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GREEN FINANCE FOR A SUSTAINABLE MARITIME TRANSPORT SYSTEM: DEVELOPING A UNIVERSAL VERNACULAR FOR GREEN SHIPPING

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One of the greatest obstacles to green shipping is the enormous capital costs required for cleaner and more fuel-efficient technologies. This is applicable to the financing of both new vessels and the retrofitting of existing vessels, which require shipowners to approach external sources for capital. Financial institutions thus have an incentivising role to play, by extending 'green' or 'sustainable' finance to shipping firms for a number of vessel-related projects which will bring a vessel in line with international standards or even supersede regulatory requirements. However, green finance for shipping does not presently enjoy an existing taxonomy or framework for what constitutes 'green' maritime activities. This Paper looks at the challenges presented by this taxonomy gap, specifically in relation to existing green finance schemes delivered by the European Investment Bank and Chinese banks. This paper argues for a clear and globally recognised green-shipping vernacular or classification system to incentivise investors and address shipowner hardship in respect of increasing regulatory demands.

1 Introduction

The International Maritime Organisation (IMO) recognises, as part of its vision for a Sustainable Maritime Transport System (SMTS), that a SMTS 'should be supported with available, *sound financing* for construction of new ships or conversion or modification of existing ships in order to meet requirements for safety and the environment, bearing in mind the cyclical nature of the shipping sector'(emphasis added).[1] This is Goal 1 of the 'Finance, Liability and Insurance Mechanism' area for action in achieving 'real opportunities for the Organization to play a meaningful and important role in facilitating coordination of relevant policies'.[2] The IMO recognises governments, industry, UNCTAD, and financial sectors as its partners in ensuring fair access to sound financing and to promote financial mechanisms to ensure regulatory compliance. However, only a handful of financial institutions (state and non-state) have explicitly come on board in respect of implementing green financial policies with a sectoral focus on shipping. Although the regulatory standards and carbon emission targets of the global maritime sector are widely supported by stakeholders, there is still a lack of cohesive strategy on how to overcome the barrier of immense capital costs by strategically providing financing for greener and cleaner technologies and practices.

This Paper contextualises shipping within the overall green finance market to explore existing frameworks for accessing finance for green shipping. It notes that few initiatives exist, and where they do, there are implementation barriers in terms of clear policy or legislative direction. In particular, there is currently no global and workable taxonomy for what constitutes 'green shipping activities.' Is mere regulatory compliance the objective or are there varying degrees of 'greenness' in achieving environmental sustainability? This paper argues for a clear and internationally applicable taxonomy to overcome the challenge of investor reluctance in newer technologies and shipowner hardship in respect of meeting increasing regulatory demands. This Paper is not concerned with defining the concept of 'green shipping', but rather aims to elucidate the need for clear definitions in this regard.

Structurally, this Paper first addresses why taxonomies and standards matter for green financing as a means of addressing environmental risk and contributing towards sustainability goals. Second, this Paper evaluates some of the challenges presented for the maritime transport sector in terms of accessing green finance in both situations where: 1) green shipping-specific products are available, such as the European Investment Bank's (EIB) green shipping schemes; and 2) where shipping is alluded to in broader green finance frameworks without a sectoral-specific focus, such as the Chinese green financial system. Finally, in addressing these shortcomings, this Paper

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[1] IMO, 'Concept of a Sustainable Maritime Transport System' (2013) <http://www.imo.org/en/About/Events/WorldMaritimeDay/WMD2013/Documents/CONCEPT%20OF%20%20SUSTAINABLE%20MARITIME%20TRANSPORT%20SYSTEM.pdf> at14 March 2020.

[2] Ibid 8.

argues for a sectoral specific taxonomy for green shipping whereby the normative direction for a workable taxonomy and understanding of 'green' is provided by states or relevant organisations and financial institutions can choose to focus or align their products accordingly.

2 Financing Environmental Objectives: The Importance of Definitions

One of the major driving factors for states has been the G20 initiative of aligning financial systems with sustainable development.[3] The G20 Green Finance Study Group is co-chaired by China and the United Kingdom to 'identify institutional and market barriers to green finance, and based on country experiences, develop options on how to enhance the ability of the financial system to mobilize private capital for green investment'.[4] One of the major findings of the G20 Synthesis Report is that green finance lacks a set of cohesive principles and uniform understandings of scope. The 2016 G20 Green Finance Synthesis Report states that, '[i]n many countries and markets, the lack of clarity as to what constitutes green finance activities and products (such as green loans and green bonds) can be an obstacle for investors, companies and banks seeking to identify opportunities for green investing.'[5] This is largely because green financing initiatives have emerged incrementally from varying actors, based on principles of environmental and social governance (ESG) or corporate social responsibility (CSR). Therefore, there are varying taxonomies and scopes of what constitutes 'green' in various government frameworks and within private governance structures. Generally, 'Green Finance' is a concept defined by the International Trade Centre as 'all the initiatives taken by private and public agents (e.g. businesses, banks, governments, international organizations, etc.) in developing, promoting, implementing and supporting projects with sustainable impacts through financial instruments.'[6] This means that all agents adopting green strategies for the provision of financial services are required to justify their decisions on the added basis of environmental risk and sustainability. One of the earliest and most well-known green banking initiatives is the Equator Principles, which launched a framework initiative in 2003 for determining, assessing and managing environmental and social risk in projects and established minimum standards for due diligence and monitoring to support sustainable decision-making.[7] Subsequently, the Loan Market Association's Green Loan Principles and the Sustainability Linked Loan Principles have also advanced the concept of green financing globally.

How banks will raise the capital for 'green' or 'sustainable' loans is entirely up to the bank, but in addition to accessing the capital markets, banks can issue green or sustainable bonds. These bonds are premised on the idea that the issuer offers a set of environmental criteria, and then undertakes to use the capital raised through issuing the green bonds for projects or purposes which fall strictly within that specified criteria. This will give financial institutions access to an investor base which is concerned with environmentally sustainable development, as well boosting public image through a commitment to environmental stewardship.[8] Accountability is achieved by the fact that an investor will not tolerate being misled by the issuer if the issuer fails to abide by the strict set of criteria and will have adequate legal recourse. Definitions are therefore equally important for 'green', 'sustainable' or 'climate' bonds, which should share an identical taxonomy to the loan agreements which disburse the capital raised.

Both the EIB and the People's Bank of China have acknowledged some of the shortcomings with the language used in green financing globally.[9] A joint research report by the EIB and the Green Finance Committee of China Society for Finance and Banking, calls for a 'common language' for green finance as a 'lack of clarity as to what constitutes green finance activities prevents a univocal definition for the use of proceeds'.[10] Secondly, the report argues that referring to different taxonomies hampers accountability and comparability cannot be achieved.[11] Primary indicators for similar activities cannot be established and market participants cannot clarify whether a product is comparably aligned with policy objectives.[12] Both the Organisation for Economic Co-operation and Development (OECD) and the High-Level Expert Group on Sustainable Finance have stated that the absence of a common definition of 'green' is brought up frequently in investor surveys when asked to identify the main

[3] *G20 Green Finance Synthesis Report* 2017 < http://unepinquiry.org/wp-content/uploads/2017/07/2017_GFSG_Synthesis_Report_EN.pdf> at 1 April 2020.
[4] Ibid.
[5] G20 Green Finance Study Group, *G20 Green Finance Synthesis Report* (5 September 2016), 10.
[6] ITC, 'What is Green Finance?' <http://www.intracen.org/What-is-green-finance/> at 15 November 2019.
[7] Equator Principles at <http://equator-principles.com./about/> at 27 September 2019. The Equator Principles (EP) apply to four financial products; 1) Project Finance Advisory Services 2) Project Finance 3) Project-Related Corporate Loans and 4) Bridge Loans.
[8] Caroline Flammer, 'Corporate Green Bonds' (2020) *Journal of Financial Economics (JFE)*, Forthcoming, Available at SSRN: <https://ssrn.com/abstract=3125518 or http://dx.doi.org/10.2139/ssrn.3125518>.
[9] European Investment Bank & Green Finance Committee of China Society for Finance and Banking, *The need for a common language in Green Finance: Towards a standard-neutral taxonomy for the environmental use of proceeds*, White Paper Phase I Report (2017).
[10] Ibid 12.
[11] Ibid.
[12] Ibid.

barriers to green investing.[13] It was found that a wide range of definitions can make selecting assets for green products difficult, hamper transparency and may even result in 'greenwashing'.[14]

In 2015, the group of Multilateral Development Banks (MDBs)[15] and the International Finance Development Finance Club (IDFC), agreed to work jointly towards an improved set of working definitions, understandings, and principles for climate change adaptation finance tracking.[16] The Common Principles for Climate Change Adaptation Finance Tracking include a set of common Definitions and Guidelines based on harmonised terms. These Guidelines list activities and quality control procedures which are to be prioritised by each institution, without covering aspects of implementation.[17]Although these are welcome developments, this has further diversified the scope of 'green' activities or standards pertaining to the classification of projects or assets. There are now a number of frameworks, including the Chinese standards of the Green Bond Catalogue, the MDB-IDFC standard, and the EIB standard and taxonomy. Whilst the Chinese green bond catalogue is fairly consistent with the widely accepted Green Bond Principles[18] of the International Capital Market Association, it is broader in scope than the MDB-IDFC and EIB standards and includes 'environmental protection' as opposed to a solely climate-change focus.[19] At the same time, the MDB-IDFC standard includes a number of categories not included in the Chinese or EIB standard, whilst the EIB standard is extended to nuclear power activities not found in the Chinese or MDB-IDFC standard. This creates a number of contradictory understandings as to the scope of 'green', although some sectors are more developed in terms of classification methods.

