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Georgian railway's experiences with belt and road initiative: Advantages and disadvantages

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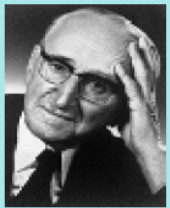
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Ordnungspolitische Diskurse

Discourses in Social Market Economy



Davit Gondauri

Georgian railway's Experiences with Belt and Road Initiative: Advantages and Disadvantages

Diskurs 2022 - 4

Georgian railway's Experiences with Belt and Road Initiative:

Advantages and Disadvantages

Davit Gondauri

Abstract

Georgia's railway network is a key segment of the TRACECA, the shortest route from the Caspian Sea and Central Asia to the Black Sea and the Mediterranean Basin. Georgian Railway Corridor has a number of advantages over pipeline, alternative railways and auto transport. Changing the quality of crude oil does not occur during rail transportation, no pipelines for oil products. The Russian rail routes have a competitive disadvantage compared to Georgia as Novorossiysk Port is typically frozen in winter and operations are frequently delayed. The Russian and Iranian routes are significantly longer than the Georgian route, which increases costs, risks, and transportation time. The railway route running through Iran is less attractive than the Georgian route due to the tense political relations between Iran and the West. Railway transportation is considered safer and more environmentally friendly than road transportation. Expensive bulk transportation - in cases of bulk transportation, the railway is considered cheaper than the road.

Keywords

Georgian railway, BRI, TRACECA, EVA, CAGR, GDP

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Georgian railway's Experiences with Belt and Road Initiative:

Advantages and Disadvantages

1. Introduction

The factors such as the region's economic development, utilization of fossil resources in Central Asia, the economic process of sustainable growth will unavoidably increase the turnout of the cargo transportation in the Middle East and the East Caucasus countries. Important that the Silk Road, a trans-Eurasian network of trade routes connecting East and Southeast Asia to Central Asia, India, Southwest Asia, the Mediterranean, and Northern Europe, which flourished from roughly 100 BCE to around 1450, has enjoyed two modern eras of intense academic study (Andrea, 2014, p. 105).

Georgian Railway's (further GR) mainline rail network is thus a key link in the shortest route from the Caspian Sea region and Central Asia to the Black Sea and the Mediterranean Basin. Thus, GR's Management believes that it is uniquely positioned to capitalize on trade between Europe, the Caspian Sea region and Central Asia. Currently, GR's network has access to three Georgian ports, namely Batumi, Kulevi and Poti all of which are located on the Black Sea. Access to these ports enables easy shipment of transit cargo to the Mediterranean Basin and Europe. GR's rail network, together with CJSC Azerbaijan Railways, forms the Caucasus corridor, a key segment of the TRACECA. GR owns and operates a 1,436-km railway network, 296 km of which is double-track line. The Company's network is almost totally electrified. GR's network is connected to Azerbaijani and Armenian railways. On 30 October 2017, the Baku-Tbilisi-Kars (BTK) railway line became operational. The BTK rail link directly connects Azerbaijan, Georgia and Turkey. In 2018, the first train passed through the line. The Company also has a line connecting with Russia through Abkhazian region, which is currently not operational (GR Annual Report, 2020).

Subsequently, the increased volume of freight transported via Georgian corridor will positively support the country's Macroeconomic stability and benefit the Economic growth. The current economic and logistical situation gives the multiple options and alternative ways of transportation rather than the "Georgian Railway" JSC, therefore, to gain the advantage country and the company has to offer to the customers a low-cost railroad transportation, with an increased speed of

transportation, improved reliability and more simplified transport service (Gondauri & Moistsrapishvili, 2019).

2. External and internal factors acting on the results of the research (attracting the cargo)

The following are various external and internal factors that affect the research results:

The growing tensions between Russia and the European Union and between Russia and Turkey, is forcing China not to depend on Russia's only railway route. Besides, the political factor there is another problem related to the overcrowding of the railway infrastructure. In the Trans-Asian Railway network countries such as: Kazakhstan, Azerbaijan, Georgia and Turkey are interested in combining Caucasian (trans-Caspian) railway sections. Attraction of China will be possible if we join the "Viking" container trains, and Ukraine - Georgia will replace ferryboats by the container vessels on the Black Sea.

