

Alternative Routes for Deliveries of Kazakh Crude Oil Shipments to the European Union

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Abstract: The situation with crude oil shipments from Kazakhstan to the European Union has seriously deteriorated since 24 February 2022 when Russia started its invasion of Ukraine. A series of different incidents, which complicated these deliveries, started soon after the beginning of the invasion and this has again brought to light the need to diversify the export routes for the Kazakh crude oil. In spite of numerous previous appeals, the dependence on the transit via the Russian territory only increased over the last years. This paper analyses the reasons for this increased dependence, considers the alternative routes and their attending circumstances and attempts to suggest potential ways out of this situation. Considering this topic, it is essential to mention that Kazakhstan is among the five top suppliers of crude oil to the European Union, and, at the same time, the European Union is the biggest importer of Kazakh crude oil.

Keywords: *European Union; Kazakhstan; crude oil; export routes; export routes diversification; Russo-Ukrainian war*

I. INTRODUCTION

First of all, the author would like to provide evidence of how mutually dependent in terms of crude oil trade the European Union (EU) and Kazakhstan are.

Though information on EU imports of crude oil may look a bit outdated, the situation has not changed much within the last few years and this is shown on **Fig. 1** and **Fig. 2**. In spite of some variations, the share of Kazakhstan remains substantial and the country continues to be among the top exporters of crude oil to the European Union.

However, since 24 February 2022 the overall context started to change. Already, in August 2022 it was stated in [1] that “Kazakhstan is dependent on Russia for its main oil export route, which has run into repeated problems since Nur-Sultan (the capital of Kazakhstan) refused to support Moscow’s war.”

Keeping all the political reasonings aside, it is important for any exporter to diversify its export routes as it allows to build resilience to unexpected developments. It is equally important for an importer to ensure safe, reliable and uninterrupted supplies of energy.

The key oil export routes for the Kazakh crude are shown in **Fig. 3**.

CPC – Caspian pipeline consortium pipeline, BTC – Baku-Tbilisi-Ceyhan pipeline

This article is attempting to answer the following research questions:

- 1) What are the reasons for overdependence of Kazakhstan for its crude oil exports via the Russian territory? and
- 2) How to get rid of this dependence?

II. LITERATURE REVIEW

Starting this section, the author needs to admit that the topic of this article is not in the limelight of researchers. This becomes especially evident in comparison with shipments from the Middle East. Nonetheless, the author has attempted to analyse as many literature sources as possible. Information collected by the author at various oil and transportation conferences and other professional events over the past few years is also used widely.

“A brief overview of the political economy of Caspian oil” is provided in [2]. The same source raises “the critical problem – ... reliance on evacuation routes that run through Russia.

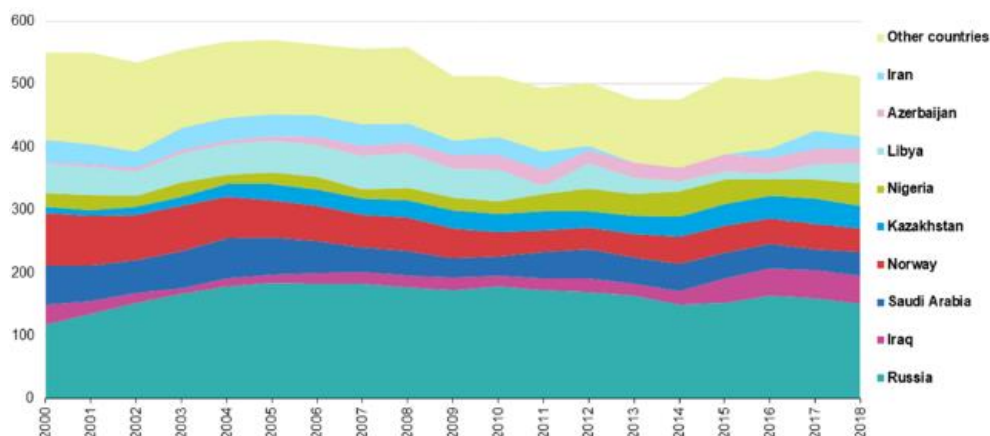


Figure 1. Crude oil imports by country of origin, EU-27, 2000-2018 (million tonnes) [3].

