



# Finland's Transmission System Operator

**FINGRID**

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# 01

## Executive summary



# Fingrid is the sole transmission system operator (TSO) in continental Finland<sup>1</sup>

Fingrid transmits  
in its own network  
approximately

**78%**

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

<sup>1</sup>Kraftnät Åland is the transmission system operator of Åland



# Fingrid's network covers entire Finland

**14,000**

km of power lines

**320**

km of submarine cable

**45,000**

towers

**115**

substations

**10**

reserve power plants

**3**

HVDC stations

# Fingrid has achieved its targets in 2011-2020

	2011	2020
Net profit	MEUR 33	MEUR 85
Return	Below regulatory allowed	Below regulatory allowed*
Dividend	MEUR 7	MEUR 136**
Efficiency	High benchmark study rankings	High benchmark study rankings
Investments	In schedule and budget	In schedule and budget

\*Cumulative deficit approximately MEUR -30 in 2020-2023

\*\* Total amount proposed by Board of Directors

Fingrid has a proven track record of continuously executing its defined strategy

# Fingrid has achieved its targets in 2011-2020

<b>Regulation</b>	Fair, stable and predictable TSO regulatory model (until 12/2023)
<b>Ownership</b>	The Finnish state owns 53% and Finnish financial institutions 47%*
<b>Strategic importance</b>	Considered strategically important holding to the Finnish state**
<b>Operating leverage</b>	Construction and maintenance of the electricity transmission network is outsourced
<b>Efficiency &amp; quality</b>	Fingrid is one of the most cost efficient and reliable TSOs worldwide
<b>Financials</b>	Continuously solid profitability
<b>Rating</b>	Fingrid benefits from AA-/A+ ratings (S&P, Fitch***)

\* The Finnish state has 71% of the voting rights in the company

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

\*\*\* Senior unsecured rating from Fitch is 'A+' and issuer default rating 'A'

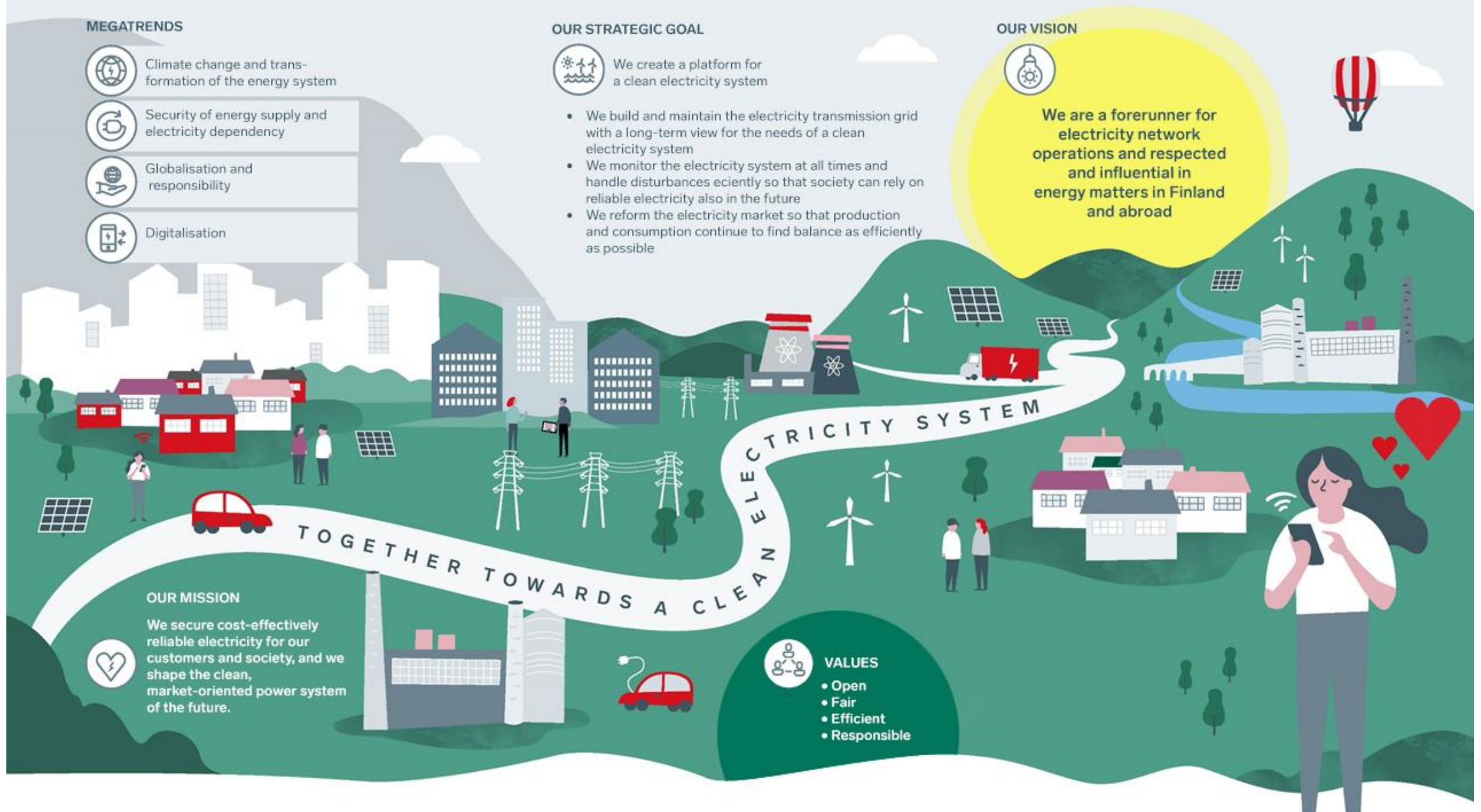
Fingrid provides a solid long-term investment in the power system in Finland



# 02

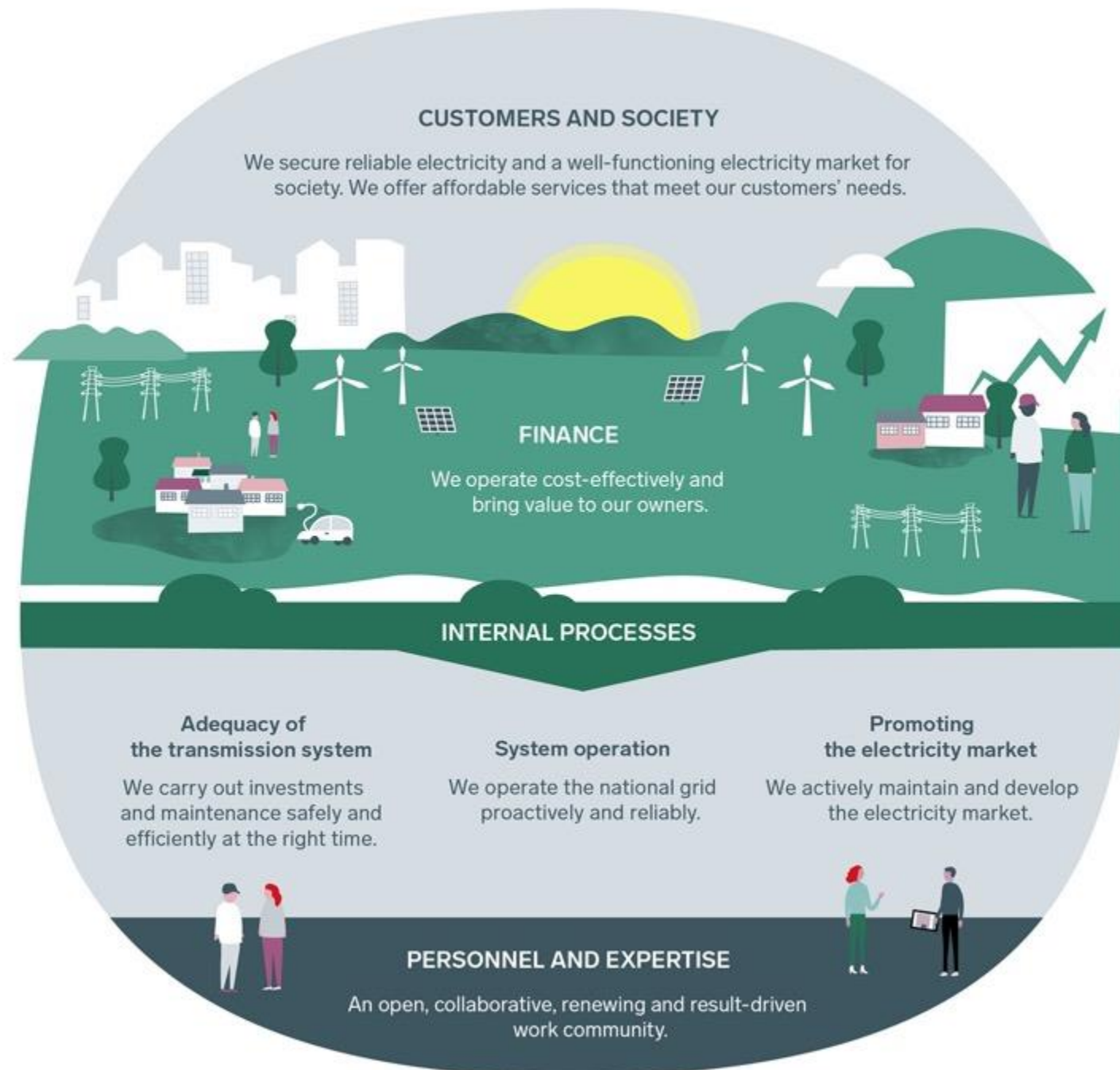
## Company overview







# Fingrid's strategic framework





# Corporate level strategic choices



## Focus on core operations

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



## Customer oriented

We develop our business operations and operating models actively, 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 operate in a market-oriented way in all areas, because functioning markets produce the best and most innovative solutions in all operations.

## Integration oriented

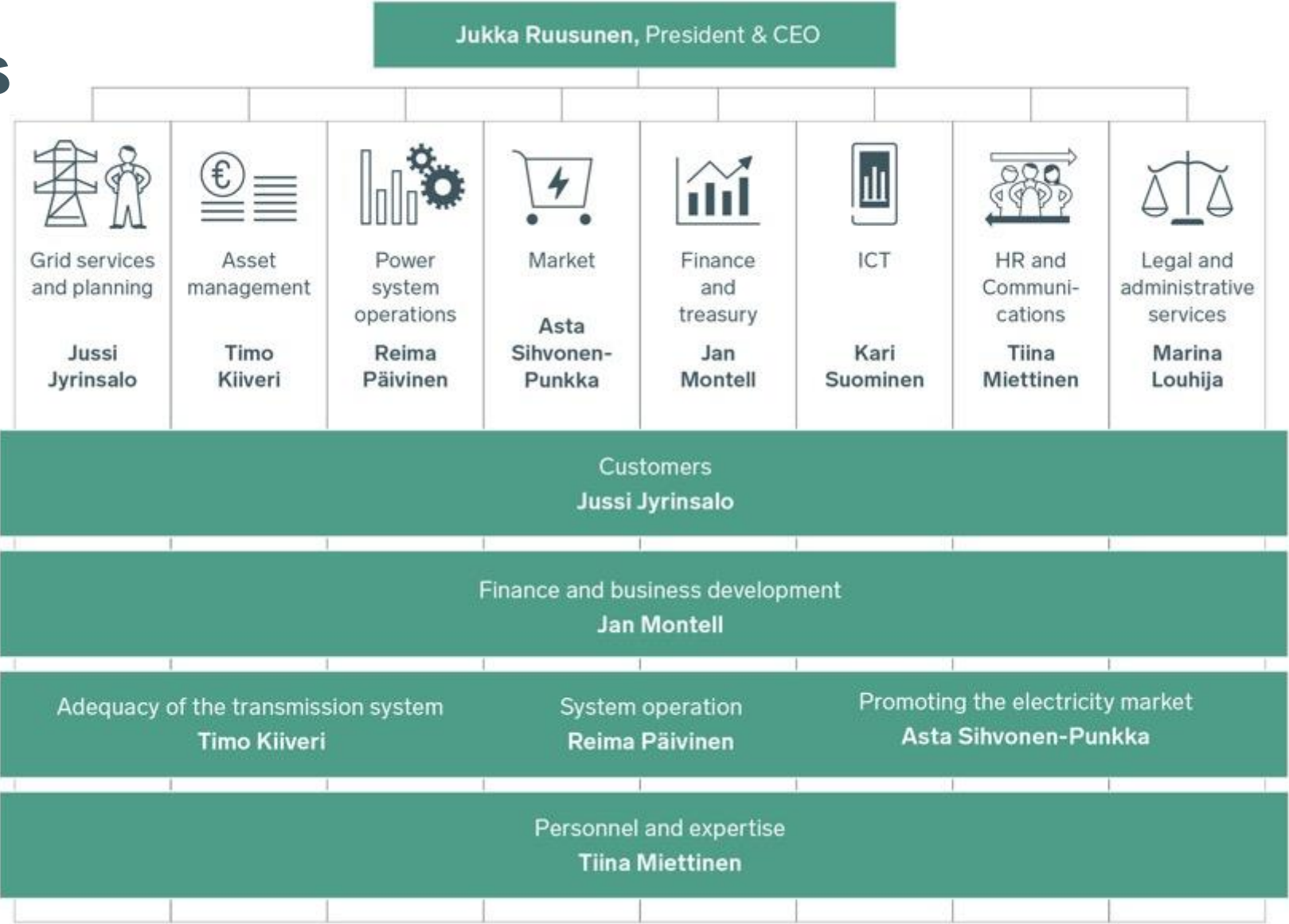
We actively promote the integration of European and Baltic sea electricity markets taking into account the interests of Finland.

## Security and sustainability

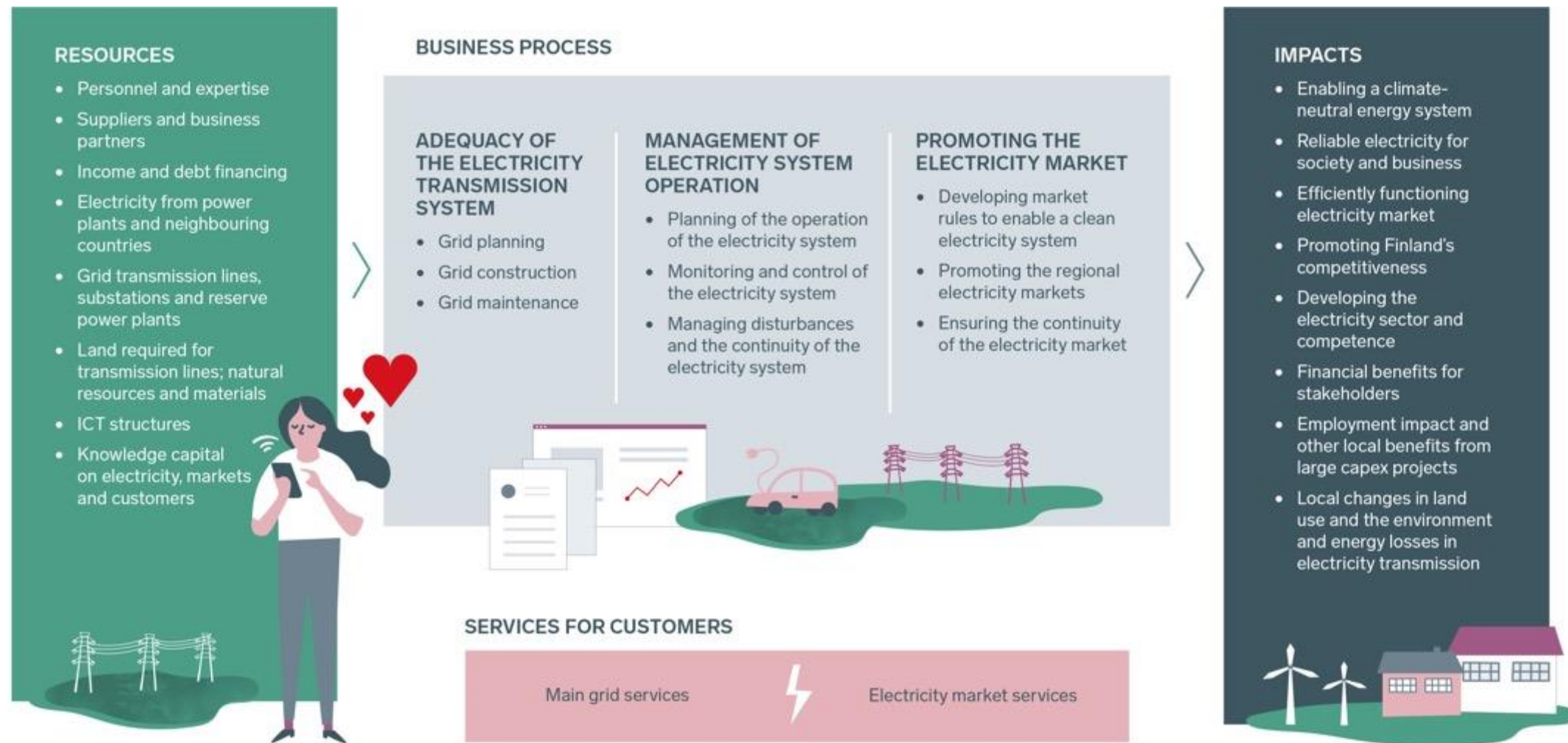
During the transformation of the power system we maintain the current high level of system operation. Sustainability and safety are in focus in everything we do.



