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A REVIEW OF RAILWAY TRANSPORTATION IN CENTRAL ASIA FOR CORRIDORS AND THE REVIVAL OF THE GREAT SILK ROAD

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ABSTRACT

This review examines the state of railway transportation in Central Asia within the context of the Silk Road initiative, tracing its origins from the United States' New Silk Road strategy. Despite recent setbacks, the Silk Route has become a crucial geopolitical tool for military, political, and economic interests, with corridors like Kazakhstan's Terminal and the China-Kyrgyzstan-Uzbekistan-Afghanistan route identified for potential revitalization. Uzbekistan, particularly in the China-Kyrgyzstan-Uzbekistan corridor, emerges as pivotal for advancing the Silk Road initiative. A comprehensive analysis of data collection methodologies employed in studying these corridors is also included to ensure the reliability and validity of the findings. Employing a multifaceted methodology, including quantitative analysis of infrastructure metrics, case studies of specific projects, a literature review synthesizing existing knowledge, and comparative analysis drawing parallels and contrasts, this study explores opportunities and challenges in enhancing these corridors, aiming to contribute to the broader strategy's rejuvenation in Central Asia. By analyzing current conditions and proposing improvements, the research seeks to optimize railway transport, aligning with the Silk Road's historical significance in the contemporary geopolitical landscape.

Keywords: Central Asian region; New Silk Road strategy; railway corridor

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INTRODUCTION

The historic Silk Road, which has connected Asia and Europe for centuries, has comprised various routes spanning a vast geography (Winter 2022). This unique path facilitated trade, prosperity, and the exchange of knowledge, promoting cultural integration and information sharing. The trade-driven interaction along the Silk Road exposed small villages to new and different beliefs, knowledge, and ideas. Initially a consequence of multifaceted expectations, supplies, and demands from diverse sources, the Silk Road eventually declined in significance due to political changes and advancements in maritime transportation(Frankopan 2017).

The U.S. *New Silk Road Strategy* aimed to boost trade-economic cooperation and liberalize trade in Central and South Asia. A key objective was to provide an economic uplift to Central Asian republics, which, despite abundant resources, remain among the least integrated regions globally(Zimmerman 2015). The strategy had the potential to spur economic growth in the region; however, implementation efforts significantly slowed down due to geopolitical circumstances and the pandemic.

Railway transportation is crucial for Central Asia's stability, as landlocked economies heavily rely on it for trade due to the absence of maritime access. The rail networks, being safer, cost-effective, and less prone to delays, have immense potential to facilitate regional and international trade, contributing to the revival of the Silk Road (Karimova 2022). The existing rail network connects all economically essential areas and capitals, making railway transportation more critical than other modes (Kulipanova 2012). However, there is a shortage of research identifying relevant corridors for the revival of the Silk Road in Central Asian countries (Barisitz 2017). This article reviews corridors in Uzbekistan, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan, pinpointing those with potential for further development, and emphasizing the corridors requiring attention for the Silk Road's revival and growth.

LITERATURE REVIEW

Central Asia's strategic importance has drawn global attention, leading to collaborative efforts to establish and enhance transport networks in the region. This literature review delves into the nuanced evolution of these networks, examining early collaborations, China's infrastructure development, European initiatives, challenges faced, and the modern global context, especially focusing on China's "One Belt, One Road" (OBOR) initiative.

Early Collaborations (1950s-1960s)

According to a study by (Otsuka et al. 2017), the mid-20th century witnessed the initiation of efforts by the People's Republic of China (PRC) to link its railway system with the Soviet Union through Central Asia. PRC's emphasis on railway connectivity with Xinxiang in the western province marked a significant turning point, leading to the establishment of the Organization for the Cooperation of Railways in 2016 (Górski, 2016). This early collaboration laid the groundwork for regional cooperation and laid the foundation for future developments.

China's Infrastructure Development (1985-1992)

A detailed analysis of China's infrastructure endeavors emerged from the study by Otsuka et al. (2017), detailing the construction of the railway line connecting the PRC and the Soviet Union. This study provided insights into the challenges faced and the eventual connection achieved in 1990, fostering regional integration. (Shu 1997) shed light on the broader vision of the "Europe Asia Land Bridge," underscoring the significance of the railway in facilitating transcontinental trade.

European Union's Initiatives (1990s)

The European Union's active role in the 1990s is highlighted through a comprehensive examination of the Transit Corridor Europe-Caucasus-Asia (TRACECA) in the study by Teimuraz Gorshkov (2001). This initiative, funded by the EU, aimed to improve road systems and establish overland transport corridors by contributing to the ambitious goal of connecting European and Central Asian train networks. The study emphasized the geopolitical implications of this initiative and its impact on regional dynamics.

