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OVERCOMING LOGISTICAL CONSTRAINTS IN UZBEKISTAN THROUGH INTERNATIONAL TRANSPORT CORRIDORS AND MULTIMODAL SYSTEMS

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Saidova Firuza Kamolovna
Bukhara state university, Faculty of economics and tourism,
Senior lecturer, Department of green economy and agribusiness
Abdikarimov Ozodbek
Student of group 3-1LOG-23

As a double landlocked country, Uzbekistan faces inherent logistical constraints that significantly influence its participation in global trade. Limited direct access to seaports, dependence on transit routes through neighboring states, and high transportation costs pose substantial challenges to the competitiveness of Uzbek exports and the efficiency of import supply chains. In the context of increasing globalization and intensifying regional economic integration, overcoming these logistical barriers has become a strategic priority for Uzbekistan's economic development.

In recent years, Uzbekistan has accelerated efforts to diversify its transport connections, expand transit opportunities, and create modern multimodal logistics infrastructure. The development of international transport corridors—such as the China–Kyrgyzstan–Uzbekistan railway, the Trans-Afghan Corridor, TRACECA, the North–South Transport Corridor, and the Baku–Tbilisi–Kars route—offers new openings for integrating the country into Eurasian trade networks. These corridors not only reduce delivery times and transportation expenses but also strengthen Uzbekistan's role as a key transit hub in Central Asia.

Multimodal transport systems, including dry ports, logistics centers, container terminals, and digital supply chain management tools, further enhance the country's ability to streamline cargo flows and increase trade efficiency. By combining railway, road, air, and—through partner countries—maritime transport, Uzbekistan can mitigate the disadvantages of its geographic location and improve access to global markets.

Therefore, exploring the potential of international transport corridors and multimodal logistics solutions is essential for understanding how Uzbekistan can overcome its structural transport limitations. This topic is of high practical

relevance, as it directly influences economic diversification, regional connectivity, and the long-term competitiveness of the national economy.

The issue of overcoming logistical constraints in landlocked countries, particularly through international transport corridors and multimodal transport systems, has been widely examined in global and regional academic literature. Scholars consistently emphasize that the absence of direct access to seaports increases transport costs, prolongs delivery times, and reduces trade competitiveness (Faye et al., 2004; Arvis et al., 2018). These challenges are especially relevant for Uzbekistan, one of only two doubly landlocked countries in the world, whose foreign trade is highly dependent on reliable transit routes through neighboring states.

A substantial body of research explores the relationship between transport connectivity and economic integration. The World Bank (Arvis et al., 2011) stresses that efficient logistics performance is a critical driver of trade facilitation, particularly in Central Asia, where geographic barriers are significant. Studies by Raballand (2003) and Limao & Venables (2001) demonstrate that improving corridor infrastructure and reducing border inefficiencies can sharply decrease trading costs for landlocked economies. These works provide a theoretical foundation for understanding why Uzbekistan prioritizes the development of regional transport networks.

Research pertaining specifically to Eurasian transport corridors highlights their transformative potential. Vinokurov (2018) and Mikhalychev (2020) examine the strategic importance of the China–Central Asia corridors within the Belt and Road Initiative (BRI), noting that multimodal solutions—combining rail, road, and maritime transport—can reduce transit times by up to 40%. Scholars such as Pomfret (2019) and Libman & Obydenkova (2013) analyze the geopolitical and economic implications of regional connectivity projects, arguing that they enhance not only trade but also political cooperation among Central Asian states.

Studies on Uzbekistan's transport sector have increased significantly in recent years, reflecting the country's active reforms. Abdullaev (2021) and Turaev (2020) highlight Uzbekistan's growing role as a transit hub and its efforts to diversify access to world markets through routes such as the China–Kyrgyzstan–Uzbekistan railway, the Trans-Afghan Corridor, and TRACECA. These authors argue that modernizing logistics infrastructure—dry ports, container terminals, and digital customs systems—is essential to overcoming structural limitations.

