

Effects of the Maritime Silk Road on Port Development along the Route of Belt and Road Initiative

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ABSTRACT

The Belt and Road Initiative (BRI) is a comprehensive strategy devised by the Chinese government to promote global connectivity through multiple pathways. The Silk Road Economic Belt (SREB) is primarily concerned with establishing land-based links that stretch across continents. In contrast, the Maritime Silk Road (MSR) is focussed on creating sea-based corridors that connect different maritime hubs. The ports situated along the MSR are not only infrastructural institutions; rather, they play a crucial role in facilitating commerce, fostering economic development, shaping geopolitical strategies, and facilitating cultural interchange. The objective of this research is to not only delineate the existing nodes and ports comprising the MSR but also ascertain prospective sites that might be smoothly included into this maritime infrastructure. A comprehensive comprehension of MSR necessitates an evaluation of the perspectives held by various international stakeholders. The basis of this study is a comprehensive literature analysis that aimed to analyse the development of ports inside the MSR framework since its establishment in 2013. Despite the significance of the programme, there is a notable scarcity of comprehensive studies that expressly examine port involvement in MSR. The existence of this gap serves to highlight the originality and uniqueness of our study. Through an analysis of port ownership patterns, recent investment flows, current political climates, and the extent of MSR's involvement, this report provides a detailed perspective on the marine aspect of China's overarching goal.

Keywords: Maritime Transportation, Port Development, Port infrastructure, Maritime Silk Road, Belt and Road Initiative

1. Introduction

In 2013, the People's Republic of China introduced a proposal for sustained international cooperation, known as the "Silk Road Economic Belt (SREB) and the 21st-Century Maritime Silk Road Initiative," which is a component of the broader Belt and Road, highlighting a significant multinational effort including 65 countries and almost one-third of the worldwide economy Initiative (Wang, 2016; Rolland, 2017; Lam et al., 2018). The Chinese government is now undertaking an ambitious initiative to construct marine infrastructure along the key shipping route between Asia and Europe. This comprehensive endeavour encompasses a wide range of sectors, including energy, telecommunications, healthcare, and education, as well as transportation infrastructure, such as trains, highways, and ports (Çelik et al., 2022; Hughes et al., 2020).

The SREB pertains to the terrestrial segment of the BRI with the objective of establishing connectivity between China, Europe, and other regions in Asia via an extensive network of infrastructure and economic development initiatives. The concept for this endeavour is derived from the renowned Silk Road, an extensive network of trade routes that facilitated connexions between China, Europe, and many other locations over a span of more than two thousand years (Dave and Kobayashi, 2018). The SREB integrates Beijing's current economic investments and security-building efforts, while also initiating novel endeavours to establish stronger connexions between the Central Asia and South Asia with China. In addition, it seeks to expand the sphere of security towards the west and foster the development of a transportation corridor that connects China with Europe (Dave and Kobayashi, 2016; Tracy et al., 2017). The MSR is a contemporary notion that draws inspiration from the historical Silk Road, an intricate system of trade routes that facilitated connexions between China and other regions throughout Asia, Africa, and Europe via both overland and marine channels (Zhang, 2017). The MSR, together with the overland Silk Road Economic Belt, is a comprehensive and interconnected system of commerce, infrastructure, and economic collaboration that extends across many continents. China's BRI

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is widely seen as a strategic approach aimed at advancing its economic interests, augmenting its sphere of influence, and nurturing regional and global economic growth and collaboration (Blanchard, 2017; Lam et al., 2018; Malik, 2020).

According to Van der Putten (2015), China has formulated a strategic initiative known as the "21st Century Maritime Silk Road," which involves the establishment of ports in Southeast Asia, the Indian Ocean region, and the eastern Mediterranean. China's involvement in seaports and other maritime-related facilities is evident via its participation in large-scale transportation infrastructure projects as part of the "BRI". The expansion of sea lanes, road networks, railroads, and aerial transportation systems mutually reinforces one another, thereby facilitating the establishment of novel trade routes connecting different places. The planned marine version of the MSR constructs a maritime corridor by connecting various seaports and infrastructural systems (Çelik and Özer, 2021). The BRI of China functions as a strategic framework guiding the nation's efforts to establish cooperative relationships with novel commercial counterparts. Several countries included in this effort exhibit economies characterised by low income levels. Under optimal conditions, they possess a greater capacity to thrive expeditiously. Furthermore, it is plausible that they might foster more organic collaborative partnerships with China, thus opening up possible new markets for Chinese goods and investment. In other words, this expansive and undeveloped region has the potential to become a significant driver of world economic development, facilitating the creation of fresh markets for Chinese products and attracting foreign direct investments from external sources (Huang, 2016; Ohashi, 2018; Tekdal, 2018; Johnston, 2019).