After the deteriorating conflict with Russia due to Syria, Turkey is trying to shift the cargo on Baku-Tbilisi-Kars railway and Bosphorus strait. The Baku - Tbilisi - Karsi axis can be used for the transportation of Russian - Turkish cargo shipments with an additional 1.5 million tons of wheat.

The Railway corridor "India - Persian Gulf - Iran - Azerbaijan - Georgia - Ukraine - Europe" significantly reduces the time for the cargo shipment. For example, while currently, time necessary for carrying freight from India and Persia to Europe is approximate 30-40 days, the number of days in the new railway corridor will be reduced down to 15.

The "Georgian Railway" JSC has a minimum tariff when transporting cargo through "South-West" route. In case of complete modernization of the Georgian Railway line, sharp rise in the transit transportation is expected. After completing the modernization project, the Georgian Railway network will increase its freight transportation capacity and reach 45,055 million tons per year. The increased capacity will be a result of full Modernization of the railway track and supporting infrastructure with the cost of the project approximately 270 million Swiss francs. With the increase of the capacity, the special emphasis should be made on the development of the terminal network for the cargo ports. The construction and development of the Anaklia Deep Sea port will allow Georgian Railway JSC to attract the increased amount of the cargo in the future, the extent of Anaklia's cargo spreads are supposedly the Transcaucasian countries such as: Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan and Kyrgyzstan. The above-mentioned countries are expected to play the role in distribution of the freight coming from China. The Anaklia Deep Sea Port

has already concluded the agreements for the cargo of 3 million tons of dry goods, bulk cargo and container flows, and the shipment process will begin as soon as the first phase of the development is completed.

The Caspian region is rich with high quality oil fields such as: Buzachi, Kumkol, Alacja, Okarem, Chelekemi and many others. The owners of those high-quality fields are not interested in mixing their product with cheaper materials during the realization of the product, even with the Russian Oil so-called Ural's Sort. For that purpose, the producers prefer to ship their valued freight via railway instead of the pipeline. This oil has been actively moving through the Georgian Railways network and Terminals, and even today there is still the oil industry's interest in Georgian corridor as an alternative route for the shipment of the cargo. Therefore, in given situation, Georgia would greatly benefit if the subject will be regulated at the level of the state policy in order to use the opportunity and gain the shipments from Turkmen oil producers such as Chelekem oil field (shipped through Iranian Necka Port 60-70 tons per month) via "Georgian Railway" JSC. Turkmenistan Factor when attracting the cargo –Soil, Clay and Aluminum (50% discount on transit transports in Tajikistan via Port of Turkmenistan) for Uzbekistan; Turkmenistan for transiting freight such as oil and gas condensates with 30% discount, 50% discount on sulfur compartment and 30%off from sulfur transit, both products are in high demand in Turkish market. Consequently, the most rational and convenient way of transporting those goods go through Baku-Tbilisi-Kars railway (in total 2-3 mln tons of freight).

3. Development of Railway Silk Road as a Platform for Promoting Georgia's Economic Growth

Using the research methods and the findings of the internal and external factors we can make the assumptions regarding the optimistic scenario that, after the full modernization of the Georgian Railway's Main Railway line which will give the company opportunity to increase the freight transportation capacity from existing 26 million tons per year up to 50 million tons per annual. In addition to above-mentioned, as a result of the development of the correct strategies for the freight transportation (taking into consideration external factors) we can expect the sharp increase of transit transportation carried out by the Georgian Railway JSC (Gondauri & Moistsrapishvili, 2019).

The matrix inputs are listed below:

1. Period 1-16 years;
2. Growth Mathematical Model - compound annual growth rate (CAGR¹)
3. The average weighted tariff used as of today is 10 dollars per 1 km/tones and remains unchanged through modeling.
4. Inflation rate is not used in the analysis.
5. Correction of Shipping Costs under the Effective Management of the Company
6. Added Economic Value Model (EVA) is used for the calculation of the Economic results= Income - Cost - Used Assets on X Discount Rates, calculated by Capital Asset Pricing Model (CAPM);
7. The current value of the effect balance - is calculated by net present value (NPV) model
8. During the analysis, the research also uses Georgia`s measurement of economic growth GDP- gross domestic product, based on its growth rate which is currently 4%.

