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ANALYSIS OF INTERNATIONAL CARGO TURNOVER AND CO2 EMITTED DURING ITS ORGANIZATION

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Abstract
This article presents an analysis of international freight turnover and the associated CO2 emissions. It examines the key aspects affecting the efficiency and environmental consequences of freight transport, including transport routes, modes of transport and their impact on the carbon footprint.

Keywords: International Cargo Turnover, Global Trade, Logistics, Transport Corridors, Economic Integration, Transport Infrastructure, Rail Transportation, Maritime Freight Transportation, Eurasian Economic Union, TRACECA.

Introduction

Historically, Central Asia has served as an important land bridge between Asia and Europe. In recent decades, however, the region has found itself on the periphery of global trade flows. Currently, the volume of cargo transportation by land from Asia to Europe is less than 2% of the total volume of sea cargo, and a significant part of rail transportation is carried out through Russia.

Nevertheless, the situation is beginning to change. Railway routes between China and Europe, both existing and projected, have advantages over sea transport through the Suez Canal, which is of great interest. Initiatives such as the Eurasian Economic Union and China's Belt and Road Initiative (BRI) can change the current situation and create conditions for the further development of trade and transport links in the region (ITF, 2017; Rastogi and Arvis, 2014).

Central Asia also occupies a key place in a number of other programs and initiatives to improve trade and transport connectivity between Europe and Asia. These include the TRACECA initiative from the European Union, the New Silk Road (NSR) concept supported by the United States, as well as projects funded by India and other countries, including corridors within the framework of the Central Asia Regional Economic Cooperation (CAREC) and the International North-South Transport Corridor.

At the same time, Central Asia lags behind in several indicators of connectivity and integration (Pomfret, 2010; Rastogi and Arvis, 2014; ADB, 2014), which hinders the development of trade. The main factors limiting the region's economic integration include low population density, weak market conditions, poor infrastructure, outdated road network and remoteness from major markets. There are also numerous regulatory and policy barriers that hinder cross-border flows. In addition, the current transport infrastructure is mainly focused on the Russian market, and its development was driven by the region's dependence on commodity exports.

The shift of the center of the world economy to the east and south as a result of Asia's GDP growth will lead to changes in the structure of production, consumption, international trade and logistics. The economic growth of developing regions will cause an increase in demand for high-quality transport infrastructure. In order for Central Asia to take advantage of the new trade relations between Asia and Europe and diversify its economy (OECD, 2018), it needs to rethink its approach to transport policy and expand infrastructure.1

Regional features due to the diversity of the terrain complicate the task of increasing trade and transport connectivity of the Central Asian countries. In the southeast, the region is bordered by a high mountain range. In countries such as Tajikistan and Kyrgyzstan, where mountains cover 87% and 94% of the area, respectively (FAO, 2016), roads and main highways often follow circular routes or through dangerous passes. A striking example is the Torugart Pass, a strategic border point and the shortest road between Kyrgyzstan and the Xinjiang Uyghur Autonomous Region of China. The border checkpoint is located in a hard-to-reach place at an altitude of 3,700 meters above sea level and does not work for several months a year due to adverse weather conditions. Along with this, Central Asia is home to the world's largest deserts and the longest steppes: the Great Kazakh Steppe in northern Kazakhstan, the Kyzylkum Desert in western Uzbekistan, and the Gobi Desert in Mongolia. The combination of impassable mountain ranges and huge underdeveloped lands, coupled with the problem of long distances between settlements and production centers (both within countries and at the international level), complicates the task of developing and implementing a regional program to increase trade and transport connectivity. Central Asian countries are characterized by low population density. With the exception of Uzbekistan, the countries of the region are sparsely populated and have the lowest densities in the world. The average population density is 13.7 people per square kilometer, compared to 136 people per square kilometer in China and 150 people per square kilometer in Western Europe. Mongolia, the most sparsely populated country in the region, is comparable in area to South Africa, and in population to Lithuania. In fact, with a population density of less than 1 person per square kilometer, Mongolia is one of the most sparsely populated countries in the world after Greenland. The population is concentrated in small towns. An important stage in the urbanization of Central Asia was the period of the planned economy, and the current situation is largely a reflection of that time. Under the influence of the Soviet model, small and medium-sized cities with a population of up to 100 thousand people, as a rule, from 10 to 50 thousand, were formed in the region, which make up the bulk of urban settlements. They account for about 16% of the total urban population in Kazakhstan, 25% in Kyrgyzstan, 35% in Tajikistan and about 35% in Uzbekistan.

