

Impact of China's belt and road initiative on logistics management in Africa: a bibliometric analysis

Rose Luke and Joash Mageto

*Department of Transport and Supply Chain Management,
College of Business and Economics, University of Johannesburg,
Auckland Park, South Africa*

Abstract

Purpose – The belt and road initiative (BRI) emanates from China and seeks to connect Europe, Asia and Africa through transport and telecommunications infrastructure. Despite the importance of Africa in the BRI network, very little research has been done on the BRI in Africa, and even less of this emanates from Africa itself. In particular, considering that the BRI investments in Africa are largely transport related, there is almost no research covering the area of logistics, which should be greatly affected by the infrastructure investments. This paper sought to establish the current state of logistics research related to the BRI in Africa.

Design/methodology/approach – A bibliometric analysis was conducted on documents extracted from the SCOPUS database.

Findings – The findings indicate that there is a lack of research in critical areas such as environmental, social and economic impact of BRI transport investments, governance, logistics performance and international cooperation. In particular, there is a massive gap in local knowledge regarding the BRI.

Research limitations/implications – The study is limited to published research indexed in the SCOPUS database. Future research directions include empirical studies into BRI project initiation investigation, economic and environmental impacts, governance structures and policy intervention requirements and macro-level logistics impacts.

Practical implications – The study emphasises the importance publishing all the relevant information regarding BRI related projects in Africa to create transparency.

Originality/value – The study investigates the current research on the effect of China's BRI on transport and logistics in Africa through a bibliometric analysis. The investigation reveals that while there are huge investments in infrastructure, the actual effect on logistics of participating countries in Africa has not been interrogated.

Keywords Logistics, Transportation, Belt and road, China, Africa, Bibliometric analysis

Paper type Literature review

Introduction

The belt and road initiative (BRI) refers to China's Silk Roads vision to connect the Europe, Asia and Africa through road, rail and maritime infrastructure. Many of the huge road and rail infrastructural developments in Sub-Saharan Africa (SSA) in the recent past have been funded through loans from the Chinese government or firms, and some are part of the BRI (Summers, 2016). The BRI has been appraised as having an economic impact on the SSA countries where it passes such as Kenya, Tanzania and Ethiopia.

There are about 147 countries that have signed an MoU with China regarding the BRI, whereby 43 (29%) are from the SSA region (Nedopil, 2021). The purpose of the BRI is,



amongst others, to create an international network of win-win relationships, facilitating global trade, enabling economic growth and development and enhancing international relationships and collaboration efforts. Fundamental to this is the need for enabling transport and logistics infrastructure, and the services associated with the infrastructure to facilitate trade. Whilst a lot of transport infrastructure is being built, there is little evidence of the infrastructure projects having any effect on logistics efficiencies, especially in SSA. Prior research on BRI has addressed a number of topics including optimal locations of logistics hubs from China's perspective (Chen *et al.*, 2020; Lee *et al.*, 2022), the Maritime Silk Road and the BRI (Lee *et al.*, 2018), sourcing practices for BRI projects (Li *et al.*, 2019) and container tracking for BRI (Choi *et al.*, 2018), with little or no focus on logistics and SCM efficiencies brought by BRI in SSA. Despite the central role of the sub-Saharan African (SSA) region in the BRI there is very little research from the continent to investigate the impact of these projects on logistics and transportation. The research is also lacking in the area of supply chain management. The lack of published research casts doubts on whether the BRI projects are actually improving logistics efficiencies as expected, given the importance of logistics performance on economic activities or trade in a country (Munim and Schramm, 2018). This research thus seeks to consider the state of research into this key area, as well as identify the key gaps in this research.

Literature review

Summers (2016) attempts to describe the nature of the BRI and asserts that the network of maritime and communications has essentially evolved from China's "neighbourhood diplomacy" policy, which involves expanding into the global economy, but focussing specifically on the peripheral regions in Asia to create better relationships. The BRI thus emerged from sub-national policies focussed on development, and was then elevated to national level, rather than being a new policy direction. He contends that the BRI is a reflection of a network which is typically rooted in today's requirements in a global economy. On the other hand, Rolland (2017) asserts that the BRI reflects "Beijing's desire to shape Eurasia according to its own worldview and unique characteristics." He contends that the BRI goes beyond infrastructure projects and the creation of networks and should rather be seen as an attempt to be the dominant power in Eurasia, and indeed, globally. Kobojević *et al.* (2018) consider the Maritime Silk Road, as part of the BRI, and conclude that the route is seen as an economic instrument to help China's growth, but also to modernise ports and infrastructures of participating countries. They conclude that the BRI does not have military or political plans but is rather based on a peaceful win-win approach aimed at worldwide growth.

It is thus evident that the BRI can have significant social and political impact on the participating countries, thus furthering Chinese government impact in the SSA region (Summers, 2016). The positive economic impact of BRI countries in Europe and Asia has been recorded (Wang *et al.* (2020a) especially through road and rail infrastructure. They find that transport infrastructure in BRI countries plays an essential role in economic growth, particularly as regards to the spill over effects of reducing geographical, economic, cultural and institutional differences. They find however that the spill over effects can be negative in some regions, such as Asia, and positive in others, particularly Central and Eastern Europe. Chan (2019) considers the transport infrastructure that has been built as part of the BRI and finds that it enhances local as well as regional connectivity and, combined with attempts at local industrialisation and facilitated by new trade opportunities, could have a significant effect on reducing isolation, poverty and marginalisation of local populations. Xie *et al.* (2020) conceptualises the BRI island cities and island ports as a mental archipelago and argue that the BRI fosters relationships in an archipelagic rather than East-West conflict or hierarchical relationship.

