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UNCLOS and the Challenge of Private Law in Offshore Project Finance

Keywords: United Nations Convention on the Law of the Sea (UNCLOS), Exclusive Economic Zone (EEZ), Offshore project finance, Functional sovereign rights, Security interests and collateral structures, Ship mortgage and registrability, Direct agreements and step-in rights, International investment protection, Bankability and cash-flow structuring

Summary. This article analyses the legal interface between the United Nations Convention on the Law of the Sea (UNCLOS) and private security law in offshore project finance, focusing on offshore wind in the Exclusive Economic Zone (EEZ). Because the EEZ confers functional sovereign rights rather than territorial ownership, classical land-based mortgage concepts cannot operate over the seabed. A comparative assessment of Germany, Norway, the United Kingdom, the Netherlands and Belgium demonstrates functional convergence: creditor protection is achieved not through in rem rights over maritime space, but through corporate and contractual security structures such as share pledges, receivables assignments and step-in rights. While maritime registration may be available for certain floating installations, it remains exceptional. Against the backdrop of declining intra-European Union investment treaty protection, bankability increasingly depends on domestic administrative stability and precise contractual risk allocation. The emerging model is a compliance-embedded, functionally designed private law of the EEZ that reconciles regulatory integrity with capital mobilisation for the energy transition.

Konwencja Narodów Zjednoczonych o prawie morza (UNCLOS) a wyzwania związane z prawem prywatnym w zakresie finansowania projektów morskich

Słowa kluczowe: Konwencja Narodów Zjednoczonych o prawie morza (UNCLOS), wyłączna strefa ekonomiczna (EEZ), finansowanie projektów offshore, funkcjonalne prawa suwerenne, zabezpieczenia wierzytelności i struktury zabezpieczeń, hipoteka morska i rejestracja statku, umowy bezpośrednie i prawa wejścia (step-in rights), międzynarodowa ochrona inwestycji, bankowalność i strukturyzacja przepływów pieniężnych

Streszczenie. Artykuł analizuje relację pomiędzy Konwencją Narodów Zjednoczonych o prawie morza (UNCLOS) a prawem zabezpieczeń prywatnoprawnych w finansowaniu projektów offshore, ze szczególnym uwzględnieniem morskiej energetyki wiatrowej w wyłącznej strefie ekonomicznej (EEZ). Ponieważ EEZ przyznaje państwu nadbrzeżnemu jedynie funkcjonalne prawa suwerenne, a nie własność terytorialną, klasyczne lądowe konstrukcje hipoteczne nie mogą być stosowane wobec dna morskiego. Analiza porównawcza Niemiec, Norwegii, Zjednoczonego Królestwa, Niderlandów i Belgii wskazuje na funkcjonalną zbieżność rozwiązań: ochrona wierzycieli opiera się nie na prawach rzeczowych do przestrzeni morskiej, lecz na zabezpieczeniach korporacyjnych i umownych, takich jak zastaw na udziałach, cesja wierzytelności oraz prawa wejścia (*step-in rights*). Rejestracja morska

w przypadku niektórych instalacji pływających ma charakter wyjątkowy. Wobec osłabienia ochrony inwestycyjnej w ramach prawa Unii Europejskiej bankowalność projektów zależy w coraz większym stopniu od stabilności krajowego prawa administracyjnego oraz precyzyjnej alokacji ryzyk w umowach. Wyłania się model funkcjonalnego, opartego na zgodności regulacyjnej prawa prywatnego EEZ, który godzi integralność regulacyjną z mobilizacją kapitału dla transformacji energetycznej.

Introduction: Offshore renewables at the crossroads of public international and private commercial law

1. The transformation envisaged by the United Nations' Global Agenda 2030 for Sustainable Development¹ and the Paris Agreement² depends on a rapid scale-up of offshore renewable generation³. From a technical perspective, offshore wind is capable of supplying eleven times the world's projected electricity demand in 2040⁴. Offshore wind can therefore be described in a metaphoric sense as the workhorse of that transition: it requires very large volumes of capital to move across borders into maritime spaces where the familiar, land-based legal provisions of property and security largely falls away. In this setting, the United Nations Convention on the Law of the Sea (UNCLOS)⁵ supplies the constitutional scaffold for allocating different coastal-State competences, delineating the lawful space for constructing and operating installations, and embedding environmental stewardship⁶. However, UNCLOS provides clarity as to which State has jurisdiction in the various maritime zones but does not provide a clear framework for legal questions concerning offshore wind energy⁷. UNCLOS draws a thin line for private law: it enables eco-

¹ UN A/Res/70/1, *Transforming our world: The 2030 Agenda for Sustainable Development*, adopted by the General Assembly on 25 September 2015.

² UNFCCC/CP/2015/L.9/Rev.1, *Paris Agreement*, 12. December 2015; see SDG Goal 13 and the Paris Agreement in W. Huck, *Sustainable Development Goals*, 2022, p. 492 mn 11.

³ C. Banet, R. Willems, *Scaling up Offshore Wind Energy in Europe*, CERRE Report, 13.10.2023, <https://ssrn.com/abstract=4603332> [access: 22.04.2026]. The EU strategy sees potential for a vast increase in the volume of electricity generated from offshore wind. Current offshore capacity in the EU is around 12 gigawatts (GW), and the strategy proposes a 400% increase to at least 60 GW by 2030. The two subsequent decades would see a further 400% increase, bringing total capacity to around 300 GW by 2050 (i.e. 25 times current levels), see European Parliament (EPRS), *EU Strategy for Offshore Renewable Energy*, 02/2022; European Commission, *An EU Strategy to Harness the Potential of Offshore Renewable Energy for a Climate Neutral Future*, COM (2020) 741 final.

⁴ T.A. Hansen, E.J. Wilson et al., *Five Grand Challenges of Offshore Wind Financing in the United States*, "Energy Research & Social Science" 2024, Vol. 107, Article 103329, p. 1.

