

Congreso Eólico Marino

Las Palmas, Gran Canaria

6th to 8th of November 2023



About

- NORWEP is an independent non-profit foundation
- 25 FTE and 25 local country advisors
- Established to strengthen Norwegian international business activities and export.
- We have more than 340+ partners/company members from the Norwegian offshore, energy and maritime industries.
- We provide market reports, databases and project intelligence to our partners.
- We map the competence, technology and competitiveness of Norwegian suppliers and match with international demand.
- We arrange close to 150 events per annum

Founders

Organisations

- Energy Norway
- Federation of Norwegian Industries
- Norwegian Oil and Gas Association
- Norwegian Shipowners' Association
- The Norwegian Confederation of Trade Unions

Norwegian Government

- Ministry of Petroleum and Energy
- Ministry of Trade and Industry
- Ministry of Foreign Affairs

Industry

- Equinor
- Statkraft



Technologies & Solutions

- NORWEP cover 7 main energy segments.
- Online database of the Norwegian Partners.
- More than 1,000 unique value propositions (UVP's).

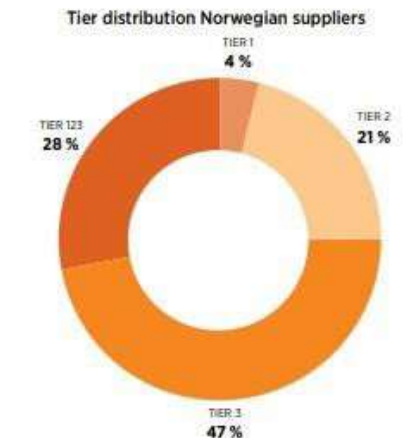


Figure 3.1: Norwegian suppliers - Tier distribution 1-3 (% distribution based on total 521 companies)

Technologies & Solutions - Norwep



Energy systems



Hydropower



Hydrogen



Oil & gas



Solar power



Windpower



CCS

Iberian Peninsula events 23/24

7 – 8 November 2023

II Offshore Wind Congress
Las Palmas, Gran Canaria

31 January – 1 February 2024

WFO Global Summit Conference and Exhibition
Barcelona, Spain

20 - 22 March 204

WindEurope 2024 Annual Event Conference and Exhibition
Bilbao, Spain

27 – 29 May 2024

Lisbon Energy Summit and Exhibition
Lisbon, Portugal



A vibrant green aurora borealis (Northern Lights) illuminates a dark night sky over a mountainous landscape. The aurora's light reflects on a body of water in the foreground. In the top right corner, there are white, curved, concentric graphic elements.

INTERNATIONAL
ENERGY FORUM

13 - 14 NOV | OSLO - NORWAY

20

23



Value to add from Norway – our strengths

1. Technology – innovation
2. Home market with up to 40GW floating in 2040
3. SME´s with competency and experience from the oil and gas industry
4. HSE Culture

The Swedish prime minister was once asked: **“Do you fear new technology?”**

His answer reflects the way Norwegians think:

“No, we fear old technology and going backwards...”



Norwegian Work Culture: Unique Features and Competitive Advantages

- **Flat Structure:** approach promoting teamwork and efficient communication
- **Dialog-Oriented:** cultivate idea-sharing and innovation
- **Delegation of Authority:** empowering employees and quick problem-solving
- **Highly Qualified Workforce** with specialized skills
- **Digitalization:** digital twins to foster innovation
- **Motivational Work Environment:** providing employees with a sense of ownership and responsibility

Norwegian offshore wind market: 30 GW in NORWAY by 2040 (mostly floating)



CAPEX: € 69 Billion (if 2,3 B€ per GW)*

OPEX: € 1,5 Billion/year (if 50 M€/Yr per GW)*

FTE: Full time employees

*Estimation from EnBW based on bottom fixed, without subsidies

Employment estimations:

- **Construction & installation: 750.000 FTE** (25 FTE/MW)*
- **Operation & Maintenance: 36.000 FTE/yr** (1,2 FTE/MW)*
 - A large portion of these will need **GWO certification** (and recertification).
 - **~ 1.500 Wind Technicians** working directly in the offshore wind farms.
 - **~ 1.500 Wind Technicians** in supply chain.
 - Considerable vertical and horizontal job migration
=> need for educating **5.000? 8.000? 10.000?**

