



---

**More fine-tuning of legislation  
needed to harness Vietnam's  
offshore wind potential**

---

2019



## Executive summary

---

Population growth, urbanization, and increased spending power of a growing middle class were key factors behind the Government of Vietnam's expansion of its' energy consumption outlook in 2011 from 42 GW to 80 GW by 2020. Already a strong manufacturing destination for multiple product groups, the Vietnamese wind supply chain contributes to the global onshore and, to a lesser extent, offshore wind industries. With a somewhat immature legislative framework and slow diffusion progress, offshore wind expansion plans do attract international attention as well as foreign direct investments. Support mechanisms, grid connection, and the competition from coal are, however, factors that need to be seriously considered. Nearshore and offshore wind projects are being worked on across five different Vietnamese provinces.



Private image by Thomas Poulsen

This *More fine-tuning of legislation needed to harness Vietnam's offshore wind potential* (the Report) is part of a series of reports on the global emerging offshore wind markets. The reports have been crafted by the Panticon team during the months of August through March, 2019 to mark the new name of the management consulting company. Panticon is particularly strong in the Offshore Wind and Logistics sectors within the three core disciplines of Strategic Management Advisory, Mergers & Acquisitions, and Market Research & Analysis.

The Report has been created using an extensive library of data sources (see Reference section). The main data sources used as the basis for the Report were made up of 500+ pages and mainly consisted of various publications by government related organisations, academic journal articles, offshore wind industry articles, and press releases by firms across the offshore wind market supply side as well as demand side.

The Report contains forward-looking statements, which by their very nature, address matters that are, to different degrees, uncertain as they pertain to the future. These, or any other uncertainties, may cause the actual future results to be materially different than those expressed in the forward-looking statements as contained within this Report. At Panticon, we do not undertake to update our forward-looking statements, nor do we assume any liability for actions or dispositions made by firms, organisations, and/or individuals based on information contained in this Report.

Copyright © 2019-2023, all rights reserved

ISBN 978-87-93809-06-2

The Report authors:	Victor Musuku Thomas Poulsen
Report information:	Report release version: 1.0 Release date: March, 2019

This report has been produced by:

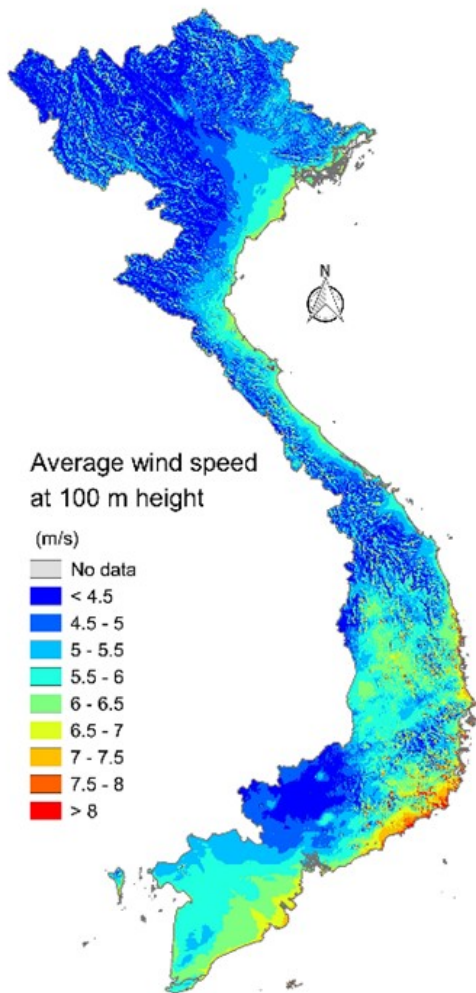


Panticon | Vivede Møllehuse 15, 4640 Faxe, Denmark

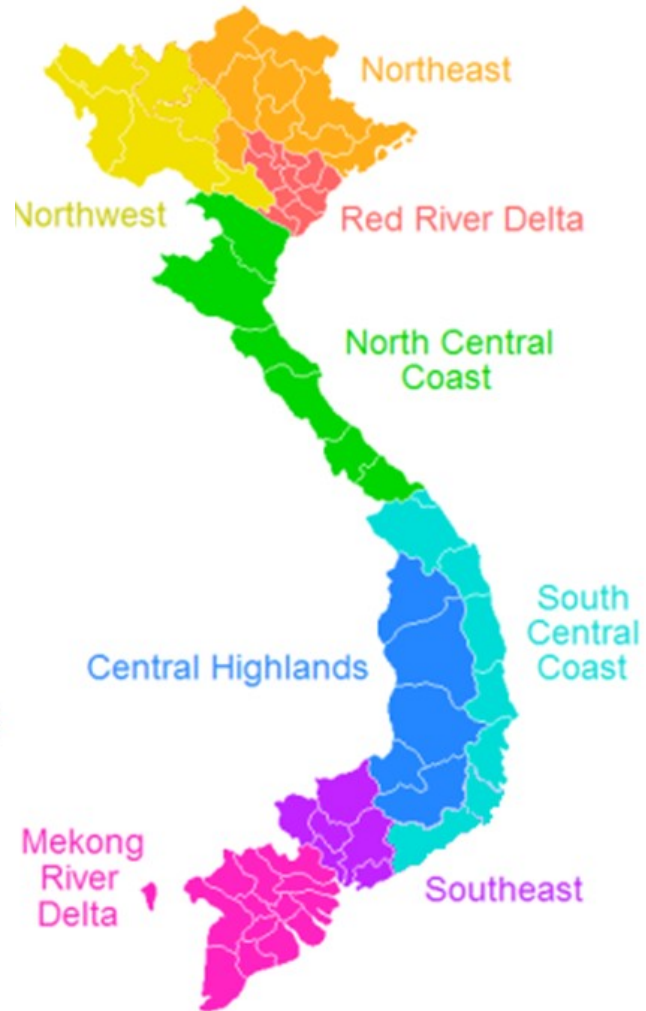
Web: [www.panticon.com](http://www.panticon.com) | Email: [info@panticon.com](mailto:info@panticon.com)



## More fine-tuning of legislation needed to harness Vietnam's offshore wind potential



Source [Map 1]: WindMinds



Source [Map 2]: Creative Commons

# Table of contents

---

Executive summary .....	3
List of abbreviations .....	7
1. Introduction - offshore wind related policy developments plus highlights of related key state players .....	8
1.1. Factors favouring offshore wind development .....	8
1.2. Factors hindering offshore wind development .....	9
2. Existing (planned) offshore wind project owners and developers .....	10
3. Existing (planned) offshore wind supply chain .....	12
3.1 Project management.....	12
3.2 Wind turbine and turbine components .....	12
3.3 Balance of plant .....	12
3.3.1 Foundations .....	12
3.3.2 Vessels .....	13
4. Conclusion.....	13
References.....	14
Who we are.....	15

## List of abbreviations

---

EVN	Vietnam Electricity
FIT	Feed-in tariff
GE	General Electric
GW	giga-Watt
kWh	Kilowatt hour
MOIT	Ministry of Industry and Trade
MW	mega-Watt
OWF	Offshore wind farm
PDP	Power Development Plan
PPAs	Power purchase agreements
UK	United Kingdom
US	United States of America
USTDA	U.S. Trade and Development Agency
VND	Vietnamese Dong (currency)

# 1. Introduction - offshore wind related policy developments plus highlights of related key state players

---

## Energy Mix

Vietnam's power generation is dominated by coal, hydropower (large- and medium-scale as well as pumped storage hydropower), and gas. Non-hydro renewables' contribution is less than 5%. At the end of 2017, Vietnam's cumulative wind capacity was 197 MW, including the 99.2 MW Bac Lieu nearshore project in the shallow waters of the Bạc Liêu Province in the Mekong Delta region.

## Targets

In June 2011, the Government of Vietnam drafted its seventh **National Power Development Plan VII** (PDP VII). The PDB VII aims to almost double Vietnam's installed generation capacity across energy forms from 42GW to 80GW by 2020. For wind, the targets for the years 2020, 2025 and 2030 are 800MW, 2GW and 6 GW, respectively.

## Support mechanism

In the June 2011 PDP VII, Vietnam introduced a feed-in tariff (FIT) of 1,614 Vietnamese Dong (VND) per kilowatt-hour (kWh) over a period of 20 years. Power suppliers sign power purchase agreements (PPAs) with state utility **Vietnam Electricity** (EVN). Local wind developers complained that the FIT is too low. In 2016 and 2017, Vietnam's **Ministry of Industry and Trade** (MOIT) proposed FIT amendments to the country's Prime Minister. In September 2018, the **Prime Minister** approved a draft decision (Decision No. 39) to raise onshore and offshore FITs to VND 1,920 per kWh and VND 2,183 per kWh, respectively, effective 1 November 2018 and applicable to projects commencing operations before 1 November 2021. Post 1 November 2021, the tentative plan is to transition to an auction system.

