



**THE POTENTIAL OF THE TRANSPORTATION INFRASTRUCTURE OF
INTERNATIONAL TRANSPORT CORRIDORS AS A STIMULUS FOR THE
INTEGRATION OF THE COUNTRIES OF THE COMMONWEALTH OF
INDEPENDENT STATES**

**TENCIAL DAS INFRA-ESTRUTURAS DE TRANSPORTE DOS
CORREDORES INTERNACIONAIS DE TRANSPORTE COMO
ESTÍMULO À INTEGRAÇÃO DOS PAÍSES DA COMUNIDADE DE
ESTADOS INDEPENDENTES**

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ABSTRACT

Objective. The research presented in this article focuses on the strategic importance and development potential of international transport corridors in enhancing economic integration and cooperation among the Commonwealth of Independent States countries.

Methodology. By analyzing communication routes and their capacity to serve as conduits for economic activities, the study identifies key benefits, including the facilitation of free trade zones, attraction of international investments, and advancement of national energy complexes.





Results. The authors propose a hierarchical interaction framework among Commonwealth of Independent States countries, emphasizing a multiplicative effect that benefits all member states through improved logistics and digital communication systems. Special attention is given to the North-South and Europe-Western China corridors, highlighting their critical roles in regional connectivity and economic development.

Conclusions. The findings and recommendations aim to guide future infrastructure projects to promote sustained economic growth and integration within the Commonwealth of Independent States region.

Keywords: International transport corridor; Transportation infrastructure; Routes.

RESUMO

Objetivo. A investigação apresentada neste artigo incide sobre a importância estratégica e o potencial de desenvolvimento dos corredores de transporte internacionais no reforço da integração económica e da cooperação entre os países da Comunidade de Estados Independentes.

Metodologia. Ao analisar as rotas de comunicação e a sua capacidade de servir como condutas para as actividades económicas, o estudo identifica os principais benefícios, incluindo a facilitação de zonas de comércio livre, a atração de investimentos internacionais e o desenvolvimento de complexos energéticos nacionais.

Resultados. Os autores propõem um quadro de interação hierárquica entre os países da Comunidade de Estados Independentes, salientando um efeito multiplicativo que beneficia todos os Estados membros através de uma logística melhorada e de sistemas de comunicação digital. É dada especial atenção aos corredores Norte-Sul e Europa-Oeste da China, destacando os seus papéis críticos na conectividade regional e no desenvolvimento económico.

Conclusões. As conclusões e recomendações visam orientar futuros projectos de infra-estruturas para promover o crescimento económico sustentado e a integração na região da Comunidade de Estados Independentes.

Palavras-chave: Corredor de transporte internacional; Infra-estruturas de transporte; Rotas.

1 INTRODUCTION

Currently, international transport corridors (ITCs) serve as key assets for the interaction of the Commonwealth of Independent States (CIS) countries in the field of international trade and cooperation (Kirillova et al., 2023; Shugurov, Pechatnova, 2023). As noted in (Martynova, 2023) : "...one of the strategic objectives of transport integration within the Commonwealth is the construction of a common transport space for the CIS," the comprehensive solution of this task draws the interest of countries in joint coordination of transport policy regarding the formation and development of





priority transit ITCs, as well as cooperation in identifying and eliminating administrative, technological barriers, and "bottlenecks" of transport and logistics infrastructure hindering the movement of national, interregional, and transit cargo flows (Kuznetsova et al., 2020).

ITCs play a crucial role not only in foreign economic but also in intraregional relations for the countries in their location (Osadchy et al., 2024). The ratio of internal and external connections in the activities of ITCs varies by region according to the degree and forms of a country's involvement in international economic relations (Barmuta et al., 2023). The international significance of transport corridors changes over time, reflecting changes in the structure of national and global economic space, the profile of a country's and its regions' involvement in international economic relations, and, as a reflection of this, the position of countries in global trade and transport.

One of the most important components of the strategic development of the CIS countries towards the integration of the Eurasian space is the development of the transport complex and the determination of conditions for effective supply chain management, as well as the possibilities of their flexible and dynamic reorientation within the structure of ITC communication routes.