⁵ United Nations Convention on the Law of the Sea, opened for signature 10 December 1982, 1833 UNTS 3 (entered into force 16 November 1994). The Convention establishes a comprehensive legal framework for all marine and maritime activities, with 169 sovereign states and the European Union as parties as of October 2024.

⁶ J. Crawford, *The Territorial Sea and Other Maritime Zones*, [in:] *Brownlie's Principles of Public International Law*, 9th ed., Oxford 2019, p. 242 ff.

⁷ C. Goodman, *Harnessing the Wind Down Under: Applying the UNCLOS Framework to the Regulation of Offshore Wind by Australia and New Zealand*, "Ocean Development & International Law" 2023, p. 260.

nomic use of the sea, but it does not translate that use into private law, in particular not in the Exclusive Economic Zone (EEZ). According to the definition in Art. 55 UNCLOS, the EEZ is an area beyond and adjacent to the territorial sea, subject to the specific legal regime established in the UNCLOS, under which the rights and jurisdiction of the coastal State and the rights and freedoms of other States are governed by the relevant provisions of UNCLOS⁸. This separation between public sovereign rights of a country including the use of the sea and private property creates a structural tension between public international law, which frames different types of sovereignty and entrust regulatory authority in maritime zones, and private law, which governs contractual rights, security interests and creditor protection⁹ in financing large-scale offshore infrastructure. The resulting tension – between functional sovereignty in particular in the EEZ under public international law and creditor security under private law – frames the central legal challenge of financing offshore infrastructure¹⁰.

2. The upcoming question of reconciliation is not merely theoretical. It is an operational precondition for delivering SDG 7 (Affordable and Clean Energy)¹¹ and SDG 13 (Climate Action)¹² through bankable, rule-of-law-based investment in the EEZ¹³. This development is further accompanied by relatively cautious investment in renewables, according to observations by the United Nations Conference on Trade and Development (UNCTAD). It was analyzed that in particular a breach of provisions of a classic International Investment Agreement (IIA), that prefer fossil sources like coal, gas and oil against the renewables according to the protection of the Energy Charter Treaty (ECT)¹⁴ could give rise to significant compensation claims¹⁵.

⁸ To the meaning of the “the specific legal regime”, A. Proelss (ed.), *United Nations Convention on the Law of the Sea. A Commentary*, München–Oxford–Baden–Baden 2017, Art. 55 mn. 15 ff.

⁹ S. Beadnall, S. Moore, *Offshore Construction: Law and Practice*, 2nd ed., London: Informa Law from Routledge 2021, pp. 365–376.

¹⁰ M. Richter, *Offshore-Windenergie in Deutschland: Potenziale, Anforderungen und Hürden der Projektfinanzierung von Offshore-Windparks in der deutschen Nord- und Ostsee*, Centre for Sustainability Management, Leuphana Universität Lüneburg 2009, pp. 19 ff, 37 ff.

¹¹ W. Huck, *Goal 7*, [in:] *Sustainable Development Goals*, ed. W. Huck, Baden-Baden 2022, pp. 287–322.

¹² *Idem*, *Goal 13*, [in:] *Sustainable Development Goals*, pp. 488–518.

¹³ UNCLOS, Art. 2–3; Art. 56; Art. 77.

¹⁴ F. Hug, *Do Just Energy Transition Partnerships Collide or Converge with Substantive Investment Law Standards? Case Studies from Indonesia and Vietnam*, “Review of European, Comparative & International Environmental Law” 2026, Vol. 35, No. 1, pp. 115–141, pp. 126–127, doi: 10.1111/reel.70033; UNCTAD, *World Investment Report 2023. Investing in Sustainable Energy for All*, UNCTAD/WIR/2023, 05 Jul 2023, pp. xi–xix, 182–187; UNCTAD, *International Investment Agreements Trends: The Increasing Dichotomy between New and Old Treaties*, IIA Issues Notes, October 2024.

¹⁵ F. Balcerzak, *Renewable Energy Arbitration – Quo Vadis? Implications of the Spanish Saga for International Investment Law*, Leiden–Boston 2023, p. 8 ff; see further M. Lumma, A. Zeugner, *Welchen Investitionsschutz wollen wir?*, “Europäische Zeitschrift für Wirtschaftsrecht” 2025, pp. 724–730.

UNCLOS as constitutional international framework

1. The Jurisdictional Architecture of Ocean Space

UNCLOS divides the sea into several zones, including among others territorial waters (Art. 2), contiguous zone (Art. 33), high seas (Art. 86), continental shelf (Art. 76) and the exclusive economic zone, the EEZ (Art. 55). This division implies different rights, duties and consequences of any installations established within each area, including offshore wind installations¹⁶. The territorial sea (up to 12 nautical miles) constitutes an extension of the coastal State's land and air sovereignty over the territory but, and this is important, exercised under international law (Art. 2(1)). Art. 2 (3) clearly states that the exercise of sovereignty is limited by international law. This provision is not merely descriptive; it embodies the obligation of the coastal State to comply with international law to confirm that the powers of the State over the territorial sea are no greater than those possessed over the land domain¹⁷. The legal status of maritime zones beyond this limit follows a more complex logic. The EEZ, pursuant to Arts. 55–75 UNCLOS, establishes a sphere of purpose-bound, specific functional rights. The coastal State does not enjoy territorial sovereignty in the EEZ but specific rights for the exploration and exploitation of natural resources (Art. 56(1)(a))¹⁸ and functional jurisdiction over installations and structures (Art. 56(1)(b)(i)). Because the EEZ grants jurisdiction without property, classic land-based securities – mortgages and land charges – cannot be attached to the seabed there. The seabed functions as a public-law domain, not as an object of private ownership. These rights in the EEZ do not confer private ownership of the seabed in a civil-law sense. This distinction is further refined regarding the continental shelf. Unlike the EEZ, which is a *sui generis* zone requiring proclamation, the coastal State's rights over the continental shelf exist *ipso facto* and *ab initio* by virtue of the “natural prolongation” of its land territory (Art. 76(1)). Thus, while the legal regime for offshore project finance in the EEZ must navigate a “functional jurisdiction” that falls short of land-based dominium, it must also account for the underlying shelf regime where sovereign rights over the seabed are intrinsically

¹⁶ A. Afriansyah, S.S. Surtiwa, *Surveillance at Sea: Legal Aspects of Offshore Installation's Utilization*, “Journal of Indonesian Legal Studies” 2020, Vol. 5, No. 2, pp. 419–448, p. 423, doi: 10.15294/jils.v5i2.38943.

