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## Transport and Communication Potential of Central Asia: EU Interests, Challenges, and Prospects

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### ABSTRACT

The scientific article analyses the transport and communication potential of Central Asian countries in the context of the interests of the European Union. The article aims to highlight the problems and prospects of realizing the transport and communication potential of the Central Asian countries in the context of the interests of the European Union. In the course of the study, a set of general scientific and unique methods of cognition was used, with the help of which the processes and phenomena considered in the paper were analyzed. To analyze the transport and communication potential of the Central Asian region, the existing achievements in this area in each of its countries are characterized separately. The Central Asian region is of geostrategic importance for the European Union. Several vital interests related to transit and transport systems have been identified, including route diversification, energy transport, economic cooperation, connectivity, and the development of transit corridors. The implementation of the developed solutions and the study of the best international practices can help the countries of the Central Asian region to significantly improve logistics performance and create a more efficient, competitive, and sustainable transport and logistics sector. The research contributes to the growing body of knowledge on Eurasian connectivity and provides actionable recommendations for enhancing EU–Central Asia cooperation through strategic infrastructure development.

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## 1. Introduction

For quite a long time, Central Asia (CA) has been in the sphere of the broad European neighborhood policy. This may well have hindered the improvement of interlateral dialogue. However, the growing political crisis in the West and the active position of China and Russia in the region has led the European Union (EU) to reconsider its approach. This manifested itself in the adoption of a new CA strategy in 2019, which shifted the European Union's foreign policy from a Brussels-centered orientation to principled pragmatism and sustainability (Winn, Gänzle 2022: 1343). The new approach implies considering the interests and specificities of the region's countries in shaping common principles to address challenges in security, energy, transport, and the digital network. Such initiatives contribute to the intensification of a comprehensive partnership with the EU, as well as to the diversification of the economies of the CA countries and the expansion of connectivity with the Western world.

The relevance of the research topic is conditioned by the fact that, after many years of isolation from the leading international trade routes (primarily sea routes) and as a result of geo-economic upheavals, Central Asia is now of active interest to world actors, mainly the EU, seeking to find new transit routes. This renewed interest may positively impact the CA countries, which have insufficient coordination in customs policy and coherence of transport communications.

Review of the theoretical basis of the study. Domestic studies on the problem of relations between the EU and the countries of the Central Asian region (CAR) are pretty extensive (Ibrashev & Ensebayeva, 2001; Paramonov et al., 2017). Thus, the work of Mozharova is interesting to study, who describes the state of the transport industry in Kazakhstan and the problems and prospects of development (2011). The author also offers recommendations to improve the development of the sector .

The monograph by Chebotarev and Gubaidullina (2013) is devoted to one of the leading international actors in Central Asia - the EU . It analyses the EU Strategy in Central Asia for 2007-2013, provides its assessments of the preliminary results of its implementation, and forecasts the prospects of the EU presence in the region. The authors obtained new empirical data and presented new theoretical approaches .

Bodaubayeva's work considers Kazakhstan's transport and logistics infrastructure in the context of transit corridor development (Bodaubayeva, 2019). The author reflects on the problems and prospects for developing the transport infrastructure of Kazakhstan to ensure efficient backbone networks between Europe and Asia through the use of international transport routes passing through the state's territory.

Laumulin (2020) takes a detailed and objective approach to the problems and prospects of relations between the CAR countries and the EU. He points out the main points of convergence of interests of both sides and analyzes foreign researchers' works .

Aubakir and Suleimenov analyzed new trends in the relations between Central Asia and the EU from the perspective of both participants in this process and the evolution of the relevant EU policy documents (Aubakir & Suleimenov 2020). Also, Aubakir, in his articles, analyzed the elements of the Europe-Asia Connectivity Strategy announced by the EU, as well as assessed Kazakhstan's capabilities in the context of its upcoming implementation (2018). Modern approaches were analyzed, considering the foreign policy doctrines of global players (Russia, China, America, and the EU) in relations with CA countries. Special attention is paid to the assessment and conclusions on their development prospects through the prism of the interests of the region's states (Aubakir 2020).

The article by Karsybaev et al. (2023). considered ways of further improvement and growth of transit trans-ortation, increasing the efficiency of using the reserves of carrying capacity of national transport systems and stimulating their reproduction.

In their study, Turkmen researchers Ishanov et al. (2023). highlight the features of the current state of the road network of Turkmenistan, the historical significance of the Great Silk Road, and substantiate the importance of investment in the intensively developing road sector of the country.

Among foreign researchers, Kühnhardt (1998), one of the first to formulate the EU's geopolitical goals, should be singled out. He believed that the Caucasus and Central Asia have long required more active intervention on the part of the EU. However, there is still a significant risk of involving Europe in blocking confrontations over natural resources and participation in regional conflicts in these regions.

In 2005, French writer Raballan published a book entitled "Central Asia or the Fatality of Enclave?", which explores the problems and peculiarities of the region's geographical location between major geopolitical forces at the center of Eurasia. Special attention is paid to the problem of land-lockedness, which the author sees as the leading cause of all geopolitical issues in the region, which is deprived of access to world communications.

"Great Powers and Regional Integration in Central Asia: a Local Perspective," (2009), prepared with the active participation of Kazakhstani specialists, was published by the Opex Foundation of the Spanish Ministry of Foreign Affairs and is devoted to the problems of geopolitics and the international position of Central Asia. It also examines the policies of prominent global actors and interested regional powers, such as Russia, China, America, Turkey, Japan, and the EU.