2 LITERATURE REVIEW

An international transport corridor includes a set of transport communications and infrastructural logistics objects along the routes with the highest concentration of freight traffic, ensuring coordinated interaction of technological, managerial, and organizational-legal conditions of transportation (Ydyrys et al., 2023). The concept of a transport corridor (TC) emerged in the mid-1980s when the United Nations Economic Commission for Europe (UNECE) Commission on Inland Transport began studying transport flows in Europe with the aim of developing transit transportation (Martynova, 2023).

In territorial planning studies, an ITC refers to a specific geographical area along the main direction of mass transportation of goods and passengers within or between agglomerations. Corridors can include both a single road and a network of parallel routes along adjacent territories (Vardomsky, 2023). The steady growth of the national





economies of the CIS countries, the strengthening of their external economic relations, stimulates an increase in demand for transport services (Baieva et al., 2023), while the development of transport communications directly stimulates the growth of other sectors of the national economy: industry, agriculture, tourism, and others (Balova et al., 2022; Anokhina et al., 2020; Kashina et al., 2022).

As a result, according to the authors' opinion, an international transport corridor is also a high-tech transport network with developed road and roadside infrastructure, generating the activities of public transport (road, rail, water) along its designated routes, within a certain area of influence, several tens of kilometers along the corridor's route. It is in this sense that the concept of an ITC is used in this article.

For Russia, the basic development programs for the transport complex and inter-national supply chains are the "Transport Strategy of the Russian Federation until 2030 with a forecast for the period up to 2035" (approved by the order of the Government of the Russian Federation No. 3363-r dated 27.11.2021) and the national project "International Cooperation and Export" (approved by the Presidium of the Council under the President of the Russian Federation on Strategic Development and National Projects on 24.12.2018). For all countries of the Commonwealth, the key document is the Agreement on Coordinated Development of International Transport Corridors passing through the territory of the CIS member states (Vardomsky, 2023). This Agreement highlights three main facilitating "subsystems" of the ITC:

- Resource-based, consolidating elements of transport, infrastructure, financial, and environmental support of transportation technologies within the ITC system;
- Information and logistics, including elements of communication interaction and digital monitoring of the efficiency of ITC operation;
- Normative-legal, ensuring interaction at the level of international agreements and national regulatory legal acts of CIS member states regulating the development of ITC.

In implementing the strategy for the development of transport and logistics infrastructure in their sections of the ITC, CIS countries predominantly apply program-targeted approaches within the framework of national interests (International Institute





for Strategic Studies, 2023), which is not contrary to the gradually forming multiplier effect for all Commonwealth participants, manifested in the activation of the formation of free trade zones (including EAEU member states - CIS participants), the development of energy complexes of countries, digital communication-telematics transport and logistics systems, attracting investments from international banks, and consequently, in a positive trend of economic development in national territories.

Thus, the goal of the study is to evaluate the potential of ITCs that traverse the territories of the CIS countries in fostering economic integration and cooperation among these nations.

3 RESEARCH METHODS

The research was conducted based on a general scientific methodology, relying on a systems approach, with the application of abstract-logical and statistical methods. The proposed basic concept of interaction between CIS countries in the formation and operation of the ITC within the framework of the common transport space strategy can be formed by a hierarchical sequence of three main blocks of interaction between CIS countries in the formation and development of the ITC as a single management object:

1. Normative-legal block, including normative-legal mechanisms of interaction at the state level and the creation of a unified information and communication system.
2. Process block, including spatial-territorial organization and management of freight transportation, uniting all participants of the transport and logistics process (shippers, consignees, carriers, logistics providers, digital operators, financial structures, government control and supervision authorities, and others);
3. Basic block, including transport infrastructure (communication routes, logistics facilities: centers, terminals, ports, border crossing points, etc.), routes and their capacity (traffic flow, time for transfer and handling of goods along the route, capacities of infrastructure objects, etc.).

