



Statnett in the North

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**President Arctic Program
Audun Hustoft, Statnett**

Statnett in brief

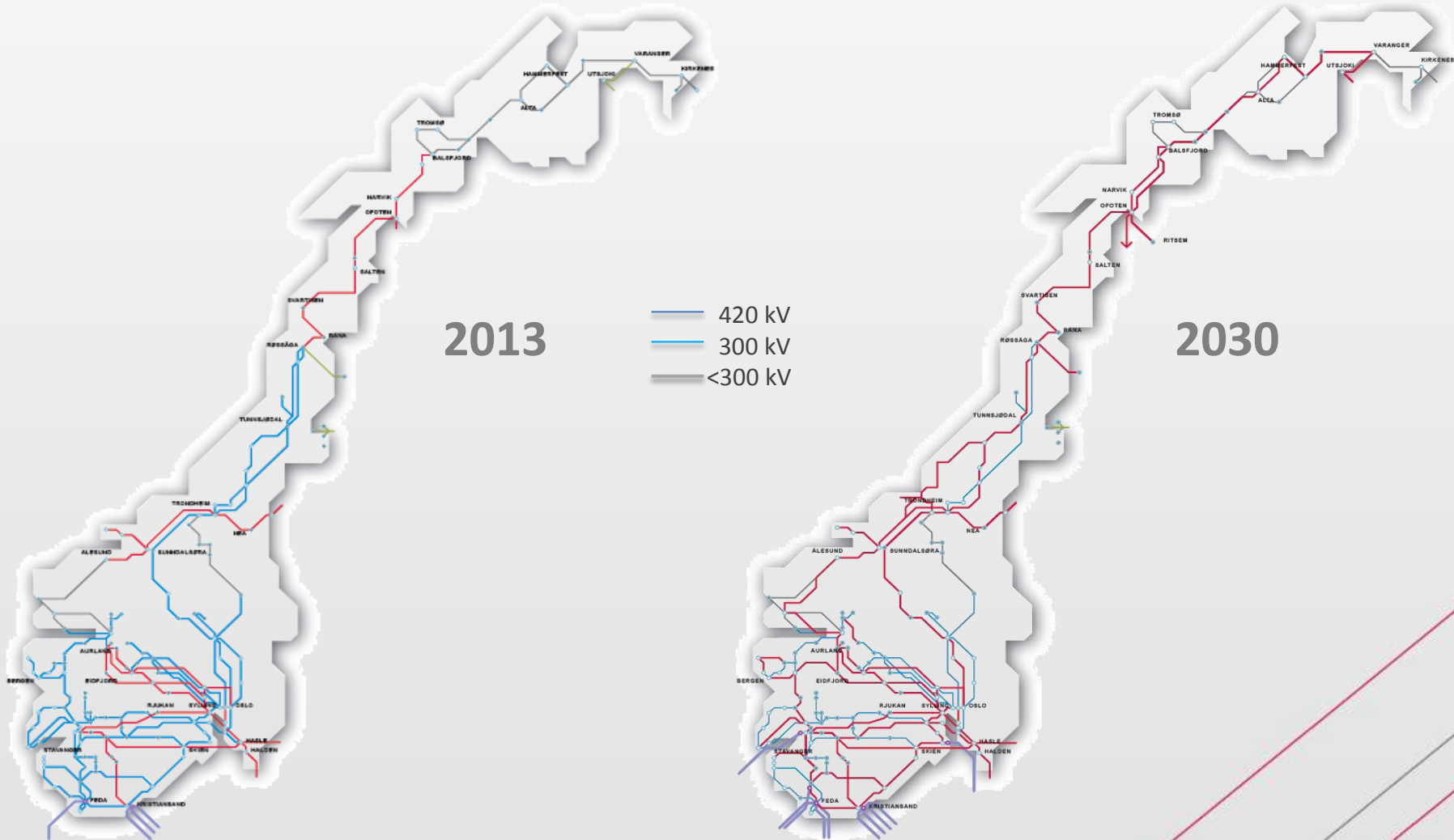
Statnett

- The Norwegian TSO (Transmission System Operator)
- Statnett owns and operates:
 - **11.000** km power lines - the national grid
 - **150** transformer stations
 - National and regional control centre
 - interconnections to five countries including 4 HVDC subsea cables
 - Russia, Finland, Sweden, Denmark, The Netherlands
- Number of employees : **1100**
- Offer international consultancy service
- Statnett SF is a 100 %state-owned enterprise, administrated by the Ministry of Petroleum and Energy



