

CASE STUDIES NOTE ON THE USE OF NEW TECHNOLOGIES ON SELECTED TRANSPORT CORRIDORS ALONG THE ASIAN HIGHWAY NETWORK IN THE CONTEXT OF THE COVID-19 PANDEMIC



This technical note is elaborated as part of analytical and capacity building activities aimed at promising smart transport solutions in COVID-19 under the framework of the United Nations Development Account project on “Transport and trade connectivity in the age of pandemics: Contactless, seamless and collaborative UN solutions.”

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BACKGROUND

The COVID-19 pandemic has not only posed a severe global health threat, it also represents a supply and demand shock to the transport sector. Transport-related policy measures taken by countries to contain the pandemic has added operational challenges to the movement of goods at national and international levels, disrupting international transport connectivity and the overall logistics of the supply chain network. Preserving the efficient flow of goods and services within and across countries is critical to defeat the pandemic, mainly to ensure delivery of essential products, such as foodstuff and medical supplies, and a speedy and sustainable economic recovery.

Freight transport operations are posing risks during the pandemic, especially if they are not fully computerized. As documents and goods continue to be subjected to physical checks for customs and other regulatory purposes, crew members and staff at border-crossing points and control terminals are exposed to the risk of contagion by the nature of their work. In this context, the use of information and communication technologies (ICT) and intelligent transport systems (ITS) is directly relevant to the pandemic response and recovery policies. Optimization of automation and digitalization reduces the need for human interaction, making cross-borders transport safer and more resilient to disruptions.

Under the framework of the United Nations Development Account project entitled “Transport and trade connectivity in the age of pandemics: contactless, seamless and collaborative UN solutions”, the ESCAP secretariat prepared a technical note covering the topic “Smart Connectivity along the Asian Highway Network in the Time of COVID-19”¹, and officially released it in September 2020. The main objective of the note is to offer policy recommendations for responses using new technologies and smart road solutions to preserve regional transport connectivity during pandemics and other similar disruptions.

As a follow-up to the technical note, the secretariat has undertaken a study project to assess the actual real-life application of new technologies along selected international transport corridors along the Asian Highway Network.

Within this context, the following two international transport corridors were selected for further analysis. The study findings are presented in this case study note.

- International Transport Corridor "Primorye-2", connecting Changchun, China to Zarubino, Russian Federation
- AH8 International Transport Corridor, connecting Bandar e-Emam, Islamic Republic of Iran and St Peterburg, Russian Federation via Baku, Azerbaijan

¹ United Nations, Economic and Social Commission for Asia and the Pacific, “Smart connectivity along the Asian Highway Network in the time of COVID-19”, Policy brief, September 2020. Available at <https://www.unescap.org/resources/seamless-and-smart-connectivity-along-asian-highway-network-time-covid-19>.

CASE STUDIES ON THE USE OF NEW TECHNOLOGIES (ICT AND ITS) AT SELECTED TRANSPORT CORRIDORS ALONG THE ASIAN HIGHWAYS NETWORK

The development of the international transport corridor (ITC) emanates from the following factors:

- Changes in the geography of the world economy and trade;
- Growth of polycentricity in terms of the world economy and trade;
- Pace of implementation of modern transport and logistics systems;
- Processes of concentration and unification in world transport.

The international transport corridor functions most effectively in conditions of preferential treatment, including a single customs or economic space, as the concentration of material, financial and information flows combined with the high quality of forwarding services ensure the acceleration of capital turnover and synchronization of the passage of goods and payments and other documents.

The formation of a multilevel ITC system operating on the hub and spoke principle (a hub and a space gravitating towards it) involves the broad involvement of countries and regions in international trade and enables greater on-time delivery of intermediate goods components and semi-finished products. The sequential transportation of goods and passengers by different modes of transport with the formation of transport service chains (multimodal and intermodal transportation), the so-called seamless transportation, makes it possible to speed up the communication and increase its reliability and quality. Directly or indirectly, this contributes to the development of trade and economic growth.

Geopolitical considerations of the countries also have a great influence on the development of ITC, in particular, the desire to strengthen their foreign policy influence through modern infrastructure, reduce the geopolitical risks of entering the main markets and diversify communication options with world markets. In other words, the dynamics of ITC is a reflection of technological progress in transport, the course of globalization and regionalization of the world economy, and the geopolitical and geoeconomic interests of the participating countries in the development of international communications.

In this exercise, research studies were conducted on two corridor routes along the Asian Highway Network, assessing the possibilities and results of using new technologies (ICT and ITS) to enhance international road transport connectivity:

- International Transport Corridor "Primorye-2": China-Russian Federation;
- International Transport Corridor AH8: Islamic Republic of Iran (Rasht)-Azerbaijan-Russian Federation (Makhachkala).

A. International Transport Corridor "Primorye-2": China-Russian Federation

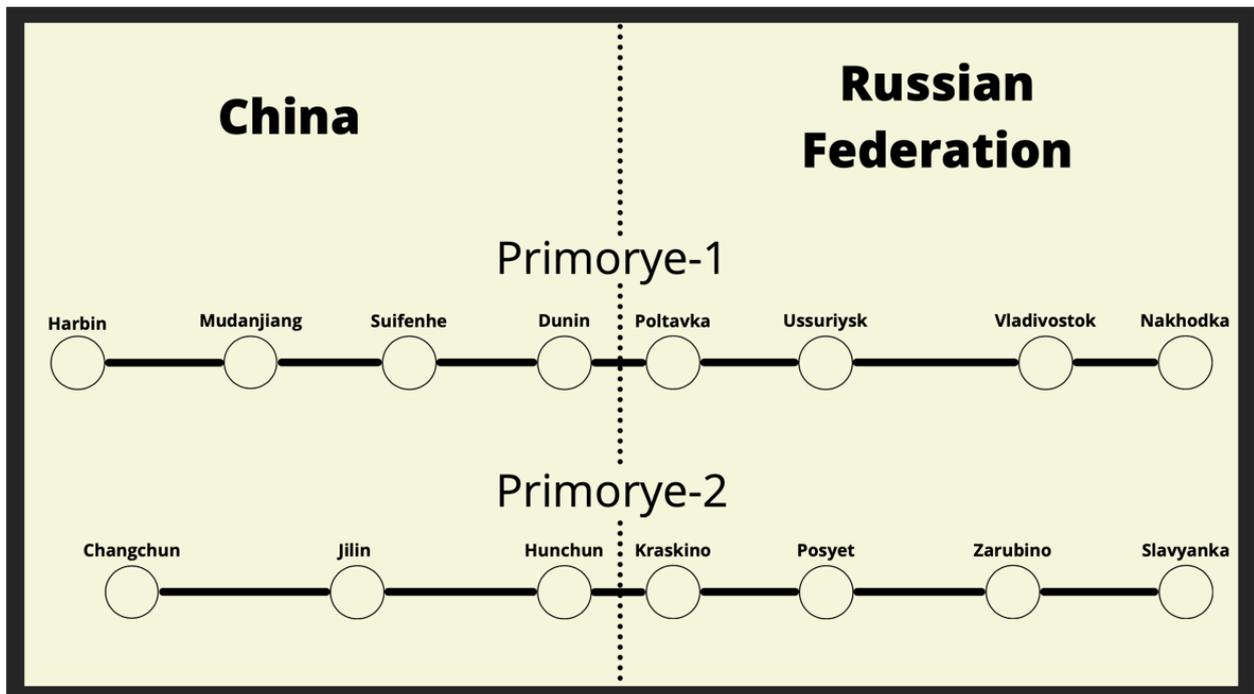
To improve the efficiency of road transport services for the development of international trade in Asia, China and the Russian Federation agreed in 2005 to develop two ITCs, which pass through the two countries and connect the mainland parts of each country with access to the sea.

These corridors are the following:

- International Transport Corridor "Primorye-1" Harbin-Grodekovo-Vladivostok/ Nakhodka / Vostochny-ports of the Asia-Pacific Region;
- International Transport Corridor "Primorye-2" Changchun-Kraskino-Posyet/Zarubino ports of the Asia-Pacific Region.

Figure 1

The scheme of the international transport corridors China-Russian Federation "Primorye-1" and "Primorye-2"



For an extended period, neither corridor was in demand because of such factors as non-competitiveness, low throughput and administrative barriers.

After being approved on 30 December 2016, the Government of the Russian Federation began to transform the infrastructure, regulatory and organizational aspects, construct facilities and roads in the new development concept of the "Primorye-1" and "Primorye-2".²

² Russian Federation, "On approval of the Concept for the development of international transport corridors "Primorye-1" and "Primorye-2", 30 December 2016. Available at <http://government.ru/news/25953/>.

Reviewing more closely the "Primorye-2" corridor for research because of the two ITCs is of particular relevance due to the minimum distance across the territory of the Russian Federation from China to access to the sea.

