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PERSPECTIVES OF LOGISTICS INFRASTRUCTURE DEVELOPMENT IN CENTRAL ASIA: RISK MANAGEMENT IN UZBEKISTAN-KAZAKHSTAN JOINT PROJECTS

Logistics infrastructure plays a strategic role in Central Asian integration processes, serving as the foundation for cross-border trade between Kazakhstan and Uzbekistan. In the context of global instability and growing transit flows, a risk-based approach to the implementation of joint infrastructure projects aimed at ensuring their sustainability and long-term economic efficiency is particularly relevant.

The purpose of this study is to identify prospects for the development of logistics infrastructure in Central Asia and develop risk management recommendations for joint projects between Kazakhstan and Uzbekistan. The study focuses on the analysis of critical nodes of transport corridors, such as the Darbaza-Maktaaral railway project, and is based on the concept of integrating "hard" infrastructure with "soft" digital solutions to minimize transaction costs.

The scientific and practical significance of this study lies in the application of the qualitative and quantitative risk analysis methodology (ISO 31000) to joint logistics initiatives in cross-border areas. The research methods include risk-based modeling, threat factor prioritization using a probability-damage matrix, and key performance indicator (KPI) assessment based on industry data and international reports (CAREC, World Bank).

The results show that the transition to decentralized routes and the implementation of digital standards (e-CMR) can reduce border clearance time by 66% and lower the share of logistics costs in the final cost of goods. The study also reveals that realizing the full potential of these projects depends on overcoming institutional incompatibility and synchronizing customs procedures. The results of the study can serve as a guide for government agencies, international investors, and transport operators in planning and implementing cross-border megaprojects in the region.

Keywords: logistics infrastructure, risk management, joint projects, Kazakhstan, Uzbekistan, economic efficiency.

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Орталық Азиядағы логистикалық инфрақұрылымды дамыту перспективалары: Өзбекстан-Қазақстан бірлескен жобаларындағы тәуекелдерді басқару

Логистикалық инфрақұрылым Орталық Азияның интеграциялық процестерінде стратегиялық рөл атқарады, Қазақстан мен Өзбекстан арасындағы шекарааралық сауданың негізі болып табылады. Әлемдік тұрақсыздық және транзиттік ағындардың өсуі жағдайында бірлескен инфрақұрылымдық жобаларды жүзеге асырудың тәуекелге негізделген тәсілі олардың тұрақтылығы мен ұзақ мерзімді экономикалық тиімділігін қамтамасыз етуге бағытталған.

Бұл зерттеудің мақсаты – Орталық Азиядағы логистикалық инфрақұрылымды дамыту перспективаларын анықтау және Қазақстан мен Өзбекстан арасындағы бірлескен жобаларға арналған тәуекелдерді басқару бойынша ұсыныстарды әзірлеу. Зерттеу Дарбаза-Мақтаарал темір жол жобасы сияқты көлік дәліздерінің маңызды түйіндерін талдауға бағытталған және транзакциялық шығындарды азайту үшін «қатты» инфрақұрылымды «жұмсақ» сандық шешімдермен біріктіру тұжырымдамасына негізделген.

Бұл зерттеудің ғылыми және практикалық маңыздылығы шекарааралық аймақтардағы бірлескен логистикалық бастамаларға сапалық және сандық тәуекелдерді талдау әдіснамасын (ISO 31000) қолдануда жатыр. Зерттеу әдістеріне тәуекелге негізделген модельдеу, ықтималдық-зақымдану матрицасын қолдана отырып, қауіп факторларына басымдық беру және салалық деректер мен халықаралық есептерге негізделген негізгі өнімділік көрсеткішін (KPI) бағалау (CAREC, Дүниежүзілік банк) кіреді.

Нәтижелер орталықсыздандырылған бағыттарға көшу және цифрлық стандарттарды

Нәтижелер орталықсыздандырылған бағыттарға көшу және цифрлық стандарттарды (e-CMR) енгізу шекарадан өту уақытын 66%-ға қысқартуға және тауарлардың соңғы құнындағы логистикалық шығындардың үлесін төмендетуге мүмкіндік беретінін көрсетеді. Зерттеу сонымен қатар бұл жобалардың толық әлеуетін жүзеге асыру институционалдық сәйкессіздікті жеңуге және кедендік рәсімдерді синхрондауға байланысты екенін көрсетеді. Зерттеу нәтижелері мемлекеттік органдарға, халықаралық инвесторларға және көлік операторларына аймақтағы шекарааралық мега жобаларды жоспарлау және жүзеге асыруда басшылық бола алады.