Laruelle concludes in his work that national identity is one of the main components of foreign policy and at least as crucial for domestic policy (Laruelle, 2017). CA countries have to deal with several parallel processes. The authorities attach high importance to sovereignty. These countries strive to be open to the world but, simultaneously, seek to maintain a certain distance from their neighbors.

In 2017, discussions began on developing a new EU policy strategy for Central Asia, adopted in 2019, to find a balance between a bilateral and regional approach. The need to complement the overarching objectives with priorities for each CA country and to address priorities in the regional dimension was emphasized (Böttger, 2018) .

Fawn discusses in his article the intensified regional and interregional competition for CA. The EU determines its comparative advantage through cost-benefit analyses and seeks to increase its attractiveness by offering CA its allies while excluding other current players (Fawn 2021).

In terms of transport communications, for example, Zogg, head of the research team at the Centre for Security Studies in Zurich (2020), notes in his publication that rail links are of paramount importance for transit between China and Europe. Although transport is expensive, the overland transport option would reduce the time to around two weeks. And the development of transit routes, mainly through Kazakhstan, is paramount.

Foreign researchers believe there are several reasons for the EU's keen interest in CA, given that the EU's more extensive external relations and security agenda extends to this region. As far as CA is concerned, analyzing the region's interaction with external actors, including the EU, is essential as they contribute to changing national policy agendas and influence everyday life (Fawn, 2022).

In the Russian political science, geopolitical and partly orientalist literature of the 2000s, the book "Big Game with Unknown Rules: World Politics and Central Asia" (Kazantsev, 2008), devoted to the main Western political-geographical projects for Central Asia, has attracted particular attention. These projects include:

- 1- Strengthening of national statehood of CA countries.

1. The Turkic World.

2. Internal integrations in CA.
3. "Silk Road" and "alternative integration" ideas in the post-Soviet space.
4. The Greater Middle East Project.
5. Greater Central Asia Project.
6. Increasing influence of the Euro-Atlantic space on the East .

The author concludes that the constant change and failure of such reorganization projects in Central Asia testify to the serious inconsistency and low efficiency of the Western coalition's activities.

A team of researchers led by Bogaturov analyzes the historical and political context of international relations in Central Asia (International Relations in Central Asia: Events and Documents 2014). The works of Voskresensky and his research team are essential for studying regional processes in international relations (World Complex Regional Studies: Introduction to the Specialty, 2022).

Garbuzarova (2019) analyses the transport and communication projects of the leading actors in world politics in Central Asia: the EU, Russia, and China, which are aimed at developing transport infrastructure and transit corridors in the region.

The conclusions of Russian experts Egorov and Stoll are interesting. Due to the long distance and numerous borders along the Trans-Caspian International Transport Route (TITR), the authors believe that this route is not sufficiently capable of becoming an alternative to the traditional East-West route (Egorov and Stoll, 2021). However, the joint work of the TITR member countries to remove bottlenecks, modernize infrastructure, and harmonize tariff policies shows us a different picture of the development of the corridor, which is in high demand for transporting goods to and from China to Europe .

The review of the study's theoretical basis has shown that the issues related to the development of transport and communication potential of the CA countries are well-developed in the scientific literature. In the context of the EU interests, these issues have become particularly relevant since 2022 after the aggravation of the situation in the international arena.

The study's novelty lies in the scientific validity of proposals and prospects for the development of CAR's transport and communication sector in the context of the joint interests of the EU and CA countries.

It is assumed that the development of transit and the modernization and construction of logistics transport infrastructure will increase the volume of cargo flows transiting through the territory of the CA countries, thus securing the region's leading role in forming the central logistics hub in Eurasia.

The purpose of the paper is to highlight the problems and prospects of realizing the transport and communication potential of the CA countries in the context of EU interests. The following tasks will contribute to the achievement of the stated goal:

- Identify the main transport and communication problems in CA and the EU ;
- To determine the directions for further development, considering the interests of the CA and the EU .

## **2. Materials and Methods**

The study used expert assessments of such international organizations as the United Nations (UN), the UN Conference on Trade and Development (UNCTAD), the UN Economic and Social Commission for Asia and the Pacific (ESCAP), as well as materials from periodical articles and media publications on the development of transport communications in Central Asia and the EU's interest in their potential in this area.

The primary method of assessing the performance of the CA transport complex is direct comparative analysis, which is used to analyze key indicators of transport infrastructure (length

of transport routes, quality of infrastructure, capacity) of the CA countries: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan, as this region is of particular interest to the EU as a new transit route.

The historical-genetic method made it possible to trace the evolution of CA transport systems and their links with the interests of external actors, particularly the EU.

System analysis was applied to assess the transport and communication potential of CA as a system comprising infrastructural, economic, and political elements and the interrelationships between regional transport routes and EU global interests.

The method of traditional analysis of documents containing data on road and railway development projects in CA and key international investment initiatives in the transport sector of CA allowed us to identify problems and prospects for their implementation.

A cartographic method was used to visualize the transport routes and corridors under study, visually representing strategic objectives and initiatives.

### 3. Results

This section may be divided by subheadings. It should provide a concise and precise description of the experimental results, their interpretation, and the experimental conclusions that can be drawn.

Central Asia is located at the crossroads of key land transport routes that historically epitomized the link between East and West, North and South, and are now the basis for forming the Eurasian transport framework. However, the accessibility of the region's states to world markets depends on transport through the territories of third countries with which they share borders. The distance to the nearest seaports varies from 1500-1700 km (for road transport to the ports of Karachi in Pakistan and Bandar Abbas in Iran) to 3500-6600 km using railways to seaports in the Baltic, Azov-Black, and Far Eastern basins in Russia (Economy 2022) (see Table 1).

