

Haralambides, Hercules E.; Merk, Olaf

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## The Belt and Road Initiative: Impacts on global maritime trade flows

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# **The Belt and Road Initiative: Impacts on Global Maritime Trade Flows**

Discussion Paper

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Roundtable

**Hercules Haralambides**

Dalian Maritime University,  
Dalian

**Olaf Merk**

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International Transport Forum  
2 rue André Pascal  
F-75775 Paris Cedex 16  
contact@itf-oecd.org  
www.itf-oecd.org

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## Introduction

The Belt and Road Initiative (BRI) from the People’s Republic of China is receiving a tremendous amount of attention. Press articles try to document what it is, how it has advanced and what it means for different parts of the world. Assessments presented are often based on studies from think tanks, consultants and academics that discuss a variety of subjects, ranging from infrastructure development, geopolitics and global governance to the future of multilateralism. More than ten thousand articles have been written on the subject in the course of a few years.

Many interpretations exist regarding the underlying objectives of the BRI. Economic motivations could include securing supply chains for strategic commodities; optimising transport chains for Chinese exports; stimulating trade opportunities of China’s inland provinces and internationalising and upgrading China’s commercial and industrial maritime cluster. This cluster includes shipping, port construction and development, shipbuilding, dredging and port services. According to some observers, military objectives might also be served. There seems to be a consensus that China aims to achieve multiple objectives through the BRI, simultaneously. Indeed, the open and flexible manner in the way that BRI is defined allows for multiple directions.

The objective of this paper is to analyse the initiative’s potential impacts on global trade. The BRI is examined as a collection of planned transport-corridor developments and analyse what their impact could be on maritime trade flows.

## Defining the Belt and Road Initiative

The Belt and Road Initiative (BRI) aims to achieve greater economic integration and development through better connectivity. The BRI concept promotes connectivity as the main enabler of trade growth and trade-driven prosperity. As its name suggests, the BRI intends to establish a transport network consisting of a “Belt”, i.e., overland transport connecting China to Europe through Central Asia; and a “Road”, i.e., a maritime return route to southern Europe through the Suez Canal and back to Asia, with a stopover in East Africa (alternatively known as the “Maritime Silk Road” - MSR). The Mediterranean Basin is central in this network, being seen as the “hub-of-hubs”, connecting Asia with Europe, Africa and the Americas. Looking at Chinese investments in Australia, Central- and South America, BRI could be easily extended to a global around-the-world transport system. Twenty-five per cent of the USD 1 trillion budget associated with BRI has already been spent since President Xi Jinping of China first announced the initiative in 2013. In the past three years, China has also managed to commit nearly USD 2 trillion from various other sources including the Asian Infrastructure Investment Bank (AIIB).<sup>1</sup> The BRI is also linked to China’s “Made in China 2025” strategy whereby China should supersede the United States and Japan as an industrial high-tech manufacturer by 2025. This will require secure global supply chains, including ports; hence the BRI.

The BRI is officially committed to multilateralism and to an open global economy. As such, the Chinese vision is that it will help to move economic globalisation toward greater openness, inclusiveness, balance and win-win outcomes. China's President has stated that

*“the BRI aims to replace estrangement with exchanges between different civilizations; replace clashes with mutual learning; and replace a sense of superiority with coexistence; it aims to boost mutual understanding, mutual respect and mutual trust among different countries. In this light, the BRI is seen as a path towards global peace” (Yang, 2019).*

Some countries are concerned about the economic viability of some of the projects. The pace of investment in the BRI has slowed and China's outward investment has fallen by more than 20% since 2016. Behind these figures are also the domestic economic factors. China's economic growth in 2019 was 6.1%, the slowest growth rate since 1990. Together with an unfavourable global trade climate - especially rising US-China trade tariffs - domestic economic issues are starting to take priority in policy making. In 2018 alone, 2.8 million people were made redundant in China's industrial sector. These economic pressures are foreseen to continue. The slowing-down of the economy undermines interest in foreign investments in faraway countries, even more so when the most bankable projects have already been financed. Investments that are peripheral to the objectives of the BRI are the first to be cut and the State Administration of Foreign Exchange, SAFE, has made known that it will scrutinise investments in what it has called “irrational” sectors. These include: real estate, sports complexes, cinemas and other areas unrelated to firms who undertake what is deemed core business in China.

