

PERSPECTIVES ON GENERATION ADEQUACY AND SECURITY OF SUPPLY FROM THE NORDIC TSO-SIDE

Nordic-Baltic Energy Conference 2019

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SECURITY OF ELECTRICITY SUPPLY



SYSTEM ADEQUACY

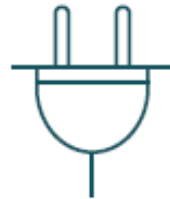


SYSTEM SECURITY



GENERATION ADEQUACY

Ability to meet overall demand



GRID ADEQUACY

Ability to supply electricity to consumers



ROBUSTNESS

Ability to handle sudden disturbances or outages



IT SECURITY

Ability to maintain secure system operation

CONCLUSION

SECURITY OF SUPPLY

- Will remain very high in the Nordic countries
 - but action is required to maintain
- Differences: Underground cables, geography

GENERATION ADEQUACY

- Increasing risks, but also improvements
 - enough?
- Backup tools – but costly

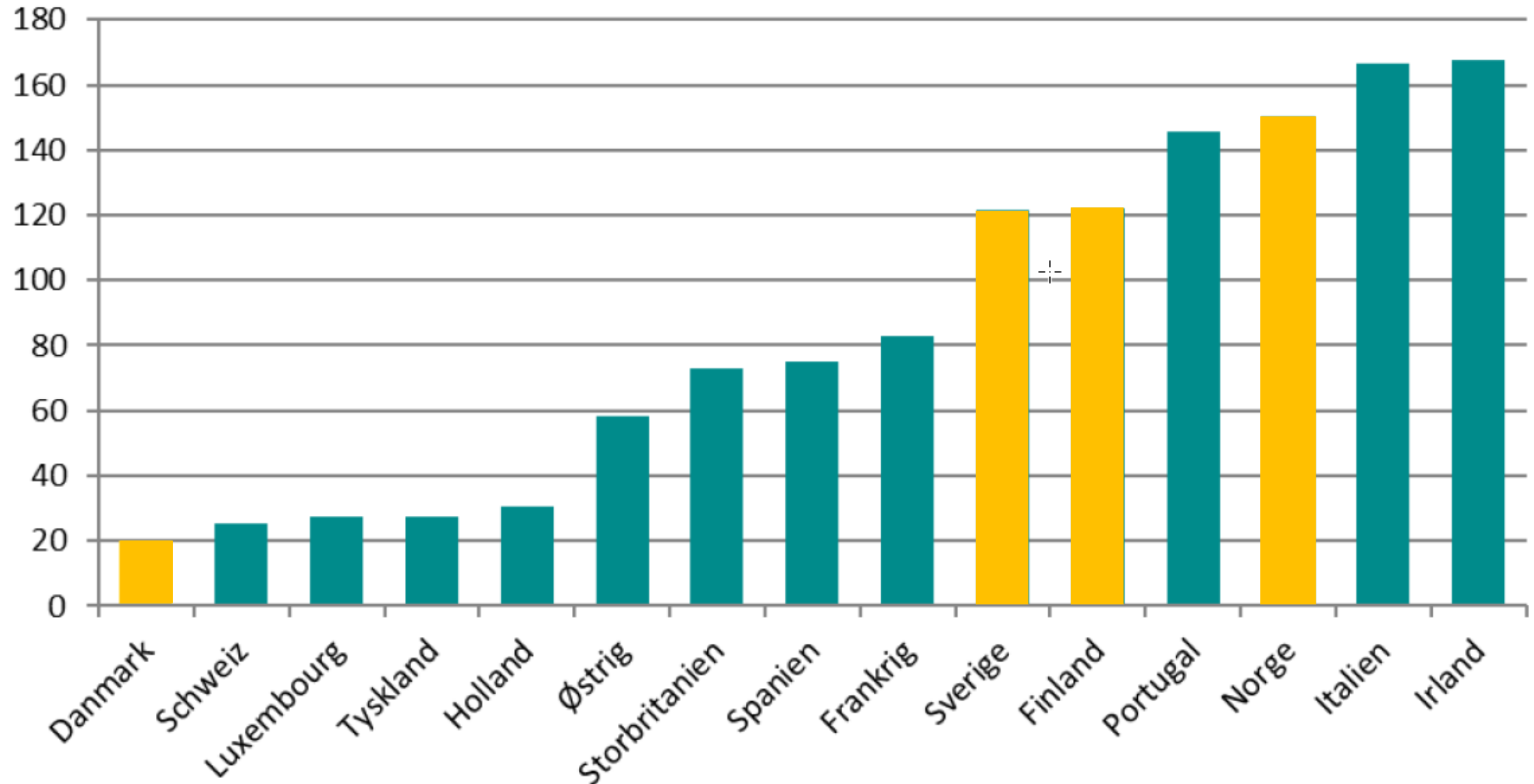
INTERNATIONAL COOPERATION

e.g. Nordic-Baltic is key to decrease costs



SECURITY OF SUPPLY: ABOVE 99.97 %

Minutes interruptions per customer per year 2010-2016

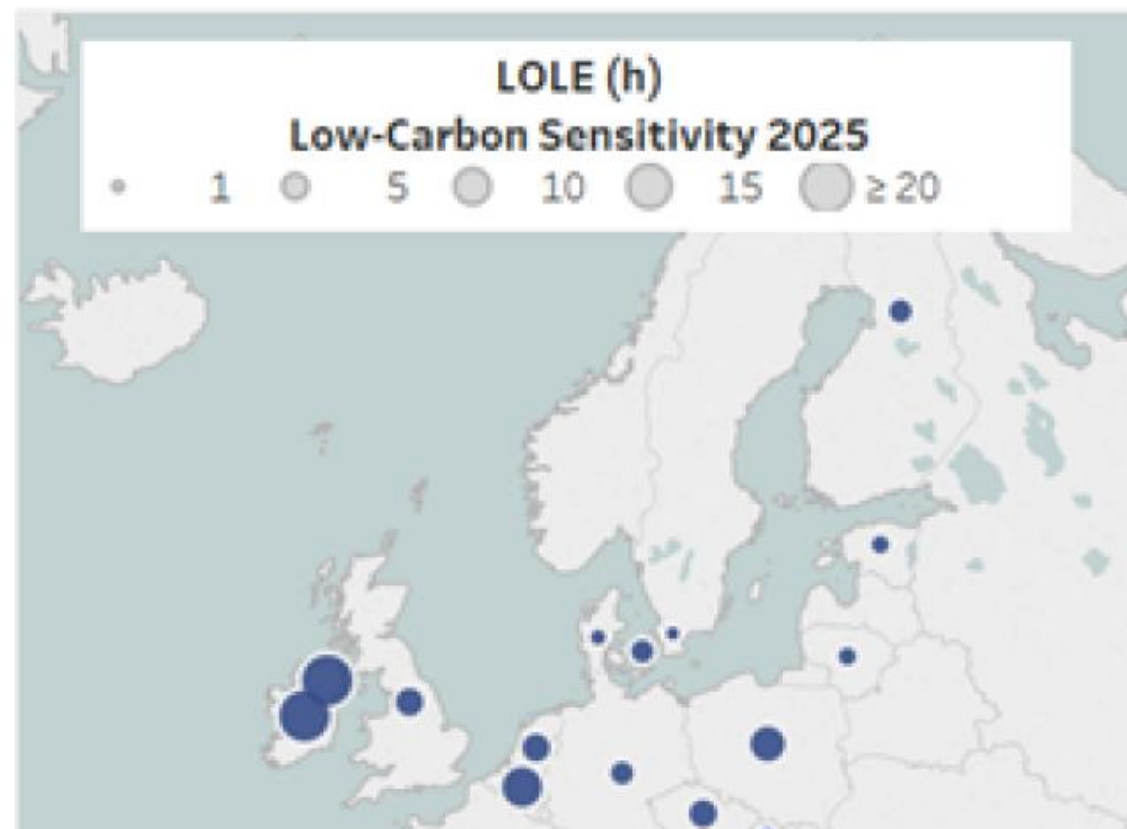
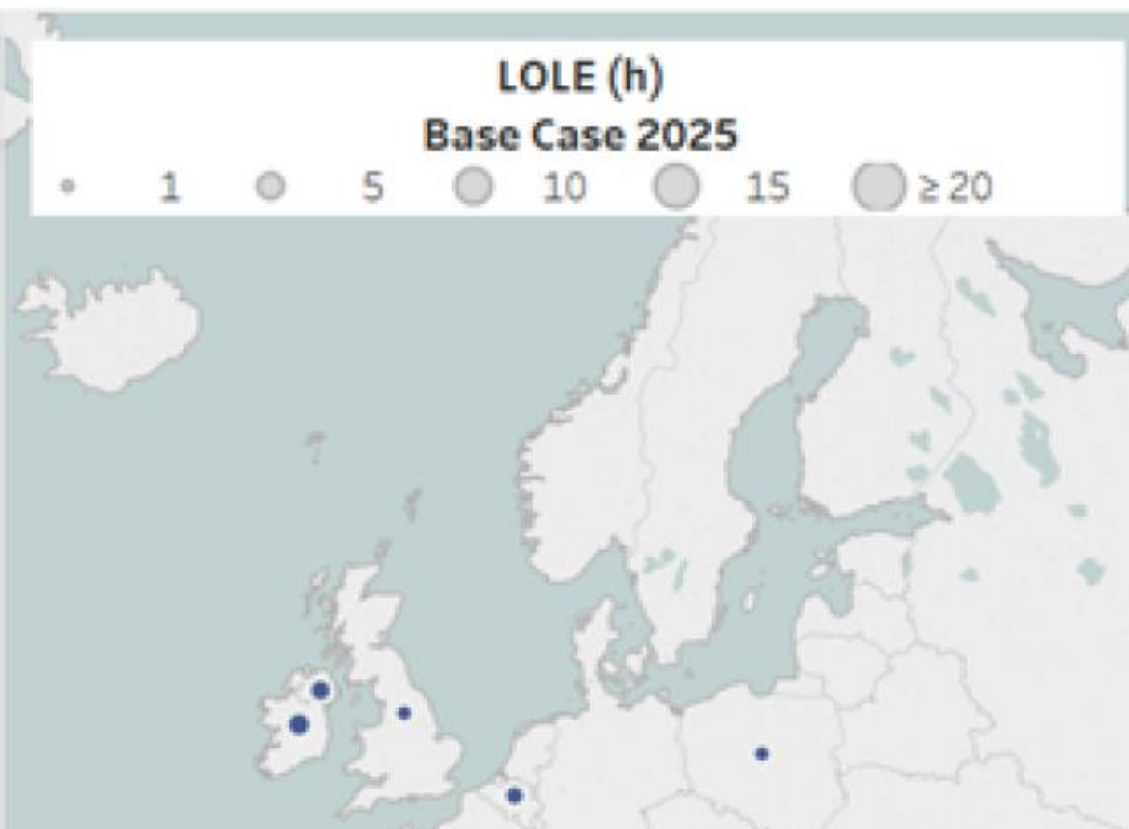




