



13.11.2017

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# Green Bond presentation

**FINGRID**

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# **Fingrid: Finland's Transmission System Operator**

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

- Transmits in its own network approximately 78% of all electricity transmitted in Finland
- Manages cross-border connections to Sweden, Estonia, Russia and Norway
- Ensures power system balance in Finland at all times
- Participates actively in promoting the development of European electricity markets

*"Efficient operations, outsourcing and digitalization are the key success factors"*

## **Fingrid Oyj (public limited company)**

- Headquarters: Helsinki, Finland
- Founded: 1996
- Industry: Electric Utilities
- President and CEO: Jukka Ruusunen



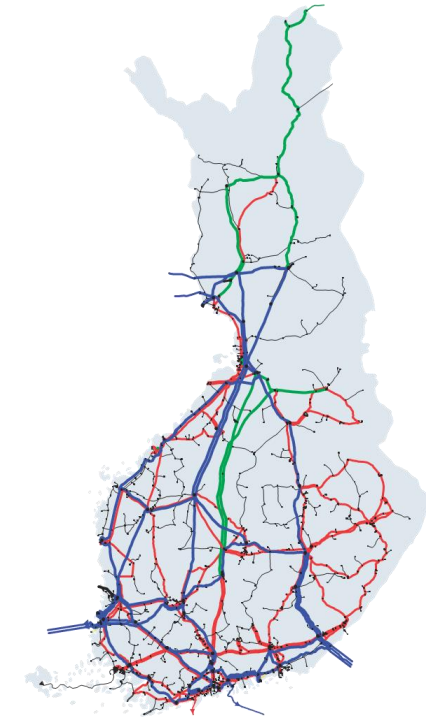
14 600 km  
of power lines,  
116 substations,  
reserve power plants



Network coverage  
and strength  
ensures one price  
area



Transmission  
network reliability





# The perspectives of Fingrid's 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.

# Fingrid has achieved its targets in 2011 - 2016

	2011	2016
Net profit	MEUR 33	MEUR 139
Return	Clearly below regulatory allowed	Almost at regulatory allowed
Dividend	MEUR 7	MEUR 98
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		



# Fingrid's efficient operations are highly recognized

- Excellent results from international benchmark studies
- Fingrid has continuously ranked among the best TSOs in the International Transmission Operations and Maintenance Study (**ITOMS**)\*
- Fingrid ranked the best in the latest International Transmission Asset Management Study (**ITAMS**)
- Fingrid was "exceptionally efficient" in 2013 in a study done for the Council of European Energy Regulators (**CEER**)

## Publicly Available Specification (PAS)

*PAS 55 is the British Standards Institution's (BSI) Publicly Available Specification for the optimized management of physical assets - it provides clear definitions and a 28-point requirements specification for establishing and verifying a joined-up, optimized and whole-life management system for all types of physical assets. Now internationally recognized, PAS 55 is proving to be an essential, objective definition of what is required to demonstrate competence, establish improvement priorities and make better, clearer connections between strategic organizational plans and the actual day-to-day work and asset realities.*

Source: <http://pas55.net>

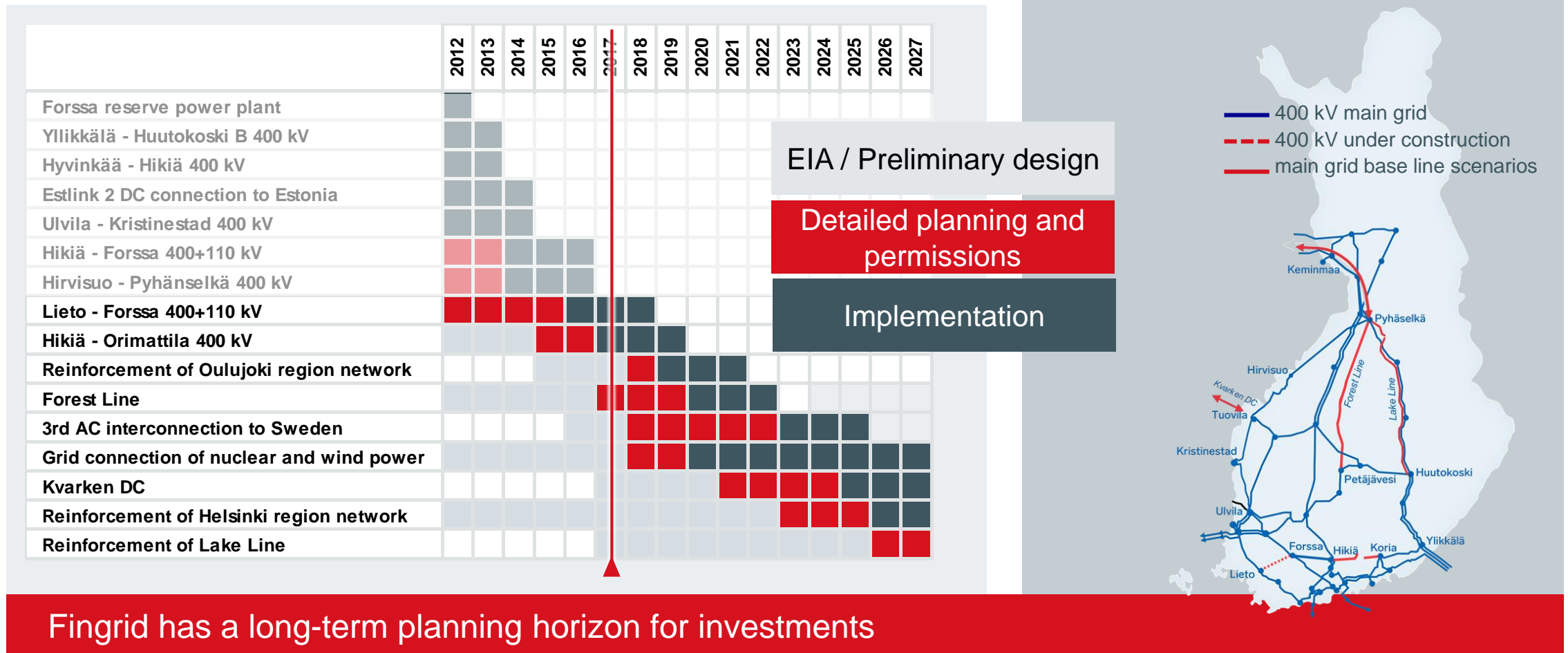
In 2016 Fingrid's asset management again received Publicly Available Specification **PAS 55** certificate.

