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OFFSHORE LOW CARBON PROJECTS & CONTRACTS IN VIETNAM

A Strategic Report for the North East Scotland Energy Supply Chain

Vietnam's offshore wind sector represents one of the most significant emerging opportunities in the Asia-Pacific region, with over 11 gigawatts (GW) of capacity currently in development stages ranging from Front-End Engineering Design (FEED) to Engineering, Procurement, and Construction (EPC). For North East Scotland's energy supply chain companies, this market presents an addressable opportunity valued at approximately **\$22.2 billion USD** across the project lifecycle from 2024 to 2035. The convergence of Vietnam's ambitious renewable energy targets, recent regulatory clarity through Decree 58/2025, and the region's favorable marine conditions creates a compelling investment case for Scottish firms to leverage their North Sea offshore expertise in this rapidly developing market.^{[1][2][3]}

The Vietnamese government has demonstrated strong commitment to offshore wind development through the revised Power Development Plan 8 (PDP8), which increased offshore wind capacity targets from 6 GW to 17,032 MW by 2030-2035, alongside onshore and nearshore wind expansion to 26,066-38,029 MW. This policy framework, combined with attractive incentives including three-year marine area fee exemptions and guaranteed power purchase agreements for 80% of output over 15 years, positions Vietnam as a priority market for international energy companies.^{[4][5][6][7]}

Major Offshore Wind Projects Portfolio

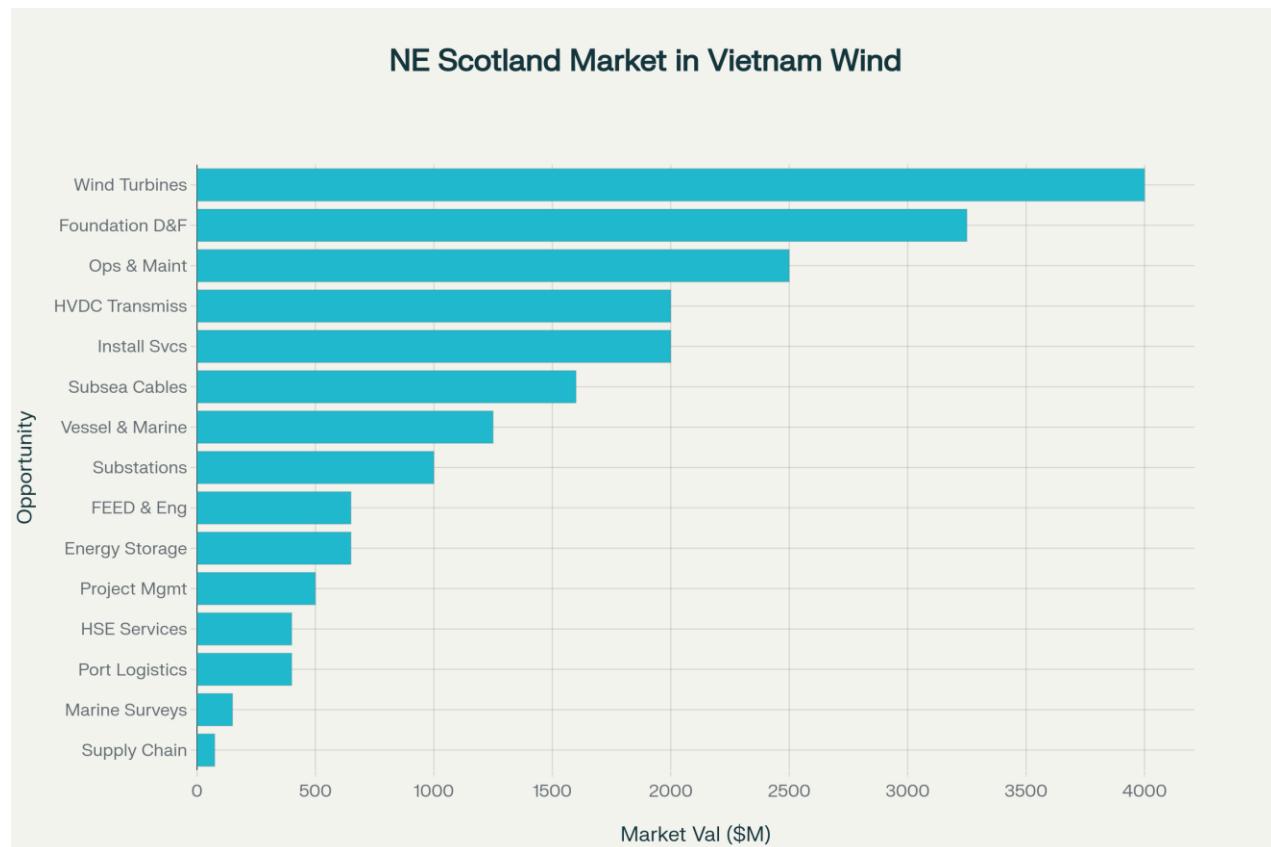
La Gan Offshore Wind Project

The La Gan project, located off Binh Thuan Province in the South China Sea, stands as one of Vietnam's flagship offshore wind developments with a total capacity of **3,500 MW** across two phases of 1,750 MW each. Copenhagen Infrastructure Partners (CIP), through its development arm Copenhagen Offshore Partners (COP), leads the project in partnership with Novasia Energy Co Ltd and Asia Petroleum Energy Corp. The project has already attracted significant investment, with CIP committing \$200 million to date

and planning an additional \$350 million, bringing estimated total CAPEX to approximately **\$10.5 billion**.^{[8][9][10][11]}