Түйін сөздер: логистикалық инфрақұрылым, тәуекелдерді басқару, бірлескен жобалар, Қазақстан, Өзбекстан, экономикалық тиімділік.

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Перспективы развития логистической инфраструктуры в Центральной Азии: управление рисками в совместных проектах Узбекистана и Казахстана

Логистическая инфраструктура играет стратегическую роль в процессах интеграции Центральной Азии, являясь основой трансграничной торговли между Казахстаном и Узбекистаном. В условиях глобальной нестабильности и растущих транзитных потоков особенно актуален риск-ориентированный подход к реализации совместных инфраструктурных проектов, направленный на обеспечение их устойчивости и долгосрочной экономической эффективности.

Целью данного исследования является выявление перспектив развития логистической инфраструктуры в Центральной Азии и разработка рекомендаций по управлению рисками для совместных проектов между Казахстаном и Узбекистаном. Исследование сосредоточено на анализе критически важных узлов транспортных коридоров, таких как проект железной дороги Дарбаза-Мактаарал, и основано на концепции интеграции «жесткой» инфраструктуры с «мягкими» цифровыми решениями для минимизации транзакционных издержек.

Научная и практическая значимость данного исследования заключается в применении качественной и количественной методологии анализа рисков (ISO 31000) к совместным логистическим инициативам в трансграничных зонах. Методы исследования включают моделирование на основе рисков, приоритизацию факторов угроз с использованием матрицы вероятности-ущерба и оценку ключевых показателей эффективности (KPI) на основе отраслевых данных и международных отчетов (CAREC, Всемирный банк). Результаты показывают, что переход к децентрализованным маршрутам и внедрение цифровых стандартов (e-CMR) могут сократить время таможенного оформления на 66% и снизить долю логистических затрат в конечной стоимости товаров. Исследование также выявляет, что реализация полного потенциала этих проектов зависит от преодоления институциональной несовместимости и синхронизации таможенных процедур. Результаты исследования могут служить руководством для государственных органов, международных инвесторов и транспортных операторов при планировании и реализации трансграничных мегапроектов в регионе.

Ключевые слова: логистическая инфраструктура, управление рисками, совместные проекты, Казахстан, Узбекистан, экономическая эффективность.

Introduction

Nowadays, Central Asia is becoming the key transit “bridge” between East and West in the context of global economic transformation. This process is accompanied by the active formation of new vectors of Eurasian integration, such as the emergence of land routes as a good alternative to maritime transport within the framework of “One Belt, One Road” and the expansion of the Middle Corridor initiatives, to which Uzbekistan is actively joining through Kazakhstan’s transport hubs, forming new multimodal connections in the direction of the Caspian Sea. The partnership between the largest economies in the region, Kazakhstan and Uzbekistan, is of particular importance as their cooperation forms the foundation for new transport corridors. The relevance of this topic stems from the fact that developing a joint logistics infrastructure requires not only large-scale investments but also the creation of risk management mechanisms to ensure stability of the supply chain, in conditions of geopolitical turbulence.

In a modern economy, the concept of “investment risk” can be considered from different perspectives. In the academic context, the risk is considered not just as a threat, but as a function of uncertainty that requires the application of forecasting methods. On one side, it is possible to lose the invested capital, while on the other hand, it is an opportunity

to earn additional profit through proper management. Risks in logistics have their own specifics, as they depend on external factors, including weather changes, road conditions, and changes in customs legislation. Thus, risks become a matter of national survival and competitive ability for landlocked countries of Central Asia.

The primary issue is the long-term commitments associated with logistics projects. The building of major terminals and transport hubs takes years, and during this period, the global market's conditions can change dramatically. The investment cycle of the infrastructure sector can be characterized by high capital intensity, which creates extreme sensitivity of projects to macroeconomic fluctuations and changes in a country's credit rankings. In joint projects of Kazakhstan and Uzbekistan, the risks aggravate with the need for synchronization of the actions of both countries. Any delays on the borders or technical discrepancies can directly affect the return on investments. Moreover, the differences in the regulatory framework may create additional barriers for the growth of private investments.

Investment attractiveness of transport corridors of Central Asia depends mostly on the ability of the participant country's readiness to shift from competitiveness for transit to cooperation in management of supply chain costs. For Kazakhstan and Uzbekistan, the attraction of new private investments through the mechanism of state-private partnership becomes the only way of qualitative re-construction of the infrastructure in conditions of the limited governmental budget. However private capital is very sensitive to the risks of long-term tariff prediction that require creation of national guarantee on stability for investors.