According to Trial et al. (2016), this location is located between the thriving economies of East Asia and West Europe. The efficacy of the new MSR, which aims to facilitate global commerce and marine transit, hinges on the establishment of robust shipping networks and enhanced connectivity. The MSR initiative aims to enhance connectivity between Chinese ports and various developing nations and economic regions, including the Association of Southeast Asian Nations (ASEAN), the Pacific Islands, the Indian Ocean region, the China-Indochina Peninsula Economic (CIPE) Corridor, and Africa (Chung, 2018; Chan, 2018; Lam et al., 2018). Chinese investors historically engaged in FDI by primarily acquiring minority stakes in port shares. COSCO holding now exercises majority control over a limited number of ports, including 85% of Zeebrugge, 100% of Piraeus, 51% of Valencia, and 90% of Abu Dhabi. The acquisition of the port share by the ports of Vad Ligure, Rotterdam, Marseilles, and Antwerp was hindered by the political and regional attitudes of local authorities against Chinese port investments (Duchâtel, 2018).

The primary objective of this study is to conduct a thorough investigation into the many aspects of the Maritime Silk Road (MSR) within the Belt and Road Initiative (BRI), which was put forth by the Chinese government in 2013. The importance of sea-based corridors in boosting global connectivity is emphasised by the MSR, even though the Silk Road Economic Belt (SREB) is largely concentrated on land connexions. In addition to mapping out the current ports and nodes that make up the MSR, possible locations that may easily become part of this maritime network are sought in our study. Furthermore, the viewpoints of different global stakeholders are assessed to obtain a thorough comprehension of the ramifications of the MSR. Due to the scarcity of thorough studies that specifically look at port involvement in the MSR, our research will address this gap.

This study takes a unique approach by thoroughly examining the MSR within the larger context of the BRI, which was proposed by the Chinese government in 2013. A limited number of studies have examined the complex aspects of port involvement and infrastructure development within this marine framework, although prior research has recognised the importance of MSR in improving global connectivity. Our analysis closes a significant gap in the literature by concentrating on the growth of ports inside the MSR since its founding and provides a fresh perspective on China's overall maritime goals. This research provides fresh insight into the current political environment, port ownership patterns, investment trends, and MSR's level of involvement through a thorough examination of all of these factors.

The research provided an analysis of the MSR, focussing on three key aspects: port ownership, infrastructure, and policy. The following section of the report provides concise details about the MSR, including its trajectory and the current situation of pivotal ports situated along its path. The last segment of the investigation entails a discussion and conclusion.

2. Maritime Silk Road

The name "maritime silk road" has traditionally denoted the ancient trade and cultural pathway linking China to many countries throughout Asia, Europe, East Africa, and the Middle East. The objective of Xi's Maritime Silk Road (MSR) initiative is to restore China's historical maritime supremacy and status as a naval force, as documented by Len (2015). In 2013, President Xi Jinping introduced the concept of the MSR as a means to articulate the foreign policy objectives of the country (Guan, 2016). China's oil imports constitute 80% of its total, while its natural gas imports account for 50%. Additionally, 42.6% of China's goods are transported via the maritime routes associated with the MSR. According to Jiang et al. (2018), the implementation of this plan is expected to result in a significant increase in China's import and export trade with countries located along the MSR. Consequently, there will be a corresponding rise in the demand for international logistics and maritime shipping services (Qiu et al., 2018). Hence, the pivotal inquiry pertains to the extent to which China's growing economic participation in these maritime routes will translate

into an escalation of military engagement, as well as the nature of such presence, particularly with regard to the establishment of enduring installations and support bases (Blanchard, 2017). To comprehensively analyse the matter at hand, it is essential to assess the underlying motivations behind China's endeavour to enhance its military presence along the MSR, as well as the many challenges that Beijing will inevitably confront in pursuing this objective. The MSR not only facilitates China's connectivity with three significant economic regions, namely Southeast Asia, South Asia, and the Middle East (Figure 1), but it also plays a crucial role in the production of critical commodities for China, including oil, iron ore, and copper ore. Moreover, the implementation of proactive measures aimed at establishing strategic and economic connexions along the MSR presents a chance, as seen by China, to evade the perceived encirclement and containment resulting from the United States' "pivot to Asia" strategy (Clemens, 2015). The growth rate of China's blue economy is around 7.5% per year, driven by the Chinese government's significant emphasis on the maritime sector as a strategic avenue for national development. The primary factor of utmost importance in this expansion is the augmentation of China's gross domestic product at an average annual rate of 10%. The government of Beijing has expressed its intention to further accelerate this rate to 15% from 2021 to 2035. According to Ghiasy et al. (2018), a significant proportion of Chinese commodities, 90%, are transported via maritime routes. Additionally, sea lanes contribute to approximately 60% of the total value of shipping. Consequently, the Chinese government and enterprises attach great importance to ports and maritime transportation.