The "Primorye-2" corridor connects Jilin Province in China with the seaports of Slavyanka, Zarubino and Posyet in the Russian Federation. This has presented a technological opportunity to organize transit cargo traffic, including containers, from Northern China through the Russian seaports of the Khasansky district to the final consignees to the Asia-Pacific region, the United States of America and Europe.

Goods produced in the Yanbian Korean Autonomous Prefecture of China, which is a free economic zone that lacks access to the sea, are exported through Chinese ports. The distance from the city of Hunchun to the nearest port in China, Dalian, is 1,500 kilometres (km), and the distance from this city of Hunchun to the port of Zarubino in the Russian Federation is only 86 km.

The port of Zarubino of the Russian Federation is in the Khasansky district of Primorsky Krai, Trinity Bay, the Sea of Japan. The existing capacity of cargo terminals is 1.2 million tons per year. Only 4.5 per cent of the designed capacity of the port is loaded. A part of the development plans for transportation on "Primorye-2", grain, container and bunkering specialized transshipment complexes with a total capacity of up to 60 million tons per year are being constructed at the Zarubino seaport.³

The port of Zarubino can provide an annual transshipment of 500 thousand twenty-foot equivalent units (TEUs) per year, 10 million tons of grain. It can also handle roll on/roll off and other cargo and can accept passenger traffic. According to experts, 60 per cent of the cargo flow will be provided by the northern provinces of China, exports to the Asia-Pacific region is expected to be comprised of 30 per cent of the total and the remaining 10 per cent will be foreign trade operations of Russian enterprises.⁴

Since the beginning of 2020, the volume of transit cargo transportation through "Primorye-2" has increased by 64.8 per cent. The potential volume that will passing through the corridor may reach 23 million tons of grain (wheat, soy, rice) and 15 million tons of container cargo.⁵

Many steps need to be taken to finalize the functioning of the ITC system and a well-coordinated mechanism is required, especially for the effort to combat the pandemic. Currently, "Primorye-2" is moving to the third and final stage of the construction process, which spans from 2020 to 2030.

For the successful development of international road transport, especially under the conditions of a pandemic, new technological and managerial decisions are being made pertaining to routes using ICT and ITS. Elements of robotization and automation in production processes are being tested in the following areas:

- Physical road infrastructure that potentially paves the way for safe traffic and provides technical support, including the use of highly automated or fully automated vehicles on international routes of Asian roads;

³ DVKapital. Mirages of the port of Zarubino, 23 October 2018. Available at https://dvcapital.ru/dkproject/primorskij-kraj_23.10.2018_13314_mirazhi-porta-zarubino.html.

⁴ See <http://russiachina-eastcargo.com/ru/transport-corridors>.

⁵ Ibid.

- Systems for the sustainable and safe management and effective control of transportation processes.

To review the state of and prospects for the development of international road transport on international routes of the Asian Highway Network using "Primorye-2" as an example, emphasis is directed to the shortest, but most significant section of "Primorye-2", Hunchun-Zarubino. This section is characteristic of the organization of international transportation in China and the Russian Federation and the procedures of the automobile checkpoint on the border of the two countries.

1. International agreements affecting the organization of international road transport on the "Primorye-2" international transport corridor

a. Bilateral agreements between the China and the Russian Federation

Currently, international road transport of goods and regular and irregular passenger transport between the Russian Federation and China is carried out in accordance with the Agreement between the Government of the Russian Federation and the Government of the China on International Road Traffic of 18 December 1992 on the basis of permits transferred to each other and on established routes. The routes and the number of permits are agreed upon within the framework of the annual meetings of the Working Group on Road Transport and Highways of the Subcommittee on Cooperation in the Field of Transport of the Russian-Chinese Commission for the Preparation of Regular Meetings of Heads of Government.

A new agreement between the Russian Federation and China of 8 June 2018 specifies that road transportation of goods and irregular transportation of passengers in bilateral and transit traffic be carried out according to permits, but regardless of the agreed routes, with the condition that vehicles are equipped with on-board navigation devices.

On 14 July 2017, the Russian Federation and China signed a memorandum on cooperation in the development of the "Primorye-1" and "Primorye-2" international transport corridors. The signing ceremony was held in the presence of Russian President Vladimir Putin and Chinese President Xi Jinping.

According to the memorandum, the Parties plan to assist in the creation of the infrastructure necessary for the development of international transport corridors, including roads and railways, ports, airports, checkpoints and communication systems. Measures are also to be taken to simplify procedures and reduce costs and time for customs clearance of transit cargo. The Parties intend to increase the volume of cargo transportation, strengthen cooperation between the ports of the Russian Far East and the ports of China, support the construction of international logistics parks and stimulate the development of cross-border e-commerce.

A specially created interdepartmental working group coordinates the implementation of the project. Its tasks include preparing a feasibility study of the project, coordinating the conditions for the implementation of investment projects within the framework of international transport corridors, studying the issues of forming a cargo base and improving the mechanisms for regulating international transport corridors.

A joint management company is engaged in the management and operation of transport corridors.

The Russian Federation is creating a seamless corridor for Chinese cargo. Border checkpoints within the framework of the international transport corridors "Primorye-1" and "Primorye-2" are open around the clock. The control regime at the border has been simplified – a single control body has been defined instead of several control bodies. The right of electronic cargo declaration has been granted. In addition, the Government of the Russian Federation has designated the seaports of Zarubino, Posyet, Vladivostok, Vostochny and Nakhodka as the places of arrival of transit cargo from China. As such, customs control over them will be carried out in seaports, and not when crossing the land border,

In September 2019, the customs authorities of the Russian Federation carried out a set of measures aimed at creating favourable conditions for the movement of goods along the "Primorye-2". These measures simplify the registration procedure and reduce the document flow, and, in turn, helps to reduce the time for passing and declaring goods, and ensure an uninterrupted operation.

As a result of consultations at a recent meeting of the Subcommittee on Cooperation in the Field of Transport of the Commission for the preparation of regular meetings of the heads of Government of Russian Federation and China along with meetings of seven industry working groups on transport, an agreement was reached to intensify work on the use of an electronic consignment note with an electronic signature, pilot transportation with paperless technology and consider the feasibility of tracking the movement of container trains using innovative blockchain technology.

b. Multilateral international agreements

Because of the unique features of international transport communications, special uniform rules between countries are required. These rules should not be developed to supplement and improve domestic legislation, but instead, should become the subject of interstate agreements. A characteristic feature of regulations in this area is that the main issues of transportation are resolved in international agreements (transport conventions) containing unified norms that uniformly define the conditions for international transportation of goods and passengers. Such agreements contain requirements for transportation documentation, determining the procedure for accepting cargo for transportation and issuing it at the destination, and the carrier's liability conditions and the procedure for filing claims against the carrier, which are stipulated in advance in the application for cargo transportation.

To reduce administrative barriers arising from non-harmonized requirements and conditions during the implementation of international road transport between countries, countries must join multilateral international agreements on an equal basis.

Below is a discussion of the main multilateral agreements that are important for regulating international road transport on the "Primorye-2" international transport corridor, and the accession of the China and the Russian Federation to them.

The Convention on the Contract for the International Carriage of Goods by Road (CMR)⁶ was signed in Geneva on 19 May 1956. It applies to any contract for the carriage of goods by road for remuneration by means of vehicles when the place of loading of the goods and the place of delivery of the goods specified in the contract are located on the territory of two different countries, of which at least one is a party to the Convention. The main provisions of the

⁶ See <http://docs.cntd.ru/document/1900717>

Convention relate to the registration of transportation, acceptance of cargo for transportation, the timing of delivery of cargo, its delivery, liability claims and other claims. In accordance with the Convention, the Contract of Carriage is established by the waybill. That is, when transporting cargo, a CMR consignment note is issued, which confirms that a contract of carriage exists. The Convention does not require the issuance of an invoice, however, it defines the mandatory and additional details of this document. The application of the Convention does not depend on the place of residence and nationality of the contracting parties. The Russian Federation has acceded to this Convention, including the Additional Protocol to the Convention concerning the Electronic Consignment Note (e-CMR); China has not yet acceded to it.

The Vienna Convention on Road Traffic, also referred to as the Convention on Road Traffic, is an international treaty that was concluded with the aim of facilitating international road traffic and improving road safety by adopting uniform traffic rules. The Convention was developed during the Economic and Social Council conference, held in Vienna from 7 October to 8 November 1968. Under the Convention on Road Traffic, a standard for licence plates was set: only Arabic numerals and Latin letters can be used in the licence plates of the countries participating in the Convention. Also specified under the Convention is that countries participating in it recognize each other's national driving licences without the need to obtain international licences. The Russian Federation has acceded to the Convention, but China has not.