Table 1: Matrix (Results)

Matrix (Results)					
Growth in Freight Transportation (CAGR %)	The total volume of transportation after 16 years	Cost adjustment %	GDP in current prices, mln. Gel	The current value of the effect balance	The economic share of railway in GDP
1%	12.41	1%	\$530,161	(\$59.66)	-0.011%
2%	14.12	1%	\$530,161	(\$19.68)	-0.004%
3%	15.84	1%	\$530,161	\$20.30	0.004%
4%	17.55	1%	\$530,161	\$60.28	0.011%
5%	19.26	1%	\$530,161	\$100.26	0.019%
6%	20.97	1%	\$530,161	\$140.25	0.026%
7%	22.68	1%	\$530,161	\$180.23	0.034%
8%	24.40	1%	\$530,161	\$220.21	0.042%
9%	26.11	1%	\$530,161	\$260.19	0.049%
10%	27.82	1%	\$530,161	\$300.17	0.057%
11%	29.53	1%	\$530,161	\$340.15	0.064%
12%	31.24	1%	\$530,161	\$380.13	0.072%
13%	32.96	1%	\$530,161	\$420.11	0.079%
14%	34.67	1%	\$530,161	\$460.09	0.087%
15%	36.38	1%	\$530,161	\$500.08	0.094%

¹ The compound annual growth rate (CAGR) is the rate of return that would be required for an investment to grow from its beginning balance to its ending balance, assuming the profits were reinvested at the end of each year of the investment's lifespan. <https://www.investopedia.com/terms/c/cagr.asp>

We have chosen a system approach and first used (EVA, CAPM, NPV) in the financial-economic models to determine the economic value of the Georgian Railway, thus determining the railway sensitivity of the railway in the country's economy. Which show in Table 3, the first column of the matrix shows the average annual geometric growth (CAGR) and after each simulation is increased by 1%. The second column gives the result of the CAGR resulting on the total volume of shipments, starting from year 2017 (approximately 10.7 million tons). The third column provides the simulation where the cost is reduced by 1%. The fourth column provides the information regarding the current value of GDP received from 2017 (taking into account the annual 4% increase since 2017). The fifth column presents the current value of the added value created on the railway based on the previous combinations and assumptions, and finally, in the last column we can see the share of the economic added value of the railway industry in the overall GDP in GDP, meaning the share that will be added to the current value after the changes made on CAGR.²

4. Georgian Railway Corridor in a competitive environment

The countries located on the Asia Pacific coast analyzed as a result of qualitative / empirical research are connected to the developed countries of the Western Atlantic Ocean by five existing international routes, one of which passes through the territory of Georgia. These international transit corridors are: North Sea Corridor, South Sea Corridor, Trans-Siberian transit corridor, Southern Road Corridor, New Silk Road or Transcaucasian transit corridor (Gondauri, D. M. Bakh-tadze, G.Guramishvili, M.Moistsrapishvili, M.Batiashvili. 2021).