In order for green financing tools to gain traction amongst investors, both state and non-state, it has been argued that 'green finance should prefer neither a narrow nor a wide definition'.[20] Instead, it is more useful to map the interconnected areas of core and secondary activities which can positively contribute to sustainability agendas. Core activities would include: Industrial Energy Efficiency; Pollution, Prevention and Recycling; Wind, Solar, Geo-thermal and small hydropower; Grid Integration and Storage; Afforestation and Reforestation; Metro, BRT and Non-diesel trains.[21] Whilst secondary activities may include activities such as energy efficiency for fossil fuels, biodiversity protection, and logistics. Finance providers or facilitators can decide whether the projects they support are "core" green initiatives or more secondary in nature, however this conceptual framework has not yet been properly applied to shipping.[22] Thus far there are no definitions nor degrees of "greenness" when it comes to maritime transport. These definitions become important when trying to conceptualise environmentalism in financing agreements for the clear allocation of duties and obligations between Lenders (Shipping Banks) and Borrowers (i.e. Shipowners). Generally, definitions are circumscribed by the prevailing environmental law, however these often normative concepts lack the commercial clarity required for contractual obligations. The importance of establishing a basis for the advancement of green funds is also heightened by the impacts that these green responsibilities will have for sub-contractors and other supply-chain actors.

3 The Need for Universal 'Green Shipping' Taxonomy

Given the global scale of shipping, it is arguable that a uniform approach to defining 'green' activities for the transition of the sector to meet IMO targets is preferable. The maritime sector and the marine economy, including its avenues for financing, have become 'a fully open international system'.[23] Many financial institutions supersede States in their powers to effectively incentivise and drive green performance, therefore similar arguments made

[13] OECD, *Defining and Measuring Green Investments: Implications for Institutional Investors' Asset Allocations* (2012); *High-Level Expert Group on Sustainable Finance, Financing a sustainable European economy. Interim Report* (2017).
[14] Ibid.
[15] Consisting of the African Development Bank (AfDB); the Asian Development Bank (ADB), the European Bank for Reconstruction and Development (EBRD); the European Investment Bank (EIB); the Inter-American Development Bank (IDB); and the International Finance Corporation (IFC) and World Bank (IDA/IBRD) from the World Bank Group (WBG).
[16] Mainstreaming Climate Action within Financial Institutions Emerging Practices <https://www.mainstreamingclimate.org/wp-content/uploads/2017/03/fi_mainstreaming_epp_en-1.pdf> at 1 April 2020.
[17] Common Principles for Climate Mitigation Finance Tracking (Version 2 – 15th June 2015) <https://www.eib.org/attachments/documents/mdb_idfc_mitigation_common_principles_en.pdf> at 1 April 2020.
[18] ICAM, *Green Bond Principles* (June 2018) <https://www.icmagroup.org/green-social-and-sustainability-bonds/green-bond-principles-gbp/> at 3 April 2020.
[19] The Chinese standard includes four categories not included in the MDB-IDFC standard: energy saving on greenfield facility construction for industries with national energy consumption allowance, clean utilization of coal, ultra-high voltage grid infrastructure, as well as urban underground pipeline projects.
[20] Jason Chuah, 'Legal Aspects of Green Shipping Finance – Insights from the European Investment Bank's Schemes' in Mukherjee P et al. (eds) *Maritime Law in Motion. WMU Studies in Maritime Affairs, vol 8*. (2020) Springer, Cham.
[21] United Nations Environment Programme, *Definitions and Concepts: Background Note. Inquiry Working Paper 16/13* (2016) 8 <https://wedocs.unep.org/bitstream/handle/20.500.11822/10603/definitions_concept.pdf?sequence=1&amp%3BisAllowed=>.
[22] Chuah, above n 20.
[23] Qian Wang, Lianhua Luo, Yongfu Yang, 'Maritime boundary effect of water pollution: Empirical research on China's prefecture-level city data' (2017) *Ecological Economy,* 2.

against unilateralism in a public law regime could apply to private actors. State-owned entities or efforts to drive development projects can obviously enjoy wider powers in defining how they wish to 'develop' certain industries. However, where a wide-scale acceptance of green principles is needed in a transnational sector, shipping at the very least requires a coherent set of normative environmental ideals and baseline concepts.

At the upper most level, the IMO has endorsed a commitment to environmental sustainability by adopting the 2030 Sustainable Development Goals as a specialised agency of the UN. These goals should permeate state actions to drive the development of the shipping industry, however there is no sectoral specific guidance when it comes to green finance for shipping.[24] In respect of meeting climate change goals, the IMO adopted an Energy Efficiency Design Index (EEDI) which was made mandatory for new ships from 2011, whilst the Ship Energy Efficiency Management Plan (SEEMP) was made mandatory for all ships at MEPC 62 (July 2011).[25]. The EEDI is a performance-based mechanism aimed at reducing carbon emissions from fuel usage and leaves the choice of technologies and specific ship design to the industry. Granted that the energy efficiency level is attained, ship designers and owners have free reign in sourcing and using the most cost-efficient solutions in order to comply with the regulations. This flexibility is important in advancing innovation, however, it makes for uncertainty in financing agreements where the allocation of risk, responsibility and a convergence of objectives is tantamount. Technical guidance is necessary for the classification of technologies as 'green' in the context of accessing capital. For example, Liquefied Natural Gas (LNG) is considered an attractive option for the industry as it has a higher hydrogen-carbon ratio than liquid fossil fuels which results in a 20 -30% reduction in carbon dioxide emissions.[26] However, these benefits may be negated by methane slip, which occurs when methane fails to combust in the engine, in other parts of the drive train, or other parts of the natural gas supply chain. Methane is also a greenhouse gas, which has a global warming potential 36 times stronger than CO_2.[27] Thus relatively low methane emissions could equal the contribution of far more carbon emissions to global warming over time. Therefore, it is important for the financial sector to know whether the installation of LNG fuel technology is a 'green' activity, or whether it is simply somewhere on the green spectrum. This would inevitably impact investor willingness as assurances must be made that such activities are indeed beneficial to long-term environmental sustainability and reaching carbon-neutral goals.

In addition, it has long been recognised that under normal capital budgeting approaches, different projects compete for funds; with conventional ships (i.e. those without green or energy efficiency technologies) competing with green ships, that are not considered cost-effective.[28] Despite this resulting in energy efficient technology experiencing lower priority, financing schemes for green shipping are only recently being explored with existing green financing work focusing almost exclusively on energy and development projects. Financial institutions thus have an incentivising role to play, by extending 'green' or 'sustainable' loans to shipping firms for a number of vessel-related projects which will bring a vessel in line with IMO standards or even supersede regulatory requirements.

From a legal standpoint, clear policy scope and definitions are essential for the formulation of 'green' covenants which provide commercial certainty for the clear allocation of risk and responsibility. The ambit of green finance as a concept is so important because its principles can extend far beyond financing arrangements across all aspects of shipping. Although these principles originally stem from government and other institutional policies, they will necessarily permeate sub-contracts and all subsequent shipping transactions. Financing arrangements can strongly contribute to the elevation of 'green principles' in contract law which might eventually be tantamount to other principles such as 'good faith' and 'co-operation'.