Currently in the pre-construction and survey/FEED stage, La Gan is projected to commence operations in 2026 for both phases. An economic impact study conducted by BVG Associates reveals that the project is expected to contribute over \$9 billion to the Vietnamese economy over its lifetime and create more than 130,000 full-time equivalent jobs. The project's strategic importance extends beyond electricity generation, as it is anticipated to catalyze the development of Vietnam's domestic offshore wind supply chain, particularly in foundation fabrication, onshore transmission, and operations and maintenance sectors where Vietnamese expertise is strongest.^{[9][8]}

For North East Scotland companies, La Gan presents immediate opportunities in FEED engineering services (expected contract award Q4 2024), foundation design and fabrication tenders (Q2 2025), and turbine supply negotiations (Q3 2025). The main EPC contract, valued between \$5-7 billion, is planned for award in Q4 2025 to Q1 2026, representing a critical entry point for Scottish firms with offshore installation and project management capabilities.



Addressable market opportunities for North East Scotland energy supply chain companies in Vietnam's offshore wind sector, showing estimated market values across 15 key opportunity areas totaling \$22.2 billion USD.

Thang Long Offshore Wind Project

Developed by Enterprize Energy in collaboration with Vestas, Societe Generale, and ODE, the Thang Long project comprises **3,408 MW** across multiple phases in Binh Thuan Province's offshore waters. With an estimated CAPEX of **\$11.9 billion**, Thang Long is currently at the permitting stage with construction anticipated to commence in 2025 and commercial operations targeted for 2029.[\[12\]](#)[\[10\]](#)[\[11\]](#)

Enterprize Energy has demonstrated substantial commitment to the project, having submitted its survey license application to the Prime Minister in June 2018, with ministerial survey approvals granted in June 2019. The project has progressed through over two years of wind data acquisition and comprehensive seabed surveys, with extensive consultation with local fishing communities. Phase I of the project will utilize Vestas V164-9.5 MW offshore wind turbines, with 64 turbines delivering 9.5 MW nameplate capacity each.[\[13\]](#)[\[12\]](#)

A notable milestone for the project and Vietnam's emerging offshore wind supply chain was the contract awarded to PTSC M&C for manufacturing offshore substation components, valued at nearly \$90 million USD as part of a broader \$180 million package. This demonstrates the potential for technology transfer and local capacity building that can benefit from Scottish expertise in offshore platform engineering and fabrication quality assurance.[\[13\]](#)

North East Scotland companies should target the offshore substation EPC contracts (Q4 2024-Q1 2025), foundation fabrication tenders currently at tender stage (Q2 2025), and the substantial installation and commissioning package planned for Q3 2026, valued at \$4.0-5.5 billion.

PTSC-Sembcorp Offshore Wind Project (Vietnam-Singapore Export)

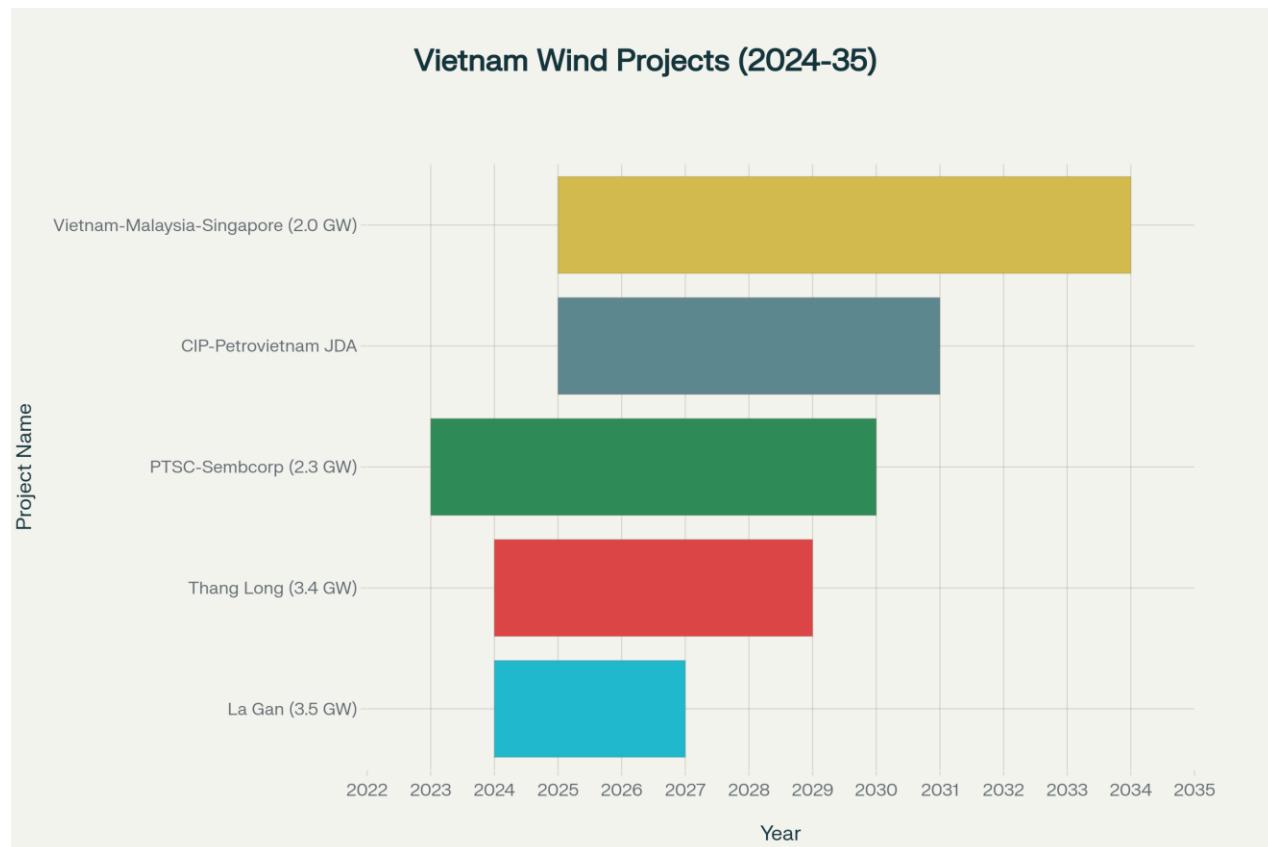
This groundbreaking **2,300 MW** project represents the first government-to-government cooperation for offshore wind electricity export from Vietnam to Singapore. Petrovietnam Technical Services Corp (PTSC) and Sembcorp Utilities signed a Joint Development Agreement in February 2023 during Prime Minister Pham Minh Chinh's official visit to Singapore, with the project expected to commence commercial operations in 2030.[\[14\]](#)[\[15\]](#)[\[16\]](#)