Transport is the basis for the formation of domestic and international markets, ensuring the development of a normal market economy. Not a single foreign trade transaction can be imagined without the participation of transport in it - in any case, the goods must be delivered from the seller to the buyer.2

1 svyaznost-gruzovoy-transport-centralnaya-aziya.pdf (itf-oecd.org)

2 Martinez, L., J. Kauppila and M. Castaing Gachassin (2014), International Freight and Related CO2 Emissions by 2050: A New Modelling Tool, International Transport Forum Discussion Papers, 2014/21, OECD Publishing, Paris. http://dx.doi.org/10.1787/5jrw1kslrm9t-en

According to the World Bank, the international transport market is estimated at more than 2.2 trillion. Usd. (about 7% of world GDP).

The current situation in the international economy, characterized, in particular, by the rapid development of integration processes, the variation of the economic environment in the territorial context, differences in the degree of development of national economies and their openness to participation in international economic relations, the intensification of commodity flows at various levels of interaction between economic agents, the growth of tourist flows, on the one hand, and the insufficient development of economic and theoretical bases, a small number of modern studies of the methodological basis of the functioning of the transport complex in modern science, on the other hand, determine the objective need to determine the place, role and importance of transport as an important economic category.

World practice shows that in order to create a reliably operating, economical, safe and environmentally friendly transport system focused on the interests of the citizen, entrepreneur, market and society as a whole, it is necessary to have general principles for the development of the transport system and its individual elements recognized by government and public institutions. In this respect, the transport policy of the European Union is of undoubted interest.

It should be noted that with regard to the Eurasian Economic Union (hereinafter referred to as the EAEU, the Union), it is advisable to analyze the EU, which has a complete common transport policy for all modes of transport, while the ASEAN, MERCOSUR and NAFTA countries are limited to declarative statements about the need to synchronize regional cooperation in the field of transport and logistics.

In addition, the EU transport policy is a model and in many respects a standard for the coordination of large-scale long-term efforts and a common cause by several equal actors under the control of a developed supranational system of political, economic and economic institutions.

The process of liberalization of EU transport services can be considered the beginning of the inclusion of the transport sector in the Single European Act of 1986, which was a fundamental plan for the completion of the Single Internal Market.

Liberalization was carried out in stages, at different speeds, depending on the mode of transport, through the adoption of a set (packages) of sectoral documents.

Despite the scale of the EU transport services market, it should be noted that thanks to the supranational institutions of the EU, cardinal decisions on liberalization were made for all modes of transport at the first stages of its formation. The key ones by mode of transport are as follows.

Air transport

In the course of the "construction" of the single internal market for aviation services, all commercial restrictions for airlines flying within the EU, restrictions on routes, the number of flights and the regulation of overflight fees have been eliminated.

Thus, all EU airlines have the opportunity to provide their services on any route within the EU.

Sea and inland water transport.

The inland waterway transport market is fully open to competition.

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The principles of freedom of service, competition, free access to the market have been established in the maritime transportation market, and the freedom to provide cabotage transportation services has been established for all transport operators, regardless of their country of origin.

At the same time, from a legal point of view, according to international agreements, sea routes from one member state to another are considered external. This factor creates difficulties for the European Union on the way to optimizing the regulatory framework for the functioning of various modes of transport within the EU, simplifying internal trade, which in turn is an obstacle to the full inclusion of coastal shipping in intra-Union logistics chains.

Railway transport.

The first railway package distinguishes infrastructure management activities from transport service activities.

The second step was a decision on a clearer separation of the activities of railway companies and infrastructure managers, as well as on the compatibility of national railway systems.

Road transport.

National permits and quotas for the transportation of goods have been eliminated.

The system of cargo inspection at internal borders has been eliminated.

A single limit has been introduced on the maximum weight of trucks.