The European Agreement concerning the Work of Vehicle Crews (AETR)⁷ was concluded in Geneva on 1 July 1970 under the auspices of the Economic Commission for Europe. The Agreement aims to promote the development and improvement of international road transport of passengers and goods, improve road safety, regulate certain working conditions in international road transport enterprises in accordance with the principles of the International Labour Organization and foster the development of certain measures to ensure compliance with such regulations. Among the more than 50 countries that have joined AETR, there are uniform rules for driving time and rest periods for drivers during international flight. The rules are based on two points: the duration of the driving mode of the vehicle; and the periods and the duration of rest between driving cycles. The requirements for the maximum period of being in a state of monotonous movement and the minimum allowable break between them are prescribed. The Russian Federation has acceded to the Convention, but China has not. The Russian Federation is obliged to apply the requirements of the AETR Convention to carriers from China.

To improve the safety of international road transport of dangerous goods, countries signed the European Agreement on the International Transport of Dangerous Goods (ADR/ADR)⁸, which entered into force in 1971. Currently, it operates in 38 European countries. This Agreement takes into account the recommendations on standardization and unification of norms and rules in force in different countries and on different types of transport for the movement of dangerous goods. The Russian Federation has joined this convention, but the China has not yet acceded to it.

The Shanghai Cooperation Organization (SCO)⁹ is a regional international organization founded in 2001 by the leaders of China, the Russian Federation, Kazakhstan, Tajikistan, Kyrgyzstan and Uzbekistan, and joined by India and Pakistan in 2016. In September 2014, an agreement was signed in Dushanbe by the Governments of the SCO member States on creating favourable conditions for international road transport. The objective of the agreement is to

⁷ See <http://docs.cntd.ru/document/1900746>

⁸ See <http://docs.cntd.ru/document/58804886>.

⁹ See <https://mintrans.gov.ru/activities/69/92>.

develop international transport in the region on the basis of simplification and harmonization of documentation, transport procedures and border crossings. Within the framework of the signed agreement, international routes were agreed for which quotas will be determined for each of the countries. To facilitate transportation, the Parties simplify the formalities and procedures for issuing visas, border, customs, transport, phytosanitary and veterinary control during international road transport. China and the Russian Federation are signatories of the SCO agreement.

The United Nations Customs Convention on the International Transport of Goods under Cover of a TIR Carnet (TIR Convention, 1975)¹⁰ allows international transport of goods by road from the customs office of the country of departure to the customs office of the country of destination through the territories of the required number of countries without customs inspection at intermediate borders. China and the Russian Federation are signatories to the TIR Convention.

c. Agreements between the Eurasian Economic Union and China

The Russian Federation is a member of the Eurasian Economic Union (EAEU), established to create a single customs space in a territory that extends to the following States: Armenia, Belarus; Kazakhstan; Kyrgyzstan; and the Russian Federation.

Digital transport corridors and routes are being formed in the EAEU space, including in the interests of developing trade and economic cooperation between the Eurasian Economic Union and China.

Trade and economic cooperation of EAEU with China is expanding. China records the highest trade turnover with members of the union, making it a top priority partner. The trade turnover between EAEU and China over the period January–June 2021 amounted to \$73.5 billion, an increase of 24.8 per cent year on year. In comparison, the trade turnover between the EAEU and the European Union (which includes 27 countries) was \$145 billion, an increase of 27.9 per cent year-on-year.¹¹

This is facilitated by an agreement on trade and economic cooperation concluded in 2018 between EAEU and China.

To consolidate the success and move forward, new initiatives are needed. In that vein, EAEU is planning to construct digital transport corridors, which would allow trading to reach a new level.

Within the framework of the strategic directions for the development of the Eurasian economic integration until 2025, approved by the heads of EAEU States in December 2020, the Eurasian Economic Commission has developed a draft plan (road map) for trade and economic cooperation between EAEU and its member States with China based on the theme “Formation, development and digitalization of transport routes”. The draft plan is being reviewed for approval by the Ministry of Commerce of the China.¹²

¹⁰ See <http://docs.cntd.ru/document/1900316>.

¹¹ Belta, China, digital products and the role of Belarus in them, 19 August 2021. Available at <https://www.belta.by/economics/view/intervju-mjasnikovich-o-torgovle-eaes-i-kitaja-tsifrovyyh-proektah-i-roliv-nih-belarusi-455895-2021/>.

¹² Ibid.

It is assumed that the entire action plan will be implemented by March 2023.¹³ Upon completion, it will be possible to switch to a comprehensive electronic technology for the movement of goods by rail in bilateral and transit transport between the member States of EAEU and in the future, with third countries, in particular with China.

Currently, due to the unfavourable epidemiological situation, the capacity of checkpoints on the border of the China with the Russian Federation has decreased considerably. Because of the restrictions imposed on the number of vehicles and increase in the time for carrying out control procedures and disinfection measures, transport downtime has increased while waiting to cross the border.

In the context of the pandemic, many Russian-Chinese border crossings have introduced the so-called "re-chain" model of cargo transportation across the border. Under this model, trucks from the Russian Federation enter China, the trailer is unhooked, Chinese employees unload or load it and then the truck returns to retrieve the trailer. The model is not very effective because vehicles have to move in one direction without cargo. This scheme, however, is suitable for China because it gives the country the ability to maintain control over the sanitary and epidemic situation at its border. The two countries are trying to improve the "trailed" model with the use of modern information and communication technologies and ITS.¹⁴

2. Physical road infrastructure of the "Primorye-2" corridor China-Russian Federation

The shortest international route of the "Primorye-2" international transport corridor from the city of Hunchun in China to the terminal at the port of Zarubino in the Russian Federation is 86 km. The route in the two countries is as follows:

- China, in the Yanbian-Korean Autonomous Prefecture of Jilin Province from the cargo terminals in Hunchun to the international automobile checkpoint at the border of China-Russian Federation border. The length of the route in China is 15 km;
- The Russian Federation, from the international automobile checkpoint "Kraskino" at the China-Russian Federation border to the seaport in the village of Zarubino. The length of the route in the territory of the Russian Federation is 71 km.

a. Physical road infrastructure of the "Primorye-2" international transport corridor on the section from Hunchun to the automobile checkpoint at the China-Russian Federation border

A 15 km long road runs through China from Hunchun to the international automobile checkpoint at the China-Russian Federation border. Part of the road is classified as Class I, and the other part is classified as Class II.

A survey of the physical road infrastructure in the Chinese section of the "Primorye-2" international transport corridor from Hunchun to the automobile checkpoint on the China-

¹³ Ibid.

¹⁴ Economic Information Agency, "The situation with cargo transportation on the border with China is difficult, concluded the Consul General", 4 August 2021. Available at <https://1prime.ru/transport/20210804/834371102.html>.

Russian Federation border, which is 15 km, shows that part of the road is classified as Class I, and the other part is classified as Class II based on the classification of roads for Asian highways.

The road infrastructure allows the use of highly automated vehicles of category N₃ for international transportation with weight and dimensional parameters corresponding to international standards for international traffic adopted by the countries of the China-Russian Federation route. However, to be able to use fully automated vehicles (without the participation of drivers), the road infrastructure requires additional coordination and modernization.

b. Automobile checkpoint at the China-Russian Federation border

On the route of the international transport corridor "Primorye-2" to the China-Russian Federation border, there is an international automobile checkpoint referred to as "Kraskino", which is being upgraded.

The daily design (actual) throughput capacity of the "Kraskino" checkpoint is the following:

- Cargo transport – 48 (52) trucks;
- Passenger buses – 40 (48) buses, passengers 1,440 (1700) people.

The capacity of the automobile checkpoint is insufficient for the existing flow of passengers and cargo. This has led to long queues, which have increased resulting from measures taken to prevent the spread of the COVID-19 virus.

One of the activities of the Russian Federal Target Program "State Border of the Russian Federation (2012-2021)", is to upgrade the automobile checkpoint "Kraskino" to be able to process 250 vehicles per day, including 150 trucks, 50 buses and 50 cars. The checkpoint will have five entry lanes and five exit lanes, and 10 passport control booths. It will operate 23 hours every day and have a one-hour technological break. The total number of employees at the MAPP "Kraskino" will be 280 people; 160 people per shift.¹⁵

The second stage of the upgrading of the international automobile checkpoint "Kraskino", to be completed in 2024, will increase the capacity to 750 vehicles per day.¹⁶

c. Physical road infrastructure of the "Primorye-2" international transport corridor on the section from the automobile checkpoint on the border of the China-Russian Federation to Zarubino

The route leading from the Russian-Chinese border to the port of Zarubino includes public roads of regional significance, with a length of 71 km.

