



Lillgrund
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Baltic
InteGrid
Integrated Baltic Offshore
Wind Electricity Grid Development

Offshore wind Sweden Vision 2050

Pierre Ståhl



<Date>
<Event title>

“Sweden is aiming to be one of the world’s first fossil-free welfare nations”



IMAGE CREDIT: BOTAN, LICENSED UNDER CC BY-SA 3.0 VIA WIKIMEDIA COMMONS

SWEDEN

is aiming to be the WORLD'S FIRST

FOSSIL FUEL FREE NATION!



CLIMATECOUNCIL.ORG.AU

| crowd-funded science information



2016 Energy agreement:

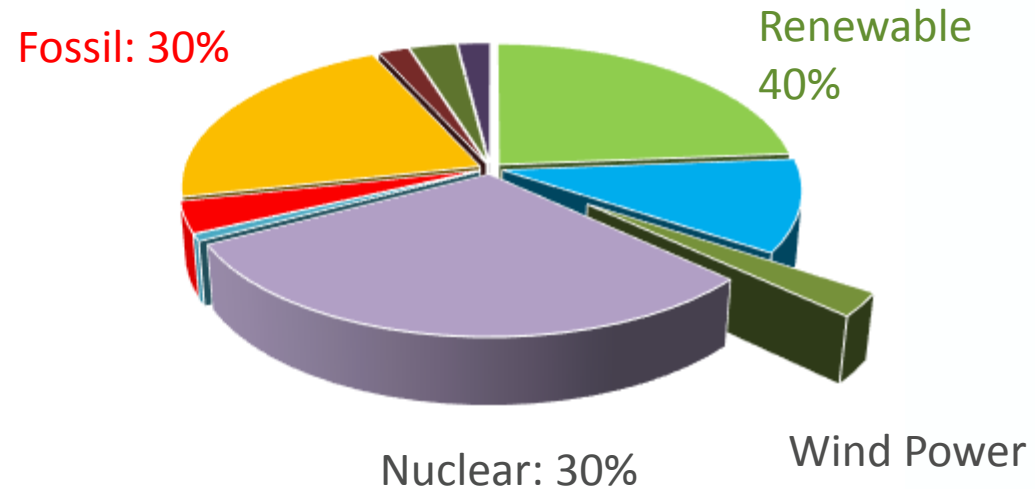
- **Goal 2040 : 100% renewable electricity production**
- No forced closing of Nuclear
- Extended support to renewables 2020–2030
- **Offshore Wind** –