The next generation national grid

CAPEX 50-70 bill NOK in coming 10 year period



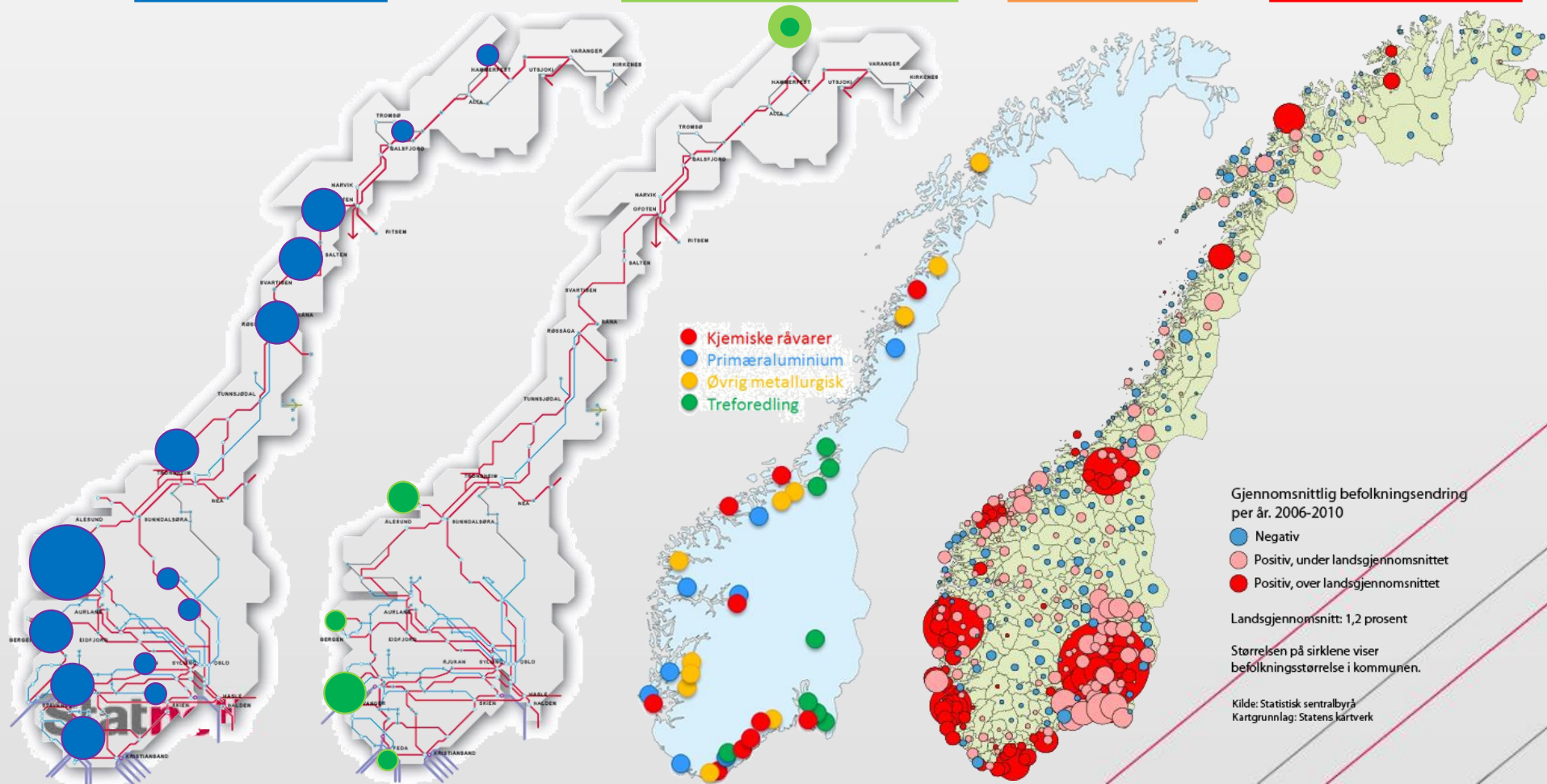
Grid development towards 2030 is driven by:

New renewables

Electrification /
Petroleum Industry

Industry

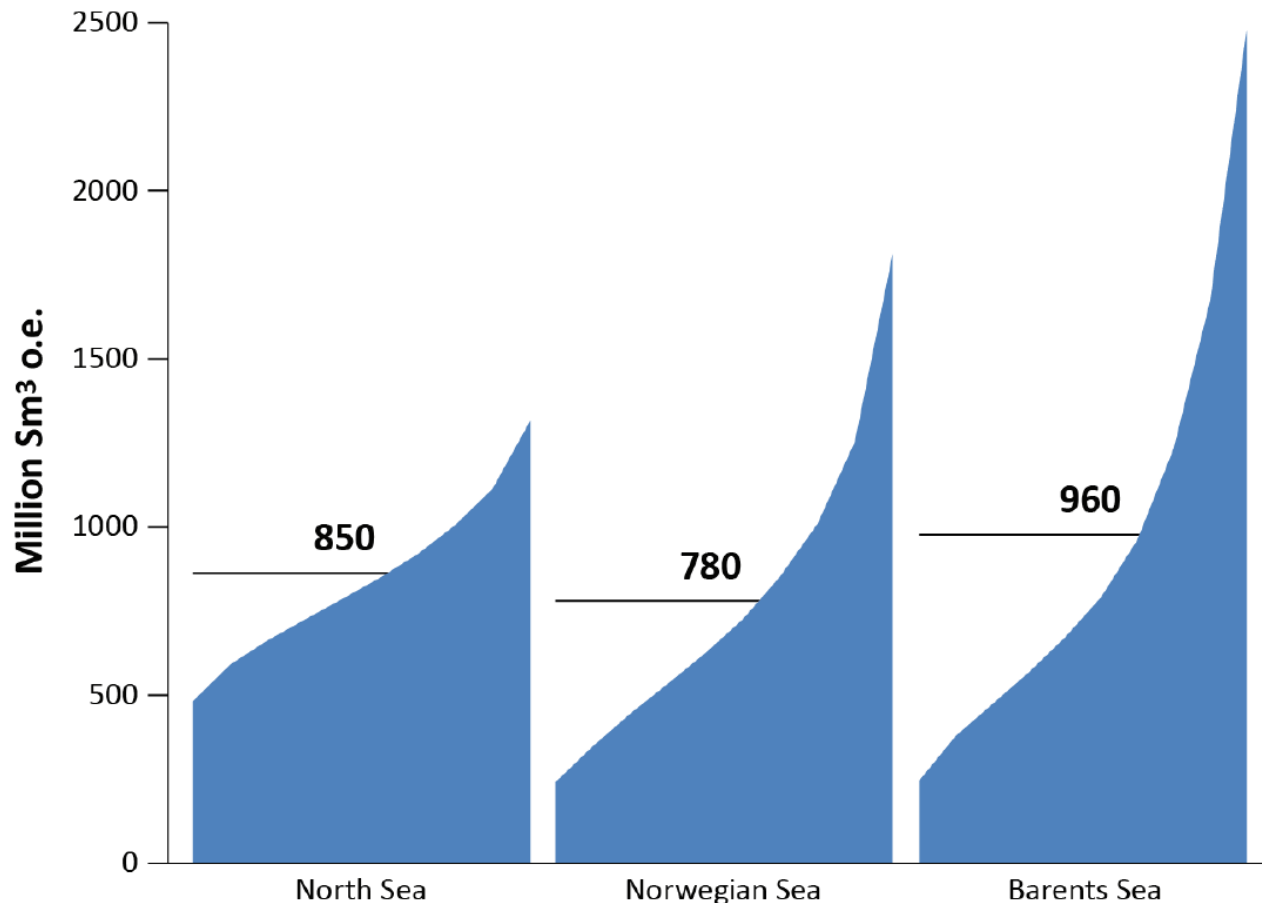
Population growth



Where- How much- When?

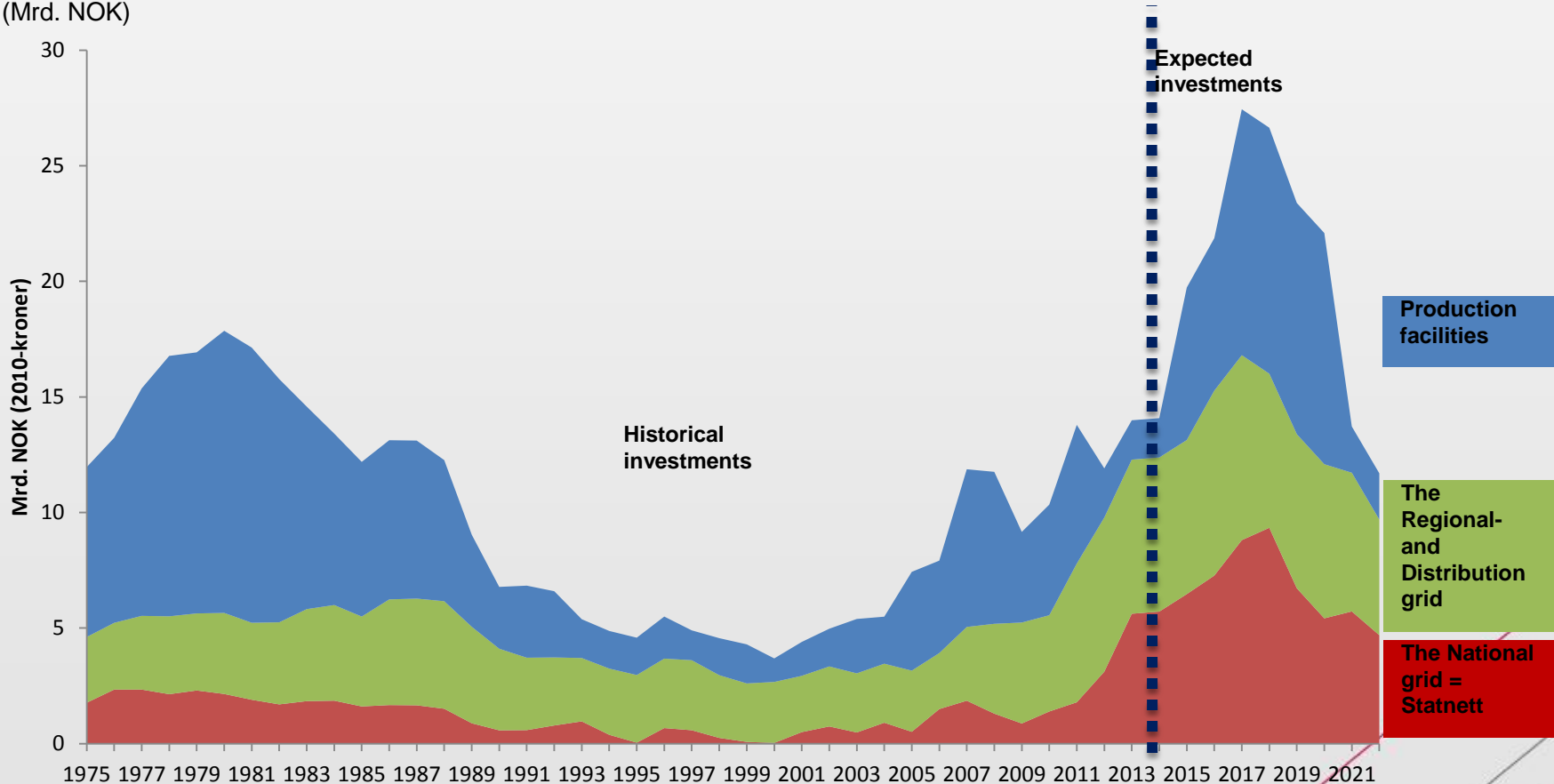
Undiscovered petroleum resources – a driver of the grid development in the North