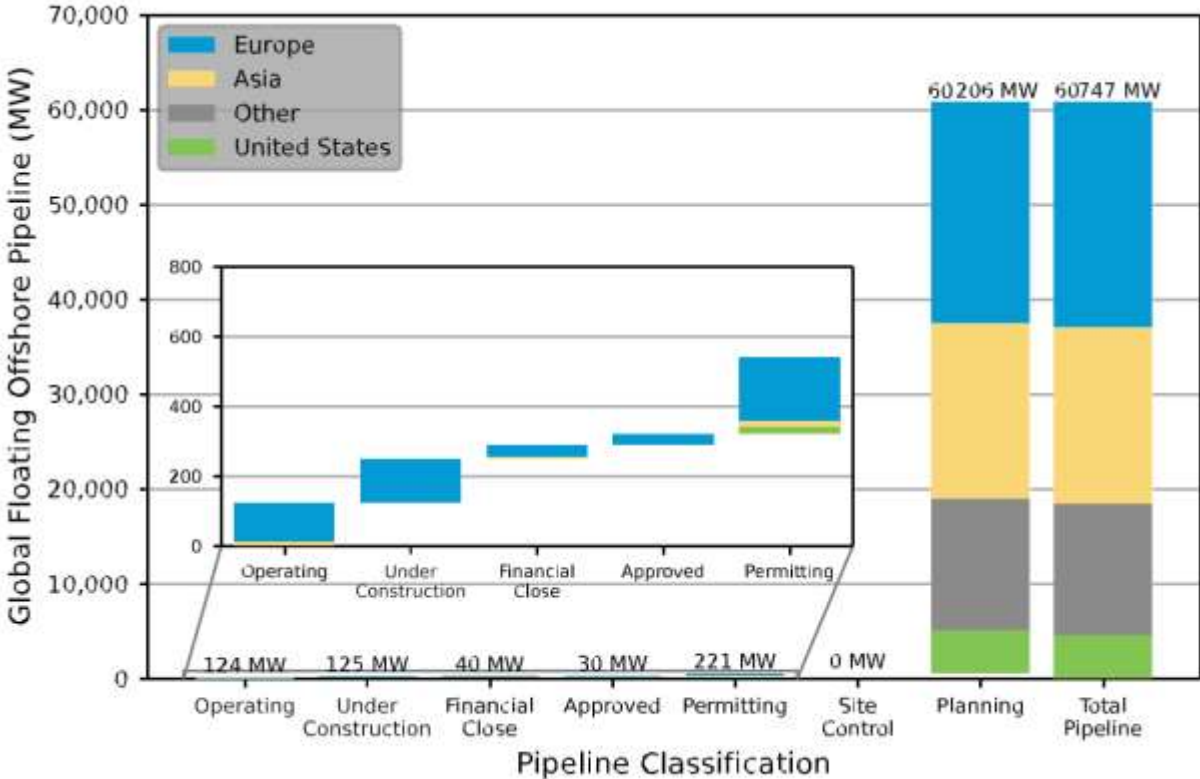
=> NEED OF LONG TERM RECRUITEMENT AWARENESS



Global floating offshore wind energy pipeline more than doubled in 2021



- The global pipeline for floating offshore wind energy grew to 60747 MW
- Floating offshore wind project pipeline has grown 20X since 2017
- This growth is attributed to rapidly expanding global commercial development
- New projects in Asia, United Kingdom, Brazil, and Australia