It is thus inevitable that the BRI would have an impact on the imports and exports of a country, and the associated logistics arrangements. [Rehman and Noman \(2021\)](#) investigate the impact of infrastructure on export in BRI countries and find that transport infrastructure improves as a result of BRI which, in turn, encourages exports. Several studies consider specific logistics aspects within the BRI. The transport infrastructural development associated with the BRI forms a critical transport and logistics link for the Chinese government to distribute medical supplies and other manufactured goods across the African continent ([Tang et al., 2017](#)), while at the same time accessing critical raw materials. [Lee et al. \(2022\)](#) consider strategic locations for logistics distribution centres along the BRI, considering “regional economic and trade blocks, maritime transport routes, China’s overseas port developments, China Railway Express services, trade conflicts between China and US, and deteriorated mobility of resources and human power caused by COVID-19.” They identify several strategic locations, of which those in sub-Saharan Africa include ports in Kenya, Tanzania, Mozambique and South Africa. Namibia is also considered as having potential, whilst Madagascar and Mauritius are disregarded as not having sufficient hinterland access.

[Zhang et al. \(2017\)](#) attempt to further economic and environmental efficiencies along the BRI intermodal network and propose a foldable container to achieve a better container repositioning system. [Huang et al. \(2021\)](#) consider the performance of key ports along the BRI and find that the ports with low efficiencies are likely to become redundant, which is expected to affect the future planning of ports and their operations. [Kim et al. \(2018\)](#) consider shipping networks and transshipment flows of potential hub ports in sub-Saharan Africa and find that there will be development of hub and feeder ports where the hub ports will focus on container traffic and other cargoes will be routed through other ports. It is likely that transshipment volumes will increase significantly and that there will be fierce competition between hub ports in the region. [Githaiga and Bing \(2019\)](#) consider one of the key projects in Kenya, the standard gauge rail line between the port of Mombasa and Nairobi, from the perspective of employment, debt sustainability, neo-colonialism and specific aspects of the project. They find that although there are positive aspects, the success of the project is dependent on the ability to create synergies in resolving concerns. [Li et al. \(2018\)](#) considered the energy mix, supplier, transport routes and settlement currency diversification aims of the BRI. They find that the network is essential in achieving these and improving the energy network security, by increasing suppliers and diversifying transport modes through pipelines. Landlocked countries in Africa face a unique logistics challenge because they depend on other countries logistics infrastructure to participate in international markets; the BRI helps to coordinate transport infrastructure along relevant corridors to improve international logistics efficiencies ([Yang and Chang, 2019](#)). Efficient logistics operations through the BRI can create opportunities for developing countries in SSA to participate as offshoring centres ([Mohiuddin et al., 2019](#)). Furthermore, host countries can promote local suppliers by formulating favourable policies and governance structures within BRI projects ([Li et al., 2019](#)).

Significant benefits thus exist to both China and the participating BRI countries. There are however several concerns. The BRI is likely to result in increased transportation activities across the countries and thus higher emissions. Much of this is associated with initial project development, but also as a result of more frequent trade along the BRI network. In addition to emission growth, there is also emission transfer from one region to another on the network. There is thus a need for policy makers to focus on emission reduction technologies to achieve environmental sustainability [Wang et al. \(2020b\)](#). [Carrai \(2021\)](#) considered governance issues related to rail megaprojects along the BRI (specifically Kenya and Ethiopia) and finds that China does not enforce any CSR rules, abiding by their principles of sovereignty and non-interference. This however has the effect of generating negative externalities that could reinforce poor governance and undermine the sustainability and developmental goals of the

BRI, therefore also warranting significant attention in future initiatives. [Mendez et al. \(2022\)](#) contemplate the future of the envisaged transport networks on land and sea aimed at advancing economic integration, increasing trade and stimulating growth. They assert that “infrastructure connectivity is being set back by three developments: fewer funding options, less international cooperation, and geopolitical shocks. Second, unimpeded trade via the BRI is being affected as the wars cause disruptions to global value chains, weakens free trade, and sharpens food and energy insecurity.” [Bagwandeen \(2022\)](#) asserts that, although there has been a lot of investment, the BRI projects are expensive and compound Africa's debt stress. China has been accused of predatory lending practices and debt-trap diplomacy. The pandemic has furthermore created doubt about whether Chinese funded and built infrastructure projects can be completed and whether African states have the fiscal capacity to repay these development loans.

Nonetheless, [Ali Aden et al. \(2022\)](#), who examined the “connection among green logistic operations, countries-level economic, environmental, and social indicators in Sub-Saharan Africa (SSA) Belt and Road Countries”, assert that China's foreign direct investment (FDI), trade openness and economic output are positively associated with green logistics operations and that Chinese FDI in SSA substantially improved the quality of their logistics. The findings also show that green logistics provide adequate infrastructure, and supply chain partners share information more frequently, increasing trade volume, growth potential and environmental sustainability. [Mendez et al. \(2022\)](#) contend that, whilst there are risks, these may result in opportunities for China to become involved, for example, in the reconstruction of the Ukraine. [Lisinge \(2020\)](#) compares Africa's inward looking infrastructure development initiatives and China's outward focussed BRI and finds that synergies can be created for mutual benefit through enhanced connectivity and trade between Africa and China, as well as deepened African regional integration and intra-African trade. Their paper asserts that Africa can learn lessons from the BRI to fast-track implementation of its own initiatives including the mobilisation of stakeholders by political leaders, the creation of dedicated institutions and funds and building of local capacity in the infrastructure sector. It is also important to highlight that China's BRI investments in Africa are inclined towards regional schemes (that is, East Africa, West Africa, or North Africa) with a view on how to optimise land (belt and road) and water connections between Africa and China to enhance trade, as asserted by [Xin et al. \(2022\)](#). They argue further that China finds ways to minimise investment costs from its perspective without much consideration of the costs implied for host countries. Further [Lee and Song \(2023\)](#) confirm the foregoing argument by highlighting possible contingency plans to secure logistics distribution centres along the BRI against likely disruptions from the contemporary political and economic events across the globe, including the Russia–Ukraine war, diplomatic crises and reshoring from China. While China seems to make deliberate contingency plans, SSA countries, which depend on Chinese imports through the BRI corridors, have not provided with any guidance.