Uoppdagede ressurser etter havområde



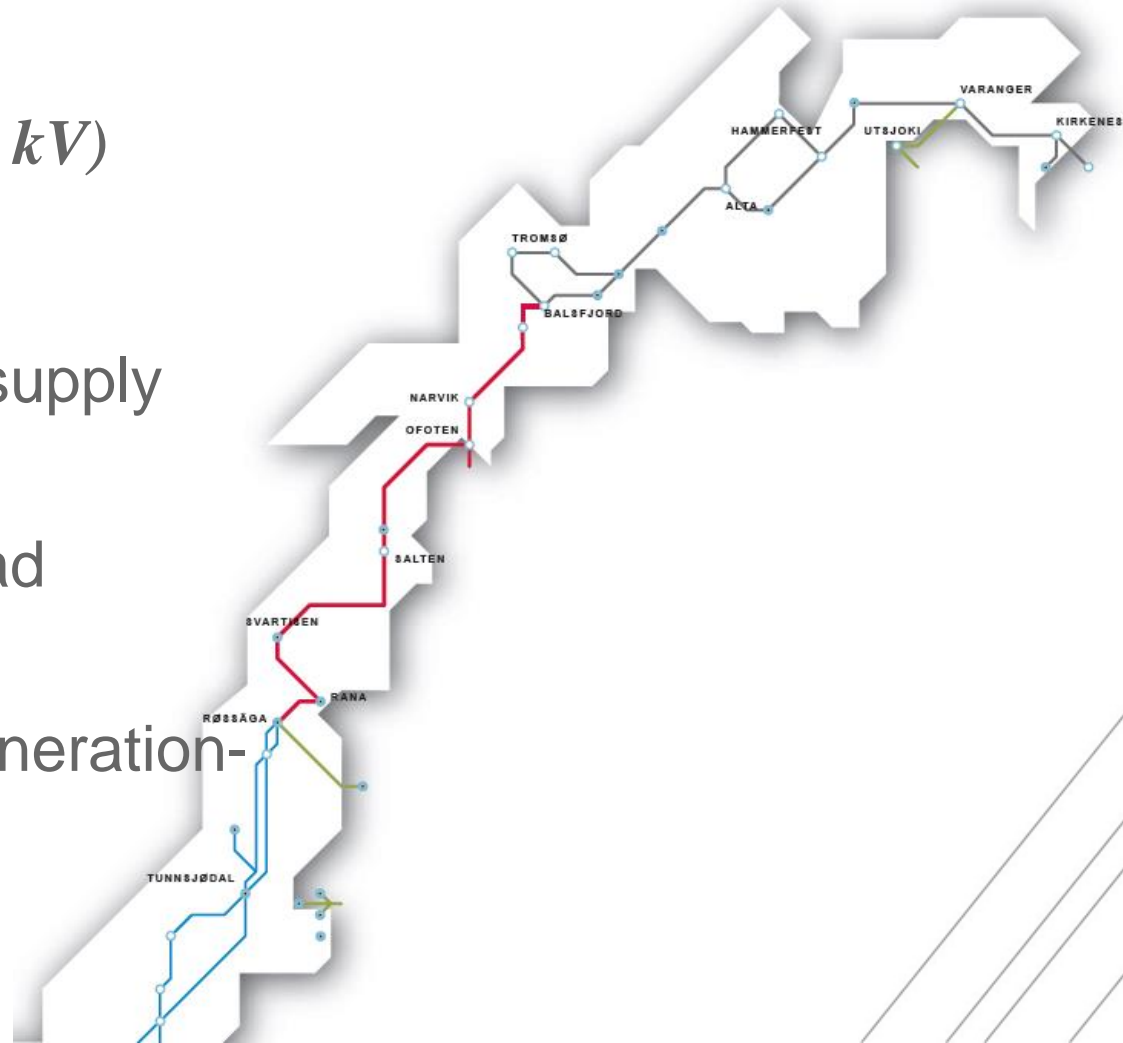
Norway is facing large growth in power generation and grid investments

Investments in the power system
(Mrd. NOK)