A survey of the physical road infrastructure in the Russian section of the "Primorye-2" international transport corridor from the automobile checkpoint to the China-Russian Federation

¹⁵ VL.RU, "Border crossing "Kraskino" in Primorye wants to be reconstructed for federal funds by 2022", 13 May, 2020. Available at <https://www.newsvl.ru/society/2020/05/13/190038/>.

¹⁶ Customs Forum. RU, "By 2025, the throughput of the Krasinko checkpoint will increase to 750 vehicles per day", 26 April 2021. Available at <https://customsforum.ru/news/business/k-2024-godu-propusknaya-sposobnost-mapp-kraskino-vyrastet-do-750-ts-v-sutki-555603.html>.

border shows that the road is Class II based on the classification of roads for Asian highways. The road infrastructure enables the use of highly automated vehicles of category N₃ for international transportation with weight and dimensional parameters corresponding to international standards for international traffic adopted in the countries of the route to China and the Russian Federation. However, to be allowed to use fully automated vehicles, modernization of the road infrastructure is required.

3. Current use of new/intelligent technologies on the "Primorye-2" international transport corridor

a. Information environment and support

Operators engaged in international road transport along the "Primorye-2" international transport corridor actively use modern means of communication. They are, however, experiencing difficulties in obtaining quickly up-to-date information about the requirements for transport documentation, admission and conditions for international transportation in force at the time of transport planning.

When searching for the necessary information on the Internet, they encounter hurdles, such as language barriers, translation inaccuracies and unreliable information given by unofficial sources.

An Internet resource with official and relevant information for carriers translated into the languages of transport participants has not been created in the countries on the route of the "Primorye-2" international transport corridor. Accordingly, it is not possible to obtain explanations or consultations from representatives of State bodies about the requirements for international transportation and transport documentation remotely via web applications,

China and the Russian Federation have not signed an agreement to provide international carriers with a harmonized list of requirements and conditions for access to official information resources on international road transport along the "Primorye-2" international transport corridor.

As a result of the absence or use of false information, carriers commit violations, which results in damages and incurs losses.

b. Digitalization of document flow

Currently, participants engaged in international road transport along the "Primorye-2" international transport corridor must prepare their transport documentation manually on paper. Inaccuracies and corrections are tolerated, including those related to the difficulties of translation into foreign languages.

Verification of transport documents on paper and registration of the results of the inspection by the control authorities are carried out manually. As a result, all vehicles must stop so that contact can be made with the drivers.

It should be noted that at the national level of transportation in China and the Russian Federation, work is being carried out to facilitate the gradual transfer of transport documentation to a digital format and automation of control processes.

To date, however, China and the Russian Federation have not signed an international agreement on the translation of transport documentation relevant for international road transport on the "Primorye-2" international transport corridor into digital format. The list of documentation, the composition of the data included in it the procedure for giving the data legal significance, data exchange and their use have also not been agreed upon by the two countries.

c. Digitalization of the permits system

International road transport on the "Primorye-2" international transport corridor is carried out through the mandatory use of permits that grant the right to a foreign carrier to travel commercial vehicles through the country. Permits, including additional special ones for the transportation of bulky and dangerous goods, are issued on paper forms. The procedure for ordering and issuing permits is connected with the need to contact people physically, a waste of resources.

Preparatory work is underway in China and the Russian Federation to convert transport documents into digital format, including permits. Web applications for remote compilation and submission of applications in the language of carriers for registration of access to registration and obtaining permits, including for the transportation of bulky, heavy and dangerous goods, have not yet been developed.

In addition, remote coordination via Web applications with the control and supervisory authorities of the countries of the "Primorye-2" international transport corridor of the planned route and schedule of transportation, taking into account the permits issued and the conditions of their use is not possible under current circumstances.

Verification of the availability of permits and compliance with the conditions of their use by the control authorities is carried out manually. This entails mandatory stopping of vehicles and making contact with drivers. Remote automated control systems for the availability of the necessary permits and compliance with the conditions of their use have not yet been implemented.

d. Preliminary declaration of transport documentation data

On the "Primorye-2" international transport corridor, the preliminary declaration of the data of transport documentation of international road carriers for the regulatory authorities of the China and the Russian Federation is not applied, due, in part, to the non-use of transport documentation in digital format.

It should be noted that at the national level of transport in China and the Russian Federation, work is being carried out to introduce a preliminary declaration of certain types of transport documentation, for example, electronic TIR Carnets (e-TIR), international consignment note (e-CMR) in accordance with national plans for the phased conversion of transport documentation into digital format and automation.

China and the Russian Federation are holding consultations on the introduction of a preliminary declaration of transport documentation in digital format, as well as on the procedure and technologies for preliminary declaration and control of submitted data, coordination and use of

the results of preliminary verification of transport documentation for international road transport on the "Primorye-2" international transport corridor.

e. "Electronic queue" systems and "accelerated lanes" for trucks at border checkpoints

The "electronic queue" system is being implemented at the international automobile checkpoint of the "Primorye-2" international transport corridor at the China-Russian Federation border. Carriers submit vehicle data to the checkpoint by e-mail and receive confirmation of registration for the right of entry to the checkpoint.¹⁷

Checkpoints do not provide carriers with the opportunity to receive video information through web applications about the queues of vehicles nor about the current working conditions of the checkpoint, its work schedule and throughput.

The administrative restrictions imposed on the number of vehicles allowed to pass through a checkpoint is the current system of remote control of the number and scheduled arrival of vehicles at the checkpoint.

Due to the actual excess of carriers arriving at the checkpoint compared to its limited capacity, traffic jams and interference with the operation of the checkpoint occur.

In addition, because there is no system for preliminary declaration and automated verification of transport documentation data before the arrival of vehicles at the checkpoint, it is impossible to organize "accelerated lanes" and "green corridors" to speed up the registration of trucks and increase the capacity of the checkpoint. The procedure and technologies for organizing "accelerated lanes", "green corridors" and "electronic queues" for international road transport on the "Primorye-2" international transport corridor have not been agreed upon by the two countries.

f. "Electronic navigation seals" for remote control of goods during customs transit

"Electronic navigation seals", which are designed to automate and speed up customs formalities and be used for remote control during customs transit of goods, are not being deployed for international road transport in the "Primorye-2" international transport corridor.

With the development of a "re-chain" model of cargo transportation across the border on the "Primorye-2" international transport corridor under the conditions of a pandemic, the expediency of using "electronic navigation seals" increases. Such seals allow remote monitoring of the use of trailers on foreign territory in the absence of their owners and of the condition of the goods in the trailer, controlled by additional sensors and connected to the "electronic navigation seal".

¹⁷ See the official website of the government of Primorsky Krai (<https://www.primorsky.ru/authorities/executive-agencies/departments/inter/proezd-k-avtomobilnym-punktam-propuska.php>).

It should be noted that in the Russian Federation and a number of EAEU member States, "electronic navigation" seals are being used in the implementation of international transportation of certain types of goods in their territory.

China and the Russian Federation have not signed an international agreement on the introduction of "electronic navigation seals" in international road transport on the "Primorye-2" international transport corridor. The two countries also do not have an agreement covering the status, procedure and technologies for the use of such seals and the exchange and use of data obtained from these seals.

g. Automated real-time en route remote monitoring and control of parameters of vehicles

China and the Russian Federation have in place remote automated control system, negating the need to stop vehicles at border checkpoints. Elements of the system are the following:

- Dynamic measurement of the weight parameters of cars using load cells built into the roadbed;
- Dynamic measurement of the overall parameters of vehicles using optoelectronic measurement sensors;
- Photo and video recordings that provide recognition of, for example, state license plates of vehicles and their identification by categories and types and the number of axles;
- Information boards with variable information to inform drivers in cases of detection of violations of the speed limit or weight loads.

Telecommunications modules are being created to establish protocols of violations and are interfaced with information systems of state control and supervisory authorities and transport operators.

Because transport documentation data are not available in digital format in international road transport on the "Primorye-2" international transport corridor, it is not possible to carry out remote automated control over the availability, correct use of permits and compliance by carriers with prescribed routes and transport conditions.

China and the Russian Federation have not signed an agreement covering the implementation of remote automated control on the "Primorye-2" international transport corridor for determining the carrier's availability of permits and the correct way to use them, as well as on the carrier's compliance with the prescribed routes and conditions of transportation. They have also not signed an agreement covering the procedure and technologies for implementing remote automated control on the corridor for the availability of permits from carriers and how to use them correctly, and the exchange and use of the control results obtained.

h. Introduction of remote monitoring systems for driver's health status

In China and the Russian Federation, approaches and requirements for conducting medical monitoring of the health status of drivers engaged in international road transport on the "Primorye-2" international transport corridor differ. The lack of uniformity for the application of various requirements, including the forms, content and validity periods of medical documents required for entry into the country, inhibits the correct and timely preparation and

presentation of them when entering a foreign country, consequently leads to delays and losses to carriers.