Challenges and Obstacles (Late 1990s-2000s)

The slowing down of TRACECA due to the influence of the Eurasian Customs Union

(Eurasec) is scrutinized in Lúcio Vinhas de Souza (2011). This study unraveled the geopolitical challenges posed by Eurasec, providing a comprehensive understanding of the obstacles faced by the ambitious European initiative. The persistence of advocates within China during this period was explored in (Shu 1997), demonstrating the ongoing efforts to promote the Eurasian land bridge despite regional challenges.

China's Strategic Vision and the "One Belt, One Road" Initiative (2013 onwards)

A detailed exploration of President Xi Jinping's announcement of the Silk Route Economic Belt (SREB) and the 21st Century Maritime Silk Road (MSR) in 2013, as well as the subsequent "One Belt, One Road" (OBOR) initiative, was presented in a study by Foo, Lean, and Salim (2020). That study underscored China's long-term global power shift and the role of OBOR in fostering global trade and connectivity, with particular attention to the establishment of the Silk Road Fund.

Global Perspectives and Challenges

Wang and Wang (2022) introduced a global perspective by examining Japan's efforts to counterbalance China's influence in Southeast and Central Asia. This comparative analysis adds depth to the understanding of the geopolitical dynamics in the region, emphasizing the multi-dimensional aspects of infrastructure development.

The evolution of Central Asian transport networks reflects a complex interplay of historical collaborations, regional initiatives, and contemporary global strategies. From early partnerships to modern geopolitical dynamics, this in-depth analysis provides a nuanced understanding of the factors shaping the connectivity landscape in Central Asia.

METHODOLOGY

Railway transportation in Central Asia

This research provides a comprehensive analysis of the role of railway transportation in shaping trade corridors within the Central Asian region. This section outlines the methodological approach employed in conducting the study.

Data Collection: The primary focus of this research is to utilize quantitative data to gain insights into the dynamics of railway transportation in Central Asia.

Literature Review: A thorough review of existing literature forms an integral part of the methodology, enabling the contextualization of the historical significance of railways in Central Asia. Scholarly articles, reports, and academic publications have been explored to understand the evolution of railway transportation, its impact on economic processes, and the historical context of the Great Silk Road.

Analysis Framework: Quantitative analysis is employed to evaluate and interpret the collected data, emphasizing the distribution of freight transportation across different rail routes and countries in Central Asia. The presentation of findings in a tabular format (Table 1) facilitates a clear representation of the freight volumes in domestic, export, import, and transit categories.

Table 1: Freight Transportation through Railways in Central Asia (in Million Tonnes), 2021

	Domestic (Kazakhstan)	Kyrgyzstan	Tajikistan	Turkmenistan	Uzbekistan (estimated)
Domestic	200	2	2	10	90
Export	80	1	1	12	15
Import	15	0.5	0.2	2	5
Transit	30	2	0.5	4	6
Total	325	5.5	3.7	28	116

Prepared by Author

Limitations: Recognizing the study's limitations is essential. Using data from 2021 may not reflect recent changes. Additionally, this quantitative analysis mostly needs to consider

explicitly qualitative aspects like infrastructure quality and logistical challenges.

UZBEKISTAN

Uzbekistan's railway network, spanning 4,714 kilometers with 2,500 kilometers electrified, primarily focuses on passenger and cargo transport, generating over 80% of total revenue. The network density is approximately 0.51 km per 100 sq. km, lower than in developed countries. The main line connects Amu Darya with Tashkent as part of the broader Transcaspian Railroad (Horák 2023). Additional rail links extend to Turkmenistan, Afghanistan, Tajikistan, Kyrgyzstan, and Kazakhstan. Uzbekistan's railways connect to various regions, including Kharkiv, Saint Petersburg, Penza, Saratov, Novosibirsk, Chelyabinsk, Ufa, and Moscow. Connecting trains operate from Almaty to Urumchi in China. The electrification of the Karshi-Termez line is underway, and a new service connecting Balykchy with Tashkent was launched by Uzbekistan Railways in 2018 (Yoshino and Abidhadjaev 2017).

KAZAKHSTAN

The current density of railways is around 5.9 kilometers per 1000 sq. km, which shows a prominent lag in comparison with developed nations. For instance, it is 1.5 to 3 times lower than other countries such as India and Vietnam, and dozens of times to developed European countries. In recent times, the development and application of new technologies for the organization of container traffic have made it easier to enhance the average speed of container trains in the country (Carbajo and Sakatsume, 2004).