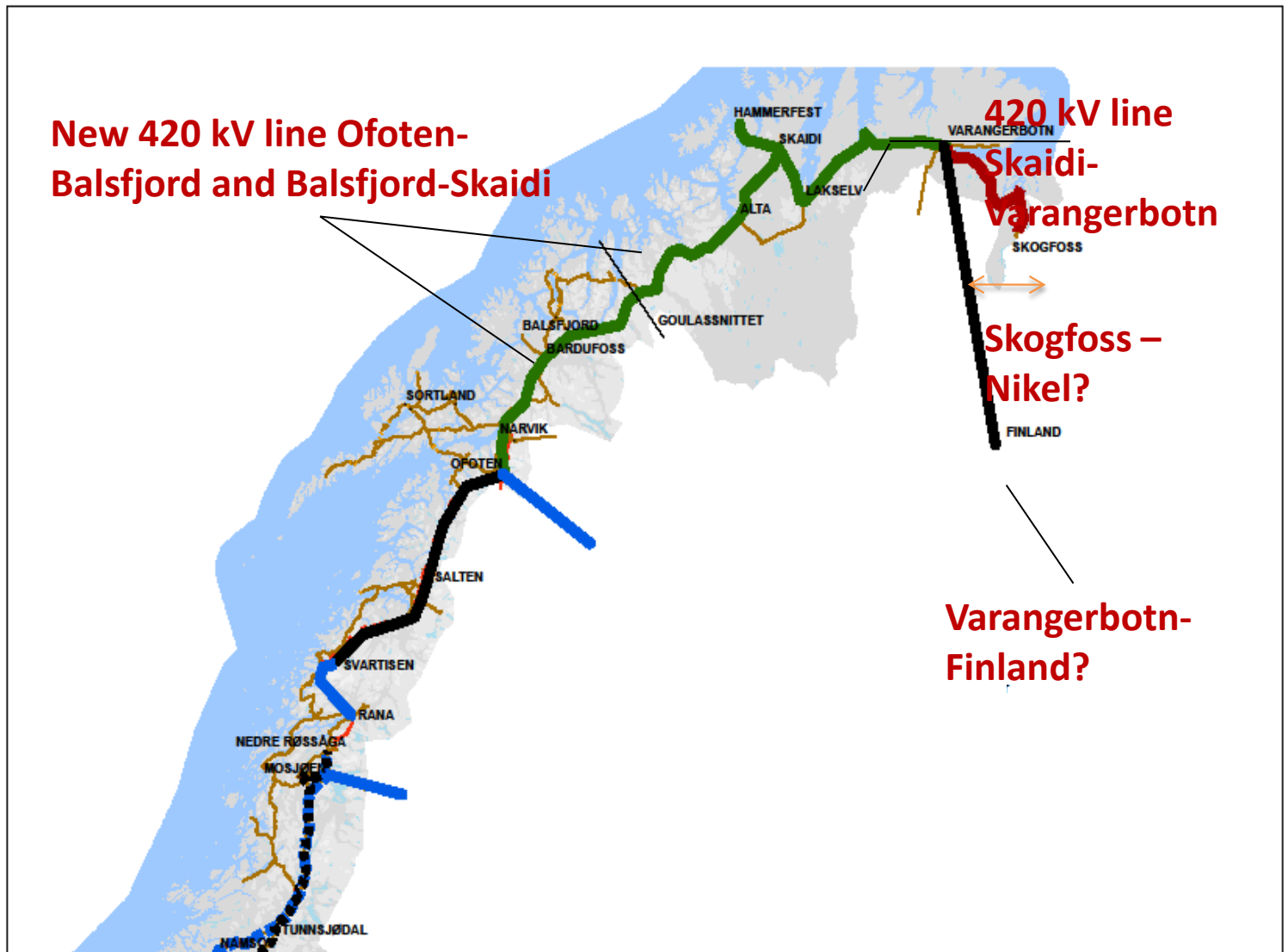


Northern Norway. The main electricity grid 2014.

- *Low grid capacity (132 kV)*
- Insufficient security of supply
- Restrictions for new load
- Restrictions for new generation-

