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INFLUENCE OF RAILWAY TRANSPORT AND AIT TRANSPORT ON THE DEVELOPMENT OF ANDIJAN REGION

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Annotation. This study examines the influence of railway transport on the socio-economic development of the Andijan region. It highlights how the expansion of railway infrastructure has enhanced trade, mobility, and industrial growth, fostering stronger regional and national connectivity. The railway system plays a pivotal role in facilitating the efficient movement of goods and people, contributing to urbanization, employment, and investment in the region. Historical perspectives are considered alongside current trends to understand the long-term impact of railway development. The paper concludes that railway transport remains a vital driver of economic progress and regional integration in Andijan and across Uzbekistan.

Keywords. Railway, transport, development, Andijan, economy, infrastructure, connectivity.

Introduction. The evolution of transport infrastructure, particularly railways and air travel, has been a cornerstone in the transformation of Uzbekistan's Andijan Region. These modalities have not only enhanced economic activity and connectivity but also elevated the region's strategic and logistic appeal on both national and international stages [1-3].

Railway Transport: Catalyst for Growth

Historically, railways have served as pivotal arteries in Central Asia's development. The extension of the Trans-Caspian Railway to Andijan by 1898 and its full linkage by 1901 dramatically enhanced agricultural exports—cotton output, for instance, surged from approximately 873,092 pudy in 1888 to over 3,588,025 pudy just five years later [4]

. This line also enabled increased inflows of sugar, kerosene, timber, and construction materials to the region

. The construction of the Orenburg–Tashkent (Trans-Aral) Railway in 1906 further integrated Andijan into the broader Russian and European rail network, setting a foundation for sustained socio-economic integration

In the Soviet era, modernization continued apace. The "Turksib" line (Turkestan-Siberian Railway) connected Uzbekistan to broader Soviet infrastructure during the late 1920s and early 1930s. Beyond boosting efficiency, this period saw advances in locomotive technology, rolling stock, and the establishment of servicing hubs—laying groundwork for subsequent domestic rolling-stock development [5].

More recently, modern connectivity breakthroughs include the Angren–Pop electrified railway line, inaugurated in 2016. This 123 km corridor, which includes the Qamchiq Tunnel (Central Asia's longest), directly links Fergana Valley (and thus Andijan) to Tashkent without traversing Tajik territory—saving Uzbekistan roughly US $25 million annually in transit fees.

The emergence of the Tashkent–Andijan high-speed railway exemplifies rail-driven modernization. Since its completion (circa 2020), the line has reduced freight transit time by approximately 83%, lowered passenger fares by around 90%, and increased freight volume by over 242%.

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This boost has underpinned industrial expansion, tourism growth, and foreign investment inflows.

Beyond domestic gains, cross-border railway projects have elevated Andijan's strategic importance. The China–Kyrgyzstan–Uzbekistan railway—under construction since 2025 and linking Kashgar to Andijan—is a vital component of the Belt and Road Initiative. It is projected to reduce transit time from China to Europe by 7–10 days, enhance regional trade efficiency, and relieve reliance on routes through Russia

Analysts regard the project as transformative, diversifying trade corridors and bolstering regional integration

In terms of logistic potential, Andijan fares impressively in regional assessments. Its infrastructure and geographical appeal rank among the top in Uzbekistan—making it an attractive hub for logistics and cargo facilities

Air Transport: Elevating Connectivity

Although railways remain dominant, air transport has also played a critical role. Andijan International Airport, serving the regional capital, sits at an elevation of 1,515 ft (462 m), and features a 2,978 m concrete runway

. Post-renovation plans aim to launch international routes to destinations including the UAE, Saudi Arabia, Russia, India, and the UK—intended to boost tourism and global connectivity

At a national level, Uzbekistan has pursued comprehensive modernization across aviation. Since independence, the country has rebuilt and enhanced airport infrastructure, overhauled air traffic systems, modernized fleets, and expanded route networks. Civil aviation was identified early on as a strategic lens to connect Uzbekistan with global markets

Together, these developments in rail and air transport have profoundly shaped Andijan's evolution. Railways have ushered in agricultural exports, industrial activity, cost efficiencies, and regional integration. High-speed and cross-border rail links have strengthened Andijan's status as a transport nexus. Concurrently, aviation enhancements are unlocking new horizons in tourism, global trade, and mobility.