*Cost for Grid connection
should be removed*



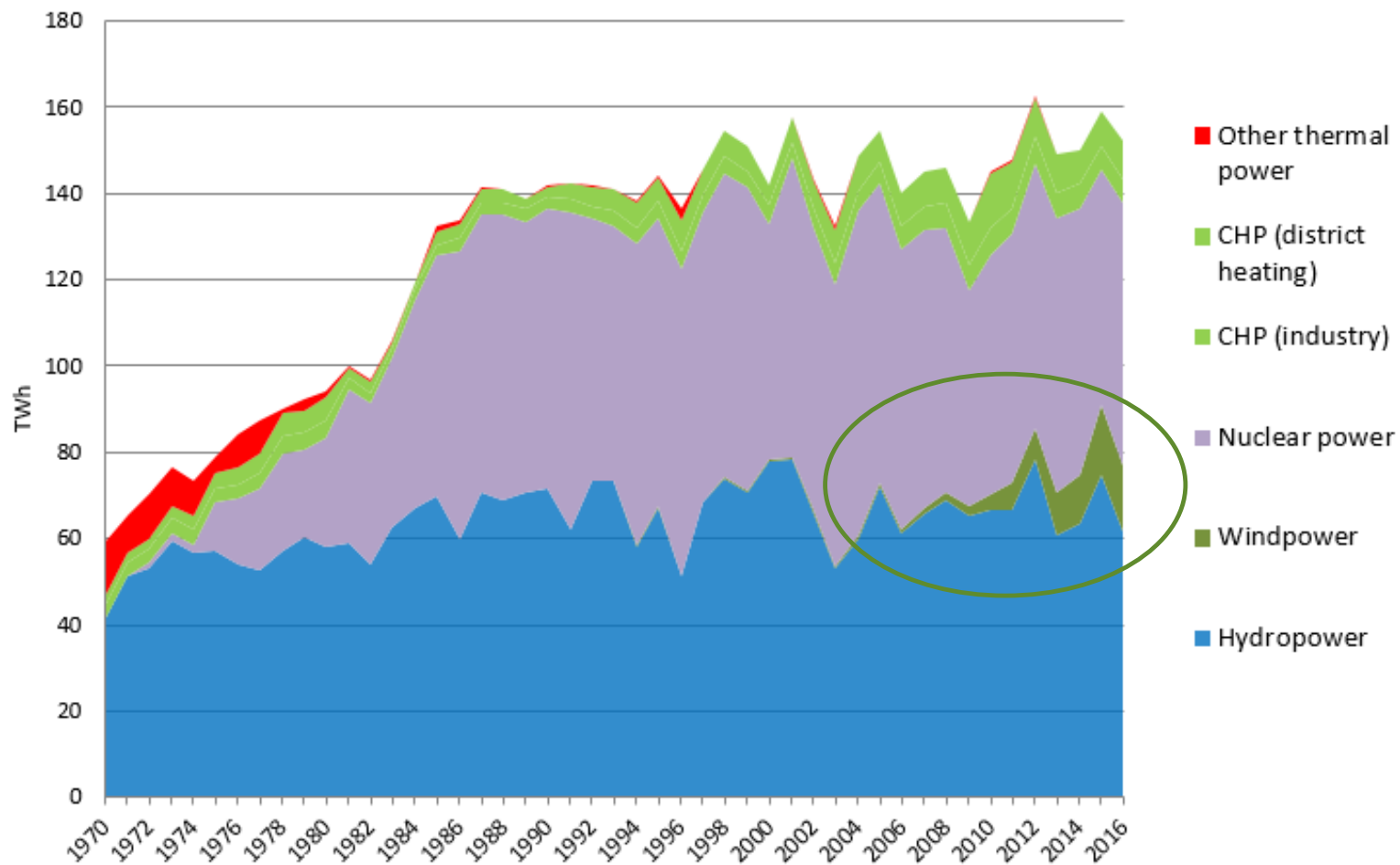
- Biomass
- Hydropower
- Wind power
- Nuclear fuel
- Primary heat
- Coal and coke
- Crude oil and oil products
- Natural gas, gasworks gas
- Other fuels
- Import-export of electricity

Energy Supply



- But electricity is low carbon today already 😊

Net electricity production, from 1970, TWh





Market: Additional demand for electricity after 2040

Vehicle electrification 10-15 TWh

Server halls 1-5 TWh

Decarbonisation of heavy industry:

Cement 5-10 TWh

Steel 20-25 TWh

TOTAL: 36-55 TWh

TOTAL: 70-120 TWh !