In the Russian Federation, it is legally prescribed to conduct a mandatory daily medical examination of the health status of drivers before starting a work project and after it is completed. To reduce contacts between medical personnel and drivers and improve the accessibility of procedures for drivers, the "telemedicine" system is being introduced. This system uses modern ICTs and specialized software and hardware complexes in the field of medical monitoring of the health status of drivers. It enables users to automate the process and use of analysis results online. It also increases the efficiency of medical control and reduces the costs to carriers.

China and the Russian Federation have not yet signed an agreement on the introduction of a system for remote monitoring of the health status of drivers engaged in international road transport on the "Primorye-2" international transport corridor. There is no agreed procedure and technologies for the implementation of remote automated monitoring on the corridor for the health of drivers, eliminating the risk of the spread of a pandemic and the exchange and use of the control results obtained.

i. Automated system for monitoring the working and rest modes of drivers with "Smart Tachograph"

In China and the Russian Federation, requirements for the duration of driver's work and rest regimes differ. There are prerequisites for the emergence of conditions for unfair competition of carriers of countries on the "Primorye-2" route, various levels of requirements for ensuring the safety of transportation and the emergence of controversial situations due to the applied control measures and penalties for violators.

The technical means used in international road transport on the "Primorye-2" international transport corridor for registering drivers, work and rest modes (tachographs) also differ regarding the degree of harmonization with the requirements of the international AETR agreement.

In China and the Russian Federation, "smart tachographs" have been developed and are used to varying degrees. Some of them can transmit automatic remote data to the control authorities of the country for automatic registration of the duration of driving periods and drivers' rest without the need to stop vehicles and contact drivers.

China and the Russian Federation have not signed an international agreement covering the use of "smart tachographs" in international road transport on the "Primorye-2" international transport corridor. There are no agreements covering the norms of drivers' work and rest regimes, and the procedure and technologies for remote automated control of drivers' work and rest regimes on the "Primorye-2" international transport corridor, the imposition of penalties and the exchange of control results.

j. Unmanned technologies

On the "Primorye-2" international transport corridor, the levels of automation of the vehicles used to transport cargo vary. Fully automated vehicles without the participation of drivers on the "Primorye-2" international transport corridor are not used to transport international cargo.

Fully automated trucks without the participation of drivers in China and the Russian Federation are being tested nationally in areas and road sections equipped for them.

In the Russian Federation, in March 2020, the "Concept of ensuring road safety with the participation of unmanned vehicles on public roads"¹⁸ was adopted. The Russian Federation has begun to investigate using fully automated vehicles without the participation of drivers in international road transport on the Russian territory of "Primorye-2" from the automobile checkpoint at the China-Russian Federation border to the port of Zarubino.

The regulatory framework and standards for the use of fully automated trucks without the participation of drivers are being formulated at the national levels of China and the Russian Federation. To date, they are not reflected in international agreements between China and the Russian Federation, including in relation to the "Primorye-2" international transport corridor.

International requirements for the use of unmanned vehicles, as well as the procedure and models for controlling the movement of fully automated vehicles in international road transport on the "Primorye-2" international transport corridor have not been agreed upon by the two countries

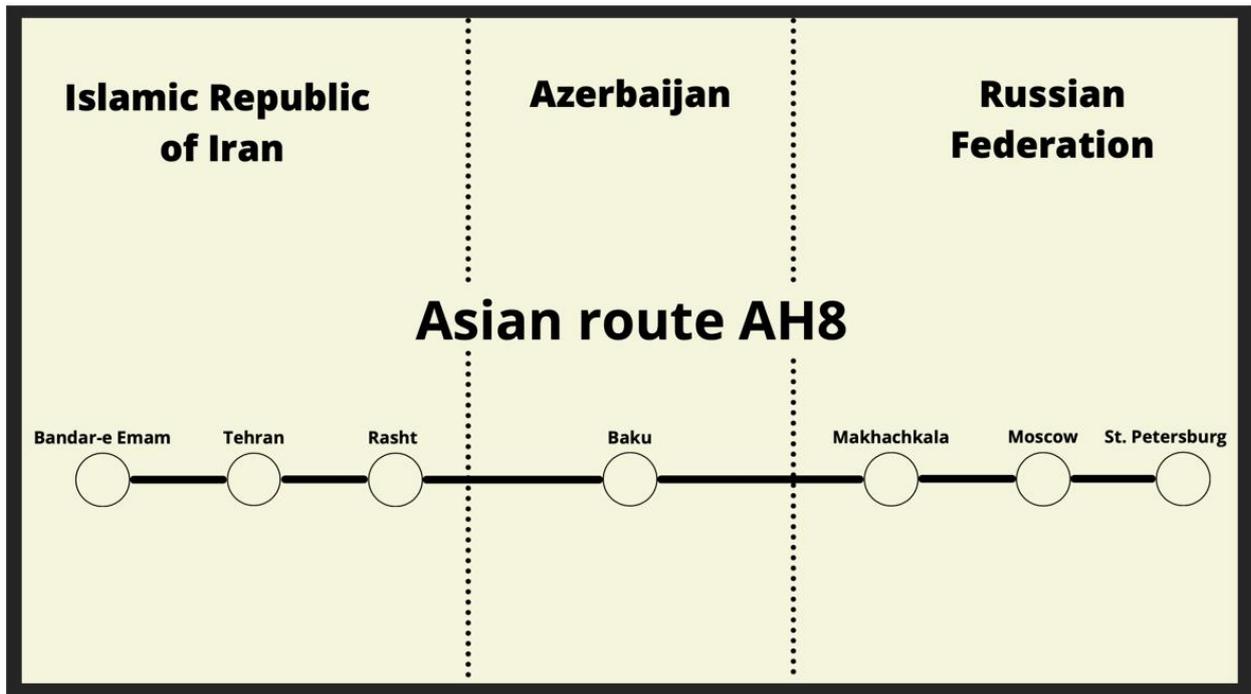
B. AH8 International Transport Corridor: Islamic Republic of Iran-Azerbaijan – Russian Federation

The Asian Route AH8 is one of the main routes of the international Asian road network. It connects overland cargo transportation from the seaports of the Arabian Sea to the seaports of the Baltic Sea parallel to the routes of ships through the limited Suez Canal and the territories of three countries: the Islamic Republic of Iran (IR)-Azerbaijan (AZ)-the Russian Federation (RU) between the following cities: Bandar-e Emam-Tehran-Rasht-Baku-Makhachkala-Moscow-St. Petersburg. The length of the AH8 route is 4,718 km.

¹⁸ See Government of the Russian Federation order of 25 March 2020 (<https://rulaws.ru/government/Rasporyazhenie-Pravitelstva-RF-ot-25.03.2020-N-724-r/>).

Figure 2:

Asian route AH8



The total cargo flow between the ports of the Islamic Republic of Iran and the Russian Federation port terminals on the Caspian Sea is approximately 30 million tons per year. The only limiting factor preventing an increase in cargo traffic on this route is the low capacity of the Russian Federation ports. Notably, these ports can only accept ships with a small draft-up to four meters, which significantly constrains the increase in the tonnage used for the transportation of sea and river vessels.¹⁹

The increased traffic on the AH8 transport corridor, as the events of recent years show, is connected not only to the development of transport communications in areas of Central Asia and Transcaucasia, but also because traditional routes, such as the Suez Canal, are gradually losing their monopoly position.

The AH8 international transport corridor, which coincides with the North-South transport corridor in Russian Federation, handles approximately 17 million tons of cargo per year. By 2030, according to a forecast of the Ministry of Economic Development of the Russian

¹⁹ See <https://sbcargo.ru/poleznaya-informatsiya/poryadok-gruzoperevozok-po-marshrutu-rossiya-iran/>.

Federation, the volume of transported goods will grow to 30 million tons per year.²⁰ Accordingly, the Russian Federation transport infrastructure can be loaded with goods from the Islamic Republic of Iran, India and the Persian Gulf States entering Northern Europe. The basis of land transit routes in the Russian Federation are railways. The share of road transport in this direction is still significantly lower than that for rail transport. A new road bridge built in 2019 over the Samur River at the Russian Federation - Azerbaijan border has significantly increased the potential of international road transport on the AH8 route.

