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Baltic
InteGrid

Integrated Baltic Offshore
Wind Electricity Grid Development

National Perspective-Sweden

Pierre Ståhl

Berlin, 2016-11-25

<Date>
<Event title>



Energy Minister Ibrahim Baylan:

„We need new connections for electricity
to our neighbouring countries“ 2016-11-23

0 KOMMENTARER



DEBATT. Det nordiska energisamarbetet behöver ny kraft
och en gemensam plan för hur vi ska förstärka
kopplingarna både mellan de nordiska länderna och till

www.svk.se

November 23



Flöden uppdaterade idag 16:47
Priser uppdaterade idag 16:00

Total export / import

Exportörer

SVERIGE
1 668 MW

Importörer

DANMARK
1 090 MW

Exportörer

NORGE
3 184 MW

Importörer

FINLAND
1 877 MW

Exportörer

ESTLAND
577 MW

Exportörer

LETTLAND
515 MW

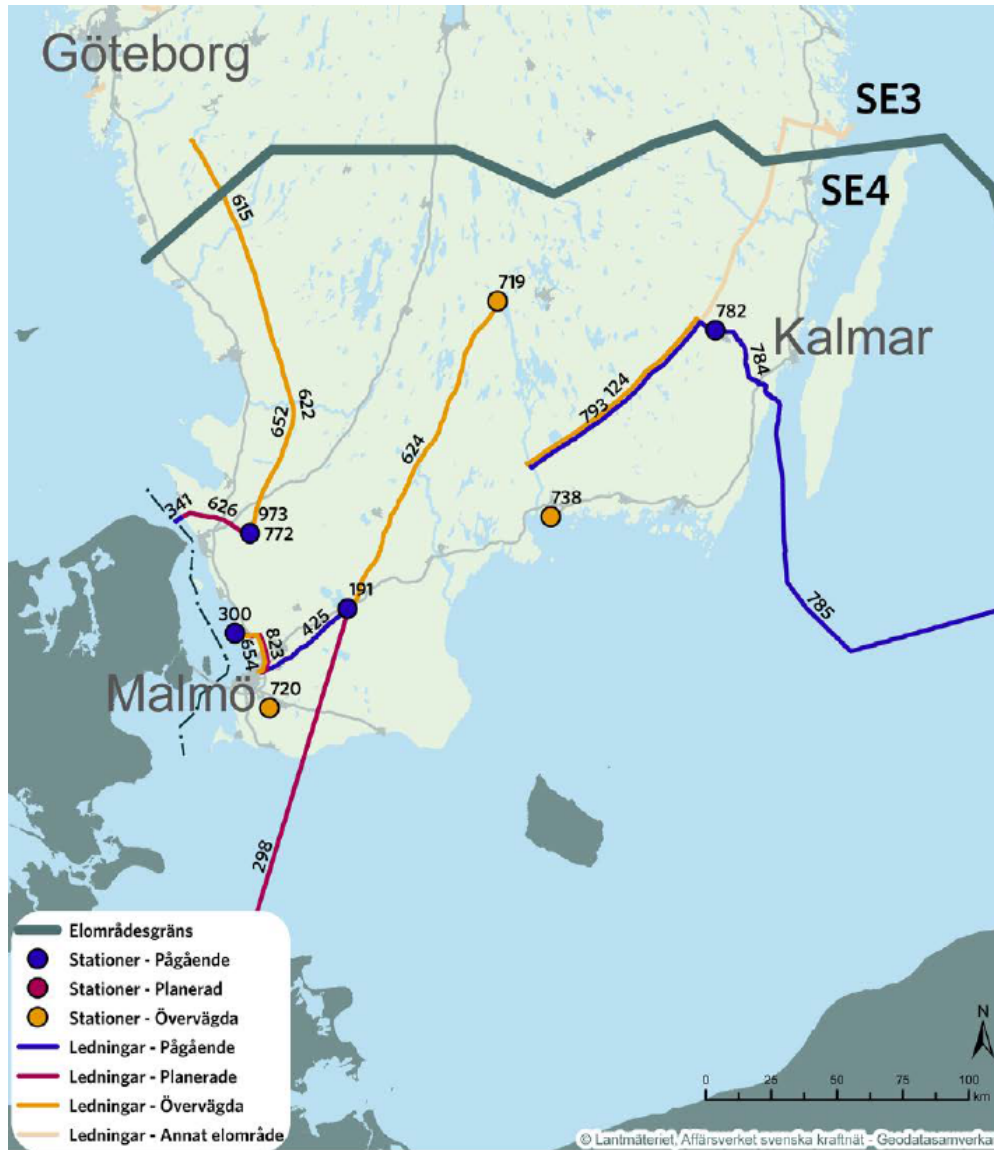
Importörer

LITAUEN
1 183 MW

Sweden exports
15-20 TWh/year

Interconnections with:

- Norway
- Denmark
- Finland
- Germany
- Poland
- Lithuania



SvK Grid Development plan 2016-2025:

Upgrades:

- Denmark-Själland
400 kV -AC

New connection

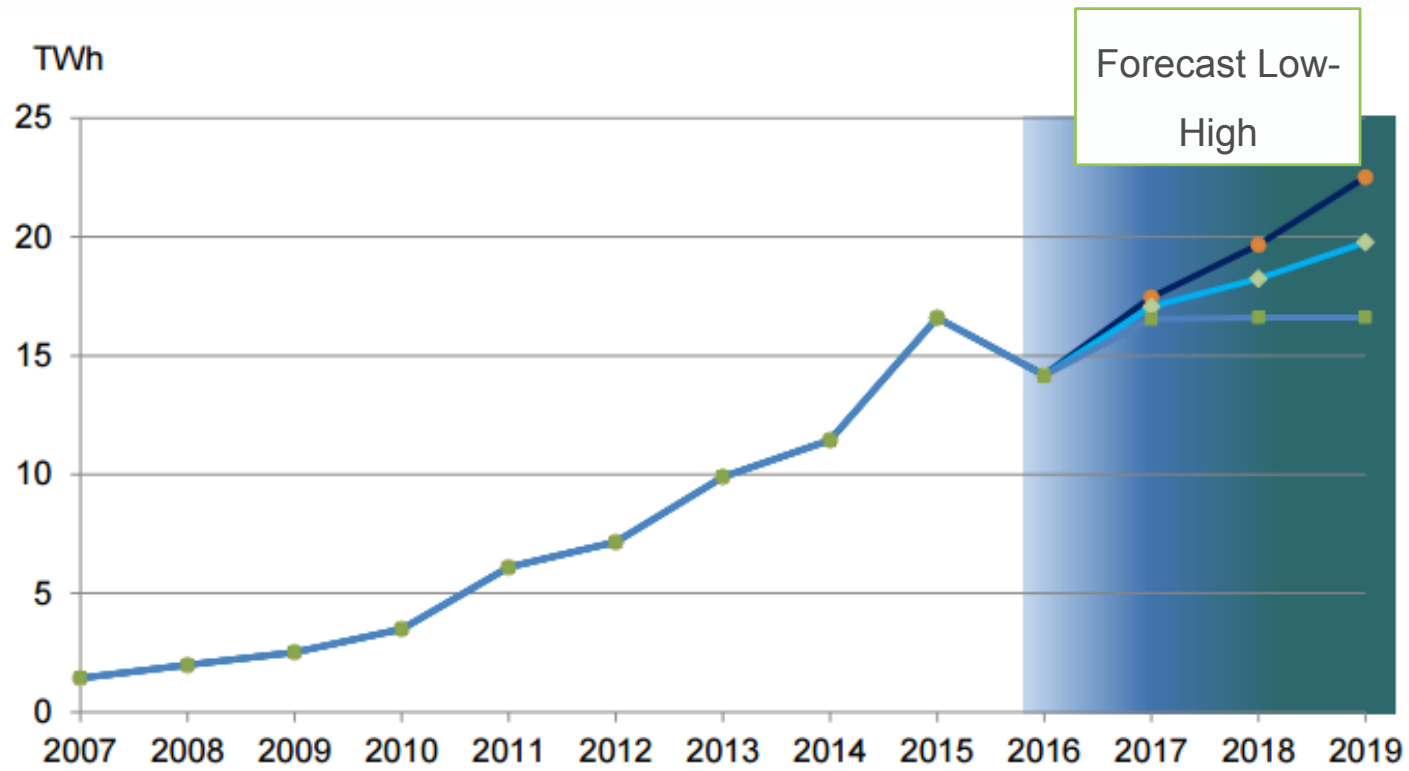
- Germany–Hansa Bridge
Decision 2017?
700 MW –DC
- Poland??



