

# Connecting Korea to Europe in the context of the Belt and Road Initiative

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## ABSTRACT

There are three ways to connect Korea to Europe, i.e., existing south-west bound maritime routes, railway by Trans-China Railway and Trans-Siberian Railway, and Polar Silk Road (Arctic Silk Road). Although China has not explicitly mentioned Korea in the BRI documents, recent policy and local governments have begun to touch upon the Korean peninsula in association with BRI. In addition, talks among the two Koreas and US have been progressing, despite its uncertainty. Having considered this circumstance, it is worthwhile to investigate the impacts of the Belt and Road Initiative (BRI) on connecting Korea to Europe. This article aims to discuss some key points to make connectivity between Korea and Europe efficient in the context of the BRI and draw its implications for logistics providers and transport carriers.

**Keywords:** Belt and Road Initiative, Trans-China Railway, Trans-Siberian Railway, Polar Silk Road, Economic Corridor.

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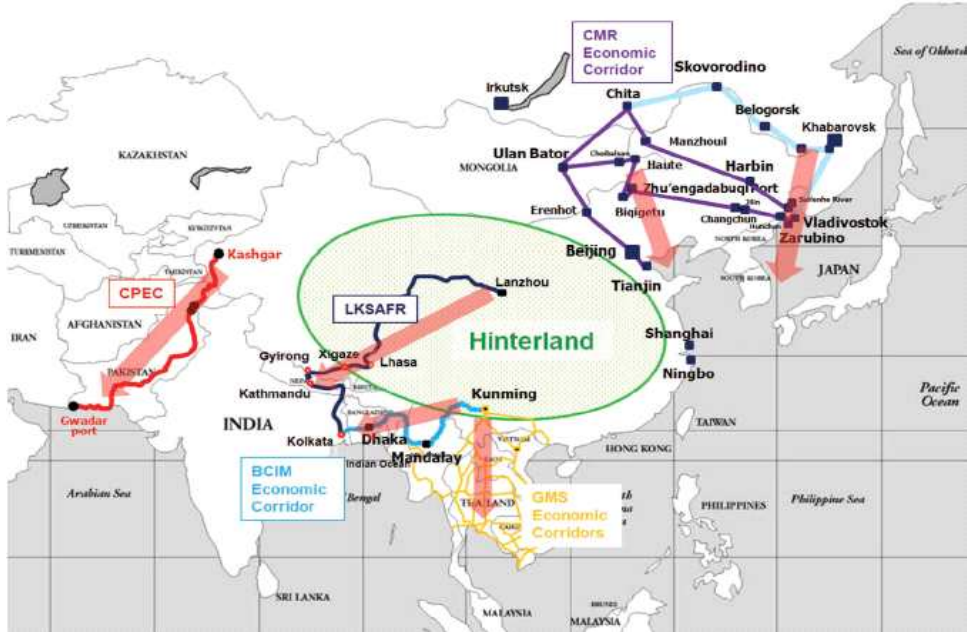
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# 1. Introduction

Five years have been passed since Chinese President Xi Jinping announced main idea of the Belt and Road Initiative (BRI) in 2013. Its more concrete contents and directions have been addressed in the “Vision and Actions on Jointly Building Silk Road Economic Belt and 21st-Century Maritime Silk Road” published on 28 March 2015 (National Development and Reform Commission: NDRC et al. 2015). This initiative has been accelerated by the establishment of the Asian Infrastructure Investment Bank (AIIB) in 2016 when its members reached 57 countries, comprising of regional members and non-regional members as of December 2016. The document consists of Preface and eight chapters, i.e. “Background, Principles, Framework, Cooperation Priorities, Cooperation Mechanisms, China’s Region in Pursuing Opening-up, China in Action, and Embracing a Brighter Future Together”. Some key words related to connectivity issue can be drawn from it, among others, China’s inland region, connectivity, economic corridor, transport corridor, city cluster, pilot free trade zone, marine economy development demonstration zone, marine economy pilot zone, core are, bay area, infrastructure, and financial mechanism Lee et al., 2018a; Chhetri et al., 2018). Out of the above key words, the most important item for this article is economic and transport corridors. Figure 1 and 2 shows a summary of the corridors as follows:

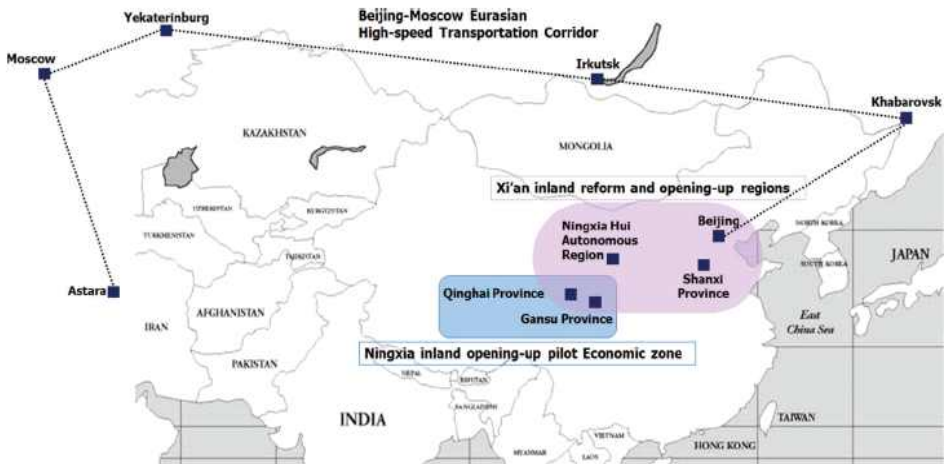
- China-Pakistan Economic Corridor (CPEC): Kashgar (Xinjiang Uygur autonomous region)—Gwadar port (Pakistan)
- Bangladesh-China-India-Myanmar Economic Corridor: Kunming (Yunnan province, China)—Mandalay (Myanmar)—Dhaka (Bangladesh)—Kolkata (India)
- Four sub-corridors in Greater Mekong Sub-region Economic Cooperation (GMSEC)
- China, Mongolia, and Russia Economic (CMR) Corridor: Heilongjiang Silk Road Belt
- Beijing–Moscow Eurasian high-speed transport corridor: Beijing (China)—Khabarovsk (Russia)—Irkutsk (Russia)—Yekaterinburg (Russia)—Moscow (Russia)—Astara (Azerbaijan)
- Lanzhou–Kathmandu South Asia Freight Rail (LKSAFR).

Figure 1. Summary of corridors in the Belt and Road (B&R).



Source: Lee et al. (2018, p. 293).

Figure 2. Beijing–Moscow Eurasian high-speed transport corridor.



Source: Lee et al. (2018, p. 286)

The expected impacts of the corridors are multi-dimensional such as change of energy supply chain, Chinese global port chain development, dry ports development in inland China, inter-port competition, infrastructure development and so on (Lee et al., 2018, Wei et al., 2018; Chen et al., 2018). In particular, CMR economic corridor is interrelated to Korea’s “New Northward Policy”, Russia’s “New East Asian Policy”,

and maritime logistics connectivity of ports and shipping networks in the East Sea Economic Rim in the context of the BRI, in which development of trade transit transport corridor is critical in northeast Asian region (Lim et al., 2017; Lee et al., 2018c). All the above are interwoven in the BRI context in the northeast Asian region.

Chinese government has announced the Polar Silk Road (PSR) in January 2018<sup>1)</sup>, which is similar to Arctic shipping routes comprising of Northeast Passage, Northwest Passage, and Central Passage. As a result of global warming, the PSR is likely to become an important transport route for international trade. Therefore, there are three ways available for China/Korea to connect them to Europe, i.e., existing south-west bound maritime routes, railway by Trans-China Railway (TCR) and Trans-Siberian Railway (TSR), and the PSR. China's interest in developing the PSR arises from her desire to establish a comprehensive Belt and Road as the "three Silk Roads," referring to the joint promotion of land (One Belt), sea (One Road), and the Arctic. Out of the six economic and transport corridors as shown in Figure 1 and Figure 2, which are connected to Europe through seaports or by railway, the China, Mongolia, and Russia Economic (CMR) Corridor: Heilongjiang Silk Road Belt and Polar Silk in tandem with the PSR is more closely related to logistics providers and carriers. Having considered this circumstance, it is worthwhile to investigate the impacts of the BRI on connecting Korea to Europe. This article aims to discuss some key points to make connectivity between Korea and Europe efficient in the context of the BRI and to draw its implications from the Korean perspective.