The project addresses Singapore's strategic goal to import 4-6 GW of clean energy from regional nations by 2035 to support its net-zero target by 2050. Renewable energy generated from offshore Vietnam will

be delivered to Singapore via underwater high-voltage direct current (HVDC) cable, overcoming the technical challenge of approximately 1,200 kilometers transmission distance. PTSC has indicated it will install sufficient energy storage systems and apply advanced technical solutions to minimize energy loss during transmission, drawing on international consultant expertise.^{[16][14]}

Survey permits were obtained in August 2023, and PTSC and Sembcorp jointly commenced technical surveys in August 2024. The estimated CAPEX ranges from \$6-8 billion, with significant opportunities in subsea cable installation, HVDC transmission systems, offshore platform engineering, and energy storage integration.^[14]

This project is particularly relevant for Scottish companies given the North Sea's extensive experience with long-distance subsea interconnectors, such as the North Sea Link between the UK and Norway, which demonstrates proven capability in similar technical challenges. The marine survey services (completed 2023), FEED and engineering design phase (Q4 2024-Q1 2025), and foundation and platform EPC tenders (Q3 2025) all present high-opportunity entry points for Scottish firms.^[16]



Development timeline of five major offshore wind projects in Vietnam from 2024 to 2035, showing FEED through commissioning phases. Combined capacity exceeds 11 GW with total CAPEX of \$28+ billion USD.

CIP-Petrovietnam Joint Development Agreement

In August 2025, Copenhagen Infrastructure Partners and Petrovietnam signed a Joint Development Agreement to collaborate on offshore wind project development in Vietnam's south-central region, building on a Memorandum of Understanding signed in March 2024. This project, currently in early development phase and subject to regulatory approvals, is expected to be among Vietnam's first offshore wind initiatives and represents the deepening partnership between CIP's global offshore wind expertise and Petrovietnam's local market knowledge and offshore operational capabilities.^[1]

The agreement combines CIP's Growth Markets Fund II long-term commitment to Vietnam with Petrovietnam's proven offshore expertise from the oil and gas sector. While capacity and CAPEX have not been disclosed at this stage, the project's early development status presents optimal timing for North East Scotland companies to engage in FEED services, environmental and marine surveys, metocean data analysis, and foundation concept design.^[1]

Le Manh Hung, Vice President and Deputy CEO of Petrovietnam, emphasized that the partnership aims not only to develop successful offshore wind projects but also to build a clean energy value chain in Vietnam. This strategic focus on supply chain development creates significant opportunities for Scottish firms to provide supply chain localization consulting, capability assessments, and technology transfer services in the Q2-Q4 2025 timeframe.^[1]

Vietnam-Malaysia-Singapore Offshore Wind Interconnection Project

This ambitious **2,000 MW** regional offshore wind project will connect three countries, with Phase 1 targeted for completion by 2034. Malaysia's Energy Minister Fadillah Yusof announced that 700 MW of capacity will serve Malaysia's domestic consumption while 1,300 MW will be exported to Singapore. The second phase involves northward transmission line extension from Vietnam to Peninsular Malaysia through land routes via Cambodia, Laos, and Thailand, subject to energy requirements and economic assessment after Phase 1 completion.^{[17][18]}

This project exemplifies the growing regional cooperation on renewable energy infrastructure and cross-border electricity trading in ASEAN. For North East Scotland companies, the project presents opportunities in long-distance HVDC transmission expertise, interconnector design, grid integration services, offshore substation engineering, and energy storage solutions. Given the extended timeline to 2034, early engagement in grid connection studies and development planning (Q4 2025) positions Scottish firms advantageously for subsequent contract awards.