Major regional actors, such as the EIB, have spearheaded green finance initiatives for shipping, providing specific products for shipping firms to meet increasing IMO regulations and targets. On the other hand, super-States with major ship financing portfolios (China is used as an example in forthcoming sections), have shown strong commitments to the 2030 Sustainable Development Goals and IMO standards, but have placed shipping in more general 'green finance' frameworks. The following sections seek to elucidate the problems faced by both approaches where there is no sectoral-specific taxonomy for eligible green shipping activities. In respect of the EIB, the market remains is fairly closed and difficult to navigate in terms of what projects are eligible. A number

[24] Furthermore, the IMO might not be the most appropriate body to determine rules relating to a financial sector. It's main role is to set standards which all sectors must necessarily take steps to achieve.
[25] Along with the adoption of amendments to MARPOL Annex VI (resolution MEPC.203(62)), by Parties to MARPOL Annex VI.
[26] S Wang & T Notteboom, 'The adoption of liquefied natural gas as a ship fuel: a systematic review of perspectives and challenges' (2014) *Transp Rev 34*:749–74.
[27] Paul Balcombea et al 'How to decarbonise international shipping: Options for fuels, technologies and policies' (2010) *Energy Conversion and Management 182* (2019) 75.
[28] J Faber et al, *Technical Support for European Action to Reducing Greenhouse Gas Emissions from International Transport* (2009) *Oude Delft 180, 2611* HH Delft, The Netherlands.

of policies influence this understanding, yet it remains burdensome to meet all the policy requirements and the pro-forma contractual terms used by the bank are not particularly useful in defining the scope of green activities. In respect of China, which is a growing and major maritime power, it is perhaps even more difficult to decipher what is meant by 'green shipping' and therefore backed by Chinese environmental interests. This question is increasingly significant as fleet capacity is expected to increase exponentially with the Belt and Road Initiative.

3.1 European Investment Bank: Green Shipping-Specific Products

The EIB was one of the first financial institutions to spearhead a green finance for shipping initiative by signing an agreement with Dutch bank, ING, to provide monetary support for a number of green projects in the European shipping market.[29] Both the EIB and the ING are set to contribute EUR 150m to the facility, available to all clients with significant European interests who are undertaking projects with a green innovation element involving the construction of newer cleaner vessels or retrofitting of existing vessels, and applies to both inland shipping and seagoing operators.[30] On the 28th of February 2019, the ING EIB signed a EUR 110m loan agreement with Dutch ship management company Spliethoff's Bevrachtingskantoor B.V. to retrofit 42 vessels with exhaust gas cleaning systems and ballast water management systems.[31] The loan will enable Spliethoff to comply with the IMO and EU regulations for air emissions and ballast water management. Projects which qualify for loans include construction and retrofitting of vessels to meet the strengthening IMO and regional regulations for vessel-source pollution and safety. These projects must be in line with EU objectives - EU Transport White Paper 2011[32] and Trans-European Transport Network (TEN-T)[33] - and investments should comply with the EIB transport lending policy[34], and must have a particular focus on sustainable shipping. The EU recognises that pollution is a transboundary and trans-jurisdictional matter, thus the financing facility does not treat inland and ocean going operators differently.

Presently, the EIB offers a number of lending and blending products. In respect of green shipping, the EIB finances projects in three ways:

1) Under its traditional lending programme with large shipping corporates
2) Under the umbrella of the European Fund for Strategic Investments (EFSI): Green Shipping Loan Programme
3) Under the umbrella of the Connecting Europe Facility (CEF): new financial instruments to further support Green Shipping investments, including the Green Shipping Guarantee Programme (GSGP)

The Green Shipping Loan Programme is a EUR250 million loan program with a pilot phase focus on Mediterranean and Atlantic based EU ship owners needing to contract newbuild vessels with eligible projects. These are investments eligible under EIB transport lending policy with significant European interest and cover up to 50% of investment costs. On the other hand, products under the CEF allows the EIB to develop innovative financial instruments to finance a range of projects. The objectives of the CEF green shipping platforms are to provide a solution to accelerate investments in greener shipping that allows, in the pilot stage, operators to adapt to the current EU regulatory framework on emissions. Having looked at the main financing constraints on the shipping sector, the EIB has identified that barriers to investment included the perceived risks associated with the sector as well as the reluctance of commercial lenders to finance environmentally motivated retrofits. This platform focuses on de-risking environmental investments and is designed for general fleet renewal. The GSGP is a form of funded risk participation with the EIB offering a guarantee to secure senior debt, and also to support subordinated debt where appropriate.[35]

These shipping-specific products are welcome in light of strengthening environmental standards and the added consequential costs for industry actors. However, the scope of projects eligible for financing requires a broader

[29] EIB, 'Netherlands: ING and EIB provide EUR 300m to finance green shipping' (2018) <https://www.eib.org/en/press/all/2018-036-ing-and-eib-provide-eur-300m-to-finance-green-shipping> at 29 August 2019.
[30] Ibid.
[31] EIB, 'Investment Plan for Europe: ING and EIB provide €110m for Spliethoff's Green Shipping investments' (2019) < https://ec.europa.eu/commission/news/investment-plan-europe-ing-and-eib-provide-eu110m-spliethoffs-green-shipping-investments-2019-feb-28_en> at 29 August 2019.
[32] European Commission, *White Paper, Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system*. COM(2011) 144 final, Brussels (referred to as EU Transport White Paper 2011).
[33] The TEN-T project < https://ec.europa.eu/inea/en/ten-t/ten-t-projects)> at1 April 2020; based on Regulation (EU) No 1315/2013 of the European Parliament and of the Council of 11 December 2013 on Union guidelines for the development of the trans-European transport network and repealing Decision No 661/2010/EU Text with EEA relevance
[34] EIB Transport Lending Policy (13 December 2011) <https://www.eib.org/attachments/strategies/transport_lending_policy_en.pdf> at 1 April 2020.
[35] Chuah, above n 20.

look at the aims of the EU shipping agenda. This is reflective of the aforementioned problem of trying to construe public environmental law into commercial agreements, especially where there are ambiguities in the prevailing regime and varying policy objectives. To clarify what sort of green projects the EIB will support, the EIB introduced a set of proforma contract terms in 2014 which provide template clauses for their green financing and financial support agreements. This document sets out the environmental obligations expected by the EIB and includes the undertaking to: (i) implement and operate the project in compliance with Environmental Law, (ii) obtain and maintain requisite Environmental Approvals for the project, and (iii) comply with any such Environmental Approvals.[36] The environmental standard imposed on borrowers thus seems to be one dependant on applicable national and EU law, including principles and standards, national laws and regulations, and applicable international treaties – all 'of which a principal objective is the preservation, protection or improvement of the Environment'.[37] "Environmental Approval" on the other hand means any authorisation required by "Environmental Law". Clause 1(g) defines "Environment" quite broadly to reflect not only the physical environment,[38] but a broader understanding of the built environment and 'without limitation, occupational and community health and safety' in 'so far as they affect human health and social well-being'. There is therefore a contractual obligation to uphold EU Environmental law, but this is also coupled with an understanding of the legal context in which the EIB operates and what policy objectives it must pursue.

In order to understand what legal framework the EIB operates in, and how this applies to shipping, it is important to understand that the EIB is an institution which furthers the objectives of the EU through providing long-term project funding, guarantees and advice. The EIB is constrained by its own governing legislation, which gives it competence to grant loans and guarantees for economically productive investment projects in three areas:[39] 1) Projects for developing less developed regions, 2) Projects for modernising or converting undertakings or for developing new activities called for by the progressive establishment of the common market, and 3) Projects of common interest to several Member States.[40] Article 18(1) of the EIB Statute also states that EIB may only grant loans whereby interest and amortisation payments are viably covered out of operating profits or other commitments, where the project contributes to economic productivity and where it promotes the attainment of the internal market. It is important not to forget that the EIB is a bank operating on commercial terms as well as one which promotes EU interests. Although the EIB might operate on a non-profit making basis, it grants loans and give guarantees which facilitate the financing of projects by using both its own funds and having recourse to the capital markets.[41] The EIB shall 'borrow on the capital markets the funds necessary for the performance of its tasks'.[42]