## 1. Key factors for efficiently connecting Korea to Europe in the context of the BRI

As discussed in the previous section, there are three possible routes to connect Korea to Europe. Figure 3 shows existing shipping route, railways by TCR and TSR, and Arctic shipping routes (so-called the Polar Silk Road). The current shipping routes have been well established for the Korean logistics providers and carriers. The discussions about the Arctic shipping routes show that they are too early to

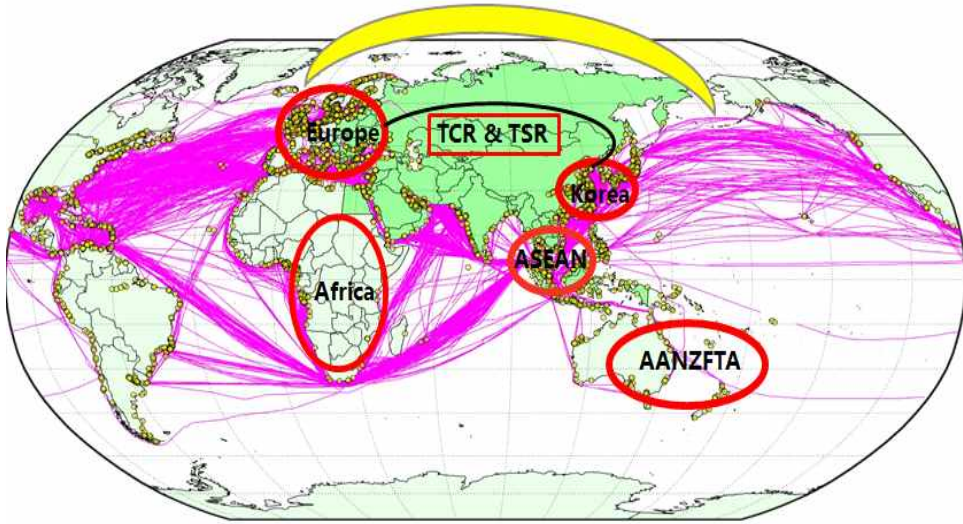
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1) The document has the following contents:

- ① The Arctic Situation and Recent Changes,
- ② China and the Arctic,
- ③ China's Policy Goals and Basic Principles on the Arctic,
- ④ China's Policies and Positions on Participating in Arctic Affairs
  - Deepening the exploration and understanding of the Arctic
  - Protecting the eco-environment of the Arctic and addressing climate change
  - Utilizing Arctic Resources in a Lawful and Rational Manner
  - Participating Actively in Arctic governance and international cooperation
  - Promoting peace and stability in the Arctic Conclusion. (Source: The State Council Information Office of the People's Republic of China, 2018, *China's Arctic Policy*, Beijing.)

commercially implement the service for the stake holders, although its feasibility and economic benefits are positive (Fu et al., 2018; Lee and Song, 2014; Lindstad et al., 2016; Liu and Kronbak, 2010; Meng et al., 2017; Tseng and Cullinane, 2017; Vavrus et al., 2012; Verny and Grigentin, 2009; Zhang et al., 2016; Zhu et al., 2018). A series of denuclearization talks among the two Koreas and US have been progressing, despite its uncertainty is envisaged. Having considered this circumstance, it is worthwhile for this article to investigate the impacts of the BRI on connectivity between Korea and Europe, focusing on railway mode.

**Figure 3.** Global network connecting Korea to Europe



**Note:** The width in pink color indicates the amount of ship traffic flows.

**Source:** Author modified the picture based on Hu, Z-H (zhhu@shmtu.edu.cn).

The discussion on railway mode to connect between Korea and Europe in this article requires a pre-requisite assumption that the railways are connected within the two Koreas and then connected to existing TCR and/or TSR. The first point to consider arises out of capacity of the railway and demand for the service. This is also interrelated to modal competition between the railway service and shipping service in terms of freight and service quality. This aspect can be inferred from a Chinese cost comparison case as shown in Table 1.