Source: Clemens (2015)

Figure 1. Maritime Silk Road and the Silk Road Economic Belt

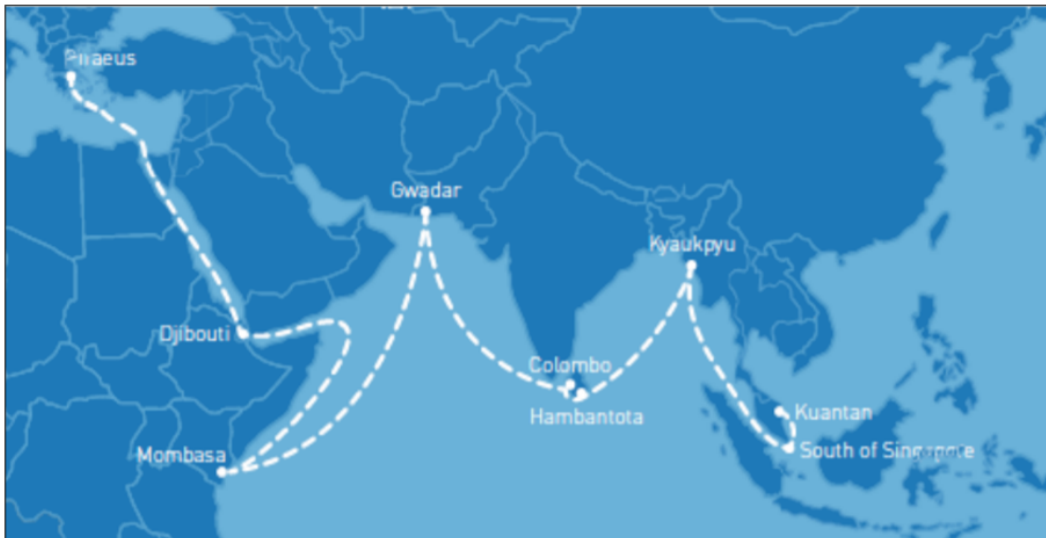
2.1. Route

According to Villafuerte et al. (2016), the main objective of the Maritime Silk Road (MSR) is to establish connectivity between China's coastal port areas and Europe as well as the Southern Pacific Ocean using the South China Sea and the Indian Ocean. The primary port cities along the Maritime Silk Road (MSR) are as follows:

- i. Piraeus (Greece)
- ii. Mombasa (Kenya)
- iii. Djibouti (near the red sea)
- iv. Gwadar (Pakistan)
- v. Colombo and Hambantota (Sri Lanka)
- vi. Jakarta and Batam Island (Indonesia)
- vii. Kyaukpyu (Myanmar)
- viii. Kuantan (Malaysia) (Figure 2) (LBIA, 2017).

It is important to acknowledge that the Maritime Silk Road did not adhere to a singular, unchanging course, but rather exhibited several branches and modifications along its historical trajectory. Moreover, it assumed a pivotal function in facilitating cultural interchange by enabling the migration of individuals, dissemination of faiths, proliferation of languages, and transmission of

creative influences, alongside the exchange of commercial commodities. The Maritime Silk Road was an integral component of the expansive Silk Road network, facilitating the interconnection between the Eastern and Western regions via land and sea routes. (Chung, 2018; Jiang et al., 2018; Jiang et al., 2022).