EIB Investments should also 'be carried out in the territories of Member States' and 'to the extent that funds are not available from other sources on reasonable terms".[43] This adds two important requirements, centred on two concepts: 'territories' and 'reasonable terms'. On a teleological interpretation, 'territory' does not literally mean that projects should take place in EU territories, but that benefits are felt by EU stakeholders and there is a socio-economic connection to the EU.[44] The criterion of 'reasonable terms' is a matter of policy and commercial considerations. This can be informed by the EIB Transport Lending Policy, which sets out lending policy and selection criteria.[45] In terms of the EIB Transport Lending Policy, the EIB applies general operational criteria to maritime transport,[46] which states that 'Lending for inland waterway, port, logistics and maritime projects are also prioritised in support of sustainable transport solutions'.[47] The EIB Transport Lending Policy stipulates that EU transport policy is currently articulated primarily through the EU Transport White Paper 2011, which is general in scope and focuses on a single European transport sector mainly through rail, road and aviation. In respect of maritime transport, it envisions a maritime 'blue belt' and market access to ports. Shipping is therefore discussed

[36] Clause 1(a) of 'EIB template contractual clauses on environmental matters' (2014) <https://www.eib.org/attachments/documents/eib_standard_contractual_clauses_on_environmental_information_en.pdf> at 1 December 2019.
[37] Ibid, Clause 1(g).
[38] Physical environment including fauna and flora; soil, water, air, climate and the landscape; and cultural heritage and the built environment.
[39] Article 16 of the Consolidated version of the Treaty on the Functioning of the European Union Protocol (No 5) on The Statute Of The European Investment Bank OJ C 202, 7.6.2016, p. 251–264 (EIB Statute), read in conjunction with art 309 of the Consolidated versions of the Treaty on European Union and the Treaty on the Functioning of the European Union (TFEU) [2016] OJ C202/1.
[40] Article 309 of the TFEU.
[41] Ibid.
[42] Art 20(1) EIB Statute.
[43] Art 16, EIB Statute.
[44] See Chuah, above n 20, and EU Parliament and Council in a Decision No 1080/2011/EU of the European Parliament and of the Council of 25 October 2011 which specifically states the competency of the EU to finance projects outside the Union (in particular Recital 8).
[45] EIB Transport Lending Policy above n 34.
[46] Ibid 4: 'In aggregate, the implication of the prioritisation outlined above and the guiding principles implies the following operational selection criteria for each mode/activity'.
[47] Ibid.

in relation to easing encumbrances on maritime transport within the Union and does little to classify maritime projects in alignment with EU environmental objectives. However, it does recognise the need for a regulatory framework for technology innovation and deployment which standardises and regulates 'appropriate standards for CO2 emissions of vehicles in all modes'.[48]

The EIB Transport Lending Policy also outlines a commitment to the Trans-European Transport Network (TEN-T)[49]; and to the gradual incorporation of climate change considerations into its activities.[50] The TEN-T policy also focuses on the development of two main transport pillars: the 'Motorways of the Sea' (MoS), and the European Railway Transport Management System (ERTMS). European coordinators were appointed to lead the harmonised realisation of these projects for which work plans were drawn up in 2015. These plans are to be updated regularly to account for progress, with the next major review to take place in 2023.

More relevant to the EIB's green ship financing objectives under the Connecting Europe Facility, is the MoS initiative, which consists of 'short-sea routes, ports, ports, associated maritime infrastructures, equipment, facilities and relevant administrative formalities'.[51] The main aim of MoS is to achieve a 'European Maritime Transport Space without barriers, connecting Core Network Corridors by integrating maritime links with hinterland'.[52] Clean shipping is an integral aspect of the MoS concept, which intends to 'positively contribute to greenhouse gas (CO_2) reductions, which is of paramount importance in the context of climate change'. [53] The 2013 TEN-T Guidelines[54] define MoS as the maritime dimension of the trans-European transport network which 'shall contribute towards the achievement of a European maritime space without barriers and shall include': a) maritime links between ports; b) port facilitates, freight terminals and logistic platforms; and c) infrastructure for land and sea access. In contrast to the EU's purported MoS environmental objectives (as seen on the MoS official website), the objectives of the TEN-T Guidelines for MoS are entirely development-focused, whilst the promotion of a 'sustainable' transport network is referred to more generally under Article 32 on 'Sustainable Freight Transport Services'. Here, the environmental aspect of sustainability envisions 'reducing carbon dioxide emissions and other negative environmental impacts'.[55] However, 'Projects of common interest for motorways of the sea *may also include* […] activities for improving environmental performance' (emphasis added),[56] without being a necessary objective. Such 'projects of common interest' are those which either establish maritime-based MoS links or elaborate on 'wider benefit actions'. Although a priority focus of the MoS is the 'promotion of alternative fuels and energy-efficient maritime transport, including LNG';[57] it remains somewhat ambiguous how 'core' of an aspect green shipping is in respect of MoS.

As seen above, there is a major emphasis on port involvement and infrastructure targeted at overcoming or supporting transport congestion. Therefore, projects eligible for MoS-related projects require a particular link to EU ports or infrastructure which contributes to MoS priorities. This is a hard standard for shipping firms seeking capital to meet IMO or EU environmental standards and excludes smaller maritime activities which are not involved in large-scale port and infrastructure activities.[58] Firms exclusively involved in oceanic shipping might also be excluded from a MoS policy interpretation.

In addition to this matrix of policy objectives, the EIB Group has also said that eligible maritime projects will include:[59]

- Both new vessels and conversion & retrofitting;
- Replacement of older, less energy efficient or more polluting vessels;
- Vessels operating on short sea routes aimed at modal shift;
- Retrofitting, incl. Exhaust Gas Cleaning Systems (EGCS), dual-fuel engines, BWTS, etc; and
- R&D programmes (hull, propulsion, power plants, waste treatment, etc).

[48] Initiative 26 of EIB Transport Lending Policy, above n 34.
[49] The TEN-T project, above n 33.
[50] EIB Transport Lending Policy, above n34, 3.
[51] European Commission, *Motorways of the Sea* <https://ec.europa.eu/transport/themes/infrastructure/motorways-sea_en> at 1 April 2020.
[52] Ibid.
[53] Ibid.
[54] Regulation (EU) No 1315/2013.
[55] Ibid, Article 32.
[56] Ibid, Article 21(3).
[57] Ibid, Article 23(d).
[58] For a further analysis of the MoS eligibility criteria see Chuah, above n 20.
[59] Sotiris Basiakos (Mobility Department, Projects Directorate, European Investment Bank) *European Investment Bank (EIB) SEA Workshop - EIB Lending in the Maritime Sector* (February 2019) http://www.seaeurope.eu/ClientData/181/662/322601/3657/4/EIB%20SEA%20Workshop%2022%20Feb%202019_EIB.pdf at 1 April 2020.

Although not explicitly stated in any policy document, this is best evidenced by projects which have received funding under the Green Shipping Guarantee Programme, including newbuilds such as the: 'Honfleur' (LNG) dual fuel powered ferry; the Finnlines environmental retrofit of scrubbers on 22 RoRo & RoPax vessels and propulsion and hull efficiency measures on 11 vessels; Fincantieri RDI investment plan for research and development in technological solutions and design optimisation; and more recently, the Spliethoff Shipping Retrofit project comprising the retrofitting of scrubbers and ballast water management systems to 42 Multi-purpose, Heavy Lift and RoRo vessels of the Promoter's fleet.

Therefore, determining a definition or classification system for 'green' shipping activities eligible for support from the EIB is not an easy task. This becomes particularly problematic where policy objectives are seemingly juxtaposed. As seen above, the MoS concept purports to place clean shipping at is core whilst contributing positively to a reduction in CO_2 emissions. However, the TEN-T Guidelines are heavily focused on infrastructure development and establishing maritime transport networks – activities which are arguably going to increase CO_2 emissions. Maritime activities which have previously been eligible for EIB funding under its green shipping schemes, are similarly hard to categorise with no apparent framework for varying degrees of 'greenness'. Retrofitting a vessel to meet stringent sulphur requirements does not necessarily mean that the vessel is any less polluting in terms of greenhouse gas emissions, nor does it mean that the activity is now aligned with long-term sustainability targets.

Furthermore, the environmental standards imposed on borrowers, dependent on a matrix of EU laws and regulations, has led to criticisms of the scheme as being 'too demanding' on users by imposing too many requirements.[60] In addition, shipowners/promoters are already expected to be well-established and to have significant experience and necessary competences to gain access to the works which fall within the programme.[61] This factor, as well as the administrative complexity of the programmes, would mean that many shipowners are ineligible for EIB support.[62] This is only further complicated by the ambiguity surrounding the green vernacular in shipping. The EIB Green Shipping Finance Facility, although pioneering in addressing green shipping, illustrates the importance of green definitions for a clear focus on what projects are aligned with an EU mandate for environmental sustainability.