Fingrid also received new ISO 55001 certification that sets out standards for asset management

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

# Flexible and long-term investment strategy

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



Fingrid has a long-term planning horizon for investments



# Major investment projects

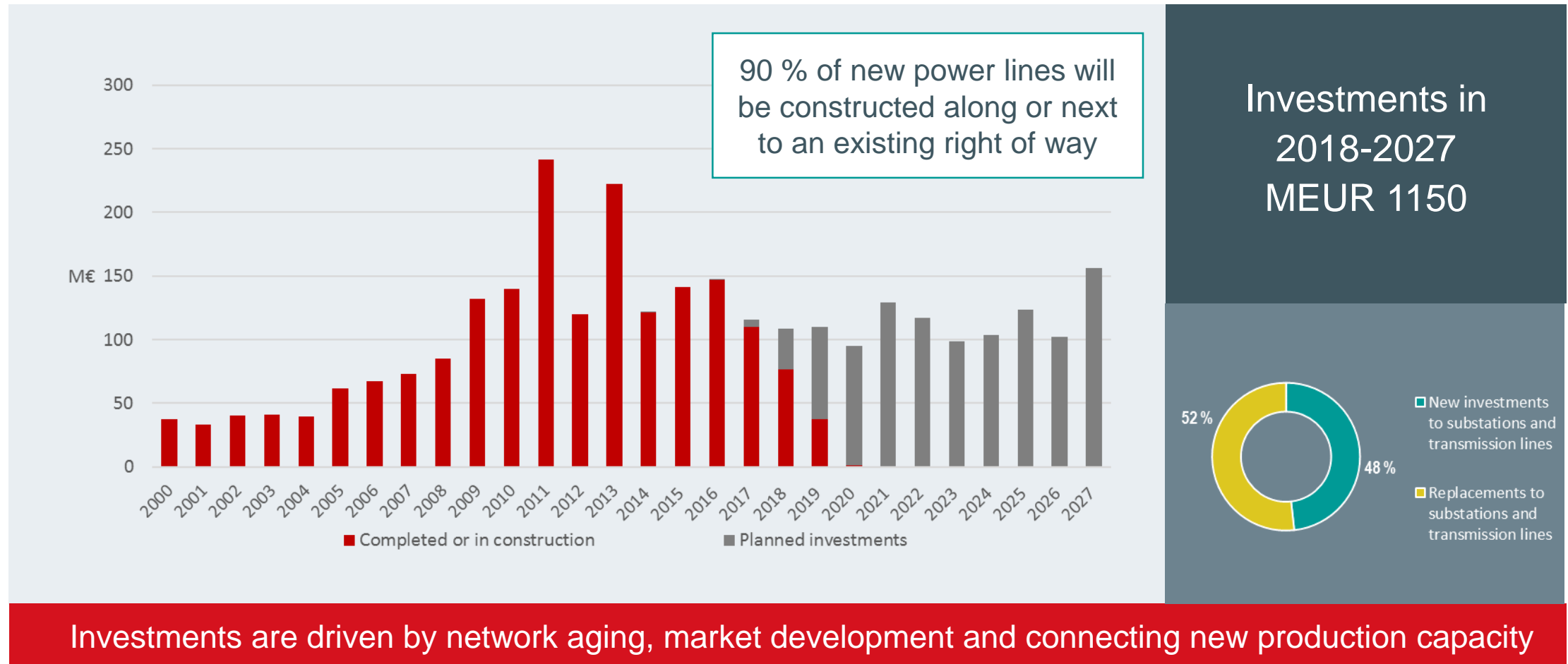
- "Forest Line": New overhead 400 kV North-South line, from Oulu to Petäjävesi. Expected completion in 2022
- "Lake Line": Doubling of the capacity on an existing North-South line in Eastern Finland
- "Iron Lady the Second": Renewal of last parts of original 110kV line Iron Lady from 1928
- 400kV line to Helsinki
- Additional cross-border capacity to Sweden in Northern Finland and cross the Bay of Bothnia
- Total of 32 investments projects to be completed in 2017

*"We shape the clean, market-oriented power system of the future."*



Focus on North-South transmission line investments to enable growing imports from Northern Sweden