Production of electricity 2016

Wind 15 TWh

Bio 15 TWh

Hydro 61 TWh

Nuclear 61 TWh

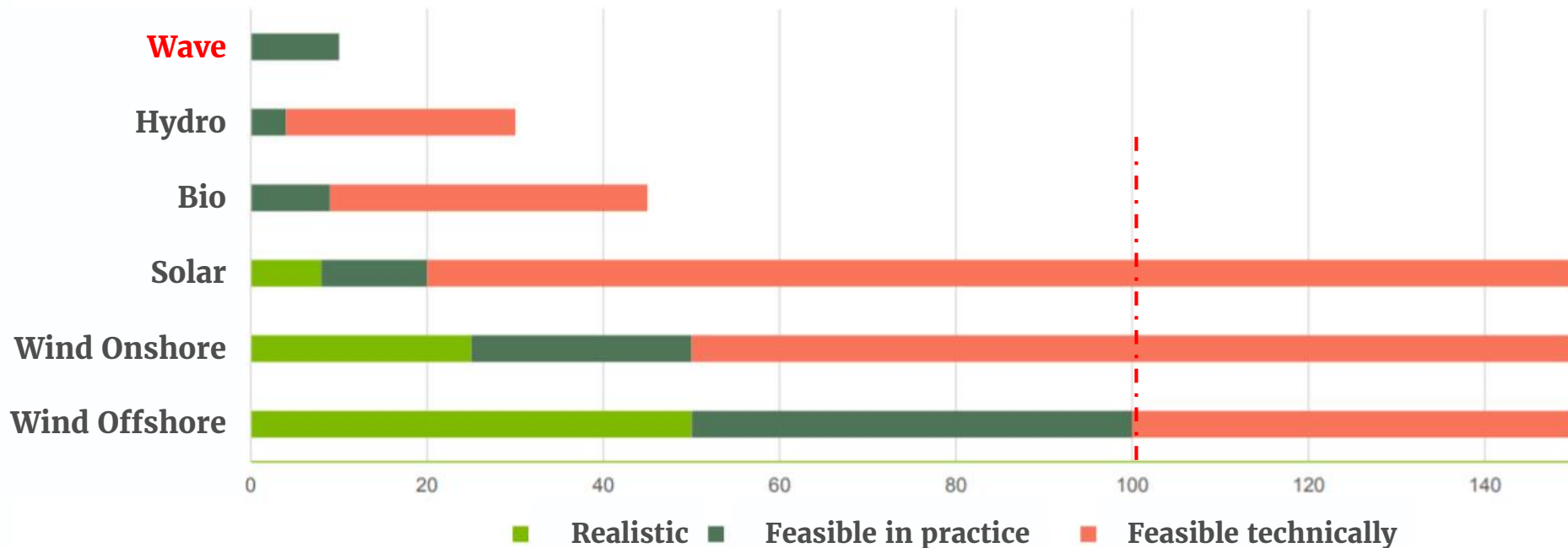
TOTAL: 152 TWh

Surplus/export 12 TWh

**100 TWh new
production 2040!**



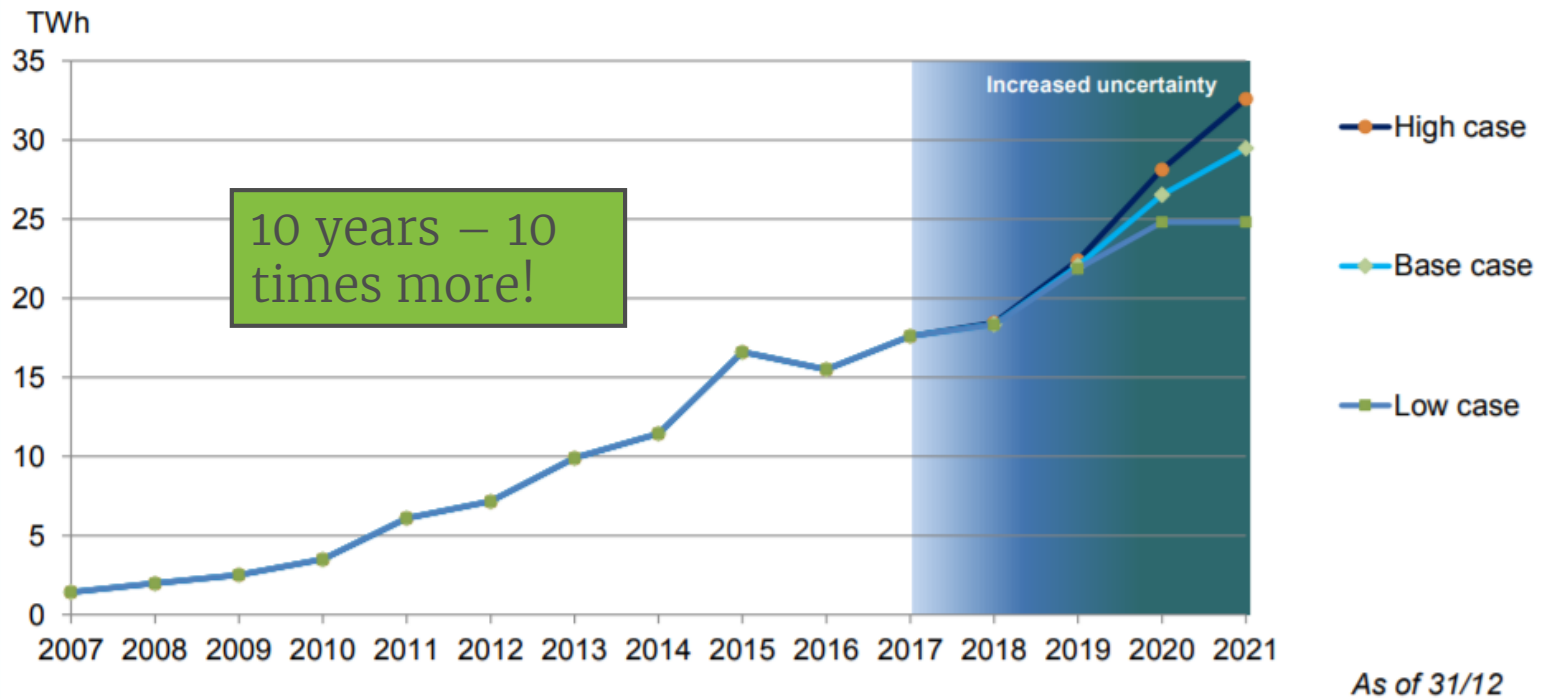
Potential different technologies





Wind power production

Actual and forecast



As of 31/12

	Onshore	Offshore	Total
In operation			
Windturbines	3 339	74	3 413
Capacity (MW)	6 406	190	6 595
* Under construction			
Windturbines	339		339
Capacity (MW)	1 103		1 103
† Permitted			
Windturbines	2 385	453	2 838
Capacity (MW)	7 549	2 017	9 566
† In permission process			
Windturbines	2 926	275	3 201
Capacity (MW)	9 267	925	10 192

* Firm and unconditional turbine order based on investment decisions

** Estimations

- **Goal 2040 : 100% renewable electricity production**
 - 100 TWh new electricity production 2040
- ***No governmental governance –Technology neutral support system***
- **Market decide what technology / projects to realize**
 - ***2003: Bio energy***
 - ***2008: Wind Power onshore***
- **2020 –**
 - ***Onshore Wind or***
 - ***Offshore Wind ?***



First Swedish Sea Plan

- 2021 (EU)
- Non binding
- Plan for 50 TWh-12 GW electricity production (1500 turbines / 8 MW) in prioritized areas



Today:

- 76 turbines
- 172 MW

Lillgrund vindkraftpark





Early Market Sweden

IF

- Clear rules on Grid connection cost
 - 2019?

THEN

- Vattenfall:
 - Kriegers Flak project – Swedish part 640MW
 - Taggen 300 MW
 - Operation 2023?
- And many more

- EU 80% goal for 2050*
 - Baltic InteGrid project data base (planned)
 - Additional areas
 - BVGassociates
 - Vision for Offshore Wind energy in Baltic Sea
-
- * Cut greenhouse gas emissions 1990-2050