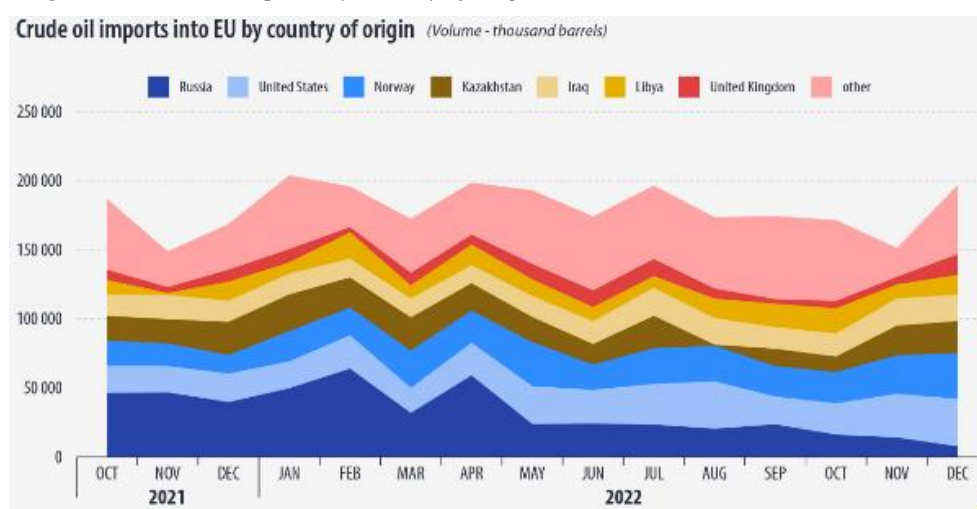


Figure 2. Crude oil imports into EU by country of origin (volume – thousand barrels) [4].



Figure 3. Key Oil Export Routes from the Caspian Region [5].

Diversification of export routes was recognised as an important goal after 1991 but was impeded by the geopolitical difficulties presented by many of the possible alternatives.” In their another manuscript [6], the same authors admitted that “Kazakhstan’s desire to diversify export routes and reduce its

dependence on Russia notwithstanding, evacuation routes via the Russian Federation remain in some cases the least problematic, given the difficulties posed by disputes over the Caspian and by political factors in Iran and Turkmenistan.” The issue of export routes diversification was further developed

in [7]: “Kazakhstan is keen to improve exporting capacities and is looking for options to diversify export routes.”

The energy cooperation between the EU and Kazakhstan (and other Caspian region countries) was addressed in [8]. It this source Kazakhstan is mentioned as the EU’s “most important oil partner in CACR (Central Asia and the Caspian Region)”. In [9] it is analysed “how the security of oil supply to the European Union member states could be enhanced in case of a lasting supply disruption...” In [10] the authors assessed energy security in the Caspian Region and its geopolitical implications for the European energy strategy. In [11] it is mentioned that “West European countries perceive increasing their supplies from the Caspian region as a way to lessen their dependence on oil coming from OPEC-associated countries, especially the Persian Gulf.” Other publications which addressed this topic include [12] and [13]. The paper [12] assessed the role of the Black Sea region (which is geographically very close to the Caspian region) in the European energy security making some important observations like “The EU has acknowledged the great oil and natural gas potential of the Caspian Sea region. The oil and natural gas resources of the states of the Caspian Sea littoral could provide a temporary alternative energy supply if Russia interrupts again the oil exports” and “An integral part of an increased focus on Caspian hydrocarbons must be concerted EU action against Russian threats to the east-west corridor”. The same topic of the European Union Energy Security was continued in [13]. The authors reiterate that “Diversification of energy resources is one of the objectives for the EU” and analyse “the potential of the Caspian basin in terms of energy and its impact on the energy security of the European Union”.