The economic sanctions of 2022 against one of the leading players in the transit and domestic markets of transport and logistics services within the Commonwealth -





Russia, have revealed a clear vulnerable point in its economic security - a high share of dependence on Western-oriented supply chains and transformed the configuration of the country's foreign economic relations, giving priority to three key markets: China, India, and Iran (International Institute for Strategic Studies, 2023). The structure of international transport corridors in the CIS capable of fully realizing the potential of countries in the new external economic conditions includes three geographic directions:

1. East-West. Russia - Central Asia - China. This direction allows for maximum involvement of CIS countries in foreign trade and international co-operation flows along the East-West line, developing regional connectivity: Central Asia, the Caucasus, Russia, and Turkey. The direction includes multimodal routes along corridors: Western China (branching through Kyrgyzstan to Southern China) - Europe (via Brest, St. Petersburg, Kaliningrad) and Western China - the Azov-Black Sea basin (further to Turkey) with a maritime section through the Caspian Sea (for road transport - through the ports of Turkmenbashi, Baku; for rail transport - through the ports of Ak-tau/Kuryk, Makhachkala), with a branch route to Armenia;
2. North-South. Russia - Caucasus - Central Asia - South Asia. This diversifies access to the markets of Southeast Asia, the Persian Gulf countries, and allows for the inclusion of Central Asian and Caucasus countries in the North-South ITC, attracting additional transit flows to the Persian Gulf, South, and Southeast Asia (Afghanistan, Pakistan, India, Southern China);
3. Siberia-South. Siberia/Ural - Central Asia - South Asia/Persian Gulf. This intensifies transit development through Central Asia in the direction of Russia - South, Southeast Asia, developing regional trade connectivity. It includes ITC routes along the lines: Siberia - Central Asia - Persian Gulf; Ural - Central Asia - South and Southeast Asia.

It should be noted that several logistics projects are being implemented in the Eurasian space, among which the most important is the International Transport Corridor (ITC) "North-South", connecting Russia with Iran, Turkey, and in the future with India, Pakistan, and other countries. Until February 2022, a significant part of Russian exports was delivered to markets in Western Europe, the USA, Japan, and South Korea. To maintain export volumes in the face of economic sanctions against Russia, it is necessary to search for new markets and to develop the "North-South" ITC. One of the factors contributing to the creation of the "North-South" ITC is the stable development of Russian-Iranian trade and economic relations. Over the past 20





years, despite the lag in the transport and logistics structure, the countries have actively increased bilateral trade, the dynamics and volume of which can be visualized in Figure 1.

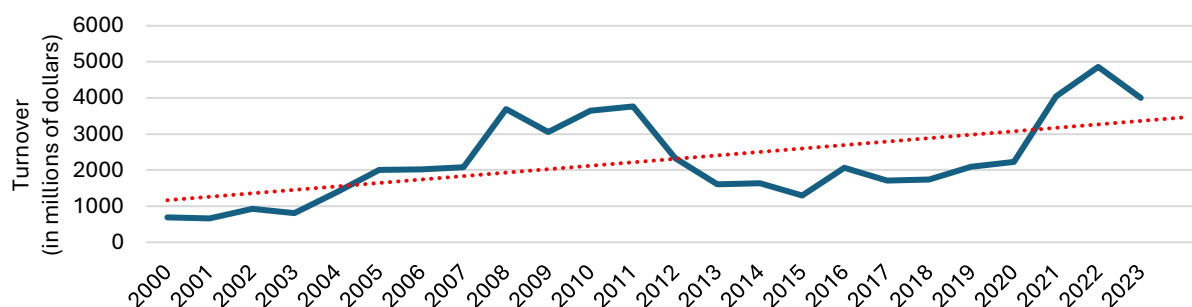


Fig. 1. Turnover of Russia and Iran in million US dollars (compiled by the authors). Source: based on data (Database of Russia's Exports and Imports (FEA))

As can be seen from Fig. 1, the intensification of trade began in 2007 (which continued until 2012) and then in 2020. In the years 2021-2023, the Russian-Iranian turn-over consistently exceeds 4 billion dollars, showing a positive growth trend. Thus, in 2021, the volume of mutual trade grew by 81% to 4.05 billion dollars, in 2022 it increased by another 20% and reached a record 4.86 billion dollars, in 2023 it amounted to 4 billion dollars, demonstrating a certain stability. In addition, as of the results of 2023, Russia and Iran have almost completely switched to settlements in national currencies (Forbes Russia). In exports and imports, the countries are represented by groups of goods such as "Animal Products," "Plant Products," "Fats and Oils," "Foodstuffs, Beverages, Tobacco" (42.7% of turnover), "Chemical Industry Products," "Wood and Products Thereof," "Books, Paper, Cardboard" (9.2% of turnover), and "Metals and Products Thereof," "Machinery, Equipment and Apparatus," "Transport" (21.1% of turnover) (Database of Russia's Exports and Imports (FEA)), which can be served by the types of transport included in the North-South ITC.

