

2020 Global Floating Wind Energy Market and Forecast Report 2019 - 2034

Volume 2

Brochure of Report Highlights



Floating Wind Energy Report debuts at US Offshore Wind Event

Quest Floating Wind Energy releases its highly anticipated market report, 2020 Global Floating Wind Energy Market and Forecast (2019-2034) in December. The long-term Outlook sees upwards of 17 GW of installed generation capacity and provides extensive details for all regions. An analysis of the Global Supply Chain including market shares covers Developers, Turbine Manufacturers, Designers, the Mooring segment, Cabling and Installation activities.

This updated report (Volume Two) provides a comprehensive overview of the Global Floating Wind Energy market,

from projects in place with CapEx estimates on all segments of the Supply Chain, along with forecast opportunities within each segment.

The reader gets far more than your typical "top-down" forecast as Quest employs their in-depth methodology (driven from Deep Data) which allows the reader to assess the impact of future growth by analyzing the benchmarks set forth in this report collectively, as well as across the Supply Chain.

\$1,995 Single-User \$3,900 Multi-User

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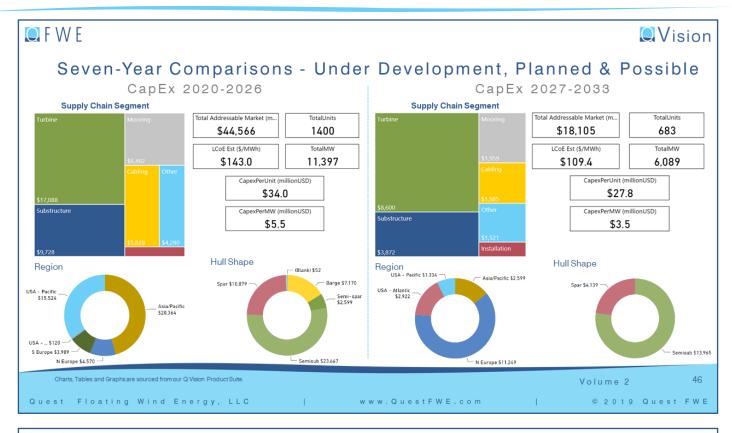
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Northern Europe Projects in CapEx by Project Name

Under Development, Planned & Possible

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		ital							535	5150	\$3,613	\$7,243	\$1,776	\$1,392	\$451	\$1,344	\$15,767	34.6	5.8				
		Charts,																					2
Volume 2 3	Volume 2	Charts,																			Vo	lume 2	34

Sample Charts, Graphs & Tables - Continued

Toda Corporation 0.39%

TBD 16.25%

Shell (EOLEI) 18.3%

Quadran 2.74%

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Project CapEx by Developer 2020-2026 (million USD)

- · Shell (combined with their acquisition of EOLFI) leads the most active developers globally with about 18% of the spend, \$8.2 billion, for SK E&C 1.64% those projects scheduled to Shizen 3.14% be Online from 2020 to 2026
- About 16% of the project spend remains an available opportunity for developers and totals about \$7.25 billion in CaPex.
- The second most active developer is EnBW which has a possible project of