# Fingrid operates in a matrix organisation structure

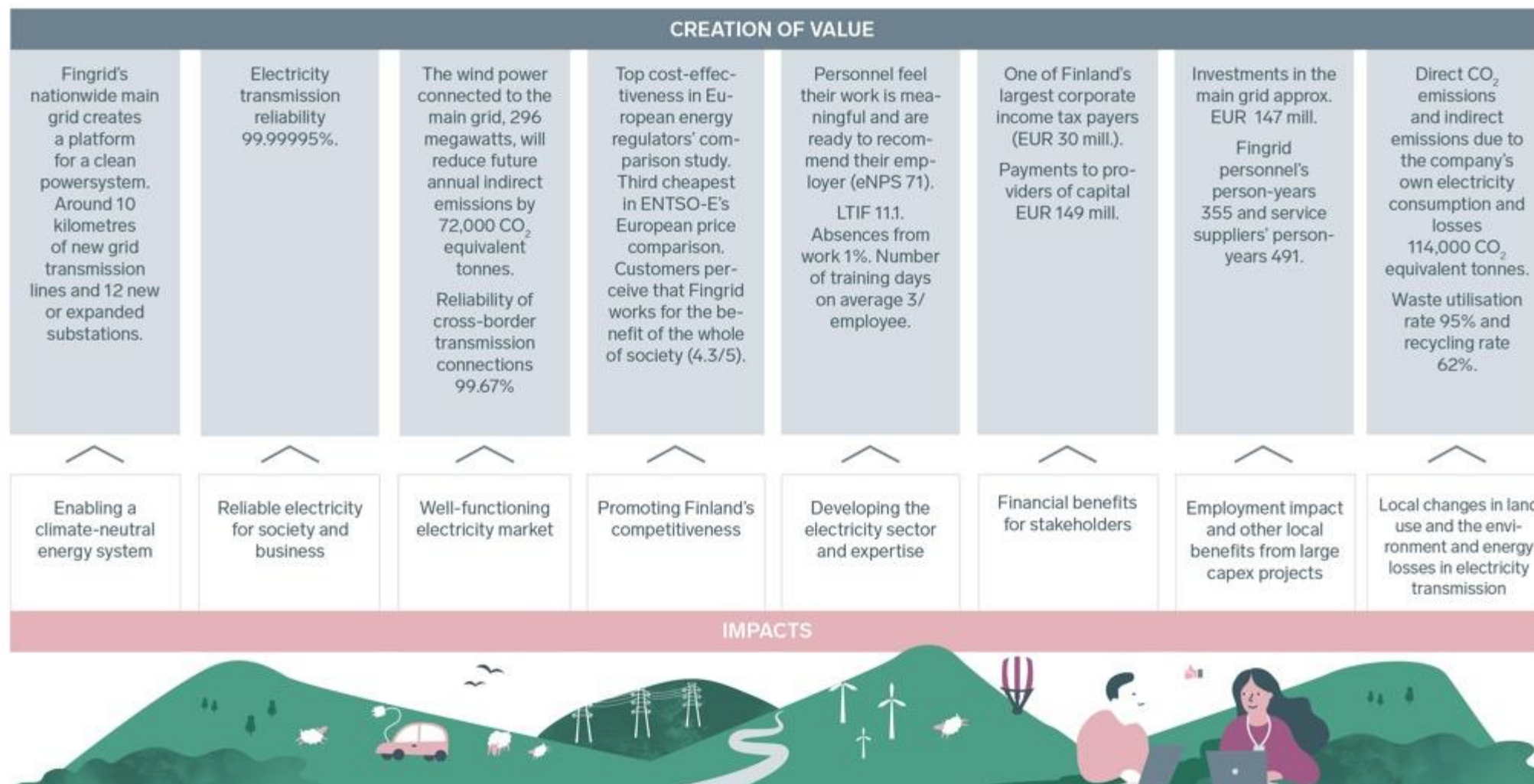


# Fingrid's business model





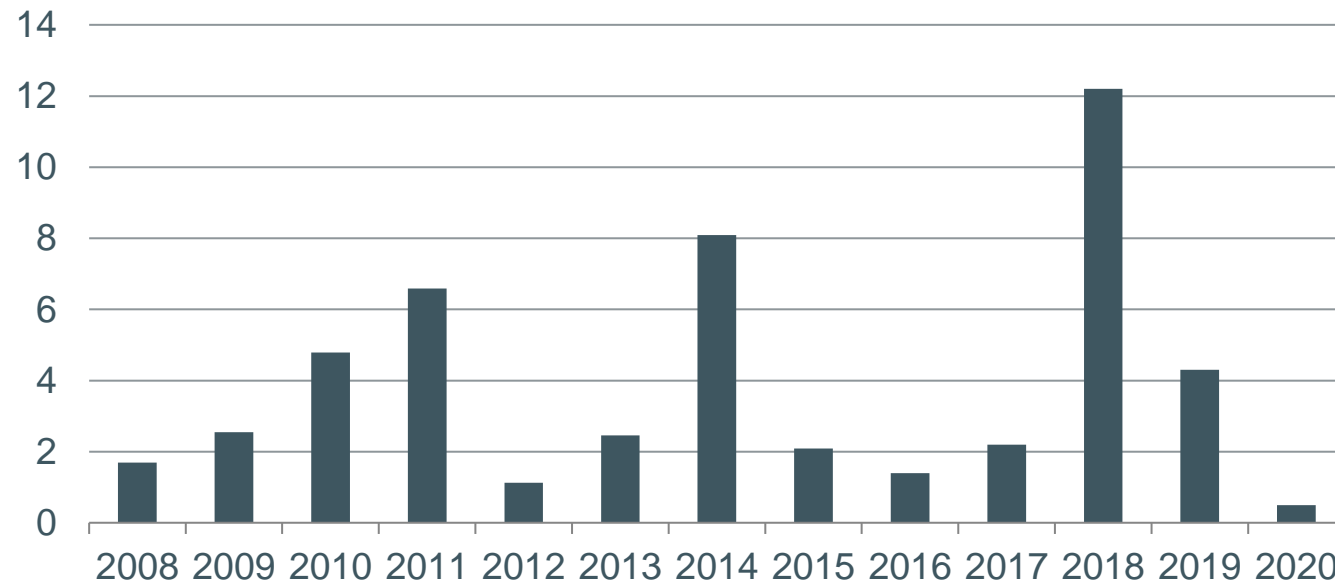
# Value created by Fingrid in 2020



# Excellent reliability in the grid

## Economic losses caused by disturbances

minutes / year / connection point

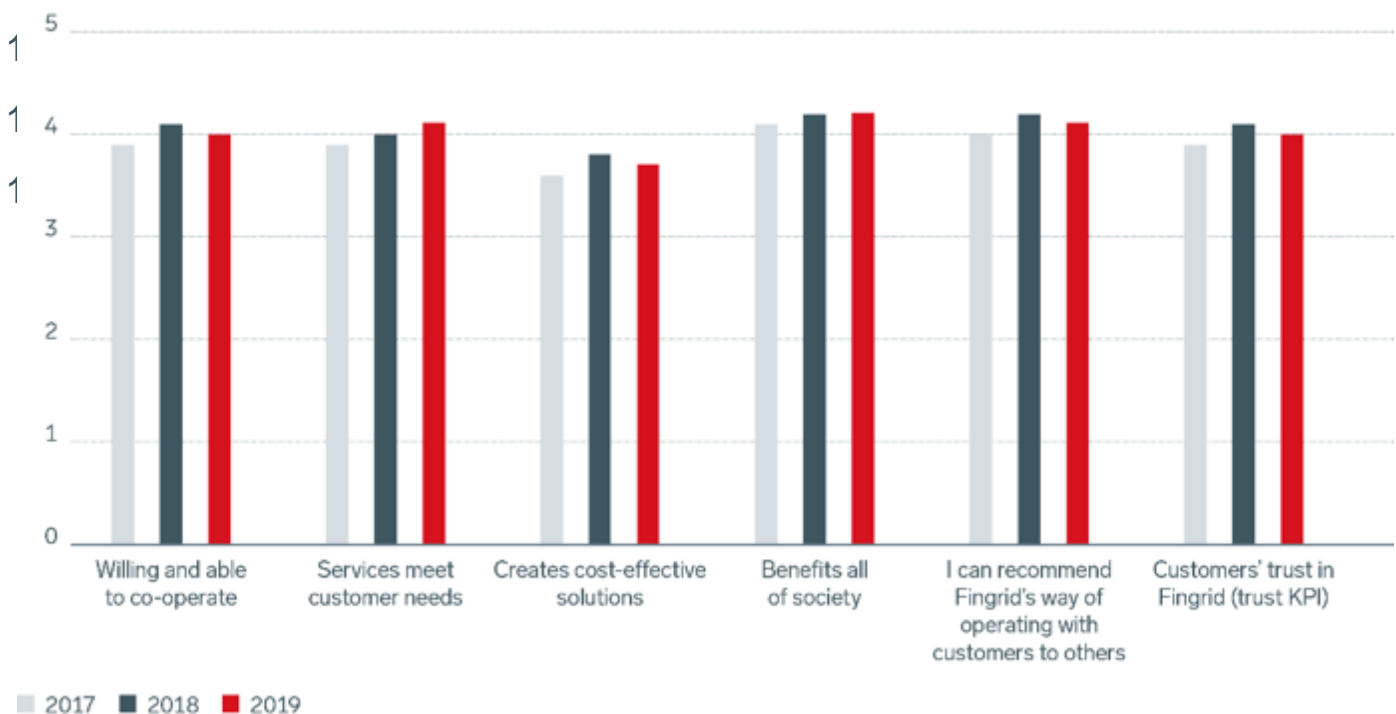


0.5 minutes  
outage per grid  
connection point  
caused by faults  
in the grid in  
2020

# Customer satisfaction: High quality services

## Customers' trust in Fingrid

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)

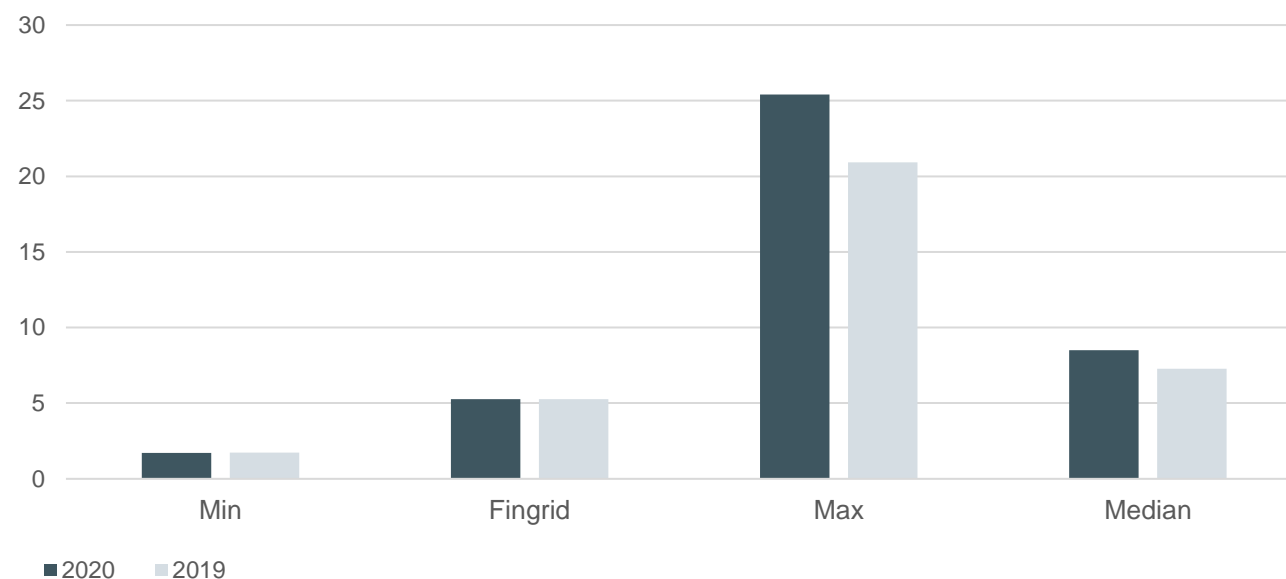
The company wide KPI 'customers' trust in Fingrid' was 4.0 (scale 1-5) in 2019



# ENTSO-E comparison on grid service fees

## European peers 2020

€/MWh

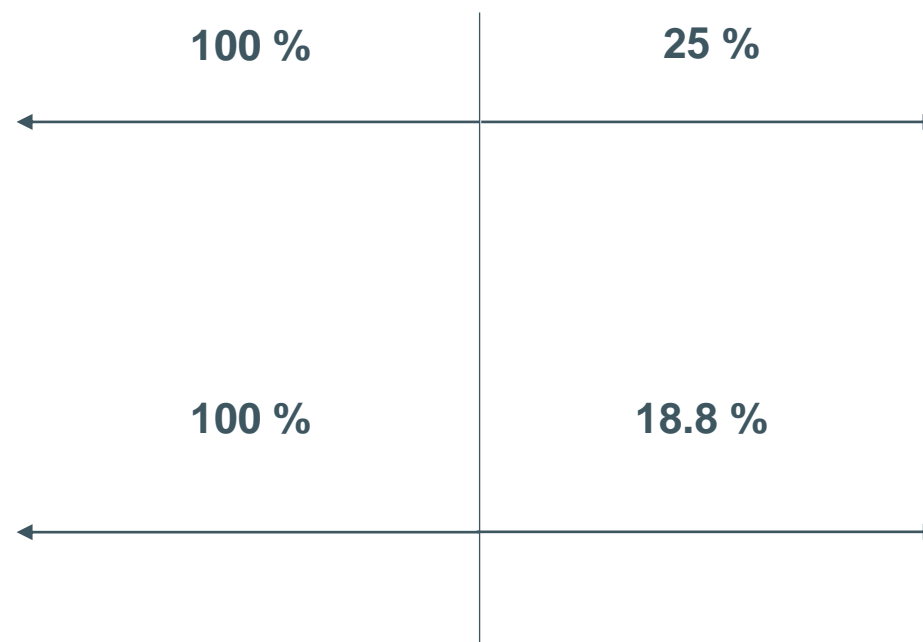
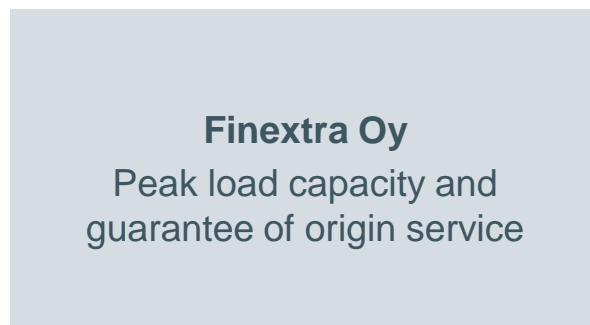


\* Source: ENTSO-E

Transmission tariffs for electricity in the Finnish transmission system are the second lowest in Europe

# Legal structure

## Subsidiaries



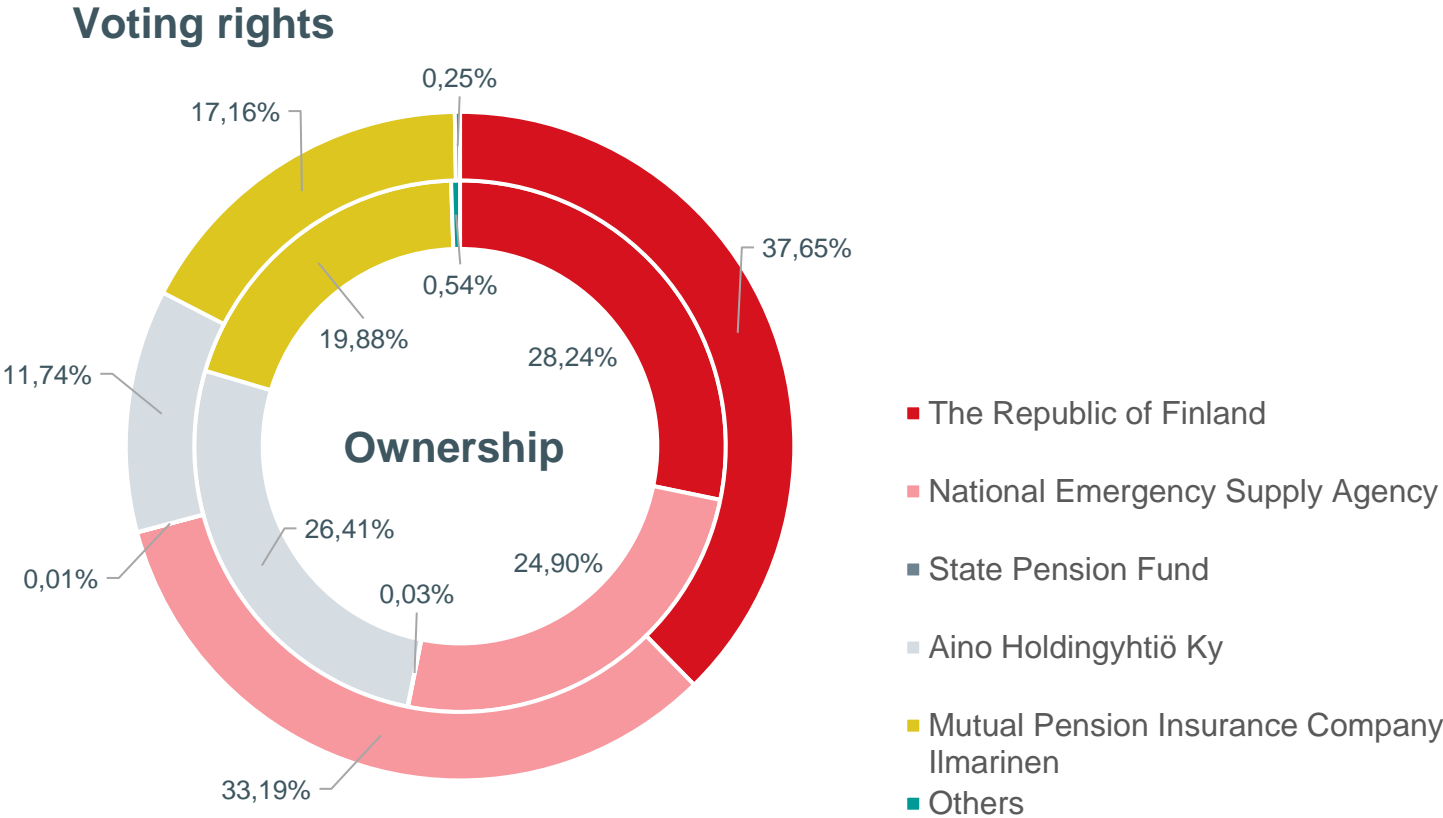
## Associated companies



## Long-term investments



# Ownership and voting rights



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

The State has 70.8% of the voting rights.

# 03

## Operating environment



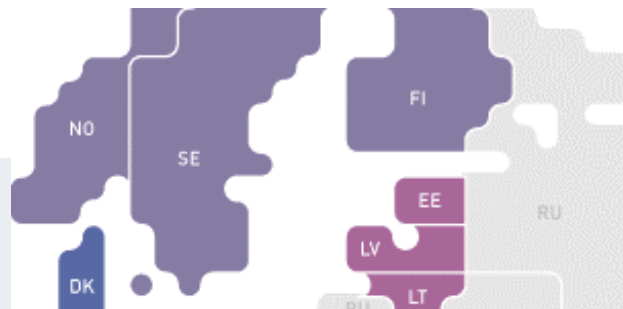


# Fingrid's operating environment on three geographical levels



## Europe

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



## Baltic Sea region

- Strong connection between the Nordic region, Baltic states, Germany and Poland.
- The transmission capacity between Nordic region and Central Europe increases. Around 1.8 GW of new capacity was built in 2020 and there is several projects in pipeline to be completed by year 2025.



