

Greenwashing Risks in Shipping Finance: A Comparative Analysis of Incentive and Coercive Mechanisms

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Abstract. Decarbonization is a new mission that has become significant in recent years in the shipping industry. Due to the need for financial support, companies seek financing opportunities. However, new risks emerge during this process, and greenwashing is one of the most typical and crucial ESG risks. This paper, through a literature review, explores greenwashing risks within incentive and coercive financing mechanisms in the maritime industry. To be specific, this paper collects and synthesizes information on greenwashing behaviors from past research papers and annual reports of maritime industry institutions. This paper arranges common financing tools used in incentive and coercive mechanisms, and concludes the triggers, types, and possible solutions for greenwashing under the two mechanisms. This paper finds that a combination of incentive mechanism and coercive mechanism might result in a smaller chance of greenwashing.

Keywords: greenwashing, shipping finance, incentive mechanisms, coercive mechanisms

1. Introduction

The emissions of greenhouse gases in the shipping industry have continued to rise over the last decade. In 2023, the IMO established a GHG strategy to attain sustainable development, targeting a minimum reduction of 20% in total annual GHG emissions from international shipping by 2030, with an aspiration for a 30% decrease relative to 2008 levels. Under this pressure, shipping companies are encouraged to reduce their carbon emissions by replacing boats and fuels, which requires high initial capital investment [1]. Meanwhile, the rapid emergence and development of green financing tools such as green loans, sustainability-linked loans (SLLs), and sustainability-linked bonds (SLBs) have provided new financing methods for shipping companies [2]. In order to gain capital, a new kind of behavior—defined as greenwashing, which involves claiming misleading information about a company's environmental performance—has emerged. As a result, greenwashing behavior has attracted attention in many countries. To be specific, major jurisdictions have claimed additional regulations [3]. According to a report by RepRisk in 2023, "one in every four climate-related ESG risk incidents was tied to greenwashing [4]." The issue of greenwashing risks is becoming increasingly significant.

This paper divides common financing methods into two green financing mechanisms: incentive and coercive mechanisms. However, while both mechanisms aim to promote sustainable development in the industry, they also create distinct methods and opportunities for greenwashing.

For incentive mechanisms, where financing outcomes are tied to sustainability performance, companies tend to exaggerate their achievements. For coercive mechanisms, where financing outcomes are tied to criteria, companies tend to seek methods to superficially meet minimum standards without substantially changing their behavior.

This paper aims to explore four core questions: typical financing tools under incentive mechanisms and coercive mechanisms, typical types of greenwashing risks under the two mechanisms, possible factors that trigger greenwashing behaviors under the two mechanisms, and possible solutions to reduce greenwashing risk in the maritime industry. This paper provides a general view of existing greenwashing risks and proposes possible methods to reduce greenwashing behaviors in the maritime industry.

2. Literature review

The Incentive mechanism can be defined as an approach that, based on sustainable performance, encourages green behaviors through positive incentives such as preferential interest rates, financing facilitation, and rewards. Jing Huang depicted a comparable system—Green Supply Chain Finance (GSCF)—that primarily seeks to foster sustainable development and eco-friendly practices in supply chain financing, relying on the efficacy of financing instruments to ensure a seamless flow of capital, information, and logistics. Furthermore, he emphasised that incentive structures diverge from conventional banking funding by "enabling borrowers to obtain reduced interest rates, a benefit they would not easily achieve when operating independently through traditional banking [5]." The key characteristics are voluntary participation and sustainable performance that are directly linked to financial benefits. Common tools of incentive mechanisms include green loans, SLLs, SLBs, and green bonds. Coercive mechanism can be defined as a mechanism that uses negative sanctions, such as regulatory requirements, market access restrictions, and penalties, to enforce compliance. The key characteristics are regulatory requirements such as laws or principles and high non-compliance costs. Common tools of coercive mechanism include CII and EEXI from IMO, EU-ETS, and FuelEU Maritime [6]. Coercive mechanisms have already been adopted by countries globally. As an example of coercive mechanism, according to the report from UNCTAD in 2025, EU-ETS "covers 100 percent of emissions on intra union voyages and 50 per cent on voyages between union and non-union ports [6]." However, none of the mechanisms alone is sufficient to prevent greenwashing risks; a hybrid approach that combines the two mechanisms might offer a more effective solution.