¹⁷ A. Proelss, *op. cit.*, Art. 3 mn. 22 f.

¹⁸ The wording of Art. 56 1 a concerns “Rights, jurisdiction and duties of the coastal State in the exclusive economic zone” and is as follows: 1. In the exclusive economic zone, the coastal State has: (a) sovereign rights for the purpose of exploring and exploiting, conserving and managing the natural resources, whether living or non-living, of the waters superjacent to the seabed and of the seabed and its subsoil, and with regard to other activities for the economic exploitation and exploration of the zone, such as the **production of energy** from the water, currents and **winds**.

linked to the land mass. Under the legal (international) regime governing the territorial sea – as well as those applicable to passage through international straits and archipelagic waters – the coastal State's rights are generally understood as being subject to the obligation not to unreasonably impede or obstruct the right of innocent passage. In the context of offshore wind energy, this can be interpreted in a conciliatory manner, implying that the construction of installations and structures is permissible so long as they do not entirely block or unreasonably interfere with a foreign vessel's right of innocent passage¹⁹.

2. Application of UNCLOS on Territorial Sea and the EEZ

2.1. Territorial Sea

Within the territorial sea (up to twelve nautical miles from the baseline), UNCLOS confirms the full sovereignty under international law of the coastal State (Art. 2(1)). In this zone, national private law applies *ex lege*. Under German law, the Bürgerliches Gesetzbuch (BGB)²⁰ supplies the general rules of property and secured transactions, while Art. 43 of the Einführungsgesetz zum BGB (EGBGB)²¹ designates the *lex rei sitae* for rights in rem. (EGBGB Art. 43). Hence offshore installations situated within the territorial sea fall squarely under domestic private law – even where foreign sponsors and lenders are involved²².

2.2. Beyond twelve miles: the EEZ as *sui generis* space

Crossing the twelve-mile limit moves the project into the EEZ, a *sui generis* jurisdiction: neither *res nullius* nor an extension of land territory. Here, German private law operates only by functional incorporation through the UNCLOS framework and its implementing legislation. For fixed installations in German waters, the operative public-law titles arise chiefly under the Windenergie-auf-See-Gesetz (WindSeeG)²³ and associated regulatory instruments like the Seeanlagengesetz (SeeAnlG)²⁴ which license functional use rather than confer civil ownership. There is no in rem title to the seabed, and thus no land mortgage to be granted over

¹⁹ C. Goodman, *op. cit.*, p. 263.

²⁰ Bürgerliches Gesetzbuch (BGB) vom 18.08.1896 (RGBl. S. 195), zuletzt geändert durch Gesetz vom 12.12.2025 (BGBl. 2025 I Nr. 320).

²¹ Einführungsgesetz zum Bürgerlichen Gesetzbuche (EGBGB) vom 18.08.1896 (RGBl. S. 604), zuletzt geändert durch Gesetz vom 30.09.2025 (BGBl. 2025 I Nr. 233).

²² T. Schulz, M. Gläsner, *Offshore-Windenergieanlagen in der AWZ. Anwendbarkeit des deutschen Sachenrechts*, "Zeitschrift für das gesamte Recht der Energiewirtschaft" 2013, p. 163.

²³ Gesetz zur Entwicklung und Förderung der Windenergie auf See (Windenergie-auf-See-Gesetz – WindSeeG) vom 13.10.2016 (BGBl. 2016 I S. 2258), zuletzt geändert durch Gesetz vom 22.12.2025 (BGBl. 2025 I Nr. 351).

²⁴ Seeanlagengesetz (SeeAnlG) vom 13.10.2016 (BGBl. 2016 I S. 2258), zuletzt geändert durch Gesetz vom 22.12.2023 (BGBl. 2023 I Nr. 405).

it. This absence of private ownership marks the boundary between public title (the State's licensed competence to authorize and supervise use) and private risk allocation (the parties' suite of contracts that replicate collateral through control, priority, and enforceability). In practical terms, the legal craft of offshore finance is to map these layers onto one another with precision: to ensure that security interests recognized by domestic private law are compatible with the jurisdictional limits of UNCLOS and with environmental and navigational-safety duties that continue to apply in the EEZ.

3. Offshore wind energy and ship register under German law

3.1. The (fixed) Offshore wind energy installation registered as a ship?

The question is whether a mortgage can be taken out on an offshore wind farm as such in the EEZ? A ship mortgage could be a possible solution if the offshore wind farm were considered a ship in the legal sense. The question of whether an offshore wind energy installation can be entered as a ship in the ship register must be considered against the statutory purpose and scope of ship registration under a specific jurisdiction, here as an example under German law. The function of the German ship register is to record the legal identity and ownership of vessels and to enable the creation and publicity of real security rights, in particular the maritime mortgage. According to section 3(2) of the *Schiffsregisterordnung*²⁵, the register covers seagoing ships, inland waterway vessels and certain shipbuilding structures. The decisive element is therefore whether the installation in question qualifies as a "ship" in the legal sense. Section 3(2) states that the register of seagoing ships records merchant vessels and other ships intended for navigation at sea, insofar as they are required or permitted to fly the German federal flag under sections 1 or 2 of the Flag Act (*Flaggenrechtsgesetz*)²⁶. But what is the legal meaning of a "ship"?²⁷ In general terms, a ship must be capable of floating, capable of movement on water, objectively intended for maritime navigation, and fly the German federal flag. Fixed offshore wind energy installations do not meet these requirements. Their operation presupposes permanent attachment to the seabed, rendering them neither buoyant nor capable of navigation, and their function is directed towards the stationary production of electricity rather than transportation or any naviga-

²⁵ *Schiffsregisterordnung* (SchRegO) i.d.F. der Bekanntmachung vom 26.05.1994 (BGBl. 1994 I S. 1133), zuletzt geändert durch Gesetz vom 31.10.2022 (BGBl. 2022 I S. 1966).