KYRGYZSTAN

Kyrgyzstan Railways is the exclusive operator for both freight and passenger transport in Kyrgyzstan. The main northern railway line spans from Dzhambul's Lugovaya station through Bishkek to Balykchy, transporting over 7 million tons of freight, including mineral fertilizers, oil products, and metals. International railways are primarily used for transporting goods like industrial raw materials, minerals, building materials, lubricants, and fuels (ESCAP 2022). Domestic rail freight is minimal; however, it is limited to small amounts of sugar and coal. Road transportation dominates the movement of goods within the country.

TAJIKISTAN

In the country, Gorno Badakhshan lacks rail tracks, and the main railway spans 617.5 kilometers. Of this, 62.1 kilometers are double track, and 555.7 kilometers are single track. Transit rail traffic constitutes about two-thirds of overall rail freight, mostly through the northern section, particularly in the cities of Khuzhand and Kanibadam (Max Ee and Eshonov Boymurod 2009). Tajikistan transports critical products like cement, wheat, cotton, and building materials by rail. The east and north lines are unconnected, requiring passage through enclaves. Building a railway to connect these lines would be a costly project (World Bank 2011).

TURKMENISTAN

Turkmen Railways is accountable for operating the railway system and belongs to the Ministry of Railways. Currently, efforts are being made by the country to expand its railway network and cover around 5,256 kilometers more by 2025. In 2020, the country had around 6,561 kilometers of rail lines close to the southern and northern borders (Gao 2016). It is important to note that the Tejen-Sarahs-Mashdad railway, established in 1966 by Iran and Turkmenistan, links European, Russian, and Central Asian rail systems with the Persian Gulf, South Asia, and Turkey.

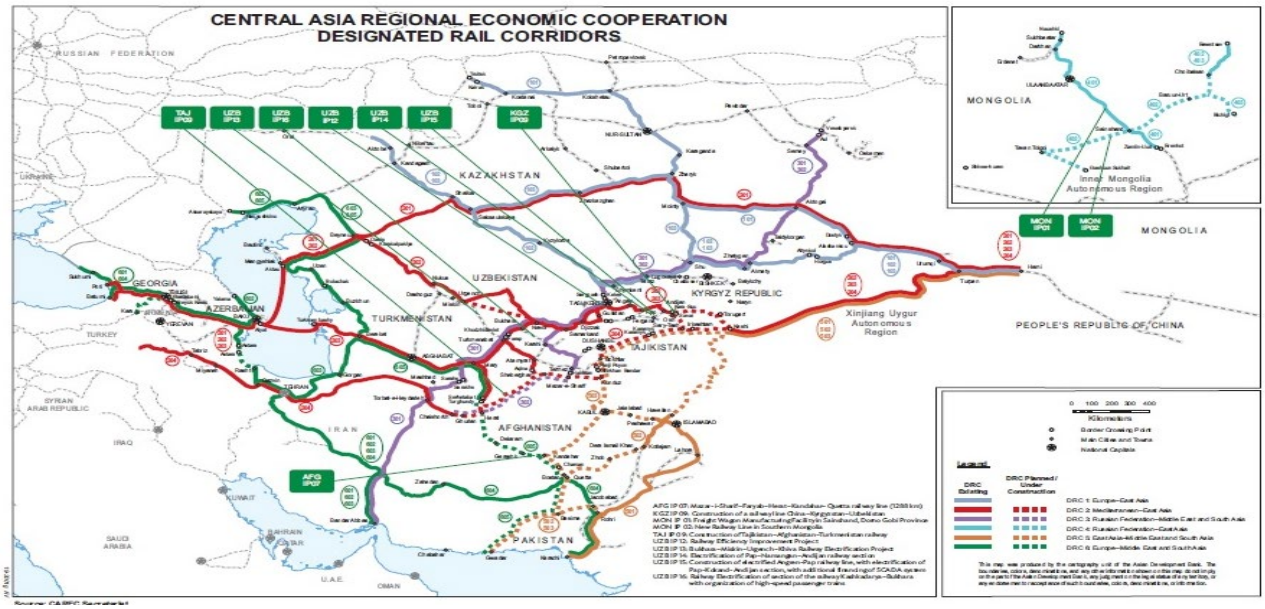
DISCUSSION

Impact of the pandemic on transportation in Uzbekistan

The global pandemic significantly impacted transportation sectors worldwide. In Uzbekistan, rail passenger transport decreased by 81% in Q1 2020, and air carriers saw an additional 83.4% decline. Quarantine measures did not affect traffic but sharply reduced road transport passenger traffic (Sitora Primova 2020). Cargo transportation, however, was affected with a 35.5% decrease in Q1 2020 due to restrictions. Public transport in Tashkent closed in March 2020, and all automobile trips were restricted in April. The substantial losses resulted in a 1.5-2.5% GDP decline, as reported by the Central Bank of Uzbekistan (Tursunbaevich, Bulturbayevich, and Rahmat 2021). The transportation sector in