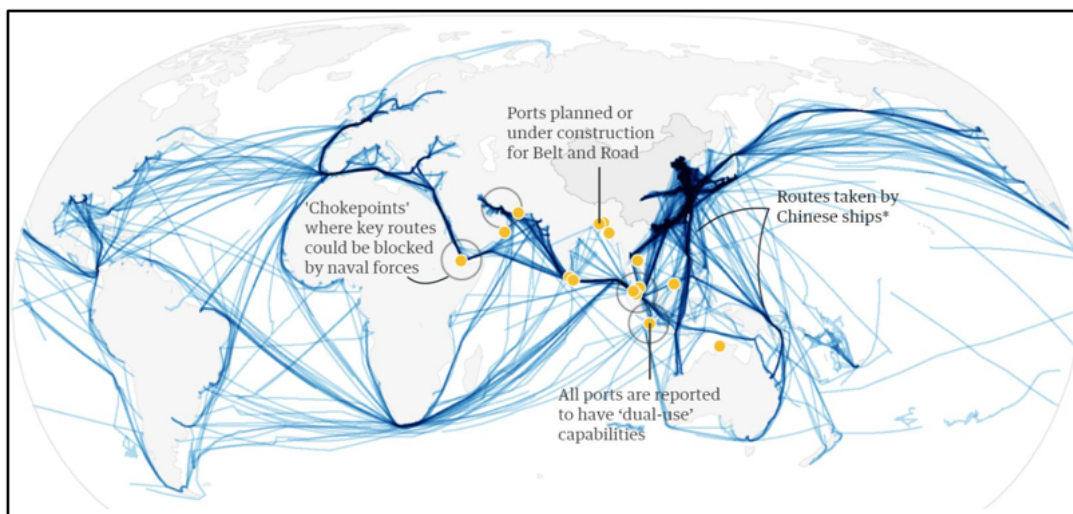


Source: LBIA, 2017

Figure 2. Key port cities of the MSR

2.2. Ports

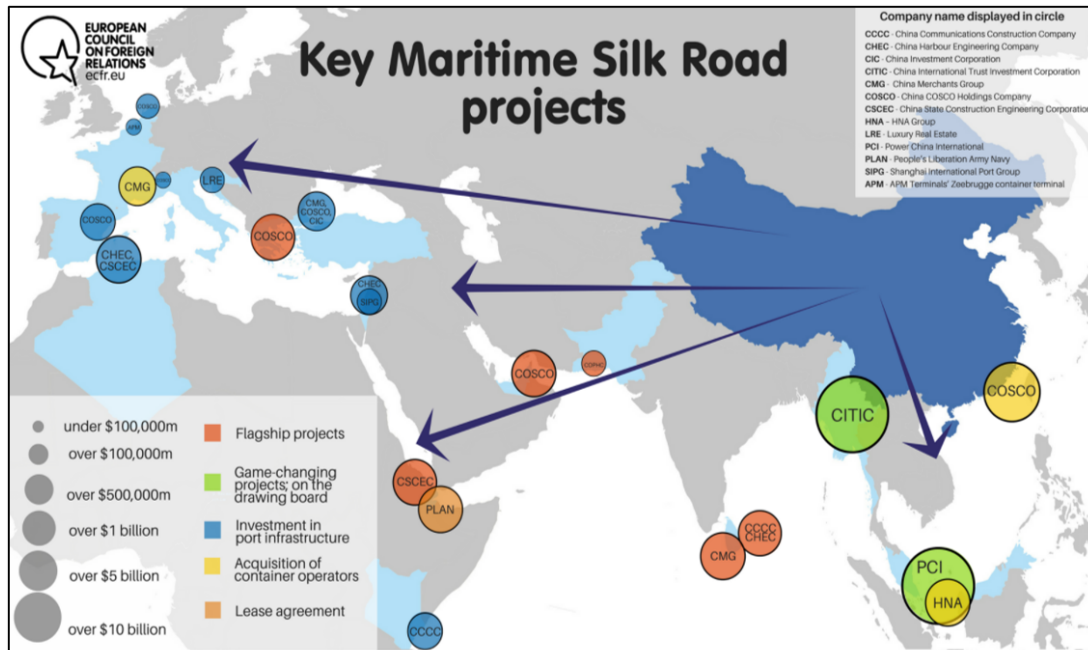
The economic development of nations is heavily dependent on their transportation systems, prompting both developed and developing countries to prioritise the incorporation of their vital transportation infrastructure with global trade routes and import-export networks. Ports play a pivotal role in supporting the integration of nations via marine routes, serving as vital hubs for various types of transportation, as shown in Figure 3 (Wang et al., 2019). The Chinese authorities and member nations place significant importance on improving connectivity and trading capacity between the eastern and western terminals of the ports along the MSR. As a result, there is a significant inclination to accelerate the finalisation of all incomplete connexion ports along the MSR pathway (Celik, 2023). Terminal operators, particularly those originating from China, make conscientious endeavours provide assistance for the project. Since the ports are the primary focal point of the project, the predominant allocation of investment endeavours is aimed at augmenting port infrastructure (Peng, 2018).



Source: Vandebroek, 2019

Figure 3. Ports Planned or Under Construction for MSR

The ongoing execution of a comprehensive effort known as the MSR is now being conducted throughout the European region, East Africa, and the Middle East/North Africa region. The project involves many substantial undertakings, including the purchase of shipping enterprises on a worldwide scale, the provision of financial assistance for port management, and the enhancement of port infrastructure. Figure 4 depicts the association existing between the Chinese government and enterprises, along with the major projects associated with the Maritime Silk Road (MSR) initiative (Yin et al., 2020).



Source: Duchâtel and Duplax, 2018

Figure 4. Key Maritime Silk Road Projects

Ports assume a vital role in the success and importance of the Maritime Silk Road, which constitutes a pivotal element of China's BRI. The significance of ports along the MSR may be comprehended via many perspectives (Wan et al., 2021):

Ports play crucial roles as gateways for facilitating international commerce. International trade plays a crucial role in facilitating the exchange of products between nations, hence assuming a pivotal position in the economic activity of the respective areas it serves. The ports along the MSR serve as vital centres for commerce, facilitating the interconnection of diverse economies and fostering the development of economic collaboration (Lam et al., 2018).

Transshipment hubs are prevalent throughout the MSR and serve as pivotal points for the interchange of commodities between various transportation modes, including ships, trucks, and trains. This phenomenon contributes to the optimisation of global supply chains, resulting in a reduction in transportation expenses (Huang et al., 2021).

Infrastructure development is a crucial aspect of port growth because it requires expenditures in ancillary infrastructure such as road networks, railway systems, and storage facilities. These investments play a significant role in fostering the general development of regions and nations (Liang and Liu, 2020).

Ports play a crucial role in fostering economic development via the stimulation of local enterprises, employment creation, and capital attraction. Port cities and areas often serve as catalysts for the development of local economies, thus promoting economic growth (Zhao et al., 2021).

Cultural movement

Throughout history, ports have served as significant hubs for cultural convergence, facilitating the movement of commodities and ideas, languages, and customs. The MSR facilitates cultural interaction and enhances the cultural fabric of nations by using its port infrastructure (Chan, 2018).

Connectivity

Connectivity is facilitated by ports, which serve as crucial infrastructural nodes that link landlocked areas and the global market. The presence of these infrastructural systems facilitates the connexion of landlocked nations to maritime routes, enabling their engagement in global commerce and mitigating their geographical seclusion (Zhao et al., 2021).