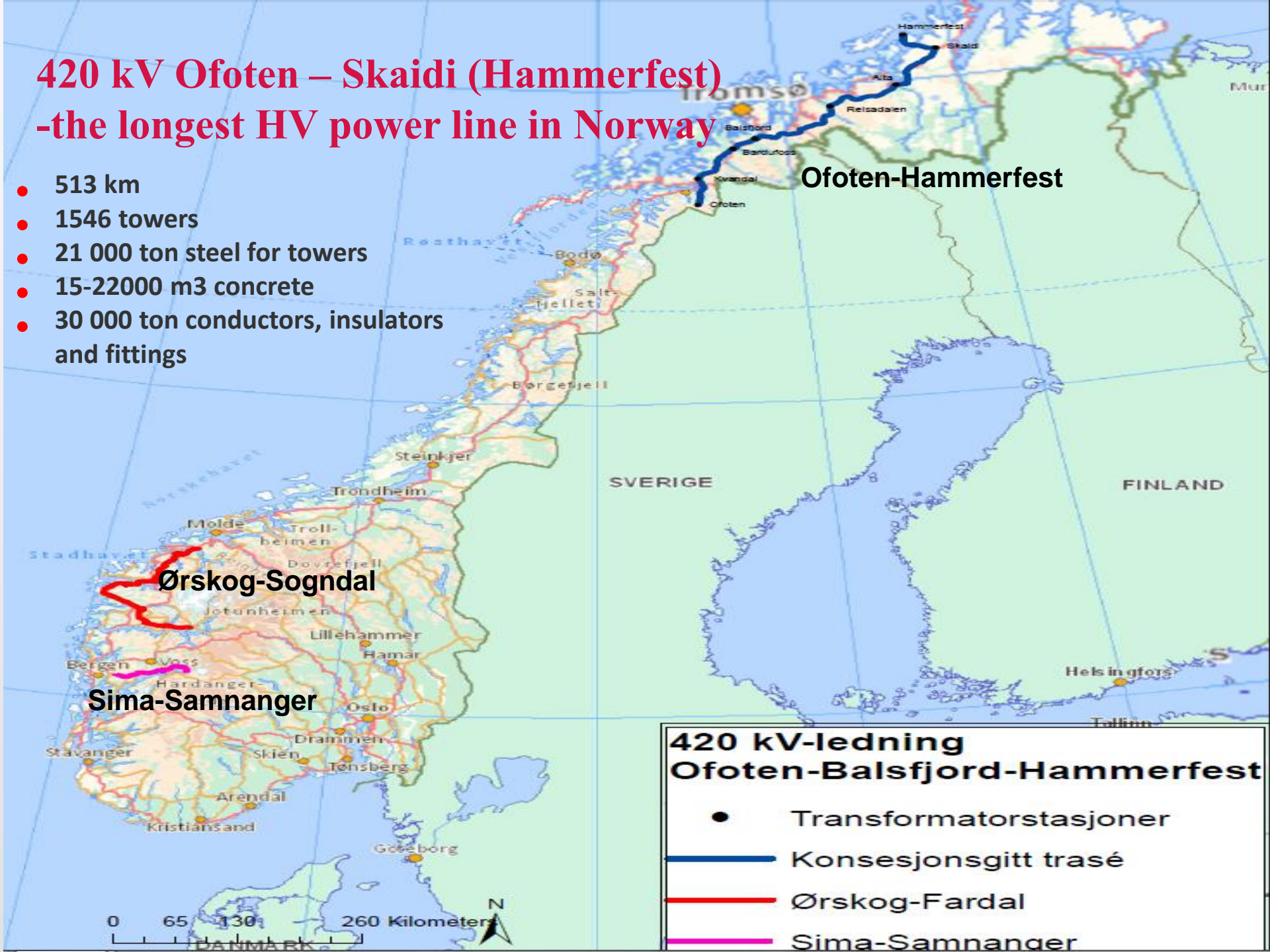


Grid development strategy for Northern Norway



420 kV Ofoten – Skaidi (Hammerfest) -the longest HV power line in Norway

- 513 km
- 1546 towers
- 21 000 ton steel for towers
- 15-22000 m3 concrete
- 30 000 ton conductors, insulators and fittings