Uzbekistan faced severe consequences, leading to increased unemployment, with a 35-57% decrease in employment in 2021.

Transport corridors and opportunities for Silk Road



Picture 2. Transport corridors and opportunities for Silk Road

Note: Connecting CAREC: A Corridor Network

Source: CAREC Secretariat (View full-sized map)

The following are the economic corridors in Central Asia, and the most important ones – the Kazakh Terminal, Kuryk's Port, and Uzbekistan - will be discussed in this section:

- Kazakhstan's Terminal in Lianyungang
- Kuryk Port
- Kashgar - Irkeshtam - Osh - Andijan – Tashkent Highway
- China-Kyrgyzstan-Uzbekistan Railway
- China- Kyrgyzstan- Tajikistan-Afghanistan-Iran RailwayRailway
- Lapis - Lazuli Transport Corridor
- Mazar-e-Sharif - Herat Railway
- Uzbekistan – Turkmenistan – Iran – Oman - India Corridor

The Kazakh Terminal in Lianyungang Port is a vital transportation corridor in Central Asia (Peter Golden 2011). It could serve as a crucial link in Kazakhstan's logistics chain and facilitate the movement of goods to and from Central Asia. However, extensive collaboration is necessary among not only Kazakhstan but also other Central Asian nations. Implementing preferences for Central Asian countries at the port and streamlining customs procedures at specific locations like Dostyk and Khorgos can reduce bureaucratic barriers and save time. The terminal faces stiff competition from ports and corridors in Pakistan and Iran, limiting its internationalization (PeaceNexus Foundation. 2021).

Kuryk Port, inaugurated in 2016 as a railway ferry terminal, plays a crucial role in enhancing the Silk Road and trans-Caspian multimodal transport (Indeo 2018). With a capacity of 4 million tons, the port facilitates efficient logistics for cargo transshipment, including chemicals, metal products, consumer goods, and oil products. This trans-Caspian route serves as a key link for exports and imports between the Ural-Siberian region of Russia and China. The completion of the Beineu-Akzhigit highway reconstruction by the end of 2019 significantly increased the route's capacity, fostering road transit through Kuryk Port and creating a new connection between Uzbekistan and the Trans-Caspian corridor (Shaikova, Dronzina, and

Zholdasbekova 2023).

Kuryk Port currently collaborates exclusively with the Azerbaijani port of Alat (Hoh 2019). While there are intentions to expand ferry services with Iran and Turkmenistan, progress remains pending. Improving the corridor is crucial for enhancing collaboration with other ports and contributing to the Silk Road's revival. Another vital corridor is the Kashgar – Irkeshtam – Osh – Andijan – Tashkent highway, initially discussed in the late 20th century and postponed for economic and political reasons (Sahakyan 2022). Since its launch, this highway has facilitated the transportation of goods. The Silk Road International venture between China and Uzbekistan has similarly aided the transportation of goods along the China-Kyrgyzstan-Uzbekistan-Afghanistan transport corridor.

Uzbekistan plays a crucial role in shaping the region's image, mainly through the China-Kyrgyzstan-Uzbekistan railway corridor. This corridor not only connects the region and its cities with the outside world but also contributes significantly to reviving the Silk Road. The project has the potential to alter the geo-economics of the region, reinforcing Uzbekistan's position as a regional transportation hub. Additionally, it fosters closer ties between Uzbekistan, Kyrgyzstan, and China, facilitating enhanced interaction.

Central Asian economic corridor – challenges and opportunities

As part of the Belt and Road Initiative (BRI) and the Central Asian Economic Corridor (CAEC), the BRI seeks to enhance trade and transportation between Europe and China via the Middle East and Central Asia. Among the six BRI economic corridors, the China-Arab Economic Corridor (CAEC) is considered the most complex due to its involvement with most countries. The CAEC has faced new challenges amid the COVID-19 pandemic, including the "Cold War mentality" and anti-globalization movements. This study suggests that China should collaborate with countries along the route to improve the economic structure, establish the Digital Silk Road, promote economic corridor growth, and build a community with a shared vision for the future.