## Finland

- Finland's target is to be carbon neutral by 2035
- Share of renewable wind power increases without subsidies
- 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

—  
Electricity market from Helsinki to Lisbon since 2014

- 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
- Supporting Green Deal and reaching the climate targets of the EU

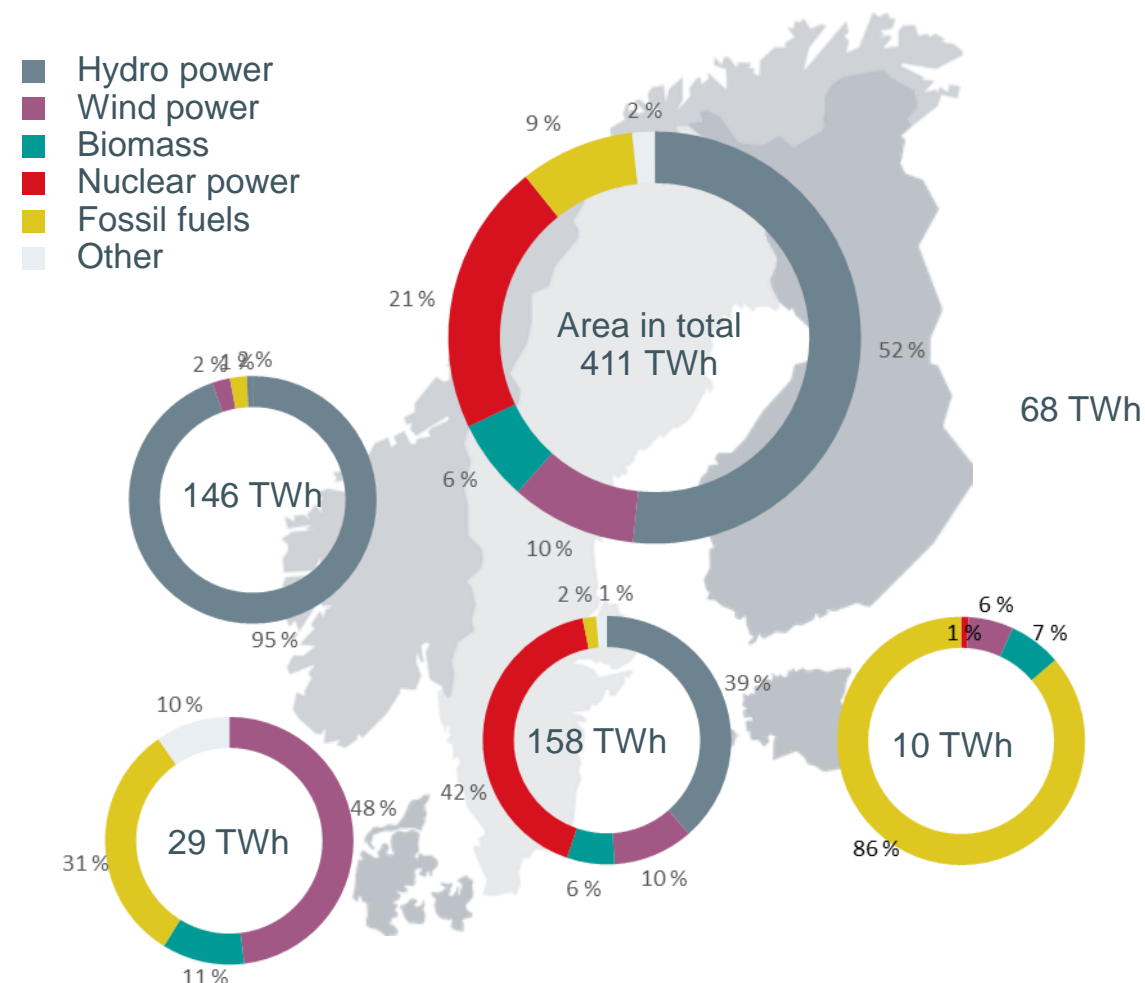


Market coupling

# 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



Source: ENTSO-E, Statistical Factsheet 2018  
(provisional values as of June 2019)



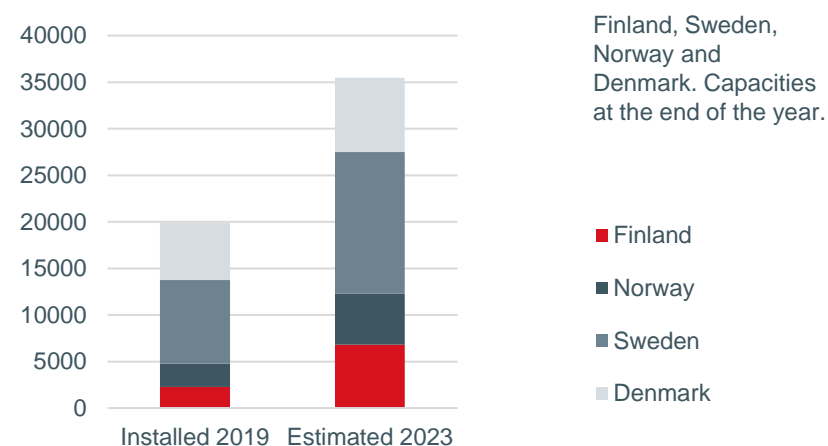
# Significant wind power capacity currently under planning and construction

- By the end of 2019, ~2300 MW of wind in Finland has been built mainly with incentive from feed-in tariff
- During 2020-2021, a total of ~1500 MW new wind power will be commissioned in Finland, mainly from unsubsidized projects
- Nordic wind power is expected to almost double during 2020-2023, with the majority of growth based on investment decisions already taken
- 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 climate neutral society

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

## Nordic wind capacity is expected to increase almost 80% during 2020–2023 \*

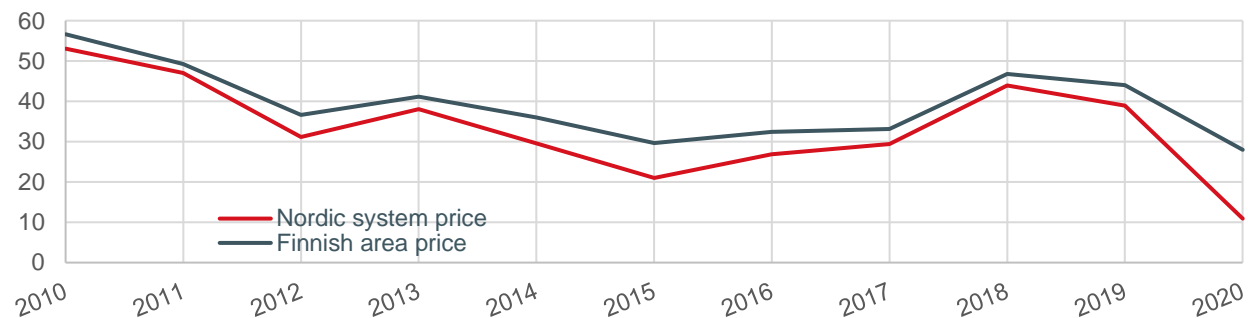
Megawatts



# Development of Nordic electricity spot prices

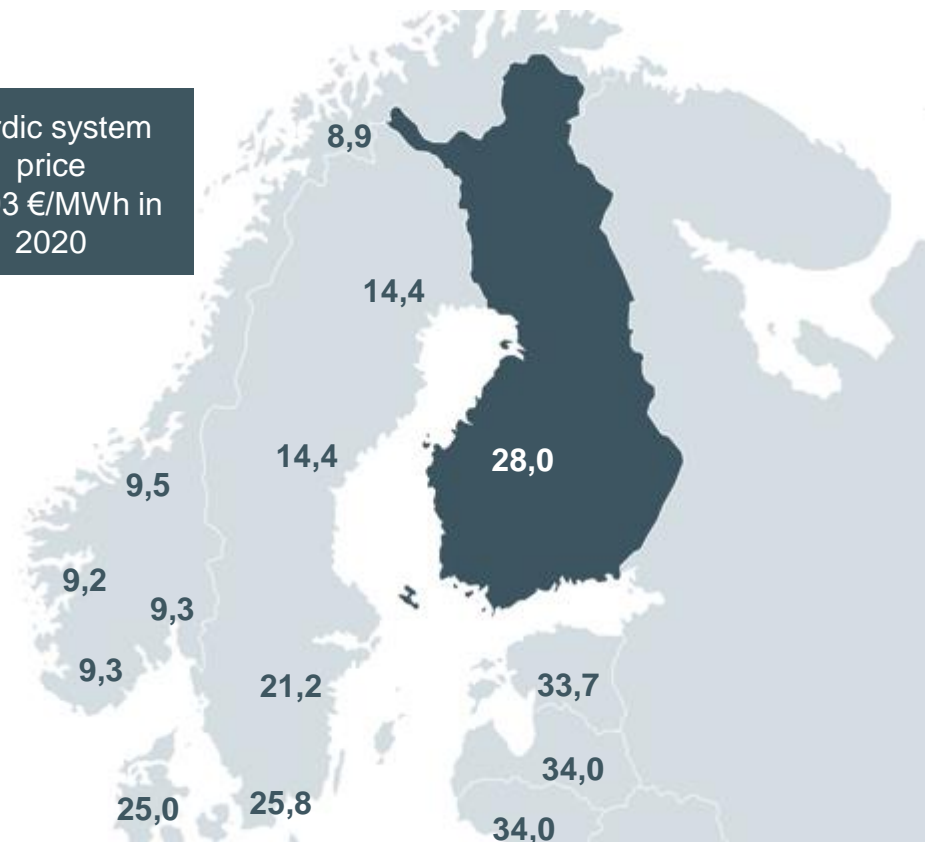
Yearly average prices in Day-ahead market for years 2010-2020

€/MWh



Nordic 2020 average Day-ahead prices

Nordic system price  
10,93 €/MWh in  
2020



- Nordic electricity prices decreased clearly from earlier levels in 2020. Average prices for year 2020 were the lowest recorded for the presented eleven years
- The reasons behind the decreased prices were mainly the unusually warm and wet weather, which decreased demand for electricity and provide plentiful supply of hydropower and wind
- After the exceptional year 2020, the prices have returned to higher level, as the beginning of 2021 the weather type has been closer to typical winter weather
- Electricity consumption decreased around 6 % in Finland during year 2020 compared to the previous year 2019

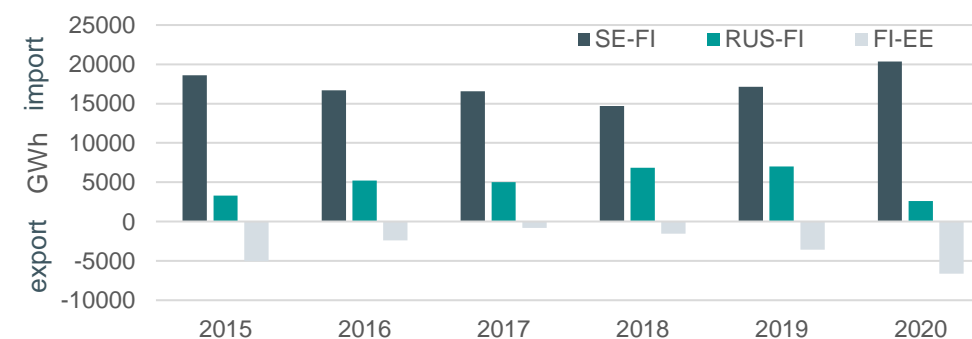
# Finland is well-connected in Baltic Sea power market

- Finland is a net importer of electricity mainly from Scandinavia
- Rapid increase of wind power and commissioning of Olkiluoto 3 nuclear power plant are set to reduce the net imports in the next few years
  - Olkiluoto 3 will cover ~10 % of the cold winter peak load in Finland
  - Per the company operating Olkiluoto 3, regular electricity production is expected to start in February 2022
- Cross-border lines between Finland and Sweden have a crucial role of limiting price differentials between the markets
- Fingrid has 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

Finland is a net importer of electricity mainly from Scandinavia, the future capacity installations are expected decrease the amount of import



## Cross-border net trade for last six years



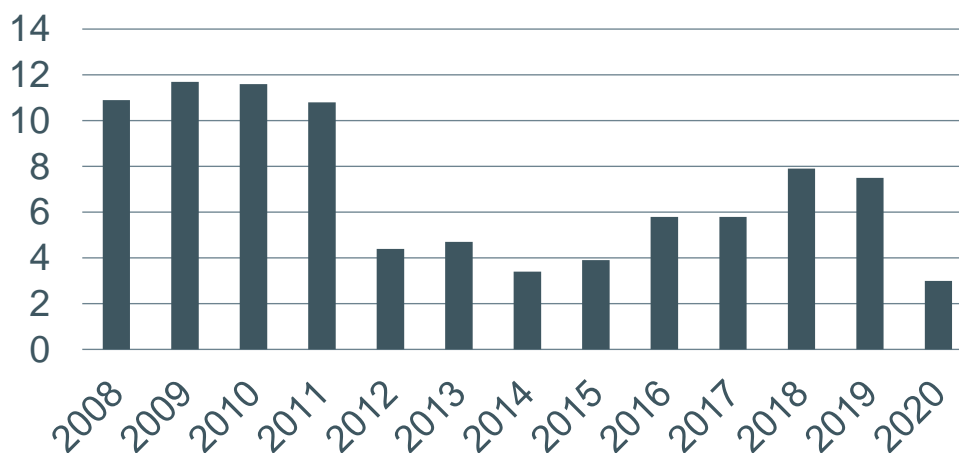


# Cross-border transmission between Finland and Russia

- Imports from Russia decreased substantially in 2020 due to record-low Nordic wholesale prices
- Lately the imports from Russia have increased, mainly due to higher Nordic wholesale prices that in turn are a result of normal winter temperatures with close to normal hydrological conditions
- Russia now has capacity payment of around 30-60 EUR/MWh on exports to Finland which limits the trade below levels seen in 2011 and earlier

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

**Annual electricity export from Russia to Finland**  
TWh



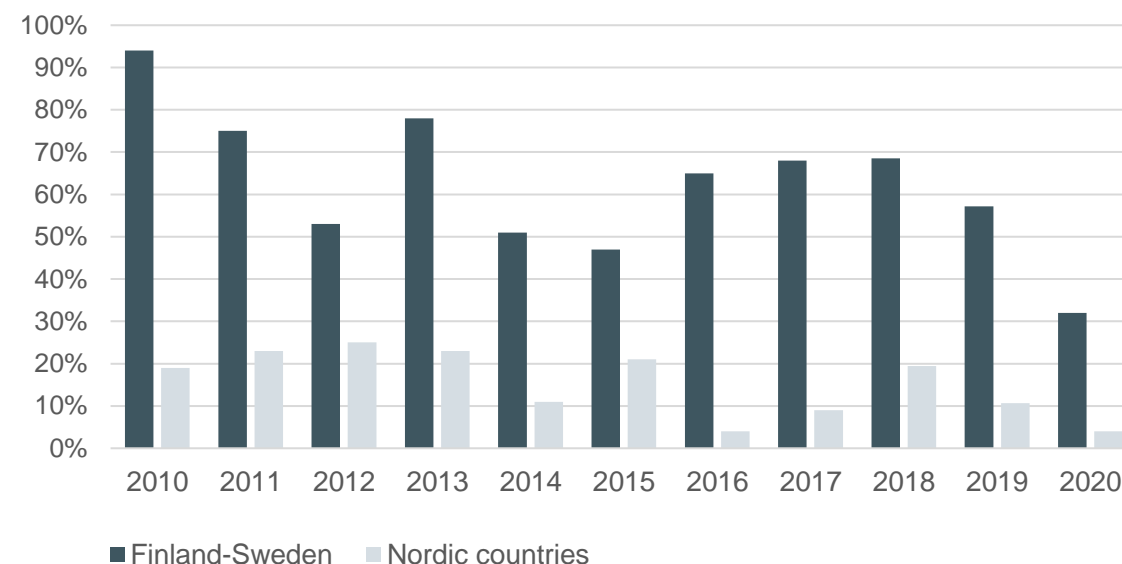
# The Baltic Sea region\* forms a well-developed regional market

- In 2020 a single price area between Finland and Sweden existed 32 percent of the time and 4 percent of the time between all the Nordic countries
- Price uniformity is impacted by hydrological situation, in addition to interconnector availability
- Price differences between countries result in congestion income, which is split evenly between the countries in which the congestion has occurred
  - The formula to calculate Fingrid's share of congestion income is  $\text{Price Difference (€/MWh)} * \text{Cross-Border Transmission (MW)} * 50\%$

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

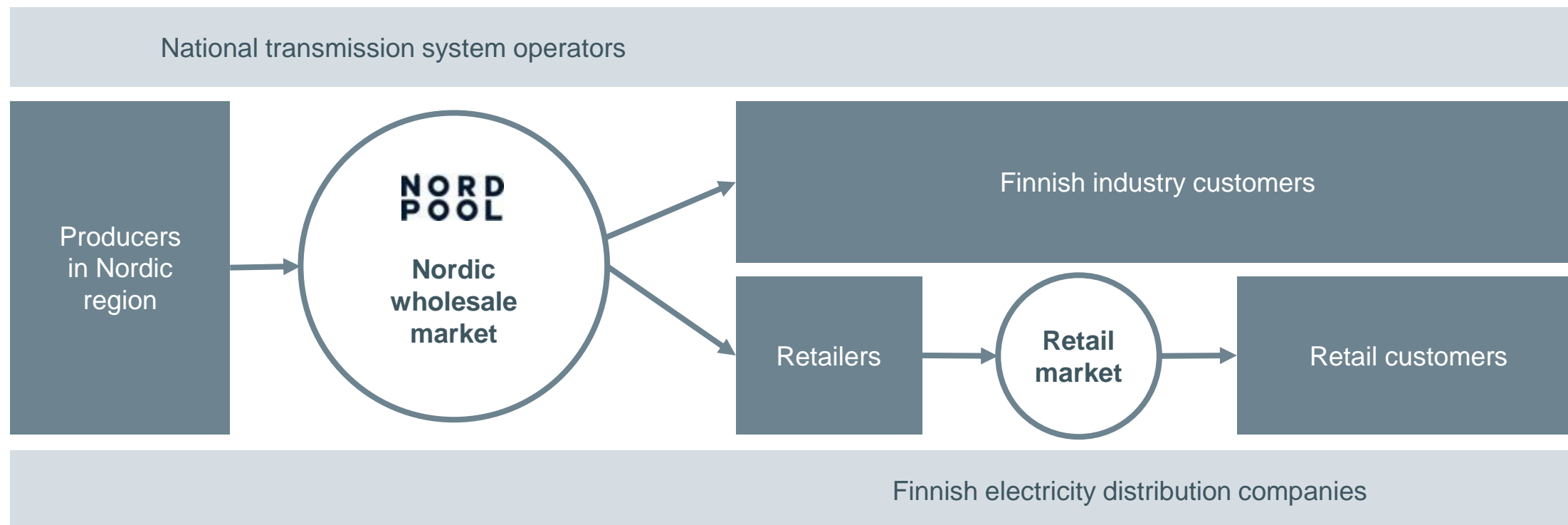
## Uniformity of spot prices in the Nordic region

% of time



# Physical electricity market structure and business areas in the Baltic Sea area

Power generation is unregulated whereas transmission and distribution are regulated by national authorities





# 04

## Operations

Description of operations



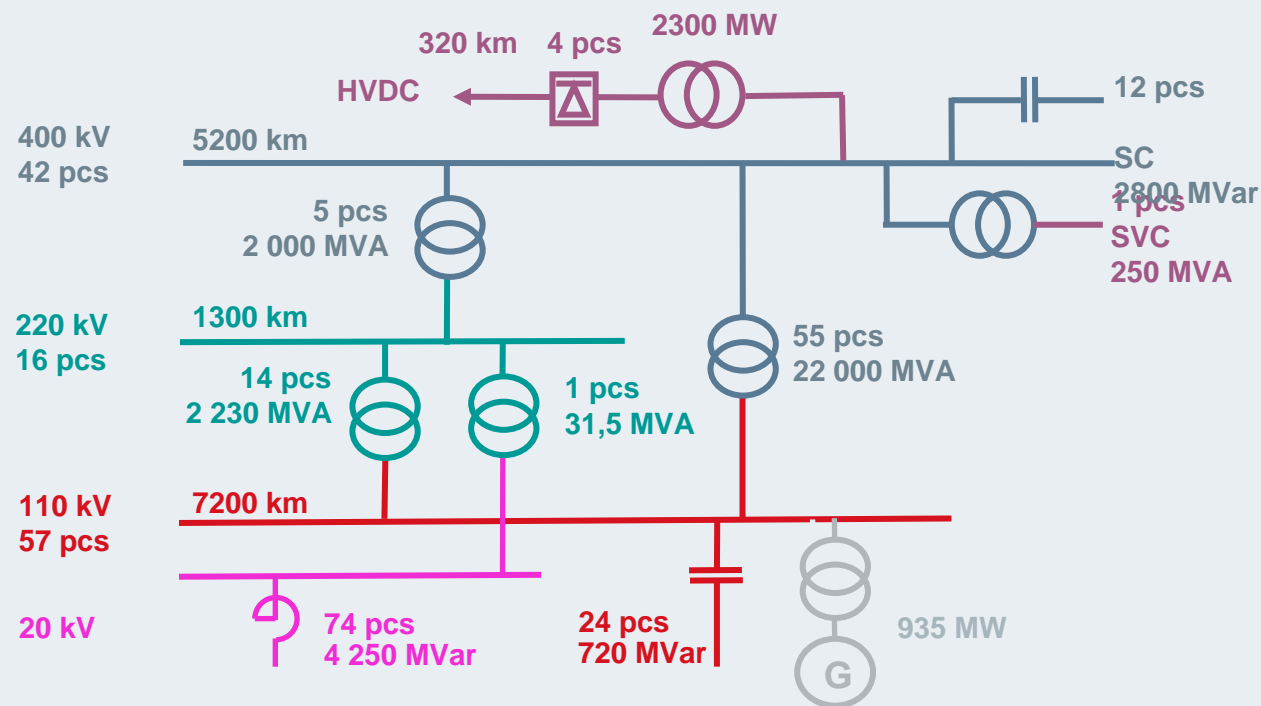
# Fingrid owns and operates the transmission network in Finland

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

Fingrid also owns and operates 220 kV and 110 kV power lines.

