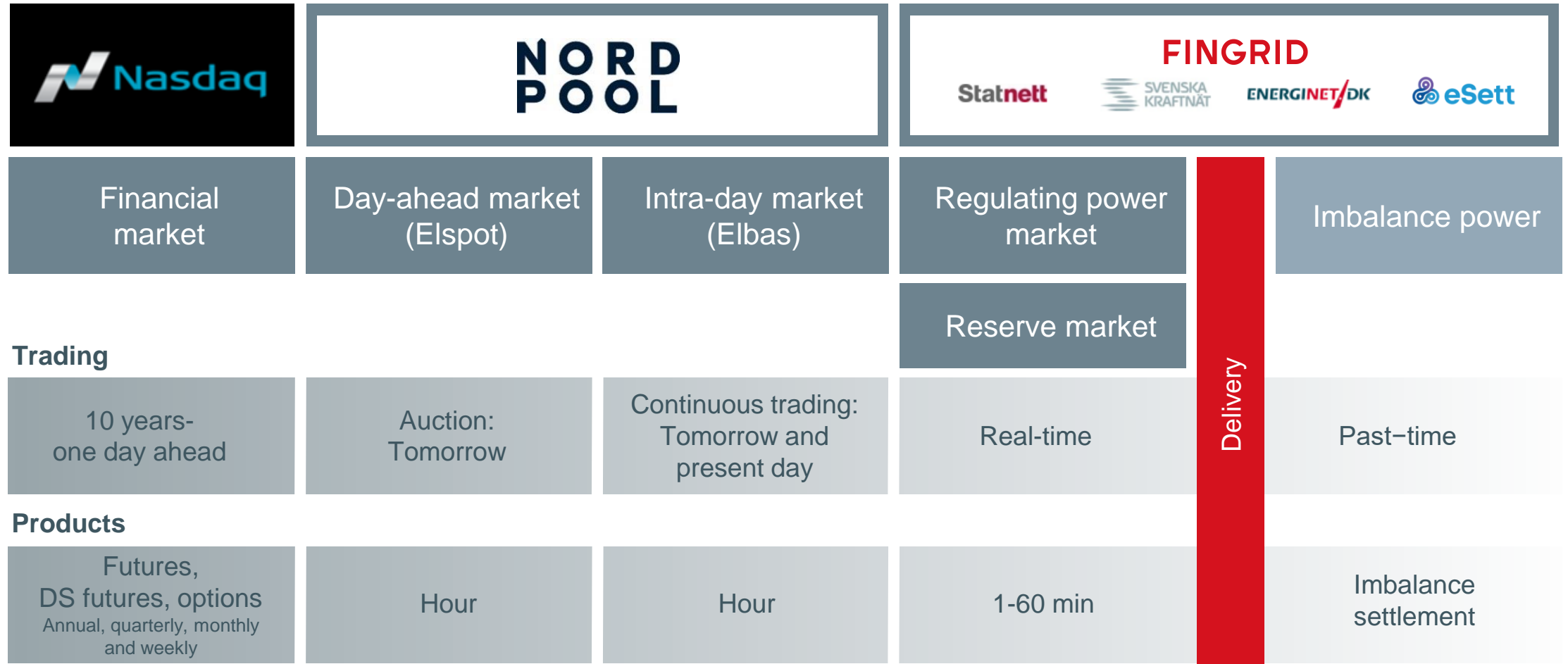
Electricity consumption was 87,4 TWh in Finland in 2018. Electricity imports accounted for 20,0 TWh or 23 % of total consumption



Energy-intensive industry is a major consumer in Finland accounting for 47 % of consumption in 2018



# Advanced markets for all time frames



# Fingrid is responsible for the imbalance power settlement after delivery

- Each party operating in the electricity market is financially responsible for an hourly power balance between its electricity production and consumption
- Fingrid acts as an open supplier, which balances the power balances of these parties after the actual power production and consumption has taken place
- A service company eSett is responsible for the financial settlement of imbalances on behalf of Fingrid
- eSett is equally owned by TSOs in Finland, Sweden and Norway

## Establishment of eSett – a joint service company

*eSett Oy, the joint company of the three Nordic Transmission System Operators (TSOs) Fingrid, Statnett and Svenska kraftnät launched a joint Nordic Balance Settlement service on the first of May 2017. The new company has the objective of providing balance settlement services to participants of electricity markets in Finland, Norway and Sweden...*

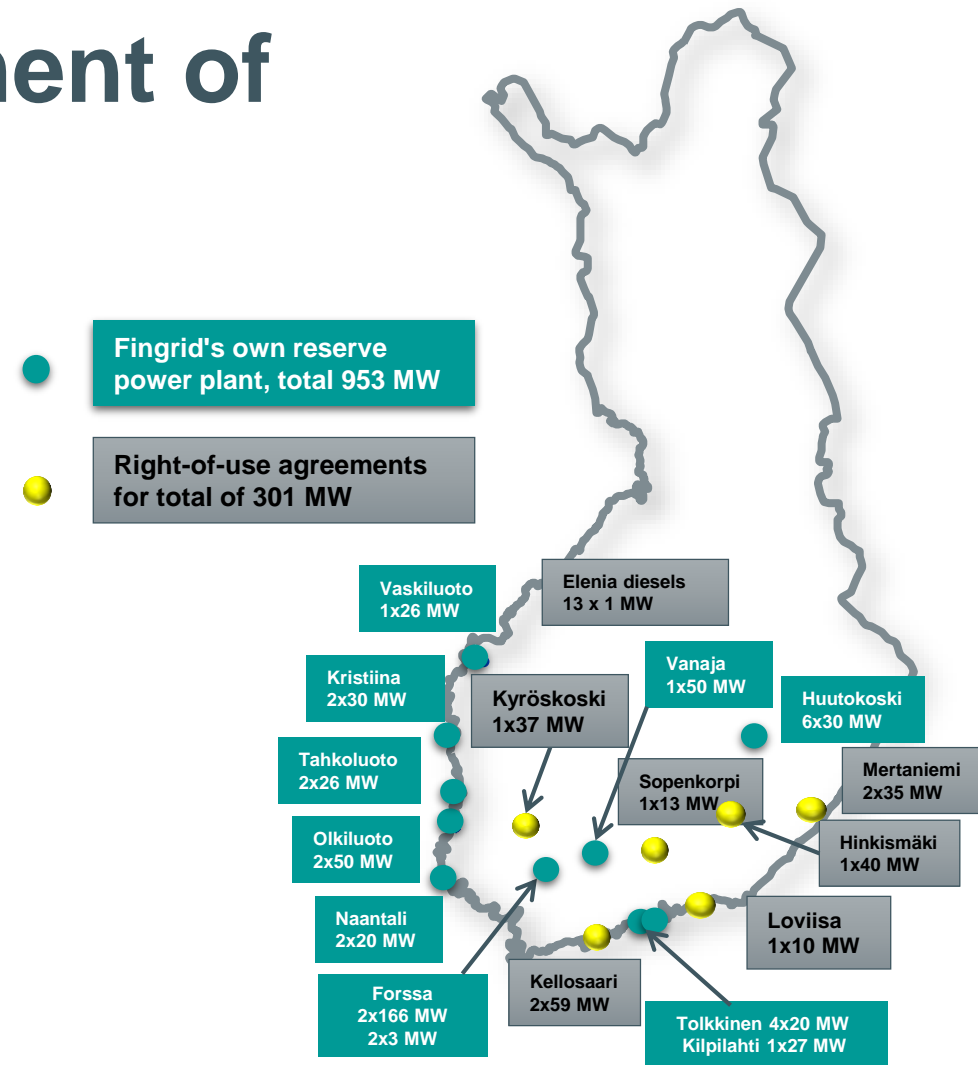
*...The company aims to lower the entry barriers for the market parties in Finland, Norway and Sweden through equal and shared settlement rules. This will increase competition in the electricity markets in these countries, reduce long-term costs for the market parties and pave the way for the establishment of a Nordic end-user market.*

Source: [www.fingrid.fi](http://www.fingrid.fi)

Imbalance settlement in Finland, Sweden and Norway has been performed by eSett since 1<sup>st</sup> May 2017

# Fingrid owns an assortment of backup power plants

- Fingrid owns and operates 953 MW of backup power plants and has right-of-use agreements for further 301 MW. All plants can be activated within minutes
- Backup power plants are not used to sell energy to market but solely as a reserve for imbalances and disturbances in power system
- Fingrid's own power plants are included in the regulatory asset base
- The total capacity of backup power plants comfortably exceeds the capacity of the largest power plant in the network

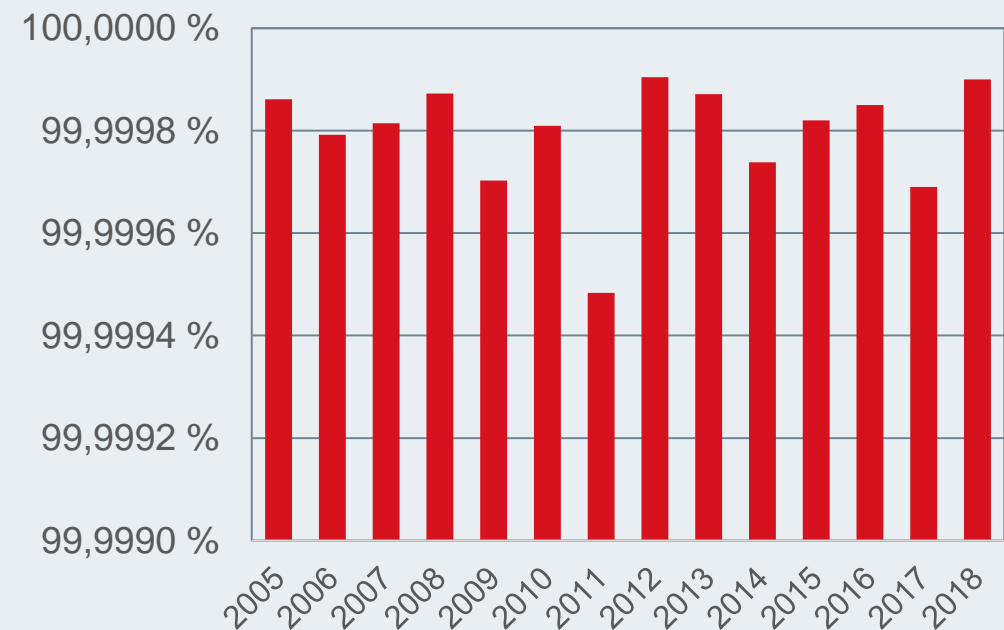


Fingrid's own backup power plants ensure reliable activation of reserves in disturbance situations

# Reliability of the Finnish power system

- The power system has to withstand a fault in any individual component (N-1)
- The main reasons for disturbances have been lightning and other weather related incidents (storms)
- Major part of the disturbances are cleared with automatic reclosure schemes without any manual switching operations
- The average duration of the connection point outages is usually a couple of minutes per year

## Transmission network reliability



The reliability of the Finnish power system is top class



# Operations

Efficiency of operations



# Key efficiency drivers

Effectiveness of the management and governance model

Outsourced  
network construction  
and maintenance



Highly centralised  
operations



Increasing degree of  
digitalisation

Fingrid's excellence in ITAMS and ITOMS benchmark studies reflect highly efficient operating model

# Outsourced grid construction and maintenance

- Core feature of Fingrid's operating model is outsourcing
- Grid construction and maintenance are outsourced
- Regional maintenance is tendered among external service providers
- Fingrid has around 60 core suppliers, of which 10 account for around 90 percent of total financial value of procurements
- Grid construction projects are tendered among prequalified contractors (system of qualification of contractors)



Grid maintenance is outsourced

High operational efficiency and flexibility are achieved through comprehensive outsourcing capabilities

# Fingrid uses qualified suppliers only

- A defined qualification process\* for equipment suppliers, service providers and contractors
- An evaluation process of new suppliers is done annually
- Only qualified suppliers in Fingrid's supplier register are invited to bid for outsourced works
- Sustainability audits are conducted among suppliers
- Suppliers must comply with Fingrid's Supplier Code of Conduct

\* In accordance with the EU based public procurement legislation for the sector



Hyvinkää – Hikiä transmission line construction site

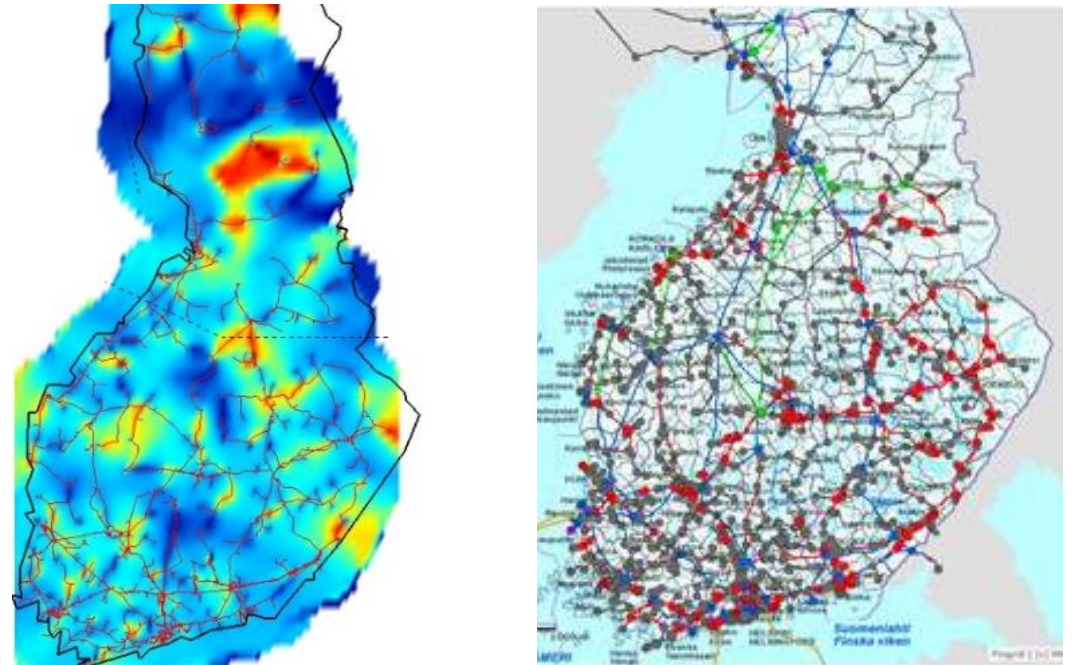
High operational efficiency and flexibility are achieved through comprehensive outsourcing capabilities



# Investing in efficient management of information through digitalisation

- Increasing proactivity in calculations, monitoring and maintenance
- Single source for power system information
  - Improving information access and usability within stakeholders
- Adding cost aspect to operation and power system components
  - Enhanced business planning through cost operational analytics
- System utilisation and further development

For a quick overview of the ELVIS asset management solution see video at: [www.youtube.com](https://www.youtube.com/watch?v=BMM99tIYFBw) key in [BMM99tIYFBw](https://www.youtube.com/watch?v=BMM99tIYFBw)



New ERP provides real-time network condition on map

A single asset management based ERP will further strengthen Fingrid's operational excellence

# Fingrid's efficient operations are highly recognized

- In September 2018 Fingrid's Asset Management retained **ISO55001** Certificate
- Fingrid has continuously ranked among the best TSOs in the International Transmission Operations and Maintenance Study (**ITOMS**)\*
- Fingrid ranked among the best TSOs in the International Transmission Asset Management Study (**ITAMS**) in 2017
- Fingrid was "exceptionally efficient" in 2013 in a study done for the Council of European Energy Regulators (**CEER**)

## ISO55001

ISO 55001 is a framework for an asset management system that will help your business to pro-actively manage the lifecycle of your assets, from acquisition to decommission. This system helps you to manage the risks and costs associated with owning assets, in a structured, efficient manner that supports continual improvement and on-going value creation.

### Benefits of ISO 55001

An asset management system provides a structured, best practice approach to managing the lifecycle of assets.