**Table 1.** Freight time and cost comparison between shipping routes and China Railway Express

	Yu-Xin-Europe	Rong-Europe	Zheng-Europe	Han-Europe	Su-Man-Europe
<b>Original city</b>	Chongqing	Chengdu	Zhengzhou	Wuhan	Suzhou
Domestic freight time (days)	12	5	4	5	0
Shipping time (days)	25				
<b>Total freight time (days)</b>	<b>37</b>	<b>30</b>	<b>29</b>	<b>30</b>	<b>25</b>
Frequency	At least 7 per week				
Inland freight costs (USD/FEU)	645	1,126	443	258	-
Shipping cost (USD/FEU)	<b>1,500USD/FEU (A.P. Moller-Maersk A/S (MSK)'s freight)</b>				
<b>Total costs (USD/FEU)</b>	<b>2,145</b>	<b>2,626</b>	<b>1,943</b>	<b>1,758</b>	<b>1,500</b>

**Source:** Jiang, Y. (2018). "Evolution of Hinterland patterns between China Railway Express and Seaborne Container Shipping under the B&R Initiative", 2019 IAME Conference, Mombasa, Kenya, 11-14 Sept. 2018.

Table 1 shows that China has five main railway service routes for Europe by origin city to use intermodal service. Their total freight costs range from 1500 to 2,626US\$ per forty equivalent unit container (FEU). The highest freight 2,626US\$/FEU by intermodal service is still higher than the lowest railway freight with subsidy by central and/or local governments in China, while the former's total transportation time is longer than latter's. Apparently, from the viewpoint of overall aspects of freight cost and service period between China and Europe, Chinese railway service is more competitive than shipping service, thanks to subsidy from central and local governments. However, we envisage the following questions regarding viability of Chinese railway service:

- How much subsidy can make Chinese railway service viable?
- How long will the subsidy by central and local governments last for Chinese railway service?
- How can China solve cargo imbalance between China and Europe?

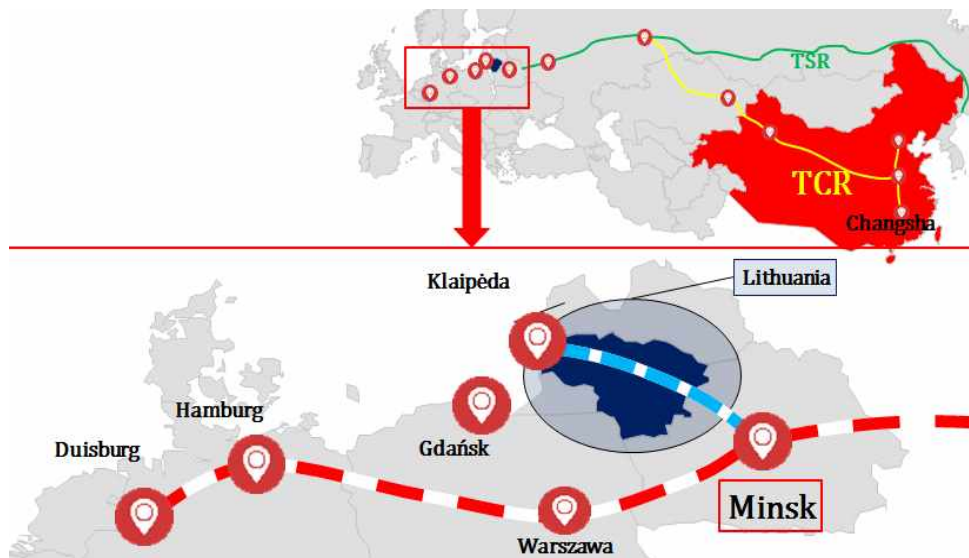
The above Chinese case may raise some similar questions to Korean stakeholders, leaving aside technical issues related to railway operation. For example, is it possible for a Korean rail operator to provide competitive freight rate without subsidy compared to shipping service? Unlike Chinese railway service, the cargoes originated from Korea will take longer service time to Europe. It means that Korean railway service has less advantage in transportation days compared to Chinese railway. In addition, Chinese main five railways have weekly service with each block train having more than 42 wagons. It is questionable whether a Korean rail operator can arrange such block train with weekly service with enough cargoes. If he cannot, how can he make block train in collaboration with Chinese TCR operators? This article does not deal with TSR but TCR because it is concerned with the BRI. Moreover, if subsidy is necessary for Korean shippers to make the railway service feasible and competitive, who and how will provide such subsidy for the railway service? On top of that, subsidy for

railway service will cause Busan Port to face a severe competition with railway operators to capture cargoes to be generated from the same hinterland because shipping networks and connectivity is interrelated to port competition (Lam et al., 2018).