²⁶ *Flaggenrechtsgesetz* (FlaggRG) i.d.F. der Bekanntmachung vom 26.10.1994 (BGBl. 1994 I S. 3140), zuletzt geändert durch Gesetz vom 20.12.2022 (BGBl. 2022 I S. 2752).

²⁷ To the varieties of the legal meaning of the term "ship" see K. Ramming, *Die Qualifikation eines Gegenstandes als Schiff*, "Recht der Transportwirtschaft" 2025, p. 2, 8 ff.

tional purpose. Because they are immovable, they are not ships and therefore they cannot be entered in the ship register²⁸. Financing and security interests for fixed offshore wind installations are thus structured through project finance mechanisms, including the transfer of ownership or control over key components, assignments of insurance proceeds and power purchase receivables, and contractually structured step-in rights²⁹. The legal and economic framework for security therefore follows energy and project finance principles rather than maritime law.

3.2. Is a floating offshore wind installation a “ship”?

A different assessment may apply to floating offshore wind installations, which are gaining increasing significance as technology develops³⁰. Such platforms may be buoyant, capable of being towed or manoeuvred, and capable of being relocated as part of their operational purpose. In those circumstances, their purpose and design may align more closely with the functional understanding of a ship³¹.

The Norwegian legal system has recognised this by permitting the registration of floating wind platforms in the national ship register, allowing access to the maritime mortgage as an established financing instrument according to § 33 of the Norwegian Maritime Code (Nw.: *sjøloven*)³². The Norwegian Maritime Authority approved in 2020 the first registration in the ordinary ship registers of a wind turbine; the “Unitech Zephyros by Hywind Technology”, a prototype originally used for research purposes by Equinor³³. Under German law, such registration is not categorically excluded, but would require that the particular platform is, in its physical construction and intended operational use, genuinely “intended for navigation at sea” and fly the Federal German Flag within the meaning of section 3 (2) *Schiffsregisterordnung*. De lege lata, this remains legally uncertain and does

²⁸ T. Schulz, M. Gläsner, *op. cit.*, p. 166.

²⁹ *Ibidem*, p. 163: “In most cases, it is required that [...] the wind turbines are already transferred to the German mainland or to a transport ship flying the German flag and [...] that ownership of the wind turbines and other items is transferred to a holding company (AssetCo) created specifically for this purpose, which is wholly owned by the respective project company [...]”.

³⁰ M. Meister, P. Overkamp, *Floating Offshore – Windkraft unter deutscher Flagge?*, “Zeitschrift für das gesamte Recht der Energiewirtschaft” 2021, p. 7.

³¹ K. Ramming, *op. cit.*, p. 2, 8 ff.

³² DLA Piper, *Security when Financing Offshore Wind Projects in Norway*, 28.03.2023, <https://norway.dlapiper.com/en/news/security-when-financing-offshore-wind-projects-norway-0> [access: 22.04.2026].

³³ B.T. Fasmer (Norwegian Maritime Authority, NIS/NOR), *Navigating Legal Waters: Registering Floating Wind Turbines in Norway*, 2024, <https://comitemaritime.org/wp-content/uploads/2024/09/Navigating-Legal-Waters-Registering-Floating-Wind-Turbines-in-Norway.pdf> [access: 22.04.2026]; Simonsen Vogt Wiig, *What Security Options are Available for Lenders to Offshore Wind Projects?*, 01.12.2021, <https://svw.no/en/insights/what-security-options-are-available-for-lenders-to-offshore-wind-projects-2021> [access: 22.04.2026].

not provide a secure pathway³⁴. Mere buoyancy is not sufficient, even in the light of the definition of the German Bundesgerichtshof (BGH), who defines that, the term ‘ship’ refers to all buoyant vessels of a size that is not insignificant, which are equipped with a hollow space and are designed to be moved on water³⁵. In that vein a functional orientation towards mobility such as a fully fledged nautic seavessel seems to be essential.

4. Registrability and its financing relevance

Fixed, seabed-anchored offshore wind installations are not “ships” for the purposes of German ship-registration law and therefore cannot be entered in the ship register. Their legal character is that of immobile, fixed structures authorized by public-law licenses; they lack the design and navigational purpose that define the understanding of a vessel.

Floating offshore units stand on a different footing. In individual cases they may be registrable – but only where the unit is demonstrably built for, and intended to undertake, seagoing movement in functional terms. Mere buoyancy or the theoretical possibility of relocation is not enough; what matters is genuine maritime mobility as part of the installation’s ordinary use.

5. Security toolkit for offshore projects

From a financing perspective, this classification matters because ship-register entry opens the door to a maritime mortgage, a familiar and potent security right in cross-border debt structures. That prospect can look attractive on paper: a recognized register, established priority rules, and a well-travelled enforcement playbook.