# Investments in 2000–2027

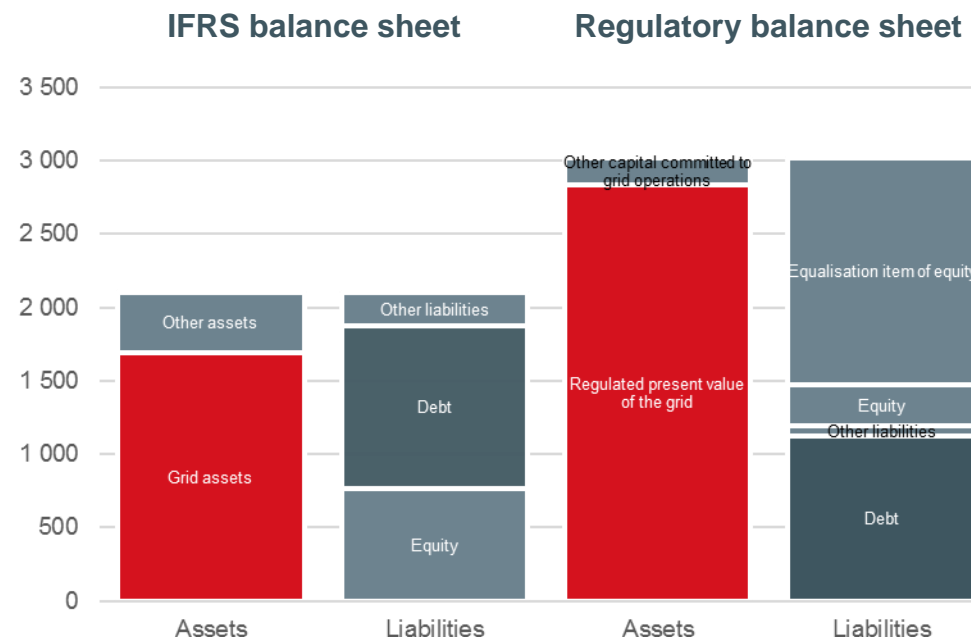
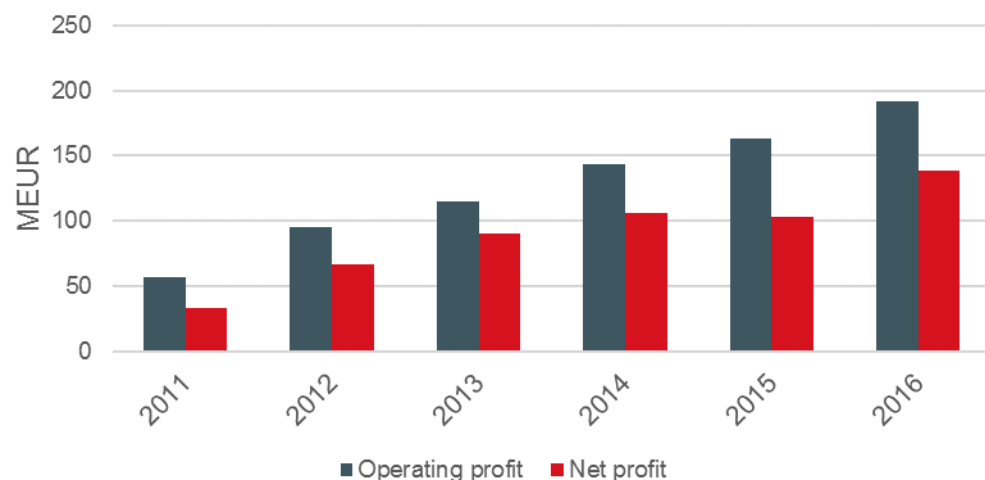


# Strong financial position enables sufficient debt service capacity

## Key figures 2016 (IFRS)

Net cash flow after capex	Net profit
<b>94 MEUR</b>	<b>139 MEUR</b>
Total assets	Regulatory capital
<b>2,101 MEUR</b>	<b>2,950 MEUR</b>
Gross debt	Net debt to EBITDA
<b>1,108 MEUR</b>	<b>3,5x</b>

## Continuously improved operating profit since 2011



- Regulated present value of the grid was approximately 2,850 MEUR in 2016
- Net debt accounted for 35% of regulatory assets
- Regulatory assets are expected to remain stable in the forthcoming years

# 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>	Continuously improved operating profitability in past three years
<b>Rating</b>	Fingrid benefits from AA-/A+ ratings (S&P, Fitch)

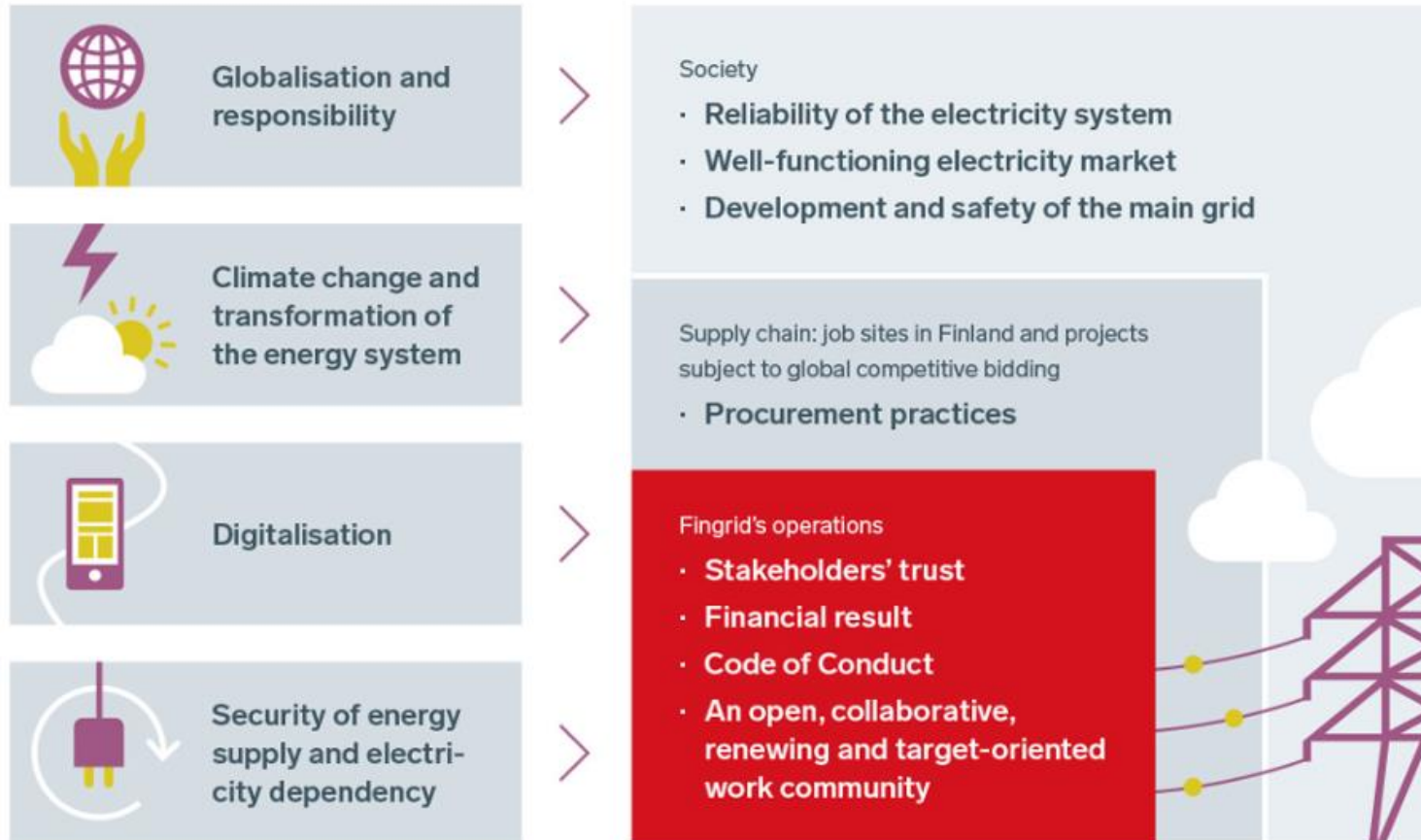
\* Source: Prime Minister's Office, Finland. (2016). *Government resolution on state-ownership policy*.