Procurement Timeline and Contract Opportunities

The procurement landscape for Vietnam's offshore wind projects is entering a critical phase, with major contract packages progressing from FEED to EPC stages between 2024 and 2026. Analysis of the detailed contract timeline reveals **18 major contract packages** across the five projects, with 10 classified as "Very High" opportunity level for North East Scotland companies, 6 as "High," and 2 as "Medium".

Immediate Procurement Opportunities (Q4 2024 - Q2 2025)

The most pressing opportunities lie in FEED engineering services, where contracts worth \$80-120 million for La Gan are progressing in Q4 2024, requiring offshore wind FEED experience, foundation design capabilities, and grid integration expertise. Thang Long's offshore substation EPC, valued at \$150-250 million, is also advancing to contract award in Q4 2024-Q1 2025, demanding HVAC/HVDC substation expertise and topside integration capabilities.

For the PTSC-Sembcorp project, FEED and engineering design contracts worth \$100-150 million are expected in Q4 2024-Q1 2025, with specific requirements for long-distance transmission, HVDC design, and energy storage integration. The CIP-Petrovietnam joint development presents early-stage opportunities in environmental and marine surveys (\$10-20 million, Q2 2025) and FEED services (\$50-80 million, Q3-Q4 2025).

Medium-Term Major Contracts (2025-2026)

Foundation design and fabrication represents the largest single opportunity area, with La Gan's tender preparation phase (Q2 2025) valued at \$1.2-1.8 billion and Thang Long's tender stage (Q2 2025) estimated at \$1.5-2.2 billion. These contracts require jacket or monopile fabrication capabilities, adherence to international quality standards, and deep-water installation expertise—areas where North Sea experience provides competitive advantage.

The EPC main contracts for La Gan (\$5.0-7.0 billion, Q4 2025-Q1 2026) and installation and commissioning for Thang Long (\$4.0-5.5 billion, Q3 2026) represent flagship opportunities requiring full project delivery capabilities, heavy-lift vessel services, and offshore installation expertise. PTSC-Sembcorp's foundation and platform EPC (\$800 million-\$1.2 billion, Q3 2025) and subsea cable supply and installation (\$800 million-\$1.2 billion, Q4 2025-Q1 2026) provide additional substantial contract prospects.

Supply Chain Opportunities for North East Scotland

Foundation Engineering and Fabrication

Foundation design and fabrication emerges as the highest-value opportunity area, with an addressable market of **\$2.5-4.0 billion** for North East Scotland companies across the project portfolio. The region's extensive offshore oil and gas heritage, combined with emerging leadership in fixed and floating foundation technologies, positions Scottish firms advantageously for Vietnam's shallow to medium-depth offshore wind sites in the 35-60 meter water depth range.^{[12][19]}

Vietnam's existing fabrication capabilities, concentrated in the southern ports of Vung Tau and Thi Vai, provide a foundation for collaboration. PTSC M&C has demonstrated capability in offshore structure fabrication through its \$320 million contract to build 33 jacket foundations for Taiwan's Changhua 2b&4 offshore wind farm, scheduled for completion by 2025. Similarly, CS Wind Vietnam and SREC operate major manufacturing facilities for wind towers and steel foundations in the Thi Vai port cluster.^{[20][15]}

North East Scotland companies can provide high-value services in jacket and monopile design optimization for deep-water conditions, quality assurance and welding inspection services, advanced hydraulic gripper system integration (as demonstrated in Taiwan's Hai Long project), and project management and risk mitigation based on North Sea experience. The market entry timeline of 2024-2026 is immediate, requiring rapid establishment of partnerships with Vietnamese fabricators and engineering firms.^{[21][19]}

Wind Turbine Components and Services

The wind turbine components sector represents the largest opportunity at **\$3.0-5.0 billion**, encompassing tower manufacturing, blade technology, and component supply chain development. While major turbine OEMs like Vestas and Siemens Gamesa are expected to supply nacelles and turbines for Vietnam projects, significant opportunities exist in tower fabrication, blade component manufacturing, and service provision.^{[12][10]}

Vietnam's wind power market has identified that while existing capacity can manufacture foundations and towers to meet specific requirements, anticipated increases in domestic and regional demand will strain existing infrastructure, particularly for WTG blades and nacelles. This infrastructure gap creates opportunities for Scottish companies to support capacity expansion through technology transfer, manufacturing partnerships, and component exports.^[20]

The Thang Long project's specification of Vestas V164-9.5 MW turbines in Phase I, with potential for larger 15 MW+ turbines in subsequent phases, indicates the scale of equipment required. Scottish firms with experience in large-scale turbine component manufacturing, offshore logistics for oversized cargo, and installation support services can capture significant market share during the 2025-2027 market entry window.^[12]