Prior literature reveals that SSA countries not found along the BRI, especially those in West Africa, are likely to benefit from the Maritime Silk Road, which is also receiving considerable investments from the Chinese government ([Chen et al., 2020](#); [Lee et al., 2018](#)). West Africa lacks a logistics hub, has poor hinterland road infrastructure and faces political instability, making it difficult for shippers to select the most optimal port location for investment ([Chen et al., 2020](#)). [Lee et al. \(2018\)](#) argued that BRI and Maritime Silk Road investments should promote trade corridors that facilitate trade between SSA and China. While potentially beneficial, there is little consideration of the impacts of these projects on the host countries, especially in SSA, which is developing and has weak policy frameworks.

The BRI would thus appear to be associated with significant benefits to China, as well as the participating countries, in as far as the negative effects of poor governance, increased emissions and debt traps can be avoided. If, however, implemented appropriately, the BRI

could result in significant increases in trade, enhanced green logistics performance, improved logistics infrastructure and considerable economic growth.

Methodology

The current study followed a bibliometric analysis technique. A bibliometric analysis helps to explore and analyse large volumes research documents to draw insights from the data and identify emerging strings of research (Donthu *et al.*, 2021). Although, the current data set was not large, a bibliometric technique was deemed appropriate to help extract some results such as most relevant authors, author impact and collaboration networks that cannot be obtained easily without it. The aim of this study was to investigate the influence of the BRI on logistics and transport on the African continent from prior published research. As such, the search words used were “logistics or transport*” AND “belt and road” AND “Africa*” in the SCOPUS database on 13 December 2022. A total of 58 documents was obtained. After initial screening of titles and abstracts, ten documents were removed for lack of relevance resulting in a final tally of only 48 documents, as illustrated in Table 1, which provides the main information about the data; implying that research on BRI and logistics and transport especially on Africa is in its nascent years (document average age is 2.1 years), albeit growing at 51.31% annually.

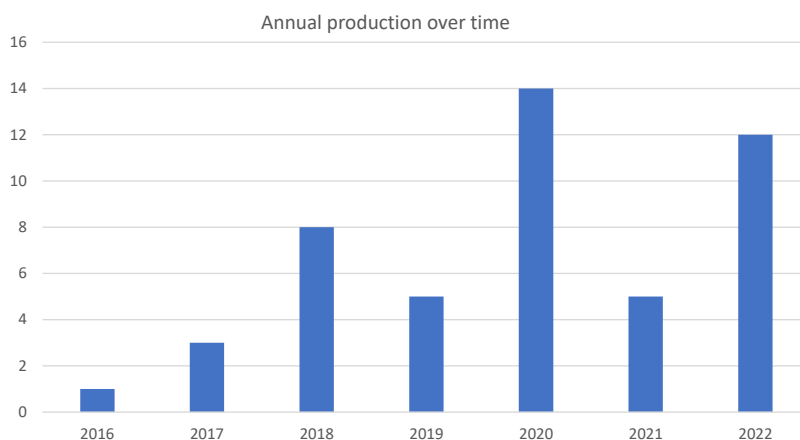
The BRI was initiated in 2013, however research focussing on Africa especially on logistics and transport started in 2016, with the highest output in 2020. In 2021, there was a decline most likely associated with COVID-19 (as illustrated in Figure 1). Given that many of the recent huge road and rail infrastructure developments in Kenya, Tanzania and Ethiopia were funded by Chinese entities, it was expected that there would be a lot more research regarding the economic, social, political and environmental impacts of BRI in these countries.

Description	Results
Timespan	2016:2022
Sources (journals, books, etc)	39
Documents	48
Annual growth rate %	51.31
Document average age	2.1
Average citations per doc	15.04
References	2,807
Document contents	
Keywords plus (ID)	208
Author’s keywords (DE)	147
Authors	
Authors	117
Authors of single-authored docs	16
Authors collaboration	
Single-authored docs	17
Co-authors per doc	2.58
International co-authorships %	27.08
Document types	
Article	37
Book	1
Book chapter	7
Conference paper	1
Note	1
Review	1

Table 1.

Overview of the data

Source(s): Authors’ own work



Source(s): Authors' own work

Figure 1.
BRI logistics and
transport research
production over time

The most relevant top ten publications include *Maritime Policy and Management* with three articles, while the *African Studies Quarterly* and *Applied Economics* each has one as per [Table 2](#). The low number of publications points to the fact that BRI research with a focus on logistics and transportation in Africa is limited.

The influential authors based on the number of published articles since 2016 include Lee PTW and Feng X with three and two articles, respectively (see [Table 3](#)). The impact of the authors based on their h-index was examined; the highest impact was from Lee PTW, Wang C and Zhang Seach with a H-index = 2. In this category, the highest total citations achieved is 129 achieved by Wang C since 2020 ([Table 4](#)), revealing an increasing interest on BRI influence on logistics and transportation in the Africa.

Many of the authors are affiliated to Chinese institutions, with Zhejiang University being on top with five articles, followed by University of Electronic Science and Technology of China. Only 8% of the affiliations were linked to the African continent, while over 50% are from China (see [Table 5](#)). This would imply that the African continent is lagging on research in the area of BRI. The limited research from the African continent raises the question whether governments care to report on the impact of the BRI projects.

Sources	Articles
Maritime policy and management	3
Critical reflections on china's belt and road initiative	2
International journal of emerging markets	2
Journal of cleaner production	2
The routledge handbook of the belt and road, second edition	2
Third world quarterly	2
Transport policy	2
World economy and international relations	2
African studies quarterly	1
Applied economics	1

Source(s): Authors' own work

Table 2.
Most relevant sources

Table 3.
Influential authors

Authors	Articles
Lee PTW	3
Feng X	2
Jiaxin P	2
Rehman FU	2
Wang C	2
Zhang S	2
Addaney M	1
Ali Aden W	1
Almohageh M	1
Amouzou EK	1

Source(s): Authors' own work

Table 4.
Author impact using
h-index

Element	h_index	g_index	m_index	TC	NP	PY_start
Lee PTW	2	3	0.4	98	3	2018
Wang C	2	2	0.667	129	2	2020
Zhang S	2	2	0.4	24	2	2018
Addaney M	1	1	0.333	2	1	2020
Bing W	1	1	0.25	11	1	2019
Carrai MA	1	1	0.5	15	1	2021
Cau E	1	1	0.2	11	1	2018
Chan MHT	1	1	0.2	24	1	2018
Changgang G	1	1	0.333	1	1	2020
Chen K	1	1	1	2	1	2022

Source(s): Authors' own work

The analysis of country production (see [Figure 2](#)) revealed that much of the research output is from North America, Europe, China and Australia. From Africa, research output is mainly from South Africa, Kenya, Ethiopia, Ghana and Morocco. In addition, documents from China received the highest citations at 538 with an average of 21.52 per article ([Table 6](#)). Ethiopia represents Africa with eight total citations with an average of 8 citations per article. The country production map and total citations confirm the fact that BRI research is conducted by Chinese institutions and the developed countries, while Africa is generally a dormant participant. The result implies the intellectual influence that China and the developed countries have globally, given that they are leading the debate on BRI, even in Africa.

