Nizhneleninskoye-Tongjiang international railway bridge: transit functions in the cross-border area

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Abstract. Strengthening interaction in a cross-border area corresponds to the presence of linear infrastructure connecting border areas of neighbouring states. One of the projects, which has been implemented since 2008 in the Russian Far East to connect the Russian and Chinese parts of the Amur area (Priamurie), is the Nizhneleninskoye (Jewish Autonomous Oblast) – Tongjiang (Heilongjiang Province) railway bridge construction. The first combined data on the ongoing changes in the transport infrastructure, the potential trade and industrial development and interaction of border areas near the constructing railway bridge are presented in the paper. It was revealed that the key project result at present is the development of transport and logistics infrastructure that provides a connection between the industrial bases of the Northern China and the Russian Far East and Eastern Siberia. The possibilities of developing an industrial cluster in the bridge sites of the two countries are still being discussed.

1. Introduction
Modern world trends associated with the globalization of economy and intensive international integration actualize the scientific problem of borders and border regions development [1]. The processes taking place in a border area reflect the level of interest in cooperation and, consequently, the development of neighbouring countries [2]. At the same time, globalization is characterized by acceleration of integration processes. It requires a reduction in the delivery time of goods for the manufacturer and the finished product to the consumer. The railway network is one of the most important parts in transport infrastructure, as well as in the framework of industrial development of a territory, especially in cross-border areas. It provides delivery of large-tonnage cargo over long distances. In terms of “eastern vector” in the modern Russian economic policy, the study of cross-border interaction between Russia and China remains relevant. The border position is determined by interaction of spatial systems [3]. Transit functions are provided by linear infrastructure (power grids, pipelines, transport ways, etc.) connecting border territories of neighbouring states. One of the objects is under construction on the border between the Russian Federation and China is the Nizhneleninskoye (Jewish Autonomous Oblast) – Tongjiang (Heilongjiang Province) railway bridge (the Amur railway bridge).

The purpose of the study is to integrate data on the impact of the project for the Nizhneleninskoye – Tongjiang railway bridge construction on transport infrastructure development in Russia, trade and industrial development potential, as well as interaction of the Russian and Chinese border areas in the Priamurie.
2. Models and Methods
Borders are considered as geographical structures where natural, resource, socio-economic, political and other similarities as well as differences are observed at the same time [3]. According to the works of P Ya Baklanov and S S Gansei, border areas are specific geographic objects that can be considered as links of contact structures. Although they tend to be not an integral geographic system. Their integrity can be enhanced if the natural system (geosystem, landscape) is at the core of border areas [4]. Thus, some territory, crossed by a frontier, can be called a border area, but not transboundary. The use of ‘transboundary’ notion can be considered justified if at least two closely related border areas are the part of an integral natural-anthropogenic system (landscape) with their structure and type of functioning. Consequently, the most important indicator to identify a transboundary area is the active interaction of landscapes or socio-economic systems on both sides of the frontier. It is carried out primarily due to transit functions by linear infrastructure (power grids, pipelines, roads, railway lines, etc.) that connect border areas of neighbouring states.

The spatial object of our research is the border area, which was identified by S S Gansei as the Group of Northern Counties of Heilongjiang Province – Jewish Autonomous Oblast. They are located within the Middle Amur Lowland, divided by the state border between Russia and China. In the People's Republic of China (the PRC), it is known as the Sanjiang Plain. It was identified as an international transboundary geosystem by S S Ganzei and N V Mishina [5]. The study territories are characterized by significant contrasts in development. For instance, the difference in population density between the Russian and Chinese parts is more than 15 times [6].

One of the projects, which has been implemented in the study area since 2008, is the construction of the Nizhnelensinskoye (Jewish Autonomous Oblast) – Tongjiang (Heilongjiang Province) railway bridge. It will be the first railway bridge between Russia and China. It will connect the Russian Far East and the northern industrial regions of the PRC.

The work is based on the analysis of scientific literary sources, strategic planning data for the development of Jewish Autonomous Oblast (JAO), media publications. Separate elements of the content analysis methods were used to evaluate media materials.

3. Results and Discussion

3.1. The cross-border railway bridge and development of transport and logistics infrastructure
V Krechetova [7] identified two driving forces for the development of cross-border interaction and the construction of transport infrastructure. The first is related to the needs of bilateral trade, tourism and business. The second is based on international cargo and passenger flows.