As can be seen in Figure 1, if all corridors are working well in the future, the size of the hinterland in the green circle would be encroaching against Shanghai and Ningbo Ports (Lee et al., 2018). As a result, it would cause more severe inter-port competition between Shanghai and Busan Port to capture transshipment cargoes with price competition (Anderson et al., 2008; Ishii et al., 2013; Dong et al., 2018).

The second factor we need to consider efficient connectivity by railway between Korea and Europe is to find a distribution center in the European region. Figure 4 shows a development strategy to connect China to Europe by establishing distribution center so-called “Great Stone” industrial park in 95km<sup>2</sup> in Minsk in Belarus<sup>2)</sup>, which was invested by China Merchants Group and is adjacent to Lithuania and Germany and Poland (On its location, see Appendix 1.).

Figure 4. A strategy connecting to China to Europe



The Great Stone aims to provide distribution service for cargoes coming from China by railway as well as accommodate block trains. The characteristics and advantages of the location are as follows:

2) This is based on author’s field trip to Lithuania and interviews on 7-11 Oct. 2018: Meetings with Vice Minister of Transportation, Lithuania; Director of Klaipėda port and CEO of Free Trade Zone (FTZ); CEO of Kaunas FTZ; Interview with China Merchants Groups from Minsk, Belarus; Secretary-General of China International Freight Forwarders Association.

Block train service available between China and Belarus (e.g., Changsha-Great Stone Park in Minsk, Belarus). As discussed earlier, some rail routes subsidized by central and local Chinese governments.

- Lithuanian rail system is the same as Russia, China and other CIS countries, so that the rail way operator does not need to change boggy system of the wagons.
- Border crossing time between Lithuania and Great Stone industrial park in Minsk, Belarus takes 30 minutes for one block train; it is so-called “Shuttle train Viking”.
- Lithuania offers free economic zone in Klaipeda Port and Kaunas with tax incentive policies to attract cargoes from China. Once the cargoes complete customs clearance in the country, they do not need any more customs clearance within EU market because the country is a member of EU.
- Klaipeda Port expansion by CMG is under negotiation with MOU.
- Port infrastructure by central government and superstructure by terminal operators
- Major shipping lines are calling in Klaipeda, e.g., MSC and Yang Ming. COSCO is planning subject to China Merchant Groups’ investment decision.
- Minsk is expected to capture cargoes to and from the Scandinavia Peninsula through Klaipeda Port.

Despite the above advantages, China’s block train cannot be commercialized for Lithuania because Russia charges 3~4 times higher than normal usage rate of the Russian railway section for the direct block trains bounding for the Lithuanian territory from China.

Having recognized the above merits and strategic location of Minsk, Lithuania has set up global logistics hub strategy in the Baltic Region aiming to not only connect China by railway and seaport to Lithuania through Great Stone industrial park in association with free economic zones in Klaipeda and Kaunas but also capture cargoes to and from West Europe and Scandinavian countries. Therefore, the two countries are trying to together solve the higher usage rate issue of the Russian railway section because both can get benefits from the direct block train services. This is an exemplary of challenges why governments are able to intervene in removing obstacles to implement the BRI (Lee et al., 2018b).

The above Lithuania-China case also gives Korean stakeholders a couple of insights. First, the Korean rail operator needs to consider a strategic distribution center to cover Europe. Second, efficient railway service to connect Korea to Europe should rely on not only professional technical rail operation but also global logistics strategy in a comprehensive way. Last, the rail distance within the two Koreas is relatively very short in terms of origin to destination connecting Korea to Europe. In other words, it could be dependent upon the whole Chinese railway system up



to Europe, having a little portion of commercial benefits from the railway operation.