**Table 1. Distances from CA countries to seaports in transit countries by road and rail transport modes**

CA countries	Main seaports in transit countries	Distance to the sea (km) (road/rail/train)
Kazakhstan	Shanghai (CHN); Hamburg (DEU); St. Petersburg (RUS); Vladivostok (RUS)	4 700 - 5 200
Kyrgyzstan	Shanghai (CHN); Hamburg (DEU); St. Petersburg (RUS); Vladivostok (RUS)	4 900 - 5 000
Tajikistan	Bender-Abbas (IRN); Karachi (PAK); Shanghai (CHN); Hamburg (DEU); St. Petersburg (RUS); Vladivostok (RUS)	1 500 - 3 770
Turkmenistan	Poti (GEO); Bandar Abbas (IRN); Shanghai (CHN); Hamburg (DEU); St. Petersburg (RUS); Vladivostok (RUS).	1 700 - 4 500
Uzbekistan	Poti (GEO); Bandar Abbas (IRN); Lianyungang (CHN); Hamburg (DEU); St. Petersburg (RUS); Vladivostok (RUS)	2 700 - 6 600

Significant transport costs caused by long distances and reaching, according to UNCTAD, 60 percent of the value of imported goods (Review of Maritime Transport 2021), limited access to international markets, and insufficient infrastructure connectivity within the region are factors slowing down the sustainable socio-economic development of the area. According to transport connectivity indicators presented by ESCAP (Review of Sustainable Transport 2019), all CA countries are still lagging behind more developed countries, with Singapore as the standard. They also show inadequate logistics performance on the LPI indicator. The highest ranking in the region on these indicators in 2018 was Kazakhstan (77th out of 160 countries),

followed by Uzbekistan (117th), Kyrgyzstan (132nd), Turkmenistan (142nd) and Tajikistan (147th).

**Table 2. Transport and infrastructure potential of CA countries**

Country	Railways				Motorways			
	Length, km	Density per 1000 km <sup>2</sup> , km			Length, km		Density per 1000 km <sup>2</sup> , km	
		2000	2021		2000	2021	2000	2021
Kazakhstan	13 600	15 372	5	5,53	38 914	87 400	7	32,85
Kyrgyzstan	417	424	2	2,35	18 494	34 000	17	92,52
Tajikistan	547	616	4	4,77	26 496	27 472	187,3	194,79
Turkmenistan	2 446	3 550	5	6,11	162,7	58 668	3	120
Uzbekistan	3 986	7 400	9	8,15	42 100	86 799	32	193,33
Total:	21 003	27 335	5	5,3	126 166,7	294 339	16,3	69,7

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However, during independence, major transport infrastructure development projects have been implemented in all CA countries (Omonturdiev, 2022: 512-513) (Table 2).

Kazakhstan (15,372 km) leads the region in terms of railway length, followed by Uzbekistan (7,400 km), Turkmenistan (3,550 km), Tajikistan (616 km) and Kyrgyzstan (417 km). Uzbekistan (183,000 km) and Kazakhstan (95,561 km) have the longest motorways. Regarding road density, Uzbekistan leads with 8.15 km per 1,000 km<sup>2</sup> (for comparison, the world average is 8.48). Regarding railway density, Tajikistan ranks first (194.79 km per 1,000 km<sup>2</sup>), followed by Uzbekistan (193.33 km).

Dynamic road network development is a factor in increasing transport and trade connectivity in CA (Table 3) (Economics, 2022).

Approximately one-third of all road highways in CA countries carry the bulk of freight for local and international transport. Like the railway network, most of the main roads are north-south orientated. The total length of road infrastructure in CA is sufficient to meet users' needs, but most of the roads in the region are in poor condition due to lack of proper maintenance. This is mainly due to the following aspects:

- 1) limited budgetary resources for road maintenance;
- 2) application of outdated technical standards in the maintenance and operation of motorways;
- 3) limited use of new technologies and road construction and maintenance methods, which could lead to a 20-30 percent reduction in costs.

The railway system in the CA countries extends over 27,000 kilometers. Kazakhstan has the most extensive and most used railway network, covering 66% of the total railway length in the region and accounting for 84% of all freight traffic. Approximately 18 % of interregional railways pass through Uzbekistan, which carries about 11 % of all traffic. Turkmenistan owns about 12 % of the interregional railways and participates in 4 % of all traffic (Horák, 2022).