- Reduced risks associated with ownership of assets – anything from unnecessary maintenance costs and inefficiency to accident prevention
- Improved quality assurance for customers/regulators – where assets play a key role in the provision and quality of products and services
- New business acquisition - stakeholders gain confidence from the knowledge that a strategy is in place to ensure assets meet the necessary safety and performance requirements

Source: <https://www.bsigroup.com/en-GB/Asset-Management/Getting-started-with-ISO-55001/>

Excellent results from international benchmark studies

\* Thirty-one TSOs from around the world participated in the 2015 study

# Fingrid's overall efficiency is confirmed also by regulators

- Study done for the Council of European Energy Regulators (CEER) 2013
- Fingrid was "exceptionally efficient" together with four other TSOs
- Study included 21 European TSOs and performed every four years
- Comparison of total efficiency: costs in grid construction, maintenance, planning and administration during the past 20 years
- CEER is organising a new benchmarking study in 2018-2019



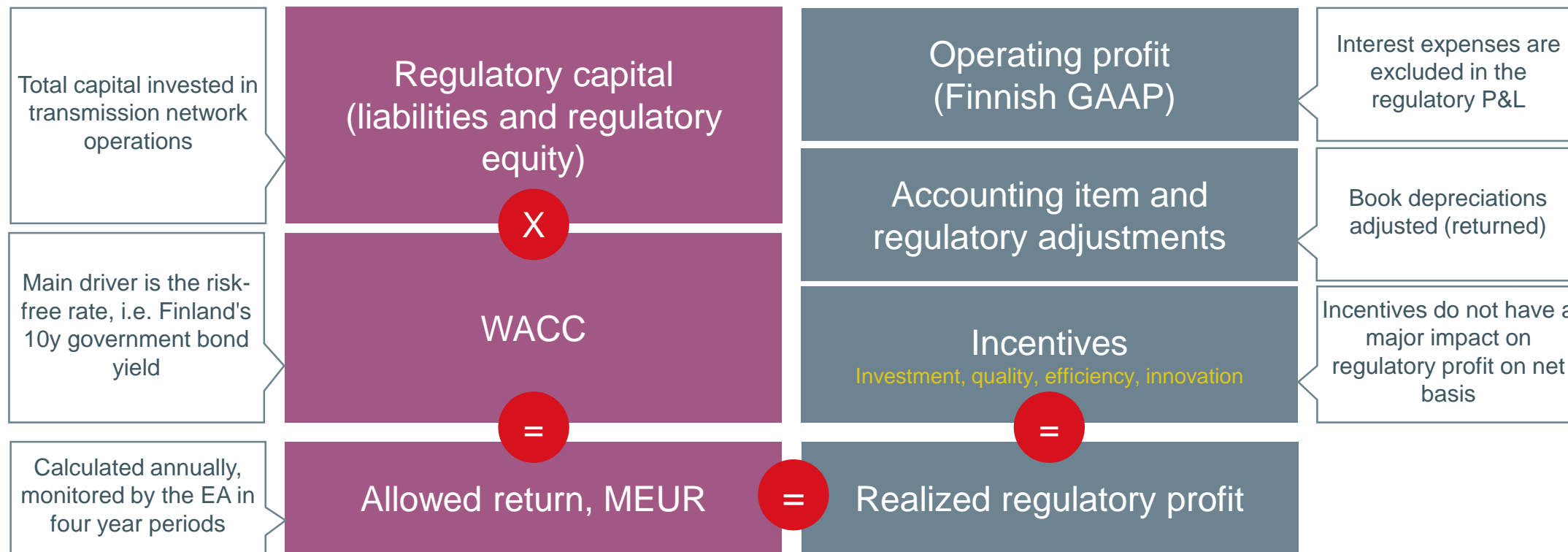


# Operations

Earnings model



# Regulatory capital and WACC defined by the Energy Authority set the allowed return



Fingrid aims to match realized regulatory profit and allowed return on an annual basis

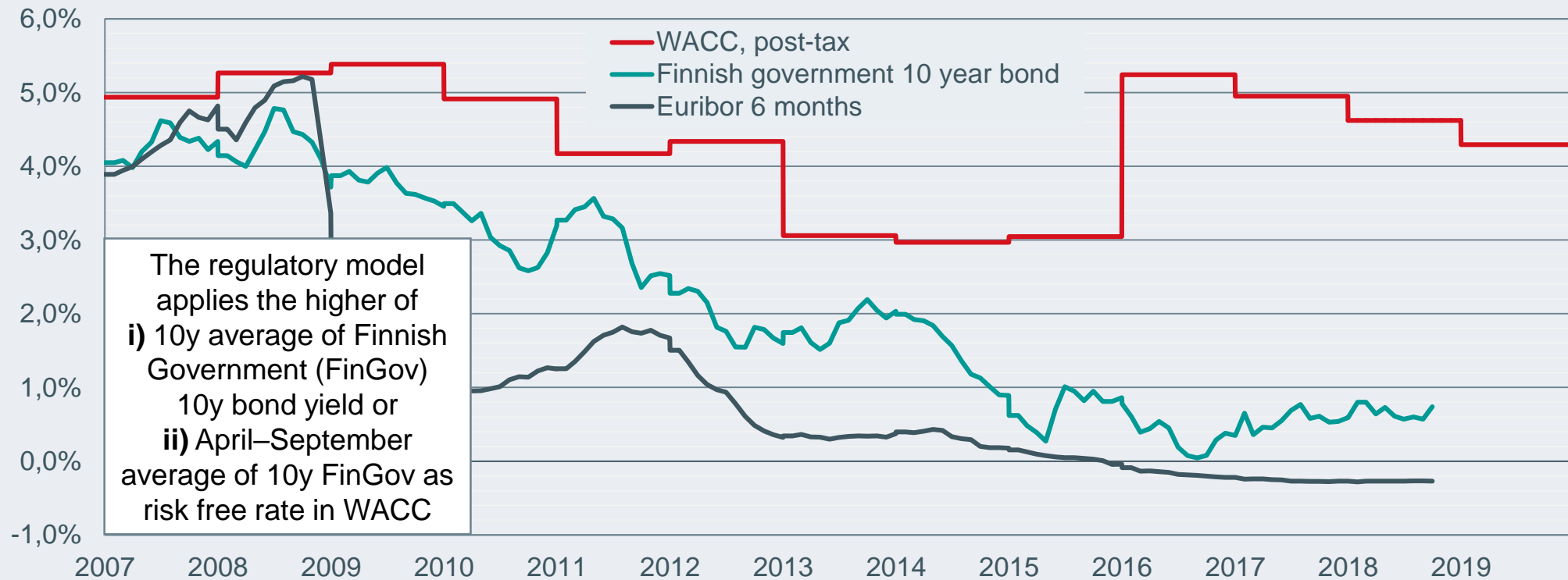
# Calculation of WACC in the regulatory model 2016-2023

Cost of equity	Parameter	Value to be applied
$C_E = R_r + \beta_{debt\ free} \times (1 + (1 - t) \times D/E) \times (R_m - R_f) + LP$ $C_E = \text{Finnish 10y bond} + 0,4 \times (1 + (1 - 20\%) \times 50/50) \times 5\% + 0,6\%$ $C_E = \text{Finnish 10y bond} + 4,2\%$	Risk-free rate ( $R_r$ )	Greater of: a) 10-year average of 10-year Finnish government bond rate b) Average of previous year April-September government bond rate
Cost of debt	Asset beta ( $\beta_{debt\ free}$ )	0,4
$C_D = R_r + DP$ $C_D = \text{Finnish 10y bond} + 1,4\%$	Market risk premium ( $R_m - R_f$ )	5,0%
WACC (pre tax)	Liquidity premium (LP)	0,6%
$WACC_{post-tax} = C_E \times 50/100 + C_D \times (1 - t) \times 50/100$ $WACC_{post-tax} = \text{Finnish 10y bond} \times 0,9 + 2,66\%$ $WACC_{pre-tax} = \text{Finnish 10y bond} \times 1,125 + 3,33\%$	Capital structure (D/E)	50/50
	Risk premium of debt (DP)	1,4% *
	Tax rate (t)	20%

\* Will be mechanically updated by the Energy Authority end of 2019 for regulatory period 2020 – 2023 based on Bloomberg's utility sector A-BBB rated companies' fixed income indices

The core parameter defining yearly WACC is the yield of the Republic of Finland's 10-year bond

# The current regulatory model benefits from relatively stable WACC\* without capping upside



\* Regulatory WACC 2007 – 2015 calculated as post-tax basis. From 2016 regulatory model applies pre-tax WACC.

**Pre-tax WACC for 2019 calendar year 5,36% (5,78% in 2018)**

# Calculating the allowed return in euros: WACC x Regulatory capital

- Allowed return in euros is calculated as follows:

$$R_{pre-tax} = WACC_{pre-tax} \times (D+E)$$

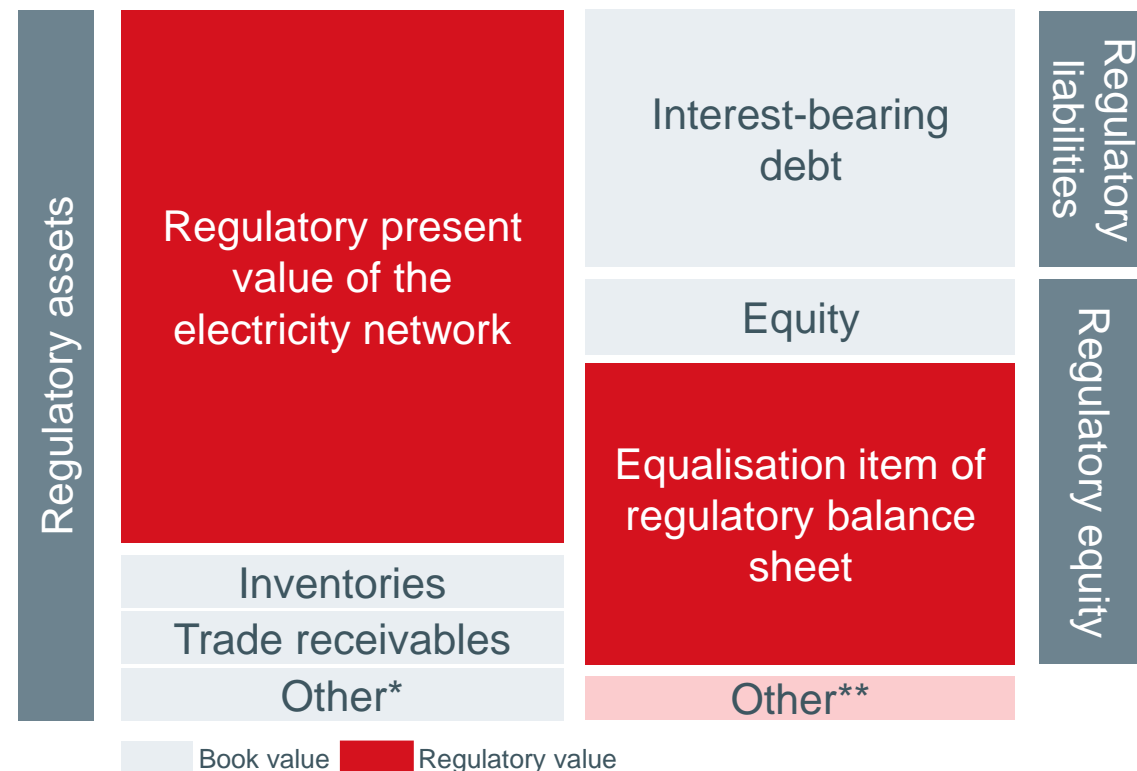
*E = regulatory amount of equity*

*D = regulatory amount of interest-bearing debt*

$$R_{pre-tax\ 2018} = 5,36\% \times \sim 3,000\ M\text{€} = \sim 160\ M\text{€}$$

- Regulatory capital is equal to the sum of regulatory equity and liabilities**
- The equalisation item in the equity section of balance sheet balances regulatory equity and liabilities with regulatory assets

## Calculating regulatory balance sheet



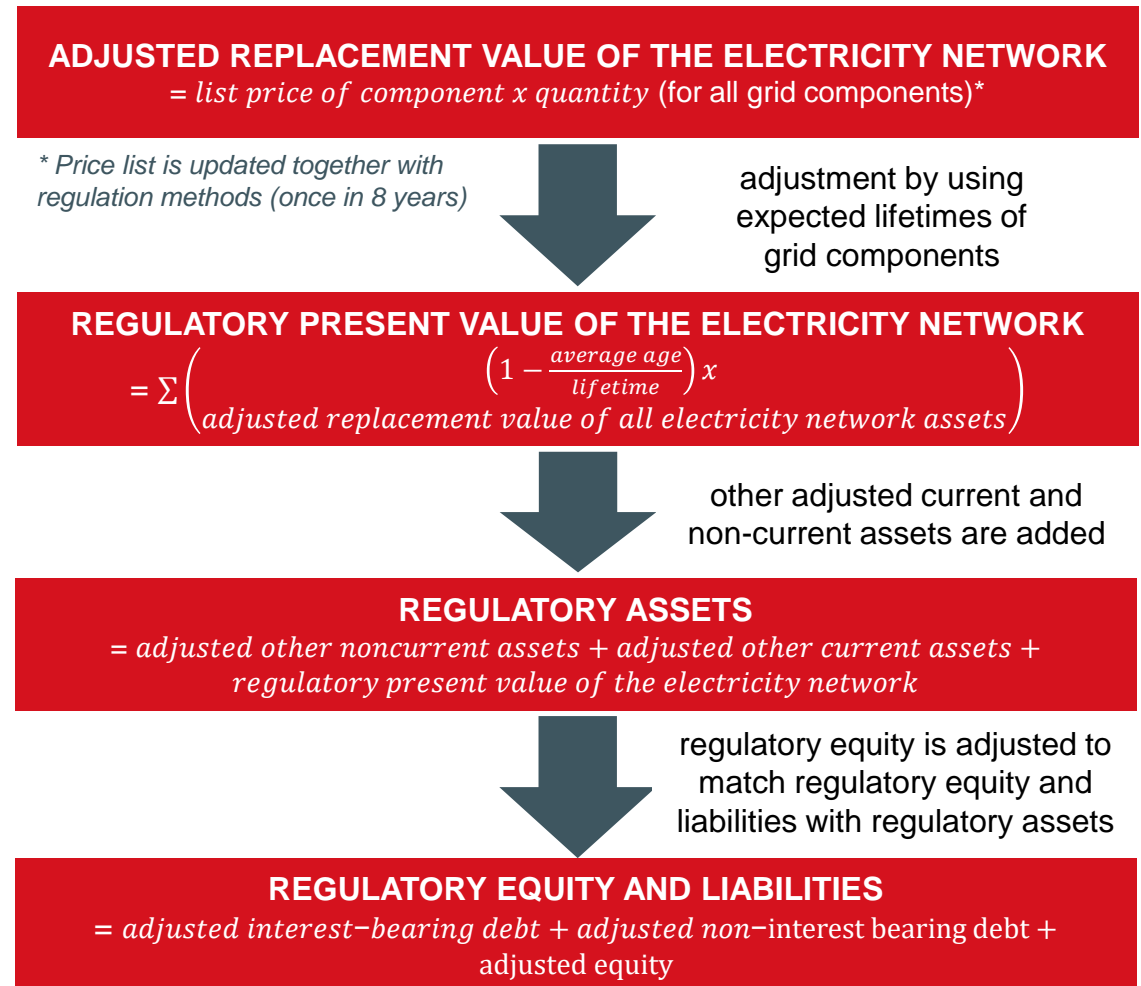
\*Including regulatory cash

\*\*Other is excluded from regulatory capital. Other includes deferred tax liabilities, non-interest bearing debt, provisions for liabilities and charges