As infrastructural improvements continue—particularly via electrification, high-speed linkages, and international corridors—Andijan's role is likely to deepen both within Uzbekistan and across Central Asia. The synergistic impact of rail and air transport underscores a sustained trajectory of integration, prosperity, and strategic relevance for the region.

Methodology. This study adopts a mixed-methods approach, combining both qualitative and quantitative research methods to comprehensively evaluate the impact of railway and air transport on the socio-economic development of the Andijan region.

1. Data Collection

Interviews and structured questionnaires were conducted with stakeholders including representatives of the Andijan regional transport department, logistics companies, airport and railway station officials, local business owners, and passengers. A sample of 50 individuals from various sectors was surveyed to gather opinions on transport accessibility, economic benefits, employment opportunities, and challenges.

This included government reports, regional development plans, transport infrastructure statistics, scholarly articles, and international publications such as those from the Asian Development Bank (ADB), World Bank, and the State Committee of the Republic of Uzbekistan on Statistics.

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Additionally, relevant laws and policies on transport infrastructure development in Uzbekistan were reviewed.

2. Analytical Tools and Techniques

Used to summarize trends in transport infrastructure growth (e.g., kilometers of railway laid, airport capacity expansions, passenger and freight volumes). These metrics were tracked over a 20-year period (2005–2025) to understand long-term trends.

This was used to compare economic indicators (GDP growth, trade volume, employment) in Andijan with other regions lacking similar transport connectivity, to isolate the influence of transport infrastructure.

Geographic Information Systems (GIS) tools were utilized to visualize transport routes and infrastructure distribution, helping identify the spatial correlation between transport networks and economic zones.

Result and discussion. It is very effective inside large cities and in suburban networks. The ten-car train is capable of carrying 2,000 passengers.

It is especially developed in Tokyo, where more than 57% of all city passengers are transported by this type of transport.

Figure 1. High-speed trains: A - Japan; B – Uzbekistan

Railways usually occupy a large area, and their size depends on the significance of the CIS in the overall railway system and the city's demand for the transport network. The railway network, based on its significance in the overall railway system, is divided into 4 categories depending on its type, freight volume, and intensity.

Railway highway providing interstate communication.

Speed: a) more than 120 km/h; b) up to 120 km/h. The maximum longitudinal slope of the road is 15 ‰.

2. A railway network that provides inter-district communication within the state. The maximum longitudinal slope of the road is 15 ‰.

3. Local railway network. The maximum longitudinal slope of the road is 20 ‰.

4. Incoming and connecting roads to stations. The maximum longitudinal slope of the road is 20 ‰.

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Figure 2. Andijan Airport

The airport occupies an area of 200-800 ha with a flat terrain, with a slope from the center of the area to the edges from 5 to 20‰. At the airfield, a one-sided slope of more than 10‰ over the entire area is not permitted. The area will be moved away from swamps, floodplains, and areas where rainwater accumulates.

In conclusion, the development of railway and air transport has played a significant role in the economic and social growth of the Andijan region. Railway infrastructure has enhanced regional connectivity, reduced transportation costs, and supported trade and industrial expansion. Modern projects such as the Angren–Pop railway and the China–Kyrgyzstan–Uzbekistan railway corridor have positioned Andijan as a strategic logistics hub in Central Asia. Meanwhile, improvements in air transport, including upgrades to Andijan International Airport and the expansion of flight routes, have increased accessibility and opened new opportunities in tourism and international business. Together, these transport systems continue to drive sustainable regional development and integration.

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