**Table 3. Road network development projects in CA countries**

CA countries	Projects
Kazakhstan	<ul style="list-style-type: none"> <li>- construction of the Beyneu - Shalkar - Yrgyz section of the Eurasian Transport Corridor Europe-Caucasus-Asia (648 km, 2025-2028) and the Aktobe - Uralsk - Samara motorway (523 km, 2025-2030);</li> <li>- new international route Europe-Western China - the first motorway in Central Asia to fully meet international standards, linking China with Russia</li> </ul>
Kyrgyzstan	<ul style="list-style-type: none"> <li>- construction of an alternative north-south motorway;</li> <li>- reconstruction of Bishkek - Osh, Tyup - Kegen, Bishkek - Naryn - Torugart, Kochkor - Aral, Osh - Batken - Isfana - Khujand roads;</li> <li>- Continued construction of the Balykchy-Karakol International Motorways</li> </ul>
Tajikistan	<ul style="list-style-type: none"> <li>- More than 2,100 km of international and 1,000 km of domestic motorways, 31 km of tunnels, and 240 bridges were reconstructed;</li> <li>- the Kulob-Khorog-Kulma-Karokurum (Shokhon-Zigar and Shkev-Zigar), Dushanbe-Kurgan-Tyube-Kulob, Dushanbe-Chanak motorways were built and reconstructed, Vahdat - Chirgatal - Saritosh (border with Kyrgyzstan), Dushanbe - Tursunzade (border with Uzbekistan), Ayni - Penjikent (border with Uzbekistan), Vose - Khovaling, Khujand - Isfara;</li> <li>- new Ozodi, Istiqlol, Shahrison, and Chormaghzak tunnels were opened</li> </ul>
Turkmenistan	<ul style="list-style-type: none"> <li>- modernization and construction of a 13.7 thousand km motorway network;</li> <li>- commissioning of 118 bridges (Transport System of Turkmenistan, 2016, p. 18);</li> <li>- construction works on the Turkmenbashi-Ashgabat motorway (564 km);</li> <li>- construction of a 600 km section of the Ashgabat-Turkmenabat-Uzbekistan border motorway included in the ASHD network, which is planned to be completed by 2030;</li> <li>- The planned construction of the Turkmenbashi - Garabogaz - Kazakhstan border motorway with a bridge over Garabogazgol Bay (298 km, 225 km of which are on the territory of Turkmenistan) should be included in the Eastern Highway Route of the North-South International Transport Corridor (ITC).</li> </ul>
Uzbekistan	<ul style="list-style-type: none"> <li>- reconstruction of 77 km of the Karshi - Kitab section on the A380 and M39 motorways;</li> <li>- widening of a 75 km road section of the Central Asia Regional Economic Cooperation Programme (CAREC-2) corridor between the cities of Pungang and Manangan, etc;</li> <li>- the possibility of reconstruction and development of a 920 km motorway from Uzbekistan to China via Kyrgyzstan (Andijan - Osh - Irkeshtam - Kashgar) is being considered. Freight traffic on this highway has been carried out since February 2018 and is vital for the whole CARs</li> </ul>

Although the density of roads in CA is much higher than that of the railway network, the latter is preferred for transporting goods through the region due to the costs associated with heavily worn roads (65%), whose north-south routes coincide with Kazakhstan's railway lines. And the seemingly obvious choice in favor of rail transport comes with specific difficulties. For example, if goods are to be transported to Central Asian stations by rail, the difference between the gauge in CA (1,520 mm, Soviet standard) and in the rest of Asia and Europe (1,435 mm) requires trans-loading of goods in and out of CA, which entails additional costs and longer transport times, already increasing due to the wear and tear of the railway rolling stock used in CA.

New railway routes and container services are being developed to improve integration into global supply chains (Economy, 2022) (see Table 4).

**Table 4. Railway development projects in CA**

CA countries	Projects
Kazakhstan	<ul style="list-style-type: none"> <li>- Construction of second main tracks on the Dostyk - Moyinty section (836 km, 2022-2025);</li> <li>- construction of the Darbaza-Maktaaral railway line (106 km, 2024-2025);</li> <li>- construction of a railway line bypassing Almaty (73 km, 2023-2024);</li> <li>- Renewal of rolling stock, including by organizing its production of containers</li> </ul>
Kyrgyzstan	<ul style="list-style-type: none"> <li>- It is planned to merge the separate northern and southern sections of the railway network;</li> <li>- construction of the China-Kyrgyzstan-Uzbekistan railway, which will strengthen Kyrgyzstan's transit role and increase transit revenues</li> </ul>
Tajikistan	<ul style="list-style-type: none"> <li>- In 2016, the Dushanbe - Kurgan - Tyube railway was commissioned, including three tunnels and eight bridges. However, the connection of the northern section of the railway with the central and southern sections remains possible only through Uzbekistan;</li> <li>- implementation of the Trans-Afghan Corridor project, which will connect Tajikistan, Afghanistan, and Turkmenistan and provide Tajikistan with alternative access to Iran, Turkey, and the South Caucasus countries</li> </ul>
Turkmenistan	<ul style="list-style-type: none"> <li>- Several essential projects were implemented to expand the 5188 km railway network;</li> <li>- in 2014, construction of a 700 km branch line was completed between Serkhetiak on the border with Kazakhstan and Ak-Yayla on the border with the Islamic Republic of Iran;</li> <li>- by 2016, an 85 km section between Kerki (formerly Atamurat) and Ymamnazar on the border with Afghanistan was commissioned;</li> <li>- in 2017, the 13 km long Serkhetabat (TKM) - Turgundi (AFG) railway line was fully reconstructed;</li> <li>- electrification of the main trunk sections with a length of 2,000 km is planned</li> </ul>
Uzbekistan	<ul style="list-style-type: none"> <li>- projects implemented: 700 km Navoi - Uchkuduk - Sulton - Uvais - Tog-Nukus line; 681 m long railway bridge over the Amu Darya River; 223 km long Tash - Gozar - Baysun - Kumkurgon line; more than 3,800 km of railways modernized and reconstructed, almost 1,100 km electrified (UNESCAP, 2022).</li> <li>- electrification of the 124-kilometer Pap-Angren railway line, which connects three provinces in the Ferghana Valley with the rest of the country, bypassing Tajikistan, and the 465-kilometer Bukhara-Urgench-Khiva railway line, part of the CAREC-2 corridor, is planned. The expansion of the railway network allowed domestic transport without transit through the border areas of neighboring Tajikistan and Turkmenistan;</li> <li>- is considering the possibility of participating in constructing the Mazar-e-Sharif-Herat railway (Trans-Afghan Corridor). The realization of this project will make it possible to create an exit through Afghanistan to seaports in Iran (Chabahar) and Pakistan (Chaman).</li> </ul>

Expanding new international transport and trade routes requires carriers to provide more efficient and higher-quality services. However, the current method of operating stops, where one state-owned railway company transfers wagons to another state-owned railway company, and an insufficiently efficient wheelset replacement system at border crossings, create obstacles to the development of regional and global East-West trade.