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

# Corporate responsibility



# From global megatrends to material sustainability aspects for Fingrid



Fingrid's corporate responsibility work focuses on matters that are important with respect to the ***company's strategy and operations***

# Corporate responsibility is an important and natural element of the company's way of operating

- Fingrid's values: In all our operations we are **transparent, impartial, efficient** and **responsible**
- Corporate responsibility management is founded on the company's strategy and guided by the company's Code of Conduct, which is based on the UN Global Compact and the Guiding Principles on Business and Human Rights
- We require responsible business practices from our contractual partners
- Engagement of the personnel and suppliers
- By operating responsibly in all areas of sustainability we can best bring value to our stakeholders and ensure the acceptance of our projects by society



We are committed to taking care of people and the environmental impacts of our operations, and complying with good corporate governance practices

# Sustainable procurement practices

- Fingrid's Supplier Code of Conduct for service and goods suppliers
- Commitment to the Supplier Code of Conduct as a requirement for supplier registers used in recurring substation and power line procurements
- An evaluation process of new suppliers is done annually. Only qualified suppliers in Fingrid's supplier register are invited to bid for outsourced works
- Fulfilment of the requirements is monitored on a risk basis

*"We thoroughly assess the environmental impacts of our operations and pay special attention to controlling environmental risks. In addition to our personnel, we also engage our contractors and service suppliers participating in grid construction and maintenance in environmental sustainability with the help of contractual terms, auditing and environmental training."*

Source: [http://www.fingrid.fi/en/grid\\_projects/environment/Pages/default.aspx](http://www.fingrid.fi/en/grid_projects/environment/Pages/default.aspx)

# Comprehensive and transparent reporting

- Global Reporting Initiative (GRI) framework since 2011. GRI G4 reporting applied
- Communication on Progress (COP) report in compliance with the UN Global Compact initiative
- Environmental Impact Assessment (EIA) materials on investment projects are available on the corporate website

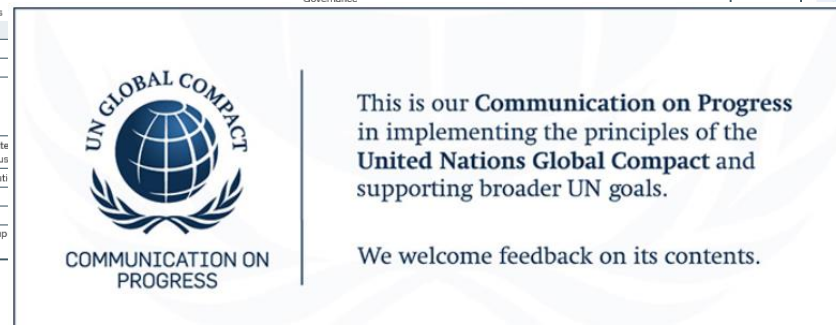
ANNUAL REPORT 2016 • GRI index

## GRI index

### CORPORATE RESPONSIBILITY GRI INDICATORS

### GENERAL STANDARD DISCLOSURES

Designation	GRI content	Location
<b>Strategy and analysis</b>		
G4-1	Statement by the President & CEO	Review by Strategy and Operating Governance
<b>Organisational profile</b>		
G4-3	Name of the reporting organisation	
G4-4	Primary brands, products and services	
<b>Key impacts, risks, and opportunities</b>		
G4-2	Description of key impacts, risks, and opportunities	