Facilitating Energy Transit Along the Maritime Silk Road

The transit of energy resources, including oil and natural gas, is facilitated by several ports situated along the MSR, which serve as crucial entry points. The aforementioned resources play a pivotal role in the global economy, with ports serving as vital conduits for ensuring a consistent supply to diverse geographical areas (Len, 2015).

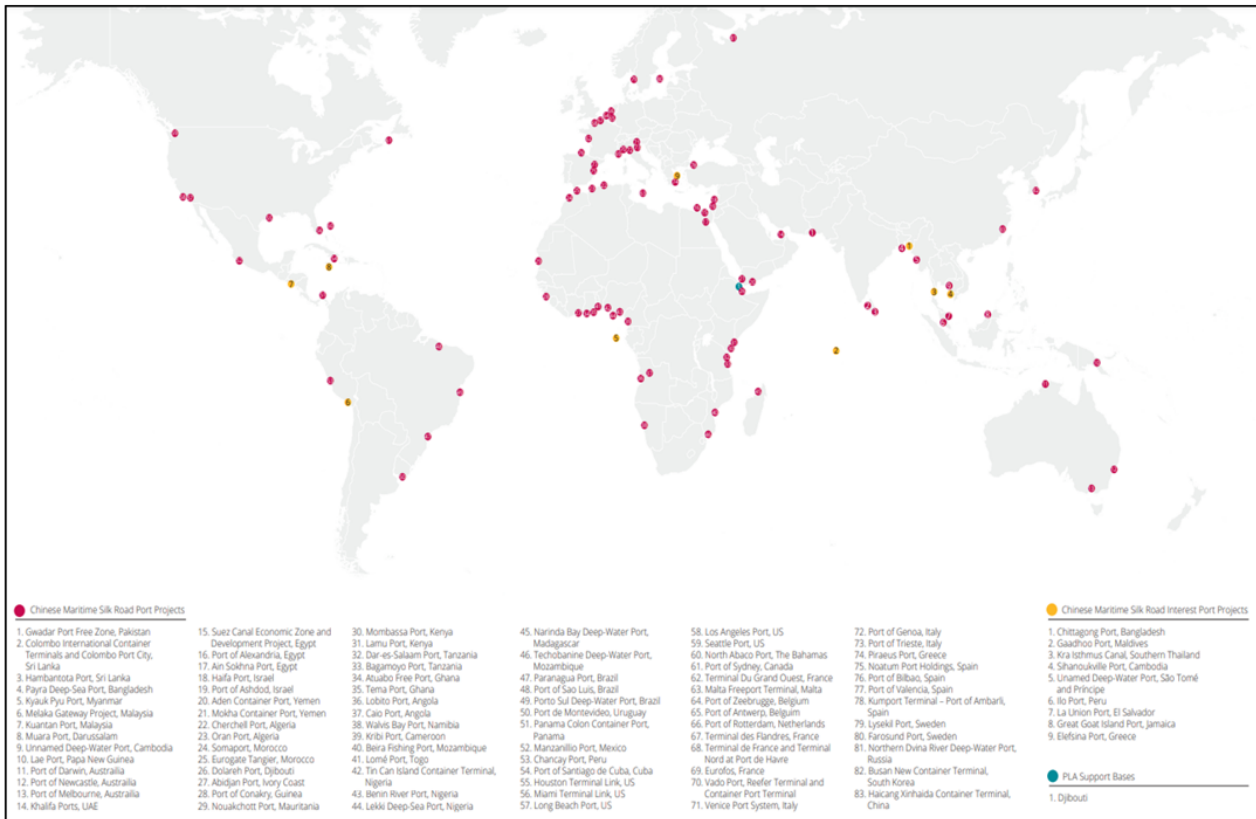
Geopolitical Significance

Certain ports situated along the MSR possess strategic positioning, hence facilitating a nation's endeavour to establish influence and safeguard its security interests within the area. These ports have the potential to function as strategic naval bases and provide significant geopolitical benefits (Blanchard and Flint, 2017).

Tourism and Cultural Heritage

Numerous ancient ports and coastal towns situated along the MSR have emerged as popular tourist sites, drawing people with a keen interest in delving into the historical and cultural facets of the area (Winter, 2021).

The aforementioned initiatives include transformational undertakings, investments in port infrastructure, purchases of container ports, and leasing agreements (Duchâtel and Duplaix, 2018). State-owned businesses in China have a significant impact on the investment landscape of ports along the MSR route, which serves as a vital connexion between Asia and Europe. Chinese corporations have made substantial financial commitments to the maritime facilities at Gwadar, Hambantota, Colombo, Malacca, and Piraeus. Based on academic literature, it has been reported that Chinese firms engaged in investments in the foremost 60 container ports throughout 2015, establishing a notable presence in around 65% of these ports (Len, 2017). The inclusion of a red circle in figure 5 denotes the participation of Chinese port investment in the establishment or management of these ports, either via Chinese state-owned firms or other private organisations. The blue circles indicate MSR's genuine objectives, while the yellow circles represent the growing desire of Chinese businesses to invest in ports. The MSR programme has its primary emphasis on the Gulf region, namely the United Arab Emirates, and entails a significant financial investment exceeding \$300 million. The primary focus of this effort is the identification and subsequent development of port sites that have strategic significance within the designated area. In addition to the Gulf area, which bears strategic importance for Chinese authorities, Yemen, Israel, Djibouti, Algeria, and Egypt are anticipated to experience heightened relevance in the foreseeable future as a result of the ongoing construction of the MSR. Consequently,