Ofoten-Hammerfest

Ørskog-Sogndal

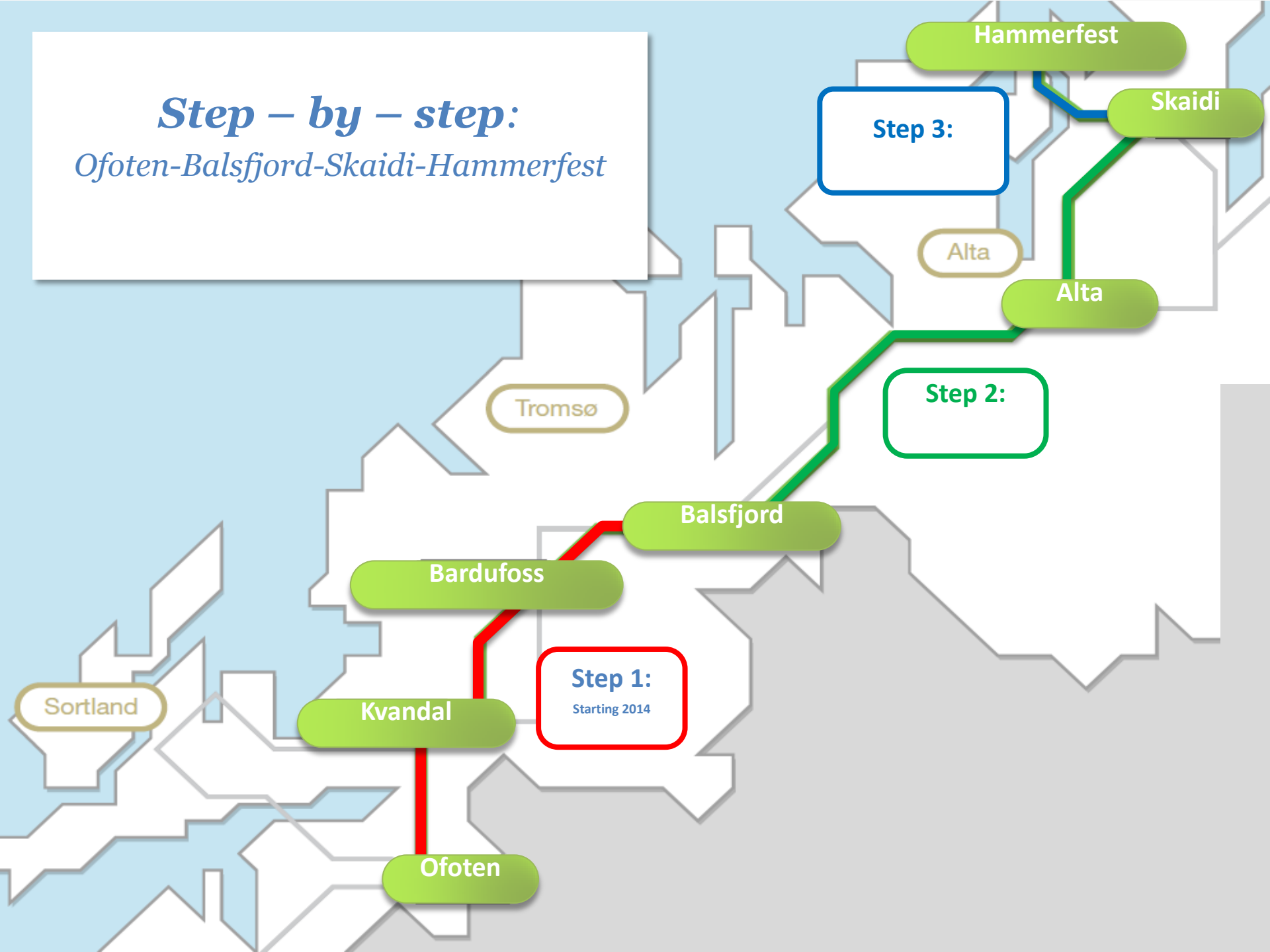
Sima-Samnanger

420 kV-ledning Ofoten-Balsfjord-Hammerfest

- Transformatorstasjoner
- Konsesjonsgitt trasé
- Ørskog-Fardal
- Sima-Samnanger



Step – by – step:
Ofoten-Balsfjord-Skaidi-Hammerfest



420 kV Ofoten to Skaidi

○ Ofoten-Balsfjord

- 3 years construction period
- Construction starting Q2 2014
- Estimate 3-4 billion NOK

○ Balsfjord-Skaidi

- 6-7 years construction period
- Awaiting final license
- Project schedule to be adapted to consumption growth and power production developments

420 kV Skaidi –Varangerbotn; next step for increased east-west interconnection

- ⦿ Planning has started
- ⦿ Triggered by oil and gas industry consumption growth
- ⦿ Important and interesting for stronger Nordic / Russian interconnection