# Calculating regulatory capital

- Regulatory capital (equity and liabilities) of the electricity network is derived from the adjusted replacement value of the electricity network assets
- The adjusted replacement value is calculated by valuing all components with list values provided by the Energy Authority
- All components have expected lifetimes, which are used to adjust the replacement values of the components to come up with the regulatory present value of the electricity network
- Equalisation item of regulatory balance sheet is used to match regulatory equity and liabilities with regulatory assets



# Regulatory assets are mainly based on regulatory present value of the electricity network

## Components in calculation of regulatory assets in regulatory model 2016-2023

<b>Regulatory present value of the electricity network</b>	Based on the unit prices of components in the beginning of the regulatory period and component age / maximum age in regulation
<b>Unit prices of components</b>	Prices were updated to replacement value in 2016 based on the unit prices (5Y historical project data)
<b>Investments under construction</b>	Investments under construction are included in the RAB in book value
<b>IT systems</b>	Value in RAB and regulatory depreciation in book value
<b>Regulatory allowed cash</b>	10 % of regulated turnover

# Limited contribution from incentives and adjustments to allowed return

## Incentives in calculation of realized regulatory profit in regulatory model 2016-2023

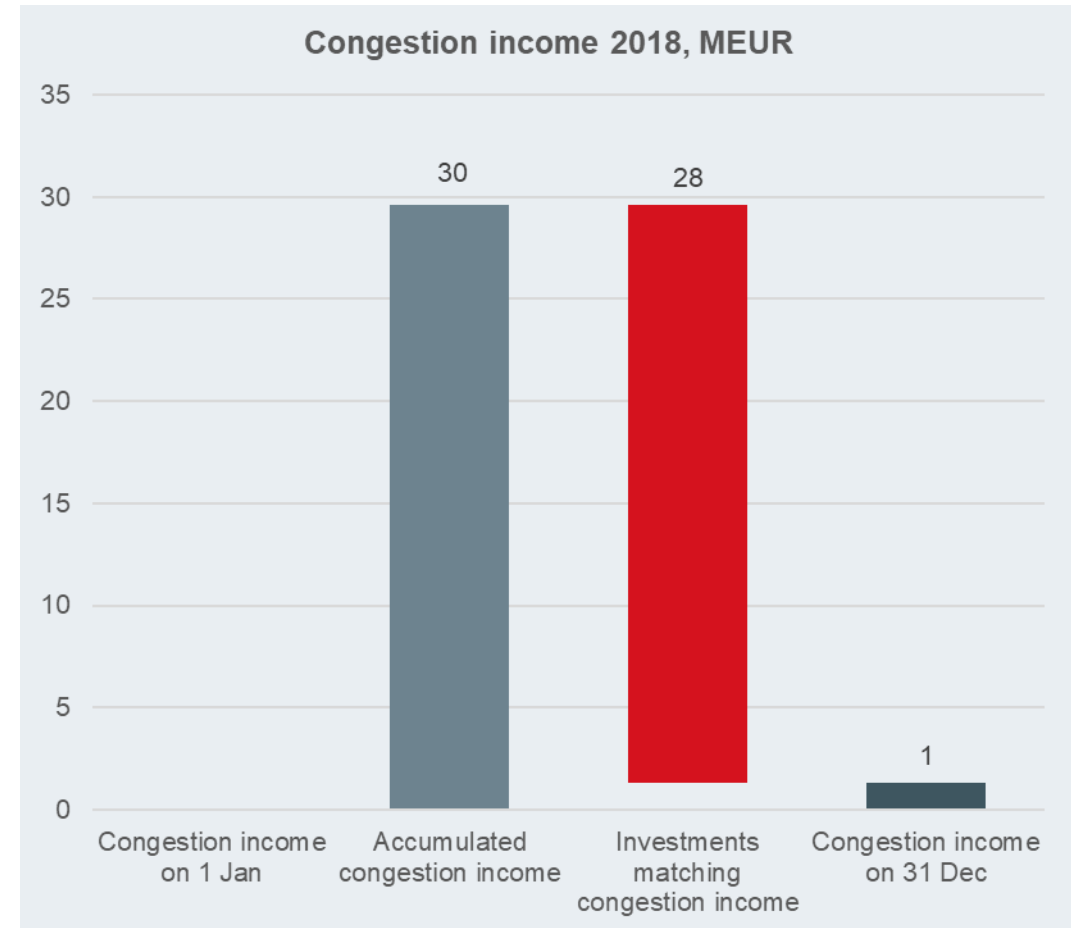
<b>Investment incentive</b>	Promotes reasonable and cost-efficient investments by allowing straight-line depreciations based on the replacement value of the transmission network assets. Components are included in depreciation in replacement value as long as they are utilized
<b>Quality incentive</b>	Cost for the society from non-delivered electricity caused by disturbances and fast reclosing operation, max +/- 3 % of allowed return, benchmarked against 8-year historical average
<b>Efficiency improvement incentive</b>	Target: 0%, max +/- 5 % of allowed return, benchmarked against 4-year historical average
<b>Innovation incentive</b>	Maximum 1,0 % of turnover is reimbursed in allowed return

## Adjustments in calculation of realized regulatory profit in regulatory model 2016-2023

<b>Congestion income</b>	Treated separately from the regulatory allowed return but investments financed with congestion income affect realized regulatory profit through regulatory depreciations
<b>Inflation adjustment to regulatory depreciation</b>	Indexed annually with CPI to match current replacement value

# Congestion income

- Since 1 Jan 2016, congestion income is no longer reported in Fingrid's turnover
- In 2018, MEUR 30 of congestion income was accumulated and MEUR 28 of it was used for the Hirvisuo-Pyhänselkä transmission network investment, which supports the cross-border transmission from northern Sweden
- Realized regulatory profit is positively affected by congestion income because investments financed with congestion income are included in regulatory depreciation but not in book depreciation



Congestion income is used to remove bottlenecks between bidding zones of an electricity exchange

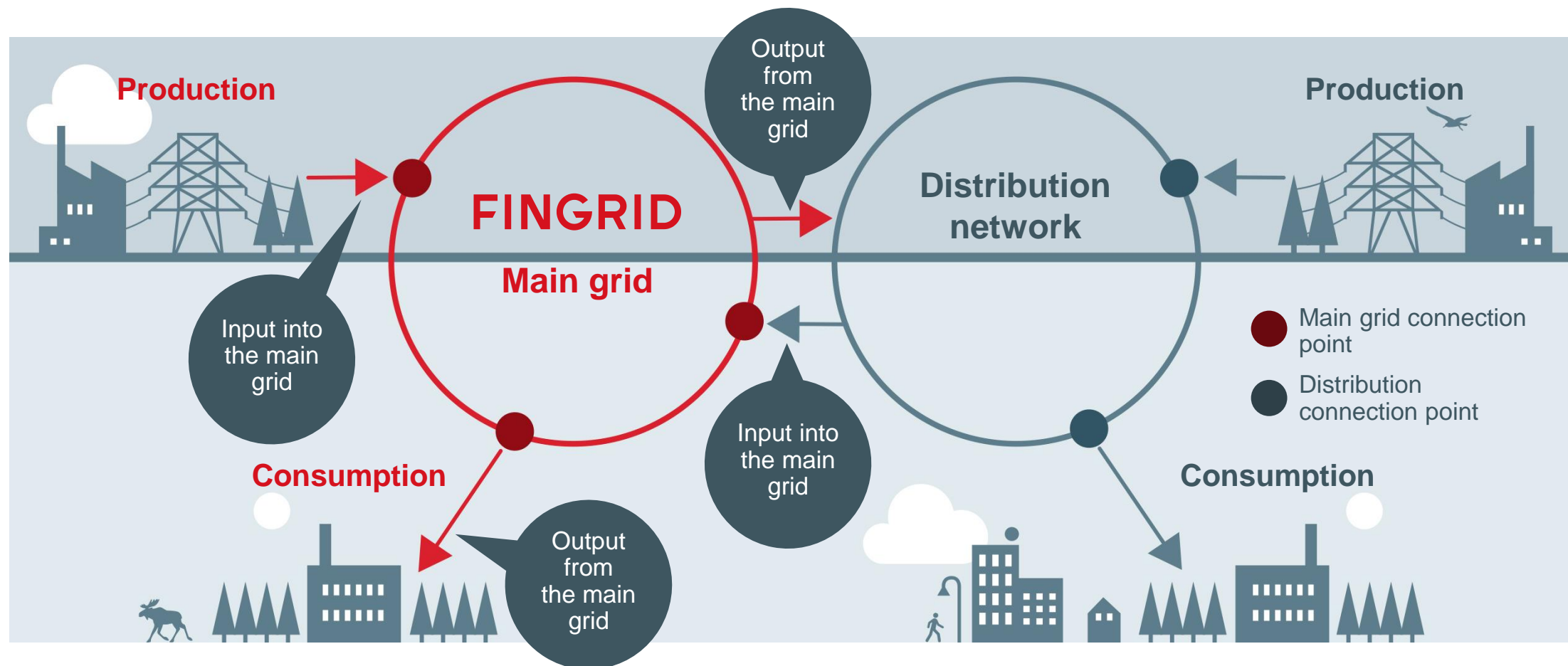


# Operations

## Pricing



# Grid service pricing is applied on both consumption and production



# Grid service pricing is applied on both consumption and production

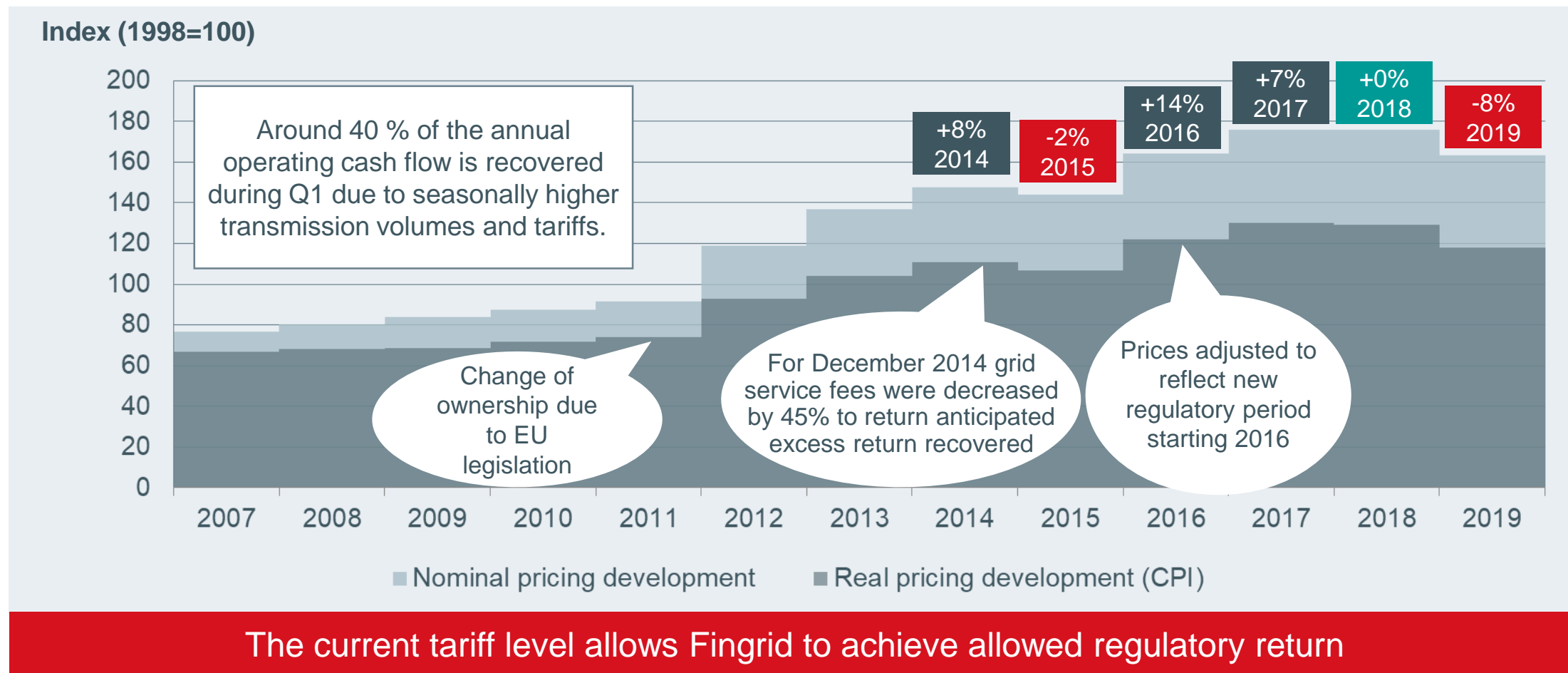
Fingrid defines the grid service pricing structure, which is approved by the Energy Authority

Pricing EUR/MWh	2019
Consumption, winter period*	8,80
Consumption, other times	2,50
Output from the grid	0,90
Input into the grid	0,60
Power plant capacity fee	1900 €/MW/a
Reactive power fee	1000 €/Mvar/m
Reactive energy fee	5 €/Mvarh

\* Winter period: 1.12.-28.2. on Monday – Friday 09.00 – 21.00

Transmission prices are seasonally adjusted and charged on consumption and use of grid