Source: Nouwens, 2019

Figure 5. China's Global Port Ambitions: Chinese company construction and investment

Chinese state-owned enterprises have articulated their ambition to procure a shareholding in or oversee the operations of all ports, with the aim of bolstering this far-reaching endeavour. Nouwens (2019) posits that Djibouti can establish itself as a significant international logistic hub.

The MSR project has influenced and affected numerous ports along its route. The specific impact varies from port to port and depends on various factors, including local government policies, investments, and the strategic importance of the ports. Some notable ports that have been affected by the initiative include (Lam et al., 2018). Hambantota Port has attracted significant investment from China and is now under a leasing agreement with a Chinese corporation (Roy-Chaudhury, 2019). The geographical positioning of the entity in question inside the Indian Ocean has a strategic advantage because it possesses the capacity to evolve into a transshipment centre. However, it has encountered disputes of its economic feasibility. The strategic geographical positioning of Djibouti Port in close proximity to the Bab-el-Mandeb strait, which serves as a vital link between the Red Sea and the Gulf of Aden, has become a significant area of interest for Chinese interests. China has successfully created its first overseas military station in Djibouti, while concurrently seeing substantial growth in the ports of Djibouti (Radwan et al., 2019). The Colombo Port has seen a surge in activity and growth because of its involvement in the MSR initiative. The location serves as a vital transshipment centre within the Indian Ocean region (Park and Dossani, 2020). The Chittagong Port has garnered considerable interest in terms of its prospective development within the BRI framework. This is primarily due to its advantageous position, which provides access to the Bay of Bengal and serves as a strategically significant trading hub within the South Asian region (Monir, 2017). The Mombasa Port has attracted investments and is a component of the envisioned Lamu Port-South Sudan-Ethiopia transport corridor, which aims to enhance transportation and facilitate commerce within the Eastern African region (Gekara and Chhetri, 2013). Although the port of Rotterdam in Europe is not situated immediately along the MSR path, it has seen a surge in traffic and commerce with China. This may be attributed to its significance as a prominent destination for maritime shipments of products (De Langen et al., 2014). The Kuantan Port has seen a notable surge in activity and growth, mostly attributed to substantial investments from China and the establishment of adjacent industrial zones (Yean, 2019).

Following the proclamation of the MSR, Chinese terminal operators operating on a global scale have undertaken the acquisition or expansion of ports across the globe. As an endeavour to advance the objectives of the BRI and strengthen its maritime connectivity, China has made these investments and acquisitions. The following ports have been acquired or are under the management of Chinese global terminal operators:

Piraeus Port

The Piraeus Port Authority in Greece was acquired by the Chinese corporation COSCO (China Ocean Shipping corporation) in the form of a majority interest. This Mediterranean port, situated in a strategic location, has emerged as a highly operational and critical nexus for commodities entering Europe (Chaziza, 2018).

Port of Koper

China Merchants Port Holdings Company, a subsidiary of China Merchants Group, has acquired a 51% interest in the Port of Koper in Slovenia. China is making this expenditure a component of its strategic initiative to enhance its influence in the Adriatic Sea (Rhode, 2022).

Moin Container Terminal

A contract was awarded to a subsidiary of China Harbour Engineering Company for the design and construction of the Moin Container Terminal in Costa Rica. The maritime connectivity in Central America is improved by this endeavour (Baker et al., 2016).

Port of Darwin

Landbridge Group, a Chinese private conglomerate, has obtained a 99-year licence on the strategically located Port of Darwin in Australia, situated in the Asia-Pacific region (Barnes, 2015).

Hambantota Port

Following financial difficulties, the Sri Lankan government entered into a 99-year lease agreement with China Merchants Port Holdings for Hambantota Port, enabling the Chinese company to oversee and advance the development of this strategic port in the Indian Ocean (Kavirarthna et al., 2021).

Gwadar Port

The China Overseas Port Holding Company has played a significant role in the administration and development of Gwadar Port in Pakistan. From its strategic location near the Arabian Sea, this port plays a pivotal role in the China-Pakistan Economic Corridor (CPEC) (Liu et al., 2020).

Doraleh Container Terminal

A legal dispute arose between the government of Djibouti and DP World, a Dubai-based global terminal operator, regarding the administration of the Doraleh Container Terminal, which DP World had previously oversaw. Subsequently, the terminal came under the jurisdiction of the Djiboutian administration (Barton, 2021).

Estonian Ports

Ningbo Zhoushan Port Company, the state-owned port operator of China, has conveyed its prospective investment in multiple Estonian ports with the objective of enhancing maritime connectivity between China and Northern Europe (Wang et al., 2021).