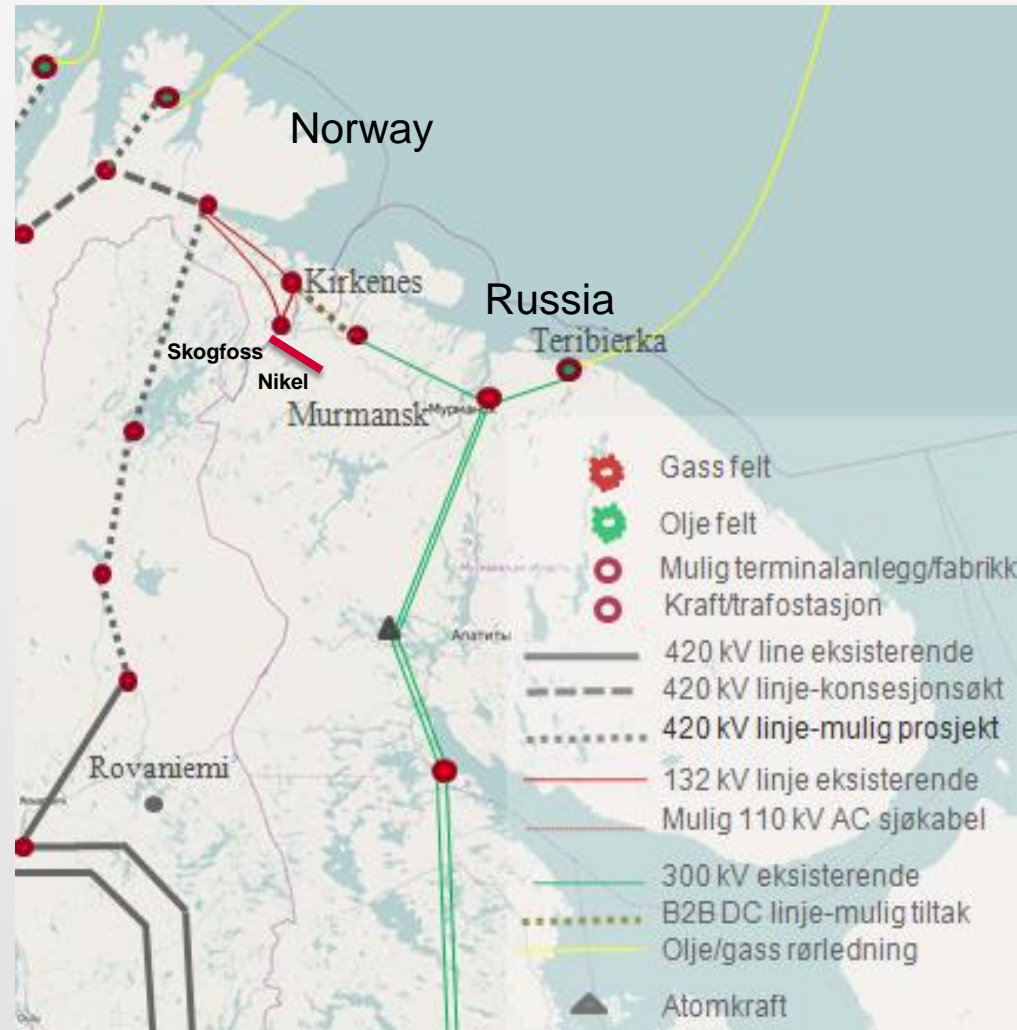
Boris Gleb - Kirkenes

- ⦿ Power from Boris Gleb hpp to Kirkenes is a well established electricity trade between Norway and Russia
- ⦿ The grid is owned by Statnett – the power is sold by InterRAO Nordic OY to the market at NordPool
- ⦿ Good and positive international co-operation



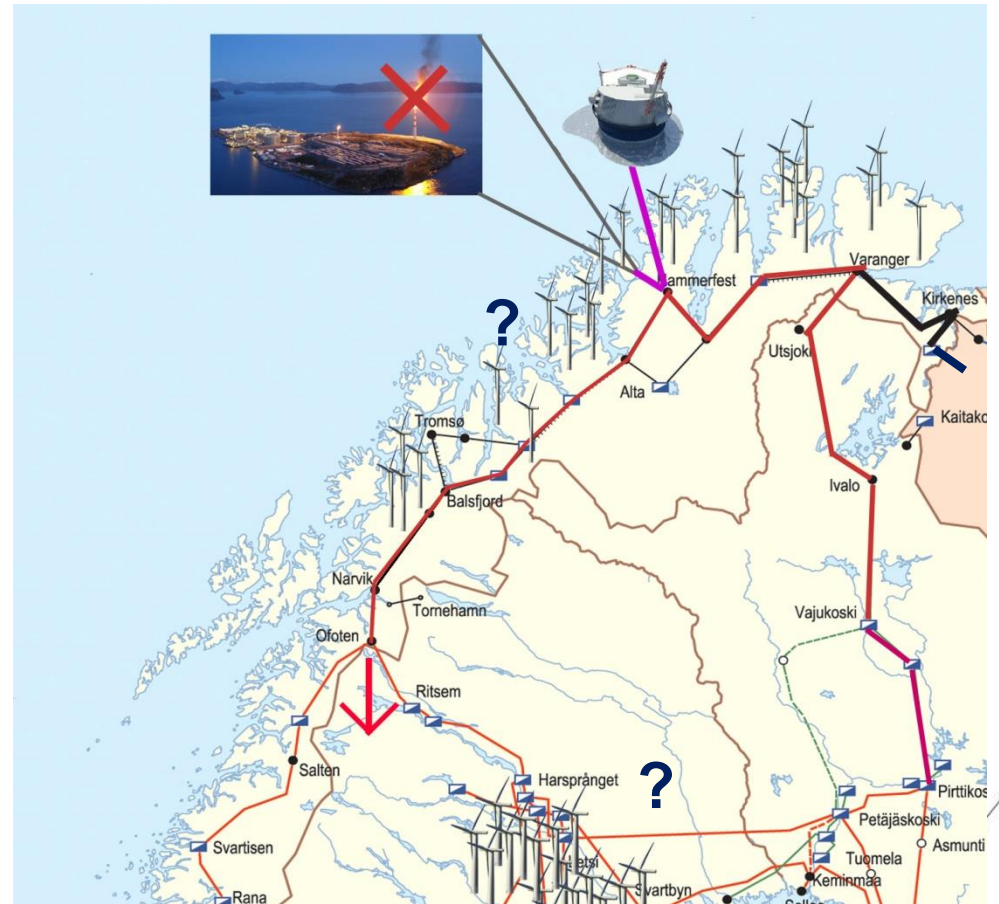
A future possible bidirectional power exchange

- Nikel – Skogfoss has been evaluated together with Inter RAO
- Purpose: Electricity exchange and increased security of supply in both regions
- Possible capacity:
 - Step 1: 100-150 MW.
 - Step 2: 250 MW
- Planning can continue, but conditions for start of operation are set by the Norwegian Government



Possible development in the Arctic ... **Statnett**

- ❖ **Skaidi - Varangerbotn**
 - Increased security of supply
- ❖ **Skogfoss – Nikel**
 - Power exchange
 - Increased security of supply
- ❖ **Varangerbotn – Ivalo**
 - Two-sided supply of the northern areas is of importance to the security of supply
- ❖ **Reinforcements southward of Ofoten**
 - Increased security of supply
 - Secures balance and capacity



Key challenges to implementation in the north

- ❖ Reindeer husbandry
- ❖ Time consuming processes to build new lines
 - Approx 8 – 10 years
- ❖ Coordination with petroleum industry and new renewable generation required
- ❖ Extensive plans to build new lines all over Europe (ref. ENTSO-E Ten Year Network Development Plan)
 - The same suppliers



Thank you for your attention !

www.Statnett.no