The geographical scope of the BRI is huge. It was announced that China has signed a total of 38 bilateral and regional maritime agreements, covering 47 countries along the BRI route at a press conference held at China's Ministry of Transport in Beijing 26 July, 2018. A recent agreement was signed with Italy in March 2019: a memorandum of understanding (MoU) comprising 29 deals. Although such MoUs have no formal legal status, nor do they create rights and obligations, they nevertheless show intent, with China anchoring the BRI in an increasing number of countries. The internet portal for BRI of the Chinese government lists 129 countries that have signed some type of cooperation agreement which China on the BRI. In addition, and in the five years since BRI's inception in 2013, China has participated in the construction and operation of 42 ports in 34 countries, including the ports of Piraeus (Greece), Hambantota (Sri Lanka), Djibouti, and Gwadar (Pakistan).

## **Possible Belt and Road Initiative links with maritime trade flows**

There is an extensive literature on the link between water transport and trade. The potential benefits of sufficient seaborne transport and transport infrastructure (ports) were already highlighted by Adam Smith (1991) when he remarked:

*“As by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself, and it is frequently*

*not till a long time after that those improvements extend themselves to the inland parts of the country”.*

There are examples of maritime infrastructures that have certainly had positive effects on trade. For example, the construction of the Suez Canal has reduced travel time and transport costs in the trade between Asia and Europe, thus stimulating more trade between the two continents. It is also clear that lagging port infrastructure has an impact on the trade potential of countries. Port infrastructure accounts for 40% of predicted transport costs for coastal countries, and various studies indicate a link between port infrastructure and maritime transport costs. Limao and Venables (2001) calculate that if a country with relatively poor infrastructure (around the 75th percentile) were to upgrade to the 25th percentile, this would reduce transport costs by between 30% and 50 %. According to Martinez-Zarzoso, Garcia-Menendez and Suarez-Burguet (2003), an improvement of 10% in the port infrastructure of a destination country could lower transport costs by 1.4%; and an increase of port infrastructure of one standard deviation reduces freight rates by USD 225, following calculations by Wilmsmeier and Hoffmann (2008). It should be noted that the port infrastructure of exporters is more important for transport costs than the importers’ (Nordas and Piermartini, 2004; Korinek and Sourdin, 2011).

At the same time, it would be amiss not to point out that infrastructure does not necessarily have trade-inducing effects. There is always a risk of “cathedrals in the desert” (to use the highly illustrative Italian expression); duplication of infrastructures and consequent overcapacity. This risks being the case for some container ports: a 2016 ITF study found that there is currently overcapacity in container ports in most parts of the world. This situation is likely to persist over the coming decades if one considers the capacity expansions that are already planned (ITF, 2016). Public authorities responsible for infrastructure financing need to realise that policies to compete internationally only through public investment in infrastructure are highly risky; public infrastructure should instead be built to enable the private sector to compete, with investments based on demand.

## **Possible effects of the Belt and Road Initiative on maritime trade flows**

In order to assess the impact of the BRI on global maritime trade flows, we will distinguish four transport-related orientations within the BRI that are relevant:

- control of existing maritime routes
- establishment of alternative routes
- infrastructure to generate new trade
- possible modal shifts.

The below assesses which BRI projects could be associated with these directions.

Control of existing maritime routes, that is: securing trade flows whatever the circumstances (e.g. conflicts, turmoil etc.), is a major pre-occupation of trading nations. In the case of China, this concern was expressed by President Hu Jintao in 2003 as China’s “Malacca Dilemma”: that is: the great dependence of China on the Malacca Straits for the transit of energy products and other strategic commodities (You, 2007). Control of such strategic waterways is also relevant in the case of the Suez and the Panama canals. Investments along the new Maritime Silk Road (MSR) could be interpreted as a way for China to increase control over these Sea Lanes of Communications and the related maritime transport chains.