Fingrid transmits in its own network approximately **78 %** of electricity transmitted in Finland

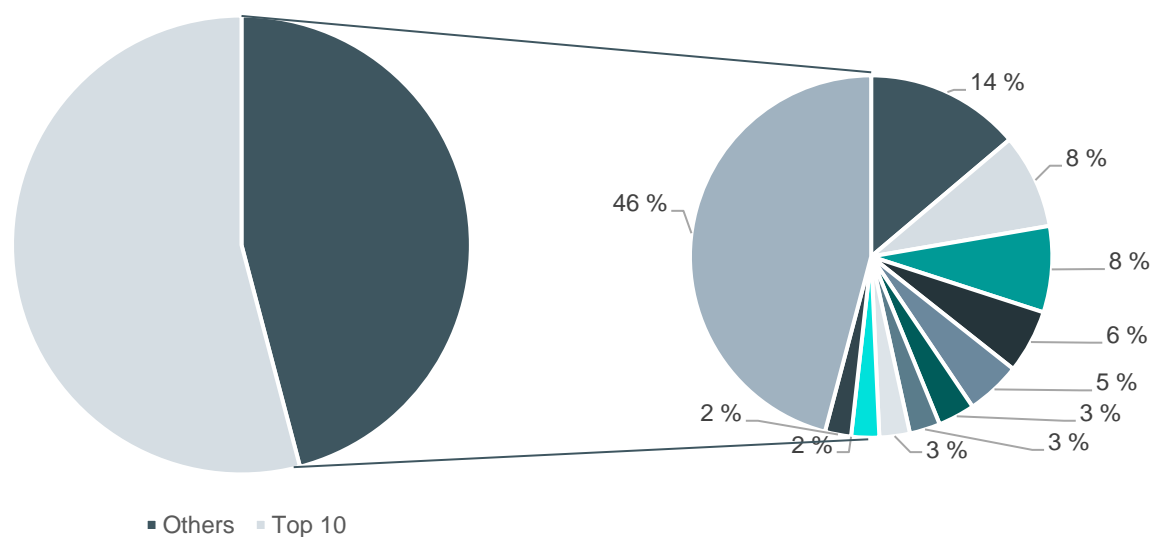
Fingrid is a part of ENTSO-E, European Network of Transmission System Operators for Electricity.



# Grid service customer base consists of around 130 entities

## Top 10 customers 2020\*

\* based on grid service income



Credit quality of customer base is solid

- 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 54 percent of grid service income

# Fingrid continuously maintains the production and consumption balance

Fingrid fulfils its 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



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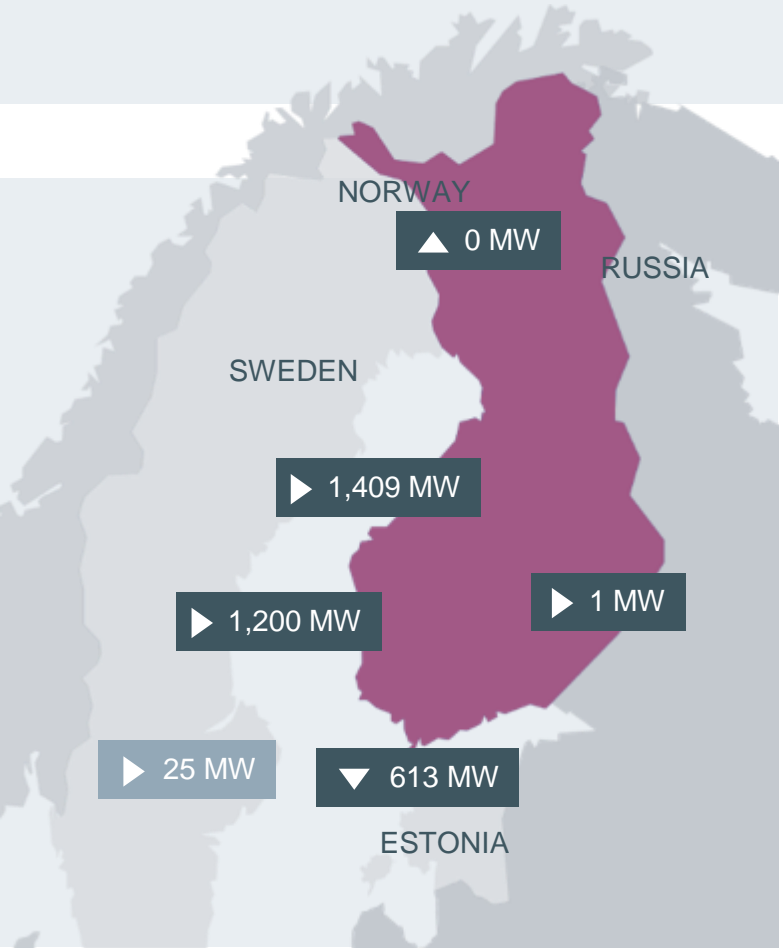
Fingrid procures the needed amount of reserve capacity to maintain the balance of the power system



# State of the power system – *illustrative example*

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

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	Electricity price in Finland Info	
• Cogeneration district heating	2,113 MW	Elspot area price	31,48 EUR/MWh
• Cogeneration industry	1,455 MW	Normal power balance	
• Wind power (partly estimated)	406 MW		Info
• Other production (estimate)	70 MW		
• Peak load power	0 MW		
Net import/export	1,962 MW		



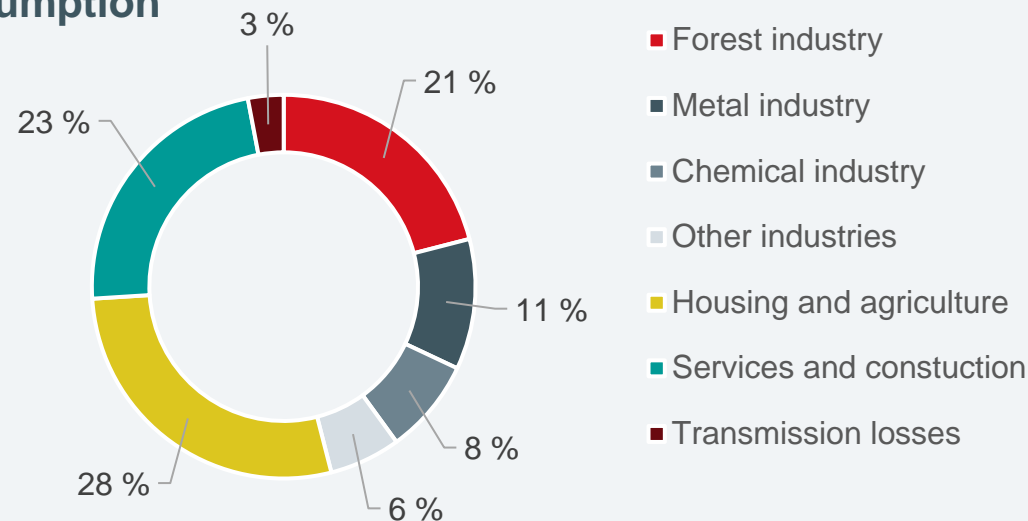
# Electricity consumption in Finland

Energy-intensive industry is a major consumer in Finland accounting for 46 % of consumption in 2020

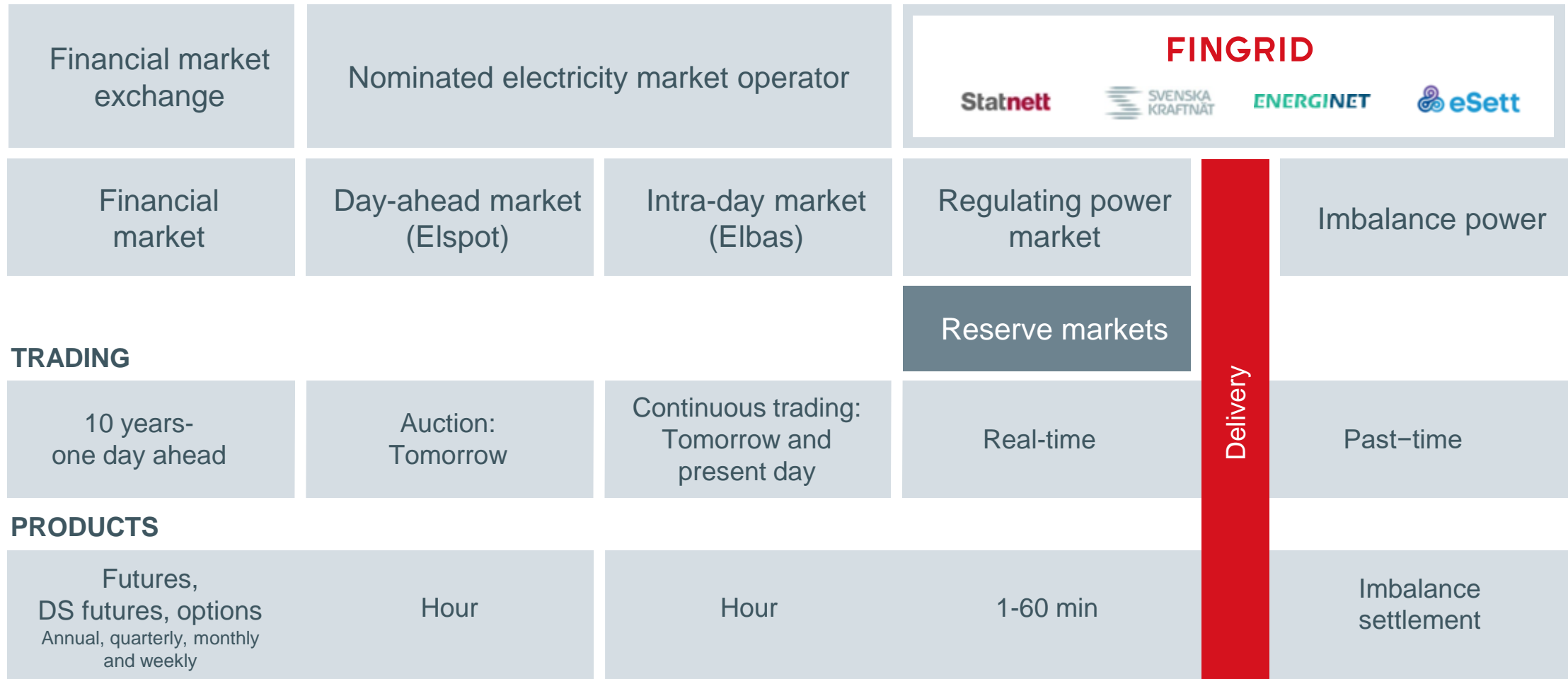
Fingrid continuously maintains production and consumption balance

Electricity consumption was 81 TWh in Finland in 2020. Electricity imports accounted for 15 TWh or 19 % of total consumption

## Consumption



# 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, Norway and Denmark\*

## eSett welcomes Denmark to the Nordic imbalance settlement

*“eSett is proud to announce that on February 1, 2021 Denmark joined Finland, Norway, and Sweden in the Nordic imbalance settlement. The expansion of the imbalance settlement to the Danish market is a major step towards further integration and development of the Nordic electricity market. This takes the Nordic countries closer to the 15-minute settlement and one-price model as well as the substantial benefits associated with these changes.”*

*“Together with the other Nordic TSOs Fingrid in Finland, Statnett in Norway, and Svenska kraftnät in Sweden, the Danish Transmission System Operator (TSO) Energinet became an equal owner of eSett in 2019. Since then, Energinet has been actively involved in developing the pan-Nordic model and eSett’s operations, culminating in their joining the Nordic imbalance settlement.”*

\*Denmark joined the Nordic imbalance settlement on February 1, 2021



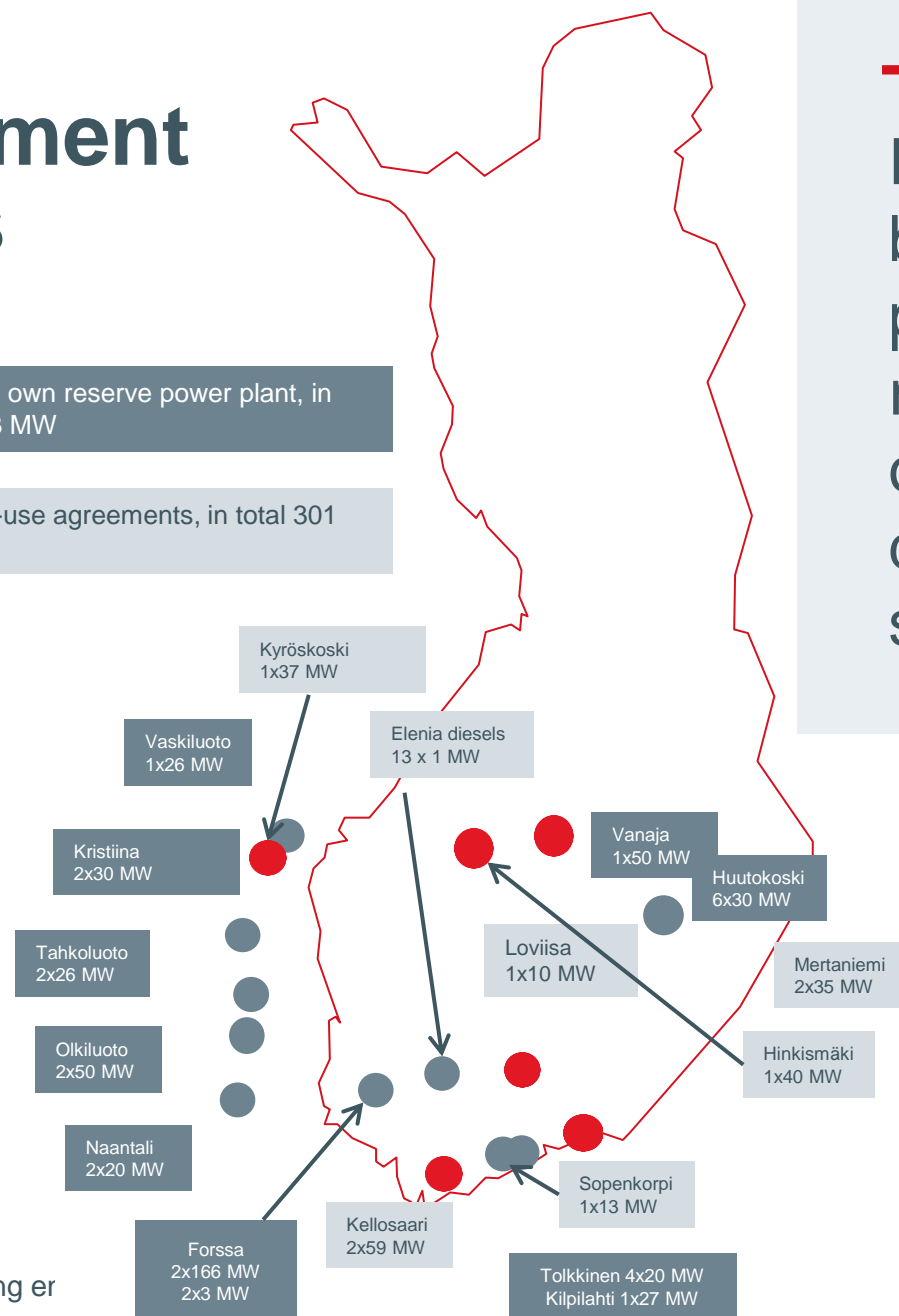


# Fingrid owns an assortment of backup power plants

- 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 reserve power plant, in total 953 MW

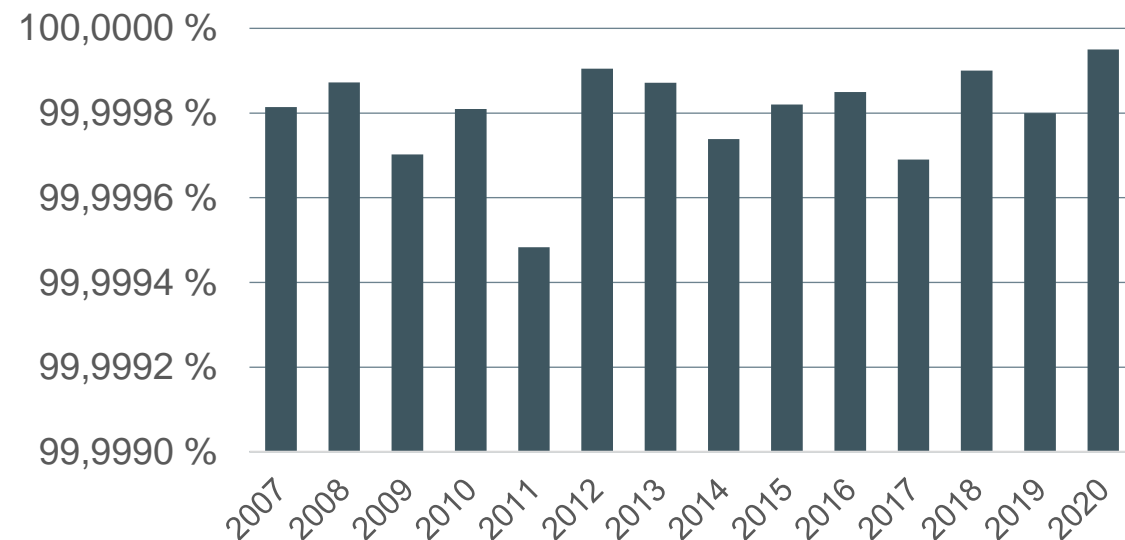
Right-of-use agreements, in total 301 MW



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

# The reliability of the Finnish power system is top class

## Transmission network reliability



Record high transmission network reliability rate of 99.99995% in 2020

- 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

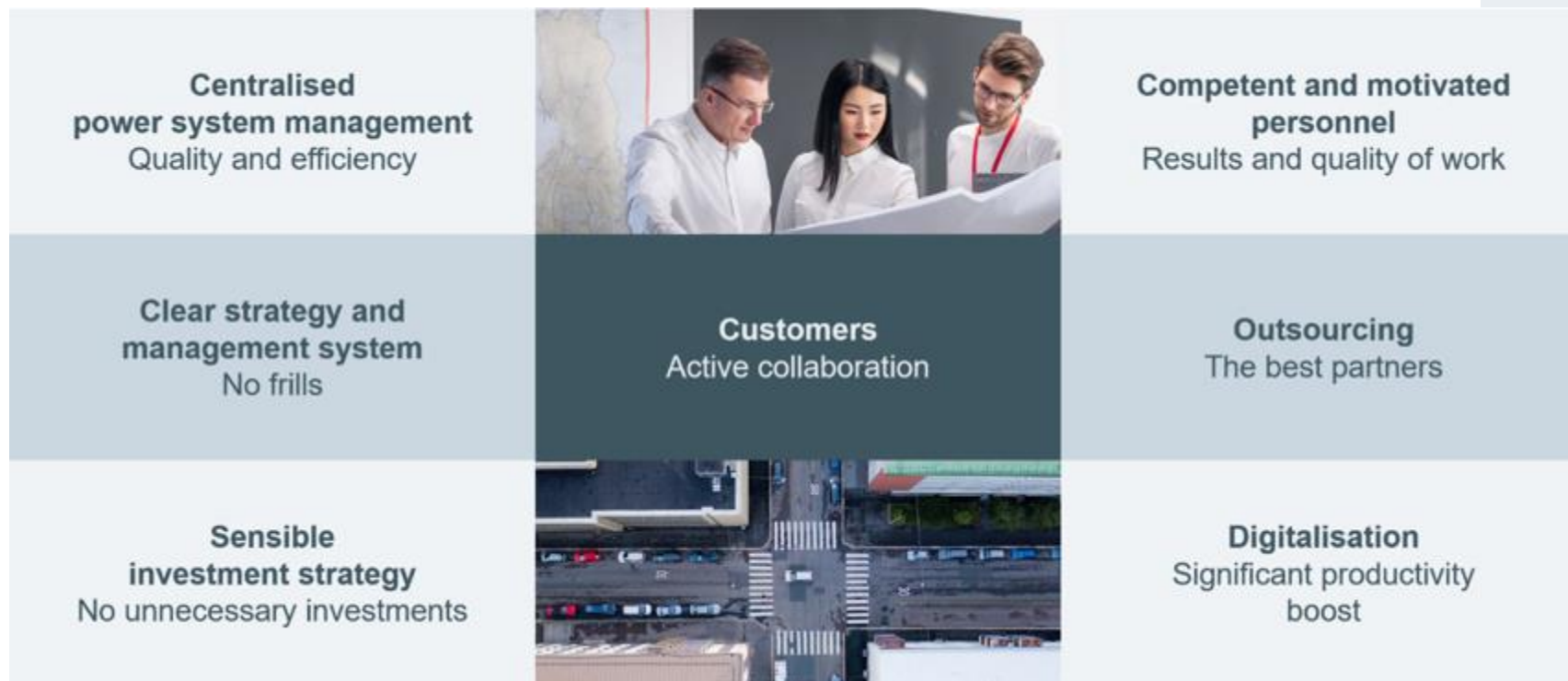
# 04

## Operations

Efficiency of operations



# The building blocks of Fingrid's operations



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 e.g. grid construction and maintenance are outsourced
- Regional maintenance is tendered among external service providers
- Fingrid has around 60 core suppliers, of which 20 account for around 90 percent of total financial value of procurements
- Grid construction projects are tendered among prequalified contractors (system of qualification of contractors)