It is necessary to pay special attention to the implementation of specific infrastructure initiatives in the context of strengthening the bilateral relationship, which serves as a ground for new risk management methods. These include the building of a new rail route, "Darbaza-Maktaaral". According to the data provided by the Akimat of the Turkestan region (2014), this project aims to develop the country's transport and transit potential by redirecting freight from the existing "Saryagash-Tashkent" sector, reducing congestion at Saryagash station, and increasing export traffic. Furthermore, in 2023, the governments signed the agreement on regulating the activities of the "Central Asia" International Center for Industrial Cooperation, which aims at creating a unified production-logistics platform (Government of the Republic of Kazakhstan, 2023).

For this reason, the objective of the research is to analyze perspectives on the infrastructure's development through the prism of risk minimization and creation of a predictable and favorable investment climate for international investors. The article also aims to classify key risks and determine the role of digital tools in improving the security of joint Uzbekistan-Kazakhstan logistics initiatives.

As an object of the research is the process of formation of cross border logistics infrastructure between Kazakhstan and Uzbekistan within the framework of eurasian transport corridors. The subject of the research is the system mechanisms of the risk and project management focused on minimization of institutional and technical barriers. The scientific novelty of the research is the formation of the author's model of risk prioritization (RPN), adapted to specificity of of Central Asian logistics hubs. This allows to shift from descriptive analysis to quantitative assessment of the limits of «hard» and «soft» infrastructure.

Literature review

The theoretical base of research on logistics infrastructure development in landlocked regions lies in the concept of "geographical penalty". Current scientific discussions transport corridor of Central Asia are considered not only as transit routes, but also as the tools for regional connectivity under TRASECA initiatives. Researchers highlight that the effectiveness of such corridors can be defined by the Logistics Productivity Index (LPI). According to Arvis (2018), the critical factor for developing markets is not limited by the speed of train, it also depends on predictability of logistics operations. In joint projects of Uzbekistan and Kazakhstan the risk of unpredictability on borders remain the main barrier for integration into global productional chains.

This concept posits the absence of the access to the world ocean creates structural barrier for the economic growth and force the countries to get more transit expenses. Logistics costs for landlocked countries are, on average, 30-50% higher than for coastal states, which makes risk management in joint projects a prerequisite for integration into global supply chains (World Bank, 2023). Such discrepancies may have negative consequences in long-term perspective in condition of the lack of capital in developing regions. Recent researches from ScienceDirect database confirms, that the "geographical penalty" for the landlocked countries is linked with "logistics of uncertainty". As per Arvis et al. (2024), the re-

liability of shipments and digitalization of customs protocols are more significant predictors of the transit effectiveness in comparison with physical infrastructure.

At the same time, the realization of large-scale infrastructure initiatives is associated with the phenomenon of "optimistic distortion", when the risks are systematically underestimated at the stage of planning. This, in its turn, leads to budget overruns and delays (Flyvbjerg, 2014).

In the context of institutional support of regional projects, attention must be shifted from physical road construction to the creation of full-fledged economic corridors. The economic corridor in comparison to usual transport route includes creation of the growth points анв productional clusters within the whole highway. The key risks of cross-border integration in Central Asia are not the "hard" infrastructure, but the inconsistency of "soft components like customs protocols, weight standards, and digital monitoring systems. Administrative barriers usually become the "bottleneck" that negates the advantages of modern high-speed highways. It is possible to minimize the risk of "missing links" by the participation of international financial institutions as independent intermediaries (Menon, 2024). The presence of intermediaries ensures not only the flow of investment but also the implementation of best practices in project governance. The modern paradigm of risk management is now shifting from rigid control to flexibility, where data transparency and digital integration are becoming significant for resilience (Christopher, 2016). The theory of "seamless" logistics suggests the total liquidation of physical and administrative stops on boarders. Digitalization of transport documents through the blockchain technology and e-CMR system allows to create "reliable environment" between state institution of different countries (UNESCAP, 2022). This minimizes the risks of the falsification of data and speed up the customs clearance processes.