Science mapping

Science mapping refers to the examination of relationships between authors, affiliations, countries and key words ([Mageto, 2022](#)). Science mapping includes citation, co-citation, co-word and co-authorship analysis.

The word analysis was conducted to reveal the prior, current and likely future themes regarding BRI, logistics and transportation in Africa. The word analysis was presented in a word cloud ([Figure 3](#)). The most common word, as expected, was China, given that the BRI was started by the Chinese government and is associated with the Silk Road project. It is expected that future BRI research will continue making reference to China, Africa and Asia as the continents where the BRI countries are based. The next most used phrase was “transportation infrastructure”. It is well documented that the BRI projects are associated with huge road and rail infrastructural developments in Europe, Asia and Africa with an aim

S/N	Affiliation	Articles	S/N	Affiliation	Articles	S/N	Affiliation	Articles
1	Zhejiang University	5	29	Graduate School of Chung-Ang University	1	57	Primakov National Research Institute of World Economy And International Relations	1
2	University of Electronic Science and Technology of China	3	30	Harvard T H Chan School of Public Health	1	58	Qassim University	1
3	Dalian Maritime University	2	31	Hong Kong Polytechnic University	1	59	Qingdao University of Science Technology	1
4	Institute of Geographic Sciences and Natural Resources Research	2	32	IBN Tofail University	1	60	Rey Juan Carlos University	1
5	Nanyang Technological University	2	33	ESIC University	1	61	Rollins College	1
6	National Institute of International Strategy	2	34	Imam Abdulrahman Bin Faisal University	1	62	School of Law of Wuhan University	1
7	South China University of Technology	2	35	INHA University	1	63	Shandong Normal University	1
8	Southwest Jiaotong University	2	36	Institute For African Studies	1	64	Shandong University	1
9	Tongji University	2	37	Institute Of Development Studies	1	65	Shandong University of Science and Technology	1
10	University of Chinese Academy of Sciences	2	38	INstitute of World Economics and Politics	1	66	Shanghai Maritime University	1
11	University of International Business and Economics	2	39	Integrated Transportation Economics and Management Center of Chang'an University	1	67	Shanghai University	1
12	University of Miskolc	2	40	Jiangsu University	1	68	Sichuan University	1
13	University of Social Sciences and Humanities	2	41	Koforidua Technical University	1	69	South Eastern Kenya University	1
14	Beijing University of Technology	1	42	Kohat University of Science and Technology	1	70	Tamkang University	1
15	Berlin University of Technology	1	43	London School of Economics and Political Science	1	71	The Nelson Mandela School of Public Governance at the University of Cape Town	1
16	Bialystok University of Technology	1	44	Nanjing University of Finance and Economics	1	72	The University of Haripur	1

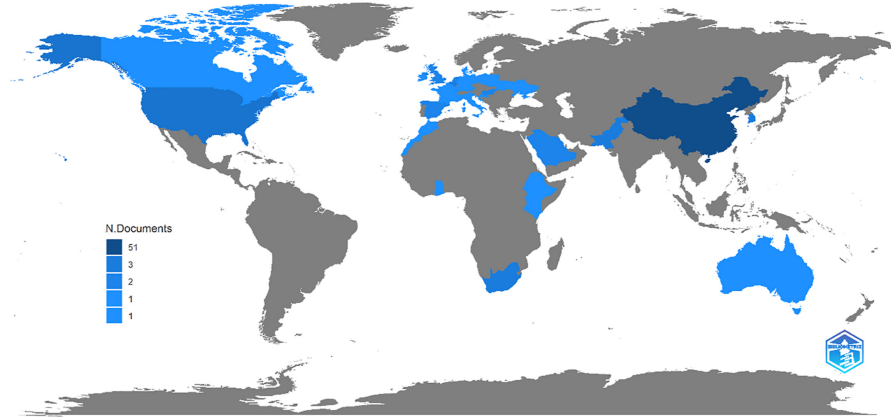
(continued)

Table 5.
Author affiliations

Table 5.

S/N	Affiliation	Articles	S/N	Affiliation	Articles	S/N	Affiliation	Articles	
17	Center for International Knowledge on Development (CIKD)	1	45	National Bureau of Asian Research (NBR)	1	73	Trinity College Dublin	1	
18	Chang'an University	1	46	National Transport University	1	74	UBI Business School	1	
19	Chinese University of Hong Kong	1	47	National University of Singapore	1	75	University of Antwerp	1	
20	Chongqing University	1	48	NEW York University Shanghai	1	76	University of Dubrovnik	1	
21	Chu Hai College of Higher Education	1	49	Ningbo University	1	77	University of Johannesburg	1	
22	Chung-Ang University	1	50	Ningxia University	1	78	University of Padua	1	
23	College of Public Administration Huazhong University of Science and Technology Wuhan	1	51	North-West University	1	79	University of Prince Edward Island	1	
24	Dalian University of Technology	1	52	Northwestern Polytechnical University	1	80	University of Tasmania	1	
25	Emlyon Business School	1	53	Ocean University of China	1	81	URAL Federal University	1	
26	ESIC University	1	54	Ohio State University	1	82	Utrecht University	1	
27	Fudan University	1	55	PBL Netherlands Environmental Assessment Agency	1	83	Zhejiang University of Finance and Economics	1	
28	Ghent University	1	56	Peking University	1				
	Source(s): Authors' own work								