A major part of publications related to the topic of this manuscript is in Russian language. It is reasonable to mention such works as [14], [15], [16], [17], [18] and [19]. [14] provides a detailed overview of different transportation routes for the Caspian oil and gas. Continuing this topic, the authors of [15] study various factors (physical-geographical, technological, economic, political, environmental) that influence the choice of optimal transportation options for the Caspian Sea hydrocarbons. They also propose a mathematical model, which takes into consideration the mentioned factors and suggests an optimal transportation option. In [16] prospects for offshore oil and gas production in the Northern Caspian Sea and possible ways of transportation are being investigated. In [17] economic and regional factors of the development of hydrocarbon transportation systems in Russia including the Caspian Sea region are addressed. The author of [18] investigates special aspects of the development of oil and petroleum products transportation by different

modes of transport. [19] deserves special mentioning. In this work transportation flows and routes and competition between different modes of transport are considered.

Several publications considered the development of transport infrastructure of Kazakhstan and the neighbouring countries. They include [20], [21] and [22]. Considering challenges and prospects of the Kazakh infrastructure development, the authors of [20] pay special attention to the accessibility of global communication routes for Kazakhstani exports. In contrast, the paper [21] analyses the transport infrastructure of Russia’s oil and gas industry “as regards the location of economic activity and existing transport links in that sphere, competitiveness of various modes of transport in transporting oil and gas cargoes, existing problems and approaches to solving them.” And in the [22], “the potential demand for oil and oil products transport via the existing rail corridor in the Caucasus, taking into consideration the competition from alternative routes” is evaluated.

Another important source of information became the publications of international organizations like [23], [24] and [25] and professional associations [26]. Here it is essential to acknowledge that these sources of information usually provide accurate information quite quickly. Even if this information is not used directly, it provides abundant material for further thought or for understanding the context.

III. DATA AND METHODOLOGY

Data collection for this article was based on the following:

- 1) Review of different literature sources. As already mentioned in the Literature review section above, the body of relevant literature is quite limited.
- 2) Gathering information at oil and gas conferences and other professional events. Over the last several years, the author attended and spoke (both on- and off-line) at numerous events in Azerbaijan, Hungary, Kazakhstan, the Netherlands, and Russia.
- 3) Gathering information from market players and representatives of academia. These sources are invaluable for understanding the situation.

The criteria for including studies into consideration were their relevance to the topic, reliability and objectivity. The same principles were applied while gathering information at professional events and from market players and academia representatives, adding to them the trustworthiness of market players, speakers at and participants of professional events.

In order to minimise the risk of bias, the information gathered at professional events and from

market players was cross-checked. Clarification calls were made when necessary.

The analytical part of this paper was initially discussed with market players and academia representatives and then presented at two oil and gas conferences. Comments and recommendations received helped to improve the quality of this research. The market players and academia representatives whom the author discussed the content of this article with agreed that the selected methodological approach is suitable for the research questions mentioned above.

List of interviewees

The following oil and gas and transportation professionals and representatives of academia agreed to share their views on the situation:

- 1) Vice-president for operations, Kazakh oil transportation company;
- 2) Business development manager, multinational oil company operating in Kazakhstan;
- 3) Director of export department, mid-size Kazakh oil company;
- 4) Manager, oil market intelligence agency;
- 5) Transport manager, Kazakh oil company;
- 6) Representative of the Ministry of Energy of Kazakhstan;
- 7) Professor, Kazakh research institution specialized in transport subject area;
- 8) Associate professor, Kazakh university
- 9) Associate professor, Azerbaijan university

IV. RESULTS AND DISCUSSION

The distinctive aspect of the considered problem is the dependence of Kazakh oil producer on export routes transiting the Russian territory (CPC and Atyrau-Samara pipelines) has substantially increased over the last years from 64% in 2010 to 95% in 2021 (Table 1-2).