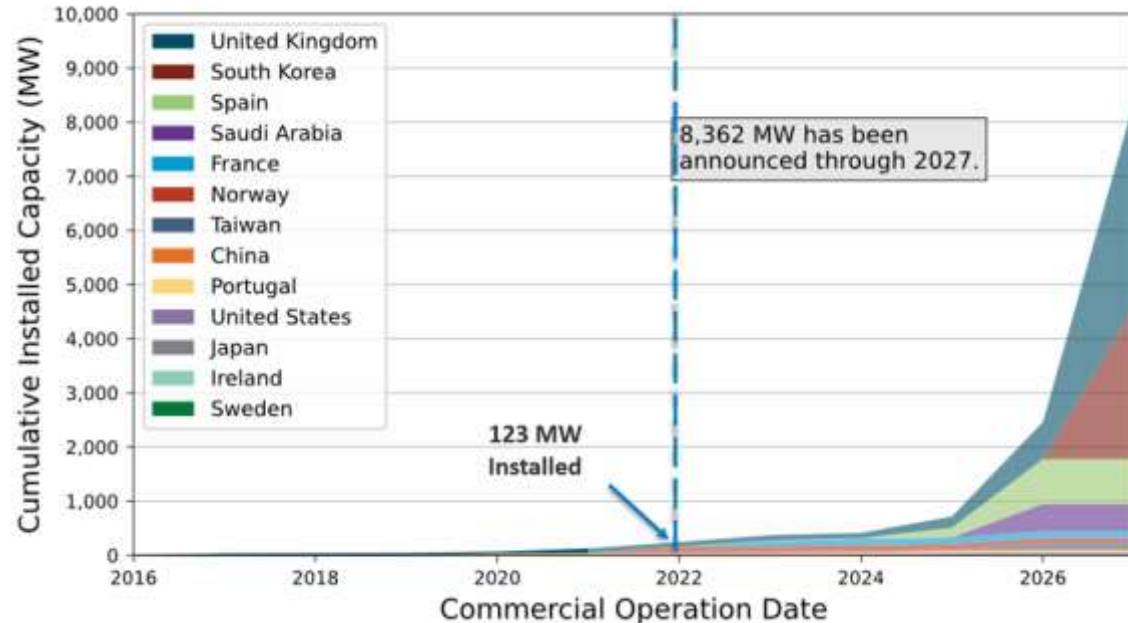


Data Source: Offshore Wind Market Report : 2022 Edition

Cumulative floating offshore wind capacity could exceed 8GW by 2027 based on developer announced commercial operations date



- 123 MW of floating offshore wind was operational as of 31 December 2021
- Developers have announced 8362 MW to be deployed by 2027, double the amount reported last year
- Most floating offshore wind is still in the planning phase, but technology is expected to reach utility-scale by 2024 - 2025
- Developer-announced near-term deployment is 3.8GW for the UK, 2.8GW for South Korea, 828MW for Spain, and 500MW for Saudi Arabia

