Frontiers in Business, Economics and Management
ISSN: 2766-824X | Vol. 23, No. 2, 2026

An Analysis of Corporate ESG Performance and Project Financing Structure Optimization in UK North Sea Offshore Wind Development

Huanjun Liu

Business School, University of Sussex, Brighton, BN19BJ, United Kingdom

Abstract: In recent years, against the backdrop of low-carbon energy development, the development of offshore wind power in the North Sea of the UK has gradually become a model in the field of renewable energy, and ESG performance is becoming an important factor affecting offshore wind power financing activities. Therefore, the author analyzed the impact and mechanism of ESG performance of offshore wind power project construction and operation enterprises in the North Sea of the UK on project financing structure, and explored the mechanism of ESG in improving the financing environment of enterprises (such as reducing financing costs, increasing financing options, improving financing contract conditions, and increasing stock market preferences for projects), thereby promoting the mechanism process of project financing models becoming green and stable. Based on specific case studies, a financing structure optimization strategy based on ESG performance has been proposed, providing reference and guidance for Chinese enterprises to participate in international offshore wind power projects.

Keywords: ESG performance; Offshore wind power; Project financing; Financing structure; North Sea, UK.

1. Introduction

The UK North Sea region benefits from favorable wind resources, a well-developed industrial base and a complete power trading system, making it a global leader in the field of offshore wind power. However, in recent years, the increasing scale and technological complexity of offshore wind power projects have significantly led to capital requirement. As investment demands often reach billions of pounds, project developers face substantial financial pressure, traditional investment and financing methods can no longer sufficiently meet the funding needs of large-scale and long-term projects.

At the same time, significant changes of sustainable finance have occurred in the global capital market, with the concept of "Environmental, Social, and Governance" gradually taking root and influencing the investment mindset of the entire financial industry. A large body of empirical evidence suggests that ESG performance is positively associated with firm value and financial performance (Friede, Busch and Bassen, 2015; Eccles, Ioannou and Serafeim, 2014). More importantly, ESG factors are increasingly recognized as key determinants of financial risk. Strong ESG performance can reduce exposure to regulatory, environmental and operational risks, thereby influencing lenders and investors' risk perceptions (Krueger, Sautner and Starks, 2020). As a result, ESG performance can directly affect firms' cost of capital and access to financing (El Ghoul et al., 2011; Goss and Roberts, 2011). The relationship is particularly relevant in offshore wind projects, where high capital intensity, long investment horizons and exposure to environmental and social risks make ESG considerations critical for project financing and long-term viability.

Despite the growing literature on ESG and corporate finance, limited research has examined how ESG performance influences financing structures in large-scale renewable energy projects, particularly in offshore wind. Therefore, this study aims to analyze the mechanisms through which ESG performance affects the financing structure of offshore wind projects in the UK North Sea with a focus on financing costs, financing channels and financing conditions.

2. ESG Performance Becomes a Key Consideration for Offshore Wind Power Project Financing Decisions

Over the past few decades, the focus of project financing decisions has been on the technical and financial aspects, with a focus on project feasibility, expected returns, and traditional risk types. But now ESG factors have gradually become an important source of risk that affects projects outcomes and are increasingly being valued in financial decision-making (Krueger, Sautner and Starks, 2020).

ESG considerations are more important in offshore wind power projects. On the one hand, at the environmental level, offshore wind power projects are important means of addressing climate change and naturally possess positive environmental attributes; On the other hand, the impacts on the marine ecosystems, noise interference, and wind turbine decommissioning have attracted increasing regulatory attention (Bolton and Kacperczyk, 2021). If a company neglects environmental management, projects may face delays or even bankruptcy.

From a social perspective, it includes relationship with local communities, the impact on fishing grounds, and the occupational health and safety of workers during construction (Friede, Busch and Bassen, 2015). The North Sea surrounding the UK has a long history of fishing, and whether the interests of all parties can be well balanced in project development directly affects the social permit of the project.

From a governance perspective, the transparency of project company decision-making, risk management mechanisms, anti-corruption systems, and so on, have become key points for financial institutions to conduct due diligence. Effective governance ensures that the project company handles various internal and external risks properly during decades of long operation (El Ghoul et al., 2011).

In fact, the essence of financial institutions starting to pay attention to ESG performance is that certain aspects of ESG can affect the credit risk of projects, that is, projects with good ESG performance may face less regulatory risk, fewer litigation disputes, and therefore have more stable cash flow and lower default rates. Therefore, they will consider it as an important indicator when considering financing targets (Goss and Roberts, 2011).