High operational efficiency and flexibility are achieved through timely competitive tendering of works



Grid maintenance is outsourced

# 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

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High operational efficiency and flexibility are achieved through comprehensive outsourcing arrangements



Hyvinkää – Hikiä transmission line construction site

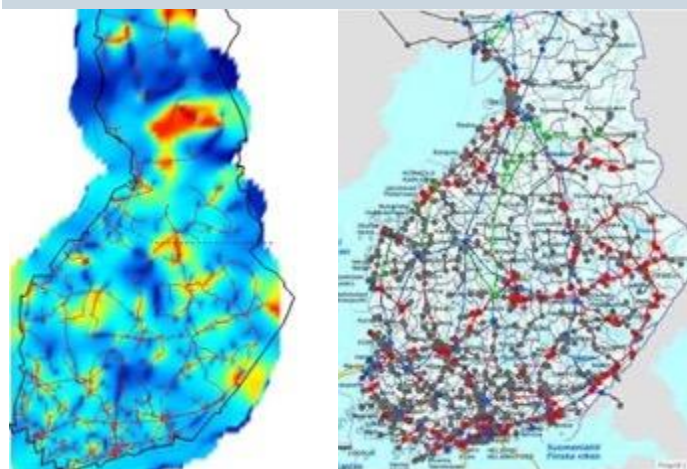
# Investing in efficient management of information through digitalisation

- 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)

A single asset management system strengthens Fingrid's operational excellence

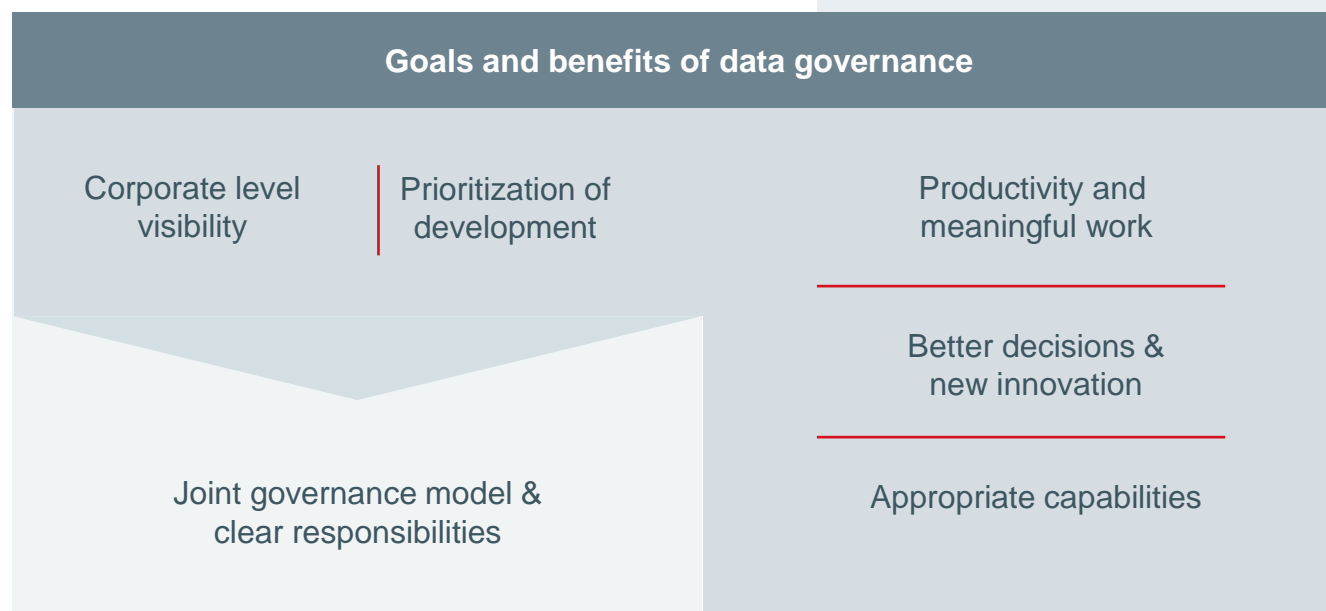
Fingrid's ERP provides real-time network condition on map



# Data governance model improves productivity, enables better decision-making and innovations

Fingrid manages data as one of its core assets

- The importance of data-based management is growing constantly. Properly maintained data is essential for decision-making
- The importance of data to Fingrid's customers and other stakeholders is significant
- Being in a monopoly position imposes a certain responsibility and data transparency is important in order to gain trust from stakeholders
- A well-managed cybersecurity and network security also require good data management





# Digital technology helps in grid maintenance

Digitalization of grid maintenance results in improved system security and cost savings

- Grid operations have become increasingly digitalized over the years
- The installation of sensors necessary for data acquisition at substations started in 2016 and has continued ever since
- Digital condition monitoring helps in allocating resources and forecasting maintenance needs as efficiently as possible
- Fingrid's vision for 2025 is an autonomous maintenance system that communicates, with the help of artificial intelligence, when any preventive maintenance should be started



# Fingrid's efficient operations are highly recognized

## Excellent results from international benchmark studies

\* Twenty-eight TSOs from around the world participated in the 2018 study

- Fingrid's Asset Management maintains an **ISO55001** Certificate
- Fingrid has continuously ranked among the best TSOs in the International Transmission Operations and Maintenance Study (**ITOMS**)\*
- Fingrid has topped the results of the most recent International Asset Management Study (**ITAMS**) in 2019

### **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/>

# Fingrid's overall efficiency is confirmed also by the regulators

- Study conducted for the Council of European Energy Regulators (CEER) in 2019
- Comparison of total efficiency: costs of grid construction, maintenance, planning and administration
- Fingrid was ranked a top performer among the 17 European TSOs included in the study
- Fingrid performed well in a similar study prepared for CEER already in 2013



# 04

## Operations

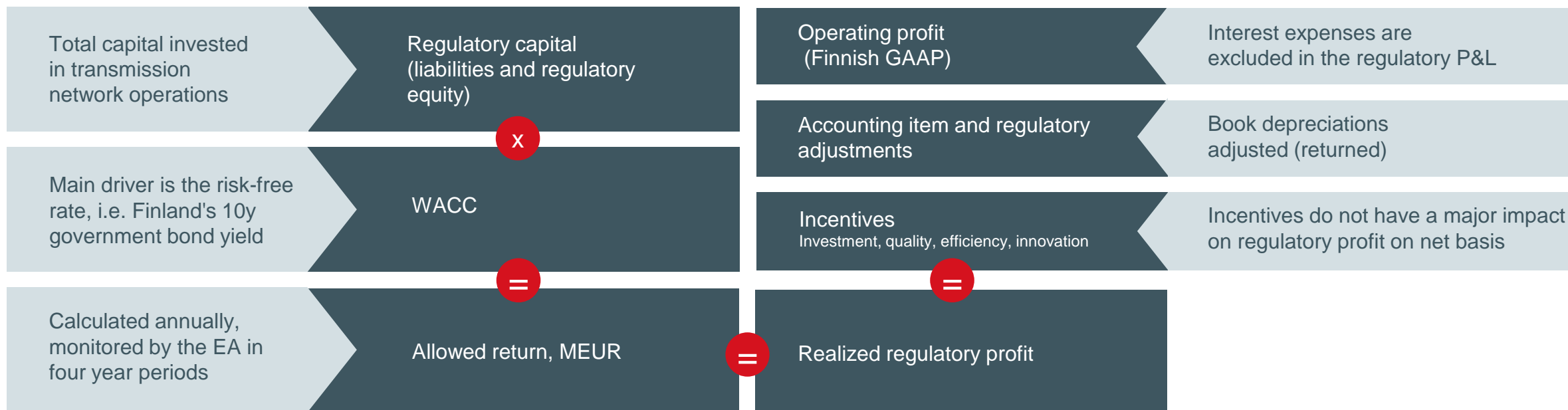
### Earnings model





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

Fingrid aims to match realized regulatory profit and allowed return over the regulatory period



# Calculation of WACC in the regulatory model 2016-2023

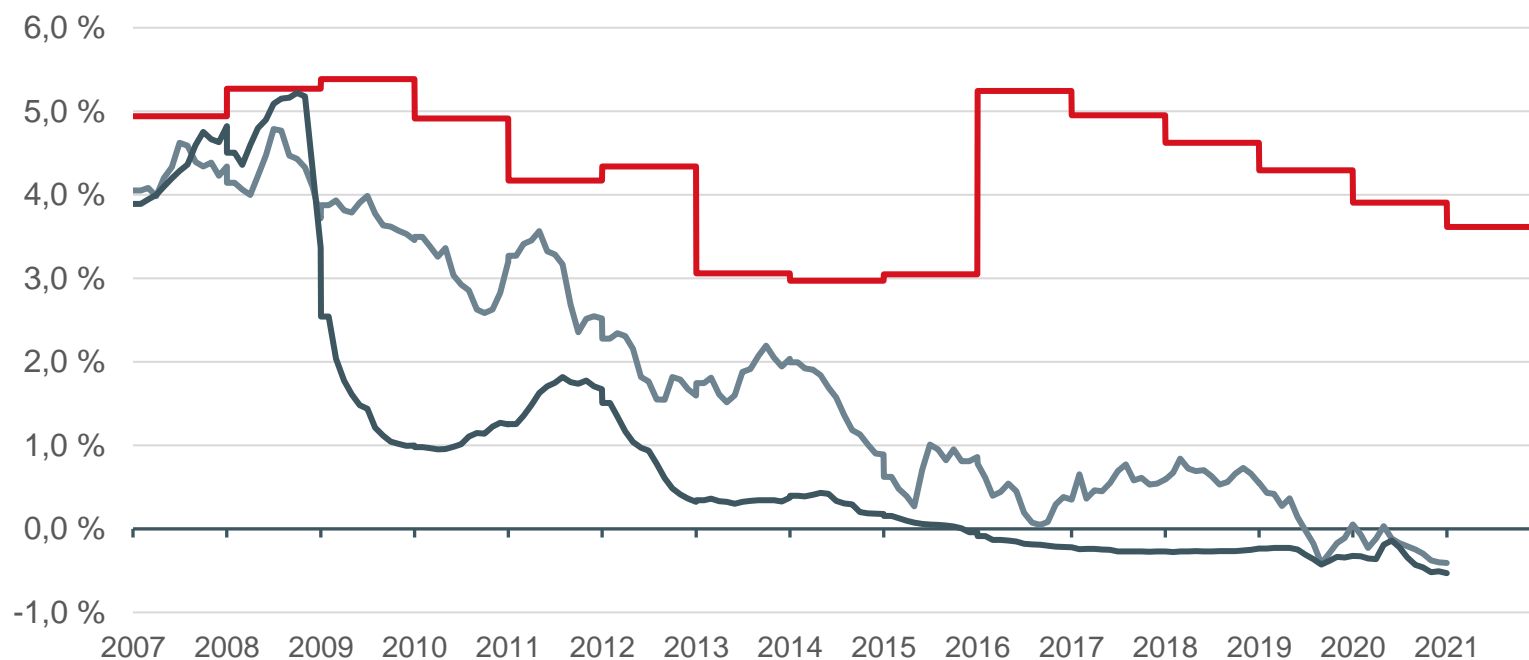
The core parameter defining yearly WACC is the yield of the Republic of Finland's 10-year bond

Cost of equity
$C_E = R_f + \beta_{debt\ free} \times (1 + (1 - t) \times D/E) \times (R_m - R_f) + LP$ $C_E = \text{Finnish 10y bond} + 0,4 \times (1 + (1 - 20\%) \times 50/50) \times 5\% + 0,6\%$ $C_E = \text{Finnish 10y bond} + 4,2\%$
Cost of debt
$C_D = R_f + DP$ $C_D = \text{Finnish 10y bond} + 1,26\%$
WACC (pre tax)
$WACC_{post-tax} = C_E \times 50/100 + C_D \times (1 - t) \times 50/100$ $WACC_{post-tax} = \text{Finnish 10y bond} \times 0,9 + 2,60\%$ $WACC_{pre-tax} = \text{Finnish 10y bond} \times 1,125 + 3,26\%$

Parameter	Value to be applied
Risk-free rate ( $R_f$ )	Greater of: a) 10-year average of 10-year Finnish government bond rate b) Average of previous year April-September government bond rate
Asset beta ( $\beta_{debt\ free}$ )	0,4
Market risk premium ( $R_m - R_f$ )	5,0%
Liquidity premium (LP)	0,6%
Capital structure (D/E)	50/50
Risk premium of debt (DP)	1,26%
Tax rate (t)	20%

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

Pre-tax WACC for 2021 calendar year 4,52%  
(4,89% in 2020)



— WACC, post-tax  
— Finnish government 10 year bond  
— Euribor 6 monts

The regulatory model applies the higher of  
i) 10y average of Finnish Government (FinGov) 10y bond yield or  
ii) April–September average of 10y FinGov as risk free rate in WACC

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

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

- Allowed return in euros is calculated as follows:

$$R_{\text{pre-tax}} = \text{WACC}_{\text{pre-tax}} \times (D+E)$$

E = regulatory amount of equity

D = regulatory amount of interest-bearing debt

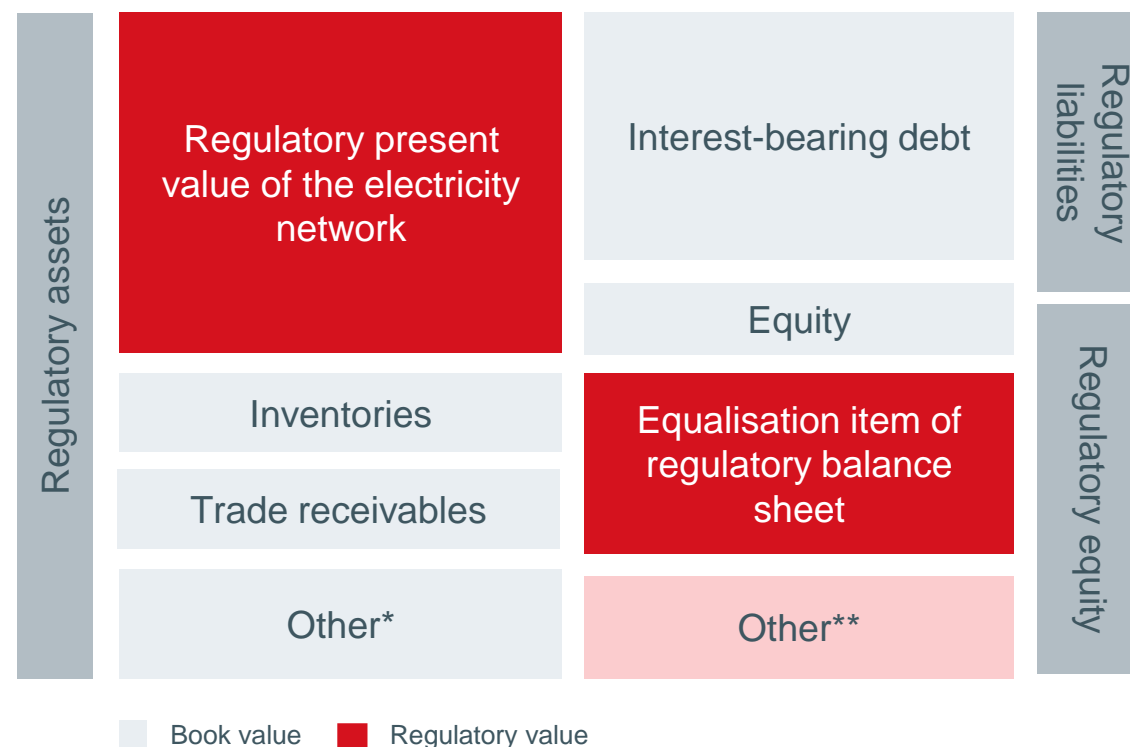
$$R_{\text{pre-tax 2020}} = 4,89\% \times \sim 3,000 \text{ M€} = \sim 145 \text{ M€}$$

- 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

\*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 balance sheet



# 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
- An equalisation item of equity is used to match regulatory equity and liabilities with regulatory assets

**ADJUSTED REPLACEMENT VALUE OF THE ELECTRICITY NETWORK**  
*= list price of component x quantity (for all grid components)\**

*\* Price list is updated together with regulation methods (once in 8 years)*

adjustment by using expected lifetimes of grid components

**REGULATORY PRESENT VALUE OF THE ELECTRICITY NETWORK**  

$$= \sum \left( \left( 1 - \frac{\text{average age}}{\text{lifetime}} \right) \times \text{adjusted replacement value of all electricity network assets} \right)$$

other adjusted current and non-current assets are added

## REGULATORY ASSETS

*= adjusted other noncurrent assets + adjusted other current assets + regulatory present value of the electricity network*

regulatory equity is adjusted to match regulatory equity and liabilities with regulatory assets

## REGULATORY ASSETS

*= adjusted other noncurrent assets + adjusted other current assets + regulatory present value of the electricity network*



# 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 is the book value
<b>Regulatory allowed cash</b>	10 % of regulated turnover

# Limited contribution from incentives and adjustments to allowed return 1/2

## 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</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

# Limited contribution from incentives and adjustments to allowed return 2/2

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

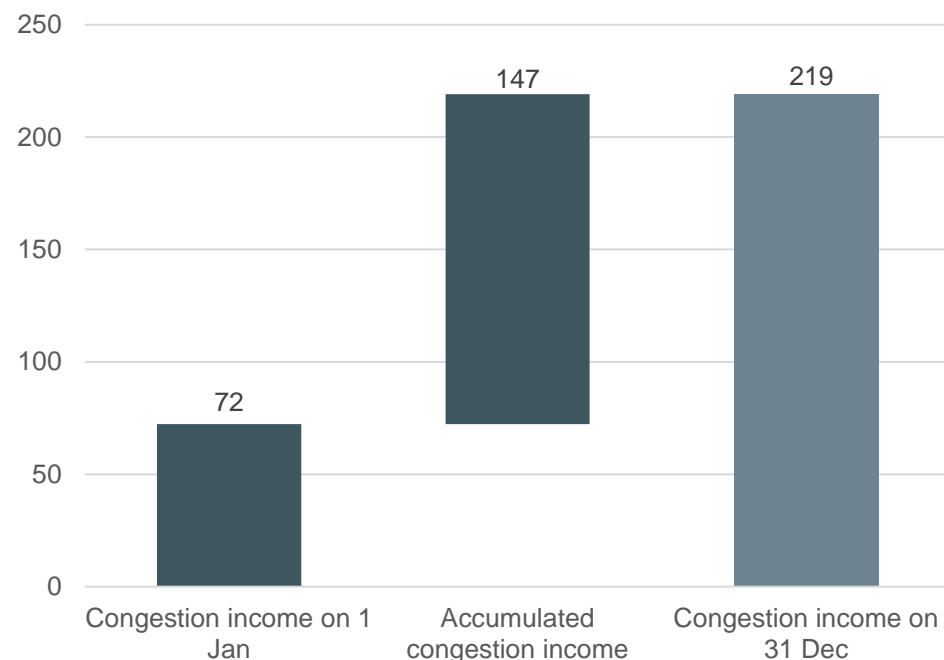
<b>Congestion income</b>	Treated separately from the regulatory allowed return but investments financed with congestion income affect realized regulatory profit through regulatory depreciations
<b>Inflation adjustment to regulatory depreciation</b>	Indexed annually with CPI to match current replacement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