The main objectives of national strategies and regional cooperation in CA are to increase passenger and freight transport, including container transit, promote environmentally friendly transport, and reduce eco-nomic transport costs. The focus is on developing an international transport complex and creating alternative routes to expand the capacity of each CA country. International programs and initiatives to improve trade and transport connectivity are crucial



for developing transport and economic cooperation in the region, as shown in Table 5 (Economics, 2022).

**Table 5. Key international investment initiatives in the transport sector in Central Asia**

Project	Investments, USD billion	Countries or continents
One Belt, One Road Initiative (BRI)	900 - 8,000 (planned)	Europe, Asia, Africa
CAREC	31.5 (invested)	Afghanistan, Azerbaijan, People's Republic of China, Georgia, Kazakhstan, Kyrgyzstan, Mongolia, Pakistan, Tajikistan, Turkmenistan, Uzbekistan
TRACECA	0.16 (invested)	Armenia, Azerbaijan, Bulgaria, Georgia, Kazakhstan, Kyrgyzstan, Iran, Republic of Moldova, Romania, Turkey, Ukraine, Uzbekistan, Tajikistan, Turkmenistan, EU member states
Trans-Asian Railway (TARC) - network in the UNESCAP region	75.6 (planned)	Afghanistan, Armenia, Azerbaijan, Bangladesh, Belarus, Bhutan, Brunei, Cambodia, China, India, Indonesia, Iran, Kazakhstan, Laos, Mongolia, Nepal, Pakistan, South Korea, Russia, Sri Lanka, Tajikistan, Thailand, Turkey, Turkmenistan, Uzbekistan, Viet Nam

CA is becoming a key partner for the EU in the current complex geopolitical situation. Central Asia is increasingly important to the EU due to its geographical location, energy resources, and key role in connecting Europe and Asia. In addition, the CA countries play an essential role for the EU in addressing security and logistics challenges.

The Investment Forum held in Brussels on 29-30 January 2024 brought together delegates from CA countries to discuss and form agreements on TITR. This corridor aims to create a route connecting Europe and CA, encompassing various linkages such as trade, economy, and energy. The importance of this route has increased significantly recently, especially after the EU distanced itself from Russia in terms of energy, trade, and economic ties two years ago, which affected transit routes from CA through its territory.

The forum was attended by the CA countries together with their Ministers of Transport and a representative of the Transport Agency of Turkmenistan. In addition, Armenia, Azerbaijan, Georgia, and Turkey, key access points to Europe via the Caucasus, the Black Sea, and Turkish territory, had the opportunity to join the discussion on ambitious European plans. All participants expressed their support for developing the transport, trade, and economic route, as they recognize the valuable opportunities it represents, which no country would refuse (Kılıçev, 2024).

However, every project has strengths and weaknesses. For example, the Dostyk-Moynty, and Almaty station sections have low maximum capacity and unoptimized infrastructure. TITR member states are actively working at the state level to eliminate problem areas along the route. These include the lack of appropriate logistics centers in the western direction (near Aktau), high wear and tear of wagons, fitting platforms, and locomotives, and insufficient vessels in the Caspian Sea area - particularly ferries.

To facilitate regional economic growth and boost trade, improving the efficiency of the TITR, which connects Kazakhstan to the Black Sea via Baku and Poti is vital. International clients are concerned that transit along the Middle Corridor will take about 80 days. However, experts suggest that through better management (dry and seaports, terminals, stations, etc.) and small investments in infrastructure, the total journey time along the route could be reduced substantially, potentially by half or more (Iskalev, 2023). According to the EU plan, transit times should ideally not exceed 15 days.

To improve the efficiency of the Middle Corridor, funds need to be channeled into developing new transport infrastructure such as roads, railways, and marine terminals. This could include improving existing infrastructure, building new facilities, and improving corridor connection. Following the last meeting, it was stated that the European Commission and the European Investment Bank (EIB) intend to invest €1.5 billion in strategic transport infrastructure facilities in CA (Loginova, 2024).

Digitalization, which involves the use of digital technologies such as GPS tracking, RFID, and block-chain, will serve as another tool to improve the monitoring of goods and minimize the risk of delays or losses.

Another aspect is the simplification of customs procedures. This includes streamlining customs processes, reducing documentation requirements, and introducing electronic systems to speed up the customs clearance process. Significantly, tax incentives, subsidies, and simplified administrative procedures can stimulate private investment in transport infrastructure along the Middle Corridor. Harmonizing technical regulations, product standards, and customs procedures in countries along the Middle Corridor contributes to cost reduction and efficiency gains by eliminating the need for multiple certifications and inspections.

Cooperation between the public and private sectors can lead to new sources of financing, expertise, and technology. For example, the President of Kazakhstan instructed KazMunayGas to develop an optimal action plan, including attracting investors for the Tengiz project. It was proposed that the Government of Kazakhstan, together with Samruk-Kazyna, take measures to increase the capacity of the Atyrau-Kenkiyak and Kenkiyak-Kumkol oil pipelines. A combination of infrastructure development, digitalization, simplification of customs procedures, harmonization of standards, investment incentives and public-private partnerships, and diversification of oil supplies is needed to improve the efficiency of the Middle Corridor (Iskaliyev, 2023).

Thus, to increase the level of automation of administrative procedures and reduce bureaucratization along the TITR route, it seems advisable to consider the possibility of signing a relevant joint document on the formation of an integrated system of digital transport corridor similar to major global platforms such as the European Logistics Platform (ELP) and China's logistics and transit information platform LOGINK. In other words, the goal will be to create a unified information system for supply chain management by accumulating all electronic data along the route using services, possibly.