# Development of announced grid service pricing in 2007–2019

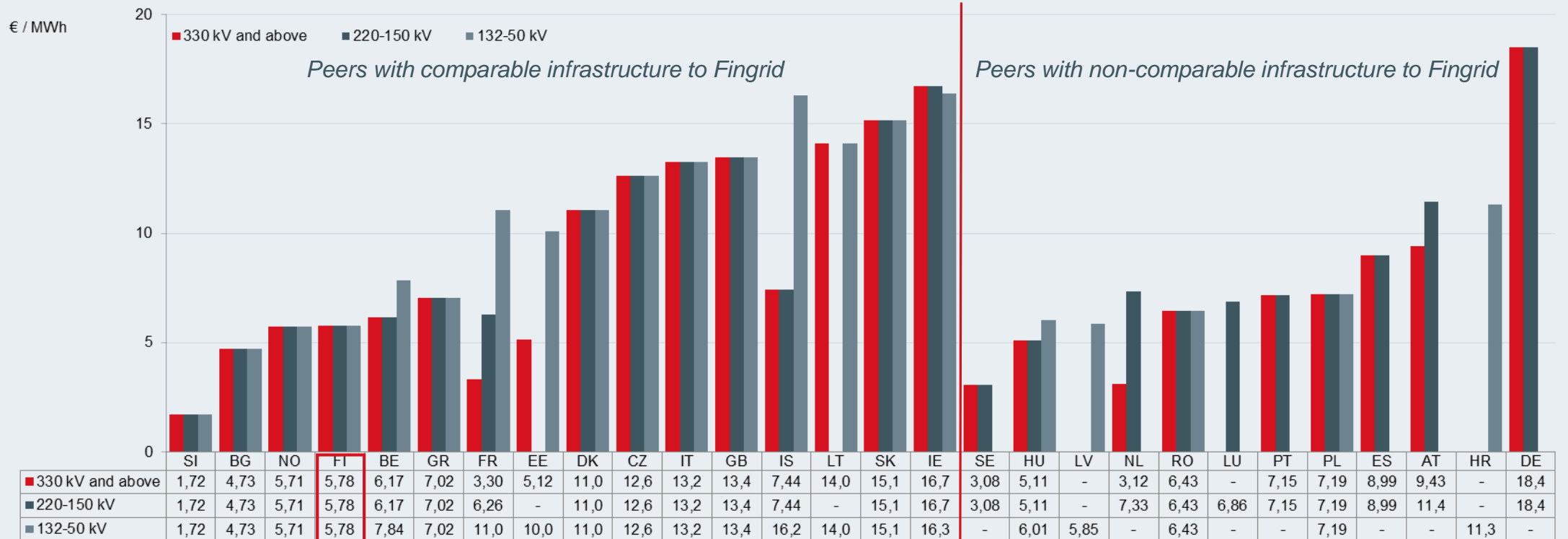




# Transmission charges from generation to consumption

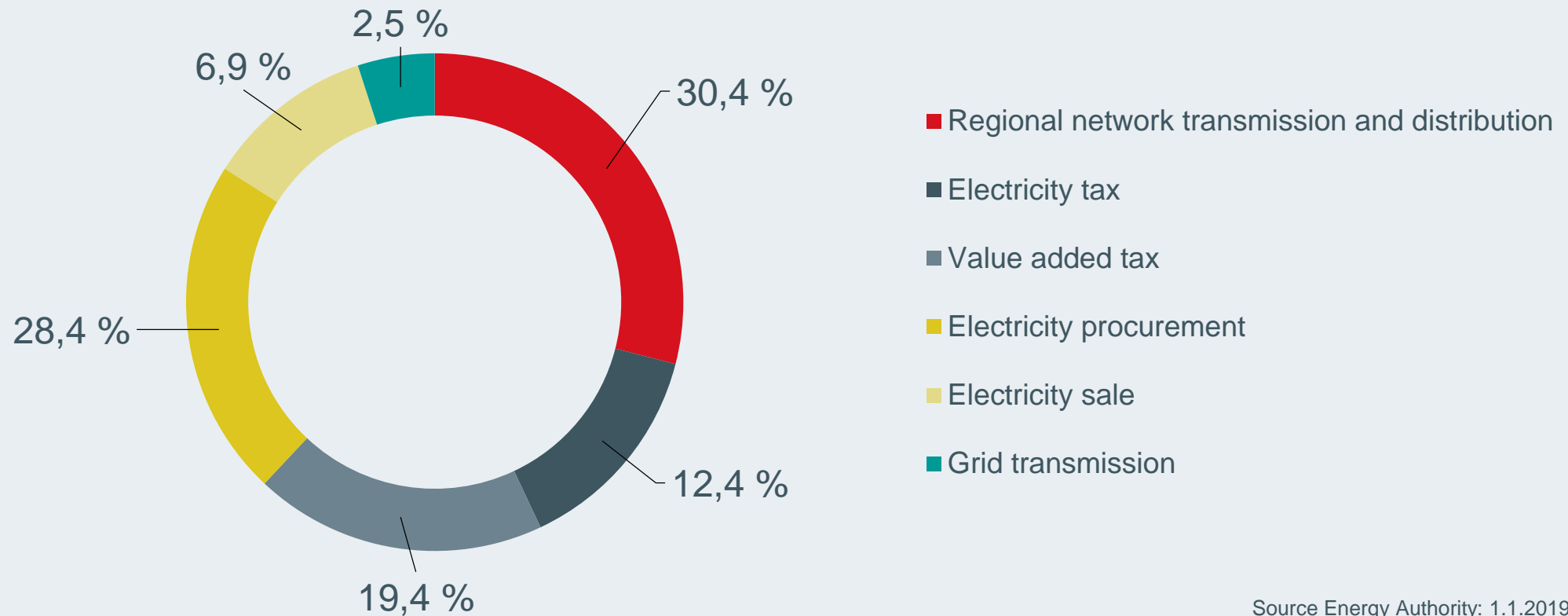
Source: Entso-e

Transmission charges from generation to consumption in Europe 2018 – including EU and ETA countries



Fingrid's effectiveness and efficiency enable low charges

# This is what makes up the consumer price



# Operations

Capex

# Investments are based on 5-25 year grid development plans

- Grid development plans are prepared at three levels, i.e. European, regional and national
- Fingrid decides on investments based on customers' needs, transmission system security and network capacity
- Fingrid's network construction is contracted with fixed price contracts
- Before network construction commences all environmental and planning permits are in place



All Fingrid's investment projects have been done in schedule and budget



# Grid vision 2030

- Total of 12 investments projects to be completed in 2019

Historical Iron Lady OHTL  
will be modernized by  
**2020**

Huittinen – Forssa 400 kV  
**2025**

Forest Line 400kV  
Oulu - Petäjävesi  
**2022**

Extension of the Forest Line 400kV  
Petäjävesi – Hikiä by  
**2030**

Third 400 kV AC interconnection  
between Sweden and Finland  
**2025**

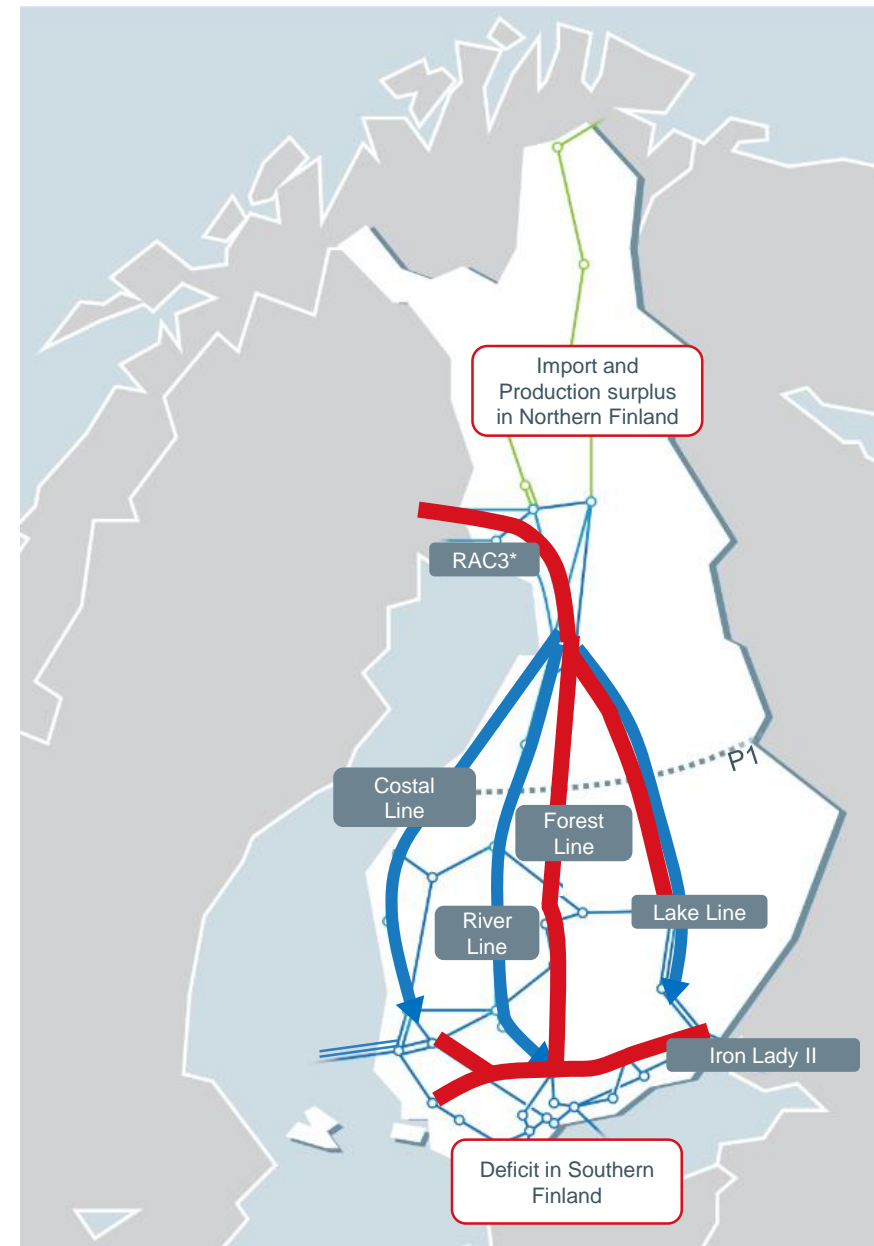
Doubling the Lake Line 400kV  
Nuojua – Huutokoski by  
**2030**

Reinforcement of Helsinki  
region network  
**2025 - 2035**

P1 capacity 5000 MW  
**2030**

\*Project of common interest between Finland and Sweden. The project has received MEUR 4,3 of EU support for the planning phase

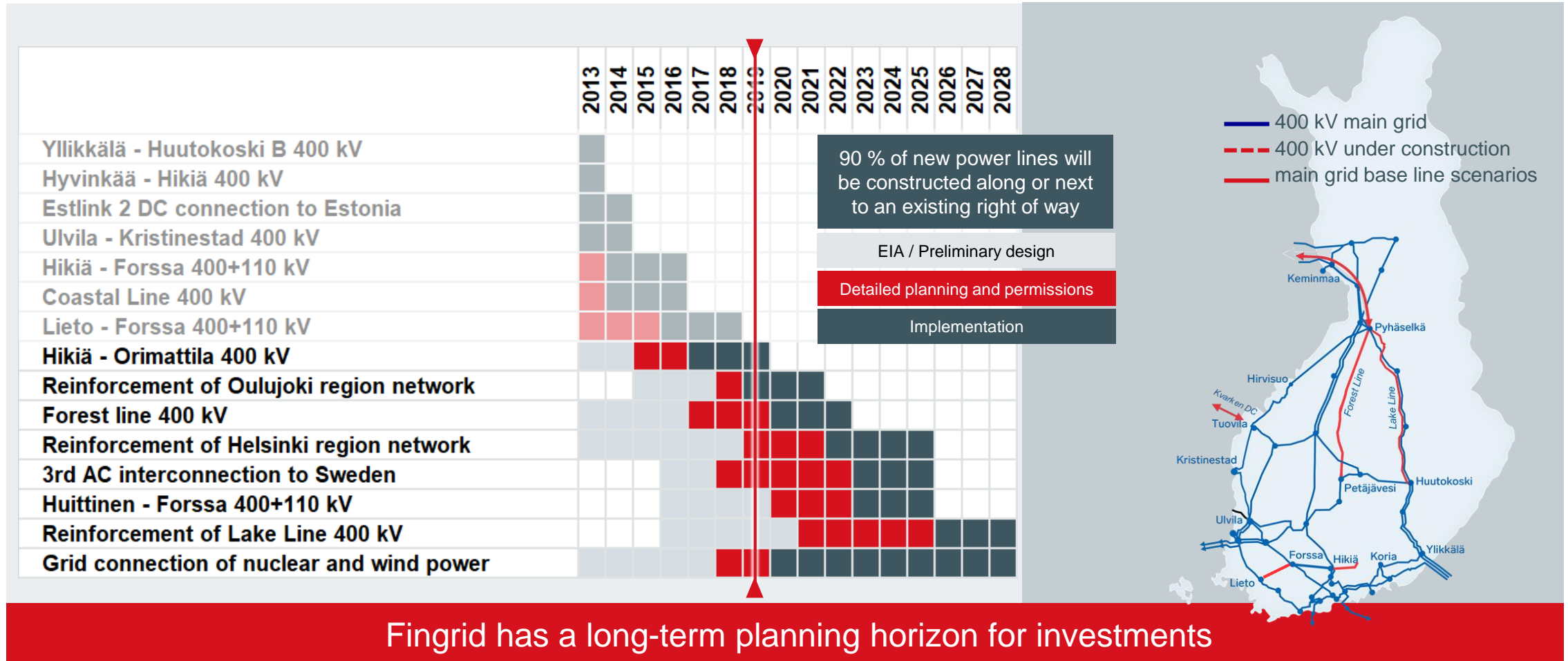
Fingrid Debt Investor Presentation



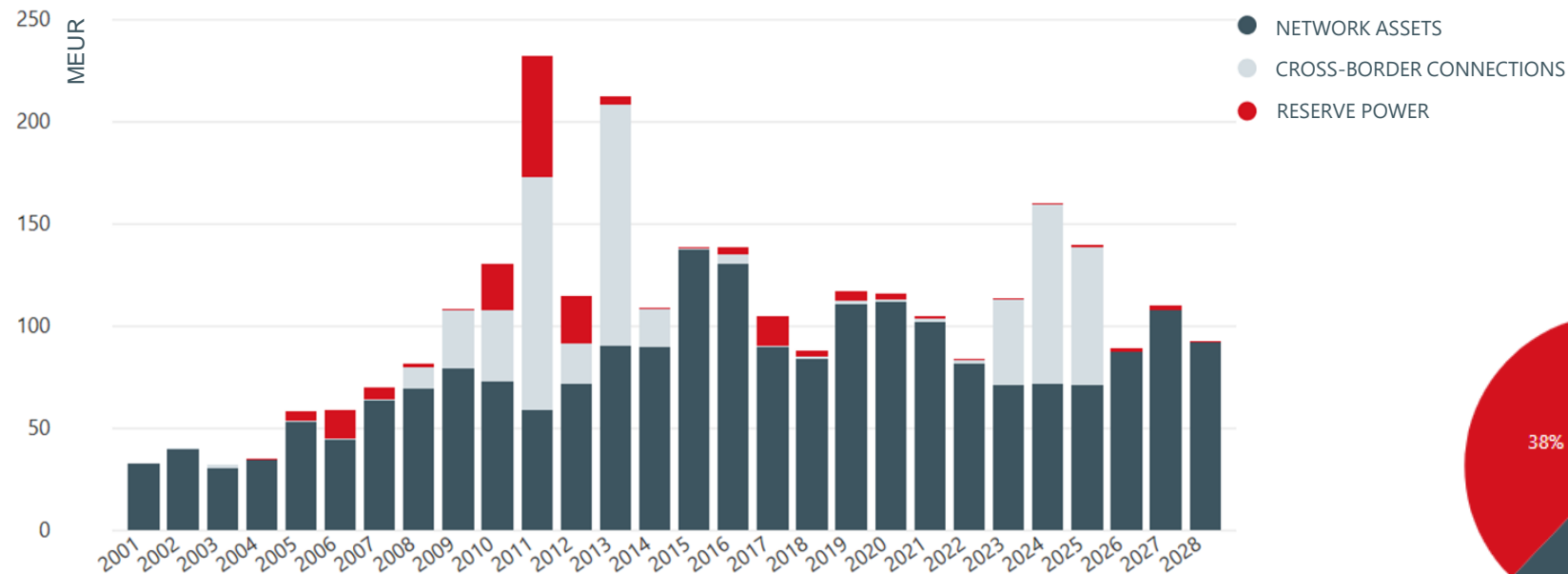
**FINGRID**

# Flexible and long-term investment strategy

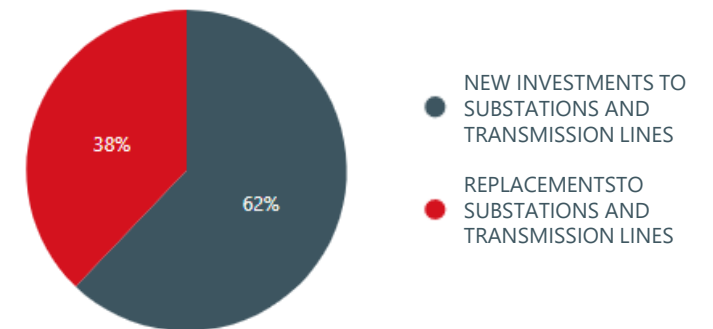
Note: [Click](#) to view National ten year grid development plan in Finland