Greenwashing is the term used to describe "misleading or unsubstantiated claims about sustainability performance made by a business or investment fund regarding their products or activities [7]." To be more precise, a frequently employed greenwashing technique involves corporate entities utilising a variety of disclosure channels, such as annual reports, sustainability reports, integrated reports, or company websites, to disclose their non-financial information, which is collected and calculated using a variety of frameworks and metrics [8]. This inconsistency in reporting presents opportunities for potentially misleading environmental disclosures and encompasses a wide range of actions that exaggerate and misrepresent "green" credentials.

KPMG listed six common greenwashing methods in a report from 2023. The first is temporal greenwashing: "rebalance portfolios prior to the reporting dates and as such 'drop' investments that are not ESG aligned." In the shipping industry, ship owners use sustainable fuels only before and during the CII reporting period. The second is data cherry picking: "picking and choosing data from different providers so as to present their investment most favorably." In the shipping industry, this means that when reporting sustainable performance, firms choose the 'greenest' data among all data sources measured by models such as CII and EEXI. The third is portfolio management bias:

"represent sustainability in marketing materials and name, but have exposure to fossil fuels if the index is transitory in nature." This occurs when a firm's high ESG rating differs from the reality that its ships still use fossil fuels. The fourth is lack of policy: "written and implemented policy is the cornerstone of anti-greenwashing." Though indices such as CII require compliance, the lack of ESG policies might still result in superficial compliance instead of structural changes. The fifth is overstated assets under management (AUM): "firms will overstate ESG AUM as a result of miscalculation of funds' defining variables." This can be done by firms exaggerating their green financing scale in order to attract investment. The last is naming conventions: "funds claiming to be 'sustainable', 'green' or 'ESG' in nature may prove to have no significantly lower carbon intensity than regular funds." This can be seen in labeling ships that have high carbon emissions as "green-performing ships" [7].

3. Incentive mechanism risks

In the incentive mechanism, the most typical and common tools include SLLs, SLBs, green bonds, and green loans. SLL is defined as "a loan that incentivizes the borrower to achieve specific sustainable performance objectives." SLL is based on the borrower's commitment to planning sustainable programs through negotiation with the lender. SLB is defined as "bond instruments, for which the financial or intrinsic value added varies depending on the issuer's achievement of sustainable or ESG objectives that are pre-established within the loan contractual agreement." SLB's objectives are determined by whether its specific KPIs fulfill the level of the sustainability performance target (SPT). Green bond is defined as "a fixed-income financial instrument for raising capital from investors through the debt capital market [2]."

One core greenwashing risk in incentive mechanism is the extreme difference between ESG rating criteria. With different agencies using different criteria, the same company can receive completely different scores. This noise calls into question the validity of ESG rating systems, resulting in a lack of actual operational improvements [9]. Moreover, there is a special form of greenwashing — executional greenwashing. Companies engaging in executional greenwashing use visual symbols that often represent green and environmental friendliness on their ESG reports, while not actually making operational improvements [10].

One of the most common factors that drive firms to engage in greenwashing is stakeholder theory. This theory illustrates that when firms seek support and approval, they realize that information is one of the most important elements that can earn stakeholders' trust while being convenient to manage and manipulate [8]. As one of the most direct and major ways to attract investors, firms will modify their impression towards others, presenting a good but fake image to their investors. For executional greenwashing, there is a specific driving factor. In a research paper from UCL, researchers suggested that greener shipping companies, however instead of greener ships, are often provided with cheaper loans from shipping banks. This research result is drawn from a concrete database: its analysis covered 15% of global loan data in the maritime industry and in-depth interviews with 9 major banks, covering 27% of the total market share of the shipping finance industry. This means that even if ships owned by the company do not have a high ESG rating, the company can still have the privilege of getting cheaper loans by manipulating its data to gain a high ESG rating for itself [11].

4. Coercive mechanism risks

The most typical and common tools in coercive mechanism are carbon intensity indicator (CII), EU-ETS and FuelEU Maritime. The CII is an index that is calculated in relation to the Annual Efficiency Ratio (AER)—"the ratio of CO₂ produced in a year, divided by the product of dead weight tonnes multiplied by miles sailed in a year.". CII's authority is derived from its ability to connect CO₂ emissions to cargo carrying capacity over distance travelled. The vessel is rated by CII on a scale of A to E in order to standardise the results [1]. EU-ETS is defined as "ETS surcharges applied to European Union-related routes, varying by carrier, voyage distance and vessel efficiency." FuelEU Maritime is characterised as a penalty for non-compliance set at "2,400 euros per tonne of very low sulphur fuel oil equivalent in 2025 (increasing to 2,640 euros per tonne in 2026 and 2,904 euros per tonne in 2027) or through alternative compliance by utilising biofuels or aggregating surplus compliance credits from other ships [6]."