Country Scientific Production



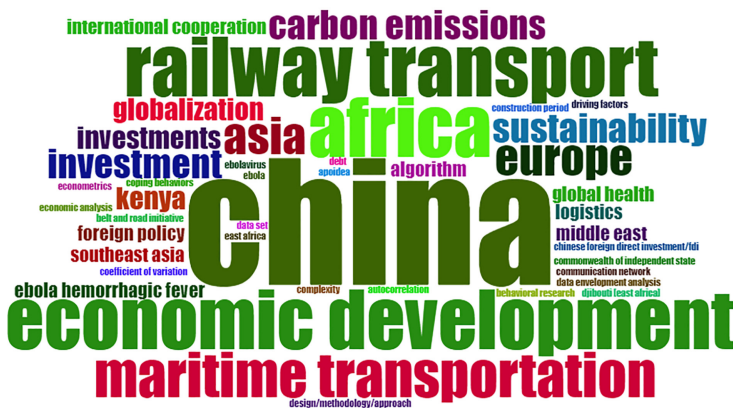
Source(s): Authors' own work

Figure 2. Country scientific production over time

Country	TC	Average article citations
China	538	21.52
USA	92	30.67
Hong Kong	24	12.00
Canada	9	9.00
Pakistan	9	9.00
Ethiopia	8	8.00
Korea	8	8.00
Croatia	7	7.00
Netherlands	4	4.00

Source(s): Authors' own work

Table 6. Total citations



Source(s): Authors' own work

Figure 3. BRI, logistics and transport word cloud

of linking the three continents (Summers, 2016; Tang *et al.*, 2017; Wang *et al.*, 2020a). The Chinese government has used the BRI as foreign direct investment in Africa through transport infrastructure, thus contributing positively to the economic growth of the involved countries (Carrai, 2021), for example, Kenya and Ethiopia, where there have been massive road and rail developments. Therefore, the word cloud reveals the themes related to (1) linking of Africa, Asia and Europe to China through BRI projects. (2) BRI majorly involves the building of transport infrastructure especially roads and rail in Africa and (3) BRI projects are likely to result in economic growth amongst the countries involved. Other relatively important themes are shown as sustainability and carbon emissions, suggesting a growing interest in the environmental impact of the BRI. Finally, the link between BRI and logistics in Africa is expected but researchers are largely silent. Whilst the World Bank is vocal about the significance of efficient logistics in spurring economic growth and measures it bi-annually using the logistics performance index (LPI), existing BRI research in Africa is lacking. The co-occurrence network in Figure 4 confirms the three themes and insights on the research gap.

The collaboration network reveals the intellectual relationships between authors within a given research area. As argued earlier, the link between BRI and logistics and transportation research in Africa is in its early years. The claim implies that research in this area has not matured, and this can be confirmed from the collaboration network presented in Figure 5, whereby pockets of local co-authorship are noted without proper institutional collaborations. For example, the most influential author on BRI, logistics and transportation research in Africa, Lee PTW, is working with a team of six authors and there is little collaboration with other researchers from China. This would imply that, as the research in the area matures, the authors are likely to get to know each other and collaborative relationships will be developed.

Thematic mapping of published documents helps to discover the niche, motor, emerging and basic themes. As presented in Figure 6, the extracted documents reveal only emerging and motor themes. The emerging theme cluster is identified as logistics and supply chain management. The finding confirms the earlier claim that BRI research in Africa focus on logistics is limited despite the importance of efficient logistics in economic growth and global trade. The developed or mature themes also known as motor themes are identified as transport infrastructure as related to BRI. This implies that BRI research and transport