Highlights

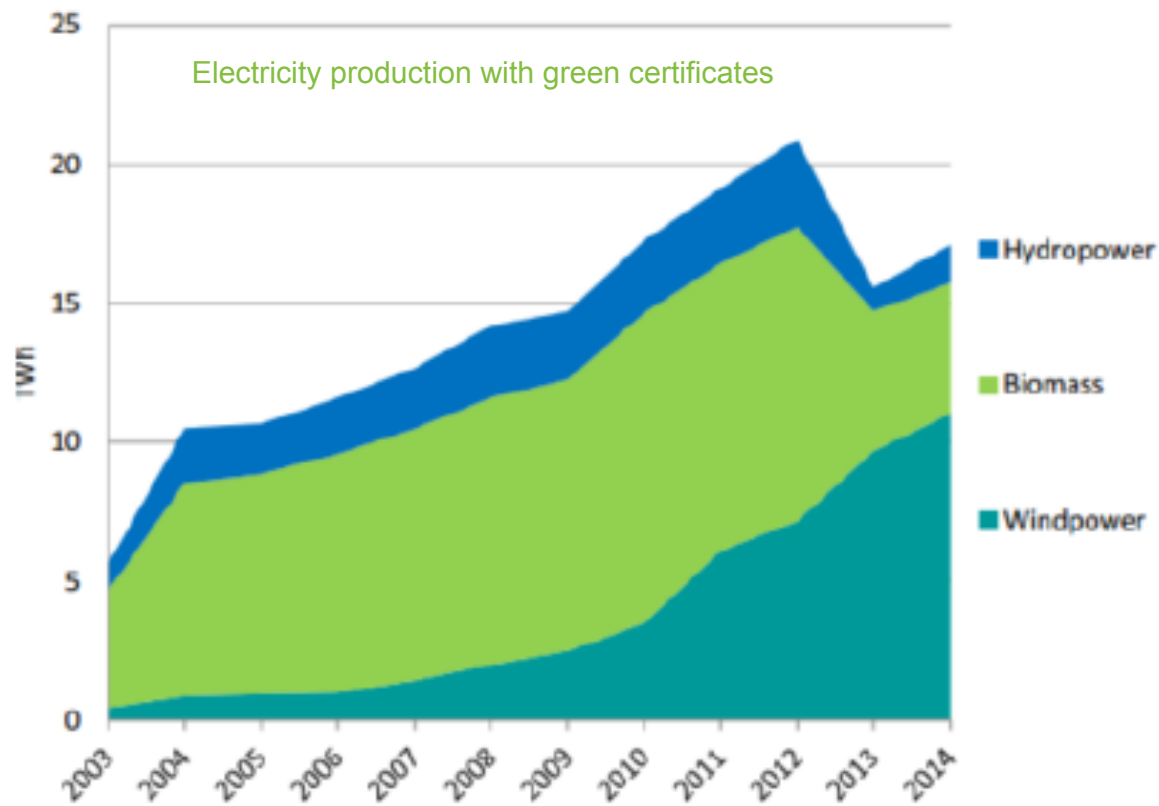


- 5 out of 8 parties in parliament => Stable agreement
- Goal 2040 : 100% renewable electricity production
- Extended support to renewables 2020-2030 -> 18 TWh
- Offshore Wind – Cost for Grid connection should be removed
- Transmission capacity between Sweden and neighbouring countries shall increase