Operations and Maintenance

Long-term operations and maintenance contracts present a **\$2.0-3.0 billion** opportunity over 20-year operational periods beginning with La Gan and Thang Long commissioning in 2026-2029. The remote location of these projects, 40-70 kilometers offshore, combined with the challenging monsoon climate conditions, creates demand for sophisticated O&M strategies, remote monitoring technologies, and locally-based service centers.^{[12][22]}

North East Scotland's experience in remote offshore operations, predictive maintenance technologies, and harsh environment asset management directly addresses Vietnam's O&M requirements. Establishing service centers in Vung Tau, which serves as the primary offshore service hub for both oil and gas and emerging offshore wind sectors, provides strategic positioning.^{[20][15]}

PTSC's existing port infrastructure and offshore service capabilities in Vung Tau offer partnership opportunities for Scottish O&M providers. The company's track record in offshore oil and gas operations, combined with its transition into offshore wind through the Hai Long substation contract and Sembcorp partnership, makes it an ideal local partner for long-term O&M service delivery.^{[15][23][22][20]}

Subsea Cable Systems and HVDC Transmission

Subsea cable systems represent a **\$1.2-2.0 billion** opportunity, with particularly significant prospects in the PTSC-Sembcorp Vietnam-Singapore export project and the Vietnam-Malaysia-Singapore interconnection. The PTSC-Sembcorp project's approximately 1,200-kilometer undersea cable requirement and the Vietnam-Malaysia-Singapore project's multi-country transmission infrastructure create demand for advanced HVDC technology and installation expertise.^{[17][16]}

Scotland's North Sea experience with long-distance subsea interconnectors, including projects comparable to the 720-kilometer North Sea Link HVDC interconnector between the UK and Norway (1,400 MW capacity), provides directly relevant expertise. Scottish companies can offer cable route survey and geophysical investigation services, HVDC converter station design and integration, cable installation vessel operations and burial systems, and grid connection studies and power electronics expertise.^[16]

The PTSC-Sembcorp project's marine survey services phase (completed 2023) has progressed to FEED and engineering design (Q4 2024-Q1 2025), with subsea cable supply and installation contracts planned for Q4 2025-Q1 2026. This timeline necessitates immediate engagement with PTSC and Sembcorp to position for these high-value contracts.

Offshore Substations and Grid Integration

Offshore substation opportunities, valued at **\$800 million-\$1.2 billion**, build on Vietnamese companies' emerging capabilities while requiring international expertise in electrical integration and complex topside engineering. The Hai Long 2 and 3 projects in Taiwan, where the consortium of Semco Maritime and PTSC M&C delivered two offshore substations, demonstrates the capability foundation that Scottish firms can enhance.^{[15][22]}

The Hai Long 2 offshore substation jacket, weighing 3,414 tonnes, set a record for the heaviest single lift jacket ever placed in Taiwan waters when installed by CDWE's Green Jade vessel in 2024. This experience provides PTSC M&C with valuable expertise for Vietnam projects, creating partnership opportunities for Scottish companies in detailed design services, topside electrical integration and commissioning, offshore installation engineering and supervision, and grid connection interface design.^[22]

Thang Long's offshore substation EPC contract, progressing to award in Q4 2024-Q1 2025, represents the most immediate opportunity, requiring HVAC/HVDC substation design capabilities and jacket foundation integration expertise. Scottish firms should target this contract through partnerships with PTSC M&C or direct engagement with Enterprize Energy.

Regulatory Framework and Market Context

Power Development Plan 8 and Recent Revisions

Vietnam's regulatory landscape for offshore wind underwent transformative changes in 2023-2025, resolving longstanding uncertainties that had hindered project development. The original Power Development Plan 8 (PDP8), approved via Decision 500/QD-TTg on May 15, 2023, established an initial offshore wind target of 6 GW by 2030 and 70-91 GW by 2050. This ambitious framework signaled the government's commitment to renewable energy as Vietnam works to reduce coal dependence and achieve net-zero emissions by 2050.^{[24][5]}

In April 2025, the Vietnamese government approved Decision No. 768/QD-TTg, substantially revising PDP8 to reflect evolving market conditions and reinforce energy security commitments. The revised plan increased offshore wind capacity targets to **17,032 MW by 2030-2035**, up from the original 6 GW, while

also raising onshore and nearshore wind capacity to 26,066-38,029 MW from the original 21,880 MW target. This upward revision extends the development timeline slightly beyond 2030 but creates a significantly larger market opportunity for international developers and supply chain companies.^{[5][7]}

The timeline extension reflects practical realities, as no offshore wind projects had been approved for investment or implementation under the original PDP8 timeframe due to regulatory gaps. However, the Standing Committee of the Government issued Notification No. 93/TB-VPCP on March 10, 2025, requiring offshore wind projects to conform to the original 2030 deadline, creating some tension between ambitious targets and implementation feasibility.^{[7][25]}

Decree 58/2025 and Offshore Wind Framework

The issuance of Decree 58/2025/ND-CP on March 3, 2025, marked a watershed moment for Vietnam's offshore wind sector by establishing a comprehensive regulatory framework for renewable energy projects. Effective immediately upon signing, Decree 58 provides detailed regulations covering investor selection, foreign investment conditions, development incentives, and operational requirements.^{[4][6]}

