

Review article

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## Major aspects of interaction between Russian and Chinese educational institutions for the benefit of sectoral economy

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**ABSTRACT** The article discusses the main aspects of the interaction between transport universities of Russia and the People's Republic of China for improving the performance of the railway industry in terms of transportation of goods and passengers. The analysis takes account of the specific features of the transport and logistics sectors in the exchange of goods between the two countries. Cooperation in the field of transportation of goods and passengers is based on the market situation. However, approaches to training professionals for solving new challenges are not given sufficient attention. Given the reorientation of the main transport flows towards the East and the active loading of the traffic in international transport corridors, improving the performance of the transport systems in the two countries requires further development of transport hubs bringing together logistics and capacities of various transport modes. This will require training highly skilled personnel on the basis of common educational standards of both Russia and China. At the same time, students, as prospective specialists, should understand the specific features of geo-economic interaction, the nature of the development of cross-border logistics centres, and have an idea of the full operational cycle: from industrial to transport implementation in logistics of transportation. The solution lies in the development and implementation of joint educational programmes and curricula of industry-specific educational institutions in the two countries. Volga State Transport University and Liaoning Railway Vocational and Technical College implement joint educational partnership programmes within the framework of their cooperation agreement. In the future, it will be necessary to implement joint educational projects with elements of a multicultural approach for training both students and working professionals.

**KEYWORDS:** One Belt, One Road; railway transport; transport corridors; cross-border centre; infrastructure; trade turnover; professional education

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Обзорная статья

## Актуальные аспекты взаимодействия российских и китайских образовательных организаций в интересах отраслевой экономики

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**АННОТАЦИЯ** Рассматриваются основные аспекты взаимодействия транспортных вузов России и Китайской Народной Республики для повышения эффективности железнодорожной отрасли в части грузовых и пассажирских перевозок. Анализ выполнен с учетом транспортно-логистических особенностей в товарообмене двух стран. Взаимодействие в сфере грузовых и пассажирских перевозок ориентировано на рыночную конъюнктуру. Однако при этом не уделяется достаточного внимания тому, как готовить специалистов для решения новых задач. В условиях переориентации основных транспортных потоков на Восток и активной загрузки международных транспортных коридоров для повышения эффективности работы транспортного комплекса двух стран требуется дальнейшее развитие транспортных хабов, связывающих логистику и потенциал различных видов транспорта. Для этого необходимо готовить квалифицированные кадры по общим образовательным стандартам двух стран – России и КНР. При этом обучающиеся – будущие специалисты – должны понимать специфику геоэкономического взаимодействия, характер развития трансграничных логистических центров, а также иметь представление о полном цикле производства от промышленного до транспортного воплощения в логистике перевозок. Решение задачи кроется в формировании и реализации совместных образовательных программ, учебных планов отраслевых учебных заведений двух стран. Приволжский государственный университет путей сообщения и Ляонинский железнодорожный институт в рамках соглашения о сотрудничестве реализуют совместные партнерские образовательные программы. В перспективе необходима реализация совместных образовательных проектов с элементами мультикультурного подхода для подготовки не только студентов, но и работающих специалистов.

**КЛЮЧЕВЫЕ СЛОВА:** «Один пояс; один путь»; железнодорожный транспорт; транспортные коридоры; трансграничный центр; инфраструктура; товарооборот; профессиональное образование

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## INTRODUCTION

The current global geopolitical and economic situation makes business entities switch to new target markets and search for new partners. The economy of the People's Republic of China has been an alternative for Russian businesses and state-owned enterprises for several years. The potential of this direction became evident ten years back, when the growing Chinese economy was in dire need for energy resources and raw materials for industrial enterprises. China was able to offer export of manufactured goods, micro-electronics, and means of production. With the introduction of unilateral discriminatory measures against Russia by Western countries, the range of Chinese products became significantly broader. In just a couple of years, products of the Chinese automotive industry have topped statistics for sales, and Chinese-made machinery and equipment are being installed at newly launched and reconstructed facilities in Russia. To ensure efficient logistics for merchandise trade between the two countries, which is growing year after year, several federal programmes and joint projects in the transport sector have been developed. Given the length of land borders between Russia and China, overland transport modes have good development prospects and railway transport is most effective in terms of the route length and large carrying capacity.

No sector of economy can function without skilled professionals, and institutions of professional education are designed to train them. The purpose of this

article is to review the transport sector from the perspective of interaction between Russian and Chinese educational institutions.

## MAIN AREAS AND PROSPECTS OF DEVELOPMENT OF RELATIONS IN THE RAILWAY SECTOR

The railway transportation sphere develops through the implementation of a number of comprehensive projects.