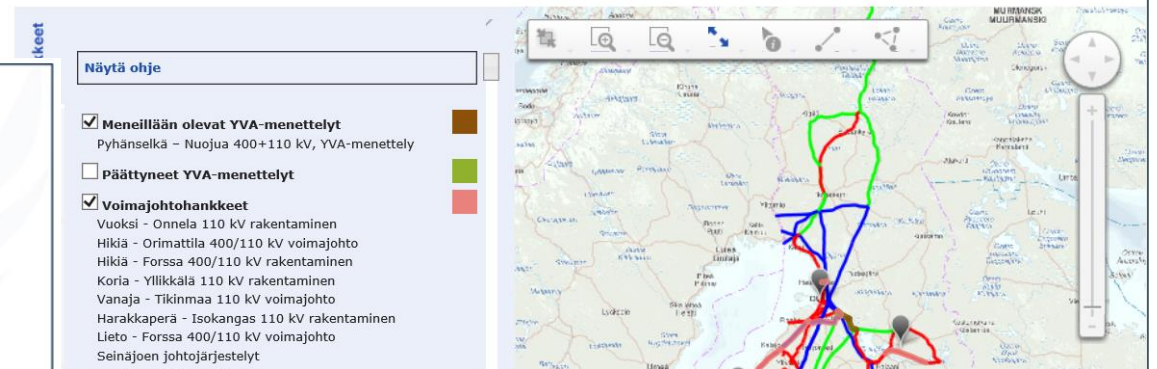
## Current projects

The needs of customers and electricity market constitute the foundation of grid planning and stakeholders efforts by Fingrid Oyj. The mission of Fingrid is to develop the power system both internationally and in Finland. Whenever line routes are being planned and in conjunction with transmission line maintenance work, Fingrid gives landowners, neighbors and other concerned parties an opportunity to express their views, to discuss the project and to co-operate in issues related to the project plan and its execution.

The international projects by Fingrid can be found from the navigation on the left on this site. The current, ongoing domestic grid building projects and EIA procedures are presented both in [Finnish](#) and [Swedish](#). Archives are presented in Finnish.

### Projects on map

Fingrid has launched a map, developed in co-operation with Logica Suomi Oy, which shows Fingrid's projects. A new window for the map service can be opened by [clicking here](#). The site is in Finnish.





# Sustainability in practice – selected achievements in 2017





# Green Bonds

# Green Bonds are part of Fingrid's overall focus on responsible operations

## Fingrid's Green Bonds Framework

- Our Green Bonds Framework is developed in alignment with the Green Bond Principles 2017
- Fingrid has defined eligible investment projects as those **i)** reducing losses, **ii)** connecting renewable power\* **iii)** cross-border projects and/or **iv)** smart grids
- Direct investments to fossil fuel generation or connecting nuclear power will not be financed with green bond proceeds

\* Wind, hydro, solar and bioenergy

Eligible Projects are defined in our Green Bonds Framework

### Energy efficiency

1. Development, construction and reconstruction of Transmission Networks to
  - a) decrease network losses and/or
  - b) enhance transmission capacity for clean energy (wind, hydro, solar and bioenergy); or
2. Development, construction and reconstruction of Transmission Networks to connect new, clean energy production to areas of demand through national grid enhancement; or
3. Development, construction and reconstruction of Transmission Networks to increase the share of renewable energy in the grid by connecting Finland's grid to neighbouring countries (and/or areas therein) where
  - a) the electricity generation mix has a *higher* share of renewables and Finland is a net *importer* of electricity or
  - b) the electricity generation mix has a *lower* share of renewables and Finland is a net *exporter* of electricity; or
4. Development and construction of smart grids.

Source: Fingrid Green Bonds Framework

Fingrid's green bond framework is verified by second opinions provider CICERO

# Second Party Opinion by CICERO



°CICERO  
Medium Green

- Fingrid's Green Bond Framework (GBF) receives a Medium Green\* shading
  - \* Scale: dark green, medium green, light green, brown
- Cicero considers many of Fingrid's project categories dark green, but there is the possibility of light and medium green projects
- **Strengths** of the Green Bond Framework
  - Established management and governance structures
  - Specified criteria for selection
  - Capable committee for project evaluation and selection
  - Reporting and Review
- **Weaknesses**
  - Cicero finds no obvious weaknesses in the Fingrid GBF

*"Overall, Fingrid's Green Bond Framework together with its land use and environmental policy, commitments to corporate social responsibility, implementing Codes of Conduct, and alignment with the Finnish National Climate and Energy Strategy provide a sound base for climate-friendly investments."*

Source: CICERO second opinion

# Decision making process for Eligible Projects

- Eligible Projects will be:
  - 1. Evaluated** by the Grid Planning, Land Use and Environment and Finance and Treasury departments based on Fingrid's long term capex plan;
  - 2. Selected** as Potential Eligible Projects if they meet the criteria in the Green Bonds Framework;
  - 3. Approved** as Eligible Projects unanimously in Fingrid's internal Steering Committee for Finance and Business development with representatives also from the Grid Planning and the Land Use and Environment departments including the manager responsible for Corporate Sustainability

*"The Committee will only approve Projects, which meet the criteria of this Green Bonds Framework, i.e. Projects, which have a high likelihood for positive, net, long-term environmental effects"*

Source: Fingrid Green Bonds Framework

# Potential for MEUR 100 Green Bond issue

- Identified green bond eligible investment costs of around MEUR 150 to 16 investment projects mainly in 2015-2018
- Green bond proceeds to be used for a pool of new projects and refinancing
  - Financing of new projects i.e. Eligible Projects completed in 2017 or thereafter
  - Refinancing of Eligible Projects completed 2015 and 2016
- The remaining around MEUR 50 will act as a buffer for any project exclusions or time schedule changes (not expected at the moment) until full allocation