In January 2019, the MOIT provided updated guidelines (Circular No 02) on developing onshore and offshore wind power projects in Vietnam effective 28 February 2019. The updates provide clarification, though not fully, on the PPA model structure and EVN's obligations. Yet further clarification is needed to assuage investor uncertainty.

## 1.1. Factors favouring offshore wind development

---

Arising electricity demand, increasing pollution levels driven by coal power generation, and diminishing large hydro power generation opportunities are among the key factors favouring offshore wind development in Vietnam.

**Rapidly growing electricity demand:** Vietnam is among South East Asia's fastest growing economies. It also happens to be the third most populous country in South East Asia with a population of 95.5 million as of the end of 2017. Population growth, urbanisation, and industrialisation are driving a rapidly rising electricity demand.

**Wind resource:** Vietnam has one of the best wind resources in South East Asia thanks to a 3,000 km coastline in the Monsoon climate zone.

**Political will:** The government's revised PDP VII emphasises renewable energy development.



**Limited large-hydro resources:** Although there is still room for small hydropower development, opportunities to develop large hydro are nearing complete exhaustion.

**Land rights issues:** The diminishing land resources are putting limits on the cheaper onshore wind and solar power development while paving way for offshore wind development.

**Deteriorating air quality:** Vietnam's major cities are suffering from coal power-driven pollution thereby increasing demand for cleaner and sustainable power generation technologies, including offshore wind.

**Strong foreign interest:** Despite delayed onshore wind projects, some of which have had licences revoked, there is enduring foreign investor interest in Vietnam's renewable energy industry and market, including offshore wind. In June 2018, Vietnam held its first ever wind summit which attracted leading international players in the offshore wind industry.

**Local and global supply chain potential:** Vietnam is a competitive global industrial manufacturing outsourcing destination and therefore provides an option for manufacturing bases for international offshore wind supply chain players seeking to improve supply chain effectiveness. It already hosts component manufacturing of leading turbine manufacturers such as GE, Vestas, Siemens Gamesa and Enercon despite having a small local wind market (less than 200MW installed).

## 1.2. Factors hindering offshore wind development

---

Lack of clear offshore wind policy framework as well as dependence on coal power have been a major hindrance to the take-off of offshore wind development in Vietnam.

**PPA bankability:** PPAs between EVN and renewable energy project developers protects EVN from power purchase or payment obligations in case of a breakdown in transmission or in the distribution grid.

**Coal dependence:** Vietnam remains highly dependent on coal. In the government's energy plan, coal power generation's share is set to rise from 33% in 2018 to 49% in 2020.

**Policy uncertainty:** With a cumulative installed capacity of 197MW at end of 2017, or less than 0.25% of the country's electricity base, Vietnam is far from meeting its wind power targets set in 2011, namely 800MW by 2020 and 6GW by 2030. Previously licensed onshore wind farms are either significantly delayed in construction or have had their investment certificates revoked. Only five out of the 50 registered onshore wind farm projects have been constructed. In addition, the technical definition of what constitutes an onshore and offshore wind project in Vietnam is not clear-cut. This remains problematic especially given that Vietnam has significant nearshore wind potential with most turbines installed on coastal areas (land).

**Grid issues:** Offshore wind is expected to compete for grid accessibility with solar power, which is ramping up fast, as well as onshore wind. The planned and approved solar plants, most of which are in the South of the country where offshore wind plants are also planned, far exceed the transmission capacity.

## 2. Existing (planned) offshore wind supply chain

---

Several international companies and organisations have shown interest in Vietnam's onshore and offshore wind development. Partnerships with local companies are behind the existing nearshore installed capacity in the country. More of such partnerships have been announced, particularly since mid-2017.