As early as 2013, China put forward a strategic initiative known as “One Belt, One Road” [1]. The main goal of the project is to strengthen economic ties and cooperation between China and Eurasian countries. The project involves the joint development of the geo-economic infrastructure of Russia and China. The strategy is based on the development of railway transport and related enterprises: construction of new railway lines, development of adjacent areas and cities, retrofitting of existing railways lines, etc. Much attention is also given to transport hubs linking various modes of transport into a single network structure for transporting goods and passengers. All these activities are aimed at making the two economies less dependent on changes in the geopolitical and economic situation in the world.

The initiative involves the development of several transport corridors, some of which will almost entirely run across Russia and others will partially involve oth-



Fig. 1. Map of the major trans-Eurasian corridors

er countries of the Eurasian Economic Union (EAEU) (Fig. 1) [2].

Mutual investments of Russia and China are an important aspect for the development of relations in the transport sector, as they both provide a significant inflow of resources to current projects and strengthen economic and political ties. Optimization of resource consumption is an equally important advantage of these initiatives.

In order to develop joint educational programmes, Russian and Chinese universities have to understand the specific features and challenges of operation of the entire railway industry comprising several components.

These, in particular, include the following:

- Construction of tracks and related infrastructure;
- Manufacturing of rolling stock;
- Transportation of goods;
- Transportation of passengers.

Each of the components is discussed in more detail below.

## CONSTRUCTION AND DEVELOPMENT OF INFRASTRUCTURE

The implementation of global projects involves the development of the railway network and related infrastructure.

In 2022, Nizhneleninskoye–Tongjiang bridge across the Amur River was opened in the Jewish Autonomous Region, which is the first cross-border railway bridge

to China. It is a single-track, dual-gauge railway bridge capable of accommodating both Russian and Chinese trains. The project was implemented by the Russian Direct Investment Fund through the Russia–China Fund (CIC) (with a 56.25% interest in the project company), RZhD JSC (25%) and VEB.DV (18.75%). The project value is about RUB 10 billion [3]. The project is the first railway border crossing between the two countries.

However, the bridge crossing over the Amur is far away from mineral deposits in Central Siberia, therefore a more conveniently located facility is needed. This could be the Zabaikalsk–Manchuria border crossing, and its infrastructure is being actively developed by both parties [4, 5].

In addition to the construction of new routes, is the existing ones are supposed to be expanded: both those directly involved in cross-border cooperation and indirectly involving it, but, in particular, those intended for domestic freight flows.

A potential project here is the construction of two new railway lines along the following routes:

- The North Siberian Railway will have two branches: from Nizhnevartovsk to Bely Yar in Tomsk Region and from Tashtagol in Kemerovo Region to Urumqi in China;
- Through the Republic of Tuva to the south across the Russian border to Mongolia, where the line will also split into two. One track will run to Erlian in China and the other will go via Mongolian cities to Urumqi [6].

The implementation of the new project will help strengthen ties both with China and with Mongolia.

Due to a special nature of the development of cross-border logistics centres, there is a need for training both engineers and blue-collar workers, and training programmes in both Russian and Chinese universities should have common modules and be based on agreed approaches to the subject matters. Volga State Transport University and its partners are implementing joint training programmes both for sharing experience and training professionals for work in related projects.

The development of transport and logistics infrastructures is necessary for expanding the network capacity for accommodating the growing freight and passenger flows.

## ROLLING STOCK PRODUCTION

Rolling stock is the main means of transportation of goods and passengers. The successful performance of railways depends on is the availability of a well-developed mechanical engineering industry. Unfortunately, the situation with the manufacturing of wagons and locomotives in Russia is bad.

“In 2023–2025, the supply of new freight wagons for the Russian Railways network may drop 19.2% compared to 2020–2022 to 137.6 thousand items. Further, in 2026–2028, analysts expect the supply to reach 154.3 thousand items — a 12.1% increase compared to 2023–2025, but this will still be 9.4% below the level recorded in 2020–2022 (170.4 thousand)” [7].

The withdrawal of European partners of Russian enterprises [8] leads to need to search for new ones outside Europe. In this sector, Chinese companies are quite a promising alternative.

But localization of production is quite a complex process as such, and in the current situation, Russian companies also need to revise their product lines and

either abandon already running projects or develop new ones. In any case, the achievement of technological sovereignty for railway traction vehicles requires large amounts of financial, production, intellectual and human resources.