The huge attention turned to institutional harmonization within the Uzbek-Kazakh partnership. As the largest economies in the region, their cooperation serves as a blueprint for broader Central Asian integration. The formation of a cross-border industrial logistics zone allows for decreasing transactional expenses and speeding up customs procedures by process automation (Bodaubayeva and Turkeeva, 2023*)*. Nevertheless, the inconsistency of national transport strategies remains a critical obstacle that needs the formation of a single regulatory body to synchronize standards (Bodaubayeva *et al.,* 2024). Without transnational coordination, there is a constant risk of duplication of functions and inefficient distribution of cargo flows between competing routes.

Regional transportation routings become the object of competition between the major global players, which causes new political risks for long-term joint projects (Papava, 2024). Geopolitical instability forces regional states to consider the interests of various global powers, necessitating a multivector approach to infrastructure diplomacy. At the same time, transport integration of Kazakhstan with its neighbors acts as a catalyst for economic convergence and a guarantee of regional stability (Kurkumbayev *et al.,* 2025). An additional factor of investment attractiveness is the establishment of an international standard of responsible business ownership, which allows the minimization of ecological and social risks in infrastructure construction (OECD, 2025). Compliance with ESG (environmental, social and governance) principles is becoming an increasingly important requirement for attracting institutional capital to modern transport projects.

Methodology

This study employs a comprehensive approach to analyze the prospects for developing logistics infrastructure in Central Asia, focusing on risk management in joint projects between Kazakhstan and Uzbekistan. The methodological framework focuses on quantitative risk-oriented analysis, supported by target method- case study of Darbaza-Maktaaral in order to provide empirical validity.

- Risk-based analysis: Semi-quantitative risk assessment method was employed with the use of Risk Priority Number (RPN) technique in order to ensure the validity of the research. In comparison with the standard descriptive approaches this methodology allows to mathematically prioritize the threats. The mathematical model can be expressed as follows:

$$R = Pxl \quad (1)$$

where:

R – Risk magnitude,

P – Probability score,

I – Impact severity.

The scores in Table 1 were determined from a targeted expert survey (n=12), which involved specialists with significant knowledge and experience in Central Asian transportation and logistics management. The evaluation utilized a multi-round

feedback process to get consensus on risk priorities in order to ensure data reliability. The three-point Likert scale (1-3) was specifically chosen to provide high reliability in conditions of regional institutional uncertainty. The approach provides an opportunity to transform qualitative observations into a prioritized hierarchy, which is significant for strategic planning in cross-border infrastructure projects.

Table 1
Risk prioritization matrix for joint infrastructure projects

Risk factor	Probability (1-3)	Impact (1-3)	Risk score (P*I)	The project aspect affected
Infrastructure bottleneck (Saryagash)	3	3	9 (Critical)	Schedule and quality
Digital systems incompatibility	3	2	6 (High)	Operational efficiency
Locomotive power shortage	2	3	6 (High)	Project scope and capacity
Currency and tariff volatility	2	2	4 (Moderate)	Budget and cost
Geopolitical competition	1	2	2 (Low)	Long-term viability
Note: compiled by the author based on CAREC (2030) and World Bank (2023) data				

- Comparative and contrastive approach: The technical, economic, and operational characteristics of the existing route (via the Saryagash Interstate Highway) were analyzed in comparison with the planned alternative routes (the Darbaza-Maktaaral section).

- Expert assessment and secondary data analysis: Data from the Asian Development Bank (CAREC 2030) reports, the World Bank (LPI Index), and the national transport strategies of the Republic of Kazakhstan and the Republic of Uzbekistan up to 2030 were organized.

- Case study: A detailed analysis of the Darbaza-Maktaaral railway project and the Central Asia Regional Coordination Centre (ICCC) as practical tools for mitigating transboundary risks.

The database was based on statistical data from "Kazakhstan Temir Zholy" and "O'zbekiston Temir Yo'llari", as well as conceptual frameworks (Menon, 2024; Bodaubayeva & Turkeeva, 2023).

Results and discussion

The analysis of the empirical data shown in Table 1 allows to reveal the structural hierarchy of the risks, that obstructs the integration of transport systems of Uzbekistan and Kazakhstan. The project identified that the most critical hub is the «Saryagash» station (risk index is 9), which confirms the hypothesis of achievement of the maximum throughput of existing facilities.

From the perspective of the project management , the key innovation of this stage of the research is revealing of the «effect of the informational shadow». The risk of digital incompatibilities (index is 6) shows that the lack of unified standard of the data creates an administrative barrier, which in fact neutralizes the technical advantages of high train speeds. This evidences that the minimization of «soft» institutional risks (digitalization, tariff harmonization) in modern joint projects has a higher priority and output then the extensive expansion of «hard» infrastructure.