Security of supply in 2030 – what will happen?

GENERATION ADEQUACY

From midterm adequacy forecast 2018 by ENTSO-E

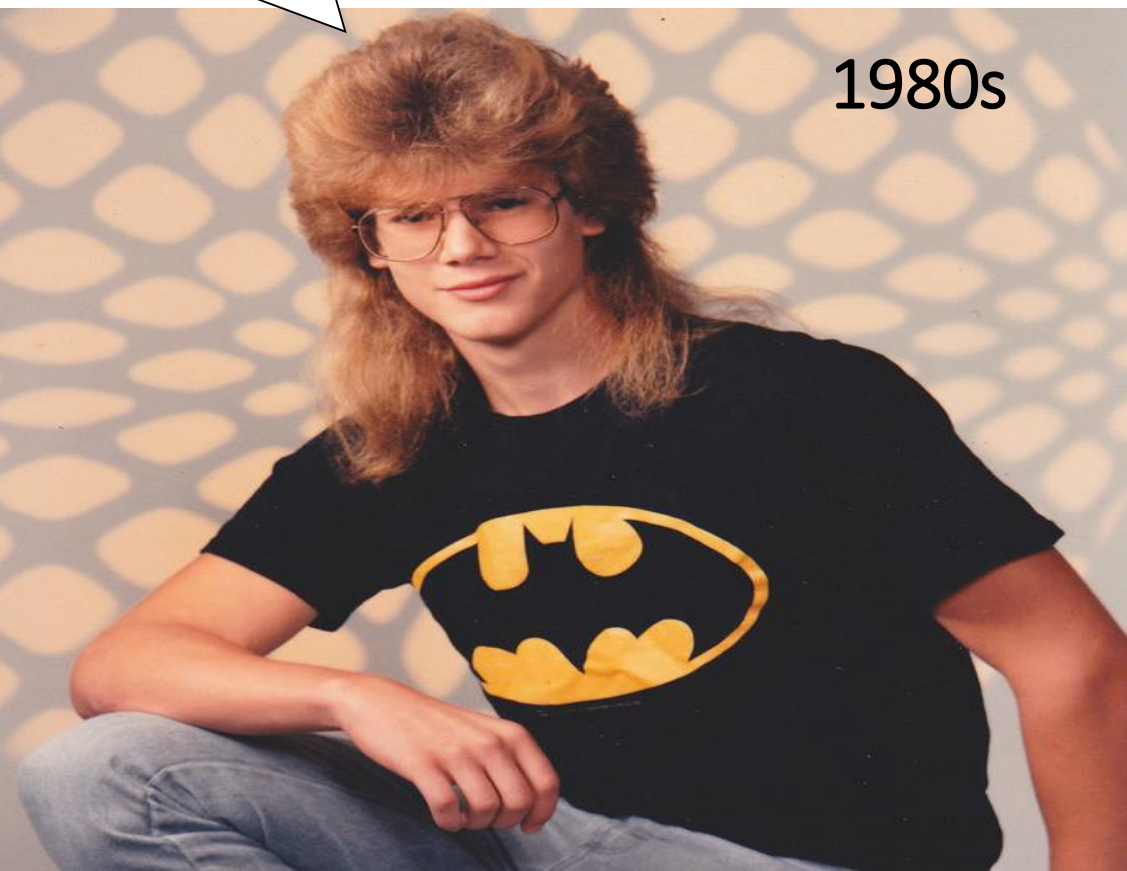


Maximum share of variable renewables?