That said, the practical significance should not be overstated. Most commercial offshore wind assets are fixed installations, and even for floaters the operational profile is often closer to stationed infrastructure than to trading vessels. As a result, the “ship mortgage for floaters” pathway remains the exception rather than the rule. In day-to-day practice, bankability is achieved through the functional security toolkit developed for offshore projects – share pledges, receivables assignments (PPA/CfD), account pledges with cash-flow waterfalls, direct agreements with step-in rights, and ring-fenced decommissioning security – rather than through

³⁴ M. Meister, P. Overkamp, *op. cit.*, p. 75 affirm this with reference to an oil platform, which is also considered in a legal sense as a “ship even in the light of the reflection that a floating offshore installation hardly fits intuitively with the typical image of a seagoing vessel” (p. 76).

³⁵ BGH NJW 1952, p. 1135 = BeckRS 1951, 31385983 and K. Ramming, *op. cit.*, p. 214, quote 46.

ship-mortgage solutions. In short: the ship-registration route is doctrinally coherent but only sporadically available, whereas the contractual architecture has become the workhorse of financing practice.

Because the WindSeeG licence grants only a public-law permission, financiers in Germany rely on a bundle of obligatory securities:

1. Transfer of title for security (Sicherungsübereignung) – ownership of turbines, transformers and cables is transferred to the lender under BGB §§ 929, 930 while the debtor retains possession as bailee. The transfer usually occurs onshore or on German-flagged vessels before installation. The re-transfer is subject to repayment (§ 158(1) BGB).
2. Share pledge (Verpfändung der Gesellschaftsanteile) – shares in the project's Special Purpose Vehicle (SPV) are pledged under GmbHG³⁶ § 15(3) in conjunction with BGB §§ 1273 ff. Registration in the shareholder list (GmbHG § 40) perfects the pledge against third parties. The pledgee gains an enforceable right to realise the shares under BGB § 1228 upon default.
3. Assignment by way of security (Sicherungscession) – current and future receivables are assigned under BGB §§ 398 ff. This includes remuneration under the Renewable Energy Sources Act (EEG), insurance claims (marine, construction all-risk, delay-in-start-up, business interruption) and bank-account balances. The assignment ensures control over project cashflow.
4. Direct Agreements and step-in rights – contractual arrangements with key contractors and offtakers grant lenders notice, cure periods and tiered rights to intervene, consistent with UNCLOS-based public duties and environmental obligations.

These devices form a functional substitute for real security. Priority is established through inter-creditor agreements, trustee waterfalls and escrowed reserve accounts for operation and decommissioning. The resulting structure has proved bankable within German and wider EU offshore-finance practice.

Comparative Analysis: Functional Equivalence in Offshore Security

The comparative analysis reveals that different jurisdictions, while bound by limitations according to Art. 56 UNCLOS which restricts sovereign rights in the EEZ to functional jurisdiction rather than territorial sovereignty – have evolved

³⁶ Gesetz betreffend die Gesellschaften mit beschränkter Haftung (GmbHG) i.d.F. der Bekanntmachung vom 20.05.1898 (RGBl. S. 846), zuletzt geändert durch Gesetz vom 23.10.2024 (BGBl. 2024 I Nr. 323).

functionally equivalent security regimes. These frameworks bridge the gap between public-law concessions and the private-law necessity for asset-backed financing.

1. The Norwegian Maritime Precedent

Norway's legal strategy relies on the "maritime fiction", treating floating wind turbines as vessels for the purpose of perfection of security. The Section 33(1) no. 2 of the Norwegian Maritime Code (Sjøloven)³⁷ associated with the regulations on the registration of other floating facilities provides the legal basis for registering "other floating devices" in the Norwegian Ordinary Ship Register. The Norwegian Regulation on Other Floating Devices of 1994 (Nw. Forskrift om andre flytende innretninger) broadly defines a "floating device" as any permanently floating device that is used for commercial purposes (other than aquaculture) and is not a ship³⁸. This status allows for the creation of a ship mortgage under § 33 (Pant i realregistrerbart løsøre) of the Mortgage Act (Panteloven)³⁹. Legal practitioners state that "once a turbine has been entered in a ship register, a lender can register what would essentially be a ship mortgage through the ordinary mortgage provisions in the Maritime Code"⁴⁰. The registration of the *Zephyros One* (2020) by the competent Maritime Authority confirmed that a "reasonable observer" test allows commercial energy units to be treated as maritime assets. *De lege lata* it may be possible that the Maritime Code will be adjusted to this issue of floating offshore wind installations⁴¹. In the case of fixed turbines it remains clear that a registration according to the provisions is not possible.

2. The Netherlands and Belgium

The Netherlands and Belgium follow the German model: there is no civil ownership of the EEZ seabed, and hence no mortgage in the classical sense. Production platforms and wind farms in the EEZ and continental shelf would be immovable property if Dutch law applied⁴². Financing therefore relies on share pledges, re-

³⁷ Lov om sjøfarten (sjøloven), LOV-1994-06-24-39, Ministry of Justice and Public Security (Justis- og beredskapsdepartementet), Lovdata Foundation (Stiftelsen Lovdata), <https://lovdata.no/dokument/NL/lov/1994-06-24-39> [access: 22.04.2026].

³⁸ Forskrift om registrering av andre flytende innretninger, FOR-1994-04-26-321, <https://lovdata.no/dokument/SF/forskrift/1994-04-26-321> [access: 6.07.2026].

³⁹ Lov om pant (panteloven), LOV-1980-02-08-2, <https://lovdata.no/dokument/NL/lov/1980-02-08-2> [access: 22.04.2026].

⁴⁰ Simonsen Vogt Wiig, *What Security Options are Available for Lenders to Offshore Wind Projects?*, 2021, <https://svw.no/en/insights/what-security-options-are-available-for-lenders-to-offshore-wind-projects-2021> [access: 22.04.2026].

⁴¹ *Ibidem*.