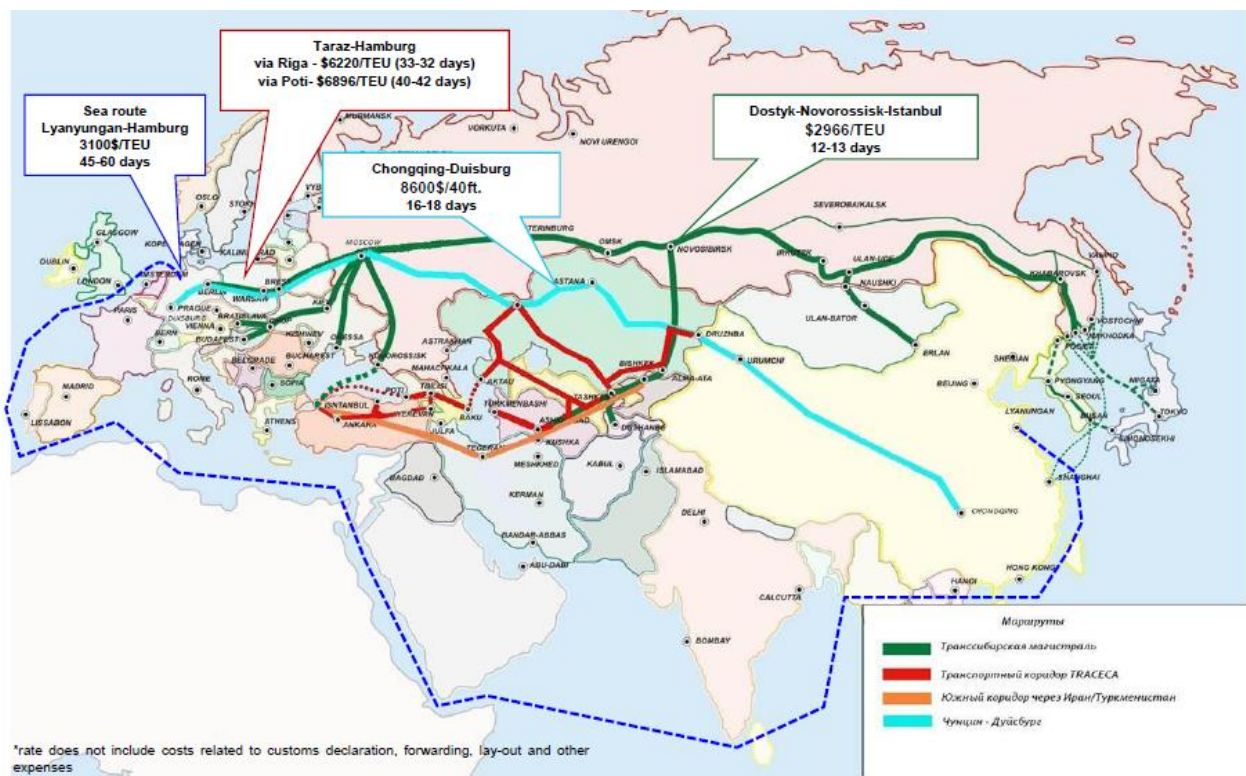
Taking into account its central geographical location, Georgia can take advantage of some of the trade flows from west to east and, conversely, expand its participation in the international value chain by providing logistics services. In 2013, the estimated total volume of total cargo flow in the New Silk Road, or Transcaucasian Transit Corridor, estimated by GNIA was 126 million Tons per year. About 55% of cargo comes from Central Asia to Europe (including Eastern Europe, the Balkans and Turkey) and exports to the rest of the world; 28% corresponds to exports from the Caucasus to Europe and the rest of the world. Liquid Cargo - The estimated volume of directed liquid cargo flow is 100 million Tons per year. About 50% of this volume comes from exports from Central Asia to Europe; And 20% correspond to exports from the Caucasus to Europe. Dry cargo (massive) - The estimated volume of targeted dry cargo flow is 17 million tons per year. About 28%

² The initial data of GDP (from where it is simulated in the regressive model - increase and then its current value) is represented on the link http://www.geostat.ge/index.php?action=page&p_id=119&lang=geo

comes from exports from Central Asia to the rest of the world (ROW) and 25% comes from exports from Central Asia to Europe. Cargo placed in a container - The estimated volume of directed cargo flow is 8.5 mln. Tons per year. About 35% comes from exports from the rest of the world (ROW) to the Caucasus and Central Asia and 17% from exports from Europe to Central Asia (World Bank Group 2014). Cargo is transported from Asia to Europe using the Georgian Railway Corridor and vice versa in 15 countries. These countries are: Azerbaijan, Turkey, Belarus, Estonia, Turkmenistan, Latvia, Lithuania, Moldova, Russia, Armenia, Tajikistan, Uzbekistan, Ukraine, Kazakhstan, Kyrgyzstan. In 2020, Azerbaijan is in the first place with 27.96% of the transit cargo transported through the Georgian corridor, Russia is in the second place with 17.47% and Turkmenistan is in the third place with 16.65%.