In the first case, economic and other interests of bordering countries or regions are manifested. The implementation of the Nizhnelensinskoye – Tongjiang railway bridge project was initiated by the Petropavlovsk mining in order to export the mining and metallurgical enterprises products of Amur Oblast and JAO to China [8, 9]. It will shorten the time and distance of transport for Russian goods to the PRC by 800 km as well as reduce transportation costs. For the neighbouring state, the project helps to restore old industrial bases in Northeast China [10, 11].

It is obvious, the implementation of this project is already contributing to modernization of the transport framework and related infrastructure Jewish Autonomous Region and the Northern Counties of Heilongjiang Province. On the Russian side, the public railway lines section Birobidzhan-Leninsk with a length of 121 km between the bridge and the Trans-Siberian railway is being reconstructed. Four railway stations (Birobidzhan-2, Birofeld, Ungun, Leninsk), electric power infrastructure as well as the bridge over the Bira River are being modernized [12].

It is planned to create logistics parks in the bridge sites both Russian and Chinese sides. Logistics centres, which are transhipment hubs on both the Amur River banks, will ensure the shipment from Russia to China and in the opposite direction. In 2015-2017, the such logistics park in China was constructed next to the Hayuidao station of the railway line Harbin – Tongjiang – border with the Russian Federation [13].
The station is designed for a cargo flow of up to 16.8 million tons per year. It is planned to tranship up to 21 million tons of cargo per year in the future. The cargo transhipment station consists of tracks with a “wide” (Russian) gauge of 1520 mm, a "narrow" (Chinese) gauge of 1435 mm, tracks with a combined gauge. It also includes a terminal for transhipment between the different tracks. In total, about 40 railway tracks have been made at the station. A passenger terminal is also going to be built next to the cargo transhipment station.

It is expected, the logistics park on the Russian border area - the junction station Leninsk-2 near the Nizhneleninskoye – Tongjiang bridge will have worked by 01 August 2021. A cargo-passenger checkpoint, including 13 railway tracks, of which 7 with Russian gauge, 6 with a Chinese gauge is planned to construct. It will help authorities to inspect goods and make cargo accreditation [14]. The issue of international passenger terminal building is being discussed.

In the second case, the needs of international freight and passenger flows contribute to the creation of international transport corridors [7]. The construction of the Nizhneleninskoye – Tongjiang railway bridge will connect two interregional transport lines, the Trans-Siberian Railway and the Chinese Eastern Railway. It will and will ensure the conjugation of the Belt and Road with the Eurasian Economic Union.

The railway corridor Chegdomyn – Izvestkovaya – Nizhneleninskoye, connecting the Baikal-Amurskaya and Trans-Siberian railways with the Nizhneleninskoye – Tongjiang railway bridge is a prospective project as well. This project includes increasing the Izvestkovaya Railway Station Capacity. It is a junction station connecting the Baikal-Amurskaya and Trans-Siberian railways. At Birobidzhan-2 station, it is planned to increase the number and length of station tracks, as well as to build a marshalling hump in order to renovate the marshalling yards. Reconstruction of the railway tunnel under the Amur River close to Khabarovsk is also required. Finishing this project will help to the uninterrupted operation of the Trans-Siberian Railway with an increase in cargo traffic to the Far Eastern seaports and consumers in Khabarovsk and Primorsky Territories [15].

### 3.2. Prospects for the economy development of the border areas as a result of the Nizhneleninskoye – Tongjiang railway bridge construction

According to the “Program for the revival of old industrial bases in Northeast China”, China took into account the Russian border factor, which consists in the potential access to natural and transport opportunities [16]. Attention to the creation of an extensive infrastructure complex that stimulates the regions development, especially remote ones, determines China’s interest in the construction of new checkpoints, customs terminals, logistics centres and bridges on the border. To develop international cooperation with Russia and other regions of East Asia, in 2019, the PRC created a free trade zone in Heilongjiang province [17]. It is focused on supporting emerging industries, such as high-end equipment, smart manufacturing and new energy, as well as offering incentives for commercialization of technological achievements. This zone covers parts of the cities of Harbin, Heihe and Suifenhe. Tongjiang city and the Amur railway bridge are still outside the free trade zone borders.