## 2. Concluding remarks

The Belt and Road Initiative (BRI) has still a short history of five years, which may not be enough to observe its formidable outcome. However, it can be said that its impact on maritime transportation, trade, global logistics pattern, and railway service development between China and Europe are potentially large. In addition, the “Belt and Road Initiative” has been carved in General Program of the Constitution of the Communist Party of China at the 19th National Congress of the Communist Party of China<sup>3)</sup> on 24 October 2017. It implies that China has paved a solid way for the BRI to implement it for coming years. In this circumstance, Korean stakeholders need to consider two options: either “Connect Strategy” or “Being Connected Strategy”. The former is proactive, while the latter passive. Lithuania and Sri Lanka<sup>4)</sup> follow the former. In November 2018, the two Koreas have agreed to carry out joint investigation of feasibility to connect railways within the Korean Peninsula. As we have seen the China and Lithuania case, we have noticed that there are several key issues to make the rail connectivity between Korea and Europe efficient and feasible. As far as rail connectivity service between Korea and Europe is concerned, we need to investigate railway service with or without subsidy for competitive edge against shipping service, establishment of railway cargo distribution center in Europe, and collaboration with TCR operators for operating direct block train service, leaving aside the technical issue of rail operation. The railway connection and development between the two Koreas requires social overhead capital as government infrastructure; therefore, the role of the central government is pre-requisite and essential as China and Korea did for container port developments (Ng et al., 2018; Lee and Lam, 2017; Lee and Flynn, 2011) unless the UN sanction on it is mandate.

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3) Quoted from the Constitution. “The Party shall constantly work to develop good neighborly relations between China and its surrounding countries and work to strengthen unity and cooperation between China and other developing countries. It shall follow the principle of achieving shared growth through discussion and collaboration, and pursue the Belt and Road Initiative.”

4) On Sri Lanka case, see Ruan et al. (forthcoming), *Maritime Policy & Management*.

## References

- Anderson, C. M., Park, Y-A, Chang, Y-T, Yang, C-H, Lee, T-W, and Luo, M. (2008). "A game-theoretic analysis of competition among container port hubs: the case of Busan and Shanghai", *Maritime Policy & Management*, 35(1), pp. 5-26.
- Chhetri, P., Nkhoma, M., Peszynski, K., Chhetri, A., and Lee, P.T-W (2018). Global logistics city concept: a cluster-led strategy under the belt and road initiative, *Maritime Policy & Management*, 45(3), pp. 319-335.
- Dong, G., Zheng, S., and Lee, P.T-W (2018). The effects of regional port integration: The case of Ningbo-Zhoushan Port. *Transportation Research Part E*, 120, pp. 1–15.
- Fu, S., Yan, X., Zhang, D. & Zhang, M. (2018), Risk influencing factors analysis of Arctic maritime transportation systems: a Chinese perspective, *Maritime Policy & Management*, 45(4), pp. 439-455.
- Ishii, M, Lee, Paul T-W, Tezuka, K. and Chang, Young-Tae (2013). A Game Theoretical Analysis of Port Competition, *Transportation Research Part E: Logistics and Transportation Review*, 49(1), pp. 92-106.
- Lam, J.S.L., Cullinane, K. & Lee, P.T-W. (2018). The 21st-Century Maritime Silk Road: Challenges and Opportunities for Transport Management and Practice, *Transport Reviews*, 38(4), pp. 413–415.
- Lee, P. T-W and Flynn, M. (2011). Charting A New Paradigm of Container Port Development Policy: The Asian Doctrine, *Transport Reviews*, 31(6), pp. 791-806.
- Lee, P.T-W and Lam, J.S.L (2017). A review of port devolution and governance models with compound eyes approach, *Transport Reviews*, 37(4), pp. 507-520
- Lee, P.T-W, Hu, Z-H, Lee, S-J, Choi, K-S, and Shin, S-H (2018a). Research trends and agenda on the Belt and Road (B&R) initiative with a focus on maritime transport. *Maritime Policy & Management*, 45(3), pp. 282-300.
- Lee, P.T-W., Feng, X., and Lee, S-W (2018b). Challenges and chances of the Belt and Road Initiative at the maritime policy and management level, *Maritime Policy & Management*, 45(3), pp. 279-281.
- Lee, P.T-W., Lee, S-W., Hu, Z-H, Choi, K-S, Choi, N. Y. H., and Shin, S-H. (2018c), Promoting Korean International Trade in the East Sea Economic Rim in the context of the Belt and Road Initiative, *Journal of Korea Trade*, 22(3), pp. 212-227.
- Lee, S.W. and Song, J. M. (2014), Economic possibilities of shipping though Northern Sea route, *The Asian Journal of Shipping and Logistics*, 30(3), pp. 415-430.
- Lim, S-W, Suthiwartnarueput, K., Abareshi, A., Lee, P.T-W., Duval, Y. (2017). Key factors in developing transit trade corridors in Northeast Asia, *Journal of Korea Trade*, 21(3), pp. 191-207.
- Lindstad, H., Bright, R.M. Bright, and Strømman, A.H. (2016). Economic Savings Linked to Future Arctic Shipping Trade are at Odds with Climate Change Mitigation, *Transport Policy*, 45, pp. 24-30.
- Liu, M. and Kronbak, J. (2010), The potential economic viability of using the Northern