# Investments in 2001–2028



Investments in  
2019-2028  
EUR 1,2bn



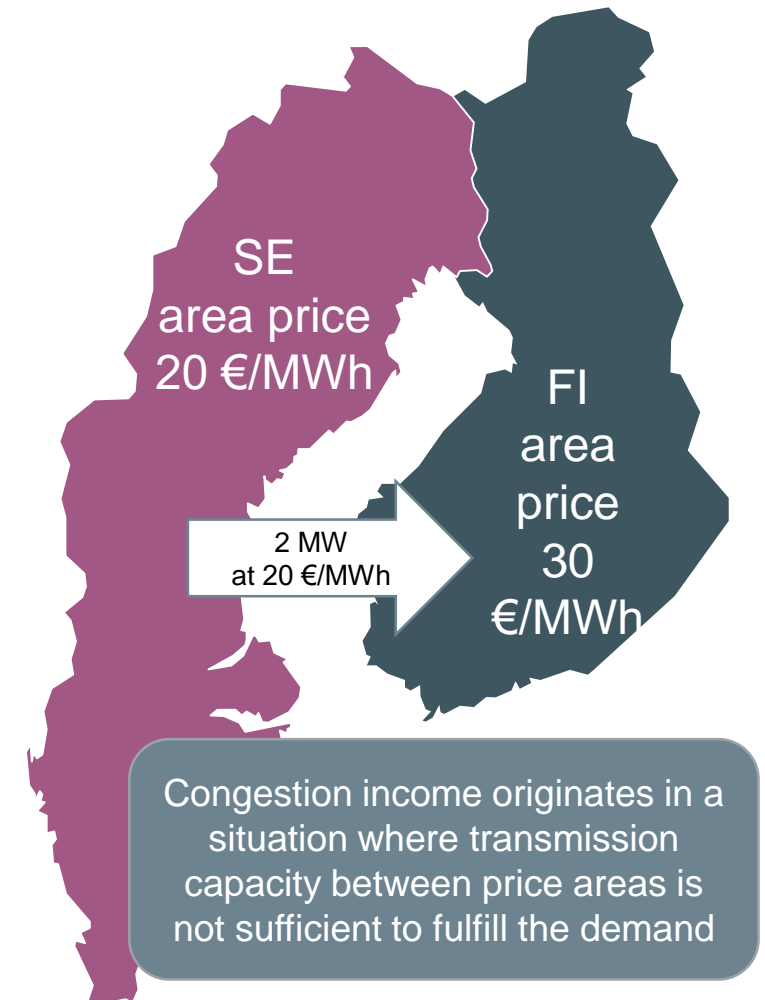
Investments are driven by network aging, market development and connecting new production capacity

# Congestion income generation

## Illustrative example on how congestion income is generated

- Nordpool Spot determines for the hour 19.00 – 20.00 (a day ahead) area price in Finland at 30 €/MWh and in Sweden at 20 €/MWh
- Cross-border transmission capacity between Finland and Sweden is illustratively limited to 2 MW but the consumption in Finland is greater than that, i.e. there is not enough transmission capacity to fulfill all the demand in Finland with the lower prices in Sweden (congestion)
- 2 MWh is transmitted from Sweden to Finland
  - A producer in Sweden receives  $2\text{ MW} * 20 \text{ €/MWh}$ , i.e. 40 €
  - A consumer in Finland pays  $2\text{ MW} * 30 \text{ €/MWh}$ , i.e. 60 €
- There is extra cash (congestion income) generated at the Nordpool Spot i.e. the difference between paid and received funds, 20 €
  - Fingrid receives 10 € and the Swedish TSO receives 10 €
- All congestion income is used in investments reducing congestions

MEUR	2014	2015	2016	2017	2018
Congestion income	51,2	90,9	39,9	25,8	29,7





# Operating environment



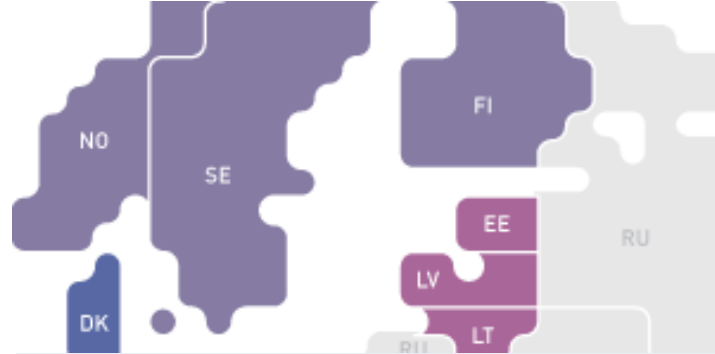


# Fingrid's operating environment in three geographical levels



## Europe

- Vision: integrated electricity market working on one European grid
- Strong changes in the generation fleet (nuclear, renewables, gas)
- Electricity market from Helsinki to Lisbon achieved in 2014
- Structural bottlenecks will remain in the grid – licensing main obstacle



## Baltic Sea region

- Transmission capacity between the Nordic region and Continental Europe will more than double during the next 5 years
- Stronger connection between the Nordic region, Baltic states and Poland



## Finland

- Energy and climate strategy 2030
- Share of price elastic generation decreases
- Decarbonization efforts increase electricity demand when clean electricity replaces fossil fuels
- Role of cross-border connections increases

# Towards a highly developed electricity market in Europe

- Improving efficiency and competitiveness of the power sector
  - efficient market price
  - cross-border trade
  - efficient dispatching via "the invisible hand" of the markets
- Delivering benefits for end-users and trust to market players
- Contributing to the security of supply
- Reaching the 20-20-20 goals and the 2030 climate targets of the EU: better environment, more renewables

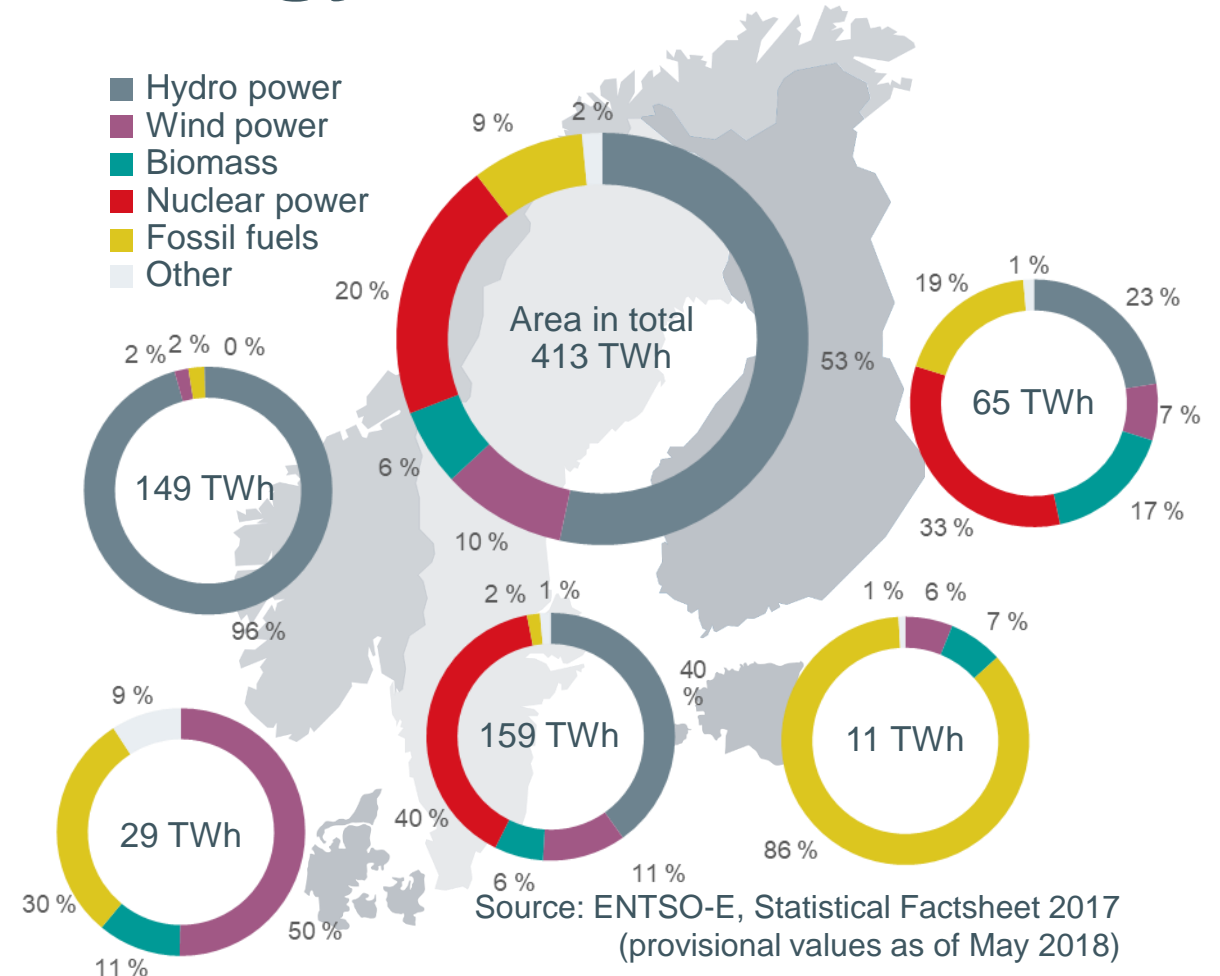


Market coupling

Electricity market from Helsinki to Lisbon since 2014

# Hydro power is the main energy source in the Nordic region

- Significant hydro power generation capacity in Norway and Sweden drive the electricity price in Finland
- Nuclear power generation is an important base load power generation source in Sweden and Finland
- Renewable power generation consist of hydro power, biomass fired cogeneration, wind power and also small amounts of solar power



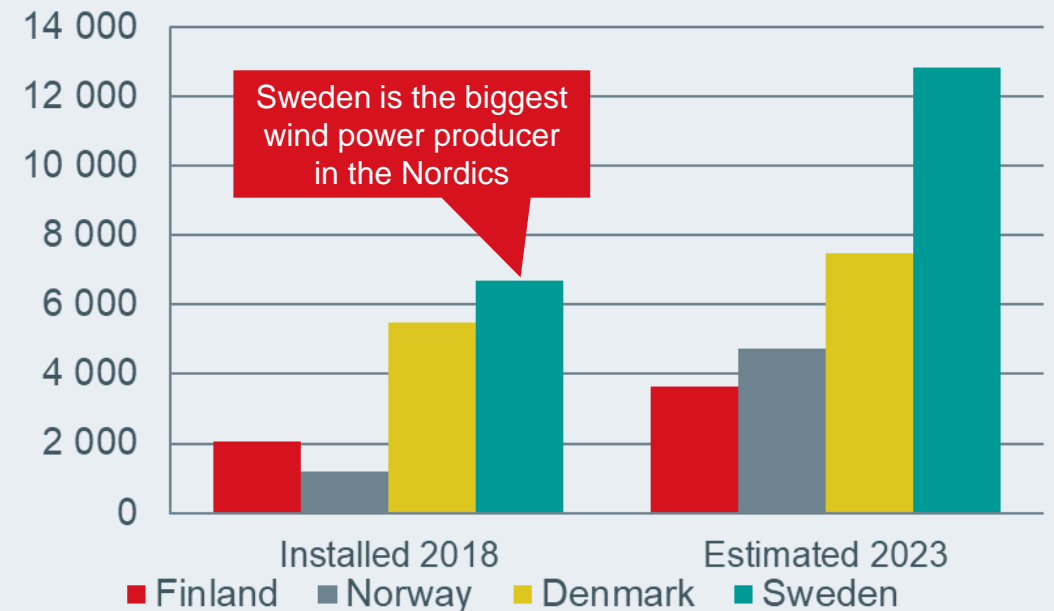
Nordic electricity price is driven by hydrological conditions in Scandinavia



# Wind power competitiveness has clearly improved

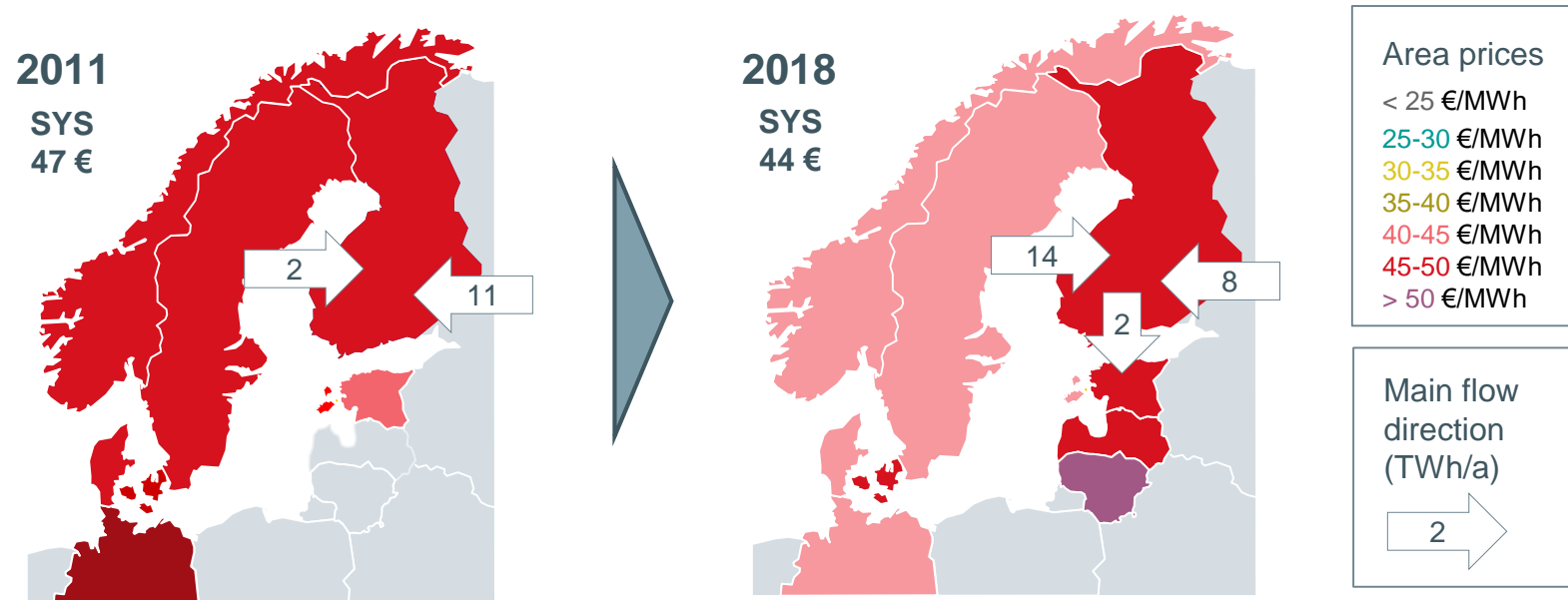
- First ~2000 MW of wind in Finland has been built with incentive from feed-in tariff
- By 02/2019, investment decisions in Finnish wind farms with no subsidies have been made with a total amount of ~450 MW
- In addition, new feed-in premium auction for renewable electricity generation was completed in 2019: all applicants were wind power projects, ~1.4 TWh selected (corresponds to ~450 MW)
- Integration of wind power is one of the key drivers for Fingrid's grid development, with significant investments already completed and more in the pipeline to enable transition towards a carbon-free society

**Nordic wind capacity is expected to nearly double during 2018-2023**



Fingrid promotes the development of market based wind power generation in Finland

# Nordic electricity spot prices increased in 2018



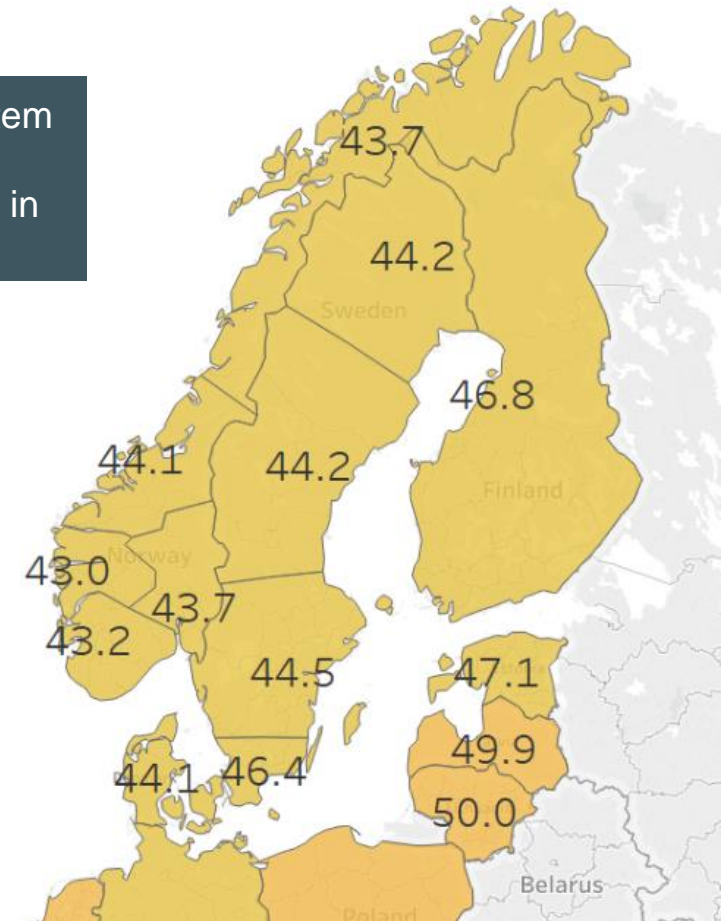
- Electricity prices increased substantially in 2018 compared to previous years
  - Relatively dry hydrological situation and increase in commodity prices, particularly EUAs\*, contributed to the increase
- Electricity consumption in Finland has started to slightly increase after large drop caused by the financial crisis
- Olkiluoto 3 nuclear power plant trial runs are expected to start in 2019. Olkiluoto 3 will increase Finnish production capacity roughly by 13%

\*European Emission Allowances

# Finland is well-connected in Baltic Sea power market

- Finland is a net importer of electricity mainly from Scandinavia
- Finland is expected to remain as a net importer of electricity even after the 1600 MW nuclear project Olkiluoto 3 is commissioned
- Cross-border lines between Finland and Sweden have a crucial role of limiting price differentials between the markets
- Fingrid has established a 24/7 service to ensure continuous specialist availability to solve issues in cross-border connections, and is investing in new transmission capacity between the countries.