1. International agreements affecting the organization of international road transport on the AH8 international transport corridor

a. Bilateral agreements between the Islamic Republic of Iran and Azerbaijan, the Islamic Republic of Iran and the Russian Federation, and Azerbaijan and the Russian Federation

Currently, transporting passengers by automobiles and cargo between countries transit through their territories, as well as to third countries or from third countries, on roads open to international automobile traffic on the AH8 route is carried out in accordance with the following bilateral intergovernmental agreements on international automobile traffic:

- The Islamic Republic of Iran and the Azerbaijan, dated 20 May 2002, on the basis of permits issued by the competent authorities of the Contracting Parties;
- The Islamic Republic of Iran and the Russian Federation, dated 17 August 1992, on the basis of permits issued by the competent authorities of the Contracting Parties;
- Azerbaijan and the Russian Federation dated 9 January 2001 on the basis of permits issued by the competent authorities of the Contracting Parties.

b. Multilateral international agreements

The conditions of international transport communications, including on the AH8 route, require the establishment of special uniform rules between the countries on the route. These rules should not be developed to supplement and improve domestic legislation, but instead to serve as the basis for interstate agreements. A characteristic feature of regulations in this area is that the main issues of transportation are resolved in international agreements (transport conventions) containing unified norms that define the conditions for international transportation of goods and passengers. Such agreements contain requirements for transportation documentation, determine the procedure for accepting cargo for transportation and issuing it at the destination, the carrier's liability conditions, the procedure for filing claims and claims against the carrier, which are stipulated in advance in the application for cargo transportation.

Countries must accede to multilateral international agreements on an equal basis in order to reduce administrative barriers arising from non-harmonized requirements and conditions in the implementation of international road transport

²⁰ See https://www.alt.ru/logistics_news/80933/.

Below is a list of the main multilateral agreements that are important for regulating international road transport on the AH8 international transport corridor, and the status of accession of the Islamic Republic of Iran, Azerbaijan and the Russian Federation to them.

Convention on the Contract for the International Carriage of Goods by Road (CMR). (See section 1.b)

Accession of countries on the AH8 route of the Convention:

- Azerbaijan acceded to this Convention on 18 September 2006;
- The Islamic Republic of Iran acceded to this Convention on 17 September 1998, including the additional protocol to the Convention concerning the Electronic Consignment Note (e-CMR);
- The Islamic Republic of Iran acceded to this Convention on 17 September 1998, including the additional protocol to the Convention concerning the Electronic Consignment Note (e-CMR).

Vienna Convention on Road Traffic (see section 1.b.). Azerbaijan, the Islamic Republic of China and the Russian Federation have acceded to the Convention:

The European Agreement concerning the Work of Vehicle Crews (AETR/AETR) (See section 1.b.)

Accession of countries on the AH8 route to the European Agreement concerning the Work of Vehicle Crews):

- Azerbaijan acceded to the agreement on 16 August 1996;
- The Islamic Republic of Iran has not acceded to the Agreement;
- The Russian Federation acceded to the Agreement on 31 July 1978.

European Agreement on the International Transport of Dangerous Goods (ADR) (see section 1b)

Azerbaijan and the Russian Federation have acceded to the European Agreement on the International Transport of Dangerous Goods (ADR), the Islamic Republic of Iran has not.

The Shanghai Cooperation Organization (SCO) (see section 1.b.)

Membership of the countries on the AH8 route to the Shanghai Cooperation Organization:

- Azerbaijan has joined SCO as a dialogue partner;
- The Islamic Republic of Iran has joined SCO as an observer State;
- The Russian Federation is a member State of the SCO and has acceded to the SCO agreement.

The United Nations Customs Convention on the International Transport of Goods under Cover of a TIR Carnet (TIR Convention, 1975) (see section 1.b.)

Accession of countries on the AH8 route to the TIR Convention:

- Azerbaijan acceded to the TIR Convention on 12 June 1996;
- The Islamic Republic of Iran acceded to the TIR Convention on 16 August 1984;
- The Russian Federation acceded to the TIR Convention on 8 June 1982.

Agreement on cooperation of the Commonwealth of Independent States (CIS) member States in the field of international road freight transport dated 18 September 2003. The Agreement is intended to coordinate actions of the CIS member States in the field of international road transport by ensuring fair competition and equal conditions for international road carriers and, eliminating barriers in international road traffic. It regulates the issues of transportation in international cargo traffic by motor vehicles of the Parties, regardless of the State of their registration, when cargo transportation is carried out on the territory of at least two Parties and the point of departure (destination) is in one of the Parties. When concluding new agreements on international road transport, the Parties seek to liberalize international road transport, bearing in mind the abolition of the licensing system within the CIS member States.

Status of CIS membership of countries on the AH8 route:

- Azerbaijan is a member of CIS;
- The Islamic Republic of Iran is not a member of CIS;
- The Russian Federation is a member of CIS.

2. Physical road infrastructure of the AH8 corridor on the Rasht-Baku-Makhachkala section

To study the state and prospects for the development of international road transport on the AH8 international route, focus is placed on the shortest, but the busiest and most significant section of it: Rasht-Baku-Makhachkala. On this section of the route, which spans 830 km, all international automobile checkpoints of the AH8 international route are located across the state borders of three countries, Azerbaijan, the Islamic Republic of Iran and the Russian Federation.

a. Physical road infrastructure of the AH8 corridor on the section from Rasht to the automobile checkpoint "Astara" at the Islamic Republic of Iran - Azerbaijan border

The distance of the road section on the AH8 route from the city of Rasht of the Islamic Republic of Iran to the international automobile checkpoint "Astara" at the Islamic Republic of Iran-Azerbaijan border is 170 km.

A survey of the physical road infrastructure on the section of the AH8 road from the city of Rasht of the Islamic Republic of Iran to the international automobile checkpoint "Astara" at the Islamic Republic of Iran-Azerbaijan border indicates that the road can be classified as Class I in some parts and Class II in other parts based on the classification of roads for Asian highways.

The road infrastructure allows the use of highly automated vehicles of category N₃ for international transportation with weight and overall parameters corresponding to international

standards for international traffic in the countries of the route concluded by bilateral agreements involving the Islamic Republic of Iran, Azerbaijan and the Russian Federation.

However, in order to use fully automated vehicles without the participation of drivers, additional coordination and modernization of the road infrastructure is required.

b. Automobile checkpoint "Astara" at the Islamic Republic of Iran-Azerbaijan border

The "Astara" border terminal occupies the first place in the Islamic Republic of Iran in terms of shuttle trade and export supplies on the northern borders of the country.

The trade turnover between the Islamic Republic of Iran and Azerbaijan is increasing. In 2019, ADY Express handled almost 400,000 tons of cargo at a cargo terminal located 1.4 km from the border at the "Astara" point.²¹

When passing control procedures at this automobile checkpoint, employees of the control and supervisory authorities often identify violations in the design of accompanying transport documentation, which is submitted only on paper. This, combined with the adoption of additional sanitary measures against the spread of the pandemic led to the reduction of the capacity of the international automobile checkpoint "Astara" from 250 to 30 trucks per day in 2021.²² Due to the increased queues, vehicles with agricultural products were forced to stand idle for days and as a result, many of their product became unusable.

c. Physical road infrastructure of the AH8 corridor on the section from the automobile checkpoint "Astara" at the Islamic Republic of Iran-Azerbaijan border to the automobile checkpoint at the Azerbaijan- Russian Federation border

The distance of the road section on the AH8 route from the international automobile checkpoint "Astara" at the Islamic Republic of Iran-Azerbaijan border to the international automobile checkpoint "Yarag-Kazmalyar" at the Azerbaijan- Russian Federation border is 480 km.

A survey of the physical road infrastructure in the section of the AH8 road on the territory of Azerbaijan from the "Astara" automobile checkpoint at the Islamic Republic of Iran-Azerbaijan border to the automobile checkpoint at the Azerbaijan–Russian Federation border indicates that the road can be classified as Class I in some parts and Class II in other parts based on the classification of roads for Asian highways.

The road infrastructure allows the use of highly automated vehicles of category N₃ for international transportation with weight and overall parameters corresponding to international

²¹ ati.su, "Cargo handling at Astara terminal in Azerbaijan will increase significantly", 11 February 2020. Available at <https://news.ati.su/news/2020/02/11/gruzoperevalka-na-terminale-astara-v-azerbaydzhane-vozzrastet-v-razy-160100/>

²² ati.su, "Azerbaijan does not allow Iranian trucks with goods to Russia, 16 July 2021. Available at <https://news.ati.su/news/2021/07/16/azerbaydzhan-ne-puskaet-iranskie-gruzoviki-s-tovarov-rossiyu-083600/>.

standards for international traffic in the countries of the route AH8 concluded by bilateral agreements involving Azerbaijan, the Islamic Republic of Iran and the Russian Federation.

However, in order to use fully automated vehicles without the participation of drivers, additional coordination and modernization of the road infrastructure is required.

d. Automobile checkpoint at the Azerbaijan-Russian Federation border

The design capacity of the international automobile checkpoint "Yarag-Kazmalyar", located at the Russian Federation-Azerbaijan border on the territory of the Russian Federation is 300 cargo vehicles per day, including vehicles entering the territory of Russia and leaving for Azerbaijan.