It was therefore desirable for the EU to include shipping in its upcoming 'Taxonomy Regulation', which from December 2021, will enforce a Framework to Facilitate Sustainable Investment, which is intended to further clarify an EU-wide classification system in identifying environmentally sustainable economic activities.[63] In achieving necessary energy transitions, the EU recognises that Taxonomy Criteria are necessary to help plan and report the development of the regional economy in a manner consistent with its environmental objectives. The establishment and proposed text of a Taxonomy Regulation was agreed upon by the European Council and the European Parliament in 2019.[64] This is part of the European Commission's Action Plan on Financing Sustainable Growth, which envisions a unified classification system which will prevent fragmentation of different EU bodies and Member States, reorient capital flows to achieve sustainable and inclusive growth, and avoid 'greenwashing'.[65] Following the release of the EU's Action Plan, the Commission set up a Technical Working Group on Sustainable Finance (TEG) to assist in the development of the taxonomy which will categorise environmentally sustainable activities. In its report, technical screening criteria are provided for 67 activities which are deemed to make substantial contributions environmental sustainability.[66] The TEG's final report is aimed at setting out its final recommendations to the European Commission regarding the overarching design of the Taxonomy, as well as guidance for users on Taxonomy disclosures.

[60] Monitor Deloitte, 'EU Shipping Competitiveness Study: International benchmark analysis', Study commissioned by the European Community Shipowners' Associations (February 2017).
[61] Ibid 46.
[62] Ibid; Other criticisms include that the EIB Transport Lending Policy focuses heavily on supporting inland water transport, ports and logistics, whilst only providing funding to vessels flying an EU state flag.
[63] Proposal for a Regulation of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment COM/2018/353 final.
[64] Directive 2014/95/EU, under which companies have to publish information in respect of environmental protection, social responsibility and treatment of employees, respect for human rights, anti-corruption and bribery, diversity on company boards (in terms of age, gender, educational and professional background).
[65] The Action Plan also initiated an amendment to the Benchmarks Regulation on law carbon and positive carbon impact benchmarks (Regulation (EU) 2019/2089 of the European Parliament and of the Council of 27 November 2019).
[66] EU Technical Expert Group on Sustainable Finance, *Taxonomy: Final report of the Technical Expert Group on Sustainable Finance*, (20 March 2020) <https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf> at 1 April 2020.

The Taxonomy Regulation is to go hand in hand with the Disclosure Regulation, which together will require firms to disclose information pertaining to the degree of environmental sustainability of funds and products which are promoted as environmentally friendly, include disclaimers where they are not, and to require firms which are subject to the Non-Financial Reporting Directive[67] to file information in respect of the Taxonomy Regulation. The Taxonomy Regulations will also apply to public measures taken by Member States including standards or labels pertaining to financial products and corporate bonds.[68] The Taxonomy Regulation will later be supplemented by delegated legislation containing detailed technical screening criteria for determining certain economic activities as sustainable and taxonomy aligned. Article 5 of the Taxonomy Regulation recognises the following environmental objectives: (1) climate change mitigation; (2) climate change adaptation; (3) sustainable use and protection of water and marine resources; (4) transition to a circular economy, waste prevention and recycling; (5) pollution prevention and control; (6) protection of healthy ecosystems. The TEG Report, in identifying 67 economic activities, is silent on the matter of shipping and refers only to inland freight and passenger transport. Maritime transport along with a few other sensitive activities are yet to receive quantitative screening criteria, namely mining, glass manufacturing, paper and pulp manufacturing, aviation or maritime transport. It therefore still remains ambiguous what sort of 'green shipping' activities should be financed by the EIB or what shipping activities should be supported by Member State institutions and their private banks. There is therefore a taxonomy gap which requires delegated legislation or clear policy to accelerate efforts for transforming the region's existing fleets to mitigate the impacts of climate change.

Although the EIB green shipping loans are the 'golden standard' for green maritime financing, these products come with their own drawbacks and bureaucratic deterrents for private actors. The policy concept of 'green shipping' requires a clearer articulation for the promotion of a regional understanding and clearer Borrower obligations. Thus far, the very specific products available for the financing of green ships require an in-depth look into transport policy and the EIB's lending criteria. Despite being administratively burdensome and locking certain users out of the system due to very detailed and itemised objectives, the EIB green shipping schemes fail to concretely tackle the taxonomy question pertaining to 'green' or 'environmentally sound' shipping activities. The Taxonomy Regulation has immense potential in clearing the waters on green shipping, however, is yet to take this important step.

3.2 Chinese Green Finance and Maritime Trade Expansion

From 2012, China has committed itself to building an 'ecological civilization' and recognised green financing as a key element in doing so.[69] In attaining this goal, the People's Bank of China and six other government agencies issued a set of 'Guidelines for Establishing the Green Financial System', approved by the State Council.[70] The Guidelines include steps in realising a strategy for the promotion of an ecological society which advances development concepts such as innovation, harmony, greenness, openness and sharing to promote a green financial system. The main objective of the envisioned green financial system is to incentivise more capital investment in green sectors and projects and to restrict investment in polluting sectors and projects. The aim is also to promote technological advancement in addition to environmental protection and renewable energy sources. The Guidelines include a number of policy incentives and financial products, including lending operations, guarantee programmes, interest subsidies and a green development fund. These initiatives are to be supported by local governments as well as requiring further expansion of international cooperation on green finance. A big emphasis is placed on developing frameworks and strengthening policy coordination. China's Green Bond market has grown significantly from zero, prior to 2015, to the biggest in the world in 2016 and 2017.[71] Having achieved significant scale, China is set to focus on quality over quantity with an aim to develop domestic policy and establish certification schemes.

China's mandate for green maritime trade is imperative for three major reasons: 1) it is the biggest exporter of products globally; 2) it is the largest shipbuilder in the world (along with South Korea and Japan, it builds 90%

[67] Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups, as amended.
[68] The EIB is the first issuer to have aligned its Climate Awareness Bonds and Sustainability Awareness Bonds with the EU Taxonomy in order to extend loan eligibilities in line with adapting legislation.
[69] Ministry of Ecology and Environment, The People's Republic of China (2011) 'Chinese Ecological Civilization Research and Promotion Association Founded' (14 Nov 2011) < http://english.mee.gov.cn/News_service/infocus/201111/t20111123_220428.shtml> at 16 November 2019.
[70] Yinfa 2016 Doc No 228; issued jointly by the People's Bank of China, the Ministry of Finance, the National Development and Reform Commission, the Ministry of Environmental Protection, China Banking Regulatory Commission, China Securities Regulatory Commission, and China Insurance Regulatory Commission.
[71] British Embassy Beijing, *Financial Services Special Report: China's Green Finance Market September 2018.*

of new vessels); and 3) its monumental plans for the Belt and Road initiative, which will build a 21st-century 'maritime silk road', in which Chinese firms are involved in either building or operating 42 ports in 34 countries. In a Chinese context, 'sustainable' or 'green' infrastructure usually refers to investments which support low-carbon development, assist in creating a circular economy, or contribute to achieving a specific environmental objective such as the reduction of SOx or rehabilitation efforts.[72] Although China hopes to become a significant player in green shipping, there is no policy nor legislation specific to financing the shipping sector in China, which instead falls under general financing laws, regulations and policies.[73] These laws are largely insufficient in acknowledging the nature of shipping assets, as 'ships are financial and technical assets that operate in an international and intra-jurisdictional framework'.[74] There is also a significant difference between ships and 'development projects', yet shipping finds itself within this broader financing paradigm which requires some analysis in order to ascertain green shipping objectives.