Nordic system  
price  
44 €/MWh in  
2018

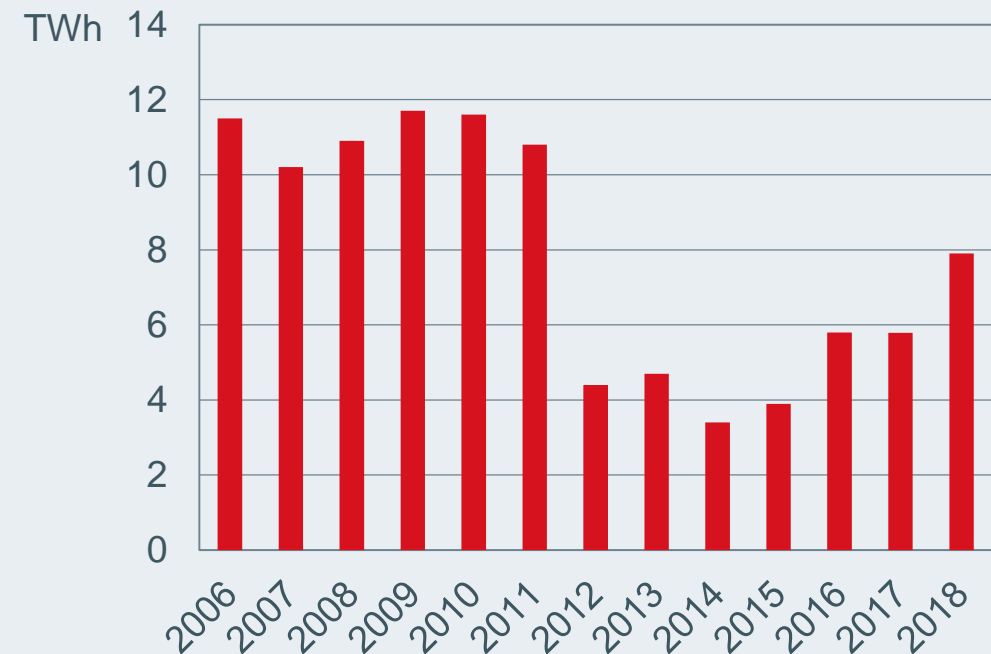


Finland is a net importer of electricity mainly from Scandinavia

# Cross-border transmission between Finland and Russia

- Imports from Russia increased substantially in 2018 due to higher Nordic wholesale prices
- Russia now has capacity payment of around 30-60 EUR/MWh on exports to Finland which limits the trade below historical levels

Annual electricity export from Russia to Finland

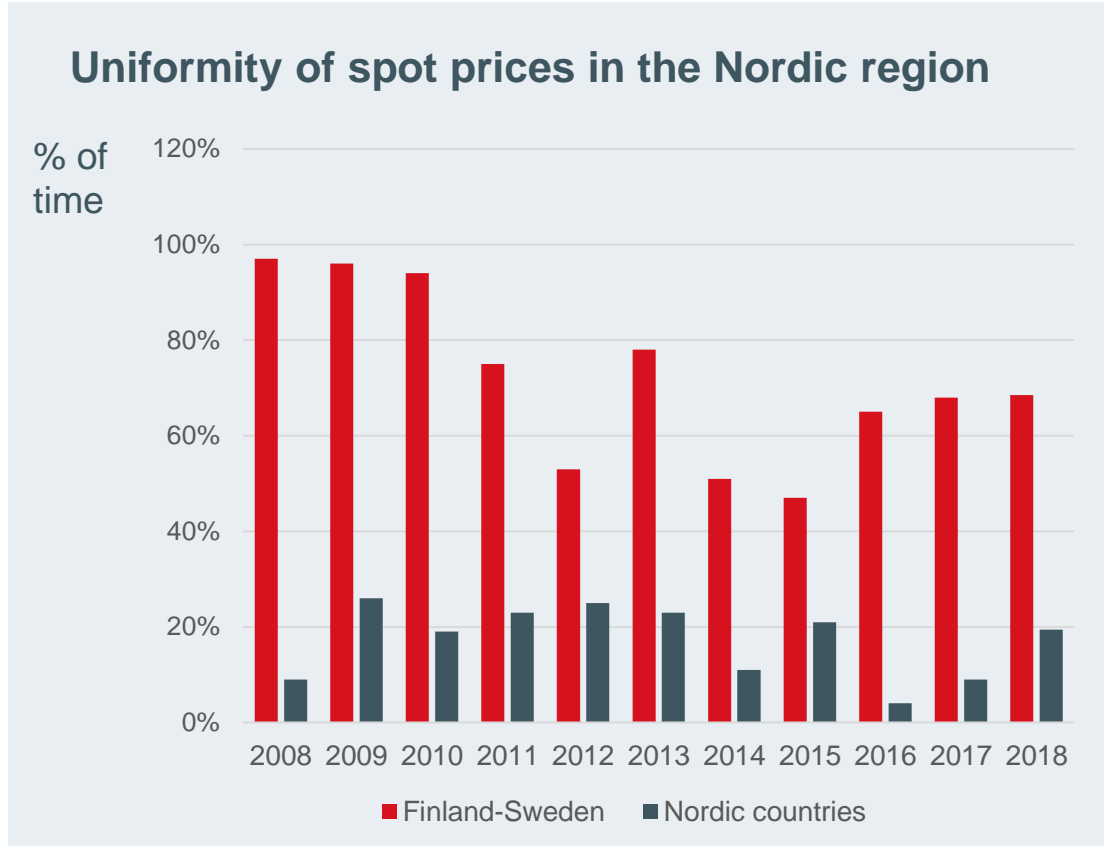


Finland's cross-border transmission with Russia is driven by power market development in EU and Russia



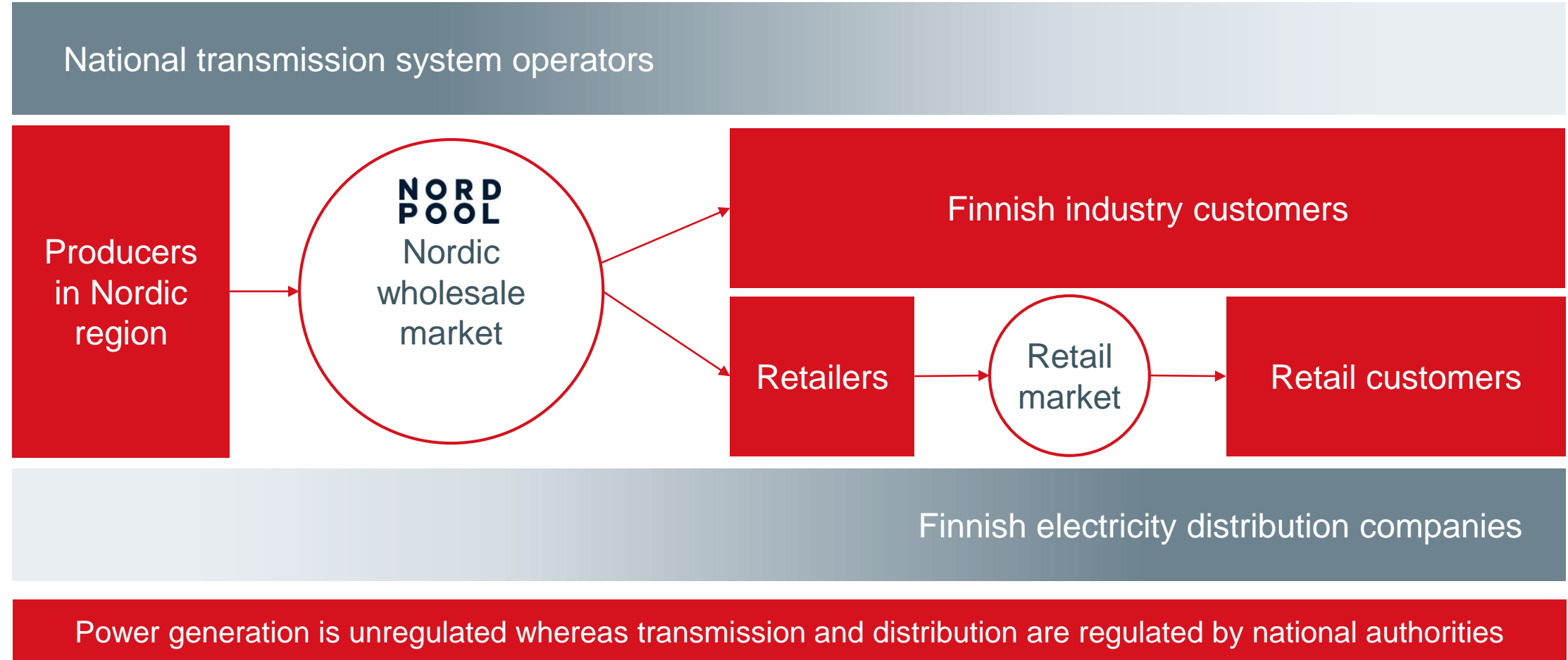
# The Baltic Sea region\* forms a well-developed regional market

- In 2018 a single price area between Finland and Sweden existed 69 percent of the time and 19 percent of the time between all the Nordic countries
- Price uniformity is impacted by hydrological situation, in addition to interconnector availability



\* Finland, Sweden, Norway, Denmark, Poland, Estonia, Latvia, Lithuania

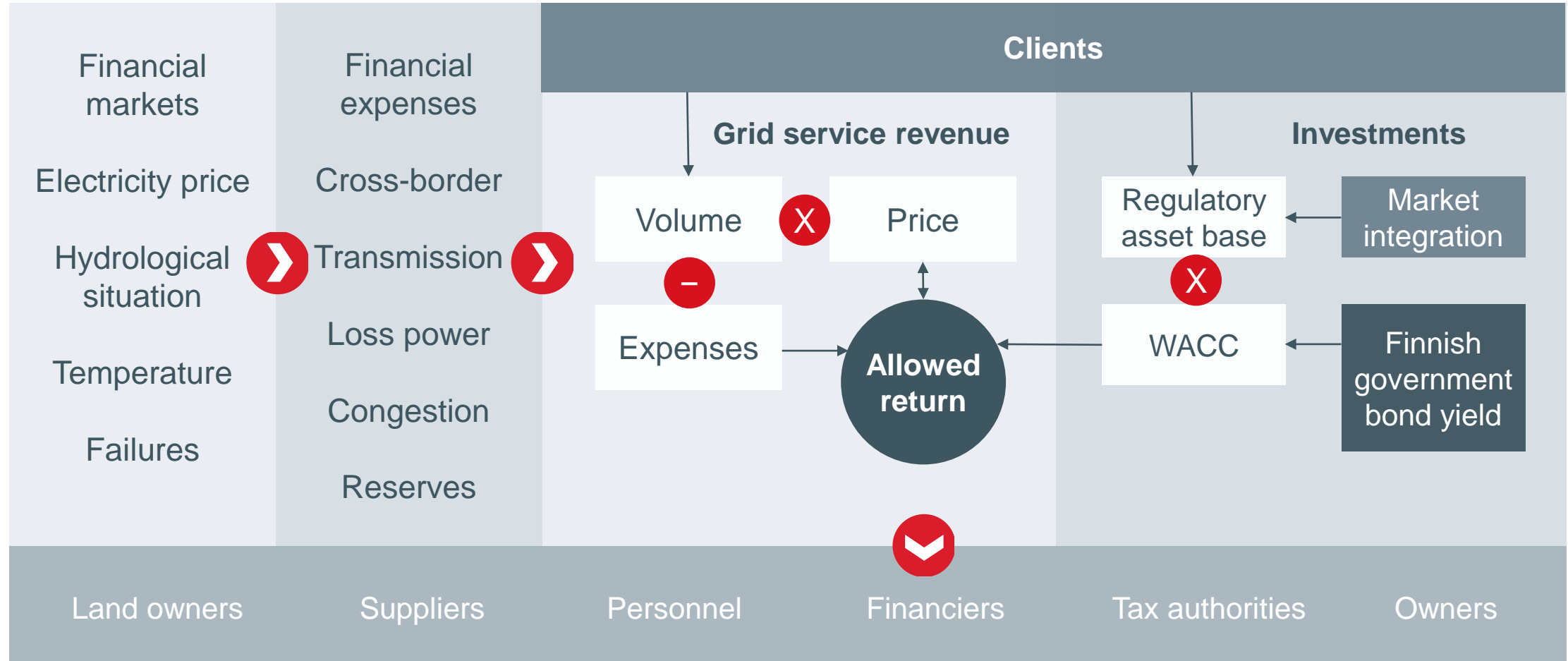
# Market structure and business areas in the Baltic Sea area