- Sea Route (NSR) as an alternative route between Asia and Europe, *Journal of Transport Geography*, 18(3), pp. 434-444.
- Meng, Q., Zhang, Y., and Xu, M. (2017), Viability of Transarctic Shipping Routes: A Literature Review from the Navigational and Commercial Perspectives, *Maritime Policy & Management*, 44(1), pp. 16-41.
- National Development and Reform commission (NDRC), Ministry of Foreign Affairs and Ministry of Commerce of the People's Republic of China with State Council (2015). *Vision and Actions on Jointly Building Silk Road Economic Belt and 21<sup>st</sup> Century Maritime Silk Road*. Beijing: The National Development and Reform Commission (NDRC), March 28, 2015.
- Ng, A.K.Y., Jiang, C., Li, X., O'Connor, K., and Lee, P.T-W (2018). A conceptual overview on government initiatives and the transformation of transport and regional systems. *Journal of Transport Geography*, 71, pp. 199-203.
- Port of Klaipeda (2018). *Klaipeda Port Expansion: Business Opportunities*. Klaipeda, Lithuania: Port of Klaipeda.
- Ruan, X., Bandara, Y.M., Lee, J-Y, Lee, P.T-W., and Chhetri, P. (forthcoming). Impact of the Belt and Road Initiative on Maritime Transport in the Indian Sub-Continent. *Maritime Policy & Management*. (accepted.)
- State Council Information Office of the People's Republic of China (2018). *China's Arctic Policy*. Beijing: State Council Information Office.
- Tseng, P.H. and Cullinane, K. (2018), Key criteria influencing the choice of Arctic shipping: a fuzzy analytic hierarchy process model, *Maritime Policy & Management*, 45(4), pp. 422-438.
- Vavrus, S. J., Holland, M.M., Jahn, A., Bailey, D. A., and Blazey, B.A. (2012), Container Shipping on the Northern Sea Route, *International Journal of Production Economics*, 122(1), pp. 107-117.
- Verny, J. and Grigentin, C. (2009), Container Shipping on the Northern Sea Route. *International Journal of Production Economics*, 122(1), pp. 107-117.
- Wei, H., Sheng, Z., and Lee, P.T-W. (2018), The role of dry port in hub-and-spoke network under Belt and Road Initiative, *Maritime Policy & Management*, 45(3), pp. 370-387.
- Zhang, Y., Meng, Q., and Ng, S. H. (2016), Shipping efficiency comparison between Northern Sea Route and the conventional Asia-Europe shipping route via Suez Canal, *Journal of Transport Geography*, 57, pp. 241-249.
- Zhu, S. Fu, X., Ng, A.K.Y. Luo, M., and Ge, Y-E. (2018), The environmental costs and economic implications of container shipping on the Northern Sea Route, *Maritime Policy & Management*, 45(4), pp. 456-477.

## Appendix 1. Transportation distance from Great Stone industrial park in Minsk to Baltic ports



Source: Port of Klaipėda (2018). Klaipėda Port Expansion: Business Opportunities. Klaipėda, Lithuania: Port of Klaipėda.