Wind Power



No of turbines	Onshore	Offshore	Total
In operation	3 291	76	3 367
Installed Power (MW)	6 251	190	6 441
No of turbines	Onshore	Offshore	Total
Under Construction 110	-	110 	
All permits granted 2 898	453	3 351 	
	30 TWh	10 TWh	
Early planning	>2 800	>750	>12 000



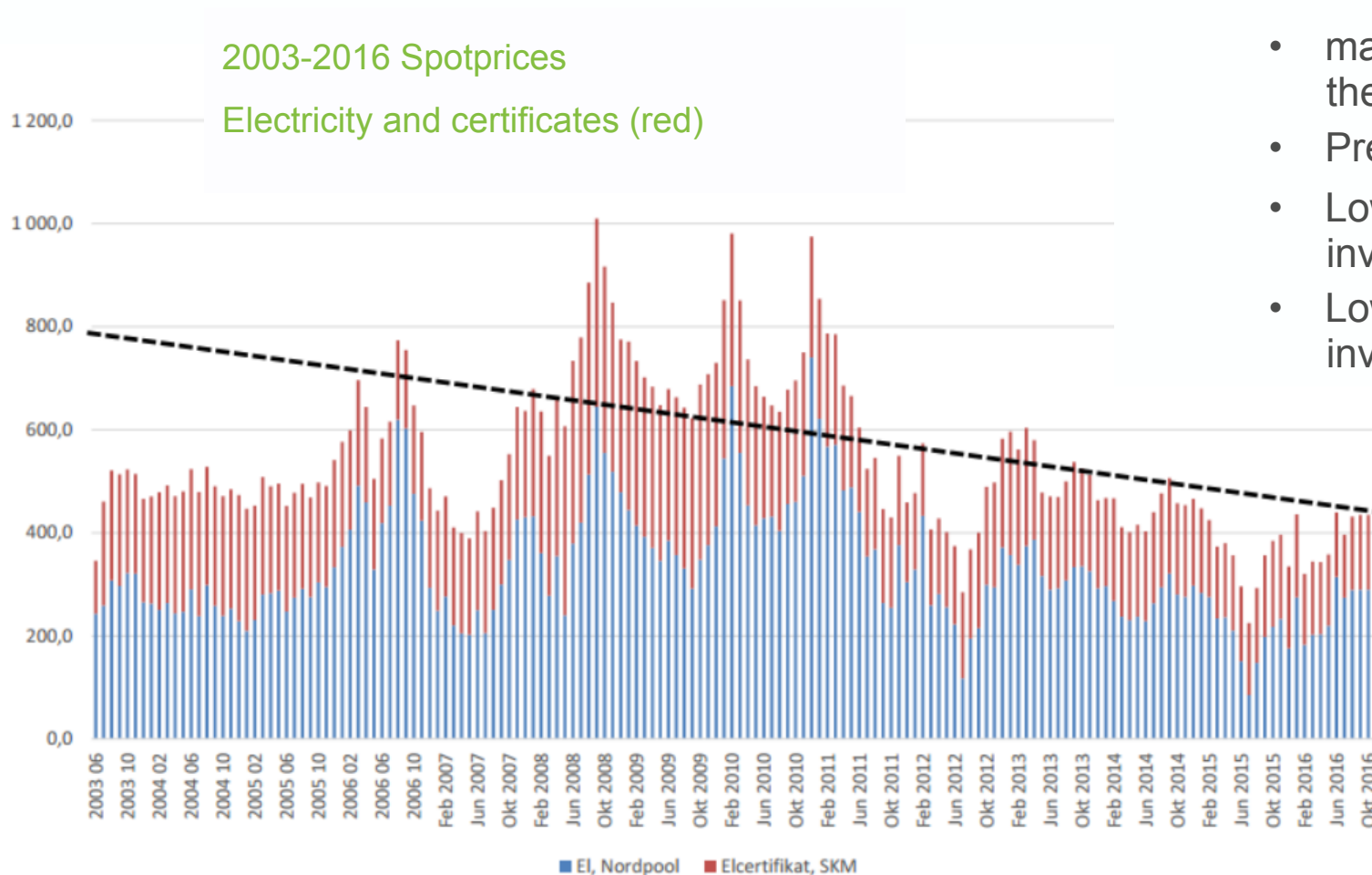
Source: Swedish Energy Agency, The Account Management System Cesar.