A critical provision of Decree 58 addresses foreign investment in offshore wind projects, which is categorized as "conditional" investment under Vietnamese Investment Law due to national security considerations. Foreign ownership in offshore wind projects is capped at 95%, requiring joint venture partnerships with state-owned or state-controlled enterprises holding a minimum 5% stake. This requirement ensures government oversight of strategic offshore assets while still enabling substantial foreign capital participation.^[6]

Foreign investors must obtain approvals from the Ministry of National Defense (MOND), Ministry of Public Security (MOPS), and Ministry of Foreign Affairs (MOFA). Additionally, both domestic and foreign investors must participate in a competitive bidding process, with electricity prices for domestic consumption not exceeding ceiling prices set by the Ministry of Industry and Trade (MOIT). Exceptions to bidding exist for projects proposed by 100% state-owned enterprises, which may be directly appointed by the Prime Minister.^[6]

Investment Incentives and Power Purchase Agreements

Decree 58 establishes attractive incentives for offshore wind projects obtaining investment approval before January 1, 2031. These incentives include complete exemption from sea surface rental fees during the construction period (up to three years), followed by a 50% reduction in sea surface rental for 12 years from the start of operations. Land use levy exemptions apply during construction, with post-construction incentives governed by land and investment laws.^{[6][25]}

Perhaps most significant for project bankability, Decree 58 guarantees purchase of at least **80% of generated electricity** by the national power system (Vietnam Electricity - EVN) during the loan repayment period, with a maximum duration of 15 years. This guaranteed offtake substantially reduces revenue risk and enhances project financing prospects, addressing a key concern that had deterred investment in Vietnam's renewable energy sector following the expiration of attractive feed-in tariffs in November 2021.^{[26][6]}

The Ministry of Industry and Trade issued Decision No. 1824/QĐ-BCT on June 26, 2025, establishing the 2025 electricity price framework for offshore wind power projects. The maximum electricity prices (exclusive of VAT) vary by region: Northern Gulf region at VND 3,975.1 per kWh (approximately \$0.17 USD/kWh), South Central Coast region at VND 3,078.9 per kWh (approximately \$0.13 USD/kWh), and Southern Sea region at VND 3,868.5 per kWh (approximately \$0.16 USD/kWh). These tariffs provide price certainty for project financial modeling and PPA negotiations with EVN.^{[27][28]}

Survey License and Site Selection Process

The offshore wind site survey process, previously ambiguous and subject to interpretation, received clarification under the Law on Electricity 2024 and Decree 58. Offshore surveys may be conducted by either a 100% state-owned enterprise assigned by the Prime Minister or an entity selected through a competitive procedure promulgated by the Government. Survey companies must demonstrate financial capacity, commit to using local employees and services where competitive, waive any claims for reimbursement of survey costs, and obtain approvals from MOND, MOPS, MOFA, and MOIT.^{[6][25]}

The Ministry of Natural Resources and Environment (MONRE) serves as the competent authority for issuing survey licenses for offshore wind projects, with exclusive survey rights granted for at least 10 years. This extended exclusivity period protects developers' survey investments and encourages thorough site characterization. PTSC holds the distinction of being the first and only domestic investor in Vietnam to have been granted an extensive marine survey license for an offshore wind project by MONRE for the 2.3 GW project with Sembcorp.^{[29][3][30]}

Vietnam currently adopts an "open-door" approach to site selection, with offshore wind sites not yet comprehensively identified or zoned by the Government within a national marine spatial planning framework. The World Bank has recommended that Vietnam align offshore wind zones with a National Marine Spatial Plan and announce the first 10 GW of development blocks to provide clarity and reduce site selection risks. This recommendation is expected to be implemented in 2025-2026, creating opportunities for Scottish companies to provide spatial planning advisory, GIS mapping services, and site selection support.^{[30][29]}

Local Content and Supply Chain Requirements

Decree 58 mandates that both foreign and domestic investors commit to using local employees, goods, and services during project development and operation, subject to competitive pricing, availability, quality, and timelines. This local content requirement, while potentially increasing project costs initially, creates significant opportunities for supply chain localization partnerships between international and Vietnamese companies.^[16]

The requirement aligns with Vietnam's strategic objective to build a domestic offshore wind supply chain capable of supporting the 17 GW near-term target and eventual 70-91 GW by 2050. As the World Bank noted, innovative technology and component scaling are set to drive further investments in Vietnam's supply chains, targeting **60% local content by 2035**. This ambitious localization goal necessitates substantial technology transfer, training, and capability development—areas where North East Scotland companies can provide high-value advisory and implementation services.^{[31][24]}

Vietnamese suppliers have begun making preliminary steps to develop offshore wind capabilities, conducting market studies, establishing connections with international players, and promoting their capabilities through representative offices. However, the lack of a consistent project pipeline and finalized offshore wind regulatory framework (prior to Decree 58) resulted in developer reluctance to commit to local infrastructure investments. The regulatory clarity provided by Decree 58 and revised PDP8 should catalyze these investments, creating partnering opportunities for Scottish firms throughout 2025-2026.^{[29][20]}

Strategic Recommendations for North East Scotland Companies

Immediate Engagement and Market Entry (Q4 2024 - Q2 2025)

The critical window for North East Scotland companies to establish presence in Vietnam's offshore wind market is now, with major projects transitioning from FEED to EPC phases throughout 2025. **Immediate actions** should include establishing in-country presence or representative offices, connecting with key Vietnamese stakeholders including PetroVietnam, PTSC, EVN, and Provincial People's Committees in Binh Thuan and other coastal provinces.