# Congestion income

## Congestion income 2020

MEUR



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

- Since 1 Jan 2016, congestion income is no longer reported in Fingrid's turnover
- In 2020, MEUR 147 of congestion income was accumulated. MEUR 219 in congestion income was left unused and will be used for future investments to improve the functioning of the electricity market
- The Energy Authority has approved MEUR 114,7 of congestion income to be used for the Forest Line investment
- 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

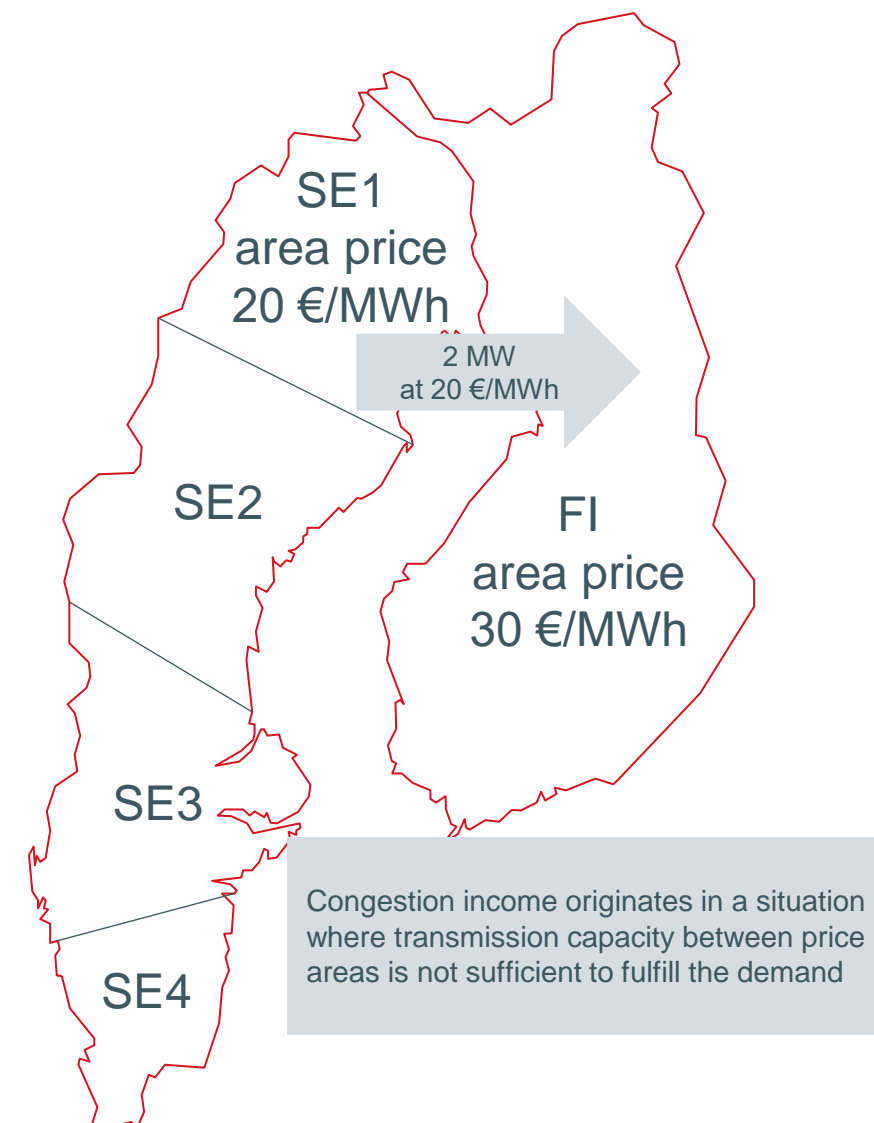
# Congestion income generation

## – *illustrative example*

### Illustrative example on how congestion income is generated

- Nord Pool determines for the hour 19.00 – 20.00 (a day ahead) area price in Finland at 30 €/MWh and in Sweden SE1 bidding area 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 SE1 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 Nord Pool i.e. the difference between paid and received funds, 20 €
  - Fingrid receives 10 € and the Swedish TSO receives 10 €
- All congestion income is used for investments reducing congestions according to EU regulation

MEUR	2016	2017	2018	2019	2020
CONGESTION INCOME	39,9	25,8	29,7	73,0	146,7



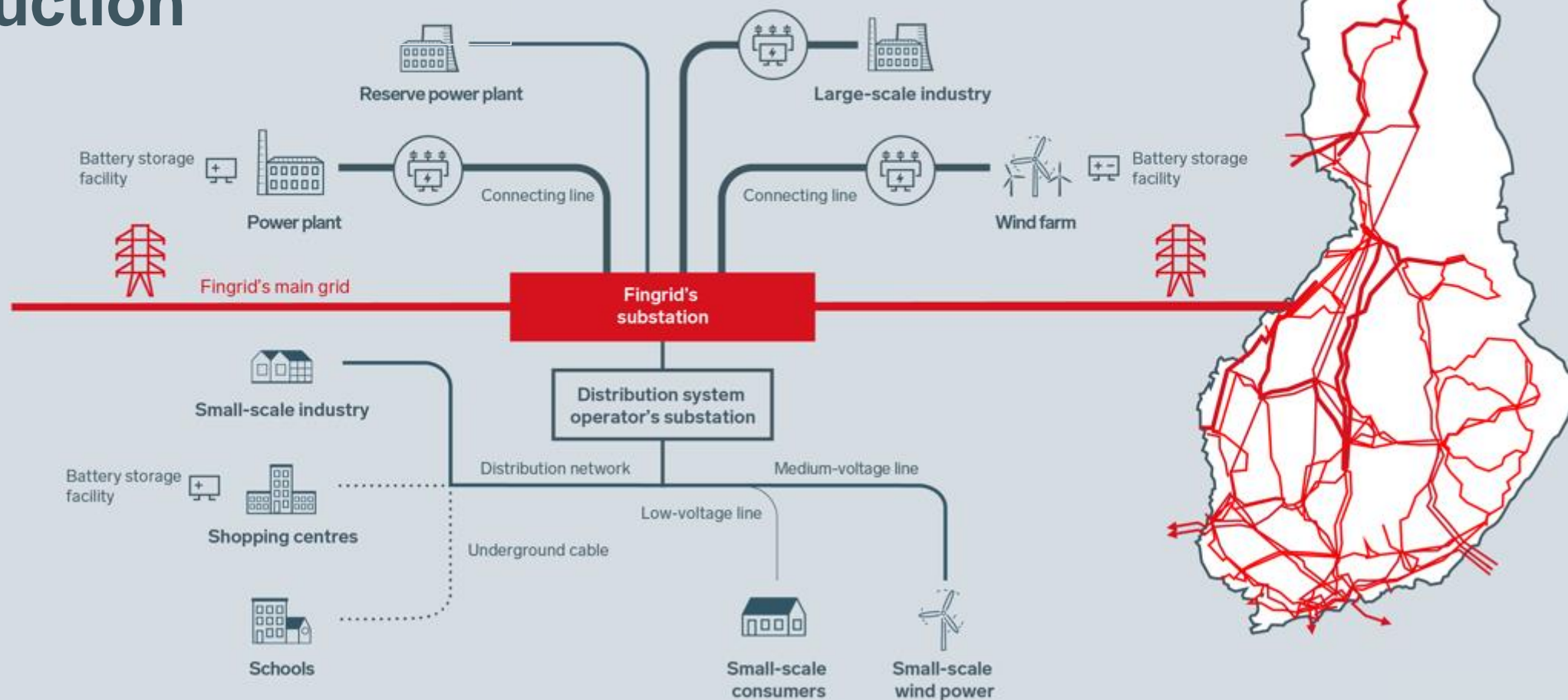


# 04

## 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 (in co-operation with its customers), which is approved by the Energy Authority

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

## Pricing EUR/MWh

2021

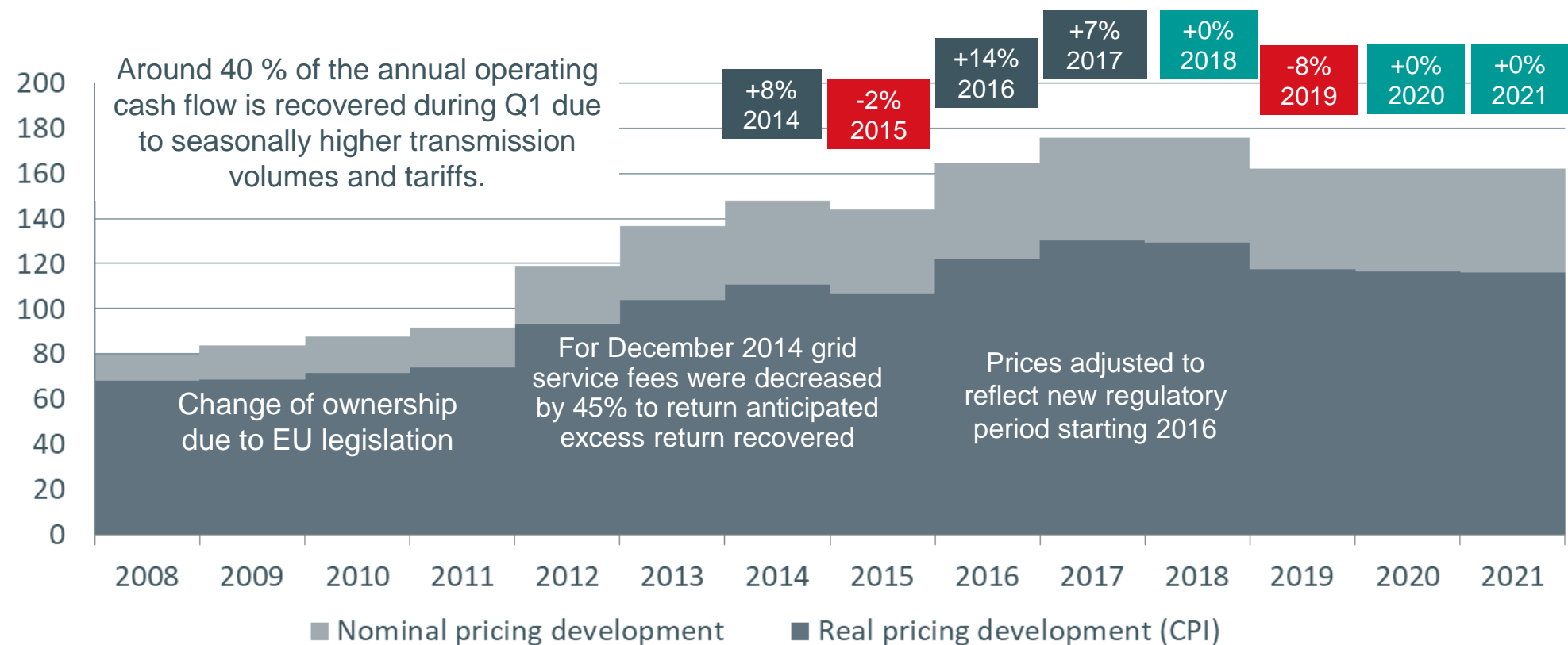
Consumption, winter period*	8.80
Consumption, other times	2.50
Output from the grid	0.90
Input into the grid	0.60
Power plant capacity fee	1,900 €/MW/a
Reactive power fee	1,000 €/Mvar/m
Reactive energy fee	5 €/Mvarh

\* Winter period: 1.12.-28.2. on Monday – Friday 07.00 – 21.00

# Grid service pricing is applied on both consumption and production

Grid service fees have been lowered by more than 10 per cent (in real terms) since 2017

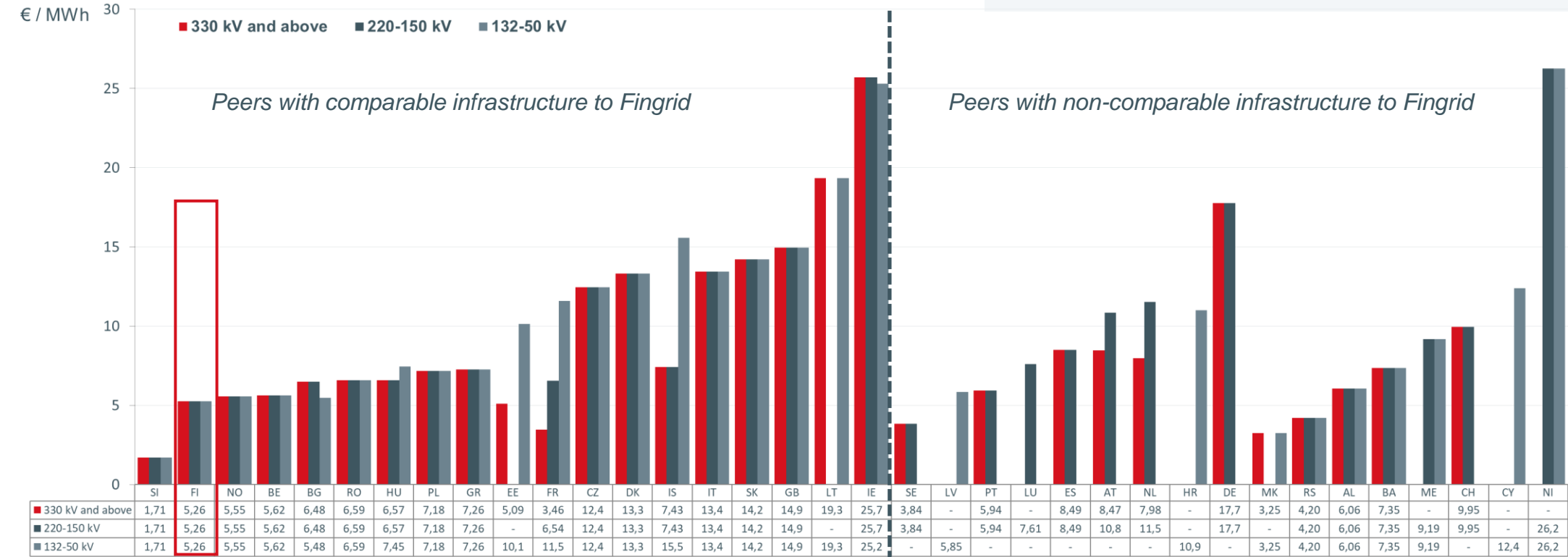
Index (1998=100)



# Transmission charges from generation to consumption

Fingrid's effectiveness and efficiency enable low charges – second lowest transmission tariffs in Europe

Transmission charges from generation to consumption in Europe 2020 – including EU and ETA countries Source: Entso-e

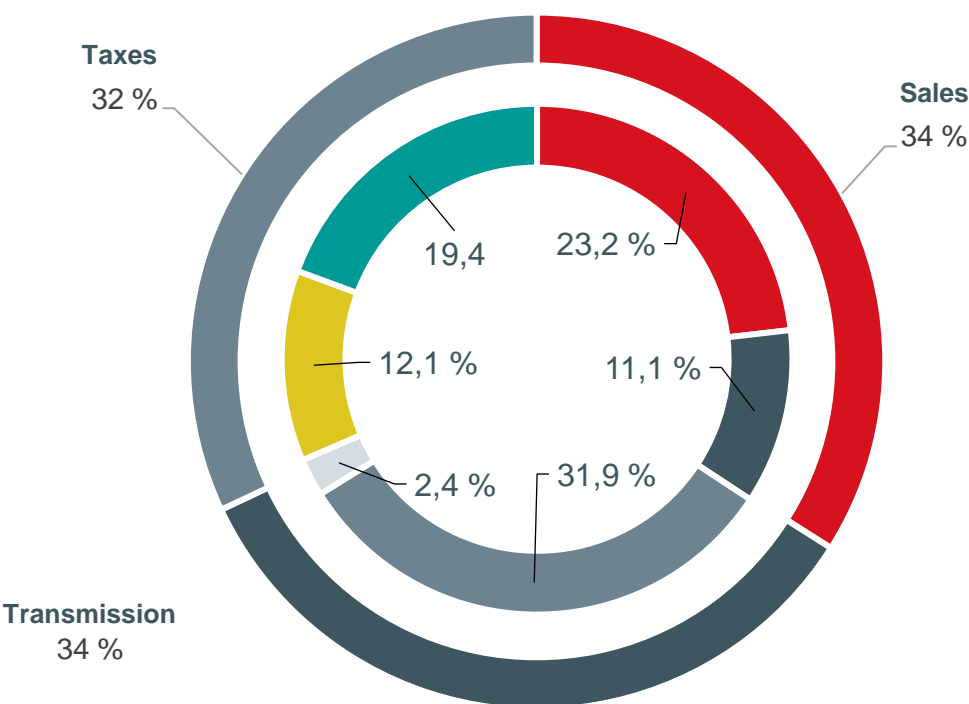




# Breakdown of the electricity price for the consumer

## Household consumer's electricity price

Consumption 5,000 kWh/year



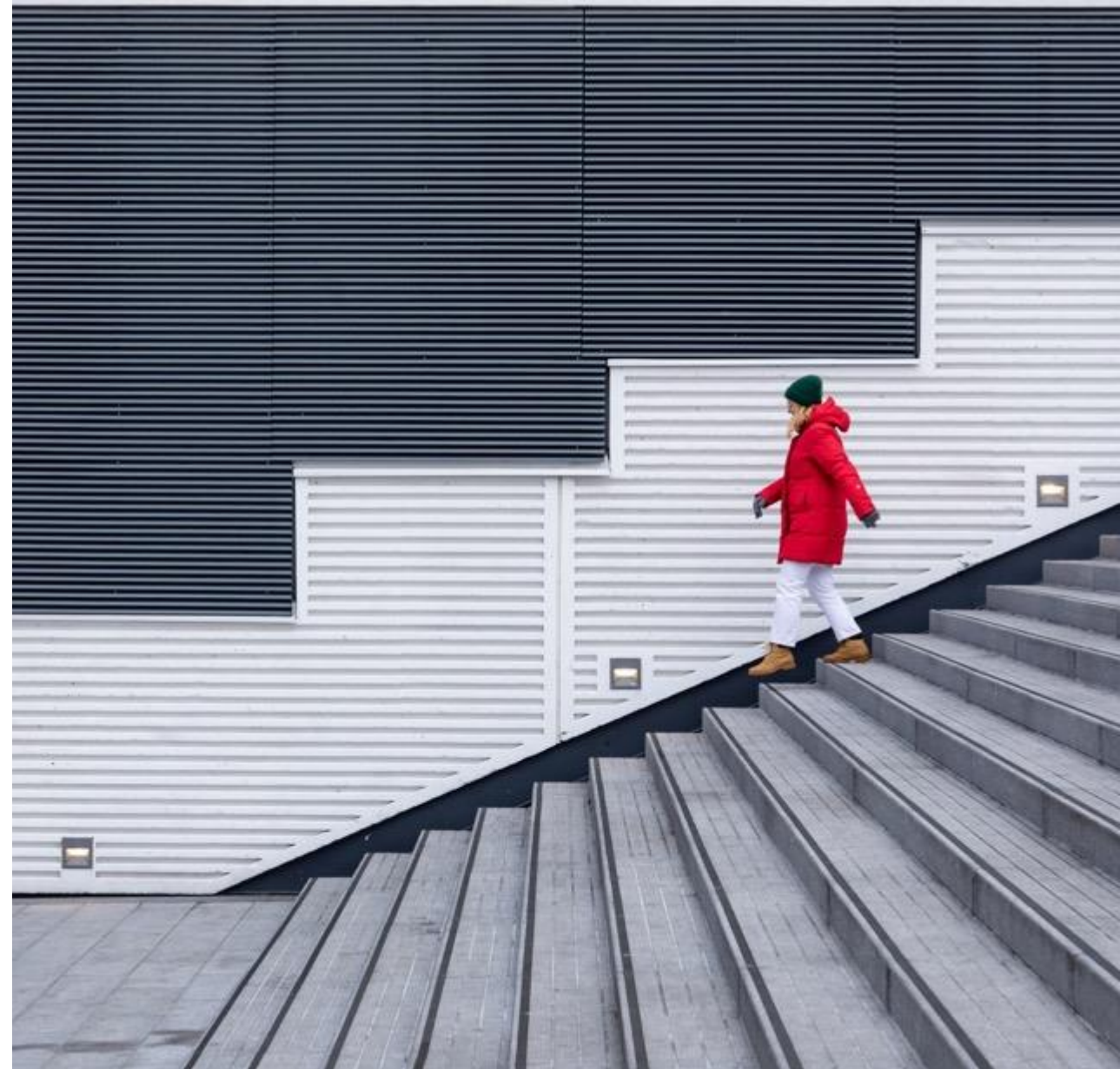
Fingrid's share of the electricity price for the consumer is 2,4%