Costs estimated/incurred from identified Eligible Projects										
Project name	2013	2014	2015	2016	2017	2018	2019	2020	2021	
Refinance	Expansion of Keminmaa substation			2						
	Reconductoring of Isohaara - Raassakka 110 kV transmission line		1	1						
	New 110 kV substation Kuolajärvi		1	3	1					
	New 110 kV substation Siikajoki			3	1					
	Refurbishment and expansion of Taivalkoski substation			1	4					
	Expansion of Tuovila substation		1	2	1					
	Expansion of Pirttikoski substation and a new 400/100 kV transformer		1	6	1					
	New Hikiä - Forssa 400 kV transmission line	3	11	14	5					
New projects	Renewal of Petäjäskoski 220 kV substation and a new 400/220 kV transformer		3	7	6	1				
	New 400/110 kV transformer substation Isokangas			3	13	1				
	New 400/110 kV transformer at Kristinestad substation				6	1				
	New Vihtavuori - Koivisto 110 kV transmission line					3				
	New 220/110 kV transformer at Seitenoikea substation				1	2				
	New Lieto - Forssa 400 kV transmission line			2	10	10	1			
	New Lempiälä - Vuoksi 400 kV transmission line					1	5	2		
	New Hikiä - Orimattila 400 kV transmission line					3	10	9	1	
Totals	Refinance MEUR 64	3	15	33	14					
	New projects MEUR 90		3	12	37	21	16			
	<b>Total MEUR 154</b>	<b>3</b>	<b>18</b>	<b>45</b>	<b>50</b>	<b>22</b>	<b>16</b>			



# Description of identified Eligible Projects\*

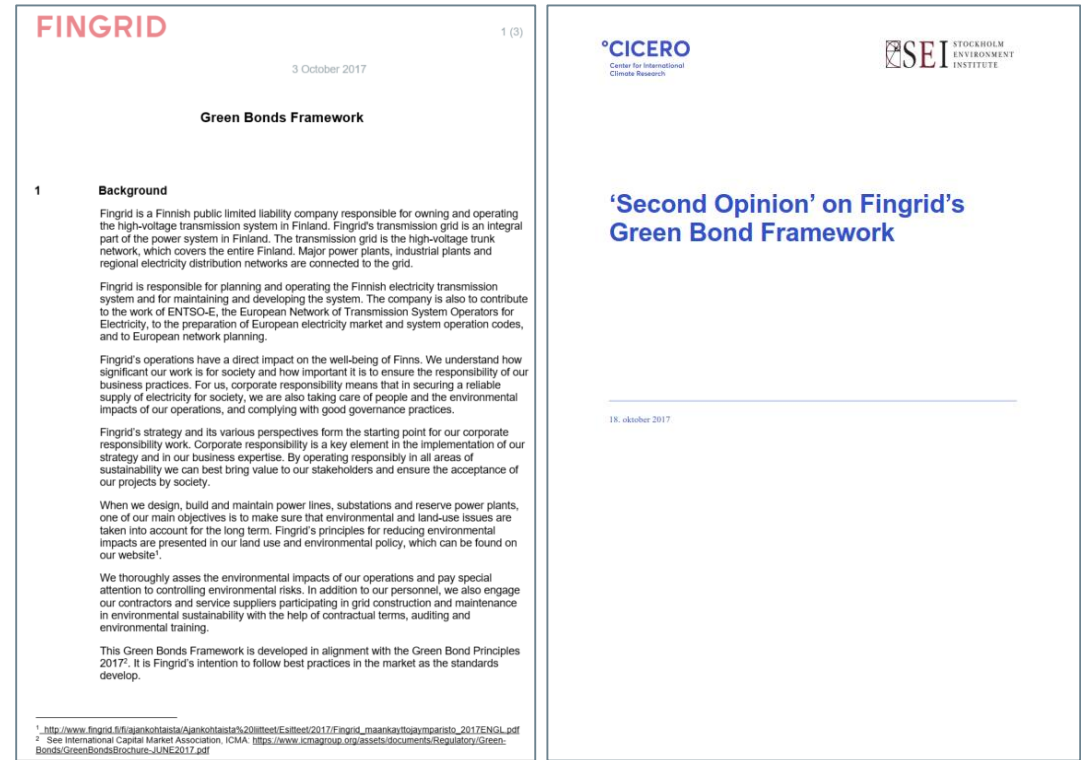
Project	Description
New Hikiä - Forssa 400 kV transmission line	Old 110 kV line was replaced by 400+110 kV power line resulting in <b>significant drop in losses</b>
New Hikiä - Orimattila 400 kV transmission line	An old 110 kV power line is going to be replaced with 400+110 kV power line to increase capacity to Lahti region. Old coal fired CHP is going to be shut down and replaced with BIO district heating plant. New power line results also in <b>significantly lower losses</b>
New 400/110 kV transformer substation Isokangas	Network was enhanced in order <b>to connect new wind power and existing hydro power</b>
Expansion of Keminmaa substation	Expansion of existing substation in order <b>to enhance capacity for wind and existing hydro power</b>
Reconductoring of Isohaara – Raasakka 110 kV transmission line	Conductors were changed <b>to connect more wind power and reduce losses</b>
New 400/110 kV transformer at Kristinestad substation	A second 400/110 kV transformer was needed <b>to connect more wind power</b>
New 110 kV substation Kuolajärvi	New substation for <b>connecting new wind power</b>
New Lempiälä - Vuoksi 400 kV transmission line	Old 110 kV line is going to be replaced by 400 kV power line resulting in <b>significant drop in losses</b>
New Lieto - Forssa 400 kV transmission line	Old 110 kV line was replaced by 400+110 kV power line resulting in <b>significant drop in losses</b>
Renewal of Petäjäskoski 220 kV substation and a new 400/220 kV transformer	A new transformer that enables <b>more wind power and reliable connection for existing hydro power</b>
Expansion of Pirttikoski substation and a new 400/100 kV transformer	A new transformer that enables <b>more wind power and reliable connection for existing hydro power</b>
New 220/110 kV transformer at Seitenoikea substation	Old 220/110 kV transformer was replaced by a bigger one in order <b>to connect new wind power</b>
New 110 kV substation Siikajoki	New substation for <b>connecting new wind power</b>
Refurbishment and expansion of Taivalkoski substation	A substation was refurbished and expanded in order <b>to connect wind power and existing hydro power</b>
Expansion of Tuovila substation	Part of new 400 kV network on western coast that enables <b>connection of new wind power</b> , better transmission capacity for FI-SE cross-border lines and north-south connection
New Vihtavuori - Koivisto 110 kV transmission line	A new power line is needed to <b>connect biopower plant</b> in new Äänekoski bioproduct mill. New power line results also in <b>lower losses</b>

