

Offshore wind power in Finland

Arctic Passion Seminar 16.2.2023

Heidi Paalatie Finnish Wind Power Association

Finnish Wind Power Association (STY, FWPA)

- Valued industry association for wind power
- Established in 1988
- App. 210 company members, app. 160 private members
 - Wide range of companies related to wind power field
- 8 employees
- HQ in Jyväskylä
- Spreads the word about the wind power, active participant in public discussion, publishes magazine "Tuulivoima", organizes seminars and courses

www.fwpa.fi, www.tuulivoimayhdistys.fi

www.windfinland.fi, www.tuulivoimalehti.fi





Advocacy





Communications





Events & memberships



Global cumulative wind power capacity 2021 (GW)



Global wind power leaders (Cumulative capacity. Note the scales)







(Lähde: GWEC, Global Wind Report 2022)

Fast growing share







Finnish offshore wind today in production

Suomen Tuulivoimayhdistys

Current offshore wind power in Finland

- Pori Tahkoluoto by Suomen Hyötytuuli
 - 1 pilot turbine MW2,3 since 2010
 - 10 turbines MW4,2 since 2017
 - Gravitation sub-sea foundations
- Kemi Ajos repowering 2016/2017 by OX2 & IKEA
 - 8 turbines, MW3,3 on man-made islands, sub-sea cable
- Lumijoki Sähkele II repowering 2014 by Lumituuli
 - 1 turbine MW2,0



Photo: Suomen Hyötytuuli







What signals make us trust that there will be offshore wind in Finland?

- Large pipeline of MW 13 000 and it is growing
- Huge interest in Finnish wind power
- Growing need for electricity e.g. due to hydrogen projects wind power needed to meet the demand for clean affordable electricity
- The existing offshore turbines have showed excellence in performance and proved the conditions to be suitable
- Too much potential to be wasted!
- But: at the same time there are still plenty of good onshore sites available – and the costs of onshore wind are lower



TSO Fingrid visions big for offshore





- According to Fingrid Network Vision, "Windy Seas" scenario, in 2035 (2045)
 - Electricity consumption is 163 TWh (210 TWh)
 - Offshore wind production 71 TWh (143 TWh)
- In all 4 scenarios the electricity consumption will rise from current 86 TWh to 128-188 TWh by 2035



The industry visions big as well





And the government?

Baltic energy market interconnection plan

The Baltic energy market interconnection plan (BEMIP) aims to end energy isolation in the Baltic region.



Hiilineutraali Suomi 2035 – kansallinen ilmasto- ja energiastrategia

The Ministry of Employment and the Economy working on a specific offshore wind power target

What supports the development?

Suomen Tuulivoimayhdistys



Some challenges on the way?

Coexistence with the military

Permitting should be finetuned

Challenges of Finnish offshore wind power

Suomen Tuulivoimayhdistys

Un-developed value chain – but it's growing

Ice load might seem like a challenge – but it can be solved?

Higher costs comparing to neighbours – grid connection and seabed leases!

2030 and beyond – how much (offshore) wind power in Finland?



- Essential points are:
 - How much and how fast will the electivity consumption grow?
 - P2X solution and hydrogen projects when, where, how much?
 - Future of demand response and storage solutions?
 - Wind power construction in Eastern Finland?

→ Wind power will help the industry, transportation and heating to become carbon neutral – but it can not do it on its own

Sweden & offhore wind power

- Currently 4 small windfarms in operation (0,6 TWh)
- On territorial water
 - Projects worth 18 TWh in project pipeline
 - Permitting process similar to onshore permitting; opendoor process unlike in Finland
- EEZ
 - App. 60 projects
 - GW125 without overlaps GW90
 - Exclusivity received very late

Source: Svensk Vindenergi





Swedish projects

Submitted permit applications on EEZ:

Företag	Projekt	Ansökan inlämnad	Storlek	
RWE	Södra Victoria	2012-03-05	1 500-2 000 MW	6-8 TWh
Vattenfall	Stora Middelgrund	2020-08-30	650 MW	2,7 TWh
Vattenfall	Kattegatt Syd	2021-07-09	1 200 MW	5 TWh
Örsted	Skåne Havsvindpark	2021-09-24	1 500 MW	6 TWh
OX2	Galatea-Galene	2021-12-04	1 700 MW	6-7 TWh
OX2	Triton	2022-02-22	1 800 MW	7,5 TWh
OX2	Aurora	2022-06-27	5 500 MW	24 TWh
Vattenfall/Zephyr	Poseidon	2022-12-21	1 400 MW	5,5 TWh
Source: Svensk Vindener				





Estonia & offhore wind power

- 3 projects to be in production 2028
 - Over GW3
- The government will auction more project areas in Sep/Oct 2023
 - App. GW4
 - In production 2035 2040?
- Hot topics
 - Interconnetions to Latvia and Finland
 - Ports, vessels





Source: Estonian Wind Energy Association



4 MAY. 2023 - MUSIIKKITALO, HELSINKI