- Procurement
- Sales
- Distribution network
- Main grid (Fingrid's share)
- Electricity tax
- Value added tax

Source: Energy/Authority as per 1 January 2020

# 04

## Operations Investments



# 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

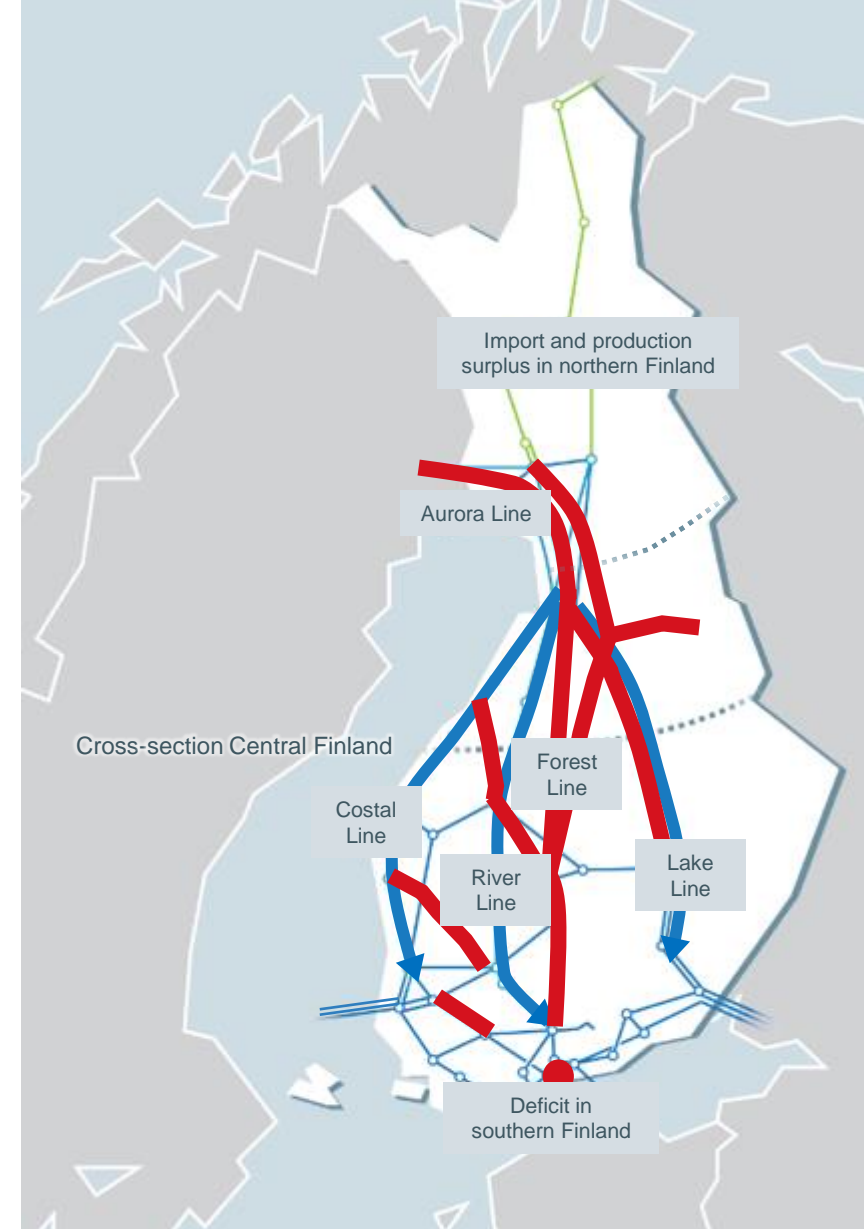
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All Fingrid's investment projects have been done in schedule and budget

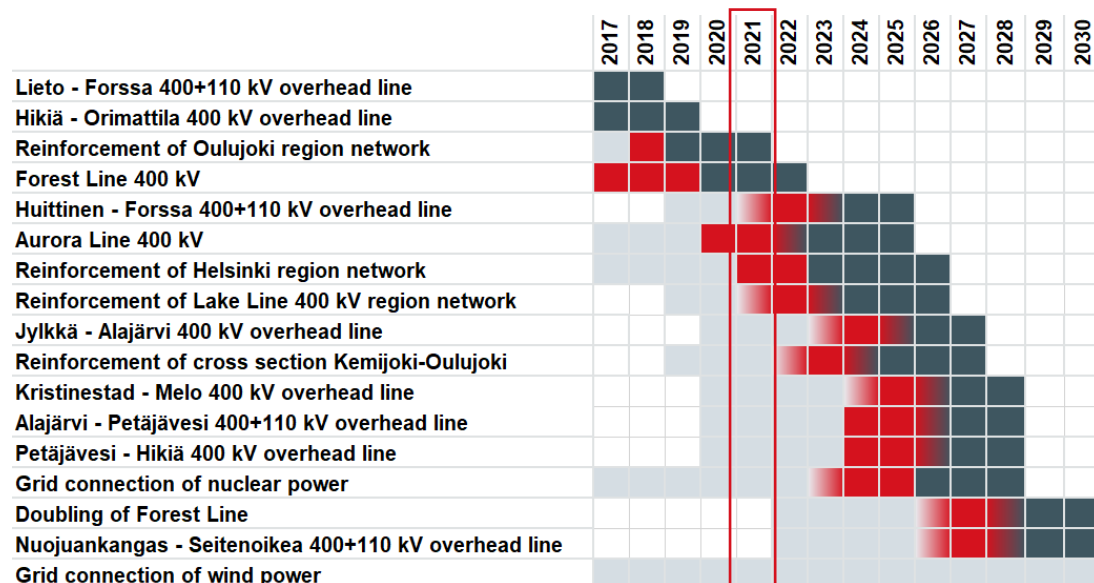


# Grid Vision 2030

Forest Line 400 kV Oulu – Petäjävesi <b>2022</b>	Jylkkä – Alajärvi 400 kV OHTL by <b>2027</b>
Third 400 kV AC interconnection between Sweden and Finland (Aurora Line) <b>2025</b>	Kristinestad – Melo 400 kV OHTL by <b>2028</b>
Huittinen – Forssa 400 kV OHTL by <b>2025</b>	Alajärvi - Petäjävesi 400+110 kV OHTL by <b>2028</b>
Reinforcement of Capital Region network <b>2021–26</b>	Extension of the Forest Line 400kV Petäjävesi – Hikiä by <b>2028</b>
Doubling the Lake Line 400kV Nuojua – Huutokoski by <b>2026</b>	Doubling the Forest Line 400+110 kV Nuojuankangas –Petäjävesi by <b>2030</b>
Reinforcement of cross section Kemijoki-Oulujoki by <b>2027</b>	Nuojuankangas-Seitenoikea 400+110 kV OHTL by <b>2030</b>



# Flexible and long-term investment strategy



## 2021– 2030:

2100 km of 400 kV transmission lines  
1400 km of 110 kV transmission lines

85 % of new power lines will be constructed along or next to an existing right of way

EIA / Preliminary design

Detailed planning and permissions

Implementation

Over 100 substation projects (includes new substation projects, expansion projects and maintenance projects)

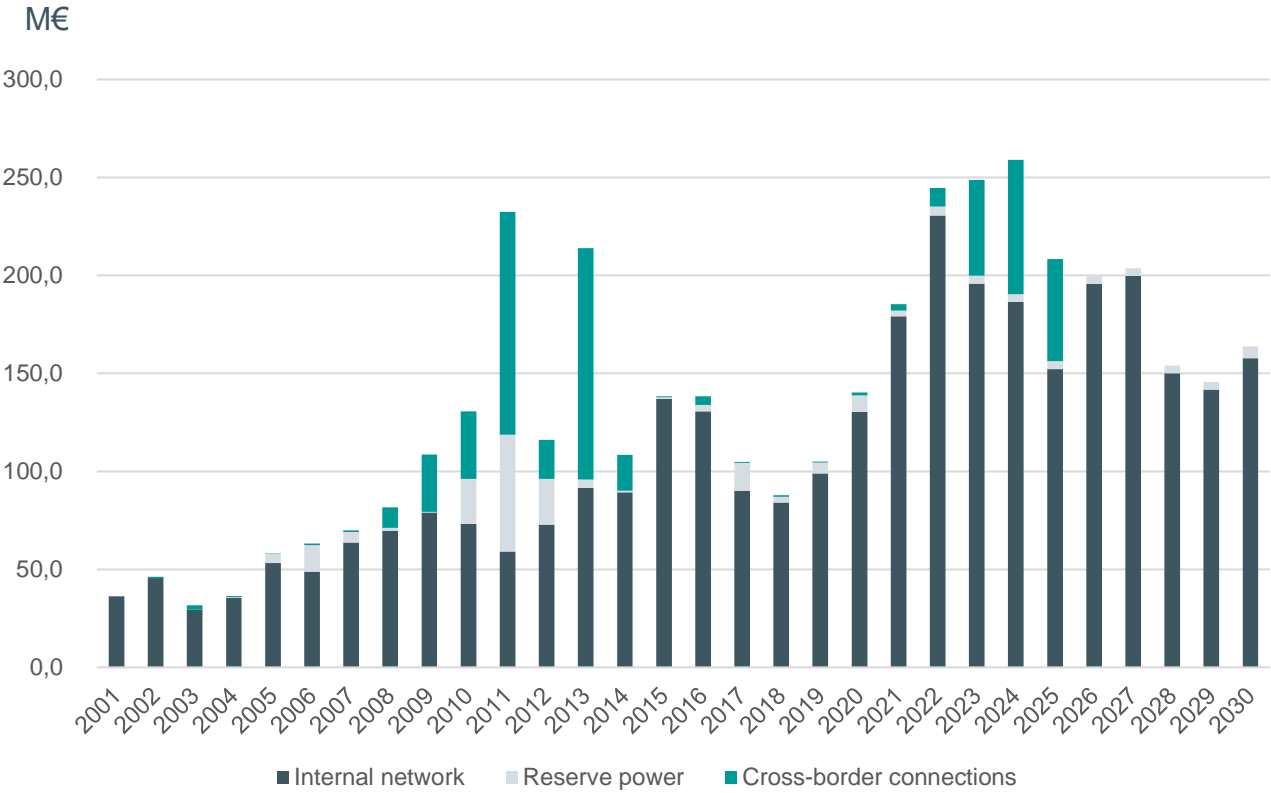
Fingrid has a long-term planning horizon for investments

- 400 kV main grid
- 400 kV under construction
- Main grid base line scenarios





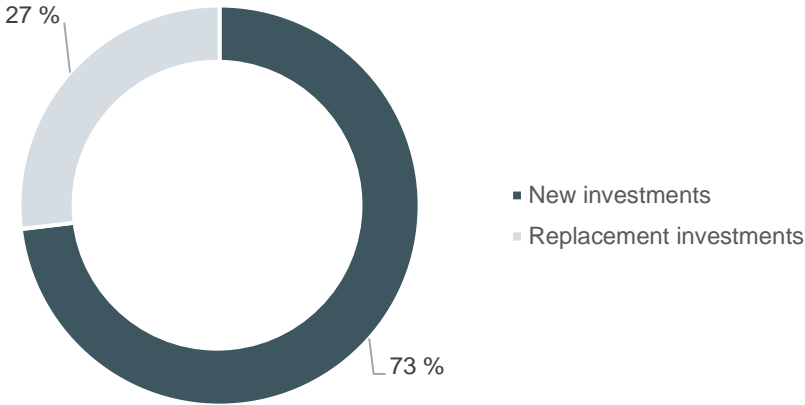
# Flexible and long-term investment strategy



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

## Investments in 2021–2030

EUR 2.0 bn



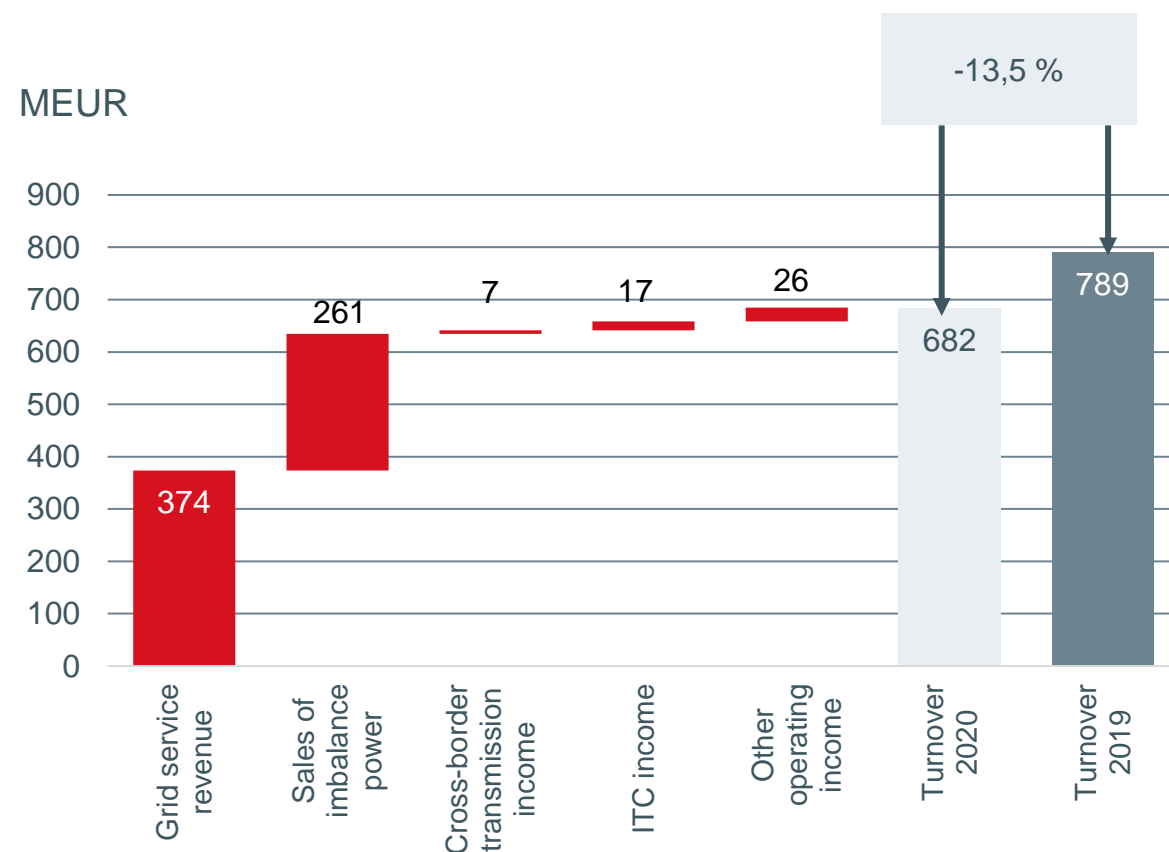
# 05

## Financials

Financial  
performance



# IFRS turnover breakdown in 2020



## 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

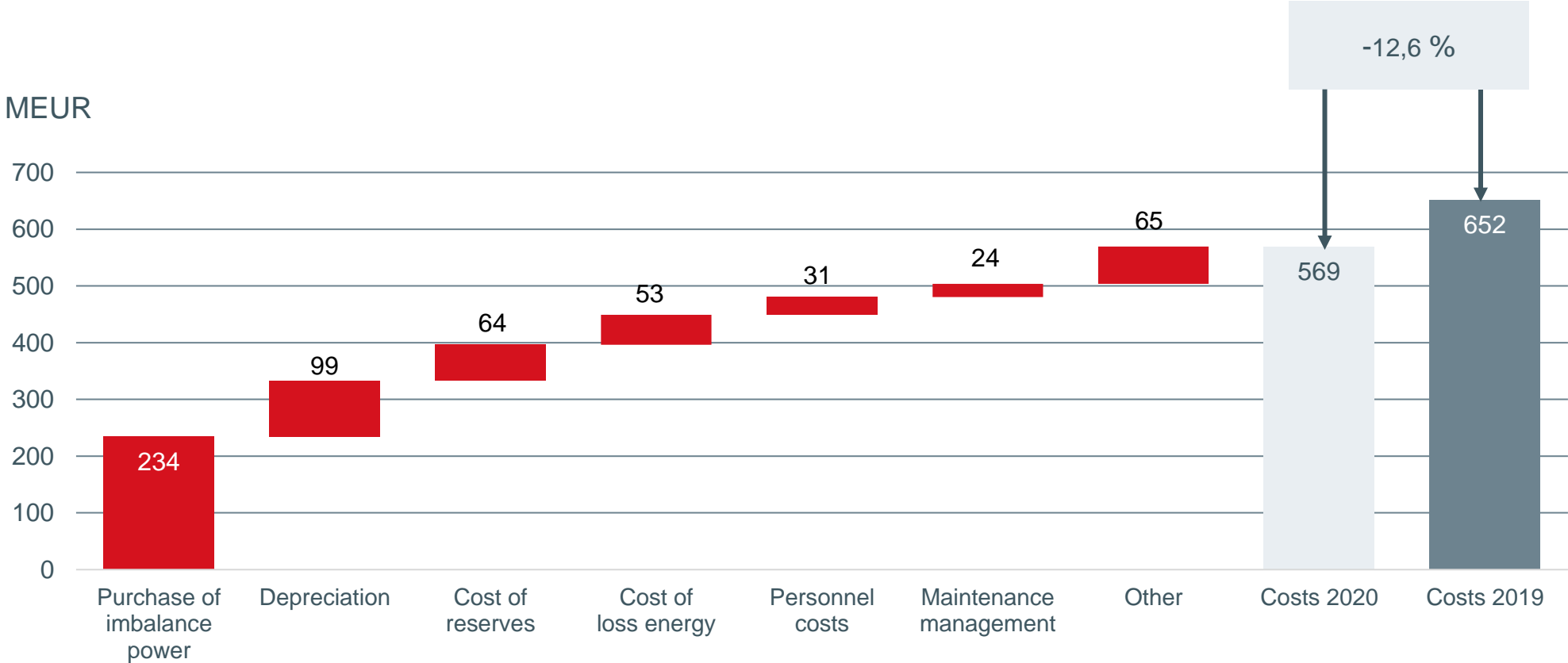
### Cross-border transmission income

- 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 2020



# 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

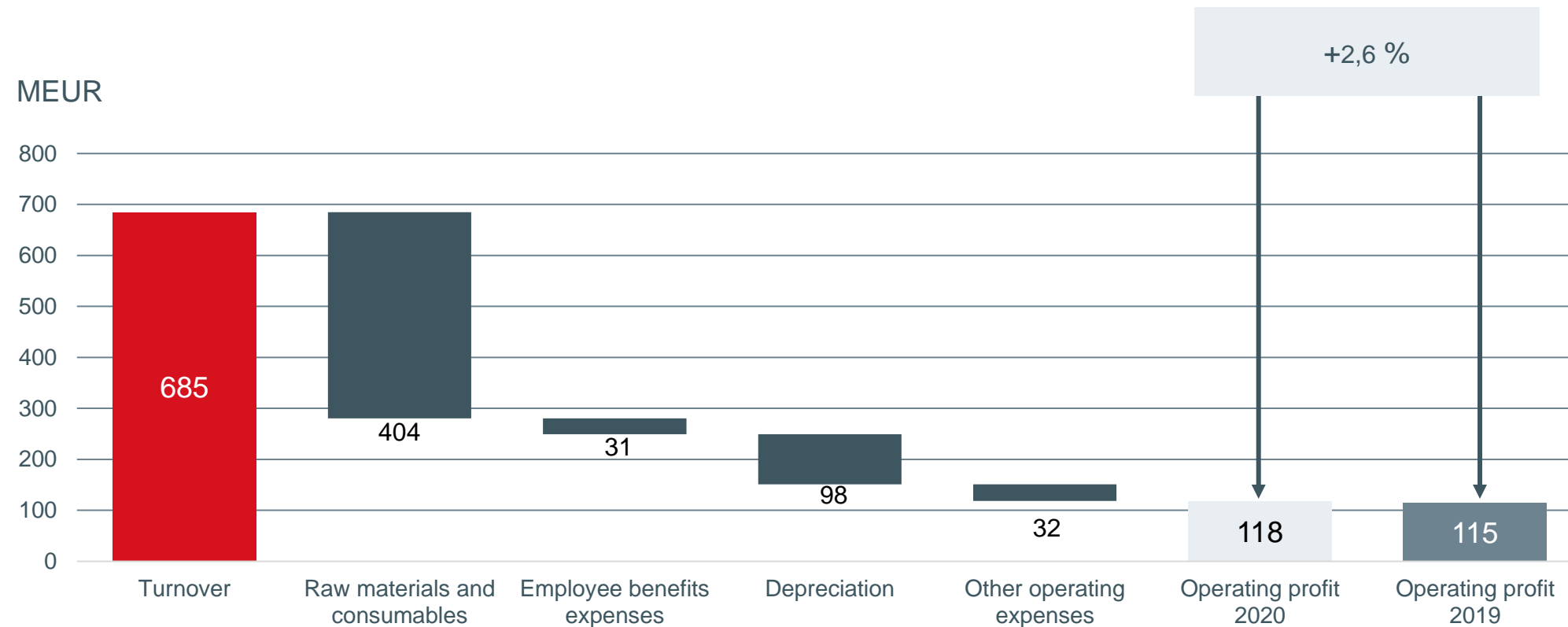
- Loss energy is hedged up to four years in advance to ensure stable tariff