Progression Energy 5.02%

Charts. Tables and Graphs are sourced from our Q Vision Product Suite

	EDF	\$37	\$//	\$28	\$37	20	\$15	\$199
Acacia 6.46%	EDPR ENGIE JV	\$558	\$937	\$228	\$380	\$60	\$240	\$2,403
- AWH Hawaii W., 2.96%	Elicio Ideol	\$415	\$485	\$317	\$85	\$29	\$148	\$1,480
	EMEC	\$9	\$4	\$5	\$14	\$1	\$1	\$34
EDPR ENGIE JV 5.39%	EnBW	\$640	\$1,385	\$339	\$549	\$83	\$316	\$3,312
	Ente Vasco de la Energia	\$27	\$33	\$11	\$8	\$3	\$7	\$89
Elicio Ideol	Eolink	\$5	\$10	\$3	\$0	\$1	\$0	\$19
3.32%	Equinor	\$655	\$859	\$286	\$328	\$70	\$244	\$2,442
	Gicon	\$36	\$65	\$19	\$47	\$6	\$17	\$190
	GIG (Macquarie)	\$172	\$277	\$123	\$130	\$21	\$80	\$803
EnBw 7.43%	Highland Floating Wind	\$17	\$15	\$8	\$6	\$1	\$2	\$49
Ente Vasco de	Iberdrola	\$13	\$17		\$20	\$2	\$0	\$52
0.2%	KNOC Equinor	\$172	\$277	\$94	\$124	\$21	\$76	\$764
	KOWL	\$105	\$151	\$32	\$63	\$10	\$40	\$400
Equinor 5.48%	Magellan	\$33	\$50	\$14	\$12	\$4	\$13	\$127
Gicon 0.43%	Maine Aqua Ventus	\$14	\$43	\$13	\$41	\$4	\$6	\$120
Highland 0.11%	Marubeni	\$470	\$1,406	\$361	\$203	\$59	\$256	\$2,755
KOWL 0.9%	Nautilus FS	\$7	\$8	\$3	\$2	\$1	\$0	\$21
- KOWE 0.9%	NEDO	\$12	\$5	\$7	\$10	\$1	\$1	\$37
Marubeni 6.18%	Plambeck	\$312	\$693	\$213	\$264	\$42	\$161	\$1,685
PPI Nautilus FS 0.05%	PPI	\$125	\$208	\$171	\$72	\$12	\$65	\$653
1.46%	Progression Energy	\$497	\$895	\$214	\$360	\$57	\$214	\$2,236
	Quadran	\$357	\$399	\$170	\$153	\$25	\$117	\$1,220
	Saitec Offshore	\$7	\$3	\$6	\$2	\$1	\$0	\$19
	Seatwirl	\$2	\$1	\$2	\$3	\$0	\$0	\$8
the USA-Pacific region.	Shell (EOLFI)	\$1,803	\$3,120	\$1,278	\$873	\$285	\$796	\$8,156
0	Shizen	\$338	\$349	\$412	\$131	\$29	\$140	\$1,399
ter design selection.	SK E&C	\$150	\$277	\$123	\$94	\$21	\$69	\$733
	TBD	\$1,408	\$3,047	\$746	\$1,165	\$183	\$691	\$7,240
	Toda Corporation	\$67	\$33	\$31	\$16	\$8	\$17	\$173
	US Air Force	\$33	\$35	\$27	\$25	\$2	\$14	\$137
	WunderEnergy	\$231	\$509	\$211	\$119	\$26	\$119	\$1,216
	Total	\$9,728	\$17,088	\$6,462	\$5,828	\$1,180	\$4,280	\$44,566

Develope

AWH Hawaii Wind LLC

Acacia

Dolphyn

WunderEnergy 1.94%

_____PPI 1.46%

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Total FTUs Installed by Year

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Project Activity 2020-2026

Under Development, Planned & Possible



Offshore Floating wind energy is a fast-moving market. Europe has been the 'test bed' for Floating wind and the success of these projects will drive export of this technology to the USA and Asia well before 2025. Planned development of large-scale projects aided with ample financial backing will continue to drive efficiencies and lead to significantly reduced costs. We see this trend in turn making European projects more feasible buoyed by additional government support of long-term Floating wind energy developments.

Status
Ounder devel
Planned
Possible
Cumulative
Total
Units 450 1400 51 1400 400 1200 Project Count TotalUnits 350 300 250 Large projects are spread across several years.

1

Charts, Tables and Graphs are sourced from our Q Vision Product Suite.

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50

Vision

\$275 \$2,878

\$35

\$4 \$2

\$6 \$15 \$199

\$124 \$1,320 \$12 \$121 \$3 \$75

Vision

Substructure Turbine Mooring Cabling Installation Other Total

\$171 \$131 \$24 \$6 \$8 \$37

\$766 \$313

\$28 \$37

\$798

\$50 \$16

\$307 \$553

- T

\$25

\$37 \$77

\$9

🔍 F W E

Vision

QVision

Asia/Pacific Project CapEx

By Supply Chain Segment & Status | Under Development, Planned & Possible

Project CapexEst (millionUSD) by Status and Year* Project CapexEst (millionUSD) by Segment and Year* Status Ounder devel OPlanned Possible Segment
Substructure
Turbine
Mooring
Cabling
Installation
Othe 2021 · As a whole, the Asia/Pacific opportunity sees potentially 815 units by 2033 representing 5.5 GW of installed capacity. · On par with Northern Europe, Asia/Pacific developers and their supply chain are leading the charge towards improved project economics, more optimized CapEx per MW and ultimately lower LCoEs. Charts. Tables and Graphs are sourced from our Q Vision Product Suite 70 Volume 2 Quest Floating Wind Energy, LLC © 2019 Quest FWE www.QuestFWE.com 1