In parallel, BRI attempts to mitigate the risk of over-reliance on existing routes, by developing alternative routes that could circumvent potential chokepoints. In other words, the BRI not only aims to increase control over the Malacca Straits, but also develop various ways to work around it. It also does this for the Suez Canal and the Panama Canal.

Transport and its infrastructure do not only facilitate trade but also promote it. Technological developments in ship design and construction, and the ensuing economies of scale of larger ships, have reduced trade and transport costs, thus promoting trade by making the transportation of goods over long distances affordable (Haralambides, 2019). Ongoing albeit still unpublished research shows that a 10% improvement in connectivity between countries along the MSR would deliver a 3% decrease in Chinese trade costs which would in turn boost China's imports and exports by around 6% and 9% respectively. Ongoing studies by the World Bank seem to suggest that BRI cooperation could cut the costs of global trade by 1.1% to 2.2%. Such effects would be expected to occur thanks to improved connectivity of countries that are currently badly connected, but that dispose of considerable consumer markets, commodities or production capabilities.

It is also possible that the BRI could lead to some degree of modal shift. The Belt (land) part of BRI consists of a multitude of rail freight corridors, connecting China with Central Asia and Europe. For certain goods (high-value and relatively time-sensitive) this form of transport could be an attractive alternative to ocean transport, which will of course remain cheaper, but with considerably lengthier transit times. For certain destinations – such as inland China to central Europe – the train might be a cheaper option than ocean transport and the hinterland transport needed to get the cargo to and from the seaports.

## **Different categories of ports in the Belt and Road Initiative**

An assessment of the trade effects of the BRI needs to include a distinction between gateway and transshipment, or hub ports. The characteristic differences between these port categories are relevant, as they will provide different support measures to the initiative.

Gateways are the ports where a large share of the cargo reaches its destination or has its origin. These are generally places with or connected to large concentrations of populations or manufacturing production. Examples are the ports of Rotterdam and Antwerp, serving the heartland of North-West Europe. In contrast, hub ports are points of transit - usually centrally located along major maritime routes, so as to minimise transport distances - but where the cargo generally does not go to an inland destination. The essential characteristic of a hub port is its proximity to main shipping routes. Most hub ports are not connected to large population or production centres. Examples of pure transshipment hubs in Europe include Malta, Gioia Tauro (Italy) and Algeciras (Spain).

Control of existing main hub ports is important for many reasons. One reason is that it can provide solutions over maritime chokepoints nearby. On the other hand, new hub ports could help to define alternative routes – occasionally in combination with new infrastructures such as canals. In the case of emerging consumer or producer markets, what might be needed instead is the development of a new gateway port, to improve connectivity and thus make new trade opportunities attractive options.<sup>2</sup> A modal shift to rail freight can be stimulated by dry ports and seaports connected to each other by rail. These categories and the possible effects of the BRI can be combined in an analytical matrix (Table 1). The following sections will describe BRI projects and classify these according to the characteristics in Table 1.

**Table 1. Possible trade effects of the Belt and Road Initiative**

Objective	Port category	Effect on maritime trade
Control of existing routes	Hub ports near maritime routes/chokepoints	None
Alternative routes	Hub ports to support new routes	Different configurations of flows
New trade	Gateway ports near untapped export markets or strategic commodities	More maritime trade
Modal shift	Ports connected by rail	Less maritime trade

## Ongoing and planned projects

This section gives a brief overview of the main Belt and Road Initiative (BRI) projects related to ports, classified geographically. The objective is to assess their level of advancement and possible future feasibility. This assessment could subsequently be used in an analysis of possible impacts on global maritime trade flows.

### China

Although the BRI is mainly outward looking, it also defines the Chinese ports that are the gateways to the world. In March 2015, with the authorisation of the State Council of China, China's National Development and Reform Commission, the Ministry of Foreign Affairs and the Ministry of Commerce jointly released "Visions and Actions on Jointly Building Silk Road Economic Belt and the 21st-Century Maritime Silk Road". The document clearly emphasises the expansion of 15 coastal ports, namely, Shanghai, Tianjin, Ningbo, Guangzhou, Shenzhen, Zhanjiang, Shantou, Qingdao, Yantai, Dalian, Fuzhou, Xiamen, Quanzhou, Haikou, and Sanya.