A single "Community licence" has been established and accompanying documents have been harmonised to ensure that national borders and differences in administrative factors do not constitute barriers to economic growth driven by road transport. This license:

is issued to transport operators by the authority of the state in which they are registered;

allows transport companies to carry out international cargo and passenger transportation throughout the EU;

requires renewal every five years;

confirms the carrier's compliance with national requirements in accordance with EU regulations;

Prevents unfair competition by saving on safe transportation.

The prerequisites for obtaining a license provide access for "bona fide" operators to the single domestic market of motor transport services.

Thanks to the liberalization of the transport market in the EU, conditions have been created for the development of a common transport infrastructure. At the same time, the main emphasis in the implementation of this task is aimed at safety and sustainability from an environmental point of view. This factor served as a prerequisite for the creation of communitarian transport agencies – government bodies whose degree of supranational powers varies.

The European Aviation Safety Agency, the European Maritime Safety Agency, and the European Railway Agency were formed.

The European Aviation Safety Agency has the largest number of supranational powers. The structure regulates the activities of not only national, but also transnational economic entities, conducts standardization inspections in the EU states, which in turn makes it possible to control the application of EU regulations and directives by national authorities.

The European Maritime Safety Agency also plays an important supranational role. Maritime transport accounts for almost 90% of the EU's foreign trade and more than 40% of domestic

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trade. The maritime transport sector, including shipbuilding, port services, and maritime-related industries and services (fishing), employs approximately three million people. The agency's executive functions are focused on conducting inspections in States. The purpose of such inspections is to monitor the implementation of EU maritime legislation. In addition to assessing ship control systems, the agency assesses at the national level the work of classification societies (both recognized and whose recognition is only being considered), maintains the appropriate level of education of seafarers.3

The European Railway Agency has the least pronounced supranational powers. This institution is more of a coordinating body created to consolidate efforts to create a more integrated railway transport.

On the whole, the process of the emergence of a complex, not so much national-territorial, but spatial-functional structure of regulation of the transport industry in the EU had the effect of a kind of "spillover" of regulatory activity beyond the boundaries of European integration.

The more supranational powers a particular EU agency has, the greater the degree of its autonomy in relation to the "political" level of the European Union, which, in addition to national governments, also includes its supranational institutions.

The EU states, together with the European Parliament, have given special powers to the agencies, on which there is a consensus in the European Union that these powers are technical. In this regard, the agencies are "free" and autonomous from political interference and do not depend on political institutions at any level in the EU. It is this fact that allows agencies to make "objective" decisions.

Due to the crisis in the world economy, some countries plunged into deep stagnation, while others, on the contrary, reached a new level of development. For example, in the United States, the volume of transatlantic traffic has significantly decreased. This market segment is being actively developed by Asian companies, especially from China, whose powerful economy was one of the first to cross the crisis line. Certain changes have occurred in every sector of the international logistics market.

At the early stages of the development of society, transport was more specialized in the movement of material objects. At present, its function is to combine production resources in the process of reproduction and ensure their access to the market. In other words, transport connects time and space separating producers, buyers and sellers.

As part of the production process, transport ensures the efficient use of production resources. But this is possible only if the prices of transport services make it profitable to move goods and services. The division of labor is realized when it allows you to reduce the cost of moving goods, services and labor. Freight rates and relative prices for various goods are an important condition for the use of resources.

The role of transport in ensuring economic growth is undeniable. World experience clearly shows that investments in transport infrastructure have a long payback period, and at the same time give a more than threefold multiplier effect on GDP. That is why capital investments in transport infrastructure and the development of transport engineering in most developed countries of the world, regardless of the stage of transport reform, are a state priority.

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The share of transport in the GDP of most countries ranges from 4 to 9%, and in employment - 3 - 8%. These data do not include individual and inland transport, which increases the importance of transport services in the economy. As a rule, its share in GDP decreases as national income increases. It is highest in Asia and then in Latin America and Africa.

The role of transport in the subsystems of the world economy in the implementation of foreign trade relations is different. Its indicator is the transport component, which is the ratio of freight to the value of exported/imported goods. In developed countries, freight reaches about 5% of the value of imports, in developing countries - up to 10%, and in Eastern Europe - over 10%. These ratios are primarily explained by the different dynamics of world export prices and tariffs for transport services, as well as the relatively high share of the "transport component" in the prices of raw materials and the relatively low share of finished products.

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