The first Chinese government policy of 'green finance' was issued in 1995 by the People's Bank of China, called the *Notice on Credit Policy for Environmental Protection*.[75] In 2007, the China Banking Regulatory Commission released the 'Green Credit Policies' to encourage banks to promote green objectives and consider environmental risks in their lending decisions, which was then revamped to the 'Green Credit Guidelines' in 2012. The Guidelines inform banks of how to integrate sustainability thinking into their lending cycle, which will be applied to both international and domestic lending. Although the original policies were recommendations on process as opposed to outcome, banks are presently obliged to report on key performance standards. In May 2015, the Central Committee of the Communist Party of China (CPC) and the State Council issued the *Opinion on Further Promoting the Development of Ecological Civilisation* and in September 2015, the *Overall Plan for the Reform of Ecological Civilisation System*. The overall objectives of the *Opinion* and *Plan*, are to establish institutional arrangements and governance frameworks to support the ecological civilisation through market-based strategies to overcome the absence of market drivers and insufficient public engagement.[76] These policies provide incentives for green investments, with the Opinion referencing pricing reform to use resources, fiscal support for the development of clean technology, infrastructure, remediation/rehabilitation projects, the enhancement of tax incentives for energy efficiency, and the promotion of green credits.[77]

The most current and relevant 'Guidelines for Establishing the Green Financial System' (Guidelines) were published and endorsed by China's State Council in 2016.[78] Green Finance in China is consistent with its 13th Five-Year Development plan, which focuses on ensuring that modes of production and ways of life will become more 'eco-friendly and low-carbon' with an emphasis on greater energy efficiency, controlled land use for construction, reduced emission of pollutants, and building eco-barriers for eco-security.[79] The Guidelines define 'green finance' as referring to:

> [F]inancial services provided for economic activities that are supportive of environment improvement, climate change mitigation and more efficient resource utilization. These economic activities include the financing, operation and risk management for projects in areas such as environmental protection, energy savings, clean energy, green transportation, and green buildings.[80]

The primary purpose of establishing China's green financial system is to mobilise and incentivise more capital investment in green sectors whilst limiting investment in polluting sectors. The aims of the green financial system are to facilitate the 'green transformation' of the Chinese economy, including a series of policy incentives to support and incentivise green investment. The Guidelines call for policies and actions in seven areas: 1) green bonds, 2) green lending, 3) green development funds, 4) green insurance, 5) markets for pollution control rights, 6) local government initiatives, and 7) international cooperation.[81] Of these actions, the most rapid progress has been made in respect of green bonds.

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[72] Xinhua News Agency, CPC Central Committee and State Council on accelerating the construction of ecological civilization (2015) Retrieved from Xinhua News Agency <http://news.xinhuanet.com/politics/2015-05/05/c_1115187518_3.htm> accessed 1 April 2020.
[73] Hai Jin and Orestis Schinas, 'Ownership of Assets in Chinese Shipping Funds' (2019) *Int. J. Financial Stud.*, 7(4), 69; https://doi.org/10.3390/ijfs7040069.
[74] Ibid.
[75] Now the *China Banking Regulatory Commission's Notice of the CBRC on Issuing the Green Credit Guidelines* (Feb. 24, 2012)
[76] Sean Gilbert and Lihuan Zhou, *Working Paper: The Knowns and Unknowns of China's Green Finance,* (The New Climate Economy 2017) https://newclimateeconomy.report/workingpapers/wp-content/uploads/sites/5/2017/03/NCE2017_ChinaGreenFinance_corrected.pdf at 29 March 2020.
[77] Ibid.
[78] Guidelines (Yinfa 2016 Doc No 228) above n 70.
[79] *The 13th Five-Year Plan for Economic and Social Development of the People's Republic of China* (2016 – 2020).
[80] Guidelines (Yinfa 2016 Doc No 228) above n 70.
[81] Ibid.

The People's Bank of China (PBoC) has significantly developed the green bond market through issuing the 'Green Bonds Endorsed Project Catalogue' defining criteria and categories for green bond projects, which cover green financial bonds within the inter-bank market.[82] This catalogue recognises six main categories of investments:

- energy saving
- pollution prevention and control
- resource conservation and recycling
- clean transportation
- clean energy
- and ecological protection and climate change adaptation

However, different guidelines exist for different entities depending on their nature. The *PBoC Green Bond Endorsed Project Catalogue* regulates the interbank bond market and bond issuance from financial institutions, accounting for 93% of outstanding bonds in China.[83] Domestic corporate bonds and non-listed companies are subject the *National Development and Reform Commission (NDRC) Green Bond Guidelines.*[84] The NDRC regulates the smaller portion of China's bond market, including corporate bond issuance. The NDRC guidelines are less comprehensive than the PBoC's guidelines as they do not offer criteria for reporting and managing of proceeds.[85] Therefore, the PBoC guidelines can also guide non-financial corporates in respect of guidance on the whole bond issuance process. The NDRC guidelines oversee 12 sectors and issuers can use green bond proceeds to repay bank loans or contribute to working capital. Green bonds issues by listed companies and corporate asset-backed securities are subject to the *China Securities Regulatory Commission (CSRC) Guidelines for Supporting Green Bond Development*[86].

Whilst the PBoC focuses on six priority areas, the NDRC Green Bond Guidelines cover the following areas which are seemingly relevant to green maritime transport:

- Technology improvement for energy saving and emission reduction;
- Energy saving and environmental protection industry;
- Pollution prevention and control;
- The circular economy;
- Water saving and unconventional water use;
- Clean and efficient use of energy;
- New energy, (including hydropower, wind, nuclear, solar, bioenergy, geothermal, shallow geothermal energy, marine, and air energy); and
- Low-carbon industry projects and demonstration projects.

As stated previously there are no specific frameworks or policies for the shipping sector. Therefore, green shipping initiatives would have to fall under these general guidelines provided for the financial sector in order to access capital from the proceeds of green bonds. Under the PBoC Guidelines for financial institutions, a level II subcategory of 'Clean Transport' (being a level I category) is 'Waterway Transport' which is then further divided into level III categories including 'Vessel Purchase' and 'Waterway Regulation'. Waterway regulation is 'specific to the high-quality inland waterway dredging projects' and therefore would not cover commercial shipping, which leaves 'vessel purchase'. Vessel purchase is 'specific to the phase-out of old vessels, and purchase of standardized inland-waterway vessels, and vessels transport on costal water and ocean which fully meet the latest international guidance, agreements and standards'.[87]

In the adjacent explanatory notes, reference is made to a number of policy plans, including the Implementation Plan for Improving Industrial Structure, Promoting Industrial Transformation and Upgrading of Shipping Industry

[82] Announcement No.39 of 2015 of the People's Bank of China.
[83] Climate Bonds Initiative and the International Institute for Sustainable Development (IISD), *Roadmap for China: green bond guidelines for the next stage of market growth* (2016)
< https://www.iisd.org/sites/default/files/publications/green-bond-guidelines-next-stage-market-growth-en.pdf> at 18 April 2020.
[84]NDRC, Green Bond Guidelines Issued by China's National Development and Reform Commission
< https://greenfinanceplatform.org/financial-measures-database/green-bond-guidelines-issued-chinas-national-development-and-reform> at 1 April 2020.
[85] *Roadmap for China: green bond guidelines for the next stage of market growth* (note 75) 6.
[86] *China's Green Bond Verification Guidelines*
< https://greenfinanceplatform.org/financial-measures-database/china%E2%80%99s-green-bond-verification-guidelines> at 10 April 2020.
[87] *China Green Bond Endorsed Project Catalogue* (2015 Edition, translated by ICMA)
<http://www.greenfinance.org.cn/displaynews.php?cid=79&id=468> at 10 April 2020.

(2013-2015); Measurement for Subsidy Management of Inland Ship Standardization; Working Focus on Energy Saving and Emission Reduction in Transportation Industry 2014; and the International Convention for the Prevention of Pollution From Ships (MARPOL73/78) where ocean shipping is applicable. Therefore, it seems as though shipping activities aligned with the objectives of these policies or for compliance with MARPOL 73/78 would be considered 'green' for the purposes of the bond catalogue. The Plan for Promoting Industrial Transformation and Upgrading of Shipping Industry was focused primarily on scrapping old tonnage to the end of 2015 and closing down unauthorised projects, meaning that China is expected to finance new vessels which meet international standards and which contribute to overall efforts of phasing out older less compliant vessels. These policies seem to guide a definition of 'green' maritime activities; however the bar is set quite low with mere regulatory compliance being the standard for activities which might receive support from green bonds. However, this viewpoint fails to take into account many of China's research and development projects which aim to promote green technologies in shipping,[88] as well as industry actions such as those taken by COSCO,[89] and a host of domestic policy and legislation aimed at reducing emissions in ports and inland waterways.

China is therefore yet to clearly articulate what it means by 'green shipping', as its current catalogue tools provide an inadequate sectoral focus. Although different from the EIB shipping-specific products, China's green finance agenda for maritime transport similarly lacks a cohesive framework for establishing how finance can be used to transition the sector through implementing clearly defined green criteria. A development and harmonisation of its various policies is desperately needed. This lack of clarity is becoming increasingly worrisome given the massive plans China boasts for maritime trade expansion. In yet another seeming juxtaposition between environmental protection and immense infrastructure development, China's equivalent of the EU's TEN-T is the BRI – although one significant difference is that the BRI foresees incredible expansion into foreign territories.