North Sea Corridor: At present we can briefly formulate as follows: Asia - Arctic Ocean - Northern Europe (Scandinavian countries). Its main advantages: Short distance; Small transit time; Lack of international overload ports. Its main disadvantages: Seasonality; High level of technical barriers; High cost (high shipping rates); Complexity of operational management procedures. South Sea Corridor - As of today, we can summarize as follows: Asia - Mediterranean basin - Northern Europe - Scandinavia - Baltic countries. Its main advantages: Safety of the corridor; Low tariffs; Coverage rates; High level of competition between sea lines; Voyage full year. Its main disadvantages: Distance of the given corridor; Considerably longer transit time; Many international shipping ports. Trans-Siberian Transit Corridor - Includes the railway route that connects Japan, North Korea, Mongolia, China, and Central Asia through Russian territory with the Nordic countries and the Baltic States to the east. Currently, the main advantages of the Trans-Siberian Railway Corridor are: it has no seasonality; One transit country between China and Europe; One custom procedure; Permeable and fixed tariffs. Its main disadvantages are: Long distance; Large transit time (compared to the Transcaucasian corridor); High levels of corruption and crime; Technical incompatibility at the border. Operational difficulty of reset. Southern Ground Corridor- Includes a route from Europe via Turkey to Iran, Turkmenistan, Uzbekistan and Kazakhstan, which runs to the Pacific coast of China. The main advantages of the Southern Road Corridor are: short distance; Small transit time. Its main disadvantages are: Operational difficulty of shipment; High levels of corruption and crime; Absence of pervasive tariffs; No agreed common customs procedures; Different border procedures in the corridor; Low level of logistics infrastructure (Gondauri, D. M. Bakhtadze, G.Guramishvili, M.Moistsrapishvili, M.Batiashvili. 2022).

Figure 1: Comparison of alternative routes



Between the years 2011-2020, the average share of transit cargo transported through the Georgian Railway Corridor (out of total shipments) by countries was: Azerbaijan - 32.07%, Turkey - 5.75%, Belarus - 0.22%, Estonia - 0.01%, Turkmenistan - 11.39%, Latvia - 0.05%, Lithuania - 0.16%, Moldova - 0.07%, Russia - 11.46%, Armenia - 12.68%, Tajikistan - 1.69%, Uzbekistan - 0.92%, Ukraine - 5.12%, Kazakhstan - 18.18%, Kyrgyzstan - 0.24%.

Liquid and dry cargo is transported in the Georgian railway corridor. By 2020, the share of liquid cargo in total shipments will be around 30%, while dry cargo will be 70%. One of the main sources of liquid cargo transportation is the production of oil and its related products in the Caspian region (Kazakhstan, Turkmenistan and Azerbaijan), which have large reserves of oil. Liquid cargo is divided into 2 parts: oil and petroleum products and crude oil. Petroleum products are the main constituent mass of liquid cargo (96% of the volume of liquid cargo transportation by 2020). They are mainly transported by rail, as it is practically impossible to transport those type of products by pipelines. The main producers of oil products transported by rail by 2020 are Azerbaijan, Turkmenistan, Russia and Kazakhstan. In 2020, the main part of crude oil transported by the Georgian Railway came from Azerbaijan (about 94%). General national economic conditions and economic development in Georgia or its partner countries (Azerbaijan, Armenia, Turkmenistan, Kazakhstan

and other CIS countries) are the main drivers of dry cargo transportation in the Georgian railway corridor. The following categories of dry cargo will be transported in the corridor: ore, grain and grain products, non-ferrous metals and scrap, sugar, chemicals and fertilizers, building materials, industrial cargo, cement and more (Gondauri, D. M. Bakhtadze, G.Guramishvili, M.Moistsrapishvili, M.Batiashvili. 2022).

Between the years 2011-2020, the structure of cargo transported in the Georgian Railway Corridor underwent some changes. Below is shown the average geometric increase (CAGR%) of the cargo transported by the countries in the mentioned years. Azerbaijan - 7.06%, Turkey - 0.23%, Belarus - 6.69%, Estonia - 18.06%, Turkmenistan - 0.10%, Latvia - 31.39%, Lithuania - 2.76%, Moldova - 27.28%, Russia - 6.85%, Armenia - 4.94%, Tajikistan - 18.88%, Uzbekistan - 5.81%, Ukraine - 13.03%, Kazakhstan - 19.86%, Kyrgyzstan - 18.02%.