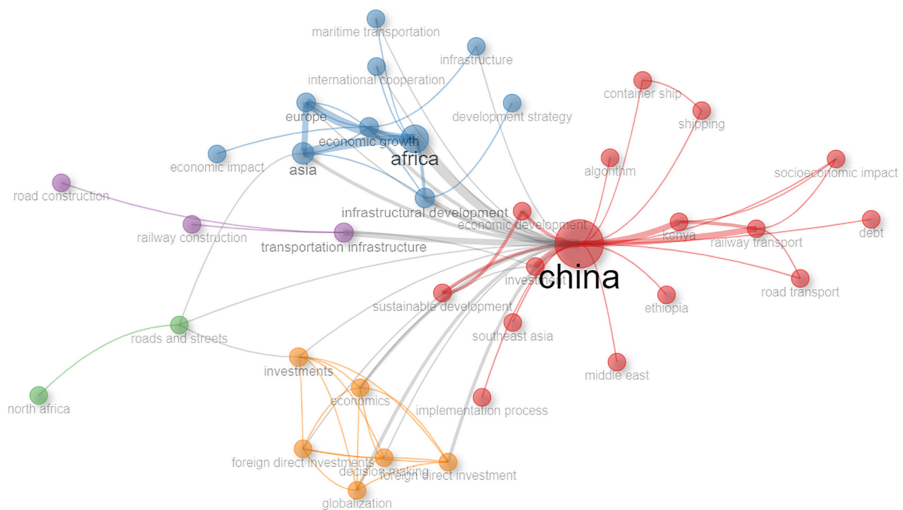


Figure 4.
Co-occurrence network

Source(s): Authors' own work

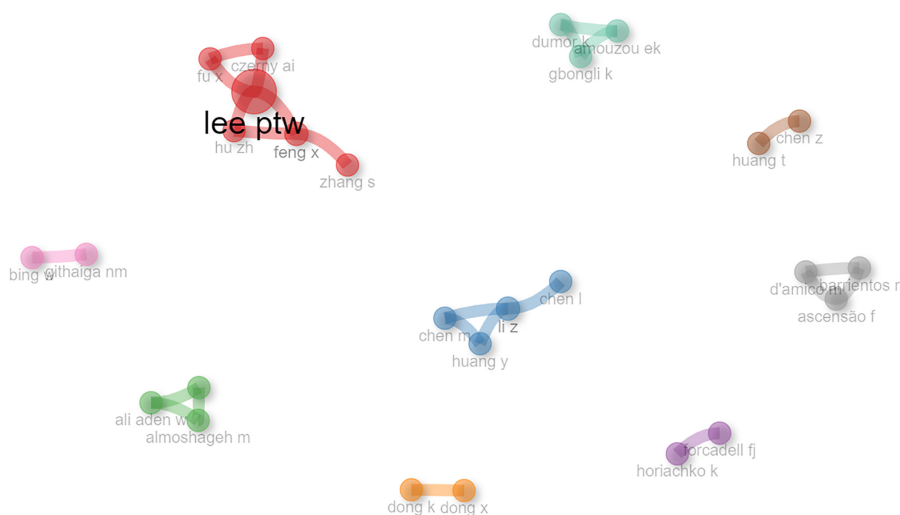


Figure 5. Collaboration network on BRI, logistics and transport research

Source(s): Authors' own work

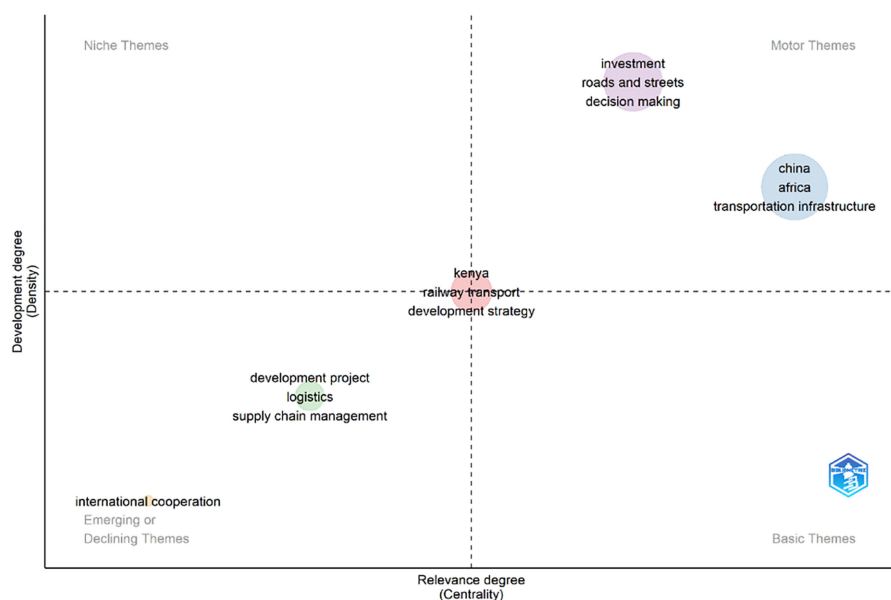


Figure 6. Thematic mapping of BRI, logistics and transportation research

Source(s): Authors' own work

infrastructure has matured. Another emerging theme that is transitioning to motor themes is the research on BRI and railway transport in Kenya. Future research is likely to focus on the impact of BRI on logistics and supply chain management, especially in Africa. There is likely to be close scrutiny of the continued development of the rail network in Kenya that is funded by China under the BRI. Collaboration and co-operation, which is a cornerstone of the BRI and the key to its success, is also likely to be further developed in the near future.

Conclusion

A bibliometric analysis is a great technique for gleaning salient themes from published research documents for purposes of drawing insights on past, present and future research on BRI impact on transport and logistics in Africa. Prior literature reveals that research on BRI, logistics and transport in Africa started in 2016, despite the BRI itself being initiated in 2013, implying a low level of interest in the BRI impacts on logistics in Africa. It may also mean that the governments in Africa, due to lack of transparency and lack of appropriate data, don't provide any form of reporting that can motivate research regarding BRI funded projects and logistics. In addition, where there is research on the BRI in Africa, very little of this research emanates from Africa, suggesting a paucity of local knowledge in the area and a strong requirement to develop local awareness and knowledge about some of the projects shaping future socio-economic development on the continent.

Prior BRI research has focussed on transport infrastructure, economic development, connecting Europe, Asia and Africa to China, optimal locations of logistics hubs, the maritime silk road and sourcing practices for BRI projects, with little or no focus on efficient logistics and sustainability, especially in Africa. The theme of logistics performance is critical to ensure that the BRI related infrastructure investments realise their trade and economic and social development potential. The research gap exists despite the well acknowledged findings that increased logistics performance results in positive economic growth ([Tang and Abosedra, 2019](#)).

The economic, social and environmental sustainability of the BRI is important to the success of the network, both to China and the participating countries, as indicated above. There is a specific need to identify and describe the environmental impact of the BRI, as massive transport infrastructure projects are likely to result in significant environmental impacts during the construction phase but are also likely to generate significantly larger traffic volumes, thereby implying massive increases in GHG emission levels. [Wang et al. \(2020a\)](#) suggest major emissions growths and transfers between countries, thus shifting the current burden from high emitting countries to countries that can ill-afford the additional costs. On the other hand, [Ali Aden et al. \(2022\)](#) suggest potential environmental benefits. This anomaly suggests that further investigation is required.

One of the most important papers ([Carrai, 2021](#)) suggests that governance is of critical importance to the success of any infrastructure or other development, yet the Chinese approach to investment maintains a non-interventionist approach. The lack of appropriate governance systems for major and mega projects is however likely to impact the success and sustainability of these projects and therefore needs further investigation. Associated with this is a conspicuous absence of research into BRI associated policy and the mechanisms required for related projects in Africa. In addition, lack of transparency in some of the BRI projects casts doubts about their economic value to the participating countries many of which are from SSA ([Githaiga and Bing, 2019](#)). Therefore, more research is required in the area of governance and international cooperation regarding BRI, even as [Lee and Song \(2023\)](#) suggest the necessity for a post-Covid-19 investment direction.

The current study is limited to the findings from the documents extracted from the SCOPUS database with a focus on transport and logistics in Africa and, as such, might not provide a full picture of BRI research, especially in Europe and Asia. Future research regarding BRI, logistics and transport can focus on aspects of sustainability regarding feasibility studies conducted to select BRI projects in Africa. Future research should include economic, environmental and social impact studies of BRI projects. Because of the huge investments and resultant debt associated with BRI projects, it is important that they provide an appropriate socio-economic return on investment over time. It is therefore critical to conduct regular and long-term economic impact assessments. Comparative analyses between countries on the socio-economic impact of BRI may also be of value in this sphere.