Maximum 5 %

No technical limit

1980s



2019



CHALLENGES AND OPPORTUNITIES

CHALLENGES

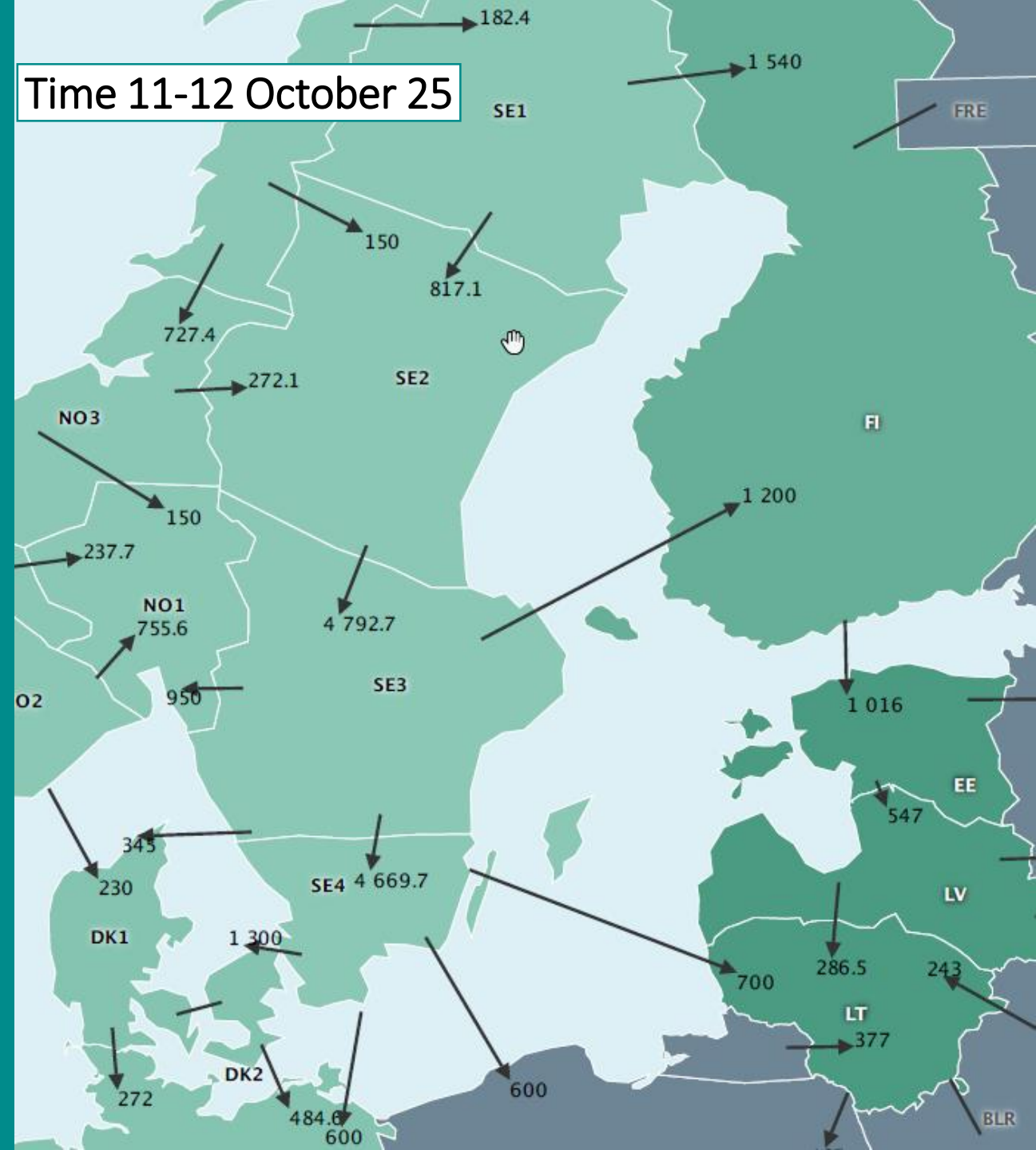
- Renewables replace thermal generation
 - Limited predictability and technical capabilities
- Risk of decoupling physics and markets

OPPORTUNITIES

- More international markets
- More interconnectors
- Common operational centers (e.g. Nordic RSC)
- New technologies

...and there are known backup tools

INTERNATIONAL COOPERATION e.g. Nordic-Baltic, is key to decrease costs



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