Another factor contributing to the formation and development of the North-South ITC is the Russian-Turkish trade and economic relations, which have been generally stable, consistently exceeding 30 billion US dollars since 2007. However, over the past ten years, mutual trade in goods between Turkey and Russia has been subject to fluctuations due to the strong volatility of national currency exchange rates, the pace of growth of national economies, changing trends in global fuel and raw materials markets (the main item of Russian exports to Turkey), and, not least, the nature of





political relations between the two countries (Kashbrasiev, 2021). Thus, in 2008, the volume of mutual trade increased to 37.8 billion dollars, in 2013 it amounted to 33.2 billion dollars, and by the end of 2021, it only exceeded the level of 2013 by 4.4%, reaching 34.7 billion dollars (Turkish Statistical Institute) (see Fig. 2).

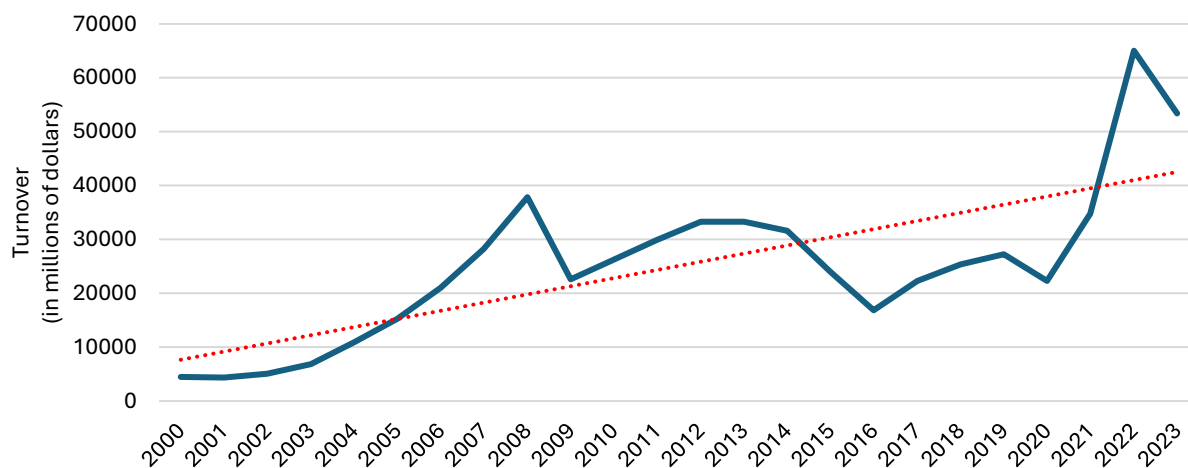


Fig. 2. Turnover of Russia and Turkey in million US dollars (compiled by the authors). Source: based on data (Turkish Statistical Institute)

When it comes to the transport and logistics services for the trade turnover between Russia and Turkey, the need for the formation and development of the North-South ITC is even greater due to the large volumes of transported goods. Let's consider the main commodity groups of exports and imports: "Animal Products," "Plant Products," "Fats and Oils," "Foodstuffs, Beverages, Tobacco" (14.5% of turnover), "Chemical Industry Products," "Wood and Products Thereof," "Books, Paper, Cardboard" (6.7% of turnover), and "Metals and Products Thereof," "Machinery, Equipment and Apparatus," "Transport" (24.3% of turnover) (Database of Russia's Exports and Imports (FEA), 2024) - all of them require types of transport included in the North-South ITC.