In this regard, there is a clear need for the development and implementation of student training programmes involving foreign teachers and workers of Chinese enterprises. Internships at both Russian and foreign enterprises will be a useful aid. However, this will require developing a comprehensive project that will need to involve many industry representatives.

Now that we have discussed the issues related to rolling stock, let us consider those on managing transportation of goods.

## TRANSPORTATION OF GOODS

In percentage terms, transportation of goods dominates the overall trade between Russia and China. This is due to the economic characteristics of the two. With its enormous need for energy products, China is interested in importing them, and with its huge reserves of carbohydrates Russia can supply them in large quantities. Therefore, the countries have entered into long-term contracts for the supply of coal, oil and gas.

Apart from energy resources, the Chinese economy is in dire need for wood for construction and wood-based industries.

In addition to expanding product types available for trade, their sales volumes also grow. *Table 1* shows trade statistics in 2015–2023 (in USD million).

In the period in question, merchandise trade between Russia and China shows a steady upward trend, which is beneficial for both economies, allowing for diversification of the target markets and improving their resilience to downturns.

Table 1

Dynamics of merchandise trade between Russia and China in 2015–2023, USD million

Year	Turnover	Exports from Russia to China	Imports to Russia from China	Trade balance	Growth rates, %	
					chain indices	base indices
2015	63,555	34,950	28,605	6,345	100.00	100.00
2016	66,108	38,087	28,021	10,066	104.02	104.02
2017	86,964	48,042	38,922	9,120	131.55	136.83
2018	108,284	52,218	56,066	–3,848	124.52	170.38
2019	110,919	54,127	56,792	–2,665	102.43	174.52
2020	103,969	54,908	49,061	5,847	93.73	163.59
2021	140,703	68,028	72,675	–4,647	135.33	221.39
2022	190,270	114,150	76,120	38,030	135.23	299.38
2023	240,100	129,130	110,970	18,160	126.19	377.78



One of the challenges in logistics of railway services between the two countries is an unbalanced structure of merchandise trade. Specifically, while the base of exports from Russia is resource materials and energy products which are transported in tank and other special-purpose wagons, goods imported from China are mainly machines, equipment and other finished products for industrial and consumer applications which are transported in containers. This creates a problem of empty runs in the opposite direction. Accordingly, it is necessary to balance the structure of merchandise trade by product type or design multi-purpose wagons for a wider range of goods.

All of the above indicates the need for training railway professionals with a mindset conducive to the integrated development of both transport and logistics facilities as well as their active interaction with industrial enterprises for the implementation of joint investment projects. In addition, academic exchange programmes for students and teachers will help add more relevant content to educational programmes and in the long run will enable young transport specialists to effectively contribute to programmes for integrated development of industrial territories both in Russia and in China. Close contacts between students from the two countries will enable each student to learn about culture and mentality of their foreign counterparts, acquire interpersonal skills in a culturally informed way, and take a closer look at engineering cultures in both countries.

Although cargo services account for the major share of the railway traffic between Russia and China, passenger flows between the two also tend to increase.

## TRANSPORTATION OF PASSENGERS

There are several factors contributing to the rapid growth of passenger services between the countries. Firstly, it is the low base effect caused by the pandemic restrictions both in Russia and China. Secondly, a sharp increase in exchange of goods necessitates a higher frequency of international trips and involves more and more people in business processes of international

cooperation. Thirdly, the geopolitical situation contributes to both economic and socio-cultural integration of the two countries, switching business and tourism links from Western Europe to Asian countries and China in particular.

Although railway services cannot fully compete with air passenger transport due to large distances between Russian and Chinese business and tourist centres, they play a notable role in international passenger logistics.

To resolve the present challenges in international passenger logistics, it is necessary to develop all of its components, improve the available infrastructure, raise the quality level of wagons, and train multi-culturally-oriented professionals. This is relevant both for railway workers and for personnel of related transport infrastructure companies and organisations.

## CONCLUSION

The prospects of Russia–China relations in the field of transport require building effective interaction between transport universities in Russia and China. Since goods are mainly transported by rail, it is railway transport universities that can make a major contribution to the development of these processes.

There is a pressing need for training railway sector professionals, as staffing needs are high both in railway companies and in related sectors.

Any industry develops better when it uses resources of many institutional entities, especially those from various leading global economies.

The geopolitical and economic conditions prevailing in the modern world are indicative of a need for closer convergence of Russia and China. Joint efforts of the two will help create a synergy in the development of both the transport sector and related enterprises, organisations and entire territories.

In this connection, it is necessary to develop and implement academic exchange programmes both for students and teachers and railway workers in the two countries.

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