3. Main Types and Characteristics of Financing Structures for Offshore Wind Power Projects in the North Sea of the UK

3.1. Traditional Project Financing Models

Project financing is the most classic financing model in the development of offshore wind power in the North Sea of the UK. Its characteristic is to use the project's assets and future cash flows as repayment sources, and the lender's recourse against the project initiator is weak. In this case, the bank issue loans based on the project's future electricity sales revenue. Offshore wind projects are characterized by high capital intensity and long investment horizons (Green and Vasilakos, 2011). The offshore wind power Contract for Difference (CfD) mechanism in the UK provides long-term stable electricity price guarantees for projects, greatly improving their financing feasibility (Polzin et al., 2019). In practice, project financing is generally carried out in the form of syndicated loans, with loan terms mostly ranging from 10 to 15 years.

3.2. Application of Green Financial Instruments

With the promotion of green finance, the financing methods for offshore wind power projects in the North Sea of the UK are increasingly using exclusive financial instruments such as green bonds and green loans. The core requirement is that funds should be invested in green projects that meet certain environmental standards. And offshore wind power itself belongs to clean energy, naturally meeting the investment requirements of green finance. Green bonds can attract more investors who focus on sustainable development, while green loans generally require borrowing companies to regularly disclose their environmental performance, and some new products link loan interest rates to project environmental performance indicators (Flammer, 2021).

3.3. Participation of Multilateral Financial Institutions and Export Credit Agencies

Multilateral development banks and export credit agencies play a key role in the U.K. North Sea offshore wind energy initiative, such as the European Investment Bank, providing long-term preferential funds and using their own creditworthiness to increase the credibility of the project; Because equipment suppliers are often foreign, export credit agencies from other nations, including Denmark and Germany, sometimes join it as buyer's credit or guarantees. Such institutions often impose stringent ESG conditions, such as environmental impact statements and public involvement (Polzin et al., 2019).

3.4. Basic Composition of Equity and Debt Structure

The capital mix for UK North Sea offshore wind is generally leveraged with small proportion of equity and large proportion of debt; equity capital assumes first-loss risk and has residual claims/control rights while debt capital receives its payments prior to equity holders and has relatively lower risk; and commercial bank loan repayments typically occur only after the completion of construction: in order to lower project construction risks; Multilateral institutes' loan cycle is long, but has high ESG requirements. A good ESG performance reduces the general risk level of projects, thus drawing additional debt capital to the table, as well as increasing leverage (El Ghoul et al., 2011; Goss and Roberts, 2011).

4. Analysis of the Impact Mechanism of Corporate ESG Performance on Project Financing Structure Optimization

4.1. Reduce Financing Costs: Obtain More Favorable Loan Interest Rates by Reducing Risk Premiums

The main components of financing costs are risk-free interest rates and risk premiums. The size of the risk premium depends on the lender's judgment of the project's default risk, while projects with good ESG performance are likely to demonstrate lower risk in various aspects. For example, good environmental management can prevent punishment, prosecution, or forced work stoppage due to environmental pollution or damage; A good social atmosphere can reduce resistance and friction in projects; An open and transparent company structure, as well as a sound internal risk control system, can reduce the probability of management making mistakes or tampering.

In summary, the combination of the above elements means a more reliable and determined project cash flow forecast, which will alleviate the risk perception of lenders. The project party can leverage its good ESG performance and opinions from independent institutions during business negotiations with financial institutions to seek lower interest rate spreads from banks. Multiple offshore wind farms have implemented credit interest rate discounts based on ESG performance levels. Directly translate excellent ESG performance into visible financial benefits. This mechanism reflects how ESG performance reduces perceived default risk and information asymmetry, thereby lowering the risk premium required by lenders (El Ghoul et al., 2011; Goss and Roberts, 2011).

4.2. Expanding Financing Channels: Attracting ESG Themed Investment Funds and Green Credit Funds

Under the influence of sustainable investment trends, more institutional investors who only engage in ESG investments are emerging. This type of foundation sets ESG standard lines for investment projects, and investment projects below this line will be excluded. Among offshore wind developments in the UK's North Sea, stronger ESG credentials increase the likelihood that, once a project attracts their interest, such funds will extend support." This reflects a shift in investor preferences, where ESG performance acts as a screening

mechanism for capital allocation (Friede, Busch and Bassen, 2015).

Meanwhile, most of the countries also promote banks to lend money to green industries. Take the UK government's green finance policy as an example, it is explicitly stipulated that the financial institution encourages loan to areas, for example, green energy. The major commercial bank has set up green special credit line, providing loan guarantees, below-market-rate financing, or soft dollar loans for offshore wind and other renewable energy initiatives. The need to demonstrate good ESG practice to access the dedicated funding described above; thereby helping diversify sources of finance for projects and reducing over-reliance on certain banks. In addition, ESG-linked financing instruments further expand funding channels by aligning financial returns with sustainability performance (Flammer, 2021).