# Financials

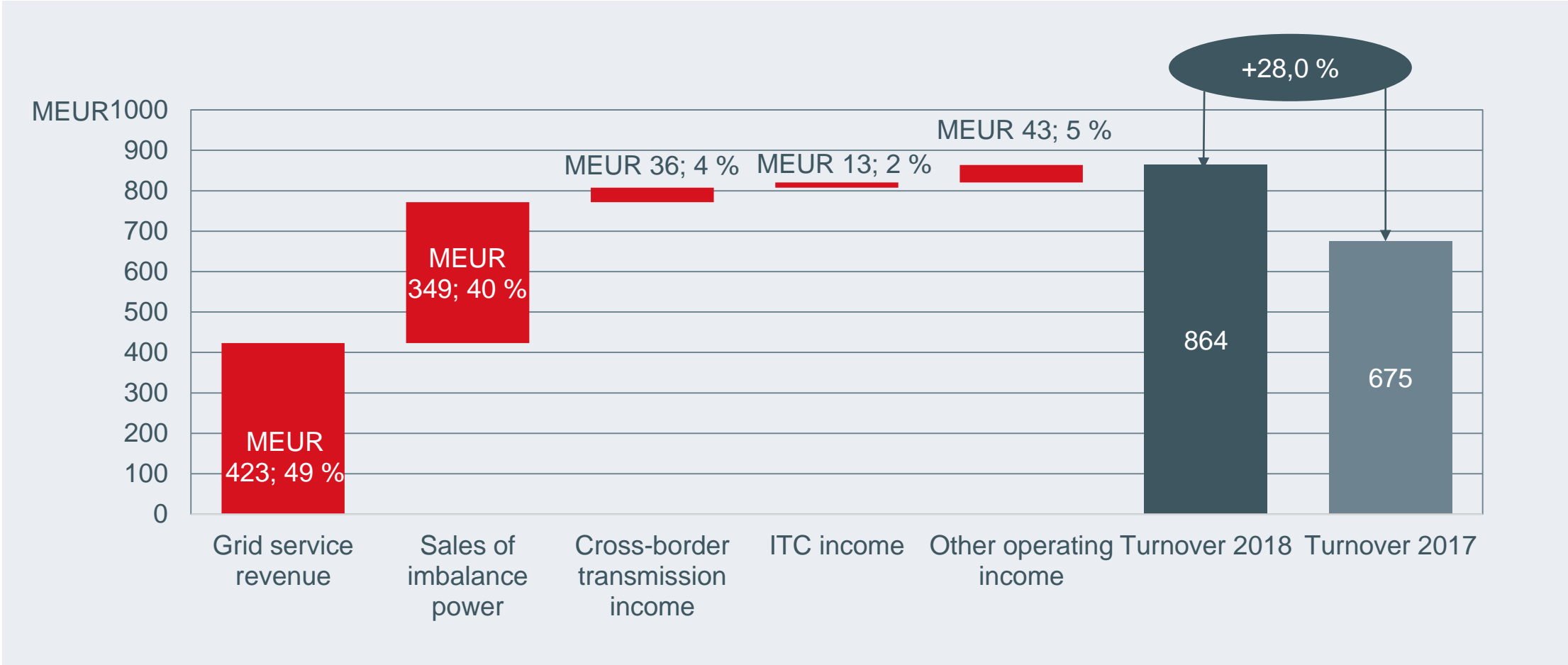
Financial performance

# Main economic drivers of transmission network operations





# IFRS Turnover breakdown in 2018



# Breakdown of main sources of turnover

## Grid service revenue

- Grid service revenue consists mainly of the unit price for electricity transmission multiplied by electricity consumption and production

## Sales of imbalance power

- Fingrid sells and purchases imbalance power in order to stabilise the hourly power balance of the balance responsible parties
- The net of imbalance power sales and purchases is slightly positive and used to cover reserve costs
- Imbalance power boosts turnover as well as costs

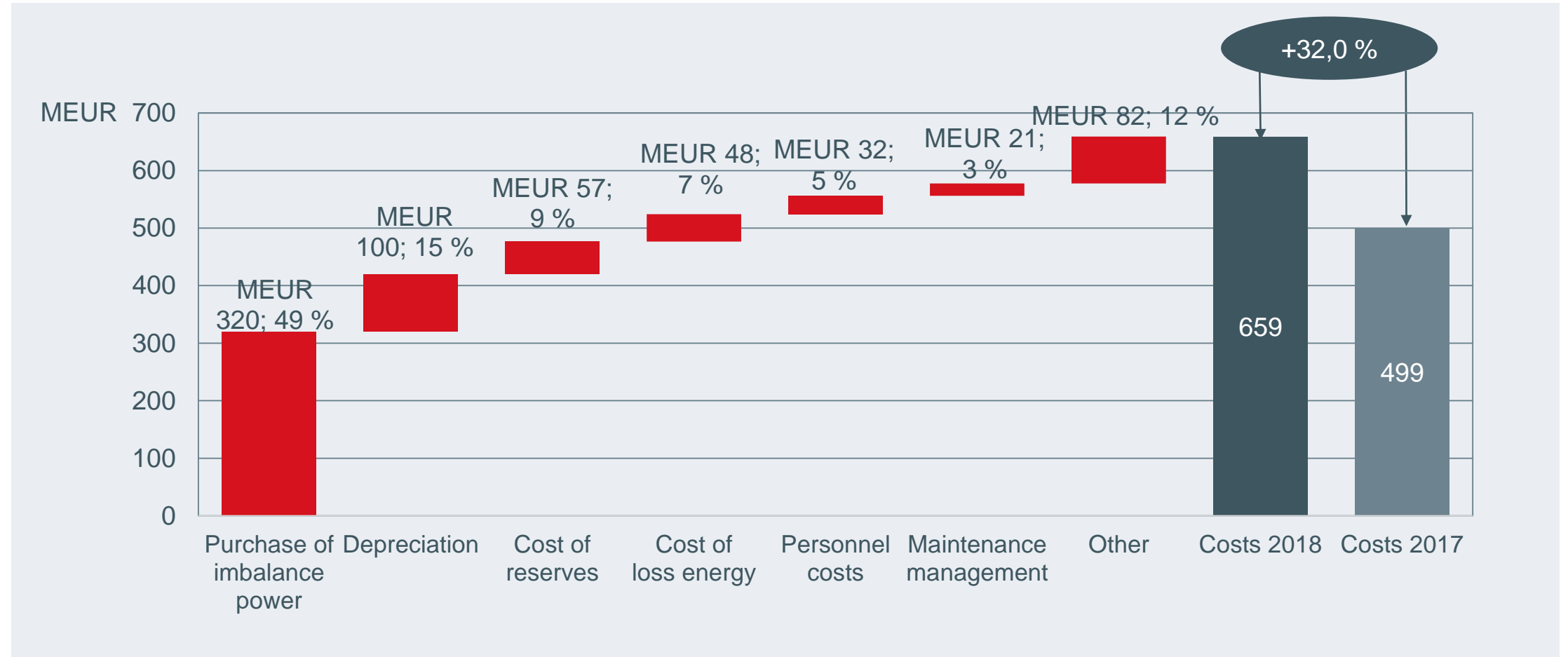
## Cross-border transmission income

- Fingrid offers transmission services on the cross-border connections with Russia available to all electricity market parties. The contractual terms are equal and public.

## ITC income (Inter TSO Compensation)

- Income received for the use of Fingrid's grid by other European TSOs

# IFRS Cost breakdown 2018



# Breakdown of main costs

## Purchase of imbalance power

- Fingrid sells and purchases imbalance power in order to stabilise the hourly power balance of the balance responsible parties
- The net of imbalance power sales and purchases is slightly positive and used to cover reserve costs
- Imbalance power boosts turnover as well as costs

## Depreciation

- The level of yearly depreciations are stable thanks to continuous and stable investments

## Cost of reserves

- Fingrid maintains reserve power to balance the frequency of the electricity grid
- The cost of reserves is recovered in grid network tariff and payments collected in balance services

## Cost of loss energy

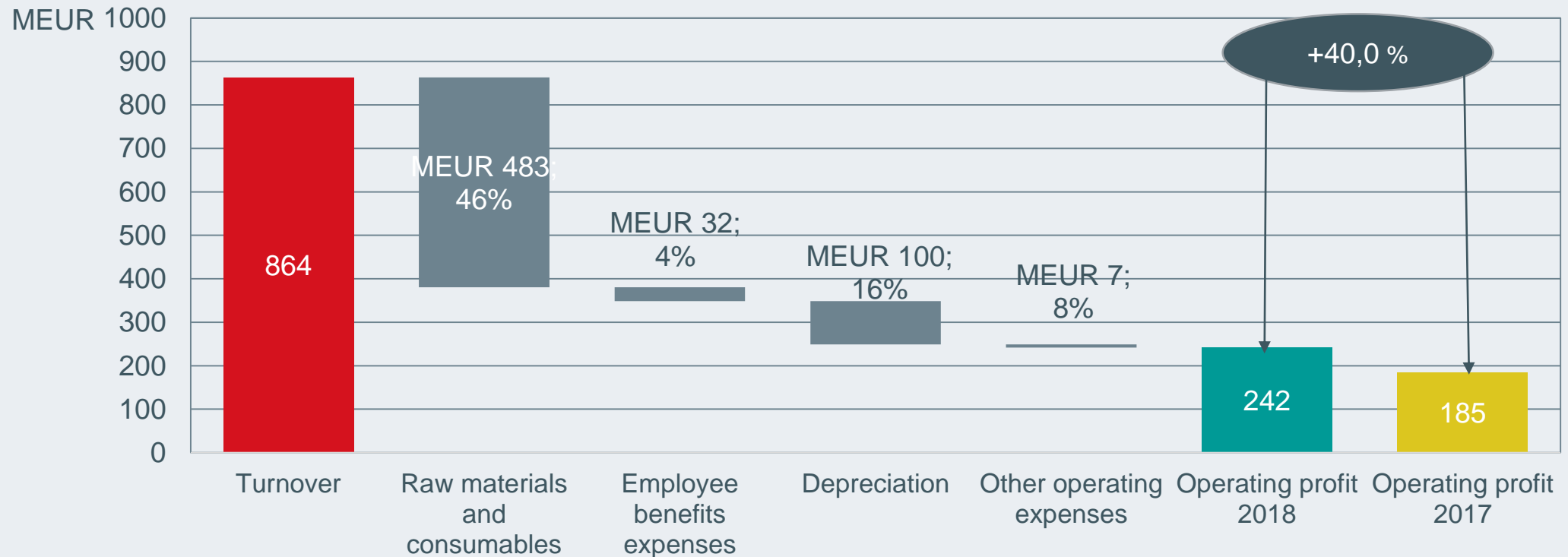
- Loss energy is hedged up to four years in advance to ensure stable tariff

## Personnel costs

- Fingrid's personnel costs are moderate thanks to outsourcing model used in most operations



# IFRS Operating profit in 2018



# Fingrid Oyj consolidated profit and loss (IFRS)

- Turnover has increased because of pricing increases and imbalance power sales treated as external turnover
- Since 2016, congestion income is no longer presented as turnover in profit and loss statement
- Employee expenses remain at notably low level due to outsourced operating model

IFRS profit and loss 2012 – 2018 in MEUR							
	2018	2017	2016	2015	2014	2013	2012
<b>TURNOVER</b>	<b>864</b>	<b>675</b>	<b>599</b>	<b>605</b>	<b>572</b>	<b>547</b>	<b>526</b>
Raw materials and consumables used	-483	-302	-248	-241	-264	-270	-267
Employee benefits expenses	-32	-29	-29	-26	-25	-23	-22
Depreciation	-100	-97	-99	-94	-92	-82	-76
Other operating expenses	-7	-62	-30	-82	-48	-58	-66
<b>OPERATING PROFIT (EBIT)</b>	<b>242</b>	<b>185</b>	<b>192</b>	<b>163</b>	<b>143</b>	<b>115</b>	<b>95</b>
<i>EBIT-%</i>	<i>28 %</i>	<i>27 %</i>	<i>32 %</i>	<i>27 %</i>	<i>25 %</i>	<i>21 %</i>	<i>18 %</i>
Finance income and costs	-15	-23	-19	-34	-11	-29	-7
<b>PROFIT BEFORE TAXES*</b>	<b>229</b>	<b>164</b>	<b>174</b>	<b>129</b>	<b>133</b>	<b>87</b>	<b>88</b>
Income taxes	-46	-33	-35	-26	-26	3	-21
<b>PROFIT FOR THE PERIOD</b>	<b>183</b>	<b>131</b>	<b>139</b>	<b>104</b>	<b>106</b>	<b>91</b>	<b>67</b>
Other comprehensive income**	0	-1	6	5	0	-5	6
<b>TOTAL COMPREHENSIVE INCOME</b>	<b>183</b>	<b>130</b>	<b>145</b>	<b>109</b>	<b>106</b>	<b>86</b>	<b>73</b>

\* Includes share of profit of associated companies

\*\* Other comprehensive income consists of cash flow hedges, translation reserves and available-for-sale financial assets.

Operating profit stabilized on a solid level

# Fingrid Oyj consolidated assets (IFRS)

- Tangible assets stabilized because of stabilized investments in grid assets
- Tangible assets were on average 77 % of total assets
- Current assets on average 10 % of total assets

IFRS assets 2012 – 2018 in MEUR							
	2018	2017	2016	2015	2014	2013	2012
Intangible assets	190	188	185	183	183	181	179
Tangible assets	1 634	1 676	1 690	1 677	1 640	1 623	1 485
Investments (associated companies and available for sale)	12	10	10	10	11	11	9
Receivables	58	46	40	51	55	60	103
<b>NON-CURRENT ASSETS</b>	<b>1894</b>	<b>1 920</b>	<b>1 925</b>	<b>1 922</b>	<b>1 889</b>	<b>1 875</b>	<b>1 776</b>
Inventories	12	14	12	13	13	11	10
Derivative instruments	19	0	3	3	11	2	4
Trade receivables and other receivables	100	96	82	70	57	76	88
Financial assets recognised in income statement at fair value	71	73	58	93	116	195	207
Cash and cash equivalents	14	10	22	23	63	22	6
<b>CURRENT ASSETS</b>	<b>216</b>	<b>193</b>	<b>177</b>	<b>203</b>	<b>261</b>	<b>307</b>	<b>316</b>
<b>TOTAL ASSETS</b>	<b>2 110</b>	<b>2 113</b>	<b>2 102</b>	<b>2 124</b>	<b>2 151</b>	<b>2 182</b>	<b>2 092</b>

Tangible assets on a stable level thanks to a defined long-term investment plan

# Fingrid Oyj consolidated liabilities (IFRS)

- Growth in equity has resulted from low dividend payments in 2010-2015
- Current liabilities on average total 17 % of total equity and liabilities
- Borrowings (current and non-current) totalled on average 55 % of total equity and liabilities
- Trade payables on average 19 % of current liabilities

IFRS liabilities 2012 – 2018 in MEUR							
	2018	2017	2016	2015	2014	2013	2012
Share capital and premium	112	112	112	112	112	112	112
Retained earnings	662	687	654	606	567	542	465
Other equity	-1	0	0	-6	-12	-12	-7
<b>EQUITY</b>	<b>772</b>	<b>798</b>	<b>766</b>	<b>711</b>	<b>667</b>	<b>643</b>	<b>570</b>
Borrowings	772	813	843	907	962	975	1 032
Other non-current liabilities	131	141	146	174	170	160	185
<b>NON-CURRENT LIABILITIES</b>	<b>903</b>	<b>954</b>	<b>989</b>	<b>1 081</b>	<b>1 132</b>	<b>1 136</b>	<b>1 217</b>
Borrowings	288	269	265	236	263	319	212
Derivative instruments	4	8	8	30	17	16	11
Trade payables and other liabilities	142	84	75	66	72	70	83
<b>CURRENT LIABILITIES</b>	<b>434</b>	<b>361</b>	<b>347</b>	<b>332</b>	<b>352</b>	<b>404</b>	<b>305</b>
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>2 110</b>	<b>2 113</b>	<b>2 102</b>	<b>2 124</b>	<b>2 151</b>	<b>2 182</b>	<b>2 092</b>

Balance sheet has remained stable in 2012-2018



# Fingrid Oyj consolidated cash flow (IFRS)

- Strong operating cash flow
- Peak investment years behind and now stabilized
- Cash and cash equivalents reduced to achieve more appropriate capital structure

IFRS cash flow 2012 – 2018 in MEUR							
	2018	2017	2016	2015	2014	2013	2012
Cash flow from operations	303	273	252	279	227	202	181
Change in working capital	-18	-40	-20	-63	-21	-43	-37
<b>Net cash flow from operations</b>	<b>285</b>	<b>233</b>	<b>232</b>	<b>216</b>	<b>206</b>	<b>159</b>	<b>145</b>
Net cash flow from investments	-82	-107	-139	-135	-111	-226	-146
<b>Net cash flow after investments</b>	<b>204</b>	<b>126</b>	<b>94</b>	<b>80</b>	<b>95</b>	<b>-68</b>	<b>-1</b>
Net borrowings	-29	-24	-40	-78	-51	84	22
Dividends paid	-174	-98	-90	-65	-82	-13	-11
<b>Net cash flow from financing activities</b>	<b>-202</b>	<b>-122</b>	<b>-130</b>	<b>-143</b>	<b>-133</b>	<b>71</b>	<b>11</b>
<b>Net change in cash and cash eqv.</b>	<b>2</b>	<b>4</b>	<b>-37</b>	<b>-62</b>	<b>-38</b>	<b>3</b>	<b>10</b>
Cash and cash equivalents 1 Jan	84	80	117	179	217	214	204
Cash and cash equivalents at the end of period	85	84	80	117	179	217	214