In respect of BRI projects and infrastructure, the Belt and Road Initiative Green Coalition (BRIGC) under the guidance of the Chinese Ministry of Ecology and Environment (MEE) commenced plans for its 'Green Light System' in March of 2020 to evaluate BRI investments in regard to their environmental performance. The BRIGC participants strongly endorsed the idea of building an evaluation tool for BRI investments. Guo Jing, Director-General, Department of International Cooperation of the Chinese Ministry of Ecology and Environment, emphasised the following action as necessary:

> To pursue the high-quality development of Belt and Road cooperation, we need to implement the principle of green development. We need to focus on addressing three issues. First, how to assess and minimize the potential eco-environmental implication of BRI projects and align with the 2030 Sustainable Development Goals (SDGs) so as to provide a model for participating countries to follow in realizing green development. Second, how to identify the priority of project investment from the perspective of ecological and environmental risk prevention. Third, whether it is possible to identify specific project areas through developing this green development guidance.[90]

The Green Light Study is set to supplement the BRI Green Investment Principles which were agreed to by financial institutions and corporations financing BRI projects and who pledge to uphold certain principles so that the UN 2030 Sustainable Development Goals and the Paris Climate Change Agreement are met.[91] The BRI Green Investment Principles include:[92]

- Embedding sustainability into corporate governance;
- Understanding environmental, social and governance risks;
- Disclosing environmental information;
- Enhancing communication with stakeholders;
- Utilizing green financial instruments;
- Adopting green supply chain management; and
- Building capacity through collective action.

[88] China maritime industry, classification society and research institutes are leading the way in energy efficiency technologies, including hybrid power systems, alternative hull designs, and the 2015 in Beijing research project called the 'Core Technology for Round-Trip LNG Vessels', (one of the 863 plans initiated by Hudong-Zhonghua Shipbuilding).

[89] Awarded the Green Gateway Partners by the Port of Seattle in 2014; awarded the Green Flag Award by the port of Long Beach for successibe; participant in the Hong Kong Fair Winds Charter; verified and certified the
Clean Shipping Index Certifications by the BSR CCWG; acquired Environmental Ship Index certificates under an umbrella of the International Association of Ports and Harbors for 12 vessel containers; piloted the "Clean Sky" LNG-driven Kamsarmax bulk carrier.

[90] Christoph Nedopil Wang, 'Green Light System for the Belt and Road Initiative' (17 April 2020)
< https://green-bri.org/green-light-system-for-the-belt-and-road-initiative> at 18 April 2020.

[91] Green Investment Principles for the Belt and Road (2018)
< http://www.gflp.org.cn/public/ueditor/php/upload/file/20181201/1543598660333978.pdf> at 18 April 2020.

[92] Ibid.

Although the focus of BRI investments along the BRI Maritime Silk Road, is the development of port infrastructure for the facilitation of maritime transport, there will be inevitable implications for Chinese shipping capacity. BRI maritime activities are inextricably connected to the activities of the Chinese state-owned-enterprise such as the China COSCO group, which is mainly engaged in both international and domestic container transport services and related maritime logistics. Clarksons Research data shows that Chinese fleet capacity grew by 10.3 percent from December 2017 to December 2018.[93] Further orders had been placed by the end of 2018, amounting to 12 percent of the existing fleet, with half of those orders said to be delivered in 2019.[94] Most of these orders were placed by state-owned enterprises such as COSCO or its affiliated and subsidiary companies, like China Ore Shipping, China Merchants and VLOC Holdings.[95] COSCO enjoys direct financial support from Chinese state financial institutions, including most notably, the China Development Bank which helped it acquire the Greek port of Piraeus in 2016.[96] China's further investment in strengthening control and expansion of the Piraeus port has been funded by the Export-Import Bank of China and even the EIB.[97] It is these kinds of EU-China collaborations which have contributed to the efforts of developing cross-jurisdictional understanding of projects eligible for the proceeds of green financing, yet are simultaneously drawing attention to the inadequacies of existing green finance frameworks for shipping.

The institutions which will likely continue to finance China's maritime fleet and interrelated BRI projects are financial institutions regulated by the PBoC. Developing an understanding of 'green' shipping activities eligible for finance is therefore crucial to developing a shipping sector which is aligned with both national and international objectives. As the COSCO Group will evidently provide substantial fleet capacity for the Maritime Silk Road, it is imperative for countries housing BRI projects to know what China means by 'green shipping' and what types of vessels are being funded and built by Chinese bank contributions. This understanding would have to adhere to a universal taxonomy for the streamlining of collaborative efforts between varying states, as seen with port of Piraeus acquisition which serves both Chinese and EU policy interests and which is necessarily inclusive of environmental standards.

China is taking steps to harmonise green finance taxonomies in its financial system at large. The 'Development Plan for Building the Standardization System for the Finance Sector (2016-2020)' was launched in 2017 by the PBoC and a number of related Commissions. Under this initiative, both the Green Bond Project Catalogue and the Green Bond Credit Rating Standard are undergoing revision. This was coupled with a number of regulatory updates for green bond issuance, management and third-party certification.[98] In 2019, the NDRC and the MEE released the 'Green Industry Catalogue' to phase out industries that it considers 'obsolete' due to their use of outdated technologies, waste of resources, pollution outputs and failure to comply with relevant laws. The "encouraged" category of activities refers to advanced technologies and industries which promote sustainable development. The Green Industry Guidance Catalogue (2019 edition) covers six categories: energy-saving and environmental protection industries, clean production industries, clean energy industries, eco-environmental industries, green upgrading of infrastructure, and green services. Green Services involve several ship projects, with the Catalogue mentioning ship manufacturing under the development of energy conservation and environmental protection industries. These include natural gas-powered ships, electric ships, solar energy vessels, wind energy and other technologies for new energy ships, energy conservation and new energy construction ships. The Catalogue also requires green shipping for the prevention and control of pollution from ships and port, including the retrofitting and installation of exhaust pollution control equipment and related port reception facilities. The Catalogue is therefore more specific in respect of 'green shipping' technologies and projects, however alignment is needed with other green financing regulations and policies.

Currently, there are several green classification systems issued by various authorities in China. All are broadly similar, yet lack the specificity required to increase the development of the green shipping technology sector. There are also many regional taxonomies in China, an analysis of which is beyond the scope of this Paper. Of particular concern is China's ruthless pursuit of its supply-chain control and its geopolitical interests.[99] If the BRI is to meet Chinese expectations, then any intentions for an 'ecological civilisation' can be severely compromised by extensive development and the resultant environmental impacts. In order to assure its investors, in particular

[93] UNCTAD, *Review of Maritime Transport 2019* < https://unctad.org/en/PublicationsLibrary/rmt2019_en.pdf> at 19 April 2020.
[94] Ibid.
[95] Richard Scott, 'China's seaborne trade and shipping update' (2019) *China Maritime Lookout No.5*.
[96] See Christopher R. O'Dea, 'Ships of State?' (2019) *Naval War College Review, Vol. 72* [2019], No. 1, Art. 1 at 66.
[97] Martyn Wingrove, 'Funding secured for €600M port expansion' (14 Nov 2019 *Riviera*)
< https://www.rivieramm.com/news-content-hub/news-content-hub/funding-secured-for-euro600m-port-expansion-56800>at 18 April 2020.
[98] EIB & PBoC, *The need for a common language in Green Finance: Extending classification of objectives and activities for a shared market-based measurement of environmental impact and risk*, White Paper Phase II Report (2018), 8.
[99] The Vale and China dispute is a prime example of how China uses leverage to exert its own policy goals and economic interests.

green bond holders, that Chinese projects aimed at expanding maritime fleet capacity and green shipping are indeed 'green'; China needs to more clearly categorise certain maritime activities based on concrete instruments. The green principles of the BRI require methods of implementation to direct investments to infrastructure and transport activities which are environmentally responsible in a clear and consistent manner. Chinese regulators are taking steps to partner with other global organisations and regional bodies to align Chinese green finance standards with global ones. This is a positive step in terms of seeking clarity on China's overall development plans and international maritime activities should not be left out of this process.

4 Towards a Global Green Finance Taxonomy for Shipping

The previous Sections have endeavoured to illustrate that two differing regional approaches to the financing of green shipping are similarly problematic in failing to advance a working framework for a classification of green maritime activities. The EIB's green shipping products, although for a seemingly specific purpose, are situated within a matrix of policy objectives and deter users due to a lack of expeditious processes guided by clear-cut criteria. On the other hand, China has sought to include shipping in certain general green finance tools, however, this catalogue approach is not specific enough in relation to shipping activities and relevant policies require significant harmonisation. Green BRI finance initiatives are also only in their inception phases of providing systems of categorisation. The lack of clarity on BRI green shipping unfortunately exacerbates concerns regarding the potential CO_2 outputs of China's monumental plans for global expansion.