Attendance at industry forums such as Vietnam Offshore Wind conferences, participation in GWEC Vietnam events, and engagement with offshore wind cluster organizations provides visibility and networking opportunities. Direct meetings with project developers—Copenhagen Infrastructure Partners, Enterprize Energy, and Sembcorp—are essential to understand procurement plans and position capabilities.^[3]

While the cost of this immediate engagement phase is relatively low compared to contract values, the strategic value is immensely high. Early mover advantage in establishing relationships, understanding Vietnamese business culture, and building government engagement positions companies favorably when major EPC contracts are tendered in Q2-Q4 2025. Personal relationships and trust-building remain critical success factors in Vietnamese business environments.

Partnership Development with Vietnamese State-Owned Enterprises

Given Decree 58's requirement for minimum 5% SOE participation in all offshore wind projects, forming strategic partnerships with Vietnamese state-owned enterprises is not optional but mandatory for foreign investors. For Scottish supply chain companies, these partnerships provide market access, local knowledge, and enhanced competitiveness in contract bidding.^[16]

Priority Vietnamese partners include PTSC and PTSC M&C, which possess extensive offshore oil and gas experience, fabrication facilities in Vung Tau, and proven offshore wind capabilities through Taiwan contracts. PTSC's partnerships with Sembcorp (2.3 GW export project) and CIP (La Gan project involvement) demonstrate its central role in Vietnam's offshore wind development.^{[11][14][20][15][16]}

CS Wind Vietnam and SREC, with major manufacturing facilities in the Thi Vai port cluster for wind towers and steel foundations, offer partnership opportunities for tower and foundation component supply. Century Wind Power's experience in Taiwan's offshore wind sector, including the delivery of 21 three-legged jacket foundations for the Hai Long project, provides a reference model for Vietnamese fabricators developing similar capabilities.^{[20][21]}

Effective partnerships require clear value propositions demonstrating complementary capabilities—Scottish firms providing international expertise, technology, and quality systems while Vietnamese partners contribute local market knowledge, government relationships, and manufacturing infrastructure. Joint venture structures with 30-50% Scottish equity participation align with Decree 58 requirements while maintaining strategic control and technology protection.

FEED and Early Stage Engineering Services

FEED and early-stage engineering consultancy represents a **\$500-800 million** opportunity with immediate market entry potential (Q4 2024-Q4 2025). Scottish companies with world-class engineering capabilities, 40+ years of North Sea offshore experience, and emerging floating wind innovation leadership are well-positioned to secure these high-value contracts.

Specific service offerings should target concept design and feasibility studies for offshore wind projects, foundation design optimization for Vietnamese metocean conditions, grid integration studies and transmission planning, environmental impact assessment support, and risk assessment and mitigation strategies based on international best practices. The CIP-Petrovietnam joint development agreement, currently in pre-FEED stage, presents an optimal entry point requiring concept design, feasibility studies, and regulatory support services in Q3-Q4 2025.

La Gan's FEED engineering contracts progressing in Q4 2024 (\$80-120 million) and PTSC-Sembcorp's FEED and engineering design phase (Q4 2024-Q1 2025, \$100-150 million) require immediate proposal preparation and submission. Partnership with the Institute of Energy Vietnam, DNV's Vietnam office, and Danish Energy Authority (active in Vietnam offshore wind advisory) can enhance credibility and provide local consortium strength.^[23]

Success factors include demonstrable international track record in offshore wind FEED services, cost competitiveness relative to European and Asian competitors, and deep understanding of Vietnam's regulatory framework including Decree 58 requirements and PDP8 specifications. Proposals should emphasize technology transfer components and capability building for Vietnamese partners to align with local content objectives.

Marine Survey and Environmental Services Excellence

Marine and environmental survey services, valued at **\$100-200 million**, provide early project engagement opportunities with high strategic importance despite lower absolute contract values. These contracts establish relationships with developers and generate proprietary data that informs subsequent engineering and installation phases.

Scottish companies should deploy specialized survey vessels equipped with advanced instrumentation, provide metocean data collection services including LiDAR wind measurement systems, conduct comprehensive environmental impact assessments, and offer geophysical and geotechnical survey capabilities for foundation design. The CIP-Petrovietnam project's environmental and marine survey requirements (Q2 2025, \$10-20 million) and future projects requiring marine surveys throughout 2025-2026 present continuous opportunities.