Strong and improving net cash flow after investments

# Financials

## Financing

# Financial risk management principles

## Liquidity risk

- Cash, cash equivalents and committed credit facilities cover at least 110 percent of short-term debt
- Undrawn MEUR 300 revolving credit facility (RCF) until 2022
- Continuous cash flow forecasting

## Refinancing risk

- Refinancing in any given year less than 30 % of total debt
- Even maturity profile
- Diversified funding sources
- Strong credit rating from at least two major rating agencies

## Credit and counterparty risk

- Prequalification of suppliers based on predetermined financial criteria
- Continuous credit risk analysis and monitoring
- Counterparty credit rating requirements and limits
- ISDAs in force for derivatives

## Market price risk

- Derivatives only for hedging purposes
- Interest rate risk hedging of debt; convergence towards 12 months' average interest re-fixing time
- Material currency and commodity risk fully hedged
- Loss power hedging horizon up to 4 years, deliveries of each forthcoming year fully hedged in advance

Fingrid applies a conservative financial policy



# Fingrid debt programme overview

- Long presence in the capital and money markets since 1998 with debt programmes:
  - EMTN Programme, MEUR 1,500 since 1998
  - ECP Programme, MEUR 600 since 1998
  - CP Programme, MEUR 150 since 1998
- MEUR 300 Revolving Credit Facility (RCF) until December 2022 is provided by the dealers. The facility supports the company's liquidity reserve and is undrawn
- A total of MEUR 50 uncommitted overdraft limits to be used for liquidity management
- Long-term bilateral loans provided by the European Investment Bank (EIB) and Nordic Investment Bank (NIB)

Fingrid's core relationship banks are the dealers of the EMTN Programme



BNP PARIBAS



Fingrid is a well-established issuer on international private and public debt capital markets



# Green bond framework established

Note: [Click](#) to view more information of Fingrid's Green Financing

- Fingrid established a Green Bonds Framework in 2017 that enables the company to acquire financing for green projects
- Fingrid's Green Bond Framework received a Medium Green\*\* assessment from third party CICERO
- Fingrid has defined eligible investment projects as those **i)** reducing losses, **ii)** connecting renewable power\* **iii)** cross-border projects and/or **iv)** smart grids
- Around MEUR 150 in 16 investment projects identified as Green bond eligible investment costs mainly in 2015-2018

\* Wind, hydro, solar and bioenergy

\*\* Scale: dark green, medium green, light green, brown

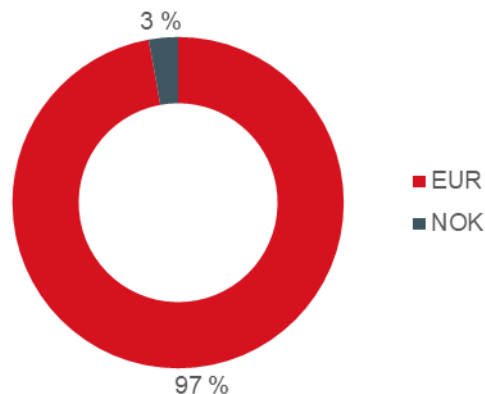


Fingrid issued inaugural MEUR 100 green bond in November 2017

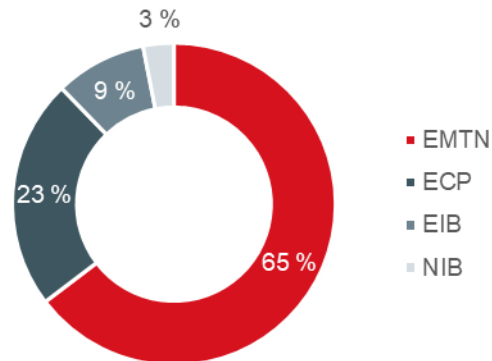
# Weighted average debt maturity was 5,0 years at the end of 2018

- Fingrid aims to maintain a well-distributed debt maturity profile
- Debt portfolio consists mostly of private placements and a couple of public bonds

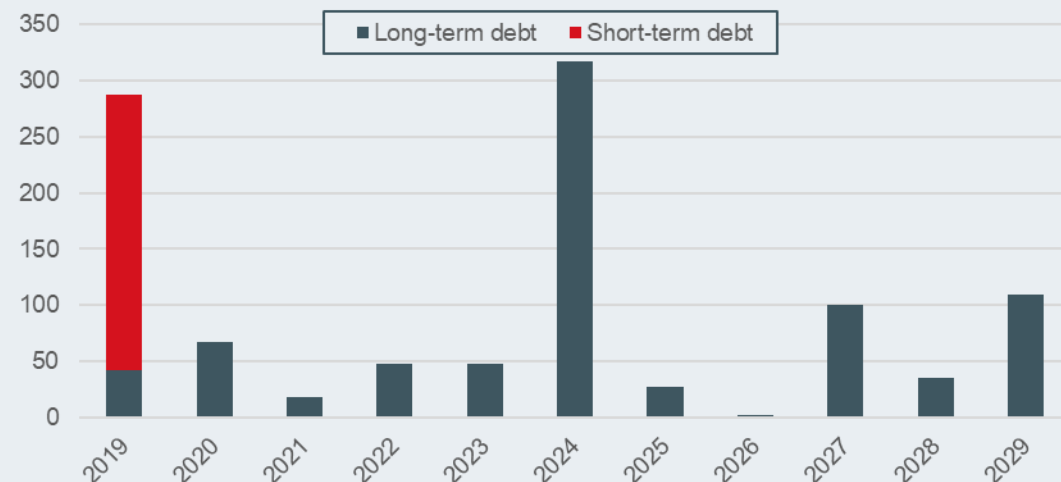
Total debt by currency 12/2018



Total debt by source 12/2018



Debt maturity profile as of 31 December 2018



Short-term debt*	27% of total	MEUR 288**
Long-term debt	73% of total	MEUR 772**
<b>Total gross debt</b>		<b>MEUR 1 060**</b>

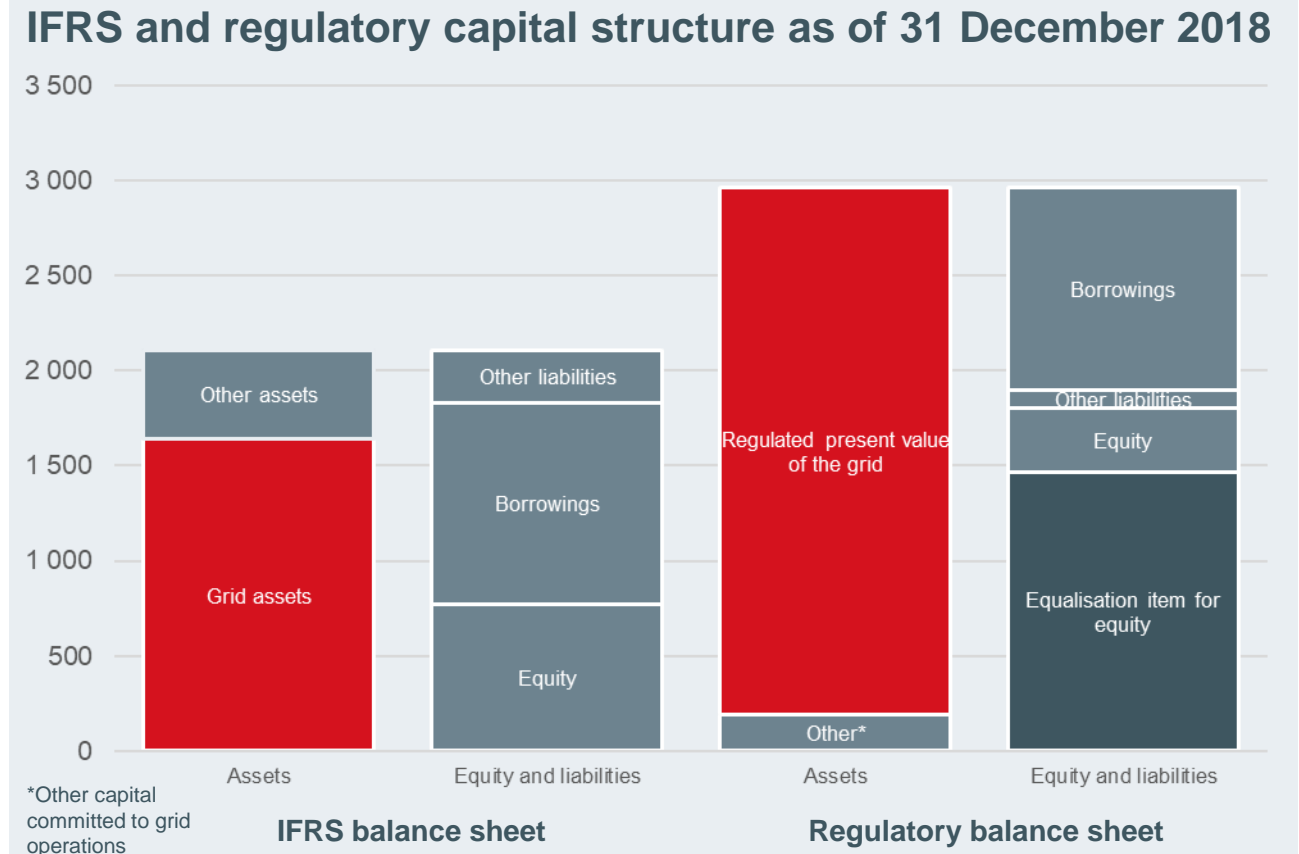
\* Debt maturing in next 12 months

\*\* Presented as notional values and hence, may differ from the published IFRS figures

Debt maturity profile is well-distributed

# Strong capital structure

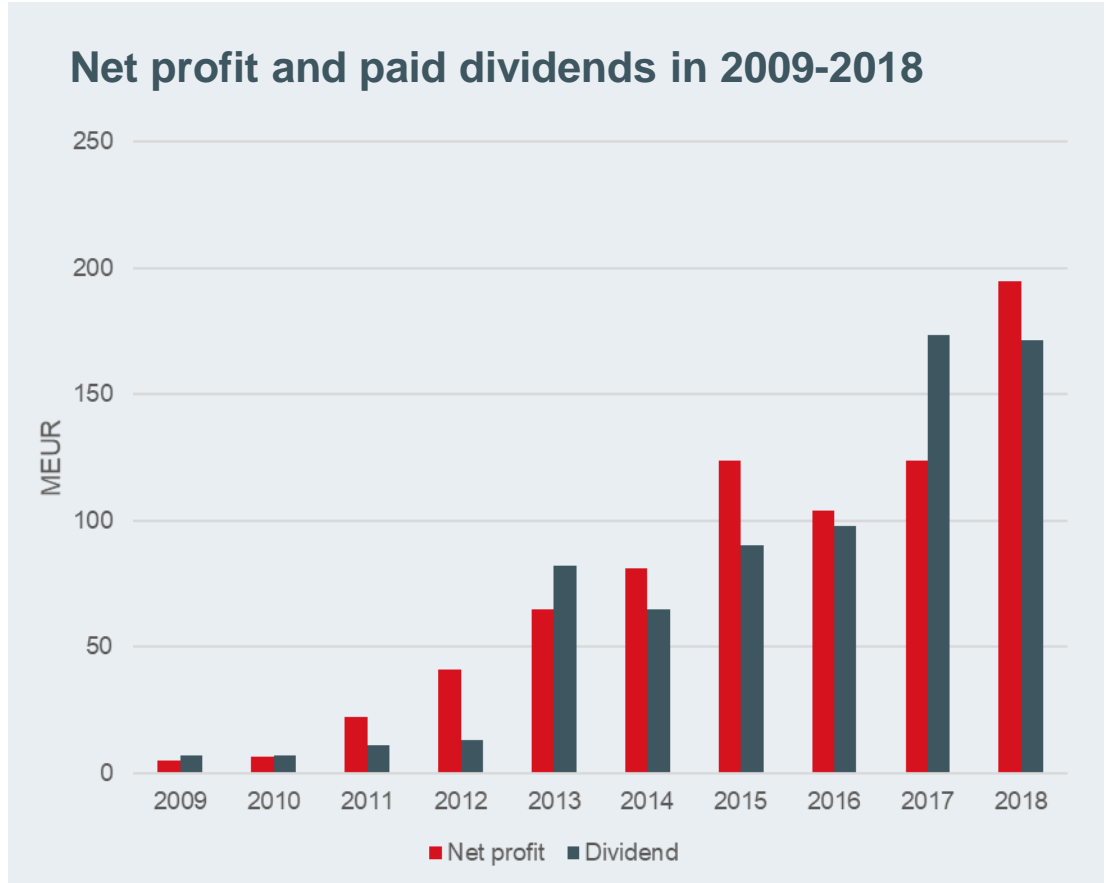
- Total shareholders' equity and liabilities amount to MEUR 2,110
- Regulatory balance sheet amount to around MEUR 2,950 of which approximately MEUR 2,900 is used as adjusted capital in calculation of allowed financial result
- Grid assets are recognised at fair value for the purposes of the company's regulatory balance sheet



Equity to total assets ratio is 37 % (IFRS) and 61% (regulatory)

# Fingrid targets to distribute substantially all of parent company profit as dividend

- The guiding principle is to distribute substantially all of the parent company profit as dividend
- MEUR 171 dividend of 2018 parent company FAS net profit
- Prevailing conditions and investment needs are always considered before taking decision on dividend to be paid
- This will enable long-term implementation of the strategy while allowing operative flexibility



Dividend policy aims to ensure reasonable return and take company's financial targets into account



# Ratings



# Fingrid aims to maintain high credit ratings

**S&P**  
**A-1+/AA-**  
**Stable**

Short-term/  
Issuer Rating

*"The upgrade primarily stems from the positive impact on Fingrid's earnings from modifications in the regulatory model for TSOs in Finland. These changes have increased Fingrid's allowed regulatory return, and made it more stable. Thanks to these changes, alongside previous tariff increases and the company's modest capital spending program, Fingrid has seen an improvement in its credit measures, which we believe should be sustainable."*

*S&P Global, 28 October 2016*

**Fitch\***  
**F1/A+**  
**Stable**

Short-term/  
Senior  
Unsecured

*"The downgrade mainly reflects the change in the dividend policy . . . Fingrid has a strong position for the remaining two ratios (net debt/regulatory asset base (RAB) ratio and FFO interest coverage), which is reflected in the Stable Outlook, together with the very solid business profile"*

*Fitch Ratings, 28 January 2019*

*"Fingrid's 'A' rating is the highest that Fitch assigns to a regulated network in Europe, reflecting a very strong business and financial profile."*

*Fitch Ratings, 28 January 2019*

**Fingrid is committed to maintain credit rating at least at 'A-' level in all circumstances**

\*Rating downgrade from 'AA-' on 28 January 2019

# Key rating factors according to the rating agencies

## S&P Global

- 1** Fingrid's business risk profile is underpinned by a strong, stable and predictable regulatory framework. Fingrid's financial risk profile benefits from low cash flow volatility
- 2** The Stable Outlook reflects our assumption that Fingrid will remain strategically important to the Finnish government as Finland's monopoly TSO, with stable and predictable underlying earnings supported by a favourable regulatory framework

## Fitch

- 1** The company benefits from a benign regulatory framework, which includes the possibility of setting its own tariffs in the context of the allowed profits
- 2** Fingrid benefits from the ability to pass on its operational costs to tariffs. The company has been consistently ranked among the most efficient TSOs in global peer studies, demonstrating strong operational efficiency

Fingrid's low business risk profile and supportive regulatory framework are key credit strengths

# Thank you!

## **Fingrid Oyj**

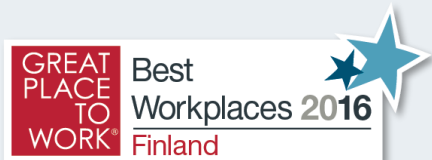
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# FINGRID