Based on blockchain technology. This will make it possible to exchange transport electronic documents between route participants and simplify customs and border crossing procedures. The whole process will generally become transparent, faster, and more convenient.

One of the pressing problems is the development of logistics infrastructure. This emphasizes the urgent need to actively build new, modern warehouse complexes that meet international standards and use digital technologies.

Centralization of management and location of logistics centers in a particular region contribute to ensuring high-quality customer service and selection of the most efficient transportation and cargo handling methods due to the availability of appropriate logistics infrastructure and technologies. The concept of logistics centers is based on synergy, which is achieved by combining the efforts of several participants and leads to more efficient logistics solutions. This is a key condition for successful functioning in today's market for small companies.

This is the main difference between modern logistics centers - they are not just focused on one company but offer a comprehensive service for multiple commercial and logistics enterprises. Another key feature of such centers is the ability to operate in different transport systems and complexes. (Logistics 2018: 328).

Simplistically, a logistics hub is a place where goods are transloaded from one mode of transport to another. The development of logistics infrastructure positively impacts the competitiveness of warehousing service providers, as the expansion of warehouse networks and their proximity to customers contribute to reliable, on-time delivery, improved service levels, and shorter lead times.

The increasing number of offers from logistics service providers in the regions will impact the development of warehouse infrastructure for all market players. Today, transport and logistics clusters (TLC) are essential in creating modern logistics infrastructure.

The main objective of such clusters is to generate and exploit unique combinations of competitive advantages for a particular territory and organization. This is achieved through joint activities and efforts to create a shared space of added value. This includes integration and coordination of operational logistics activities of supply chain counterparties, as well as the development of transport, logistics, and business infrastructure that provides conditions for managing the flow of materials with specific characteristics necessary for the successful functioning of a business in the cluster form.

We believe that all market players, including suppliers, producers, consumers, and commercial intermediaries, should join forces to create their own TLC in each region. This will provide the following benefits:

- development of critical logistics components such as cargo handling terminals and universal terminal and warehouse complexes offering a wide range of warehousing, customs, and ancillary services;
- increasing the competitiveness of transport routes;
- Reducing the share of transport costs in gross domestic product (GDP);
- ensuring coordination and integration of various small and medium-sized logistics organizations (transport, forwarding, warehousing, etc.) into a comprehensive logistics system;
- adapting internal structures and external business relationships to overcome environmental uncertainty;
- the creation of transport and warehouse infrastructure covering various types of transport companies, freight forwarding firms (including couriers, agents, intermodal transport operators, etc.), warehouse complexes, distribution centers, terminals, and related organizations offering related services (vehicle maintenance, repairs, trucking companies, service providers) (Shulzhenko 2017: 275) .

To ensure information and financial flows, it is necessary to develop infrastructure that includes financial institutions, insurance companies, research organizations, training centers for personnel training and retraining, and consulting, analytical, and marketing organizations. In this regard, future challenges require creating a regional infrastructure base that will allow customizing the solutions developed to improve the resources and development of TLC .

Introducing an efficient logistics system for international freight transport will reduce transport costs, thereby increasing the competitiveness of CA countries' products in global markets. Due to their remoteness from world markets and limited access to sea routes (e.g., Uzbek goods need to cross two other countries to reach sea ports), transport costs contribute significantly to the total costs of exported goods. Trade and transport companies face additional challenges, such as long distances to world markets, and physical barriers, such as delayed deliveries and unofficial payments.

Considering the problems of realizing the transport and communication potential of the CA countries, it is possible to formulate some recommendations for the further development of this sphere in the context of the EU interests.

Thus, the following seems appropriate:

- development of an agreement on transport and transit in CA;
- formation of specific mechanisms to promote efficient transport corridors to enter the markets of China, South Asia, the Middle East, and the EU with the use of through tariffs favorable to business;
- preparation of a program of measures to liberalize the transport services market and streamline permit procedures;
- creation of an integrated digital International Transport Platform.

These initiatives will undoubtedly provide significant assistance in addressing the pressing problems facing each CA state. They envisage optimization and harmonization of customs and other procedures on international transport routes passing through our countries, establishment of standard approaches for the development of a reliable transport and communication system providing access to the most important global markets and seaports, creation of a common transport space in Central Asia, intensification of co-operation efforts to expand existing and create new transport corridors, as well as ensuring transparency of transit traffic through digitization of transport corridors. Ultimately, these measures are aimed at improving the region's competitiveness in the global market.

#### **4. Discussion**

The Central Asia-European Union Summit was held in June 2023, with trade, transport infrastructure, and the green economy as the main issues. Transport and logistics development is one of the most important areas for Central Asian countries. The region has every opportunity to create a common geo-economic space, which will contribute to the integration of Central Asian countries into the world economy.

The China-Kyrgyzstan-Uzbekistan railway project can be cited as an example. Its implementation will bring CAR out of the transport deadlock, connect about four billion people, and expand the geography of transport from Asia via Turkey to Europe, the Middle East, Iran, the Persian Gulf, and North Africa (Amanbekov, 2023).

At this summit, the President of Kyrgyzstan Zhaparov expressed confidence that Central Asia has the potential to "become a hub connecting Europe and Asia." Zhaparov expressed confidence that Central Asia has the potential to "become a hub connecting Europe and Asia." In this context, he proposed to create a permanent platform with the EU at the level of heads of transport structures.