Out of the 15 countries listed, the increase of the transit cargo (CAGR%) is shown in the direction of 7 countries - Turkey, Turkmenistan, Lithuania, Moldova, Russia, Uzbekistan, Kyrgyzstan. The transit traffic (CAGR%) decreased in the direction of the other 8 countries in 2011- 2020.

Thus, the internationally competitive corridors of the Transcaucasian Corridor are the Trans-Siberian Railway and the Southern Land Corridor. Both have the ambition to attract freight flows between the West and the East and to transport their own corridor, although only the Trans-Siberian Railway corridor can do so more or less successfully than the Southern Land Corridor (GR Annual Report, 2020).

Competition through the pipeline: The following oil pipelines directly compete with the Georgian Railway in terms of oil and oil products transportation: Caspian Pipeline Consortium (CPC Pipeline), which transports raw oil materials from Kazakhstan, the Tengiz oil field (on the Caspian Sea coast), to Russia, Novorossiysk (on the Black Sea coast); Baku-Tbilisi-Ceyhan (BTC pipeline), which transports crude oil from Azerbaijan (Caspian Sea coast) to Turkey (Mediterranean coast); Baku-Novorossiysk pipeline, which transports crude oil from Azerbaijan (Caspian Sea coast) to Russia, Novorossiysk (Black Sea coast); Baku-Supsa pipeline, which transports crude oil from Azerbaijan (Caspian Sea coast) to Georgia (Black Sea coast); Strengths: Large capacity at low cost - Pipelines often have low transport and operating costs, especially for large oil producers who are also involved in their construction. An oil pipeline is a much more efficient means of transporting large volumes of oil than a railroad. Weaknesses: Oil quality change - Pipelines generally do not carry all quality raw materials as different quality oils are mixed in the pipeline, which

in turn affects the quality of the product. Therefore, pipelines are best suited for medium level oil, while for high and low quality raw materials, pipelines are not the best means of transportation. Lack of pipelines for oil products - It should be noted that pipelines compete with the railway only in the transportation of crude oil. As for processed petroleum products, they are not subject to transportation via pipeline.

Competition from road transport: There is a competition in Georgia in terms of transporting goods by containers. Strengths: Cheap transportation over short distances - In Georgia, which is a relatively small country, road transportation is relatively cheap, especially for container cargo. Competition increases when international prices for petroleum products are low, especially given our low excise duty on petroleum products and low taxes on road transport. Flexibility - Transporting cargo to a specific destination is an inherent advantage of road transport. Weaknesses: Safety issues - Rail transport is safer and more environmentally friendly than road transport. Expensive transportation - In the case of bulk cargo transportation, the rail route is cheaper than – the road (Gondauri, D. M. Bakhtadze, G.Guramishvili, M.Moistsrapishvili, M.Batiashvili. 2022).

Based on the above, we believe in modern competitive conditions, the task of the New Silk Road or the Transcaucasian Transit Corridor should be to increase its role in the direction that when choosing a route by the cargo owner, in other equal conditions, to increase the advantageous factors of Georgian corridor. Impeding factors may include: A - The total length of the route is 10 thousand kilometers (Central China - Poland) and from here the route to Georgia is only 400 kilometers; B – We do not have any tools that will influence the formation of the route, price or time. Means terminals, rolling stock or vessels (vessels have a considerable influence on price formation; for example, transporting cargo by 10,000 tones to a destination allows for a handling of at least \$ 30 per ton compared to a 50,000 ton vessel); C – Insufficient conditions for trader and logistics companies.