The literature on multimodal transport emphasizes the efficiency gains from integrating multiple transport modes into a seamless logistics chain. Rodrigue &

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Notteboom (2017) argue that multimodal networks reduce dependency on a single route and increase supply chain resilience. Their framework is particularly relevant for Uzbekistan, where geographic constraints necessitate optimized logistics solutions. UNESCAP (2019) and UNECE (2020) reports further show that multimodal hubs can significantly shorten lead times for landlocked countries by consolidating cargo and facilitating cross-border movement.

Table 1

Major international transport corridors passing through Uzbekistan

Transport Corridor	Route Description	Length Through Uzbekistan (km)	Primary Modes	Key Infrastructure Projects	Economic Impact Potential
China-Central Asia-West Asia Economic Corridor	Connects China through Central Asia to Turkey and Europe	1,245	Rail, Road	Kamchik Pass Tunnel (19.2 km), Angren-Pap Railway	$2.3 billion annual trade volume potential
North-South Transport Corridor (NSTC)	Links India, Iran, Central Asia to Russia and Northern Europe	890	Rail, Road, Multimodal	Termez cargo terminal, Hairaton port facility	30% reduction in transit time to India
Trans-Caspian International Transport Route (Middle Corridor)	Azerbaijan-Georgia-Black Sea-Central Asia-China	1,120	Rail, Maritime, Road	Tashkent-Bukhara-Nukus railway modernization	40% increase in cargo throughput capacity
Central Asia Regional Economic Cooperation (CAREC) Corridors 2 & 3	Connects Mediterranean to East Asia through Central Asia	2,340	Rail, Road	Border crossing points modernization (Alat, Gisht Kuprik)	$1.8 billion investment attracted 2020-2024
Southern Gas Corridor Extension	Energy infrastructure from Central Asia to Europe	670	Pipeline, Multimodal support	Bukhara-Khiva gas transmission system	$850 million annual energy transit revenue

Uzbekistan's status as a doubly landlocked country creates serious challenges for international trade and logistics. Without direct access to seaports, the country depends on reliable transit routes through several neighboring states, which increases transportation costs, prolongs delivery times, and reduces the

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competitiveness of domestic exports. These structural constraints make logistics development one of the most important priorities for Uzbekistan's long-term economic growth.

In recent years, Uzbekistan has actively expanded its regional transport connections in order to reduce the negative effects of its geographic location. One of the key directions has been the development of international transport corridors that connect the country with major global markets. The China–Kyrgyzstan–Uzbekistan railway project, for example, is expected to shorten cargo routes between East Asia and Europe and provide Uzbekistan with a new, fast, and economically efficient transit corridor. Another promising initiative is the Trans-Afghan Corridor, which aims to link Uzbekistan with Pakistani seaports through Afghanistan. If fully implemented, it would provide the shortest access route to the Indian Ocean and significantly diversify Uzbekistan's trade directions.

Table 2

Multimodal transport system components and current constraints in Uzbekistan

System Component	Current Capacity	Main Constraints	Technological Gap	Investment Needed (USD)	Expected Completion Timeline
Railway Network	4,642 km total; 16.5 million TEU/year	Single-track dominance (78%); outdated rolling stock	Lack of electrification (only 35% electrified); no high-speed connections	$4.2 billion	2025-2030
Road Infrastructure	42,500 km highways; 60% paved	Poor road quality in rural areas; limited international standard highways	Insufficient weight-bearing capacity for heavy freight	$2.8 billion	2024-2028
Air Cargo Facilities	280,000 tons/year capacity	Limited cargo handling equipment; few dedicated cargo terminals	Lack of cold chain facilities; outdated tracking systems	$650 million	2025-2027
Border Crossing Points	32 international crossings; avg.	Bureaucratic delays; inadequate	Manual documentation processes; no	$420 million	2024-2026