In order to effectively 'green' the financial markets and drive the green transition of commercial sectors, States have an important role to play in providing clear and multi-lateral policies for international governance frameworks. It would also be far easier for private banks to align themselves with existing global mandates for the development of green financial products, as opposed to having to rely on piece-meal CSR factors and internal ESG policies. However, a solely State-centric view also fails to consider the important role of private governance structures for the management of the environmental damage from transboundary activities.[100] Rather, green finance should consider a collaborative approach in directing international shipping to greener practices. Public law frameworks can only go so far without encountering the inadequacies surrounding 'flags of convenience' and the challenges posed for environmental governance. Although international organisations, financial regulators and State banks have a significant role to play in spearheading investment in green technology, many private banks boast large shipping portfolios are already powerful determinants of industry behaviours. Although international standard-setting authorities and initiatives are imperative for providing green criteria in a harmonised manner, implementation of such standards will rely heavily on private institutions and private governance frameworks.

As an important example, the Poseidon Principles have heeded the call of the IMO collaborative agenda by providing a framework for clients to access capital through environmental compliance and adherence to IMO requirements. This initiative, led by a group of global banks, has formulated a framework whereby Signatories will align their ship finance portfolios with 'responsible environmental behaviour and incentivize international shipping's decarbonization – to shape a better future for the shipping industry and society'.[101] For now, the Poseidon Principles framework merely aligns itself with the International Maritime Organization's long-term goal of reducing the shipping industry's total emissions by at least 50 percent from 2008 levels by 2050. The Poseidon Principles require that their Signatory Banks apply four key principles to lenders, relevant lessors and financial guarantors including export credit agencies. The four principles are as follows:[102]

- Assessment of climate alignment: Signatories will measure the carbon intensity and assess the climate alignment of their shipping portfolios on an annual basis
- Accountability: Signatories will rely on Classification Societies and IMO-recognised Organisations for data and information sources
- Enforcement: Signatories will use standardised covenant clauses in contracts with clients to ensure access to high-quality data
- Transparency: Climate alignment scores will be published annually meaning that signatories will make their status public knowledge

[100] M Herberg, 'Private authority, global governance, and the law' in G. Winter (Ed.), Multilevel Governance of Global Environmental Change: Perspectives from Science, Sociology and the Law (Cambridge University Press 2006) 149-178.
[101] Poseidon Principles (2019) < https://www.poseidonprinciples.org/> at 16 November 2019.
[102] See *Poseidon Principles: A global framework for responsible ship finance*
< https://www.poseidonprinciples.org/download/Poseidon_Principles.pdf> at 16 November 2019.

The Poseidon Principles are not a substitute for international environmental governance of the shipping sector, but rather a powerful tool in assisting IMO efforts through a significant 'buy-in' from relevant stakeholders.[103] Furthermore, the Poseidon Principles do not solve the taxonomy issue of defining green maritime activities, yet have immense normative value for the sector in respect of advancing a set of carbon-neutral ideals. These efforts will be strengthened by clear taxonomies in defining the scope of 'green shipping' and can be included in such voluntary financial initiatives.

In addressing the taxonomy gap more directly, the Climate Bonds Initiative (CBI) certification standard has done some work through providing standards and guidance to its Programme Members as well as banks, non-governmental organizations, other stakeholders and government bodies. In addition to working on market intelligence and the dissemination of information and data, its core work is focused on developing a trusted standard and providing policy models and advice. The proposed standard is its Climate Bonds Taxonomy which clearly defines what projects are climate aligned and will drive a low carbon economy.[104] This is a useful tool for governments and financial institutions. In respect of shipping, the CBI has not yet done a sectoral focus on what projects are included in its taxonomy as 'green light' (meaning automatically compatible), 'orange light' (meaning compatible if compliant with a screening indicator), or 'red light' (not compatible). In light of the 2020 sulphur cap and IMO targets for carbon reduction, the CBI has recently announced the formation of its Shipping Technical Working Group (TWG) and Industry Working Group (IWG) to develop a framework criteria for shipping investments.[105] A sector criteria for freight shipping will provide a framework for decision-making and will set out rules for determining when shipping assets and infrastructure projects are compatible with a low carbon, climate resilient economy. Projects deemed to be in alignment with this framework will be eligible for certification under the CBI Standard. The TWG and IWG will receive contributions and input from a number of stakeholders including academics, governments, law-makers, ship owners, operators, investors, financial institutions and international policy bodies.

Such voluntary efforts can have further reaching impact than those confined to state jurisdictions, therefore a universal set of norms and definitions for what constitutes 'green shipping' is ever more relevant to realise the potential for green finance as a mechanism to transform the industry. The CBI's work has recognised that non-standardised and ambiguous policy objectives in green financing can lead to arbitrary decision making, which threatens the legitimacy of regional and national green financing schemes. The Poseidon Principles have similarly recognised the need for a clear green mandate without the impediments of too many standards and red tape, as forms the criticisms of EIB financing,[106] but rather endorses a universal set of ideas on the 'greenness' of technologies. Whilst the IMO provides a global mandate, the Poseidon Principles can work alongside governments to provide a sectoral-specific set of ideals or objectives for financiers aiming to green their shipping portfolios. Even if the Poseidon Principles, in its inception phases, endorses global taxonomies as mere normative guidelines without strict contractual enforcement, these taxonomies must be aligned with international and uniform frameworks for the sake of commercial clarity.

To incentivise the uptake of green technologies in the shipping sector, it is imperative that public bodies, as well as public-private partnerships, streamline their financing processes to provide capital expeditiously. This becomes a complicated task with transnational collaborative efforts as different legal regimes have differing environmental laws and policies. Frameworks and taxonomies for green financing therefore require extensive legal consideration, especially to the extent that these policy factors make their way into green covenants and become binding legal obligations. Of course, shipping projects cannot be contrary to prevailing environmental public law, but the civil interpretation of green covenants and the obligations they impose on parties require clarity to avoid disputes and to not deter users from accessing such finance.

5 Conclusion

Achieving a globally unified 'taxonomy' for green shipping projects, supported by green financial schemes and shipping-specific products, is essential for channelling investment into the environmental transition of the sector. Without clarity in this regard, it would be difficult for investors to distinguish between projects that might seem beneficial to the environment but are actually just variations of the status quo (e.g. LNG fuels) or activities that are actually game changers in terms of meeting carbon neutral goals. A lack of uniform standards also effects

[103] Pia Rebelo, 'Poseidon Principles: legal directions for Implementation and Enforcement' (2020) *The Journal of International Maritime Law, Volume 26 Issue 2*.
[104] See CBI Climate Bonds Taxonomy October 2019 < https://www.climatebonds.net/files/files/CBI_Taxonomy_Tables-Oct19_Final.pdf> at 16 November 2019.
[105] See the CBI's *Shipping sector criteria* available soon at < https://www.climatebonds.net/shipping> at 18 April 2020.
[106] Monitor Deloitte, above n 60.

pricing and can create confusion, generate additional verification costs, and can ultimately deter investors. Although this Paper is not concerned with advancing a set of definitions, as these should be scientifically informed taking into account technical expertise, it has set out to illustrate the taxonomy gaps and shortcomings in respect of financing the international maritime sector.

The EIB's green shipping products are illustrative of the problem of trying to place shipping within a larger legal and policy matrix in order to determine the green eligibility of transportation projects. In this regard, it is submitted that the proposed Taxonomy Regulation should be extended to shipping activities. At the same time, China's non-specific direction for the financing of green shipping is too generalist to achieve a clear mandate for the advancement of funds to environmentally sound maritime activities, nor are its policy objectives clearly and concretely implemented. However, China and the EIB are attempting progress, along with the CBI certification standards, to harmonise taxonomies for an international sector to encourage global and cross-jurisdictional investment. This is where governments and international bodies have an important role to play in providing direction and goals for the greening of international shipping through financial instruments. Given recent developments in the private sector, such as the Poseidon Principles framework, it is becoming immediately necessary for ship finance to operate within a clear green framework which classifies shipping activities in accordance with the internationally set ambitions of the IMO. 'Green shipping activities' require substantive definitions, categorisations, degrees of comparison, and clear industry specifications – all of which can be easily incorporated into commercial agreements for the realisation of the combined potential of environmental standard-setting and private law enforcement mechanisms.