All percentages do not total 100% due to rounding. Let us have a look at the reasons for this increase.

Table 3 above clearly demonstrates that the economics of crude oil export via CPC pipeline is much better in comparison with other routes. It is also the shortest route, which results in shorter delivery times and better safety. The CPC pipeline is also safer from the environmental point of view as it has less trans-shipments and requires less time for transportation. It also has the quality bank. This circumstance is of serious importance for producers of high quality crudes. Last, but not least is the fact that major Kazakh oil producers have shares in CPC. All these reasons made CPC the major export route for the Kazakh crude. The only what complicates further shipments via CPC is the changed political situation. This changed situation can lead to even

discontinuation of shipments via the Russian territory.

Table 1. Export of crude oil from Kazakhstan, 2010 [27].

	Route	Amount, mln. metric tons	Share, %
1.	Caspian pipeline consortium pipeline (CPC)	29.9	42
2.	Atyrau-Samara pipeline	15.3	22
3.	Port of Aktau	9.3	13
4.	Atasu-Alashankou pipeline (to China)	10.1	14
5.	Railway	6	8
6.	Total	70.6	

Table 2. Export of crude oil from Kazakhstan, 2021 [27].

	Route	Amount, mln. metric tons	Share, %
1.	Caspian pipeline consortium pipeline (CPC)	53	78
2.	Atyrau-Samara pipeline	12	17
3.	Port of Aktau	2	3
4.	Atasu-Alashankou pipeline (to China)	1	1
5.	Railway	insignificant amounts	
6.	Total	68	

Table 3. Economics of crude oil export from Kazakhstan, 2021 [27].

	Route	Tariff, \$ / ton
1.	Caspian pipeline consortium pipeline (CPC)	38
2.	Atyrau-Samara-Vysotsk (Russian Baltic Sea port)	56
3.	Port of Aktau – port of Baku and then via BTC pipeline	113
4.	Atasu-Alashankou pipeline (to China)	45
5.	Railway from Atyrau to Batumi (Georgian Black Sea port)	103

A substantial portion of crude oil produced in Kazakhstan has been transported via the Atyrau-Samara pipeline and then via the Russian Transneft crude oil pipeline system. Unfortunately, this route is becoming risky because of tightening anti-Russian sanctions. The shipments of the Russian crude via the Transneft system were almost discontinued. It is unlikely that revenues from relatively small Kazakh

shipments will be enough to support the functioning of this system in the future.

At first glance, the economics of shipments to China also looks attractive. However, this is the tariff till the border between China and Kazakhstan only. It is important to note here that the main consumers of crude oil and refined products in China are in the eastern coastal provinces. So, if we take into consideration the distance between the point where the Atasu-Alashankou pipeline crosses the border between China and Kazakhstan and say the city of Shanghai, the actual tariff for Chinese consumers should be more than doubled.

In the event the shipments of Kazakh crude via the Russian territory are discontinued, increasing refining or using crude oil in petrochemistry can be a partial solution. Within the last few years, the share of the total production, which was used for these purposes was around 20%. However, the share of these industries should be significantly increased due to their rapid development over the last several years.

The route via the port of Aktau, then by sea to the port of Baku and finally to the Mediterranean via the BTC (Baku-Tbilisi-Ceyhan) pipeline is the most expensive option. There are also issues around the access to this pipeline, which do not exist for CPC. In spite of the high cost, this route can become a partial solution. Similarly, rail the Kazakh crude oil from Atyrau to Batumi (Georgian Black Sea port) via the territory of Azerbaijan is very expensive. In addition to that, this route crosses the Russian territory.