⁴² For the Netherlands with detailed arguments see J. Waverijn, *Navigating Legal Barriers to Mortgaging Energy Installations at Sea – the Case of the North Sea and the Netherlands*, [in:] *The Law of*

ceivables assignments, insurance cessions and Direct Agreements. Belgian scholars, supported by the Comité Maritime International (CMI), have proposed an offshore register to accommodate maritime hypothèques compatible with the public-law character of offshore installations⁴³.

3. Ship Mortgages for Floating Wind Devices in UK Waters?

The central question is here if floating offshore wind turbines can be registered as vessels under UK law and secured by ship mortgages in both the territorial sea (0-12 nautical miles) and the Exclusive Economic Zone (12-200 nautical miles)? Under English law, the key interpretative question is whether a floating wind turbine constitutes a “vessel used in navigation” within the meaning of Section 313(1) Merchant Shipping Act 1995⁴⁴. The MSA 1995, Section 313(1), defines “ship” broadly as: “‘ship’ includes every description of vessel used in navigation”. This definition is expansive and potentially encompasses floating wind turbines if they can be characterized as “vessels used in navigation”⁴⁵. However, UK law does not currently contain explicit provisions – equivalent to Norway’s Maritime Code Section 33 – that specifically authorize registration of floating wind turbines as vessels, even if there are sound commercial reasons for allowing floating offshore wind turbines as “ships”⁴⁶. Even under current practice there is no evidence that the UK Maritime and Coastguard Agency (MCA) has established procedures for registering floating wind turbines as vessels eligible for ship mortgages⁴⁷. Under current UK law, ship mortgages cannot be used to secure floating wind devices in the territorial sea or EEZ. Because UK law does not authorize ship mortgages for floating wind turbines, UK offshore wind finance relies on the leasehold mortgage framework.

the Seabed: Access, Uses, and Protection of Seabed Resources, ed. C. Banet, Leiden–Boston 2020, p. 522, https://research.rug.nl/files/113319840/_9789004391550_The_Law_of_the_Seabed_Navigating_Legal_Barriers_to_Mortgaging_Energy_Installations_at_Sea_the_Case_of_the_North_Sea_and_the_Netherlands.pdf [access: 22.04.2026].

⁴³ G. De Latte, *Can Offshore Wind Farms Be Mortgaged under Belgian Law?*, European Land Registry Association (ELRA), 23.04.2010, <https://www.elra.eu/can-offshore-wind-farms-be-mortgaged-under-belgian-law/> [access: 6.07.2026].

⁴⁴ Merchant Shipping Act 1995 (c. 21), <https://www.legislation.gov.uk/ukpga/1995/21/contents> [access: 22.04.2026].

⁴⁵ A. Severance, M. Sandgren, *Flagging the Floating Turbine Unit: Navigating Towards a Registrable. First-Ranking Security Interest in Floating Wind Turbines*, SSRN-Preprint, 01.11.2014, <https://ssrn.com/abstract=3694505> [access: 22.04.2026], p. 22 ff.

⁴⁶ T. Walters, J. Ohlman, *Why Floating Offshore Wind Turbines Should Be Defined as ‘Ships’*, “Sea Technology”, 10.03.2025, <https://sea-technology.com/why-floating-offshore-wind-turbines-should-be-defined-as-ships> [access: 6.07.2026].

⁴⁷ UK Ship Register, *Eligibility*, <https://ukshipregister.co.uk/about-us/uk-ship-register-eligibility> [access: 22.04.2026].

Practical example: loan structures and security for offshore wind project finance

1. Institutional role

The Kreditanstalt für Wiederaufbau (KfW) is Germany's development bank and among the largest of its kind globally⁴⁸. It operates without retail branches or customer deposits and refinances almost entirely on the international capital markets. Within the offshore wind sector, KfW supports up to **ten** wind farms located either in the Exclusive Economic Zone (EEZ) or within the 12-nautical-mile zone of the North and Baltic Seas⁴⁹.

2. Financing instruments

KfW's toolkit is deliberately modular so it can be combined with commercial lenders and public financiers⁵⁰:

1. Direct loan within a banking consortium (clubbed with commercial banks).
2. Financing package comprising a bank-mediated loan and a matching direct loan from KfW (up to the same amount).
3. Direct loan for unforeseen cost overruns (to address verified additional costs).

3. Indicative limits and proportions

The allocation logic balances leverage with resilience:

- Consortium direct loans: up to 50% of total debt; cap EUR 400 million per project.
- Financing package: up to 70% of total debt; cap EUR 700 million per project.
- Cost-overrun direct loans: up to 50% of the verified overrun; cap EUR 100 million per project.

4. Equity and tenor

As a rule, sponsors must provide at least 30% equity of total project costs. Of this, 20% must be funded before first drawdown; the remaining 10% may follow later if adequately secured. Loan maturities run up to 20 years, typically with a three-year grace period on repayments to accommodate construction and early operations.

⁴⁸ KfW, *Förderprogramm Offshore-Windenergie*, Förderdatenbank des Bundes, <https://www.foerderdatenbank.de/FDB/Content/DE/Foerderprogramm/Bund/KfW/kfw-programm-offshore-windenergie.html> [access: 22.04.2026].

⁴⁹ KfW, *Merkblatt KfW-Programm Offshore-Windenergie 273*, Stand 07/2023, [https://www.kfw.de/PDF/Download-Center/Foerderprogramme-\(Inlandsfoerderung\)/PDF-Dokumente/6000001940_M_273_Windenergie.PDF](https://www.kfw.de/PDF/Download-Center/Foerderprogramme-(Inlandsfoerderung)/PDF-Dokumente/6000001940_M_273_Windenergie.PDF) [access: 22.04.2026].

⁵⁰ *Ibidem*, p. 5.

The KfW financing can be combined with European Investment Bank (EIB) funds and with facilities from other banks that benefit from export credit agency cover – allowing sponsors to optimize cost of capital and risk distribution.