Proper policy frameworks regarding the governance mechanisms of BRI projects is also an area of consideration in future research. The lack of appropriate policy frameworks suggests opaqueness on how BRI projects are initiated. [Rolland \(2017\)](#) asserts that the BRI is an attempt by China for global domination and [Bagwandeen \(2022\)](#) suggests that BRI projects are resulting in further debt-stress for Africa. It is therefore suggested that power relationships within the BRI be investigated to determine whether BRI projects indeed result in the win-win outcome, as anticipated by [Summers \(2016\)](#). This should be accompanied by investigations into the nature and extent of international collaboration in BRI projects.

There is extremely limited research emanating from Africa resulting in a paucity of local knowledge creation and local databases (local knowledge repositories). There is a critical need to encourage researchers and institutions to investigate the effect of BRI investments on local economic growth and development.

The purpose of the BRI is, amongst others, to facilitate global trade, enabling economic growth and development. Fundamental to this is the need for transport and logistics infrastructure and services. Little evidence exists on the effect of BRI projects on logistics efficiency, which necessitates research in this area in the future.

References

- Ali Aden, W., Zheng, J., Almoshageh, M., Ullah, I., Aziz, Q. and Jamal, A. (2022), "Dynamic association between socio-economic, environmental and logistic operations: evidence from SSA BRI host countries", *Frontiers in Environmental Science*, Vol. 10, 1024180, doi: [10.3389/fenvs.2022.1024180](https://doi.org/10.3389/fenvs.2022.1024180).
- Bagwandeen, M. (2022), "Changing realities: China-Africa infrastructure development", *Asia Policy National Bureau of Asian Research*, Vol. 29 No. 3, pp. 18-29, doi: [10.1353/asp.2022.0047](https://doi.org/10.1353/asp.2022.0047).
- Carrai, M.A. (2021), "Adaptive governance along Chinese-financed BRI railroad megaprojects in East Africa", *World Development*, Vol. 141, 105388, doi: [10.1016/j.WORLDDEV.2020.105388](https://doi.org/10.1016/j.WORLDDEV.2020.105388).
- Chan, M.H.T. (2019), "The belt and road initiative – the new silk road: a research agenda", *Journal of Contemporary East Asia Studies*, Vol. 7 No. 2, pp. 104-123, doi: [10.1080/24761028.2019.1580407](https://doi.org/10.1080/24761028.2019.1580407).
- Chen, K., Xin, X., Zhang, T. and Yang, Z. (2020), "Multiport cooperative location model with a safe-corridors setting in West Africa", *International Journal of Logistics Research and Applications*, Vol. 23 No. 6, pp. 580-601, doi: [10.1080/13675567.2019.1708873](https://doi.org/10.1080/13675567.2019.1708873).
- Choi, H.R., Moon, Y.S., Kim, J.J., Lee, J.K., Lee, K.B. and Shin, J.J. (2018), "Development of an IoT-based container tracking system for China's Belt and Road (B&R) initiative", *Maritime Policy and Management*, Vol. 45 No. 3, pp. 388-402, doi: [10.1080/03088839.2017.1400190](https://doi.org/10.1080/03088839.2017.1400190).
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N. and Lim, W.M. (2021), "How to conduct a bibliometric analysis: an overview and guidelines", *Journal of Business Research*, Vol. 133, pp. 285-296, doi: [10.1016/j.JBUSRES.2021.04.070](https://doi.org/10.1016/j.JBUSRES.2021.04.070).
- Githaiga, N.M. and Bing, W. (2019), "Belt and road initiative in Africa: the impact of standard gauge railway in Kenya", *China Report*, Vol. 55 No. 3, pp. 219-240, doi: [10.1177/0009445519853697](https://doi.org/10.1177/0009445519853697).
- Lee, P.T.W. and Song, Z. (2023), "Exploring a new development direction of the Belt and Road Initiative in the transitional period towards the post-COVID-19 era", *Transportation Research E: Logistics and Transportation Review*, Vol. 172, doi: [10.1016/j.tre.2023.103082](https://doi.org/10.1016/j.tre.2023.103082).
- Huang, T., Chen, Z., Wang, S. and Jiang, D. (2021), "Efficiency evaluation of key ports along the 21st-Century Maritime Silk Road based on the DEA-SCOR model", *Maritime Policy and Management*, Vol. 48 No. 3, pp. 378-390, doi: [10.1080/03088839.2020.1773558](https://doi.org/10.1080/03088839.2020.1773558).
- Kim, H.J., Lam, J.S.L. and Lee, P.T.W. (2018), "Analysis of liner shipping networks and transshipment flows of potential hub ports in sub-Saharan Africa", *Transport Policy*, Vol. 69 October, pp. 193-206, doi: [10.1016/j.tranpol.2018.05.018](https://doi.org/10.1016/j.tranpol.2018.05.018).