### South and South-East Asia

The way in which the BRI aims to secure maritime flows via the Malacca Straits is by developing a new hub port in the Malaysian city of Malacca that could function as an alternative to Singapore. In April 2016, transport Minister Liow Tiong Lai announced that China is investing USD 10 billion to develop a deep-sea port in Malacca, which would be the biggest in the region when completed in 2025. In addition to the Malacca Gateway, China is spending USD 2.84 billion on Kuala Linggi Port; USD 1.4 billion on Penang Port; and USD 177 million on Kuantan port.

In parallel, the BRI aims to bypass the Malacca Straits via investments in Myanmar. Myanmar is extremely important to China which has constructed oil and gas pipelines, railroads and logistics parks, to bring oil to Kunming (Yunnan Province) directly from the Middle East and export Chinese goods. A related priority is to connect Kyaukpyu and Kunming via a 1 200 km railway line. In addition, by 2025 China plans to complete

a 1000 hectare industrial park and Special Economic Zone (SEZ) at Kyaukpyu. Driving this development is the idea that construction of a new port at Kyaukpyu would allow China to bypass the Malacca Straits, in particular for cargo to and from western China. The planned new deep-sea container port at Kyaukpyu has a projected capacity of 7 million twenty-foot equivalent units (TEU) per annum and its intention is to also serve Kolkata in India and Chittagong in Bangladesh, all the way to the landlocked countries of Nepal and Bhutan.

To complete the picture, China is showing a great interest in the Kra Canal in Thailand. The discussion on the Canal goes back to the 17th century. The projected dimensions of the Kra Canal are approximately 100 kilometres in length, 500 metres in width, and 20 metres in depth. The Canal would cut Thailand in two, bypassing Malacca straits and thus the Port of Singapore, establishing Shenzhen and Hong Kong as the “Asian ports of origin”. The project is estimated to cost USD 30 billion, for a two-way channel, and its construction is expected to employ 30 000 workers. The canal comes into the Bay of Bengal (Andaman Sea) and passes south of the Andaman and Nicobar islands, in a route heading to Sri Lanka. This would cut navigational distance between the Yellow and South China Seas on the one hand, and Bay of Bengal and Arabian Sea on the other by more than 1 000 nautical miles. Thailand stated in February 2018, however, that the project does not have high priority.

## Indian Ocean

The main Chinese projects in the Indian Ocean include the new seaports of Hambantota in Sri Lanka and Gwadar in Pakistan. In Sri Lanka, two companies have been created related to the port of Hambantota under a 2017 agreement. The Chinese hold a majority in the first company, which was created to run the commercial operations. In the second one, the Sri Lankan government holds the majority share (51%) while the Sri Lankan Port Authorities are responsible for security controls.

Another ambitious project in the Indian Ocean is the China Pakistan Economic Corridor (CPEC). This connects China to Pakistan (and to the ‘mouth’ of the Persian Gulf), in particular to the deep sea port of Gwadar. It is envisaged to play an important role as hub for containers and energy products. As part of the CPEC, investments in pipelines, highways and special economic zones are taking place. The CPEC provides another way for China to bypass the Malacca Straits: the idea is to establish a land bridge between China and Pakistan and use the port of Gwadar for further transport to Africa and West Asia.

Although Persian Gulf ports are not yet part of the BRI network in any visible way, the region’s importance cannot be underestimated. China has invested in Oman and Qatar, whereas India has shown interest in the Iranian port of Chabahar, as a counter-strategy against the China-Pakistan Economic Corridor and Gwadar. The region could constitute a land-bridge alternative to the Suez Canal, at the same time connecting the Gulf to the Mediterranean Sea.