\* Subject to committee approval

# Reporting

- Annual Green Bond Investor Letter publicly available on Fingrid's web site:
  - a. list of the Projects financed including a brief description and expected impact
  - b. information about the division of the allocation of Green Bond proceeds between new Projects and refinancing
  - c. a summary of Fingrid's Green Bond development
- Quantitative and/or qualitative impact reporting on financed Projects in the Investor Letter when feasible
- Fingrid will have an annual verification of the allocation of proceeds by a third party once reporting is started

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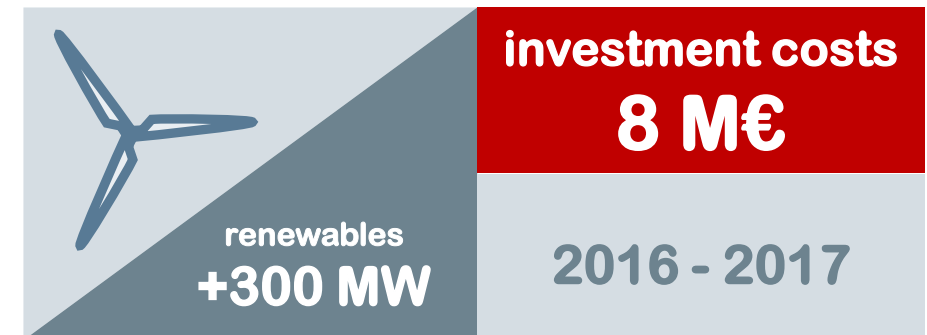
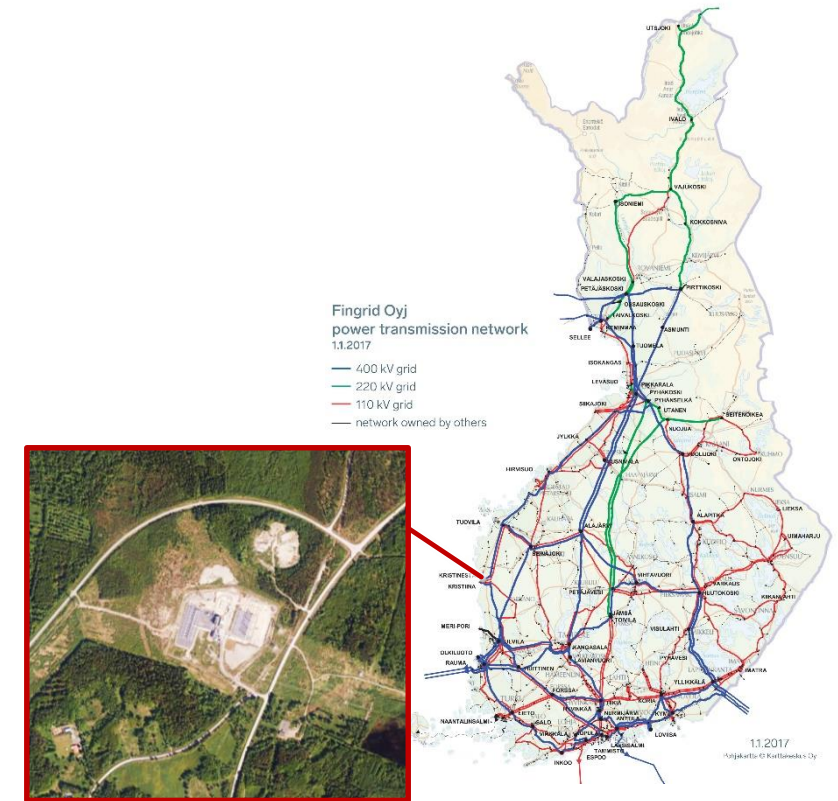
FINGRID

# Project examples

# Connecting renewable power

## New 400/110 kV transformer at Kristinestad substation

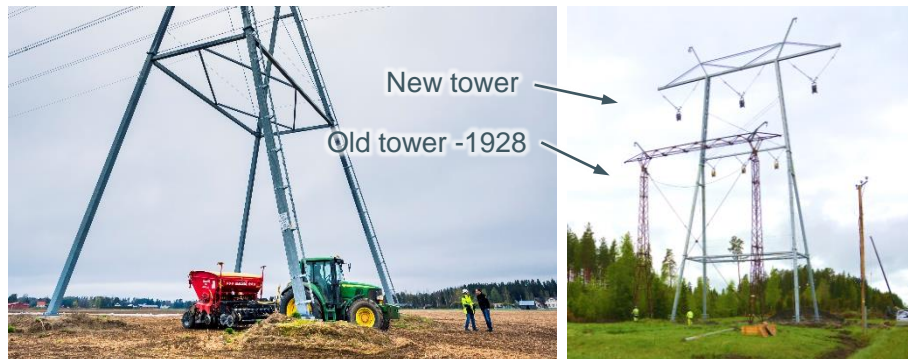
- Kristinestad substation was built in 2014 in the center of one of the best wind power areas in Finland
  - Kristinestad substation replaced an old substation that was situated 6 km from the new substation next to oil and coal fired condensing power plants. These power plants have now been closed
- A **second 400/110 kV transformer** was added to Kristinestad in 2017
- Connection **capacity for wind power increased 300 MW** totaling 500-600 MW
  - The transformer also made it possible to change the use of surrounding 110 kV network. New wind power can now be connected to grid without the need of building new power lines