One of the common factors that drive firms to engage in greenwashing is meeting stakeholders' demands by improving ESG information. By doing so, companies can provide stakeholders with their economic performance as well as sustainability performance, which helps their wider stakeholders to assess information about the company [8]. Moreover, an absence of regulations can also create greenwashing risks since companies are left with confusion about guidelines or standards in environmental practices [12]. In addition, in the shipping industry, shifting into eco-friendly fuels and boats often means totally abandoning old ships, since most of them cannot be retrofitted into vessels with lower carbon emissions, and it also requires massive capital investments to replace old vessels and purchase new fuels [1]. Additionally, a critical index, CII, actually "favours lengthy journeys and incentivizes activities that may lead to higher CO₂ emissions." CII is defined as "linking the CO₂ emissions to the cargo carrying capacity over distance travelled, and rates the vessel on a scale of A to E." This means that ships with short trading voyages, due to their trading patterns, will be measured unequally under existing criteria [1]. Lastly, since shifting to green vessels requires advanced technology, it might trigger a chain of risks, ranging from technology risks to contractual and litigation risks [13].

5. Suggestions

For incentive mechanisms, improving transparency is a critical mission in combating greenwashing. Specifically, it is crucial to improve the transparency of fund reporting, especially regarding ESG investments. This can be applied by setting fixed standards of information that should be reported when applying funds and inviting authority institutions to check reported data. Moreover, Alaudhli also highlighted that "the integration of corporate financial disclosure and sustainability reporting is a crucial step in combating greenwashing [12]."

For coercive mechanisms, the first suggestion is to improve the calculating method of CII, since CII favors lengthy journeys [1]. Specifically, replacing the current calculation method—which measures cargo carrying capacity over distance travelled—with total cargo weight over distance travelled, and excluding the impact of distance travelled. By improving the calculation of CII, the validity of ESG rating system will improve, ensuring an equal chance of getting a higher ESG rating. Second, minimizing frequent regulatory modifications and aligning local regulations with global regulations, and ensuring harmony among policymakers, are also essential [12]. In addition, in the shipping industry, governance arrangements are found at various scales. Therefore, there are plenty of opportunities for ship owners to perform greenwashing behaviors. One example is that ship owners can change the place where individual ships are registered. Together with a lack of

global standards, these issues undermine both incentive and coercive mechanisms. Thus, policymakers should focus on "pressure points" that ship owners cannot easily circumvent, points such as port cities [14]. Specifically, one possible action is for port cities to reject boats with low environmental performance data.

In addition to the distinct solutions for each mechanism, a combination of incentive and coercive mechanisms might also work. There is already a successful example of blending incentive mechanisms with coercive mechanisms: Poseidon Principles. Poseidon Principles is a global framework for green shipping finance which includes 36 leading banks, occupying around 80 per cent of worldwide shipping finance. Adopted in 2019, the principles have established a normative framework for assessing and disclosing the climate alignment of ship finance portfolios, increasing transparency [6]. By aligning global banks, the Poseidon Principles comply with both voluntary initiatives and regulatory requirements. As Poseidon Principles covers a large proportion of global shipping financing, it largely promotes sustainable development by attracting firms to accomplish environmental goals. With the same mindset, a combination of SLL and CII might also promote sustainable development, as it is linked to preferential loans while also requiring a minimum CII rating.

6. Conclusion

This study aimed to investigate greenwashing risks within incentive and coercive mechanisms in the shipping industry. The findings indicate that various greenwashing risks exist in both mechanisms, but there are differences in the types and manifestations of greenwashing risks. In addition, though both mechanisms have flaws, a combination of the two mechanisms might offer a better approach to reducing greenwashing risks. This research contributes to the existing body of knowledge by providing a general view of greenwashing risks in the shipping industry. Moreover, this paper also analyzes the different greenwashing risks in incentive and coercive mechanisms. In addition, this paper provides possible solutions to improve the existing regulatory framework for greenwashing risks. This study has practical significance for financing in the shipping industry. This study is limited by a lack of quantitative data and thus lacks empirical evidence, since it is based on published papers and reports. This may affect the generalizability of the findings. Future studies could focus on collecting empirical data on carbon emissions of ships and comparing them with reported data from firms. Moreover, future studies could expand the research scope to specific industries such as the container industry and the cruise liner industry.

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