## East Africa

Geopolitically, Djibouti and the Gulf of Aden are strategically important areas. A number of western countries (France, Italy, Germany, United States) have a military presence there, while Djibouti is China’s only foreign naval base. At the time of writing, the Djibouti government was sentenced to pay a substantial amount of money to DP World for breaking the latter’s concession to run the Doraleh Container Terminal, leaving China Merchants as the main terminal operator there. With investments in port and free trade zones in Djibouti, but also Port Said, Qatar and Oman, China is diversifying its port interests in the region.

In addition, the BRI also includes port projects in other countries in East Africa, notably in Tanzania. These projects, especially when paired with investments in railway capacity linking the ports to inland Africa, are likely to generate new cargo flows.

## **Mediterranean**

The port of Piraeus can be considered one of the most significant BRI success stories. Since it was leased to COSCO, the port has become one of the fastest growing container ports in the world, soaring to 36th place in global container traffic rankings, from 93rd in 2010. The port has only ten Chinese staff and employs 1 000 Greek staff, and it has also created substantial indirect local employment. At the time of writing, the Greek government rejected a further EUR 600 million port investment plan on grounds of archaeological finds. As a result, China is now looking to invest in the Italian ports of Trieste and Genoa.

COSCO's acquisition of Noatum Port Holdings (NPH), Spain's largest port and terminal operator (formerly Dragados) was a strategic move more important even than that of Piraeus. With Piraeus in the east, and Valencia in the west Mediterranean, China is diversifying its interests. By controlling Noatum, COSCO Shipping Ports (CSP) controls not only Valencia, the country's prime container port, but also Bilbao that has significant Short-Sea-Shipping services with Rotterdam and Northern Europe. In addition, it now controls the inland terminals of Madrid and Zaragoza. China's recent interest in the Italian ports of Trieste and Genoa completes the northern Mediterranean picture. Genoa is well connected by rail (and distribution) to Rotterdam, while Trieste serves not only Central and Eastern Europe but also the other EU Member States of the Northern Adriatic, namely Slovenia, Croatia, Bosnia, and perhaps all the way down to Montenegro and Albania.

## **Latin America**

One of the most ambitious and recent plans from China has been the idea of constructing a canal crossing Nicaragua, connecting the Atlantic to the Pacific Ocean. The idea for this canal, that could rival the Panama Canal, can be traced back to the 16th century. The project has been developed by a Chinese businessman and is not formally part of the BRI, but has objectives that are aligned to the BRI. Despite strong resistance by environmental lobbies, the government of Nicaragua has endorsed it.

The canal would be able to accommodate the largest of ships of today and tomorrow, as it would allow for drafts of up to 26 metres, i.e., able to accommodate ships with 25 000 TEU capacity (Table 2) – as imagined by COSCO. Its use would mostly be westwards bulk shipments (dry and wet) from the United States, Venezuela, Brazil with cargo such as: iron ore, coal, oil and grains. Eastward-bound containerised traffic with the ultra-large containerships of the latest generations (> TEU 14 000) to the East Coast of the United States would not be possible due to port draft limitations, prohibitive dredging costs, bridges in New York and New Jersey (NYNJ) and other limitations of the East Coast. With regards to exports of US grains to Asia, the Nicaraguan canal would offer a great advantage to shippers, not in terms of ship sizes (grains do not utilise very large bulk carriers) but in terms of sailing distances (a Nicaraguan canal would be much closer to the Gulf of Mexico than the Panama Canal).

**Table 2. Comparing Panama, Suez and Nicaraguan Canals**

	Previous Panama Canal	Expanded Panama Canal	Previous Suez Canal	Expanded Suez Canal	Nicaraguan Canal
Beginning service year	1914	2016	1869	2015	?
Length (km)	77	77	193	193	276
Maximum container vessel size (TEU)	4 700	14 000	18 000	24 000	> 25,000
Maximum vessel size (thousand DWT)	65	180	200	280	400
Maximum vessel draft (m)	12.04	15.2	17.7	20.1	24-26

Source: Chen et al. (2019).

## Other regions

China invests heavily in African infrastructure and also transferring manufacturing activity there. By the end of 2015 the count was as follows: 128 industrial projects in Nigeria, 80 in Ethiopia, 77 in South Africa, 48 in Tanzania and 44 in Ghana. It seems that this trend will continue with rising labour costs in China.