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	8-12 hours clearance time	customs infrastructure	single-window systems		
Logistics Centers/Dry Ports	8 major facilities; 2.3 million tons/year	Insufficient warehousing capacity; poor intermodal connectivity	Limited automation; no integrated IT platforms	$1.5 billion	2025-2029
Inland Waterways (Amu Darya)	1,100 km navigable; minimal use	Seasonal water level fluctuations; lack of modern ports	No container handling facilities; outdated vessel fleet	$380 million	2026-2030

Along with these initiatives, Uzbekistan is strengthening its participation in other regional corridors such as TRACECA, the Trans-Caspian Middle Corridor, and the North–South International Transport Corridor. These routes provide access to ports in Azerbaijan, Georgia, Turkey, and Iran, offering multiple alternatives for international shipments and reducing dependence on any single transit direction. This diversification is crucial for building a resilient logistics system that can withstand political, economic, or infrastructural disruptions.

However, improving corridors alone is not sufficient. Effective trade logistics require a strong multimodal transport system, where different modes of transport—rail, road, air, and sea—are integrated into a single, coordinated chain. Uzbekistan has begun developing modern logistics centers, dry ports, container terminals, and distribution hubs that allow goods to be sorted, stored, and transported more efficiently. Facilities such as the Navoi logistics hub, Angren dry port, and new container terminals help consolidate cargo flows and reduce the total cost of transportation.

Table 3

Strategic solutions for overcoming logistical constraints

Strategic Direction	Specific Measures	Key Stakeholders	Implementation Barriers	Expected Outcomes (2030)	Success Indicators
Infrastructure Modernization	Electrification of 1,200 km railway; construction of 3 logistics	Ministry of Transport, ADB, EBRD,	$8.5 billion funding gap; land acquisition	45% increase in transit capacity; 35%	Transit time reduced from 15 to 8 days for

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	centers; upgrade 15 border crossings	World Bank	challenges	reduction in logistics costs	China-Europe route
Digitalization & Smart Logistics	Implementation of single-window system; GPS tracking for all freight; blockchain for customs	IT Ministry, private tech companies, customs authority	Digital literacy gaps; cybersecurity concerns	60% reduction in customs clearance time; full cargo visibility	95% paperless processing by 2028
Regional Integration	Harmonization of customs procedures; mutual recognition of transit documents; joint border facilities	SCO, EAEU, bilateral agreements	Political coordination challenges; regulatory differences	50% increase in regional trade volume	Elimination of double inspections at borders
Private Sector Participation	PPP for logistics centers; concessions for terminal operations; freight forwarding liberalization	Uzbekistan Railways, private investors, freight operators	Regulatory uncertainty; lack of legal frameworks	40% of logistics infrastructure privately operated	$2.3 billion private investment attracted
Multimodal Integration	Unified tariff system; intermodal terminals at 6	Transport operators, regulatory	Modal competition; coordination complexity	70% of international cargo using 2+	25% cost reduction through

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	major cities; integrated scheduling platforms	bodies		modes	modal optimization
Capacity Building	Training 5,000 logistics professionals; international certification programs; technology transfer	Universities, international training centers	Quality of training programs; brain drain	Skilled workforce increase by 300%	80% of positions filled with certified specialists

Digitalization is becoming another important component of Uzbekistan's logistics modernization. The introduction of electronic customs systems, single-window procedures, and real-time cargo tracking improves transparency and reduces delays at borders. These reforms simplify trade operations and bring Uzbekistan's logistics processes closer to global standards.

Overall, the development of international transport corridors and multimodal logistics systems plays a critical role in overcoming Uzbekistan's structural limitations as a landlocked country. By expanding transport networks, modernizing logistics infrastructure, and improving regulatory efficiency, Uzbekistan can significantly reduce the cost of trade, strengthen its role as a regional transit hub, and increase its participation in global value chains. These efforts not only support the growth of export industries but also contribute to economic diversification and long-term national competitiveness.

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