According to President Tokayev, TITR has gained strategic importance in transport. Kazakhstan and its Chinese partners have launched the construction of a logistics terminal in Xi'an. This port is expected to become an essential hub for sending direct container trains through Central Asia to Europe. In this context, he suggested that the EU create a strategy for transport cooperation with Central Asia.

In September of the same year, the annual, starting from 2018, Consultative Meeting of the Heads of the Central Asian States was held, which testifies to the continued positive development of regional cooperation. One of the characteristic features of this meeting was a special focus on developing cooperation in the transport sector and integrating the region into the international transport and transit system.

Thus, the participants concluded the Five-Party Agreement on Enhancing Land Transport Connectivity in Central Asia, which is of significant practical importance for strengthening new partnerships and cooperation. The signing of this document means that the leaders of the states have decided to form a unified transport infrastructure, which is a key factor for economic growth and the realization of the potential of Central Asia. As the President of Uzbekistan stated in his speech, "the region is once again regaining its role as a transport hub connecting West to East and North to South," restoring its historical significance (Amanbekov, 2023).

Interaction in forming an extensive transport and communication system will allow us to fully realize the transport and transit potential of CA for several reasons.

Firstly, the UN estimates that by 2050, the world's freight transport demand will grow 3 times. This trend is a direct challenge for landlocked CA countries, as more than 80% of world trade is currently carried out by sea (Amanbekov, 2023).

Secondly, the products of the countries isolated from the sea are hardly represented on international trade markets, and their share in world exports is less than 1 percent. Therefore, to compete in global markets, CA countries must reduce prices to the detriment of their interests and conclude rather expensive import deals.

The CA region is currently undergoing a significant transformation. As CA countries integrate their economies into the global community, there is a growing need to reduce barriers to transport and trade while improving transport logistics to optimize international freight movement.

Economic integration in the region through creating a network of cross-border structures (border posts, free zones) is complicated by several reasons.

First, CA countries are generally reluctant to engage in multilateral customs cooperation. Each prefers to manage its own customs clearance and border control procedures rather than harmonize its legislation with its CA neighbors.

Secondly, the continuing tensions between countries with intertwining borders, as in the case of Kyrgyzstan, Tajikistan, and Uzbekistan in the Ferghana Valley (Lewiston 2022: 14-15).

Finally, the low logistics performance indices (LPIs) of CA countries highlight their lack of competitiveness compared to the most developed countries in managing cargo turnover in and out of their territories. In this regard, the slowness of Kazakhstan's customs service, which is capable of waiting up to forty hours, is a particular source of criticism, which in turn demonstrates that Kazakhstan's relatively high IEL compared to neighboring CA countries, however, does not guarantee the absence of serious deficiencies in the management of flows at its borders.

Thus, transport isolation seriously hinders the economic growth of the region's countries. The share of freight delivery costs in CA countries is up to 50 percent of the final price of goods, which is about 5 times higher than the world average of 11 percent. As a result, the economies of the countries of the region under consideration have to bear the transport burden 2-3 times more.

In this regard, improving border and transit procedures in the region seems advisable. Optimizing the flow of goods and services across CA borders requires simplifying customs procedures and creating efficient transport and logistics networks. Development and modernization of transport infrastructure, including roads, railways, and air links, is necessary to improve regional goods and services.

UN experts have determined that addressing issues related to access to global seaports has the potential to double the GDP of CA countries within a decade (Rakhmanov, 2023). To achieve this goal, it is recommended that a comprehensive market analysis be conducted and a comprehensive plan for developing the transport and logistics sector. This process will be assisted by the involvement of all relevant stakeholders and forming a public-private advisory council for open dialogue. In addition, attracting private sector involvement and investment in logistics is crucial to promoting competition, reducing state monopolies, and eliminating competition with private enterprises. In addition, providing incentives to foreign investors will encourage their participation in developing the transport and logistics industry.

Ensuring access to affordable finance and incentives is key. This includes initiatives such as attracting financial institutions to provide low-interest loans to transport and logistics enterprises. It also includes promoting public-private partnerships using financial instruments

and guarantees, giving grants or subsidies aimed explicitly at infrastructure development and introducing new technologies in the logistics industry.

The next stage involves the renewal and modernization of equipment and infrastructure. To achieve this goal, it is essential to establish credit programs with low interest rates that encourage investment in new transport equipment, railway rolling stock, freight fleets, and other necessary resources. In addition, it is critical to upgrade terminal equipment at railway stations on major routes to meet international standards and to keep pace with the projected increase in freight traffic. Developing and maintaining roads, railways, warehouses, and terminals as an independent outsourcing industry is critical to improving the overall efficiency of the transport sector.

It should be noted that on the issue of interaction in the transport and transit sphere, a common consensus has been formed between the leaders of the Central Asian states, supported by similar initiatives, the addition of which will be an important factor for general progress in this direction. For example, the President of Turkmenistan, Berdymukhamedov, suggested possibly launching a Central Asian transport and logistics platform. The President of Kazakhstan, Tokayev, stated that the Kazakh side welcomes the readiness of Central Asian countries to participate in projects to gradually increase the capacity of the TITR by introducing digital solutions and modernizing infrastructure (Rakhmanov, 2023).

The training of qualified personnel remains an urgent issue. This requires forming faculties in higher education institutions focused on education in international transport and logistics and cooperating with international and educational institutions and industry experts to develop and update training programs and requirements. It is possible to upgrade the skills of existing cadres in the field through offline and online training as a requirement.

The importance of developing and implementing effective legal frameworks and policies must be recognized. To achieve this goal, it is required to:

- Establishing an integrated logistics policy and strategy with a focus on efficiency and sustainability;
- Establish transparent and clear rules that promote fair competition, lower entry barriers, and support public-private partnerships to optimize the benefits for both parties.