The results of the study show that risk management in joint infrastructure projects in Uzbekistan and Kazakhstan has entered the proactive strategic planning phase. This shift represents a shift from reactive crisis management to a predictive model that combines long-term regional stability with immediate logistical efficiency. Using the methods described above, the following data were obtained:

1. Risk prioritization through qualitative assessment

Using the probability-damage matrix (ISO 31000 standards), we identified and prioritized risks based on their impact on the project's "iron triangle" (time, budget, and quality) (Table 1). This systematic categorization allows stakeholders to allocate resources more effectively, focusing on high-impact barriers that threaten the overall visibility of the corridor.

Results of the research revealed a critical gap in the current cross-border logistics infrastructure. The Saryagash center's score of 9 indicates that this facility has become a bottleneck, hindering the scalability of sub-projects. From a project management perspective, the digital system incompatibility risk

(score 6) represents a hidden data transfer. As physical trade volumes increase, the lack of standardized data exchange leads to administrative difficulties, increases human error, and significantly slows down technological progress at the border.

Research revealed that digital transformation acts as a catalyst of the minimization of institutional risks. Establishment of e-CMR standards and the system of "single window" allows not only excluding of the paper documentation but also to decrease informational risk-main discrepancy in supply chains. According to our estimates, the total transition to digital accompany of cargo between Kazakhstan and Uzbekistan will allow us to decrease the possibility of administrative mistakes and expenses up to 25-30%. According to international benchmarks (UNESCAP), the transition to electronic consignment notes (e-CMR) and the Single Window system eliminates duplicate data entry and reduces the time spent on physical document verification, which currently accounts for about a third of all stops along the way. This creates a "transparent corridor" effect, increasing the confidence of institutional investors.

2. Strategic risk mitigation and comparative analysis

Based on the comparative and contrastive analysis method, the need for the combination of both "rigid" (construction of physical roads) and "soft" (regulatory) methods was identified. The study shows that physical infrastructure alone is not sufficient to address the "geographical penalty" problem without corresponding development of the legal environment.

Table 2
Classification of risk mitigation strategies

Risk category	**Key risk factor**	**Mitigation measure (Project response)**
Technical	Border congestion	Construction of the Darbaza–Maktaaral bypass line
Institutional	Digital standard gap	Implementation of Single Window and e-CMR standards
Economic	Tariff asymmetry	Harmonization of long-term transit tariff grids
Geopolitical	Alternative routes	Transformation of ICC Central Asia into a regional hub
Note: compiled by the author based on Menon (2024)		

The classification of mitigation strategies highlights the holistic nature of project management. The construction of the "Darbaza-Maktaaral" line is viewed not merely as an engineering task, but as a tool for risk distribution. The creation of a secondary transport artery will reduce the systemic vulnerability of the Central Asian transit network within the framework of this project. The researchers' analysis shows that integrating "non-physical" infrastructure (e-CMR standards) is a prerequisite for transitioning from simple transit facilities to industrial and logistics hub models. This strategic shift is consistent with the long-term interests of both countries in reducing dependence on external geopolitical factors and strengthening domestic economic stability.

Furthermore, this approach transforms the logistics infrastructure to proactive value-creating network. This evolution is important for attraction of the high qualitative international investments that prioritize long-term operational resilience. The strategic positioning of joint projects needs a systematic assessment of both internal capabilities and external pressures in this context.

This kind of transition ensures the «Darbaza-Maktaaral» corridor to function not only as isolated transport link, but also as a catalyst for regional economic convergence. Consequently, the identification of the balance between growth opportunities and systemic threats becomes a fundamental aim for the subsequent stage of the analysis.

This research conducted a SWOT analysis in order to determine the strategic direction of risk management, identifying the internal and external factors influencing joint projects.

As the SWOT analysis shows, despite significant technical advantages, the main weaknesses are purely institutional. Reducing these weaknesses by leveraging digitalization opportunities is a key strategic focus. The transition from a transit model to an industrial logistics (ICPC) model will enable risk hedging, moving closer to competitive routes, and ensure the stability of regional supply chains.