- Kobojević, Ž., Kurtela, Ž. and Vujčić, S. (2018), "The maritime silk road and China's belt and road initiative", *NAŠE MORE: znanstveni časopis za more i pomorstvo*, Vol. 65 No. 2, pp. 113-122.
- Lee, P.T.W., Hu, Z.H., Lee, S.J., Choi, K.S. and Shin, S.H. (2018), "Research trends and agenda on the Belt and Road (B&R) initiative with a focus on maritime transport", *Maritime Policy and Management*, Vol. 45 No. 3, pp. 282-300, doi: [10.1080/03088839.2017.1400189](https://doi.org/10.1080/03088839.2017.1400189).
- Lee, P. T.-W., Hu, Z.-H., Lee, S., Feng, X. and Notteboom, T. (2022), "Strategic locations for logistics distribution centers along the Belt and Road: explorative analysis and research agenda", *Transport Policy*, Vol. 116, pp. 24-47, doi: [10.1016/j.tranpol.2021.10.008](https://doi.org/10.1016/j.tranpol.2021.10.008).
- Li, X.K., Jin, M. and Shi, W. (2018), "Diversification as an energy importing strategy for China under the belt and road initiative", *International Journal of Shipping and Transport Logistics*, Vol. 10 No. 3, pp. 335-354, doi: [10.1504/IJSTL.2018.091677](https://doi.org/10.1504/IJSTL.2018.091677).
- Li, Y., Shou, Y., Ding, R., Sun, T. and Zhou, Q. (2019), "Governing local sourcing practices of overseas projects for the Belt and Road Initiative: a framework and evaluation", *Transportation Research Part E: Logistics and Transportation Review*, Vol. 126, pp. 212-226, doi: [10.1016/j.tre.2019.04.012](https://doi.org/10.1016/j.tre.2019.04.012).
- Lisinge, R.T. (2020), "The belt and road initiative and Africa's regional infrastructure development: implications and lessons", *Transnational Corporations Review*, Vol. 12 No. 4, pp. 425-438, doi: [10.1080/19186444.2020.1795527](https://doi.org/10.1080/19186444.2020.1795527).
- Mageto, J. (2022), "Current and future trends of information Technology and sustainability in logistics outsourcing", *Sustainability*, Vol. 14 No. 13, 7641, doi: [10.3390/su14137641](https://doi.org/10.3390/su14137641).
- Mendez, A., Forcadell, F.J. and Kateryna, H. (2022), "Russia-Ukraine crisis: China's belt road initiative at the crossroads", *Asian Business and Management*, Vol. 21, pp. 488-496, doi: [10.1057/s41291-022-00195-1](https://doi.org/10.1057/s41291-022-00195-1).
- Mohiuddin, M., Rashid, M.M., Al Azad, M.S. and Su, Z. (2019), "Back-shoring or re-shoring: determinants of manufacturing offshoring from emerging to least developing countries (LDCs)", *International Journal of Logistics Research and Applications*, Vol. 22 No. 1, pp. 78-97, doi: [10.1080/13675567.2018.1475554](https://doi.org/10.1080/13675567.2018.1475554).
- Munim, Z.H. and Schramm, H.-J. (2018), "The impacts of port infrastructure and logistics performance on economic growth: the mediating role of seaborne trade", *Journal of Shipping and Trade*, Vol. 3 No. 1, pp. 1-19, doi: [10.1186/s41072-018-0027-0](https://doi.org/10.1186/s41072-018-0027-0).
- Nedopil, C. (2021), *Countries of the Belt and Road Initiative (BRI)*, Green Belt and Road Initiative Center, Vol. 5.
- Rehman, F.U. and Noman, A.A (2021), "Trade related sectorial infrastructure and exports of belt and road countries: does belt and road initiatives make this relation structurally instable?", *China Economic Journal*, Vol. 14 No. 3, pp. 350-374, doi: [10.1080/17538963.2020.1840014](https://doi.org/10.1080/17538963.2020.1840014).
- Rolland, N. (2017), "China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative", *The National Bureau of Asian Research*, The National Bureau of Asian Research. <https://www.nbr.org/publication/chinas-eurasian-century-political-and-strategic-implications-of-the-belt-and-road-initiative/> (accessed 23 February 2023).
- Summers, T. (2016), "China's 'new silk roads': sub-national regions and networks of global political economy", *Third World Quarterly*, Vol. 37 No. 9, pp. 1628-1643, doi: [10.1080/01436597.2016.1153415](https://doi.org/10.1080/01436597.2016.1153415).
- Tang, C.F. and Abosedra, S. (2019), "Logistics performance, exports, and growth: evidence from Asian economies", *Research in Transportation Economics*, Vol. 78, 100743, doi: [10.1016/j.RETREC.2019.100743](https://doi.org/10.1016/j.RETREC.2019.100743).
- Tang, K., Li, Z., Li, W. and Chen, L. (2017), "China's Silk Road and global health", Vol. 390, available at: www.thelancet.com
- Wang, C., Lim, M.K., Zhang, X., Zhao, L. and Lee, P.T.W. (2020a), "Railway and road infrastructure in the Belt and Road Initiative countries: estimating the impact of transport infrastructure on economic growth", *Transportation Research A: Policy and Practice*, Vol. 134, pp. 288-307, doi: [10.1016/j.tra.2020.02.009](https://doi.org/10.1016/j.tra.2020.02.009).

-
- Wang, C., Wood, J., Wang, Y., Geng, X. and Long, X. (2020b), "CO2 emission in transportation sector across 51 countries along the Belt and Road from 2000 to 2014", *Journal of Cleaner Production*, Vol. 266, p. 122000.
- Xie, B., Zhu, X. and Grydehøj, A. (2020), "Perceiving the silk road archipelago: archipelagic relations within the ancient and 21st-century maritime silk road", *Island Studies Journal*, Vol. 15 No. 2, pp. 55-72, doi: [10.24043/isj.118](https://doi.org/10.24043/isj.118).
- Xin, X., Wang, X., Ma, L., Chen, K. and Ye, M. (2022), "Shipping network design–infrastructure investment joint optimization model: a case study of West Africa", *Maritime Policy and Management*, Vol. 49 No. 5, pp. 620-646, doi: [10.1080/03088839.2021.1930225](https://doi.org/10.1080/03088839.2021.1930225).
- Yang, C.C. and Chang, Y.K. (2019), "Crucial factors influencing international logistics operations for African landlocked countries—A case study of Burkina Faso", *Maritime Policy and Management*, Vol. 46 No. 8, pp. 939-956, doi: [10.1080/03088839.2019.1606464](https://doi.org/10.1080/03088839.2019.1606464).
- Zhang, S., Tang, J., Wang, H., Wang, Y. and An, S. (2017), "Revealing intra-urban travel patterns and service ranges from taxi trajectories", *Journal of Transport Geography*, Vol. 61, pp. 72-86, doi: [10.1016/j.jtrangeo.2017.04.009](https://doi.org/10.1016/j.jtrangeo.2017.04.009).

Corresponding author

Joash Mageto can be contacted at: joashm@uj.ac.za

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