Green certificates

- Support for all new renewable electricity production
- for 15 years production
- Financed by consumers of electricity
- Market solution, no fixed price
- Together with Norway

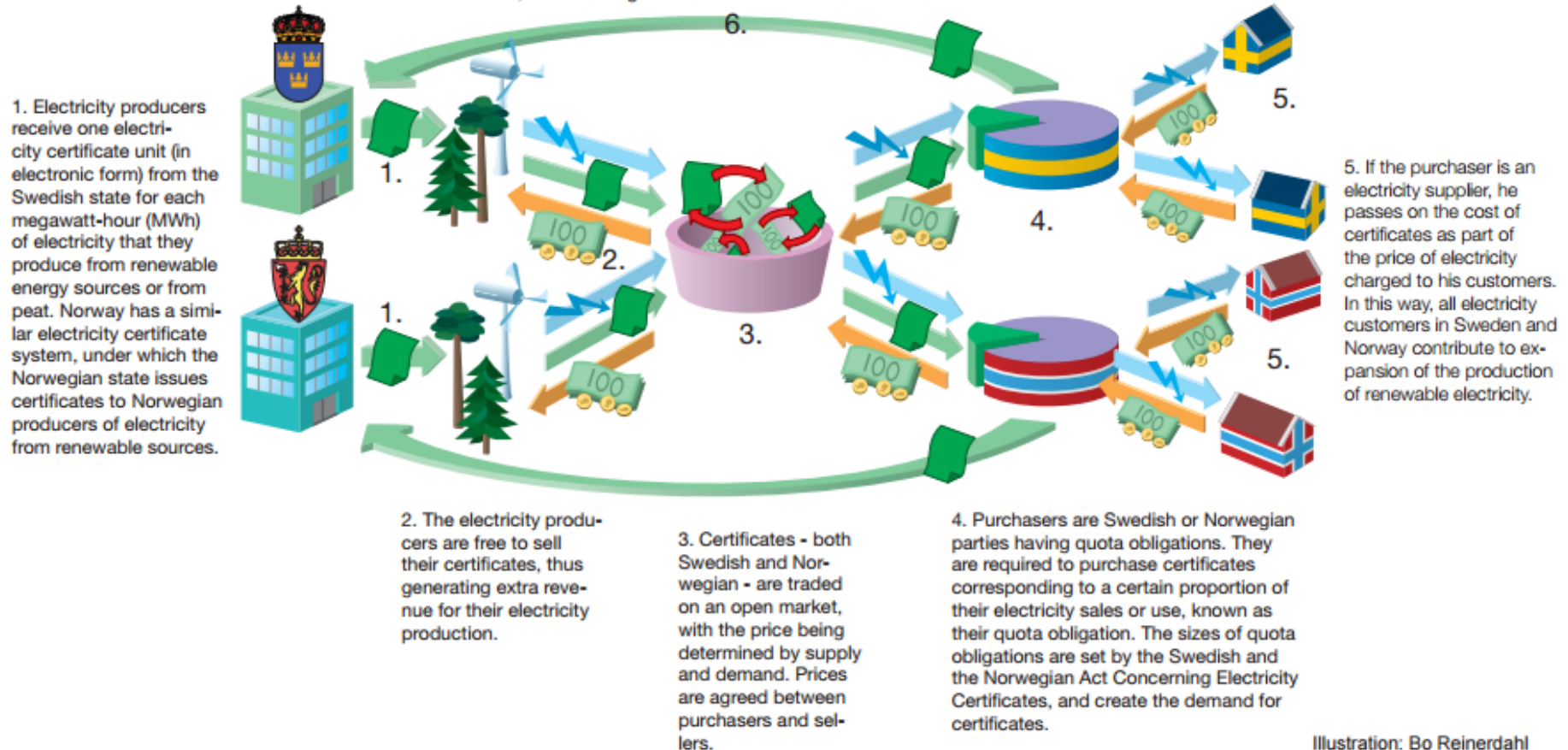
Green certificates

- Much new production
 - many certificates on the market
 - Pressure on price
 - Low income for the investors
 - Lower pace new investments