5. Conclusion

The findings of the study have discovered cargo is transported from Asia to Europe using the Georgian Railway Corridor and vice versa in 15 countries. These countries are: Azerbaijan, Turkey, Belarus, Estonia, Turkmenistan, Latvia, Lithuania, Moldova, Russia, Armenia, Tajikistan, Uzbekistan, Ukraine, Kazakhstan, Kyrgyzstan. In 2020, Azerbaijan is in the first place with 27.96% of the transit cargo transported through the Georgian corridor, Russia is in the second place with

17.47% and Turkmenistan is in the third place with 16.65%. By 2020, the share of liquid cargo transported in the Georgian transit corridor in total shipments is about 30%, and dry cargo - 70%. Therefore, the findings of the study show the increase in the number of cargo transit (CAGR%) from the presented 15 countries is shown in the direction of 7 countries - Turkey, Turkmenistan, Lithuania, Moldova, Russia, Uzbekistan, Kyrgyzstan. The transit traffic (CAGR%) decreased in the direction of the other 8 countries in 2011-2020.

The following recommendations for research are based on the study findings: Lack of development of the country's transport and logistics infrastructure leads to a decrease in the competitiveness of the transport corridor of Georgia. There are a number of objective reasons why the cargo will not pass through our corridor: the frequency of the customs crossings, the frequency of transfers from one means of transport to another and finally the limited number of ferries. The Trans-Caspian International Transport Route runs from China via Kazakhstan, the Caspian Sea, Azerbaijan, Georgia, Turkey and then to Europe. The focus here should not be on China's land freight alone, as China is more interested in shipping and, for the most part, cargoes by sea. China is not the most important market for us in terms of attracting cargo flows, but more importantly Kazakhstan, Uzbekistan and Turkmenistan. The largest enterprises in these Central Asian countries today, including sulfur, metal, aluminum, and wheat, are state-owned. Therefore, Georgia and Azerbaijan should hold negotiations with these countries. For example, the cargo flow of Kazakhstan, which passes through Russia, totals 100 million per year.

Strengthen the function of the Georgian transit corridor and compensate for "failures" in cargo turnover. Additional cargo flows in the direction of Azerbaijan-Europe, such as iron ore, cement, Kazakhstan-Europe in the direction of wheat, Turkmenistan-Europe in the direction of oil, coke, potassium in Ukraine, potassium in Ukraine, With shipments of sunflower oil, various wheat, soybean, rye, barley, corn, rice, buckwheat and other container shipments to Ukraine-China and Asia.

In terms of transit shipping, big risks offer greater opportunities - If Iran is interested in the European market, we should know that Georgia is the only country in the region that has a free trade agreement with the EU. If China is interested in the Turkish market, we should know that in the whole region there is only Georgia, which has a free trade agreement with both China and Turkey. Turkey has no such agreement with either China or the European Union. Due to the lack of practice in Batumi and Poti terminals, in order for the port to be maximally loaded, it will be necessary to develop warehousing farms, where logistics centers should be developed first. If we want to achieve the progressive economic growth, the country must shift from a transit load to the strategy

of value-added creation. That is, the economy must create added value, in the form of infrastructure and innovation centers, which, as the economy grows, will increase exports and create additional jobs in Georgian Economy.

Railway freight transportation itself requires the development of Georgia's logistics sector. Most of the freight companies operating in Georgia provide 2PLs type carriers that carry cargo from point A to point B. There are already 3PLs companies in our neighboring countries that, in addition to shipping goods, own terminals, carry out brokerage, customs clearance and other procedures. In developed countries, there are already 6PLs, such as Alibaba and other similar companies, which provide a variety of services. Therefore, according to the World Bank logistics index, Georgia is only in 119th place with 2.44 points from the point of view of the development of the logistics. In terms of the development of the logistics field, it is interesting for Georgia to learn from: Belarus model - the state did not adapt the development of the logistics system to the private investor, but rather worked out plan where the logistical centers must be located in terms of the territory. Concluded necessary research and studies and approved action plan, regarding the strategy, location, capacity, etc. of such centers. The development of private terminals around the port - meaning the Rotterdam model, where refrigerated and dry warehouses are owned by private individuals. The same strategy is used by the neighboring Azerbaijanis when the Absheron Logistics Center was set up and still operating. Taking into account the financial resources that those countries have, for Georgia it would be better to start the arrangement of the logistic system by stages or phases. With the less financial risks and a higher return forecast for the invested resources.

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