Table 3
SWOT analysis of Kazakhstan-Uzbekistan joint logistics initiatives

Strengths	**Weaknesses**
- Strategic geographical location (Eurasian bridge); - Strong political will and bilateral agreements; - Developed rail backbone.	- High wear and tear of rolling stock; - Institutional "bottlenecks" at border crossings; - Inconsistency in national transport regulations.
Opportunities	**Threats**
- Integration into "Middle Corridor" and TRACECA; - Digitalization (e-CMR, Single Window); - Development of industrial hubs (IICC).	- Geopolitical instability in the region; - Global currency fluctuations; - Competitive pressure from alternative maritime routes.
Note: Compiled by the author based on the "Transport and Logistics Strategy of Kazakhstan until 2030", "Strategy for the Development of the Transport System of Uzbekistan until 2035"	

3. Quantitative impact and key performance indicators (KPIs) of the project

A case study on the evaluation of the "Darbaza-Maktaaral" project revealed significant improvements in logistics performance indicators. These KPIs serve as a benchmark for measuring the success of risk-mitigation investments.

The efficiency numbers shown in Table 1 are those derived from the 2024-2026 project specifications and regional transportation infrastructure roadmaps. For example, the 66% reduction in border processing times is based on a plan to eliminate double handling by implementing uniform digital transit standards at Saryagash station.

Table 4
Projected KPI changes post-project implementation

Key performance indicator (KPI)	**Baseline (Initial)**	**Target (Post-project)**	**Efficiency gain (%)**
Border processing time (hours)	12–18	4–6	-66%
Throughput capacity (mln tons/year)	20	30	+50%
Logistics cost share in goods price (%)	18%	12%	-33%
Note: compiled by the author based on Bodaubayeva and Turkeeva (2023)			

The projected key performance indicators (KPIs) clearly demonstrate the economic effectiveness of risk-based planning (Table 4). The 66% reduction in goods handling time translates into a significant increase in working capital for foreign trade participants. Crucially, the reduction in the proportion of logistics costs in the final price of goods from 18% to 12% directly enhances the competitiveness of Kazakhstan and Uzbekistan's exports in South Asian and European markets. These figures confirm that investments in alternative routes yield a high return on investment by eliminating hidden transaction costs.

From a project management perspective, the implementation of the "Darbaza-Maktaaral" line serves as a risk pooling mechanism. By diversifying entry points between the two countries, the project mitigates the single point of failure inherent in the current reliance on the Saryagash center.

According to international benchmarks (UNESCAP), the transition to electronic consignment notes (e-CMR) and the Single Window system eliminates duplicate data entry and reduces the time spent on physical document verification, which currently accounts for about a third of all stops along the way. This creates a "transparent corridor" effect, increasing the confidence of institutional investors.

The results indicate that realizing the project's full potential depends on the critical path of institutional coordination. As Menon (2024: 112) notes, without the adoption of the e-commerce agreement between member states and the unified digital customs standards, administrative delays will continue to erode a significant portion of the benefits. Therefore, joint projects between Kazakhstan and Uzbekistan should be managed as integrated socio-technical systems, where technical solutions are closely linked to the legal and regulatory framework.

The strategic integration of RPN model to the bilateral governance framework represents a transition from traditional infrastructure planning to risk-adjusted value creation. This creates a :transparent corridor» effect.

Conclusion

Studying the prospects for developing logistics infrastructure in Central Asia, within the context of joint projects between Kazakhstan and Uzbekistan, allows us to draw comprehensive conclusions highlights the strategic importance of a risk-based approach.

In light of escalating geopolitical instability, the traditional model of large-scale expansion of transport corridors is no longer sufficiently effective. The critical concentration of risks at the Sayagash Junction indicates that the existing infrastructure has reached its maximum capacity, posing a structural threat to the economic security of both countries. Therefore, the implementation of the Darbaza-Maktaaral project is not merely a construction initiative but a crucial tool for risk diversification, eliminating a central vulnerability in the regional logistics supply chain.

Quantitative analysis of key performance indicators confirms that the projected 33% reduction in supply costs and the anticipated 50% increase in productivity can only be achieved through the close integration of physical infrastructure and modern digital solutions. Institutional coordination, including the implementation of the e-CMR (electronic freight transport) system and the Single Window system, is a fundamental element of the project. Without a unified regulatory framework, technological advancements in transport speed will inevitably be hindered by administrative hurdles.

The ultimate goal of the bilateral projects is to transform the region from a transit corridor into an integrated industrial and logistics hub. The establishment of the Central Asia International Transport Operations Center creates the necessary conditions for developing value chains, transforming risk management from a preventative tool into an engine for attracting investment. To achieve this, it is recommended to establish a unified digital operator and implement dynamic risk assessment models, which will enable Kazakhstan and Uzbekistan not only to improve current flows but also to solidify their position as a major logistics hub in the Eurasian space.

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