5. Application pathway

Applications for consortium direct loans and cost-overrun frameworks are submitted informally via a credit institution directly to KfW. The process is iterative and anchored in the project's bankability evidence rather than formalistic filing.

6. Security package

A comprehensive security suite is required. Its form and scope are negotiated with KfW (or, in a financing package, with the arranging bank) and are subject to KfW review and adjustment. In practice, this will include the familiar elements of limited-recourse project finance: share pledges over the SPV⁵¹, assignment of material project contracts and receivables (PPA⁵²/CfD⁵³), account pledges and cash-flow waterfalls, step-in rights via Direct Agreements, insurance assignments, and ring-fenced decommissioning security⁵⁴.

7. Core documentation

To support credit assessment, sponsors typically provide⁵⁵:

- Project description, structure, and a risk-focused analysis (strengths, risks, mitigants).
- An organisational chart/group structure with ownership and shareholding details.
- A fully linked cash-flow model with sensitivities, reviewed by an auditor or recognised adviser.
- A detailed project schedule (development, construction, commissioning).
- Information and credit materials (financial statements and audit reports, including prior year figures) for five key participants (e.g., sponsor, turbine OEM⁵⁶, installation contractor, foundation supplier), with references.

⁵¹ **SPV** stands for Special Purpose Vehicle.

⁵² **PPA** stands for Power Purchase Agreement.

⁵³ **CfD** stands for Contract for Difference.

⁵⁴ KfW, *Förderprogramm Offshore-Windenergie*.

⁵⁵ KfW, *Merkblatt KfW-Programm Offshore-Windenergie* 273, p. 5.

⁵⁶ **OEM** stands for Original Equipment Manufacturer. An OEM is a company that produces parts, components, or complete products that are used in the final assembly of a larger system manufactured by another company.

- A (draft) indicative term sheet (structure, tenor, financial covenants/ratios, collateral, margins, fees).
- (Draft) due-diligence reports – technology, insurance, legal, tax (and often grid and permits).
- At least two independent wind resource assessments from recognized experts, including uncertainty bands and discount factors.
- Drafts of all material project contracts (EPC/BoP⁵⁷, TSA/SSA⁵⁸, O&M⁵⁹, PPA/CfD⁶⁰, grid connection⁶¹, port and logistics).
- A risk-based banking opinion from the applicant bank or its internal credit memorandum, including the final decision-maker's vote.
- Consent to intra-group data exchange within the KfW banking group.
- Consent to data transfer to the competent federal ministries for credit-decision purposes.

8. Governing law and interface with the international layer

All finance and security documents rest on an express choice of law and jurisdiction. Yet the contractual architecture does not operate in a vacuum. It is designed to coexist with the public-law framework applicable in the EEZ and to remain compatible with the evolving international investment regime. In practice, that means security interests are crafted to be effective under domestic private law, while Direct Agreements, step-in mechanics, and compliance covenants ensure that creditor remedies respect licensing conditions, environmental obligations, and navigational safety constraints derived from public and international law.

⁵⁷ **EPC/BoP** stands for Engineering, Procurement and Construction and Balance of Plant. EPC contracts are comprehensive agreements where a single contractor assumes full responsibility for designing, procuring all necessary materials and equipment, and constructing the complete facility from start to finish. **BoP** contracts cover all additional plant components beyond the main systems, such as electrical infrastructure, civil works, wiring, roads, and supporting facilities.

⁵⁸ **TSA/SSA** refers to Transition Service Agreement and Service Supply Agreement. These contracts govern services during transitional phases or ongoing service provisions within the project context.

⁵⁹ **O&M** means Operation and Maintenance. These contracts regulate the long-term operational management and maintenance of facilities after construction completion.

⁶⁰ **PPA/CfD** stands for Power Purchase Agreement and Contract for Difference. PPAs are long-term electricity offtake agreements between energy producers and buyers with fixed pricing structures that provide financial planning certainty. CfDs are difference contracts guaranteeing a fixed “strike price” – if market prices rise above it, the generator pays back the difference; if they fall below, the generator receives compensatory payments.

⁶¹ **Grid connection** refers to agreements for connecting the facility to the electricity grid. Port and logistics encompasses contracts for port usage and logistical services, particularly relevant for offshore or large-scale infrastructure projects.

International Investment Protection

For many years, International Investment Agreements (IIA) – most prominently the Energy Charter Treaty (ECT)⁶² – offered investors advance (“ex ante”) assurances: standards such as fair and equitable treatment (FET)⁶³ and protection against unlawful expropriation, backed by Investor–State Dispute Settlement (ISDS). But the landscape shifted decisively with the Court of Justice of the EU (CJEU) judgment in *Slovak Republic v Achmea BV* (C-284/16)⁶⁴. The Court held that arbitration clauses in intra-EU bilateral investment treaties (BITs) are incompatible with the autonomy of EU law, as enshrined in Articles 267 and 344 Treaty on the Functioning of the EU (TFEU). The reasoning was categorical: because EU law takes precedence within its sphere of application, and because ISDS tribunals established under intra-EU BITs operate outside the EU judicial architecture, such tribunals lack authority to interpret or apply EU law in a manner that respects its primacy and uniform application⁶⁵.

For offshore wind projects, the practical consequence is immediate: investors from one EU Member State developing projects in another EU Member State cannot credibly anchor their investment protection strategy in intra-EU BITs. The *Achmea* principle extends to the ECT in its intra-EU application⁶⁶, a position confirmed by the EU’s and EURATOM’s coordinated withdrawal from the ECT⁶⁷, described as “crusade” against ISDS⁶⁸. The European Union’s and EURATOM’s coordinated exit from the ECT and the Court of Justice’s judgments since *Achmea*

⁶² *Energy Charter Treaty* 1994, 2080 UNTS 95; C. Tietje, *Der Energiecharta-Vertrag im Kreuzfeuer der Kritik: Ist der Rücktritt vom Energiecharta-Vertrag wirklich ein großer Wurf der Ampelkoalition?*, “VerfBlog” 15.11.2022, <https://verfassungsblog.de/der-energiecharta-vertrag-im-kreuzfeuer-der-kritik/> [access: 22.04.2026], doi: 10.17176/20221115-215637-0.