With investments in Australia (Darwin) and South America, and a continuing interest in the Nicaraguan canal, China will soon be looking at the Pacific Ocean, expanding BRI to a global, “around-the-world” network, served, possibly, by the ultra-large containerships (> TEU 25 000) China is building.

## Categorising Belt and Road Initiative projects

Assessment suggests that the projects related to controlling existing maritime trade routes are the ones that have progressed most for the BRI. The examples of Piraeus, Djibouti and investments in the Suez Canal zone – predating BRI – are good examples. Two projects on existing routes have experienced significant delays due to political sensitivities – at Malacca and in Sri Lanka. The development of alternative maritime routes has so far proved complicated, with ports in Gwadar and Kyaukpyu not yet fully operational. Projects with even longer time perspectives – such as the Kra Canal and the Nicaragua Canal – might never see investment.

The number of BRI port projects aimed at developing new trade flows, by unlocking the potential of untapped export markets or strategic commodities, is relatively small. Examples of such projects include the Chinese involvement in African ports like Mombasa (Kenya) and Dar es Salam (Tanzania), with railway projects linking these ports to inland Africa.

**Table 3. Examples of different projects within the Belt and Road Initiative**

Objective	Port category	Examples
Control of existing routes	Hub ports near maritime routes/chokepoints	Malacca, Djibouti, Port Suez, Tanger-Med, Piraeus, Panama Canal
Alternative routes	Hub ports to support new routes	Kra Canal, Nicaragua Canal, Arctic routes, Kyaupyu, Gwadar
New trade	Gateway ports near untapped export markets or strategic commodities	Mombasa, Dar es Salam
Modal shift	Ports connected by rail	New Silk Road

## Conclusions

The most advanced Belt and Road Initiative port projects so far are those that are based on existing routes. BRI projects representing success stories for China include Piraeus and Djibouti, both expansions of existing ports along established maritime routes. Other port projects along similar lines include the acquisition of the terminal portfolio of Noatum, most importantly its terminal in Valencia. Not all port projects along existing maritime routes can already be considered successes: e.g. the Sri Lanka port of Hambantota is hardly utilised.

Less progress has been made on projects related to alternative routes. Although the port of Gwadar is operational, its cargo handling activity is far below capacity. The port of Kyaukyu has been scaled back by Myanmar authorities because of concerns regarding the feasibility of the project. New canal projects – such as the Nicaragua and Kra canals – do not seem likely to materialise. Although it cannot be excluded that the coming decades will see the emergence of alternative maritime routes, driven by these projects, their likelihood is not very high.

BRI projects that are related to new trade opportunities, in particular in Africa, seem to be promising, especially if port projects are linked to railway development towards hinterlands and mineral resources. In terms of freight rail connections between China and Europe, progress has been made, but the volumes are not of the order to significantly impact maritime trade.

## Notes

- 1 The original name, used by President Xi, was One-Belt-One-Road (OBOR). This evoked quite some negative commentary in the sense that countries, led by India, pointed out that there is no “one road” but many roads, nor could such a ‘system’ be monopolized by China. Thus, OBOR became an ‘initiative’ open also to other parties.
- 2 For the identification of such ports along the west-African coastline, of interest to BRI and China’s trade, see Kang Chen, Shihe Xu and Hercules Haralambides (2020).

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# The Belt and Road Initiative: Impacts on Global Maritime Trade Flows

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This paper analyses the potential impacts on global trade initiated by the Belt and Road Initiative. The Initiative is examined as a collection of planned transport-corridor developments and discusses their impact on maritime trade flows.

All resources from the Roundtable on Future Maritime Trade Flows are available at:

[www.itf-oecd.org/future-maritime-trade-flows-roundtable](http://www.itf-oecd.org/future-maritime-trade-flows-roundtable)

**International Transport Forum**

2 rue André Pascal  
F-75775 Paris Cedex 16  
+33 (0)1 73 31 25 00  
[contact@itf-oecd.org](mailto:contact@itf-oecd.org)  
[www.itf-oecd.org](http://www.itf-oecd.org)