4.3. Optimizing Debt Maturity and Terms: Obtaining More Flexible Repayment Arrangements Based on Good ESG Performance

The deadline and terms determine the level of cash flow pressure and financial flexibility of the project. A longer loan term can correspond to a lifespan of 25 years or even longer for offshore wind power, reducing the risk of reset; The adjustable repayment method can also be adjusted according to the actual cash flow situation of the project, so as not to cause repayment crisis in years with low power generation.

Projects with excellent ESG performance can win more trust from lenders and have more say in debt terms and conditions; Because lenders believe that project companies with good environmental and social awareness will be more cautious in considering the value of assets and will not neglect equipment maintenance or relationships with local communities due to short-term profit losses. Make the lender willing to lend for a longer period or provide a grace period and flexibility in the pace of repayment and interest. This suggests that ESG performance enhances lender confidence and reduces uncertainty, enabling more flexible debt structuring and longer maturity profiles (Krueger, Sautner and Starks, 2020).

4.4. Enhancing Project Valuation and Equity Attractiveness: Strengthening Long-Term Value Creation Capabilities

For equity investors, their ultimate concern is the project's ability to add value. The role of ESG performance in project valuation is reflected in the following aspects: firstly, good ESG provides a lower probability of negative events occurring in the project, and considering the possibility of a smaller decrease in cash flow in valuation, that is, if the reliability of predicting cash flow is higher, the corresponding payout ratio will be lower. From a financial perspective, improved ESG performance can reduce the discount rate applied by investors due to lower perceived risk, thereby increasing project valuation (Bolton and Kacperczyk, 2021). Secondly, projects that focus on ESG typically do better in areas such as technological advancements, supply chain optimization, and human resource incentives, reducing costs and creating more substantial profits while improving efficiency.

Equity investors also have higher valuation premiums for projects with good ESG performance that can bring long-term value returns. For enterprises, this means that they can obtain better introduction or transfer prices and can also use less equity dilution to obtain the required funds. Projects with stronger ESG attractiveness will attract more high-quality capital to gather. This aligns with empirical findings that firms with strong ESG performance tend to enjoy valuation premiums in capital markets (Eccles, Ioannou and Serafeim, 2014).

5. Financing Structure Optimization Strategies and Case Studies Based on ESG Performance

5.1. Improve the Quality of ESG Information Disclosure to Meet the Due Diligence Requirements of Financing Institutions

For financial institutions, sufficient due diligence is conducted before deciding whether to grant loans or investments to project companies, and the degree and authenticity of ESG information acquisition are key factors. When the project company cannot provide objective, comprehensive, and effective ESG data, financial institutions will find it difficult to assess the potential risks of the project and will generally be more cautious and propose higher risk compensation fees or even abandon financing. This reflects the role of ESG disclosure in reducing information asymmetry between project developers and financial institutions, thereby lowering perceived risk (El Ghoul et al., 2011).

Therefore, it is essential for the project owner to establish a standardized ESG information gathering and storage process at an early stage, base disclosures about relevant data upon globally accepted frameworks, including those developed by the Global Reporting Initiative(GRI) and the ISSB Standards (incorporating the industry-specific SASB Standards), and hire an outside party for independent verification of environmental performance, social benefits, and other information in order to add credibility. Standardized and credible ESG disclosure can improve transparency and facilitate more efficient capital allocation, thereby enhancing financing conditions.

5.2. Building a Financing Mechanism Linked to ESG Performance

In recent years, ESG performance linked financial products have developed rapidly internationally. These instruments refer to financing arrangements in which interest rate or bond coupon rates are adjusted based on the achievement of predefined ESG performance indicators. In other words, ESG performance is directed linked to financing costs through performance-based contractual clauses (Flammer, 2021). For example, when the project achieves the established carbon emission reduction or safety production targets, the target interest rate can be lowered; If it cannot be achieved, it can be adjusted higher.

Taking the North Sea offshore wind power project in the UK as an example, ESG performance indicators can be designed based on the project's own characteristics: E indicators such as ocean noise emissions during construction, seabird observation and protection implementation; S indicators such as providing local employment numbers and resolving community complaints percentage; G indicators such as the ratio of independent directors to board members,

the proportion of anti-corruption education acceptance, and so on. The above indicators are linked to financing costs, which not only encourages project companies to continuously improve their ESG management, but also releases positive information to financing institutions, which is conducive to obtaining better initial financing conditions.

5.3. Case Study: Select Typical Offshore Wind Power Projects in The North Sea of The UK And Analyze Their ESG Performance and Financing Structure Characteristics

The Hornsey II offshore wind power project, located in the North Sea of the UK, has an installed capacity of approximately 1.3 gigawatts and is currently one of the largest offshore wind power projects globally. It is a large-scale project led by Ørsted with a substantial investment amount and a complex financing structure. During the financing process, ESG management is highly valued and integrated into the entire lifecycle of the project, reflecting the increasing importance of ESG factors in large-scale project financing.

