Offshore wind in the North Sea
An outlook
Or: Where are we heading?
“The Times They Are A-Changin"

- EU’s Green Deal
- Europe 2050: 400 GW +
- Norway 2040: 30 GW
- Energy Security
- Price of energy
- EU, 20 October:
  
  ... fast-tracking of the simplification of permitting procedures to accelerate the rollout of renewables and related grids

Need for speed and volume!

Source: IEA 2019
How to use 30 GW?

140 TWh
+130 TWh
= 270 TWh

Figur 3.11 Historisk temperaturkorrigert forbruk og anslag for norsk kraftforbruk mot 2040, fra utvalgte rapporter og innspill. Anslag med lik farge er ulike scenarioer fra samme analysemiljø.

Power price in Europe –
What is the new normal?

Average power price (NOK/kWh) 2011 – 2020.
Source: St.meld. 36, 2021. “Energi til Arbeid”

Day- ahead power price (EUR/MWh)
21.10.2022
Source: NorPool.
Norway: World leading wind resources
Norwegian Offshore wind - Beyond the North Sea

Source: SNL, Knut Barthel

Courtesy Ida M. Solbrekke, UiB
An intermittent energy resource -

But:

- Offshore wind more persistent than onshore
- Seasonal variations fits the consumption
- May utilize low correlated areas
- Combine with hydropower

January 2004
Average power

June 2004
Average power

Courtesy Ida M. Solbrekke, UiB
Areas considered in 2010 – Deep water a real option?

Source: NVE 2010, Havvind, Forslag til utredningsområder.
Floating wind turbines

“You crazy, rich Norwegians”

Vision: 2005 (Norsk Hydro):

**Vision**
- Share infrastructure; Power to shore and platforms.
- Reduce emission to air
- New clean power

Hywind Demo, 2009
Hywind Tampen, 2022
Size of wind turbines

- Empire State Building: 443 m
- State of art turbine: 15 MW – 270 m, Rotor: 240 m
- World’s first full scale floating turbine, 2009: 2.3 MW – 107 m, Rotor: 82 m
Where are we heading?

- Our role in Europe’s carbon neutral energy system?
- What should we deliver?
- Role of the traditional Norwegian power demanding industry?
- Are we ready for the competition?
- 1.5 GW installed per year, 2 - 3 turbines per week
- About 1000 billion NOK
What is our vision in 2022?

• Norwegian Wind: Europe’s clean energy provider.
  – Electricity, hydrogen, ammonia, energy rich products, …
• Sustainable development
• From co-existence to cooperation
• Connect and reduce storage need.
• Our wealth comes from oil and gas – use it for new solutions!
• Brave ideas and persistence!


Source: UiB.no / Havbyen Bergen