- **Cong Ly Construction-Trade-Tourism Company Ltd.** (Cong Ly Ltd.), a Vietnamese private sector company, owns and operates Vietnam's only nearshore wind farm in the Mekong Delta, the Bac Liêu project. It came online in two phases of 16MW and 83MW in August 2013 and December 2015, respectively. Since then, plans for more nearshore projects have been announced.
- In March 2015, **Cong Ly Ltd.** received a grant from the **U.S. Trade and Development Agency** (USTDA) to develop a 300MW wind power project, a third phase of the Bac Liêu nearshore wind farm.
- In May 2016, US wind turbine manufacturer **GE** signed an agreement with the Vietnamese government to co-operate on building 1GW wind capacity in place by 2025.
- In June 2016, Vietnam's **Phu Cuong Group** (PCG) signed a contract with **DNV GL Americas** whereby **DNV GL** would deliver a feasibility study for the 170MW Phu Cuong 1 nearshore wind farm project. The project is **PCG's** first in a planned series of similar projects along Vietnam's southern coastline in Sóc Trăng Province, Mekong Delta region.
- In October 2017, Vietnamese power engineering company, Power Engineering Consulting Joint Stock Co. 2 (PECC2), received a grant from the **USTDA** to support development of the 100 MW Tan Thuan nearshore wind farm project in Vietnam's Cà Mau Province in the Mekong Delta region. PECC2 is developing the project in two phases of 24MW and 76MW.
- In February 2018, solar energy company **Superblock Public Company** (Thailand) announced plans to invest up to 56 billion Thai baht to construct 700MW of wind capacity in Vietnam. The first phase of the investment will consist of three nearshore wind farms in Vietnam's Mekong Delta region: A 142 MW project in Bạc Liêu Province, a 98 MW project in Sóc Trăng Province, and a 100 MW project in Cà Mau Province, with completion set for 2020.

Meanwhile, the momentum for offshore wind is slowly building up in Vietnam.

- In January 2018, Danish-Japanese offshore wind turbine manufacturer **MHI Vestas Offshore Wind**, global technology group **DNV GL**, Singapore companies **Enterprize Energy and Renewable Energy Global Solutions**, and Vietnamese consortium **PetroVietnam** (comprising **Petroleum Equipment Assembly & Metal Structure** and **VietSovPetro**) formed an alliance targeting offshore wind development off Southern Vietnam. The parties entered exclusive agreement including feasibility, environmental, development, and financing planning through implementation. The alliance will focus on an area it has named the **Ke Ga Offshore Wind Development Zone** (Ke Ga OWDZ) from where it plans to deliver utility-scale offshore wind energy development within government's price expectations. The **Ke Ga OWDZ** is an area outside

of the current oil and gas production areas of the Cuulong Basin between 20 and 70 kilometres offshore Southern Vietnam's Bình Thuận Province in the South-Central Coast region and Bà Rịa-Vũng Tàu Province in the South East region. The **PetroVietnam consortium** has shipyards in Bà Rịa-Vũng Tàu Province where fabrication of turbine foundations and offshore electrical substation platforms is planned.

- In March 2018, South Korea's **Doosan Heavy Industries & Construction Co.** (Doosan) and Vietnam's state-run utility **EVN** signed a Memorandum of Understanding (MoU) to jointly develop a 3MW pilot offshore wind project off Vietnam. Under the terms of the MoU, **Doosan** will supply wind turbines, storage systems, EPC package, and, alongside **Korea South-East Power Co.** (a 100% subsidiary of South Korea's state-owned utility **KEPCO**), operations and maintenance. **EVN** will provide the site for the pilot project and will work on obtaining all the necessary project-related licences and approvals.

## 3. Existing (planned) offshore wind supply chain

---

### 3.1. Project management

---

The development and consent lifecycle phase has seen South Korea reach out most to western players.

- In July 2017, Vietnam-headquartered **Titan Technologies Corporation** ordered two Fraunhofer IWES LiDAR measuring buoys for the surveying of the Zhangpu and Changle offshore wind farms in China.
- The UK's **LOC Group**, an independent marine and engineering consultancy and survey company, has long been involved in offshore wind energy in Asia. It was technical consultant for the Bac Liêu nearshore wind farm.
- For the 100 MW Tan Thuan nearshore wind farm project in southern Vietnam's Cà Mau Province in the Mekong Delta region, PECC2 selected US consulting and engineering group **DVN KEMA Renewables** to carry out the project design and feasibility study.

### 3.2. Wind turbine and turbine components

---

Vietnam does not have a local turbine manufacturer, nor does it host turbine assembly plants for the global turbine manufacturers. GE supplied the turbines for Vietnam's 99MW Bac Liêu nearshore wind farm in shallow waters of the Mekong Delta.