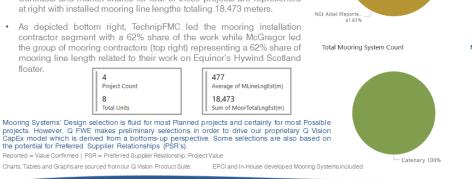
🔍 F W E

Mooring Activity by Status Online 2017-2018

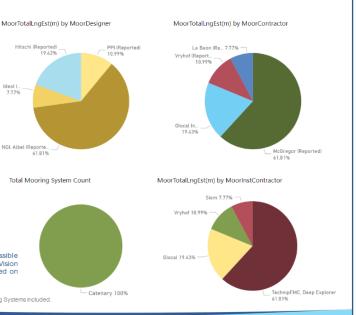
- The Online universe of nine recent 2017 to 2018 projects comprises 13 FTUs representing total installed mooring line lengths over 41,000 meters.
- Japan led the way early-on for Floating wind Demonstrators followed by the United Kingdom, France and Norway.
- Contracts and market shares for four of these projects are represented at right with installed mooring line lengths totaling 18,473 meters.
- As depicted bottom right, TechnipFMC led the mooring installation contractor segment with a 62% share of the work while McGregor led the group of mooring contractors (top right) representing a 62% share of mooring line length related to their work on Equinor's Hywind Scotland floater. 4

Project Count

8 Total Units



Ideol (... 7.779



1

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About Q Vision

Q Vision provides instant access to real-time data for the world's Fixed and Floating Wind Energy projects. Driven from Q FWE's proprietary database, these Microsoft Power BI tools allow for dynamic analyses of relationships across Markets and Technologies, and an enhanced understanding of project Economics including LCoEs.

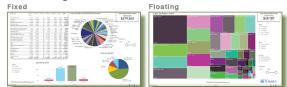
Q FWE's Predictive Analytics and Market Expertise enable clients to see the consequence of change led from this rapidly accelerating market. Q FWE's Subscription Products provide timely and actionable strategic market information. *Data products refreshed weekly at a minimum, and within hours of important project updates.*

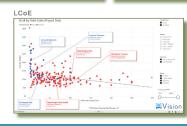
Vision

Project Economics

CapEx / LCoE

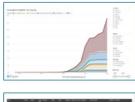
Q Vision is our proprietary **Business Analytics'** tool delivering real-time data and analysis giving you a competitive advantage to win **Fixed** and **Floating** Offshore Wind Energy projects. This *Microsoft Power BI* tool allows for dynamic analysis of relationships across markets and technologies; robust benchmarking as well as an enhanced understanding of project economics including LCoE. Subscribe now to see the consequence of change led from this rapidly accelerating market. Our **Subscription Products** provide timely and actionable, strategic market information. **The Q Vision database subscription includes an Excel data download containing over 120 attributes.**





Total MW

The report highlights projects by total MW bubble size on a world map, cumulative total MW to 2030 and beyond, and cumulative Total MW by country, with the backing data on page 4. Each page has filters for Status, Region and Development Type. **Includes backing data in MS Excel.**





Total FTUs

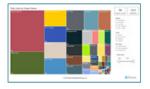
A roundup of the known universe of current, Planned and Possible floating wind projects, totaling the number of FTU units in each project. Very handy for getting a quick overview of the potential future market for turbines, floaters, cables, installation and O&M activities. *Includes backing data in MS Excel.*

Market Dynamics



Tons per MW

An analysis of Tons/MW and CapEx/ MW, highlighting greater efficiencies when plotted both over time, and progressing toward higher turbine capacities. Lower costs and tonnages are colored green while heavier and/ or more costly projects tend toward orange and red. Filter on Steel/ Concrete, Floater Design, Status, MW and Development Type. *Includes backing data in MS Excel.*



Our Consultancy Practice - Capabilities and Methodology

Supporting Clients with Strategic Data-Driven Decisions

Client Directed Inquiries

Supply Chain Analysis

Primary Research

M&A Advisory

Quest Floating Wind Energy provides strategic advisory and consulting to end-clients within the global Energy and Financial sectors. Q FWE delivers highly focused market intelligence tools, products and services to the entirety of the Renewables Supply Chain related to offshore wind encompassing Floating and Bottom-fixed.

• Extensive project benchmarking of key metrics, CapEx & LCoE modeling and assessment

• Expert and technical market analysis utilizing a bottom-up / top-down approach

Rigorous quantitative and qualitative research, vendor analysis and predictive analytics

M&A advisory and market evaluation

• Actively develop and assist clients in sourcing niche financing alternatives

• Market reviews, sizing and demand modeling

• First source referencing (Market/Client/Customer)

• Early project planning & feasibility studies

Number of FTUs by Region & Hull Type



Contact Us

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International, maintaining our global energy insight from hubs in Amsterdam and Houston with support from our representatives in Rio de Janeiro, New York and London

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