Meanwhile, there is a need to look at other potential export routes, which have not been covered above. The first is supplying the North of Iran via Turkmenistan by rail or via the Caspian Sea to Iranian sea ports by sea (please refer to the map on **Fig. 3** above). This option existed in the past and was discontinued because of Western sanctions against this country (Iran). Another potential destination is the neighboring countries: Afghanistan, Kyrgyzstan and Uzbekistan. However, the demand in these countries is relatively small – never exceeded 1 million metric tons.

V. CONCLUSIONS AND RECOMMENDATIONS

1) CPC remains to be the best export route for the Kazakh crude at the moment and in the near future. However, this does not mean that the situation can be accepted as is. The work on the development of alternative routes has to be continued even if alternatives are less attractive economically now. There is a possibility that all transit via Russia (or at least via the Russian Black Sea ports) will be discontinued due to political or security reasons. In this case, even

more expensive and difficult routes bypassing the Russian territory will be needed for the country.

- 2) Among the most viable alternatives to CPC are shipments to the port of Aktau and then to the Mediterranean via BTC pipeline and to China via the Atasu-Alashankou pipeline, though substantial investments are required to make them able to accept increased volumes. In spite of these investments, high transportation costs and other issues, these two routes remain the only feasible options for the evacuation of the Kazakh crude to the World markets in sizeable quantities.
- 3) Construction of the Caspian undersea pipeline from Aktau to Baku (please refer to **Fig. 3** above) can radically decrease the cost of transportation via this route. However, this project is very costly and involves numerous environmental problems.
- 4) The routes via Turkmenistan to Iran or from the port of Aktau via the Caspian Sea to Iranian sea ports are not operational now due to the Western sanctions. In the event these sanctions are lifted, these routes will soon become very attractive.
- 5) Another potential way is to increase crude oil refining or using crude oil in petrochemistry. This way is also not free from limitations and requires additional investments but can at least partially ease the situation.
- 6) In spite of limited demand in the neighbouring countries of Afghanistan, Kyrgyzstan and Uzbekistan, the shipments to these countries deserve due attention. It should be noted that though the demand in these countries is quite small it has a steady upward trend because of rapidly growing populations.
- 7) The Turkmenistan–Afghanistan–Pakistan–India (TAPI) gas pipeline project is being considered. In case this project moves forward, an oil pipeline can be laid down in parallel with this gas pipeline's right-of-way (in compliance with all the required technical safety standards).
- 8) In spite of tightening anti-Russian sanctions, potential swap deals with Russia can be a partial solution as well. In this case, Kazakh oil producers can supply crude oil to China via the Atasu-Alashankou pipeline and receive equivalent volumes of Russian crude in say Russian Baltic Sea ports.
- 9) The country has to continue clarifying to the international community that shipments from Kazakhstan are not subject to sanctions. This is critical as there were attempts to restrict Kazakh cargoes already.

Research contribution

The present study is among the first and very few, which considers the changed situation with energy supply to the European Union since the beginning of the Russo-Ukrainian war. As mentioned above, the literature body on this topic is limited, though the

importance of crude oil supplies from Kazakhstan to the EU is high.

Research limitations

- 1) Small sample size: the limitation is caused by the nature of the research. Here it is necessary to acknowledge that the overall number of people with proper understanding of the situation and the market trends is limited. The author, however, tried his best to increase the number of respondents as much as possible.
- 2) Self-reported data: the limitation is also caused by the nature of my research. It was addressed through cross-checking the answers, making clarification calls to ascertain the responses and comparing the information received from the respondents with the information presented in different publications (mainly of international organizations and professional associations).
- 3) Refusal to comment on some issues due to political and/or self-censoring reasons. This