- In October 2010, US wind turbine manufacturer **GE** opened a USD 61 million factory in Vietnam's Hải Phòng City in the Red River Delta region. In 2013, **GE** increased its total investment in the factory to USD 110 million to expand its production capacity in response to growing global demand. The facility produces "multiple" wind components, including generators for **GE's** 1.X and 2.X turbine platforms, and electrical control systems.
- In 2010, Vietnam exported onshore wind towers worth USD 51.9 million to the US. Alongside China, Vietnam was a target of a December 2011 petition to the US government by a coalition of American wind tower manufacturers for anti-dumping duties on wind tower imports. **CS Wind Vietnam Co. Ltd**, a subsidiary of South Korean wind tower manufacturer **CS Wind Corporation**, has wind tower manufacturing facilities in Vietnam's Bà Rịa-Vũng Tàu Province in the South East region from where it serves the global wind market. CS Wind manufactured some towers for the Rentel OWF in Belgium from these facilities.

### 3.3. Balance of plant

---

#### 3.3.1. Foundations

---

Vietnam has potential for local foundation fabrication. South Korea's **CS Wind** fabricated transition pieces for the Nobelwind OWF in Belgium at its factory in Vietnam from March 2016.

### 3.3.2. Vessels

---

Vietnam hosts shipyards for global shipbuilders supplying offshore wind farm support vessels in Europe.

- Australian shipbuilder **Strategic Marine** has a shipyard in Vietnam's Bà Rịa-Vũng Tàu Province in the South East region from where it has built wind farm service vessels servicing the northern European offshore wind market. Clients have included **Njord Offshore Limited** and **Sure Wind**.
- French shipbuilder PIRIOU Group has a shipyard, **South East Asia Shipyard** (SEAS), in Vietnam's Long An Province in the Mekong Delta region, from where it has built wind farm support vessels servicing wind markets in the North Sea and Baltic Sea. Clients have included **MPI Workboats**, **Opus Marine**, **AIS (Marine) 2 Limited**, **Rix Sea Shuttle**, and UK-based **Wind Energy Marine**.
- Dutch shipbuilder **Damen Shipyards** has a 70% stake in shipyard **Damen Song Cam Shipyard** (DSCS), in Vietnam's Thuy Nguyen District in Hải Phòng City in the Red River Delta region, from where it has built crew transfer vessels (CTVs) servicing the northern European offshore wind market.
- Singapore-based ship designer and shipbuilder **TRIYARDS Holdings Limited** has shipyards **TRIYARDS Ho Chi Minh City** in Vietnam's Ho Chi Minh City in the South East region and **TRIYARDS Vung Tau** in Vietnam's Bà Rịa-Vũng Tàu Province in the South East region from where it builds wind farm support vessels for European and Asian (e.g., Delhi-based MDL Energy) clients.

## 4. Conclusion

---

Vietnam is unlikely to meet its 2020 wind target. The current legislation, which is not fully clear on the PPA structure, as well as a lack of a clear grid expansion plans will continue to hold back the much-needed foreign investment to kick-start offshore wind development. Meanwhile, Vietnam's continuing status as a global manufacturing hub is likely to spur more interest from multilateral development banks as well as European nations with offshore wind companies seeking new markets. The announced nearshore projects can come online between 2020 and 2025 with the offshore projects are expected to come online in the long-term, that is, post-2025. However, it is possible to see an offshore pilot project by 2025.