## Personnel costs

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



# IFRS operating profit in 2020



# Fingrid Oyj consolidated profit and loss (IFRS)

Operating profit stabilized on a solid level

## IFRS profit and loss 2016–2020 in MEUR

	2020	2019	2018	2017	2016
<b>TURNOVER</b>	<b>685</b>	<b>794</b>	<b>864</b>	<b>675</b>	<b>599</b>
Raw materials and consumables used	-404	-491	-483	-302	-248
Employee benefits expenses	-31	-26	-32	-29	-29
Depreciation	-98	-98	-100	-97	-99
Other operating expenses	-32	-63	-7	-62	-30
<b>OPERATING PROFIT (EBIT)</b>	<b>118</b>	<b>116</b>	<b>242</b>	<b>185</b>	<b>192</b>
<i>EBIT-%</i>	<i>17 %</i>	<i>14 %</i>	<i>28 %</i>	<i>27 %</i>	<i>32 %</i>
Finance income and costs	-4	-11	-15	-23	-19
<b>PROFIT BEFORE TAXES*</b>	<b>113</b>	<b>106</b>	<b>229</b>	<b>164</b>	<b>174</b>
Income taxes	-19	-21	-46	-33	-35
<b>PROFIT FOR THE PERIOD</b>	<b>94</b>	<b>85</b>	<b>183</b>	<b>131</b>	<b>139</b>
Other comprehensive income**	1	0	0	-1	6
<b>TOTAL COMPREHENSIVE INCOME</b>	<b>95</b>	<b>85</b>	<b>183</b>	<b>130</b>	<b>145</b>

\* Includes share of profit of associated companies

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

- Turnover decreased mainly due to low energy consumption during the unseasonably warm winter
- 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

# Fingrid Oyj consolidated assets (IFRS)

Fingrid will invest a record EUR 2 billion in the grid resulting in increasing assets

## IFRS assets 2016–2020 in MEUR

	2020	2019	2018	2017	2016
Intangible assets	225	212	190	188	185
Tangible assets	1703	1643	1 634	1 676	1 690
Right-of-use-assets	31	33			
Investments (associated companies and available for sale)	12	11	12	10	10
Receivables	72	52	58	46	40
<b>NON-CURRENT ASSETS</b>	<b>2042</b>	<b>1951</b>	<b>1894</b>	<b>1 920</b>	<b>1 925</b>
Inventories	14	12	12	14	12
Derivative instruments	16	4	19	0	3
Trade receivables and other receivables	110	95	100	96	82
Financial assets recognised in income statement at fair value	80	67	71	73	58
Cash and cash equivalents	46	16	14	10	22
<b>CURRENT ASSETS</b>	<b>265</b>	<b>193</b>	<b>216</b>	<b>193</b>	<b>177</b>
<b>TOTAL ASSETS</b>	<b>2307</b>	<b>2145</b>	<b>2 110</b>	<b>2 113</b>	<b>2 102</b>

- Tangible assets will increase due to higher investments in coming years
- Tangible assets were on average 77 % of total assets
- Current assets on average 10 % of total assets

# Fingrid Oyj consolidated liabilities (IFRS)

Balance sheet has remained stable in 2016-2020

## IFRS liabilities 2016–2020 in MEUR

	2020	2019	2018	2017	2016
Share capital and premium	112	112	112	112	112
Retained earnings	521	575	662	687	654
Other equity	0	-1	-1	0	0
<b>EQUITY</b>	<b>632</b>	<b>686</b>	<b>772</b>	<b>798</b>	<b>766</b>
Borrowings	1004	854	772	813	843
Other non-current liabilities	152	147	131	141	146
<b>NON-CURRENT LIABILITIES</b>	<b>1156</b>	<b>1001</b>	<b>903</b>	<b>954</b>	<b>989</b>
Borrowings	142	235	288	269	265
Derivative instruments	4	0	4	8	8
Trade payables and other liabilities	374	222	142	84	75
<b>CURRENT LIABILITIES</b>	<b>520</b>	<b>458</b>	<b>434</b>	<b>361</b>	<b>347</b>
<b>TOTAL EQUITY AND LIABILITIES</b>	<b>2307</b>	<b>2145</b>	<b>2 110</b>	<b>2 113</b>	<b>2 102</b>

- Current liabilities on average total 20 % of total equity and liabilities
- Trade payables on average 42 % of current liabilities
- Borrowings (current and non-current) totalled on average 51 % of total equity and liabilities
- Decrease in book equity has resulted from increased dividend payments in recent years

# Fingrid Oyj consolidated cash flow (IFRS)

Strong cash flow after investments despite growing investments

## IFRS cash flow 2016–2020 in MEUR

	2020	2019	2018	2017	2016
Cash flow from operations	310	240	303	273	252
Change in working capital	-21	25	-18	-40	-20
<b>Net cash flow from operations</b>	<b>289</b>	<b>265</b>	<b>285</b>	<b>233</b>	<b>232</b>
Net cash flow from investments	-149	-117	-82	-107	-139
<b>Net cash flow after investments</b>	<b>140</b>	<b>148</b>	<b>204</b>	<b>126</b>	<b>94</b>
Net borrowings	51	21	-29	-24	-40
Dividends paid	-148	-171	-174	-98	-90
<b>Net cash flow from financing activities</b>	<b>-97</b>	<b>-150</b>	<b>-202</b>	<b>-122</b>	<b>-130</b>
<b>Net change in cash and cash eqv.</b>	<b>43</b>	<b>-2</b>	<b>2</b>	<b>4</b>	<b>-37</b>
Cash and cash equivalents 1 Jan	83	85	84	80	117
Cash and cash equivalents at the end of period	126	83	85	84	80

- Strong operating cash flow
- Peak investment years coming in following years to enable climate-neutral Finland by 2035
- Cash and cash equivalents reduced to achieve more appropriate capital structure



# 05

## Financials

### Financing



# Financial risk management principles

Fingrid applies a conservative financial policy

## 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 and bilateral facility agreements with banks to support liquidity
- Continuous cash flow forecasting

## 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

## 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

## 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 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
- In addition, Fingrid has bilateral facility agreements with banks to support liquidity
- Long-term bilateral loans provided by the European Investment Bank (EIB) and Nordic Investment Bank (NIB)

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

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



BNP PARIBAS



OP

Swedbank



# Fingrid to increase use of Green Financing

- In 2017 Fingrid established a framework enabling green financing for eligible investment projects and issued inaugural EUR 100 million Green Bond
- Fingrid's investor base grew thanks to the Green Bond because new, long-term and specifically green finance focused debt investors participated in the issue
- Fingrid's capex program covers next 10 years on a rolling basis. Green financing eligible investments are regularly screened from the capex program. In the 2020 screening, around MEUR 180 of Green Bond eligible investments were identified
- One of Fingrid's corporate ESG targets is to increase the share of green financing in the company's total funding portfolio
- Fingrid's corporate responsibility and sustainable development report is available at [https://www.fingrid.fi/globalassets/dokumentit/en/annual-report/fingrid\\_ojy\\_corporate\\_responsibility\\_and\\_sustainable\\_development\\_2020.pdf](https://www.fingrid.fi/globalassets/dokumentit/en/annual-report/fingrid_ojy_corporate_responsibility_and_sustainable_development_2020.pdf)



<https://www.fingrid.fi/en/pages/investors/financing/green-financing/>

Since 2019 Fingrid reports as Green Bond impacts also the amount of estimated CO2 emissions avoided on investments related to renewable power generation

*These impacts are estimated at  
around 207 000 CO2t  
equivalent in 2020.*

*The impacts have been verified  
by an independent external  
verifier Mitopro Oy.*

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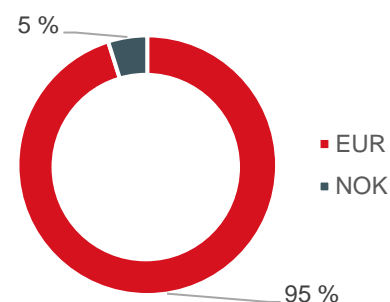


# Weighted average debt maturity was 6,1 years at the end of December 2020

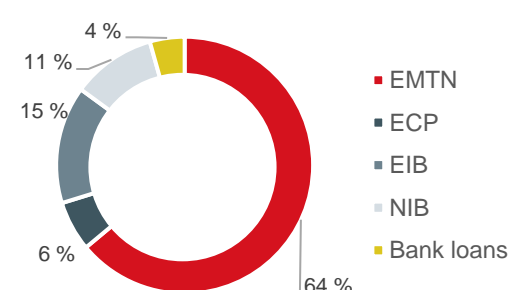
Debt maturity profile is well-distributed

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

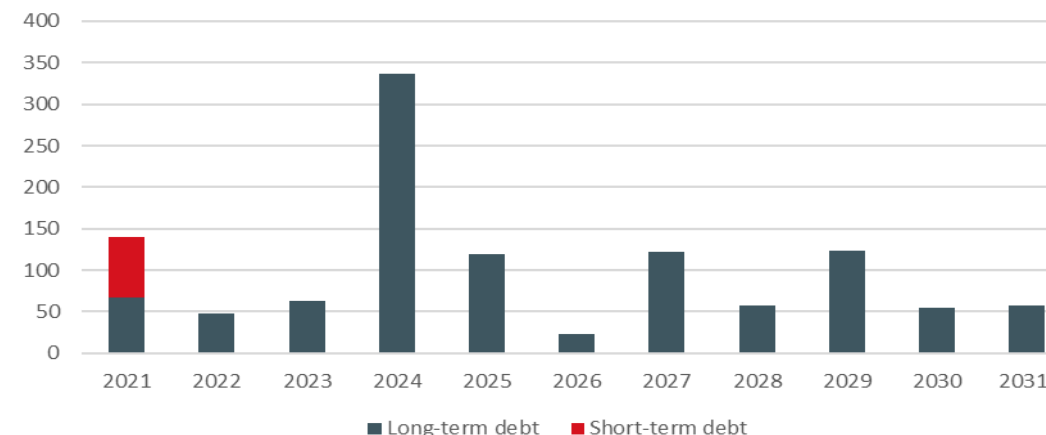
Total debt by currency  
12/2020



Total debt by source  
12/2020



Debt maturity profile as of 31 December 2020



Short-term debt*	12% of total	MEUR 140**
Long-term debt	88% of total	MEUR 1 005**
<b>Total gross debt</b>		<b>MEUR 1 145**</b>

\* Debt maturing in next 12 months

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

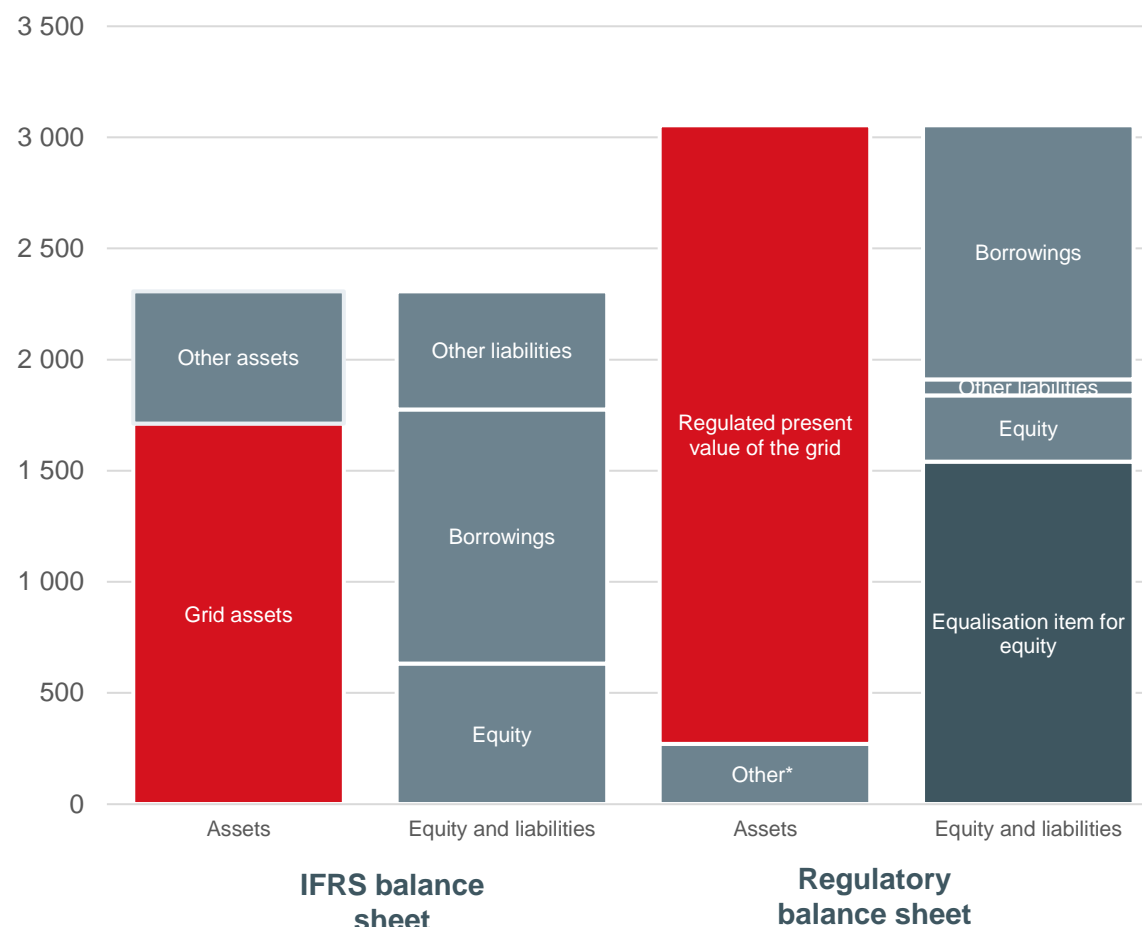


# Strong capital structure

- Total shareholders' equity and liabilities amount to MEUR 2,307
- Regulatory balance sheet amount to around MEUR 3,000 which 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 27 % (IFRS) and 60% (regulatory)

## IFRS and regulatory capital structure as of 31 December 2020



\*Other capital committed to grid operations

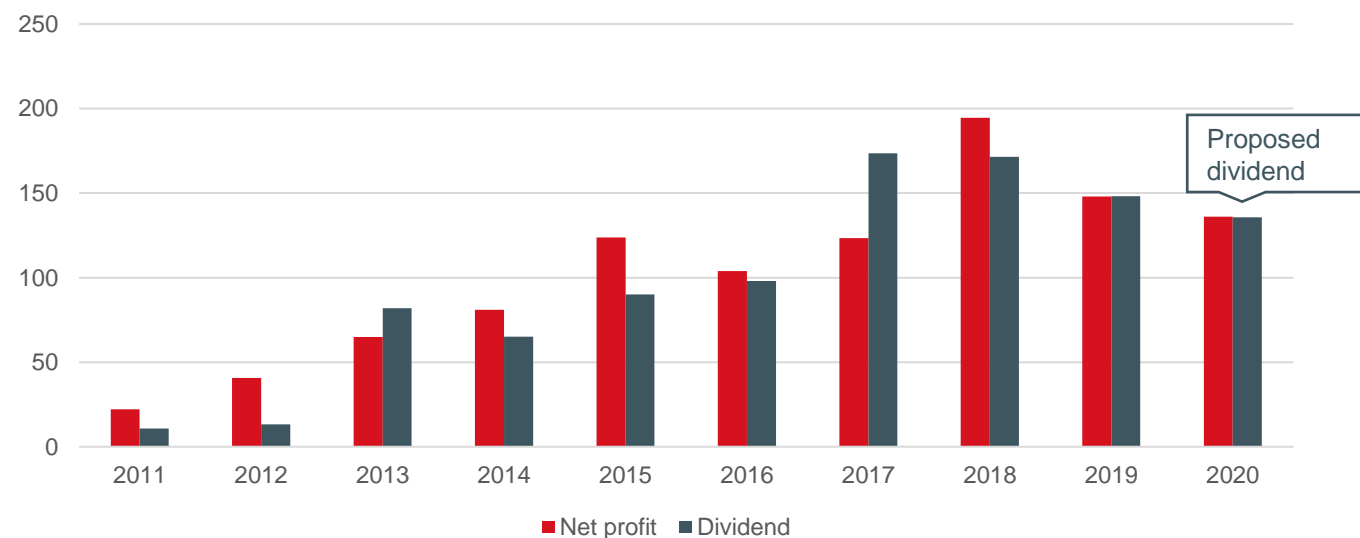
# Fingrid targets to distribute substantially all of the parent company profit as dividend

- The guiding principle is to distribute substantially all of the parent company profit as dividend
- MEUR 136 proposed dividend i.e. 100% of 2020 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

## Net profit and paid dividends in 2011-2020

MEUR



# 06

## Ratings



# Key rating factors according to the rating agencies

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

## S&P Global

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

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

The company benefits from a benign regulatory framework, which includes the possibility of setting its own tariffs in the context of the allowed profits

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 aims to maintain high credit ratings

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

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

Short-term/ Issuer  
Rating

"The stable outlook reflects our assumption that Fingrid will remain strategically important to the Finnish government as Finland's monopoly transmission system operator (TSO), with stable and predictable underlying earnings supported by a favorable regulatory framework. Based on this, we do not anticipate any pronounced changes in Fingrid's stand-alone credit profile (SACP)."

*S&P Global, 21 November 2019*

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

Short-term/ Senior  
Unsecured

"Fingrid Oyj's ratings reflect good earnings and cash flow visibility until 2023 and the supportive features of the Finnish regulatory framework. The ratings further incorporate the group's conservative financial structure, but also Fitch Ratings' expectation of dividend distributions in excess of the stated dividend policy."

*Fitch Ratings, 23 December 2019*



# Thank you!

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**FINGRID**