Another important step involves the development of cooperation at both regional and international levels. CA countries can strengthen their ties with neighboring countries and actively participate in regional logistics initiatives by taking advantage of their strategic location. The CA countries have long demonstrated a growing interest in emerging new external players in the region, capable of balancing Russia, China, and America, emphasizing their desire to avoid an unambiguous geopolitical choice.

The “depoliticized” agenda of economic cooperation is most in demand. Therefore, the new surge of EU attention to the CAR could be a serious and multifaceted challenge for the historically present powers. Cooperation with international organizations to share best practices and access resources for logistics development should not be neglected.

At the same time, the CA countries seek to pursue a multi-vector policy designed to serve their interests. It should include the development of business cooperation and the attraction of foreign investments. In this regard, the West’s tough stance towards Russia is somewhat contrary to the interests of the CA countries. The Eastern countries want to maintain a balance between the largest centers of power other than America and the EU - China or Russia.

A distinctive feature of the Eurasian transport framework is its ability to link the ITCs passing through CA, offering various logistical opportunities for the region's countries. The North-South ITC is linked to other transport routes such as the Northern Corridor, the Europe-West China international route, the TRACECA Corridor, the TITR route, and the Lazurit

Corridor. This allows us to use the benefits and advantages of transport logistics and transit crossroads (Vinokurov et al. 2022: 163).

Along with the development of transport infrastructure, the countries in the region should also pay considerable attention to optimizing soft (intangible) infrastructure. This includes harmonizing transport regulations and simplifying border crossing procedures such as customs transit and border control. A critical aspect of seamless transport is digitalizing transport and logistics processes. Digitalization involves the use of electronic waybills, the creation of a digital global transit network based on the Global Transit Document (GTD), the introduction of digital twin technologies for transport infrastructure, artificial intelligence, unmanned traffic, big data analytics, distributed registries (blockchain), automatic identification and tracking of cargo and containers, and other similar technologies.

## **5. Conclusions**

This section is not mandatory but can be added to the manuscript if the discussion is the results of the system analysis of the transport and communication potential of the Central Asian countries in the context of the EU interests showed that this region has been in the sphere of the broad European neighborhood policy for quite a long time. , perhaps, this is what hindered the improvement of the interlateral dialogue. However, the Eurasian space, which has undergone significant changes in supply chains due to the COVID-19 pandemic of lockdowns and border closures, is now in the process of active reorganization. In 2022, for the development of transport and logistics in CA, the key factors are events related to Russia and Ukraine, as well as sanctions and the position of individual countries towards Russia.

On the one hand, this thesis is overly relativistic; on the other hand, it is the state of the agenda that determines the organization of the logistics chain, routes and forms of transportation, and the conditions of functioning of the state, market participants (carriers) and institutions providing financial settlements. In addition, the delivery map also depends on such technical factors as the shortage of containers and fitting platforms, restrictions on transshipment of Russian cargo in specific ports, potential defaults of transport companies due to currency obligations, local restrictions on labor from certain countries, etc .

The growing political crisis in the West and the active position of China and Russia in the region has led the EU to formulate a new approach that involves taking into account the interests and specificities of the region's countries in shaping common principles to address challenges in security, energy, transport, and the digital network. Such initiatives contribute to the intensification of a comprehensive partnership with the EU, as well as to the diversification of the economies of the Central Asian countries and increased connectivity with the Western world.

Interaction in the transport sphere is becoming strategic for all CA states. Their significant interest in forming a new regional transport and communication connectivity model is apparent. In this respect, the CA countries and their close partners will continue active transport diplomacy, making it possible to coordinate national projects of the region's states with the international transport corridors North-South and West-East and turn CA into an essential element of interregional interconnectivity.

The EU is interested in joining the implementation of transport infrastructure projects as part of its Global Gateway foreign policy initiative adopted in December 2021. Potential projects are planned to expand the railway network, port, and logistics infrastructure through the mechanisms of the European Bank for Reconstruction and Development (EBRD) and the EIB (Kadomtsev, 2022). On the one hand, the EU is interested in creating a trade link between the EU and Central Asia, bypassing Russia. On the other hand, implementing the Global Gateway project for 2021-2027 is a so-called alternative to China's "One Belt, One Road" program (Flint

2023). It is designed to combine all available EU instruments and resources in promoting infrastructure programs in Central Asia under the auspices of Brussels.

To determine the transport and communication potential of the Central Asian region, the existing achievements in this sphere in the context of CA countries are characterized. In general, the CAR is of geostrategic importance for the EU. EU investments in the transport sector, transit, and logistics of the CA countries aim to improve connectivity between Europe and Asia and promote economic development in the region. Thus, the EU has several interests in CARs related to transit and transport systems, including route diversification, energy transport, economic cooperation, connectivity, and transit corridor development. These interests are closely linked to the EU's broader strategic objectives of trade expansion, economic growth, and ties with Asia.

In the course of the study, several problematic aspects restraining the implementation of the existing transport and communication potential of the countries of the Central Asian region have been identified: worn-out infrastructure facilities, lack of harmonized legislation, persisting tensions in relations, and low indices of logistics efficiency. Specific recommendations are formulated to solve the identified problems, and prospects for further development in the context of EU interests are identified. Implementing the developed solutions and research of the best international practices can help CA countries significantly improve logistics performance and create a more efficient, competitive, and sustainable transport and logistics sector. The presented conclusions can help form a shared vision at the regional level and elaborate joint proposals for the development of transport and communication interconnectivity in Central Asia and further improvement of the transport policy of the region's countries.

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