Moreover, in modern conditions, Turkey can engage in intermediary trade, servicing commodity flows between Europe and Russia, countries of the North American continent and Russia, etc. For this purpose, Turkey has a convenient economic-geographical position and developed transport and logistics capabilities. In today's conditions, this intermediary trade involves goods that are not subject to the Western sanctions against Russia. These are food products and consumer goods (clothing, cosmetics, household appliances, and personal hygiene products). The





purchase of these goods in other countries and their re-export does not pose difficulties, although it is under the close control of the Turkish customs service.

4 RESULTS

Currently, the CIS countries are implementing program projects for the construction, reconstruction, and modernization of transport and logistics infrastructure facilities on the national sections of the ITC. During the study, an assessment was made of the state and dynamics of development of the supporting transport and logistics infra-structure of national and transit ITCs. An analysis of factors and barriers that hinder the attraction of cargo flows to the routes of transport corridors of the Commonwealth countries was conducted. The result of the study is recommendations for im-proving and effectively utilizing the existing CIS ITCs. The list of recommendations for reorganizing the prospective routes of the Commonwealth ITCs is presented in Table 1.

Table 1. List of Prospective Routes of the ITC within the CIS region

No.	Corridor/route	No.	Branch
East-West direction: Russia - Central Asia – China			
1.	Republic of Belarus - Smolensk - Moscow - Vladimir - Orenburg - Sagarchin (Russian Federation) / Zhaizan (Republic of Kazakhstan) - Aktobe - Kyzylorda - Shymkent - Taraz - Almaty - Korgas (Republic of Kazakhstan) / Khorgos (China)	1.1.	Highway: Taraz - Karasu (Republic of Kazakhstan) - Ak-Tilek border crossing (Kyrgyz Republic) - Kant
		1.2.	Highway: Shymkent - Konysbaeva (Republic of Kazakhstan) / Yallama (Republic of Uzbekistan) - Chinaz
2.	Border of the People's Republic of China - Dostyk / Altynkol - Ilets-1 - Smolensk / Vyazma - Brest / Bruzgi / Svisloch / Gudogay and further to Europe with branches	2.1.	Railway: on the territory of the Republic of Kazakhstan to Elimai (Kartaly-1) - Krasnoe / Osinovka - Brest and further to Europe, as well as Semiglavny Mar (Ozinki) - Krasnoe / Osinovka - Brest
		2.2.	Railway: to Kaliningrad (multimodal route through the seaport of Kaliningrad), Mamonovo and Zheleznodorozhny (single-mode railway route)





3.	Border of the People's Republic of China - port of Novorossiysk (Russia)	3.1.	Railway + sea transport: border of the People's Republic of China - Altynkol - Almaty-1 - Lugovaya - Aris-1 - Sekseul - Shalkar - Beyneu - sea port Aktau / Kuryk, then by ship (ferry) to sea port Makhachkala and further to sea port Novorossiysk (multimodal route through seaports Aktau, Kuryk, Makhachkala, Novorossiysk)
		3.2.	Highway + sea transport: Makhachkala - Baku - Turkmenbashi - Ashgabat - Mary - Chargzhou - Bukhara - Samarkand - Jizzakh - Tashkent - Shymkent - Zhambyl - Bishkek - Almaty - Khorgos - border of China
		3.3.	Highway: Vladikavkaz - Georgia border (towards Armenia border) and further to Yerevan
<p>North-South direction: Russia - Caucasus / Caspian (connecting North-South) - Central Asia - South Asia (Afghanistan, Pakistan, India/Southern China)</p>			
4.	Highway: Port of Ust-Luga - St. Petersburg - Tver - Moscow - Voronezh - Rostov-on-Don - Mineralnye Vody - Makhachkala - Baku - Turkmenbashi - Ashgabat - Mary - Chargzhou - Bukhara - Bukhara - Karshi - Termez - border of Afghanistan further to Pakistan, India	4.1.	Bukhara - Samarkand - Jizzakh - Tashkent - Shymkent - Zhambyl - Bishkek - Almaty - Khorgos - border of China
		4.2.	Termez - Dushanbe - Jirgatal - Karamyk - Irkeshtam - border of China
		4.3.	Pavlovskaya - Krasnodar - Gelendzhik - Novorossiysk
		4.4.	Voronezh - Saratov - Uralsk - Aktobe - Kzyl-Orda - Shymkent - Zhambyl - Bishkek - Naryn - Torugart - border of China
		4.5.	Highway: Rostov-on-Don - Pavlovskaya - Nalchik - Vladikavkaz - Nizhniy Lars - border of Georgia (towards Armenia border)
		4.6.	Highway: Voronezh - Volgograd - Astrakhan - Atyrau - Beyneu - Nukus - Bukhara - Karshi - Termez - border of Afghanistan further to Pakistan, India
		4.7.	Minsk - Moscow
<p>Siberia-South direction: Siberia / Ural - Central Asia - South Asia / Persian Gulf</p>			
5.	Novosibirsk - Kazakhstan - Uzbekistan - Turkmenistan - border of Iran - Persian Gulf	5.1.	Railway: Novosibirsk - Barnaul - Rubtsovsk - Semey - Shar - Aktogai - Almaty - Lugovaya - Saryagash -