The Swedish Electricity Certificate System

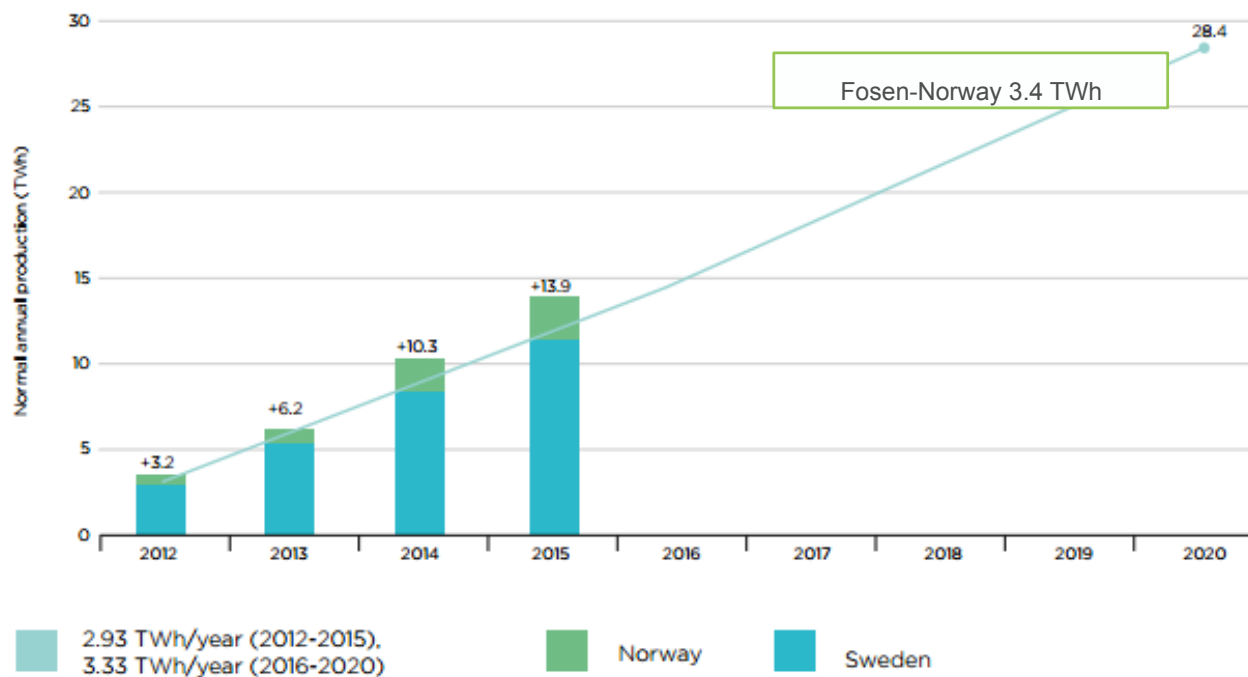
6. Each year, those having quota obligations must hold (i.e. have purchased) the number of electricity certificates needed to meet their quota obligations to the Swedish or Norwegian states. Once a year, these certificates are cancelled, which means that the holders must start to buy new certificates to meet next year's quota obligation, thus creating a constant demand for certificates.



Ambition

- Increase renewables with 28.4 TWh 2012-2020 (with Norway)
- Additional 18 TWh 2020-2030

Figure 2: Normal annual production of plants included in the 28.4 TWh target



Source: NVE and the Swedish Energy Agency

- Proposal delay towards 2030
- Norway?

Opportunities

- High Ambitions
 - Fossil free Sweden
 - 100% renewable
 - More interconnectors
- Support system
- Energy agreement
- Conditions are good
 - A lot of wind
 - Many projects
 - Experienced developers

Treats

- Low energy prices
- Delay of new projects -> 2030
- Common certificates with Norway

Thank you!