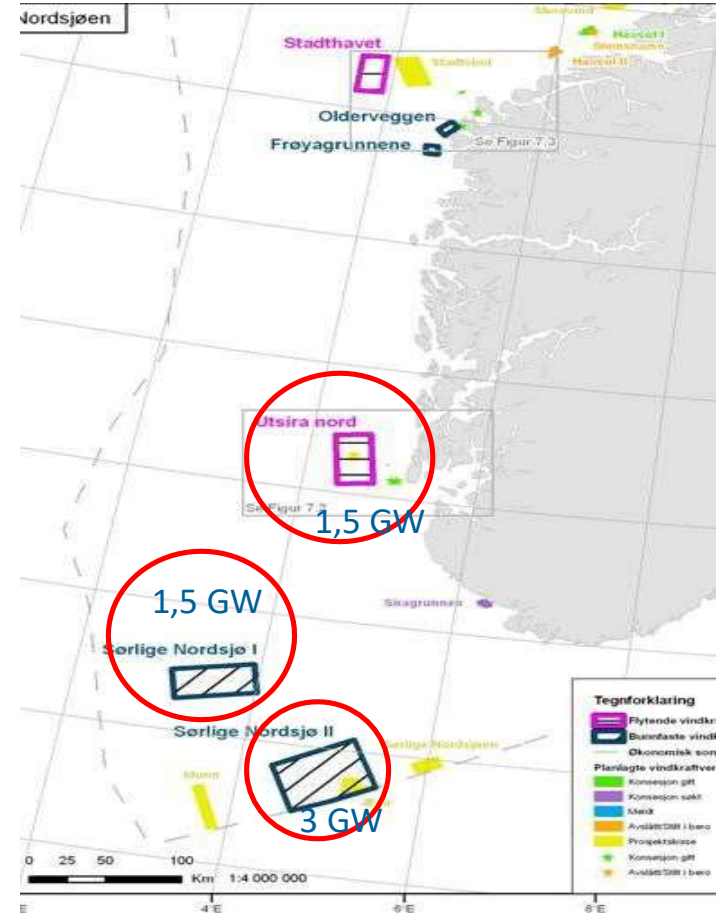


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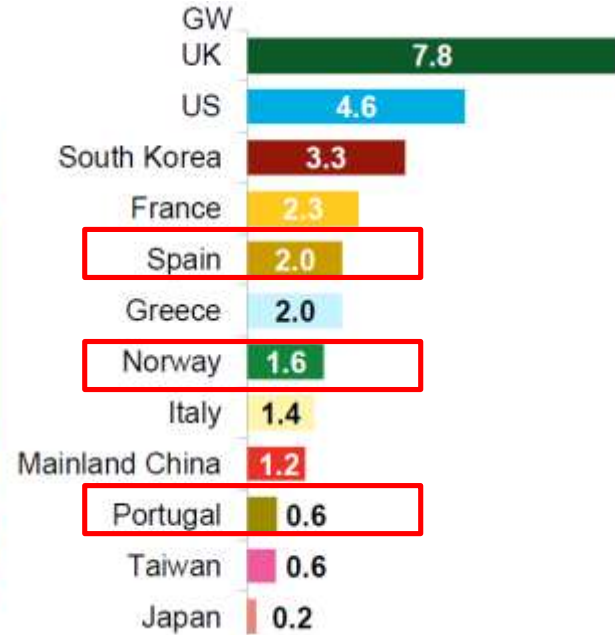
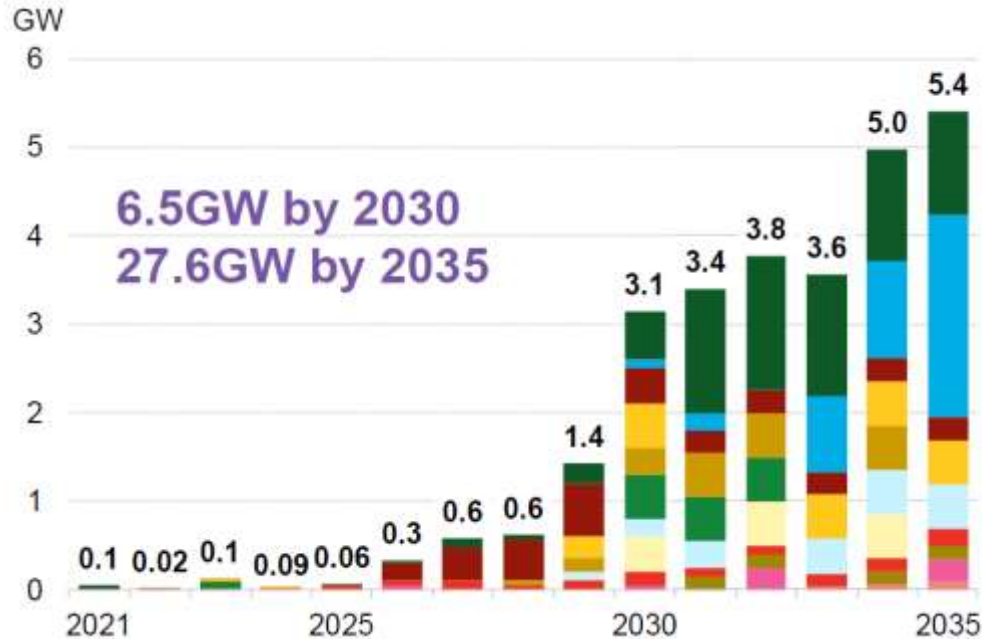
Utsira North and Southern North Sea



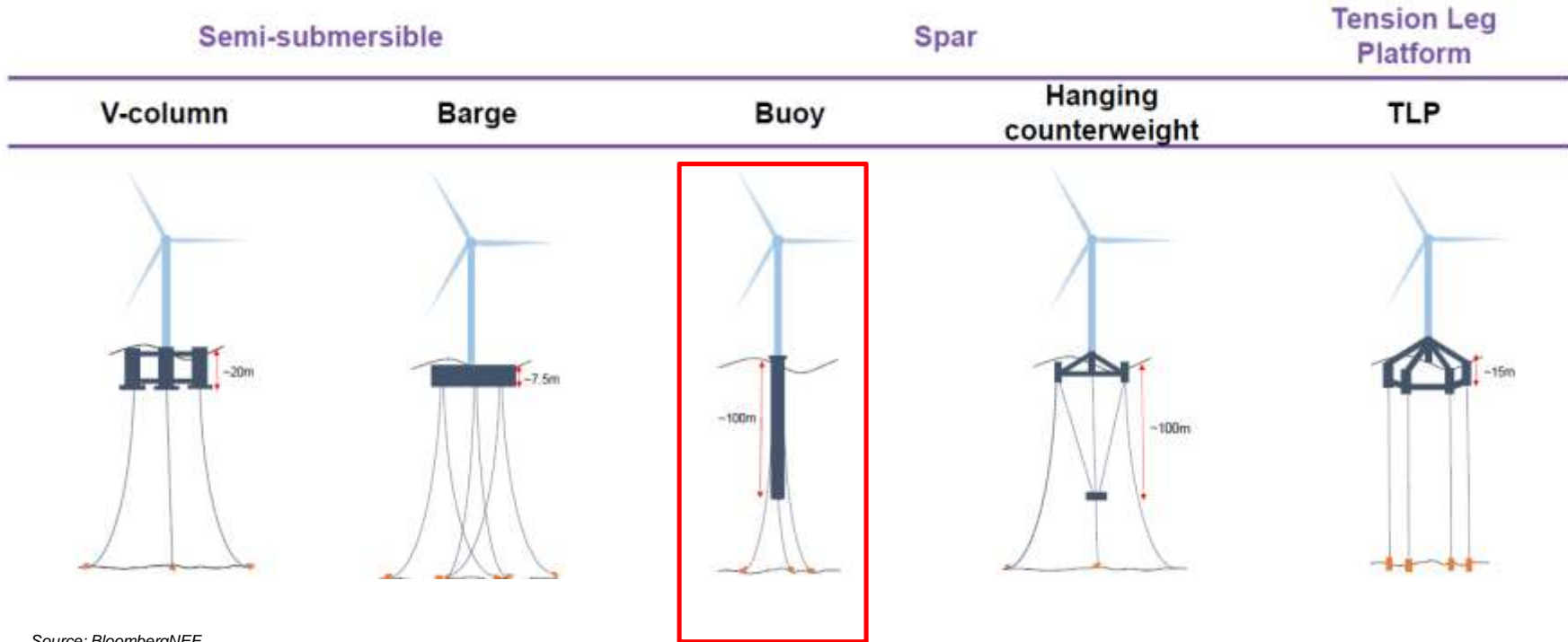
A home market with ongoing projects to team up with the Norwegian supply chain