## References

---

1. Baker McKenzie, 29 September 2017: Updates on Vietnam's Proposed Increase of Feed-in-Tariff for Wind Power Projects; <https://www.bakermckenzie.com/en/insight/publications/2017/09/vietnam-wind-power-projects>
2. Baker McKenzie, January 2019: New Circular 02 on Development Guidelines for
3. Wind Power Projects in Vietnam; [https://www.bakermckenzie.com/-/media/files/insight/publications/2019/02/al\\_vn\\_newcircularwindpowerprojects\\_jan2019.pdf?la=en](https://www.bakermckenzie.com/-/media/files/insight/publications/2019/02/al_vn_newcircularwindpowerprojects_jan2019.pdf?la=en)
4. Damen Song Cam Shipyard; <https://www.damen.com/en/companies/damen-song-cam-shipyard>
5. GWEC Global Wind 2017 Report, March 2018
6. Offshore Wind Journal, 17 September 2018: New feed-in tariffs for Vietnamese wind power projects to become effective in November; [https://www.owjonline.com/news/view,new-feedin-tariffs-for-vietnamese-wind-power-projects-to-become-effective-in-november\\_54233.htm](https://www.owjonline.com/news/view,new-feedin-tariffs-for-vietnamese-wind-power-projects-to-become-effective-in-november_54233.htm)
7. Offshorewind.biz
8. Poulsen, T. and Hasager, C. B.: How Expensive Is Expensive Enough? Opportunities for Cost Reductions in Offshore Wind Energy Logistics, *Energies*, 9 (6), 437, June 2016; <https://doi.org/10.3390/en9060437>
9. Poulsen, T. and Lema, R.: Is the supply chain ready for the green transformation? The case of offshore wind logistics, *Renewable and Sustainable Energy Reviews*, Volume 73, June 2017, Pages 758-771; <https://doi.org/10.1016/j.rser.2017.01.181>
10. PwC, October 2017: Spotlight on Viet Nam - The leading emerging market; <https://www.pwc.com/vn/en/publications/2017/spotlight-on-vietnam.pdf>
11. Recharge News
12. Renewables.biz
13. Reuters, 9 February 2018: Thailand's biggest solar firm plans \$1.76 billion in Vietnam wind projects; <http://www.rechargenews.com/wind/1432489/thai-pv-developer-plans-700mw-vietnam-wind-push>
14. Vietnam Investment Review, 11 August 2018: Wind farm investors line up despite poor track record; [http://www.vir.com.vn/apicenter@/print\\_article&i=43928](http://www.vir.com.vn/apicenter@/print_article&i=43928)
15. WindMinds, 21 December 2018: Wind in Vietnam: Dutch opportunities; <https://windminds.com/wind-in-vietnam-dutch-opportunities/>

## Who we are

---

At Panticon, we are particularly strong in the Offshore Wind and Logistics sectors within our three core disciplines of **Strategic Management Advisory**, **Mergers & Acquisitions**, and **Market Research & Analysis**. We are mainly focusing on the business side to improve our clients' performance, create value in the long-term, and to create sustainable competitive advantages.

## How we create value

---

- Tailor-made strategies
- Support M&A endeavours
- Share knowledge
- Analyse markets
- Advise our clients in every aspect of our three core disciplines



**Strategic Management Advisory**



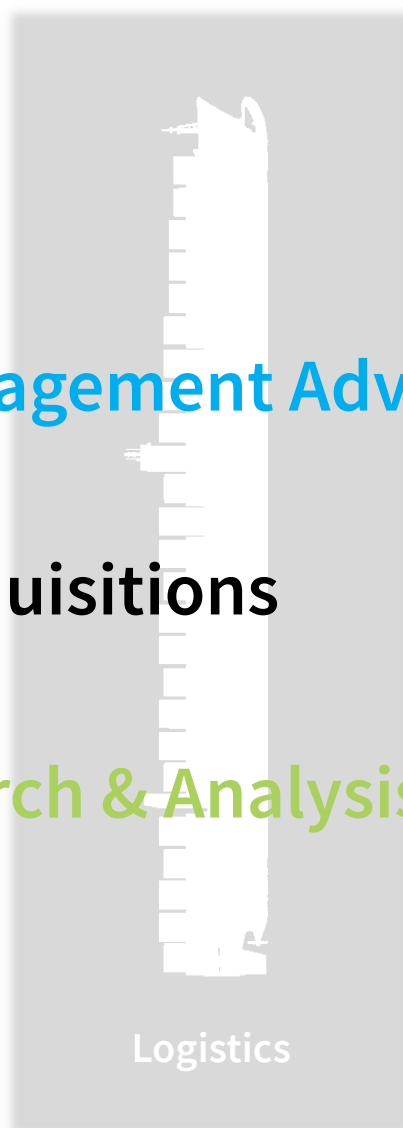
**Mergers & Acquisitions**



**Market Research & Analysis**



Offshore Wind



Logistics



**Panticon** | Vivede Møllehuse 15, 4640 Faxe, Denmark

**Web:** [www.panticon.com](http://www.panticon.com) | **Email:** [info@panticon.com](mailto:info@panticon.com)