From an environmental perspective, comprehensive environmental impact assessments were conducted at the early stages. Targeted environmental protection plans were developed for bird migration routes and marine ecosystems including whale habitats. In addition, the project commits to recycling wind turbine blades at the end of their operational life.

From a social perspective, the project collaborates with local training institutions to develop skilled operation and maintenance personnel.

From a governance perspective, the project company establishes an independent Sustainable Development Committee responsible for ESG oversight, regular audits and transparent disclose to shareholders and the public.

Overall, the Hornsey II project demonstrates how strong ESG performance can reduce regulatory and operational risks, enhance stakeholder confidence, and improve access to financing, which is consistent with the theoretical mechanisms discussed in previous sections.

5.4. Experience Reference and Inspiration

From the cases of Hornsey II and others, ESG performance is not merely an external factor in financing but can become an important endogenous determinants of financing structure.

Firstly, ESG needs to move forward, focusing on the impact of environmental and social factors in the early stages of project initiation and construction, rather than passively meeting the requirements of financial institutions for rectification during financing. This not only increases the cost of rectification in the later stage but also lacks sufficient negotiation chips.

Secondly, international alignment should be strengthened. Financial institutions in British and European countries use more mature ESG evaluation systems, and domestic corporate environmental and social governance should be matched as much as possible. The content and form of report disclosure should also follow international common models, and international consulting firms can be introduced to participate in ESG management work when necessary.

Thirdly, cleverly utilize ESG advantages to design financing products. In the process of communicating with banks and investors, proposals can be made to design financing plans related to ESG performance, specifically implementing the company's green development concept into financing preferential terms, saving financing costs while giving the company extra points.

Set up standardized stakeholder communication mode. The building period and the operation period of offshore wind power project are usually more than thirty years. During this period, continued communication with local communities, NGOs, government agencies, etc., to actively respond to their concerns is crucial for obtaining social permits and promoting the sustainable development of projects. Good external relations are also an important part of ESG management. Will also get returns in the next round of financing.

6. Conclusion

Experience from offshore wind projects in the UK's North Sea indicates that corporate ESG performance is increasingly shaping the optimization of project financing structures. Integrating ESG considerations throughout the entire project lifecycle, establishing effective management systems, strengthening information disclosure, and exploring more financing methods based on ESG performance are one of the winning strategies in the fierce battle for offshore wind power development.

Furthermore, the experience of British North Sea Market also provides important implications for Chinese enterprises engaged in offshore renewable energy project development. In this era of gradual transformation of global capital to ESG investment, the outstanding ESG performance is no longer just a reflection of social responsibility, but also an important guarantee to obtain better finance and form a healthy financial status.

Looking ahead, with the continuously strengthened ESG capital ideas and constantly innovated green financial instruments, the interaction between ESG performance and finance structures is expected to become more significant, thereby supporting the global energy transition.

References

[1] Bolton, P. and Kacperczyk, M. (2021) 'Do investors care about carbon risk?', Journal of Financial Economics, 142(2), pp. 517–549.

[2] Eccles, R.G., Ioannou, I. and Serafeim, G. (2014) 'The impact of corporate sustainability on organizational processes and performance', Management Science, 60(11), pp. 2835–2857.

[3] El Ghoul, S., Guedhami, O., Kwok, C.C.Y. and Mishra, D.R. (2011) 'Does corporate social responsibility affect the cost of capital?', Journal of Banking & Finance, 35(9), pp. 2388–2406.

[4] Flammer, C. (2021) 'Corporate green bonds', Journal of Financial Economics, 142(2), pp. 499–516.

[5] Friede, G., Busch, T. and Bassen, A. (2015) 'ESG and financial performance: aggregated evidence from more than 2000 empirical studies', Journal of Sustainable Finance & Investment, 5(4), pp. 210–233.

[6] Goss, A. and Roberts, G.S. (2011) 'The impact of corporate social responsibility on the cost of bank loans', Journal of Banking & Finance, 35(7), pp. 1794–1810.

[7] Green, R. and Vasilakos, N. (2011) 'The economics of offshore wind', Energy Policy, 39(2), pp. 496–502.

[8] Krueger, P., Sautner, Z. and Starks, L.T. (2020) 'The importance of climate risks for institutional investors', The Review of Financial Studies, 33(3), pp. 1067–1111.

[9] Polzin, F., Migendt, M., Täube, F.A. and von Flotow, P. (2019) 'Public policy influence on renewable energy investments—A

panel data study across OECD countries', Energy Policy, 80, pp. 98–111.