			border of the Republic of Uzbekistan - Turkmenistan - border of Iran and further to countries of the Persian Gulf
		5.2.	Highway: Novosibirsk - border of the Republic of Kazakhstan" including highway A-322 Barnaul - Rubtsovsk - border with the Republic of Kazakhstan (and further through the territory of the Republic of Kazakhstan)
		5.3.	Railway: Lugovaya - Bishkek
6.	Yekaterinburg - Chelyabinsk - Kazakhstan (via Kyzylorda, Shymkent) - Termez (Uzbekistan) - Mazar-i-Sharif - Kabul (Afghanistan) - Peshawar (Pakistan) – India	6.1.	Highway: Chelyabinsk - Kostanay - Akmola - Karaganda - Almaty - Bishkek - Osh - Andijan - Kokand - Tashkent - Dushanbe - Nizhny Pyanj - border of Afghanistan - Pakistan - India

The analysis of the efficiency of using the potential of international transport corridors passing through the territories of the CIS countries has revealed the following contradictions. On one hand, national transport and logistics systems have a sufficiently branched internal network of regional routes connecting to global international transport corridors (ITCs). On the other hand, the level of connectivity between national routes of the ITCs is relatively low, and the infrastructure along these routes is not sufficiently diversified, which hinders the efficient operation of certain lengthy national segments of the ITCs and prevents the full realization of their transit potential. These contradictions are particularly evident within the most promising "North-South" direction, which currently requires the expansion of ITCs, assuming a stable growth in cargo turnover (in the first quarter of 2023, over 800 thousand tons, an increase of 172% compared to the first quarter of 2022) (Kashbrasiev, 2021).

5 CONCLUSION

Currently, various solutions are being assessed to address this issue, including expanding the "North-South" corridor and organizing routes bypassing Kazakhstan: China - Kyrgyzstan - Uzbekistan - Turkmenistan, then across the Caspian Sea to the port of Astrakhan. Comprehensive solutions to these problems will require joint efforts among CIS countries to develop common approaches to the infrastructure





development of ITCs, to establish mechanisms for joint administration, and to create digital service support systems.

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REFERENCES

Anokhina, M., Abdrakhmanov, R., Gridneva, Y. E., Arrieta-López, M., Dzhililova, N. R., & Meza-Godoy, A. (2020). Formation of the competitive potential of the agricultural territories. *Entrepreneurship and Sustainability Issues*, 7(3), 1921-1936.

Baieva, O., Bakhov, I., Sologub, Y., Rozmetova, O., & Veres, K. (2023). Organizational principles of international medical tourism cluster management. *Brazilian Journal of Law and International Relations*, 2(40), 1-11.

Balova, S., Orlova, I., Konovalova, E., Repina, M., & Shichkin, I. (2022). Social Media Marketing (SMM) Impact on Hotel Business Development: Private Mini Hotel Experience. *Anais Brasileiros De Estudos Turísticos*, 12(Special Issue). <https://doi.org/10.5281/zenodo.7154757>

Barmuta, K., Zainullin, L., Kurikov, V., Arkanova, I., Anuchina, O., & Chernov, V. (2023). Impact of migration processes on socioeconomic changes in Russia and the security of its citizens. *Brazilian Journal of Law and International Relations*, 4(42), 717-729.