The dep-trap strategy used by the Chinese government is evident in the case of Hambantota Port, where the government acquired equity rights for 99 years, starting from December 2017. Concerns have been raised by authorities in Sri Lanka over the potential use of the Hambantota port as a naval base, primarily because of its limited economic benefits (Hillman, 2018; Lai et al., 2022). The significance of the Gwadar port in the context of the China-Pakistan Economic Corridor cannot be overstated, as it plays a crucial role in the growth of both China and Pakistan (Ahmed, 2019). The MSR project has had a positive impact on the political and economic collaboration between the authorities of China and Pakistan. Chinese investors are showing a significant focus on the Gwadar port because of its capacity to handle around one million tonnes of cargo annually, including crucial industrial commodities and oil (Gholizadeh et al., 2020). This preference is mostly driven by the limited development opportunities available

at the two other major ports in Pakistan. The construction of this port has generated apprehensions over the maritime expansion of China in the Indo-Pacific area, as seen by significant stakeholders such as India and the United States (Gurmeet, 2018; Liu et al., 2020). The Indian government has formulated a strategic plan to establish the Chabahar Port in Iran as a countermeasure to Chinese endeavours in the area, primarily driven by apprehensions over the expansion of Chinese ports (Pant, 2018). Investment connected to the MSR mostly centres on ports located in Greece and Italy within the European region. The China Ocean Shipping Company (COSCO) has acquired stakes in port facilities located in Turkey and the Netherlands. COSCO acquired a large share of one of the crucial port container terminals in Noatum, Spain, while China Merchant Holding International Limited purchased a 49% stake in the terminals located in France. The latter is recognised as one of the notable Chinese investor in the context of port acquisition under the MSR initiative. Nevertheless, irrespective of the inclusion of these ports in the route, the MSR project is expected to have an influence on many ports, even in the absence of conclusive evidence to support this claim (Nouwens, 2019). The Piraeus Port serves as a central centre for overseeing the transportation operations of the MSR in Europe. However, Cosco Shipping has significantly advanced this network by acquiring Noatum Port, thus establishing a vital connexion between the ports of Piraeus and Valencia. The acquisition of ownership of Spain's principal terminal operator by Cosco enables the establishment of a full connexion between Valencia, the state's foremost container port, and Bilbao, which offers short-sea shipping services to Northern Europe and Rotterdam. The engagement will also include the participation of inland ports in Zaragoza and Madrid, facilitated by Chinese firms. The increasing attraction of Chinese investors to Italian ports such as Genova and Trieste has the potential to significantly shape the European perspective on the Northern Mediterranean region (Ven der Putten et al., 2016; Haralambides, 2020). To facilitate the integration of transportation operations across the European region, Cosco Holding acquired a controlling stake in Kumport, the third-largest container terminal in Turkey. Similarly, COSCO began its investment in the Piraeus port in 2010. Furthermore, Cosco Holding acquired a majority stake of 65 percent in Chancay Port, a minority stake of 20 percent in Antwerp Gateway, and a minority stake of 40 percent in the Noatum Container Terminal (Nouwens, 2019).

The Filyos Project, located in Turkey, is a promising project that is part of the Maritime Silk Road concept. Its goal is to increase trade and connect various maritime routes. Filyos Port, geographically located on the Black Sea coast, is an important point of entry for marine trade and has the potential to grow into a major gateway for commodities, particularly those from the Middle East and Central Asia, travelling from Asia to Europe. By providing a competitive alternative to current ports and integrating smoothly with the Middle Corridor—a crucial transportation route that connects China with Europe via Central Asia and Turkey—China's development might greatly improve connectivity within Eurasia. To ensure sustainable growth and take advantage of the opportunities, however, achieving its full potential will require strong infrastructure development, careful assessment of the environmental and social implications, and coordinated stakeholder engagement. However to fully realise its potential, strong infrastructure development, careful assessment of social and environmental effects, and coordinated stakeholder engagement are required to guarantee sustainable growth and take advantage of the opportunities provided by this important marine gateway (Ceyhan et al., 2017; Günay et al., 2019; Karlı et al., 2021).

2.3. Discussion and Conclusion

The BRI has the potential to reshape the global transportation order. Consequently, it is imperative that scholars thoroughly investigate both the maritime and terrestrial components of this initiative. It is noteworthy to acknowledge that the BRI has engendered much discourse and deliberation. Concerns have been expressed by critics about the sustainability of debt, its environmental consequences, and the possibility that some nations are too reliant on China. The effectiveness and impact of the initiative may differ between participating countries because of variations in individual initiatives, legislation, and local situations. Hence, while the BRI has significant advantages, it also entails certain obstacles and threats.

Maritime transportation is often considered the preferred mode of transportation for facilitating international trade. (Ceylan, 2023). The maritime component of the programme known as the Maritime Silk Road (MSR) was only mentioned in 2013 in the literature. As a result, there is a scarcity of papers and research specifically on MSR. The trajectory of the initiative is variable, allowing for the potential inclusion of a new port in the maritime segment of the project. The objective of the MSR programme is to revolutionise marine transportation through the improvement of infrastructure, the promotion of connectivity, and the use of contemporary technology. These anticipated modifications are projected to result in enhanced efficiency, dependability, and cost-effectiveness in maritime transportation, thus yielding advantages for commerce, economic advancement, and global interconnectedness.