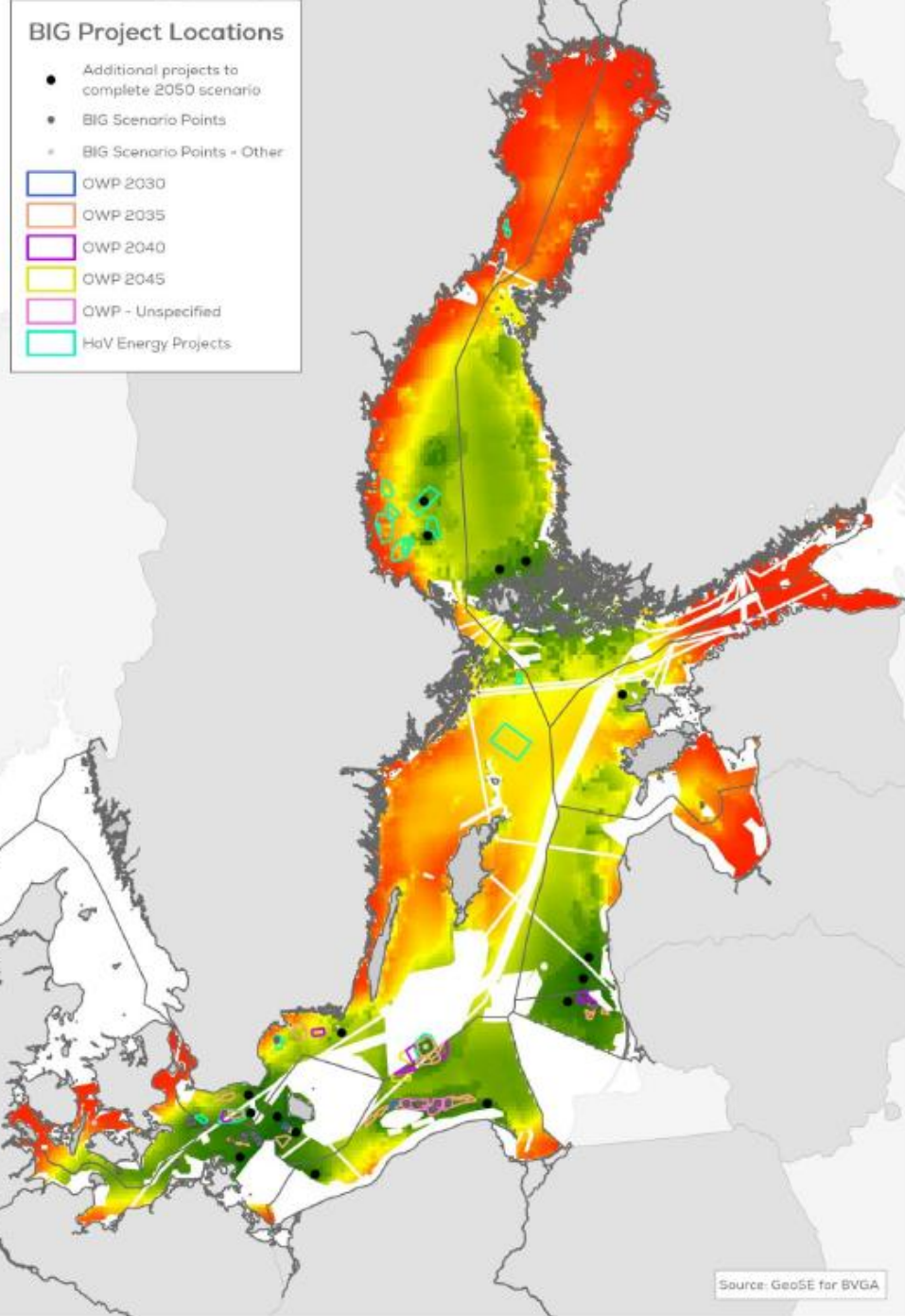


**Unleashing Europe's
offshore wind potential**
A new resource assessment

June 2017

- 35 GW / 150 TWh electricity
Offshore Wind in the Baltic Sea

Vision 2050 offshore Wind	
	GW
Denmark	4,3
Germany	5
Sweden	11
Finland	2,1
Poland	7,3
Estonia	1,9
Lithuania	2,3
Latvia	1
Total	35



Thank You!

www.baltic-integrid.eu

Newsletters, conferences and latest project developments