For the first five months of 2021, a total of 71,520 trucks passed through the checkpoint, 7,548 units more than in the same period last year. In addition, there has been monthly increases in the flow of vehicles. In April 2021, 14,276 trucks crossed the border, while in the following month, the number increased to 15,102. Approximately 10 per cent of these vehicles pass between the Russian Federation and the Islamic Republic of Iran in transit through Azerbaijan.²³

The multilateral international automobile checkpoint at the Russian Federation-Azerbaijan border on the territory of the Russian Federation "Yarag-Kazmalyar" is being modernized under the framework of the federal project entitled "Logistics of International Trade" of the project International Cooperation and Export project. According to the work plans, the capacity of checkpoint will increase from 500 to 1,400 vehicles per day.²⁴

The project involves increasing the number of traffic lanes from 10 to 24 with the separation of traffic flows, the construction of an in-depth inspection box and equipping the facility with a complex of modern information and technical capabilities, including an integrated security system.

The purpose of the ongoing reconstruction is to increase the capacity of "Yarag-Kazmalyar" to 730 passenger cars, 630 trucks, 40 buses and 4,000 individuals per day.²⁵

In addition, under the framework, sites will be equipped to set up a mobile inspection and inspection complex to be used to detect undeclared goods and prohibited goods, for example, drugs, weapons and explosives.

To increase the capacity of the automobile checkpoint at the Azerbaijan-Russian Federation border, a road bridge over the Samur River was built and began operating in December 2019. The construction of a new bridge with two-lane traffic to replace a bridge with only one lane has reduced the transport time by an average of three hours per trip.²⁶

²³ TKS.RU, "More twice the capacity of trucks on the border between Russia and Azerbaijan", 7 June 2021. Available at <https://www.tks.ru/logistics/2021/06/07/0006/print>.

²⁴ All Rambler, "Dagestan to modernize checkpoint on the border with Azerbaijan", 21 July 2020. Available at <https://news.rambler.ru/other/44542116-v-dagestane-moderniziruyut-punkt-propuska-na-granitse-s-azerbaydzhanom/>.

²⁵ See <https://www.tks.ru/logistics/2021/06/07/0006>.

²⁶ MKRU, "New bridge opened on the border of Russia and Azerbaijan, 24 December 2019. Available at <https://www.mk.ru/economics/2019/12/24/na-granice-rossii-i-azerbaydzhana-otkryli-novyy-most.html>.

e. *Physical road infrastructure of the AH8 corridor on the section from the automobile checkpoint at the Azerbaijan-Russian Federation border to Makhachkala*

The distance of the road section on the AH8 route from the international automobile checkpoint "Yarag-Kazmalyar" at the Azerbaijan-Russian Federation border to Makhachkala is 180 km.

Bypass roads are being built near the cities of Derbent and Khasavyurt.

A survey of the physical road infrastructure on the section of the AH8 road on the territory of the Russian Federation from the "Yarag-Kazmalyar" international automobile checkpoint at the Azerbaijan-Russian Federation border to Makhachkala shows that part of the road can be classified as Class I, and other parts can be classified as Class II based on the classification of roads for Asian highways.

The road infrastructure allows the use of highly automated vehicles of category N₃ for international transportation with weight and overall parameters corresponding to international standards for international traffic in the countries of the route concluded by bilateral agreements involving the Islamic Republic of Iran, Azerbaijan, and the Russian Federation.

However, to use fully automated vehicles without the participation of drivers, the additional coordination and modernization related to the road infrastructure is required.

3. Current use of new intelligent technologies on the AH8 International Transport Corridor

a. *Information environment and support*

Participants in international road transport along the AH8 international transport corridor actively use modern means of communication. Despite this, they are experiencing difficulties in obtaining quickly, up-to-date information about the requirements for transport documentation, admission and conditions for international transportation in force at the time of transport planning.

When searching for the necessary information on the Internet, difficulties arise due to the language barriers, translation inaccuracies and questions over the reliability of information obtained through unofficial sources. They are also finding it difficult to attain quickly, explanations from or consult with representatives of competent State bodies about the requirements for international transportation. Another hindrance is that transport documentation cannot be attained

remotely via web applications, as an Internet resource with official and relevant information for carriers with translation into the languages of transport participants has not been created in the countries on the route of the AH8 international transport corridor.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not acceded to international agreements on providing international carriers with a harmonized list of requirements and conditions for access to official information resources related to international road transport along the AH8 international transport corridor. It is necessary to develop a list and composition of information necessary for carriers to move along the AH8 international transport corridor, agree on the procedure for updating it and adapt technologies for its use by carriers and include these documents in bilateral international agreements.

As a result of the absence or information or use of false information, carriers commit violations, cause damage and incur losses.

b. Digitalization of document flow

Currently, participants in international road transport along the AH8 international transport corridor submit transport documentation manually on paper. Inaccuracies and corrections are allowed, including those related to the difficulties associated with translation into foreign languages.

Verification of transport documents on paper and registration of the results of the inspection by the control authorities are carried out manually. As a result, there is mandatory stopping of vehicles and contacts must be made with drivers.

Notably, at the national transportation level. in Azerbaijan, the Islamic Republic of Iran and the Russian Federation, preparations are being carried out on an individual basis for the gradual conversion of transport documentation into digital format and automation of the control processes.

However, at the international level, within the framework of bilateral agreements, Azerbaijan, the Islamic Republic of Iran and the Russian Federation have yet to sign an agreement covering the transfer of transport documentation relevant for international road transport on the AH8 international transport corridor in a digital format.

Going forward, additional coordination and development of a list of transport documentation and the composition of its data in digital format, the stages and timing of digitalization, the procedure for giving these data legal significance and procedures for exchange, recognition and use are needed.

c. Digitalization of the permits system

To carry out international road transport on the AH8 international transport corridor, it is mandatory to attain permits that grant the right to foreign carriers to drive commercial vehicles through the country. Permits, including additional special ones for the transportation of bulky and dangerous goods, are issued on paper forms. The current procedures for issuing permits on paper and monitoring their use do not preclude the possibility for full automation of processes and consequently reduce travel time and the need for physical contact.

In Azerbaijan, the Islamic Republic of Iran and the Russian Federation, preparatory work is still being carried out for the translation of transport documents into digital format.

No web applications have been developed to facilitate the remote preparation and submission of an application in the language of the carriers attaining access to registration and obtaining permits, including for the transportation of bulky, heavy and dangerous goods.

Carriers are unable to register remotely through web applications with the control and supervisory authorities of the countries of the AH8 international transport corridor their planned route and schedule of transportation, taking into account the permits issued and the conditions of their use, including for the transportation of bulky, heavy and dangerous goods.

Verification of the availability of permits and compliance with the conditions of their use by the control authorities is carried out manually; cars are required to stop at checkpoints and contact must be made with drivers. Remote automated control systems for the availability of the necessary permits and compliance with the conditions of their use have not yet been implemented.

d. Preliminary declaration of transport documentation data

On the AH8 international transport corridor, the preliminary declaration of the data of transport documentation of international road carriers for the regulatory authorities of Azerbaijan, the Islamic Republic of Iran and the Russian Federation is not applied, due in part to the non-use of transport documentation in digital format.

Notably, at the national transport level in Azerbaijan, the Islamic Republic of Iran and the Russian Federation, work is being carried out to introduce a preliminary declaration of certain types of transport documentation, for example, an electronic TIR Carnets (e-TIR), international consignment note (e-CMR) in accordance with national plans for the phased conversion of transport documentation into digital format and automation.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not yet signed an international agreement on the introduction of the preliminary declaration of transport documentation in digital format. The procedure and technologies for preliminary declaration and control of the submitted data, coordination and use of the results of preliminary verification of transport documentation for international road transport on the AH8 international transport corridor have also not been agreed upon.

e. "Electronic queue" systems and "accelerated lanes" for trucks at border checkpoints

The "electronic queue" system is being implemented at the international automobile checkpoint of the AH8 international transport corridor at the Azerbaijan-Russian Federation border. Carriers send data about their vehicles to the checkpoint by e-mail and receive confirmation of registration for the right of entry to the checkpoint.

Checkpoints do not provide carriers with the opportunity to receive video information through web applications about the current conditions concerning vehicle queues, and working conditions of the checkpoint, its work schedule and throughput.

Due to the excess number of carriers arriving at the checkpoint compared to the limited capacity of the checkpoint, which often occurs due to the control and information technologies used, traffic jams and interference with the operation of the checkpoint often occurs.