⁶³ For an overview of the standards in Investment law see M. Bungenberg, P. Reinhold, *Investitionskontrollrecht*, München 2023, mn. 227–233; and referring in particular to energy law, C. Theobald, J. Kühling, C. Germelmann, *Energierrecht*, 131. EL, München, September 2025, mn. 72–76.

⁶⁴ CJEU Case C-284/16, *Slovak Republic v Achmea BV*, ECLI:EU:C:2018:158 (CJEU, 6 March 2018).

⁶⁵ *Declaration by the Representatives of the Governments of the Member States on the Legal Consequences of the Achmea Judgment* (15.01.2019), https://finance.ec.europa.eu/publications/declaration-member-states-15-january-2019-legal-consequences-achmea-judgment-and-investment_en [access: 22.04.2026].

⁶⁶ CJEU Case C-741/19, *Republic of Moldova v Komstroy LLC*, ECLI:EU:C:2021:655 (CJEU, 2 September 2021), confirming that *Achmea* applies to intra-EU ECT arbitrations.

⁶⁷ In 2024, the EU and Euratom decided to withdraw from the Energy Charter Treaty as it was not matching EU or global energy and climate ambitions. The withdrawal became effective on 28 June 2025.

⁶⁸ D. Charlotin, D. Restrepo Amariles, A. van Waeyenberge, *From Conflict to Coexistence? The Consolidation of the Pluralist Era for Intra-EU Investment Arbitration*, “Journal of International Economic Law” 2025, p. 101.

(C-284/16)⁶⁹, have markedly reduced the certainty of treaty-based enforcement once provided within the Member States of the EU. While the ECT's sunset clause preserves protection for existing investments for twenty-one years from the date of the effectiveness of the withdrawal⁷⁰, new projects initiated after the withdrawal cannot benefit from this grandfather mechanism⁷¹. Investment certainty that once flowed from supra-national treaty commitments has therefore migrated back into the domain of domestic administrative law, contractual risk allocation, and – where available – political risk insurance. This recalibration fundamentally alters the risk profile of offshore projects within the EU. Lenders and sponsors must now construct bankability through enhanced domestic legal certainty rather than treaty-based arbitration backstops. In operational terms, this means greater reliance on adaptive change-in-law clauses, government guarantees targeting specific infrastructure risks (such as grid availability or port access), and front-loaded dispute resolution via expert determination and domestic administrative appeals before any recourse to arbitration is contemplated.

Outlook and Conclusion

UNCLOS structures maritime space as an order of jurisdiction rather than an order of property. In the EEZ, the decisive legal question is not who “owns” the seabed, but which State may lawfully exercise defined competences of exploration, exploitation and environmental regulation. This functional allocation of sovereign rights precludes the transplantation of land-based mortgage concepts into the offshore domain.

Offshore project finance has responded with a functional security architecture. Share pledges, assignments of receivables, account security, direct agreements and step-in rights replicate the economic core of collateral: control over the project vehicle, priority in enforcement and reliable access to cash flows. Where available, as in Norway for certain floating installations, maritime registration may complement this structure, but it does not displace the centrality of contractual design. Across jurisdictions – Germany, the Netherlands, Belgium, the United Kingdom and Norway – the functional outcome is equivalent: creditor protection is achieved without conferring private ownership of the seabed.

⁶⁹ CJEU Case C-284/16, *Slovak Republic v Achmea BV*; Case C-741/19, *Republic of Moldova v Komstroy* confirming that Achmea applies to intra-EU ECT arbitrations.

⁷⁰ ECT Art. 47(3) (sunset clause): “This Treaty shall continue to apply to Investments made in the Area of a Contracting Party by Investors of other Contracting Parties [...] for a period of twenty years from the date on which this Treaty has ceased to be in force”.

⁷¹ See R. Klimke and J. Bertling, *Klagewelle im Sonnenuntergang? Welche Lehren sich aus Rockhopper vs. Italy ziehen lassen*, “Verfassungsblog”, 14.11.2022, <https://verfassungsblog.de/klagewelle-im-sonnenuntergang/> [access: 22.04.2026], doi: 10.17176/20221114-215714-0.

At the same time, the recalibration of intra-European Union investment protection following *Achmea* and the coordinated withdrawal from the Energy Charter Treaty has shifted the locus of investment certainty. Bankability now depends less on treaty-based arbitration and more on the coherence of domestic administrative law, regulatory stability and precise contractual risk allocation. Carefully structured change-in-law clauses, targeted State guarantees, political risk insurance and structured domestic dispute-resolution mechanisms have become central components of offshore risk management.

Looking forward, the development of offshore renewables will depend on the ability of the European Union and its Member States to maintain a coherent and predictable regulatory framework within the EEZ. A further densification of environmental, biodiversity and maritime safety regulation is likely. This will increase the relevance of compliance-integrated contractual design rather than diminish it. Technological advances – particularly in floating offshore installations – may reopen questions of registrability and security classification, yet without fundamentally altering the functional primacy of contract-based security structures.

In the longer term, a more harmonised European offshore security practice may emerge, establishing clearer publicity and priority mechanisms for large-scale infrastructure finance without resorting to artificial concepts of seabed ownership. The emerging paradigm is therefore one of structured complementarity: public international law defines the outer limits of permissible private ordering; European Union and national law provide the regulatory infrastructure; and private law supplies the instruments through which capital can be mobilised at scale. By privileging functionality over form, UNCLOS and private law jointly enable the financing of offshore renewables while preserving regulatory integrity and investor confidence within the constitutional framework of the law of the sea.

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