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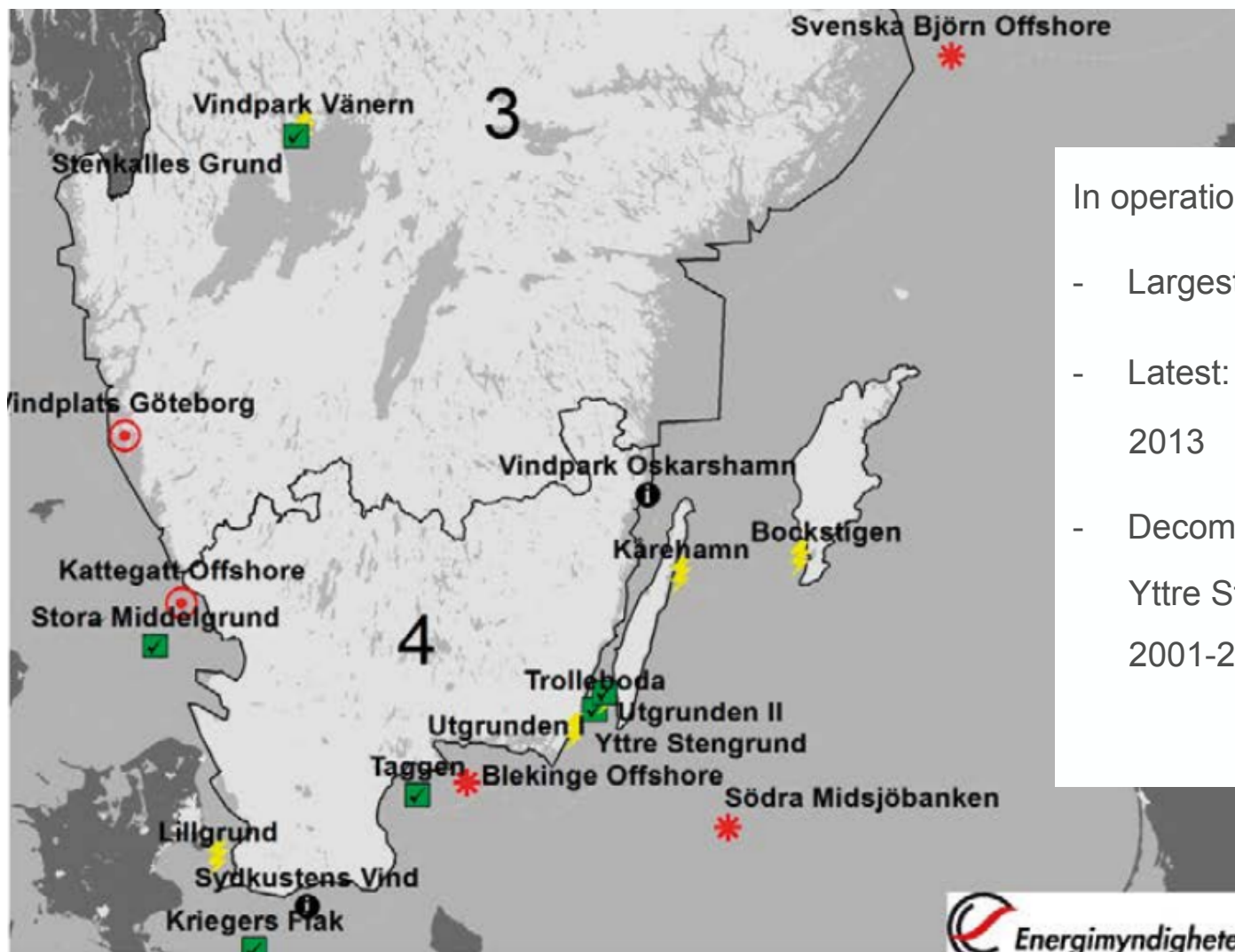
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- In operation (yellow):
- Largest: Lillgrund 48 turbines
 - Latest: Kårehamn 16 turbines
2013
 - Decommissioned:
Yttre Stengrund 5 turbines
2001-2015