Because no system is in place to submit a preliminary declaration and the verification of transport documentation data before the arrival of vehicles at the checkpoint is not automated, "accelerated lanes" and "green corridors" for accelerated registration of trucks, which would increase the capacity of the checkpoint, cannot be set up. The procedure and technologies for organizing "accelerated lanes", "green corridors" and "electronic queue" for international road transport on the AH8 international transport corridor are also not coordinated.

f. "Electronic navigation seals" for remote control of goods during customs transit

"Electronic navigation seals" designed to automate and expedite customs formalities, as well as for remote control during customs transit of goods are not being used for international road transport on the AH8 international transport corridor.

Notably, the Russian Federation and a number of EAEU member States use "electronic navigation seals" for transporting certain types of goods from their territory overseas.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have yet to sign an international agreement to introduce the introduction of "electronic navigation seals" in international road transport on the AH8 international transport corridor. The status, procedure and technologies for the use of such seals, as well as the exchange and use of data obtained from these seals, have also not been agreed upon.

g. Automated real-time en route remote monitoring and control of parameters of vehicles

In Azerbaijan, the Islamic Republic of Iran and the Russian Federation, systems are being implemented for remote automated control on the AH8 route, which will negate the need to stop vehicles at border checkpoints. Elements of the system are the same as those in place in China and the Russian Federation (discussed earlier):

- Dynamic measurement of the weight parameters of vehicles using load cells built into the roadbed;
- Dynamic measurement of the overall parameters of vehicles using optoelectronic measurement sensors;
- Photo and video recordings that provide, for example, recognition of state licence plates of vehicles and their identification by categories and types and number of axles;
- Information boards with variable information to inform drivers in case of detection of violations of the speed limit or weight loads.

Telecommunications modules are being created that set protocols of violations and are interfaced with information systems of state control and supervisory authorities and transport operators.

However, because transport documentation data are not available in digital format in international road transport on the AH8 international transport corridor, remote automated control over the availability and correct use of permits and as compliance by carriers with prescribed routes and transport conditions are not possible.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not signed an international agreement covering the implementation of remote automated control on the AH8 international transport corridor covering availability of permits, how to use them and the carrier's compliance with the prescribed routes and conditions of transportation. The procedure and technologies for implementing remote automated control on the AH8 international transport corridor for the availability of permits from carriers, how to use them and the exchange and use of the obtained control results, have also not been agreed upon.

h. Remote driver health monitoring system

In Azerbaijan, the Islamic Republic of Iran and the Russian Federation, approaches and requirements for conducting medical monitoring of the health status of drivers engaged in international road transport on the AH8 international transport corridor differ. The application of various requirements, including the forms, content and validity periods of medical documents required for entry into the country, creates additional barriers at checkpoints at the borders of Azerbaijan, the Islamic Republic of Iran and the Russian Federation, restricts the activities of foreign drivers in the countries and incurs losses to carriers.

In the Russian Federation, it is legally prescribed to conduct a mandatory daily medical examination of the health status of drivers before starting work and after their work is completed. To reduce contacts between medical personnel and drivers and improve the accessibility of procedures for drivers, the "telemedicine" system is being introduced. This system uses modern ICTs and specialized software and hardware complexes in the field of medical monitoring of the health status of drivers. It allows users to automate the processing of and using the analysis results online, increases the efficiency of medical control and reduces the costs for carriers.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not signed an international agreement covering the introduction of a remote health monitoring system for drivers engaged in international road transport on the AH8 international transport corridor. The procedure and technologies for implementing remote automated monitoring of the health status of drivers on the AH8 international transport corridor, eliminating the risk of the spread of a pandemic and the exchange and use of the control results obtained has not been agreed upon.

i. Automated system for monitoring the working and rest modes of drivers with "Smart Tachograph"

Azerbaijan and the Russian Federation are Parties to the European Agreement concerning the Work of Vehicle Crews (AETR). They apply harmonized requirements for the duration of a driver's work and rest hours and require that and they use a tachograph in the vehicle. The Islamic Republic of Iran is not a party to this international agreement and has no obligations to impose requirements on drivers regarding the duration of work and rest or require use of a tachograph in a vehicle.

The presentation of different requirements for the safety of transportation in the countries on the route, for example, according to the minimum permissible environmental class, the level of technical condition or the list of mandatory equipment on the vehicle, which lead to additional and different costs to carriers registered in different countries, are the reason behind varying transportation costs and the development of unfair competition.

In the Russian Federation, "smart tachographs" have been developed and are used to varying degrees, offering the possibility of automatic remote data transmission to the control authorities of the country for automatic registration of the duration of periods of driving and rest of drivers without the need to stop vehicles and contact drivers.

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not signed an international agreement on the use of "smart tachographs" in international road transport on the

AH8 international transport corridor. The norms of drivers' work and rest regimes and the procedure and technologies for remote automated control of drivers' work and rest regimes on the AH8 international transport corridor, the imposition of penalties and the exchange of control results have not been agreed upon.

Unmanned technologies

In Azerbaijan, the Islamic Republic of Iran and the Russian Federation, technologies for using highly and fully automated vehicles are being developed at the national level with varying degrees of intensity. Tests of such vehicles carrying goods on public roads are being conducted without the participation of drivers. The physical road infrastructure on the AH8 route needs to be modernized to ensure the safety and efficiency involved in using highly and fully automated vehicles.

The Russian Federation is considering to use highly and fully automated vehicles on the AH8 international transport corridor in its territory

Azerbaijan, the Islamic Republic of Iran and the Russian Federation have not signed an international agreement covering the use of highly and fully automated vehicles in international road transport on the AH8 international transport corridor.

International requirements for the use of unmanned vehicles and the procedure and models for controlling the movement of highly and fully automated vehicles in international road transport on the AH8 international transport corridor have not been agreed upon.

POLICY RECOMMENDATIONS

Insufficient harmonization of requirements for transport participants, nomenclature and composition of transport documentation data in countries on the Asian highway network are resulting in administrative delays or interruptions of transport during control procedures, especially at border checkpoints, due to detected violations of carriers.

The uncoordinated policy of countries in the use of new ICT and ITS technologies on the Asian routes AH8 and "Primorye-2" remains the weakest link in improving the sustainability and development of international road transport and in reducing the risks of spreading of the COVID-19 virus.

Accordingly, countries located on the path of Asian transport corridor routes that aim to develop international transport should include additional sections in the existing international agreements that define the coordinated implementation of ICT and ITS on each route.

In the additional sections of the agreements, in order to harmonize and coordinate the activities of countries on the selected Asian routes, the recommended directions are as follows:

- Creation of a specialized information and communication environment for transport participants, containing the following:
 - A list of official information sources/ Internet resources in each country of the route;
 - The list and composition of the published information and the procedure for updating it;
 - The procedure for authorizing users, technologies for accessing and using information;
- Digitalization of document flow;
 - Transition to using transport documentation in digital format;
 - Giving legal significance to transport documentation data in digital format;
 - Implementation of the system of remote registration and registration of transport documentation in digital format;
 - Introduction of a system of preliminary declaration and automation of control of transport documentation data in digital format;
- Increasing the capacity of checkpoints at the borders and reducing transport delays, including through the use of the following systems:
 - "Electronic queue";
 - "Accelerated lanes" for vehicles;
 - "Green corridors";

- Remote monitoring and management of road transport, including the following:
 - Control over the availability and correct use of permits, as well as compliance by carriers with the prescribed routes and conditions of transportation,
 - Driver’s compliance with work and rest regimes, and traffic rules;
 - Monitoring the health status of drivers;
 - Use of highly automated and fully autonomous vehicles;
 - Procedure for the exchange and use of the obtained monitoring and control results;
- Modernization of road infrastructure and service facilities.

The transition from paper document management to digital format and electronic data exchange, including data of accompanying transport documentation, preliminary declarations and results of control procedures, as well as giving the transmitted data legal significance are possible through the creation of a unified digital information platform of the national data management system in each country of the AH8 route.

The unified digital information platform of the national data management system will make it possible to do the following:

- Combine information from a variety of existing and emerging state systems, registers and registration databases;
- Accelerate the exchange of information between national government agencies and regulatory authorities;
- Become a connecting technological tool of the information and communication interaction system with the unified national platforms of other countries;
- Integrate all data on single platforms, as well as automatically identify and confirm the sources of legally significant information, constantly monitor their reliability, relevance and consistency.

The formation of a telecommunications road transport infrastructure for the management of connected and unmanned vehicles on the routes of Asian highways includes the creation of the following:

- Linear and station infocommunication and object tool infrastructure;
- A technological platform that includes application software modules, means of protecting data transmission channels and ensures the functioning of the entire infrastructure based on unified open protocols as a single digital ecosystem.

The sequence and priority of including additional sections in the international agreements of the countries located on the route and the composition and content of the sections are determined by individual countries, taking into account the expediency and mutual interest.

If it is necessary to coordinate the activities and policies of countries on the use of modern ICTs and ITS for the development of international road transport on the routes of Asian roads. Additional discussions on this topic are possible within the ESCAP expert groups.