Countries in the CAEC have a unique opportunity for economic growth by leveraging the corridor to facilitate increased trade and investment within the region and with neighboring countries. The CAEC is expected to play a significant role in enhancing regional infrastructure, a crucial factor for economic development (Jiang et al. 2016). Improving the governance system is another crucial step, requiring standardized rules and norms for trade and business, fostering collaboration among countries, and creating a legal framework that encourages investment and protects intellectual property rights.

The CAEC provides member countries with a distinctive chance to promote economic growth and progress. However, addressing existing challenges is imperative for effective corridor utilization. Collaborative efforts are needed to establish a better regulatory environment, formulate a shared vision for the CAEC, develop a detailed growth plan, and enhance the overall business climate in the region. Joint efforts among participating countries are essential to overcome challenges and capitalize on opportunities.

CONCLUSION AND RECOMMENDATION

Central Asia can revitalize the historic Silk Road by establishing crucial transportation networks fostering enhanced trade with other countries through economic integration. However, improving the existence of transit lines is essential for these routes to meet their objectives. Cooperation, coordination, and resource pooling among key players in the region are vital. Critical thoroughfares, such as the Kazakhstan Terminal at Lianyungang Port, the Kashgar-Irkeshtam-Osh-Andijon-Tashkent Corridor, the China-Kyrgyzstan-Uzbekistan railroad, and the Kuryk Port, could significantly contribute to regional economic growth. Overcoming challenges like red tape, customs processes, and links to nearby cities requires international collaboration. Collaborations between the Kuryk and Alat terminals in Azerbaijan are underway, while progress with ports in Iran and Turkmenistan is still pending. The China-Kyrgyzstan-Uzbekistan railway has the potential to be a key artery connecting China to Europe and the Middle East, but challenges like global competitiveness and corruption need addressing for successful completion.

For the efficient operation of transportation networks, regional leaders must exhibit political

will and agree to connect economies and address historical tensions among Central Asian governments. Close collaboration with organizations like the Eurasian Economic Union (EAEU), Shanghai Cooperation Organization (SCO), and Conference on Interaction and Confidence-Building Measures in Asia (CICA) is expected from China, Russia, and Turkey, given their strong ties to the region. China's Belt and Road Initiative can provide both energy and funds, but tackling challenges like corruption and local ownership remains crucial. Collaboration among Central Asian states is essential not only for transportation but also for energy, agriculture, tourism, internet access, and cross-cultural interaction. Overcoming historical animosities rooted in complex factors is necessary for a comprehensive alliance, unlocking economic potential and fully re-establishing Silk Road ties. A deeper exploration of these historical tensions can reveal the challenges to achieving a more integrated and collaborative Central Asia.

Given its strategic location, growing economic influence, and stable political atmosphere, Uzbekistan can play a crucial role in connecting various sectors, addressing challenges, and navigating historical tensions for a more cooperative regional environment. Moving forward, Central Asian governments should overcome past animosities and recognize each other as true partners in a mutually beneficial joint endeavor. This approach positions Central Asia as a vital node for international commerce, facilitating transactions and fostering ties among significant countries such China, India, and those in Europe. Revitalizing and integrating both physical and soft networks can pave the way for a more interconnected and prosperous Central Asia globally.

However, it is crucial to acknowledge certain limitations that may pose challenges to the successful implementation of the recommended strategies. One significant limitation lies in the potential geopolitical tensions and historical animosities among Central Asian governments. Despite the call for political will and regional cooperation, deeply rooted historical tensions may hinder the seamless connectivity of economies and the establishment of effective transportation networks. Addressing these historical animosities requires a nuanced and delicate approach, and the process may encounter resistance from various stakeholders.

Another limitation worth considering is the inherent complexities associated with international collaboration, particularly in addressing challenges such as red tape, customs processes, and corruption. The proposed collaborations with countries such as Azerbaijan, Iran, and Turkmenistan are positive steps, but the varying political and bureaucratic landscapes in these nations may introduce delays and obstacles to the smooth execution of joint initiatives. It is imperative for the stakeholders involved to navigate these limitations effectively and adopt flexible strategies that account for the diverse challenges inherent in the geopolitical, economic, and cultural landscape of Central Asia. By recognizing and proactively addressing these limitations, the region can maximize its potential and truly re-establish the Silk Road as a vibrant and interconnected economic corridor.

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