However, creating industrial and logistics parks in the bridge sites is planned by both Russian and Chinese sides. It is assumed that they will attract a large number of Chinese and Russian enterprises, expand opportunities for the export of goods and services. Functioning of these enterprises is going to be needed labour resources. Therefore, development of social infrastructure will be essential.

In 2016, F W Engdahl suggested that the Heilongjiang province’s ban on the cultivation of genetically modified soybeans would be a driver for mutual Sino-Russian grain trade on a GMO-free basis. So, the construction of the Amur railway bridge will enable JAO to participate actively in this process [18]. In 2015, due to the devaluation of the rubble purchase prices for soybeans in Russia got lower than in China. Almost the entire crop harvest has been exported from JAR to the PRC since that [19]. The interest of Chinese companies in the development of regional cooperation in agriculture and food production is also noted in the Report “Russia–China Dialogue ...” [20]. One of the largest bilateral cooperation projects which is being launched in Tongjiang is the Sino-Russian Agricultural Logistics Centre.
It is focused on increasing exports from Russia and imports to China of agricultural products, as well as formatting in Tongjiang Russian agricultural products processing facilities.

Also, the infrastructure at the Tongjiang bridge site is being modernized so as to improve industries for the processing of timber, coal, iron ore, and chemical products imported from Russia to China [21, 22]. Despite the fact that the Amur railway bridge has been constructing in JAO for several years the Russian side has no clear idea which of companies is ready to develop business in the industrial park.

The following kinds of using the possibilities of logistics and industrial sites of the Amur railway bridge can be identified:

- export of iron ore, mineral fertilizers and other goods. The project will provide the export of iron ore concentrate from the K&S Mine, which locates in the Obluchensky District of the northwestern part of JAO, to China via the shortest transport route;
- supplies of coal from Yakutia and gas in tanks from Eastern Siberia to the PRC;
- export of wood products from the Khabarovsk Territory.

In 2015, one of the Chinese companies got involved in the construction of the industrial park in the Leninsky District of JAO [23]. It is registered as Amurprom, LLC in Russia. It is a resident of the Amur-Khingan territory of priority development (TPD). One of the sites of this TPD in the Leninsky District close to the Amur railway bridge has been allocated for it. By 2023, the company is ready to build a soybean processing plant, the Amursky industrial park infrastructure, wood processing plant, warehouses and an industrial refrigerator for storing and transporting cargo, as well as industrial facilities for storing and drying corn grain.

Since the industrial centre in the border area is created on the basis of the Amur-Khingan TPD it is possible to find what types of economic activities are allowed in here, according to the Decree of the Russian Federation Government, 27 August 2016, No. 847 “On the Creation of the Amur-Khingan Territory of priority socio-economic development”. The list includes:

1. Crop and livestock production, game hunting and related services;
2. Extraction of minerals;
3. Food production;
4. Wood processing and production of wood and cork products, except furniture, straw products and plaiting materials;
5. Manufacture of other non-metallic mineral products;
6. Metallurgical production;
7. Manufacture of finished metal products, except machinery and equipment;
8. Manufacture of machinery and equipment which is not included in other categories;
9. Furniture manufacturing;
10. Warehouse management and auxiliary transport activities;
11. Temporary residences;
12. Food and drinks provision;
13. Organization of conferences and exhibitions.

To summarize these results, we may say that during the entire period of the Nizhneleninskoye - Tongjiang cross-border railway bridge construction it has faced various difficulties. Among them: rising the construction cost due to the complex the Russian section of the Amur River bed structure; change of construction contractors; decreasing the iron ore cost in 2016-2017, which should be exported by the K&S Mine to China; restrictions caused by the COVID-19 pandemic; export duties imposed by Russia on unprocessed timber and ferrous and non-ferrous metals. As a result, the commissioning of the Amur railway bridge was postponed several times.
4. Conclusion

Thus, the key results of the Nizhneleninskoye – Tongjiang border-crossing railway bridge construction are defined as transport and logistics development for linking the industrial bases of northern China with the Russian Far East and Eastern Siberia. The situation with the development of an industrial cluster in the border areas near the bridge is uncertain. However, a well-thought-out strategy for the development of cross-border cooperation might provide a beneficial effect on both countries.

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