Partnership with Fugro Vietnam, which has established presence and government relationships, can enhance market access. PTSC M&C's marine service capabilities provide another partnership avenue, particularly for projects where PTSC holds survey licenses or development rights. Semco Maritime's relationships in Vietnam through the Sembcorp partnership offer additional collaboration possibilities.^[20]

Vessel availability, technical expertise, international certification (such as ISO standards and industry-specific accreditations), and exemplary safety standards constitute critical success factors. Given the sensitive nature of offshore surveys in Vietnam's territorial waters, ensuring all personnel and vessels meet Ministry of Defense and Ministry of Public Security requirements is essential.^[6]

Foundation Engineering and Heavy-Lift Installation

Foundation engineering and offshore installation represent the largest individual opportunity areas, with combined market value of **\$4.0-6.5 billion** and market entry timelines of Q2 2025 through Q4 2029. This extended timeline provides opportunities to participate across multiple projects and phases, from La Gan's early 2026-2027 installation through Thang Long's 2027-2029 installation and PTSC-Sembcorp's 2028-2030 deployment.

Scottish companies should leverage deep-water foundation expertise developed in the North Sea's challenging 50-100 meter water depth environments, offer harsh environment engineering solutions including typhoon-resistant design, provide quality assurance and welding inspection services, and deliver project management excellence for complex offshore installations. The hydraulic gripper system integration successfully demonstrated in Taiwan's Hai Long project represents an advanced technical capability that Vietnamese fabricators will require support to implement.^[21]

La Gan's foundation design and fabrication tender (Q2 2025, \$1.2-1.8 billion) and Thang Long's foundation fabrication tender stage (Q2 2025, \$1.5-2.2 billion) require immediate positioning through partnerships with PTSC M&C, CS Wind Vietnam, or Thi Vai port cluster manufacturers. These contracts will likely be awarded to consortia combining international engineering expertise with local fabrication capacity, creating natural partnering opportunities.

Heavy-lift installation services, including vessel provision, offshore installation engineering, and commissioning support, follow foundation fabrication by 12-18 months. Scottish companies with heavy-lift vessel fleets or partnerships with vessel operators should target La Gan's installation phase (2026-2027) and Thang Long's installation and commissioning (Q3 2026, \$4.0-5.5 billion). Safety culture, track record in harsh environment installations, and project management excellence differentiate competitive bids.

Long-Term Operations and Maintenance Positioning

Operations and maintenance represents a **\$2.0-3.0 billion** opportunity over 20-year operational periods, with revenue streams beginning in 2026-2027 as La Gan and Thang Long commission. While O&M

contract awards may occur closer to commissioning dates, strategic positioning must begin now through relationship building with asset owners and establishing local service infrastructure.

Scottish companies should develop comprehensive O&M strategies for 2026+ commissioning dates, establish service centers in Vung Tau (the primary offshore service hub), create training programs to develop local workforce capabilities, and deploy remote monitoring and predictive maintenance technologies. Vung Tau's existing port infrastructure, offshore service capabilities, and concentration of oil and gas support functions provide optimal positioning for offshore wind O&M operations.^{[20][15]}

Partnership with PTSC offers direct access to port facilities, offshore service vessels, and trained workforce transitioning from oil and gas to renewable energy. Sembcorp's long-term commitment to Vietnam through the 2.3 GW export project and EVN's role as the national utility responsible for grid-connected asset performance create additional partnership opportunities.^{[14][16][20]}

Remote operations capabilities, offshore logistics expertise, predictive maintenance technologies, asset management systems, and spare parts supply chain management constitute key success factors. The monsoon climate conditions and remote offshore locations (40-70 km) necessitate sophisticated monitoring and rapid response capabilities that Scottish firms have developed through decades of North Sea operations in similarly challenging environments.

Conclusion: Timing and Scale of Opportunity

Vietnam's offshore wind sector presents a time-sensitive, high-value opportunity for North East Scotland's energy supply chain companies, with the critical market entry window opening now and extending through 2026. The convergence of regulatory clarity through Decree 58/2025, increased capacity targets under revised PDP8 to 17 GW by 2030-2035, and major projects advancing from FEED to EPC phases creates optimal conditions for international participation.^{[4][5][7]}

The total addressable market of **\$22.2 billion USD** across 15 opportunity areas, underpinned by five major projects totaling 11.2+ GW capacity and \$28+ billion CAPEX, represents substantial scale. Immediate opportunities in FEED services (\$500-800 million), marine surveys (\$100-200 million), and partnership development (\$200-400 million) establish foundations for medium-term foundation engineering (\$2.5-4.0 billion), offshore installation (\$1.5-2.5 billion), and long-term O&M (\$2.0-3.0 billion) contracts.

North East Scotland's competitive advantages—40+ years offshore experience, North Sea harsh environment expertise, floating wind technology leadership, and strong industry-government collaboration frameworks—align directly with Vietnam's requirements. The region's successful transition

from oil and gas to renewable energy, demonstrated through projects like Hywind Scotland (world's first floating wind farm) and the 17 GW ScotWind pipeline, provides credible references for Vietnamese stakeholders.^{[32][33][34][35]}

Strategic success requires immediate action: establishing Vietnamese presence in Q4 2024-Q1 2025, forming SOE partnerships by Q2-Q4 2025, securing early FEED contracts in 2024-2025, positioning for major EPC tenders in Q2-Q4 2025, and building long-term O&M capabilities for 2026+ commissioning. Companies that move decisively to capture this opportunity will not only participate in Vietnam's offshore wind development but also position themselves for broader Asia-Pacific market expansion, including Taiwan, South Korea, Japan, and other emerging markets where Scottish expertise and track record in Vietnam will provide competitive differentiation.^[36]

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