Database of Russia's Exports and Imports (FEA). (2024). Trade turnover between Russia and Turkey. Retrieved April 2, 2024, from: <https://ru-stat.su/date-Y2014-2022/RU/trade/TR>

Database of Russia's Exports and Imports (FEA). Trade turnover between Russia and Iran. Retrieved from: <https://ru-stat.su/date-Y2014-2022/RU/trade/IR>

Forbes Russia. VTB has launched a money transfer service to Iran. Retrieved from: <https://www.forbes.ru/finansy/482699-vtb-zapustil-servis-deneznyh-perevodov-v-iran>

International Institute for Strategic Studies. (2023). *Greater consensus on improving the Middle Corridor*. Retrieved from: <https://www.iiss.org/publications/strategic-comments/2023/greater-consensus-on-improving-the-middle-corridor/>





Kashbrasiev, R. V. (2021). Factors of Turkey's economic development in the 21st century. *Vestnik ekonomiki, prava i sotsiologii = The Review of Economy, the Law and Sociology*, (1), 170-173.

Kashina, E., Yanovskaya, G., Fedotkina, E., Tesalovsky, A., Vetrova, E., Shaimerdenova, A., Aitkazina, M. (2022). Impact of digital farming on sustainable development and planning in agriculture and increasing the competitiveness of the agricultural business. *International Journal of Sustainable Development and Planning*, 17(8), 2413-2420. <https://doi.org/10.18280/ijstdp.170808>

Kirillova, E., Otcheskiy, I., Ivanova, S., Verkhovod, A., Stepanova, D., Karlibaeva, R., & Sekerin, V. (2023). Developing Methods for Assessing the Introduction of Smart Technologies into the Socio-Economic Sphere Within the Framework of Open Innovation. *International Journal of Sustainable Development and Planning*, 18(3), 693–702. <https://doi.org/10.18280/ijstdp.180305>

Kuznetsova, I., Okagbue, H., Plisova, A., Noeva, E., Mikhailova, M., & Meshkova, G. (2020). The latest transition of manufacturing agricultural production as a result of a unique generation of human capital in new economic conditions. *Entrepreneurship and Sustainability Issues*, 8(1), 929-944. [https://doi.org/10.9770/jesi.2020.8.1\(62\)](https://doi.org/10.9770/jesi.2020.8.1(62))

Martynova, E. S. (2023). International transport corridors as a factor in shaping the Greater Eurasian Partnership. *Russia and New States of Eurasia*, (III)LX, 68-77. <https://doi.org/10.20542/2073-4786-2023-3-68-77>

Osadchy, E., Abdullayev, I., Bakhvalov, S., Klochko, E., Tagibova, A. (2024). Jellyfish Search Algorithm Based Feature Selection with Optimal Deep Learning for Predicting Financial Crises in the Economy and Society. *Fusion: Practice and Applications*, 14(2), 186-198. <https://doi.org/10.54216/FPA.140215>

Serikbai, Y., Ibrayeva, N., Abugaliyeva, F., Zhaskairat, M., Uvaliyeva, A. (2023). Regulatory and Legal Support for the Development of Digital Infrastructure in Rural areas as a Factor in Improving the Level of Sustainable Development and Quality of Life of the Rural Population. *Journal of Environmental Management and Tourism*, 14(5), 69. [https://doi.org/10.14505/jemt.v14.5\(69\).08](https://doi.org/10.14505/jemt.v14.5(69).08)

Shugurov, M. V., & Pechatnova, Y. V. (2023). The sanctions regimes of Germany and Great Britain in the field of international scientific cooperation with the participation of Russia: the political and legal nature and consequences. *International Law*, 4, 1-35. <https://doi.org/10.25136/2644-5514.2023.4.44106>

Turkish Statistical Institute (TÜİK). Retrieved from: <https://www.tuik.gov.tr/>

Vardomsky, L. B. (2023). International Transport Corridors in the Context of Developing Russia's Transit Potential. *Regional Research of Russia*, 13(1), 65–76. <https://doi.org/10.1134/S2079970522700575>