The study highlighted several key ports, including Piraeus in Greece, Mombasa in Kenya, Djibouti near the Red Sea, Gwadar in Pakistan, Colombo and Hambantota in Sri Lanka, Jakarta and Batam Island in Indonesia, Hambantota in Sri Lanka, Djibouti Port in Djibouti, Chittagong Port in Bangladesh, Mombasa Port in Kenya, Kyaukpyu in Myanmar, and Kuantan in Malaysia. However, it should be noted that certain ports may be excluded from the project, whereas additional ports may be considered for inclusion.

The completion of all unfinished link ports along the MSR route is driven by the desire of Chinese authorities and MSR member nations to enhance connectivity and trade capacity between the eastern and western endpoints of the ports.

Global terminal operators and the MSR initiative maintain a collaborative and partnership-oriented relationship. The contribution of these operators in terms of investment, technology, and knowledge to the development of transportation infrastructure and ports along the BRI's route is vital to the initiative's success and its objectives of enhancing trade, economic growth, and connectivity in the regions it spans. Terminal operators try to support the project, with a particular emphasis on those originating from China (Akyar et al., 2023). Chinese state-owned enterprises allocate substantial financial resources towards investments in ports situated along the MSR corridor connecting Asia and Europe. Significant investments have been made by Chinese investors in Gwadar's ports, Hambantota, Colombo, Malacca, and Piraeus. Chinese corporations made investments in the top 60 cargo ports in 2015.

The MSR project has significantly enhanced the political and business ties between Chinese and Pakistani leaders. Chinese investors are primarily interested in the Gwadar port because of its capacity to transport significant volumes of industrial products and oil annually, as well as its ability to handle around one million tonnes of cargo. In contrast, Pakistan's other two largest ports offer limited prospects for expansion. From the vantage point of other prominent nations such as India and the United States, the growth of this port gives rise to concerns over China's maritime expansion in the Indo-Pacific region. The Piraeus Port functions as a pivotal hub for coordinating MSR shipping activities across Europe. However, Cosco has made a notable advancement by purchasing Noatum Port, thus establishing a connexion between the ports of Piraeus and Valencia. Cosco Holding bought Kumport, the third largest container terminal in Turkey, in its entirety. Additionally, in 2010, the China Ocean Shipping Company initiated the acquisition of a portion of the Piraeus port.

In conclusion, the MSR initiative, which is a part of the larger BRI, raises legitimate concerns about the sustainability of debt, its effects on the environment, and its geopolitical ramifications, even though it also offers promising opportunities for increased connectivity and economic growth through maritime transportation. As researchers delve deeper into the complex details of the BRI, it is critical to confront these obstacles while capitalising on the initiative's potential advantages for international trade and connectivity.

By analysing the BRI's maritime and land components, this study adds to the body of knowledge about the initiative and highlights its potential to alter international transportation networks. This study fills a vacuum in the literature by examining the maritime component of the BRI, specifically the MSR, and offers insights into its goals, difficulties, and expected effects on maritime traffic. Analysing the BRI's impact and efficacy compared to other participating countries provides important insights into how different local situations and different legislative frameworks have affected the initiative's execution.

The results of this study can be used by investors, industry participants, and policymakers to develop well-informed strategies for BRI involvement, accounting for potential roadblocks like environmental concerns and debt sustainability. Opportunities for investment and cooperation are presented by the BRI's identification of important ports and the function of international terminal operators. This report emphasises the potential economic benefits of the BRI, such as improved efficiency, dependability, and cost-effectiveness in maritime transportation, by highlighting the initiatives to build connectivity and trade capacity along the MSR route. Anyone with an interest in developing infrastructure and facilitating maritime trade.

The accessibility and accuracy of the data, particularly about port operations, Chinese investments, and the actual execution of the BRI projects, may have placed limitations on the study. The extent of the study and the generalizability of the results may have been constrained by missing or inconsistent data. The study's primary focus is on the BRI's maritime component, specifically the MSR, which may have constrained its examination of the initiative's wider effects. As such, it is possible that some facets of the BRI's land component and how it interacts with the maritime portion have not been thoroughly investigated. It is possible that the study's conclusions cannot be applied to the ports and areas examined. The applicability of the findings to other contexts may be limited by differences in local dynamics, legal frameworks, and geopolitical contexts across the many BRI participating regions. Certain constraints may have been created by the study's methodology, including the choice of important ports and the data processing strategy, which could have an impact on the validity and robustness of the findings. Additional data sources or different methodological approaches may have addressed any biases or offered supplementary insights.

To monitor the long-term effects and evolution of BRI, especially about maritime transportation, future studies may take a longitudinal approach. Researchers can gain a better understanding of the sustainability, efficacy, and consequences of BRI projects for global trade and connectivity by analysing trends across time.

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