# Reducing losses and facilitating bio heating

## New Hikiä - Orimattila 400 kV transmission line

- Oldest 110 kV power line in Finland is being replaced with a new one
- New power line has **80% lower transmission losses** and almost **500% higher transmission capacity**
  - Power line structure makes it possible to upgrade voltage from 110 to 400 kV → Even higher capacity and lower losses
- The new transmission line will provide (replacement) transmission capacity to a region where a coal fired combined heat and power plant is being closed and replaced with bio district heating plant, which has no electricity production

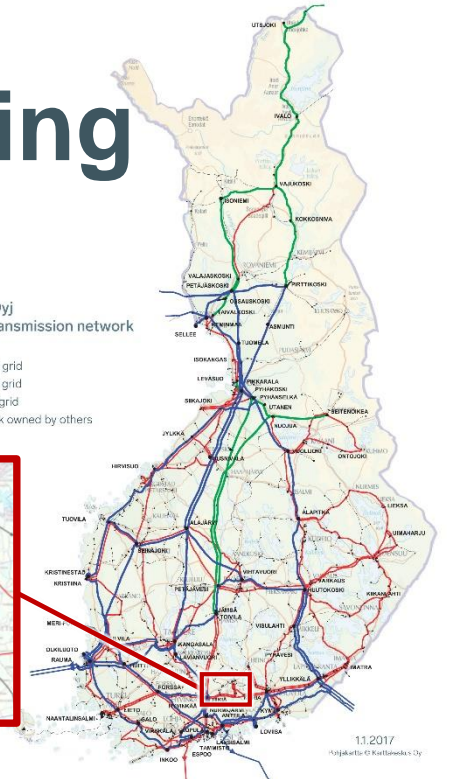


Fingrid has developed a new type of transmission line tower for use on arable fields. The new tower has been designed to minimise the disadvantage inflicted on agriculture and to improve occupational safety. The product development project for the new field tower has been awarded the [Fennia Prize 2012 Grand Prix in industrial design.](#)



Fingrid Oyj  
power transmission network  
1.1.2017

- 400 kV grid
- 220 kV grid
- 110 kV grid
- network owned by others



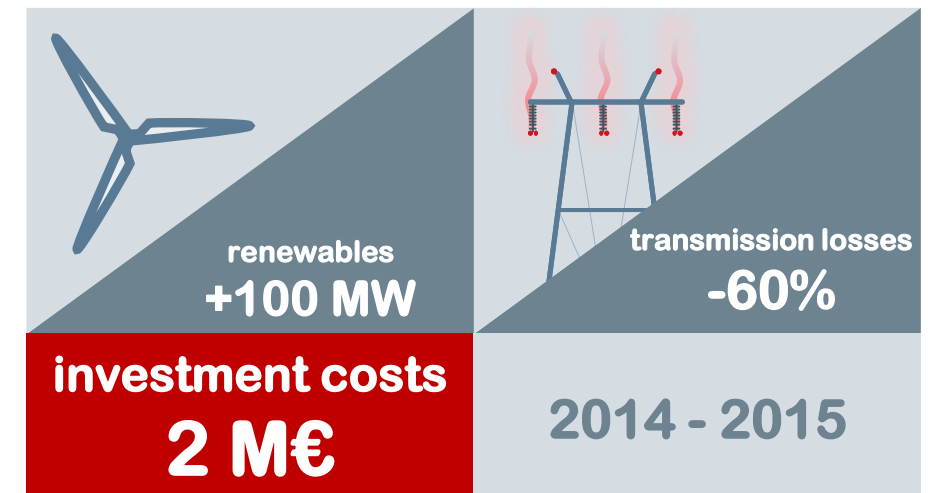
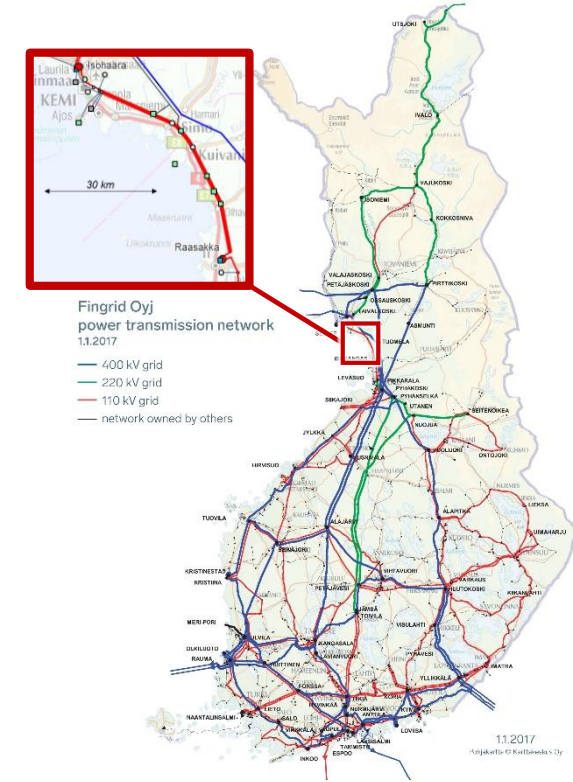
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# Connecting renewable power and reducing losses

## Reconductoring of Isohaara– Raasakka 110 kV power line

- Single conductors were changed to thicker double conductors
- **Transmission losses reduced >60%**
- Higher transmission capacity made it possible to connect **extra 100 MW new wind power** with minimum connection costs
- No new right of way was needed so the **negative environmental impact** was **negligible**
- Project also included new lightning conductors which resulted to much higher reliability: Less failures caused by lightning or snow adhesion to lightning conductors



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# Thank you

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