Floating wind forecast and market ranking in 2035



Floating offshore wind platform designs

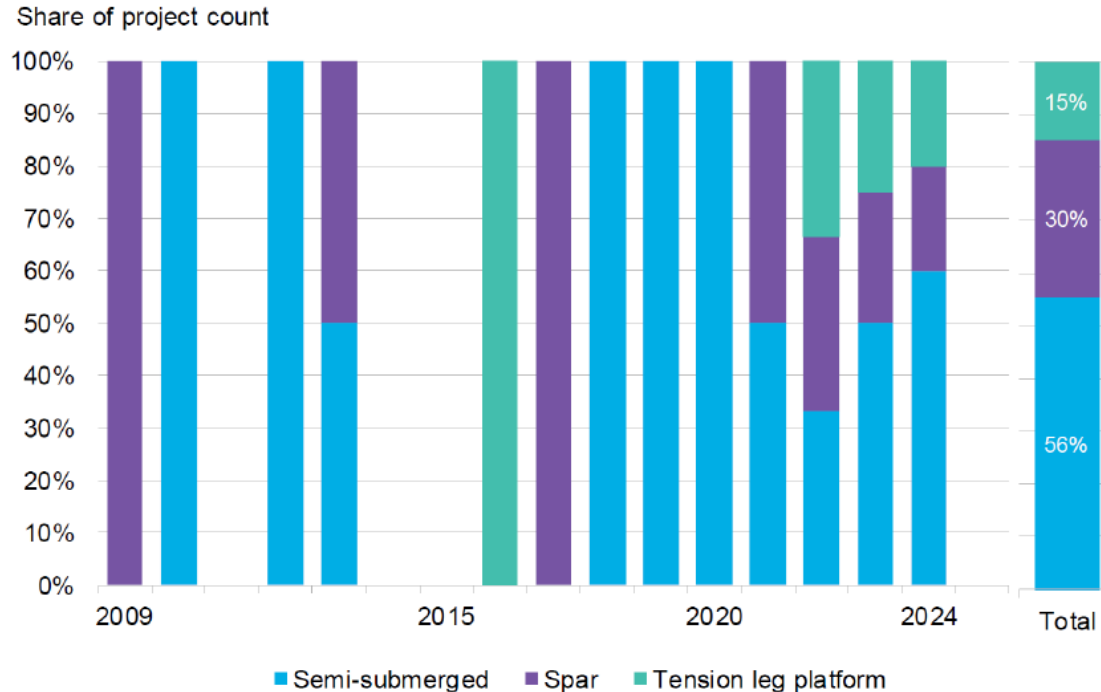


Source: BloombergNEF

Almost two-thirds of floating projects plan for semi-submersible platforms



Platform type of floating wind projects



Source: BloombergNEF

Norway breakthroughs in floating offshore wind



2009

Hywind demo



2017

Hywind Scotland (30MW)



2019

Makani



2021

Tetraspar



2023

Hywind Tampen (88MW)



2023

Seatwirl



2024

Hexicon



2024

Flagship

Unique Value Proposals from NORWEP partners in all these projects





Norwegian Energy Partners

Oslo

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N-0214 Oslo

Stavanger

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N-4021 Stavanger

Bergen

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N-5179 Godvik