REFERENCES

- [1] Kumenov Almaz, "Kazakh oil exports across Russia interrupted for fourth time this year," Aug. 23, 2022. <https://eurasianet.org/kazakh-oil-exports-across-russia-interrupted-for-fourth-time-this-year>
- [2] R. Ahrend and W. Tompson, "Caspian oil in a global context," *Transition Studies Review*, vol. 14, no. 1, pp. 163–187, May 2007, <https://doi.org/10.1007/s11300-007-0132-5>
- [3] Crude oil imports by country of origin, EU-27, 2000-2018. Eurostat, 2 July 2020. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Crude_oil_imports_by_country_of_origin_EU-27_2000-2018_\(million_tonnes\)_F.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Crude_oil_imports_by_country_of_origin_EU-27_2000-2018_(million_tonnes)_F.png)
- [4] Crude oil imports and prices: changes in 2022, Eurostat, 28 March 2022. <https://ec.europa.eu/eurostat/en/web/products-eurostat-news/w/DDN-20230328-1>
- [5] Kazakhstan's Tengiz oil field operator says logistics problem impacting output amid political crisis, S&P Global Commodity Insights, 7 January 2022. <https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/oil/010622-kazakhstans-tengiz-oil-field-operator-says-logistics-problem-impacting-output-amid-political-crisis>
- [6] R. Ahrend and W. Tompson, "Realising the Oil Supply Potential of the CIS: The Impact of Institutions and Policies," Elsevier BV, Dec. 2007. <https://doi.org/10.2139/ssrn.1010667>
- [7] F. Guliyev and N. Akhrarkhodjaeva, "The Trans-Caspian energy route: Cronyism,

situation is very typical for the oil and gas industry.

The limitations above do not undermine the value of this, but rather serve as an initial point of departure for further studies.

AUTHOR CONTRIBUTIONS

E. Akhmedov: Conceptualization, Experiments, Theoretical analysis, Writing, Review and editing.

DISCLOSURE STATEMENT

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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- competition and cooperation in Kazakh oil export," *Energy Policy*, vol. 37, no. 8, pp. 3171–3182, Aug. 2009, <https://doi.org/10.1016/j.enpol.2009.04.009>
- [8] F. Umbach and S. Raszewski, "Strategic Perspectives for Bilateral Energy Cooperation between the EU and Kazakhstan - Geo-economic and Geopolitical Dimensions in Competition with Russia and China's Central Asia Policies," Berlin, 2016. www.eucers.eu
- [9] Kottsieper, "Study on the Technical Aspects of Variable Use of Oil Pipelines-Coming into the EU from Third Countries OVERALL REPORT Prepared for the Directorate-General for Energy of the European Commission," Munich, 2010. https://ec.europa.eu/energy/sites/ener/files/documents/2010_reporting_technical_aspects.pdf
- [10] U. Aydin and D. Azhgaliyeva, "Assessing Energy Security in The Caspian Region: The Geopolitical Implications for European Energy Strategy," Tokyo, 2019. <https://www.adb.org/publications/assessing-energy-security-caspian-region>
- [11] J. Cichocki, "The Significance of Caspian Oil and Gas for Diversifying Energy Imports to the Visegrad Group Countries," *Connections*, vol. 2, no. 1, pp. 23–28, 2003. https://www.jstor.org/stable/26322975?seq=1#metadata_info_tab_contents
- [12] C. Lupu, "The Russia and EU at crossroads. The role of the Black Sea region in the European energy security," Università degli Studi di Trieste, Trieste, 2009. <https://core.ac.uk/download/pdf/41172151.pdf>

- [13] A. Ibrayeva, D. V. Sannikov, M. A. Kadyrov, V. N. Zapevalov, E. L. Hasanov, and V. N. Zuev, "Importance of the Caspian Countries for the European Union Energy Security," *International Journal of Energy Economics and Policy*, vol. 8, no. 3, pp. 150–159, 2018. <http://www.econjournals.com/index.php/ijeep/article/view/6263>
- [14] S. Makarova, "Export routes and transportation of Caspian oil and gas," *Social and economic geography*, 2005. <https://cyberleninka.ru/article/n/2005-03-011-014-eksportnye-marshruty-i-transportirovka-kaspiyskoy-nefti-i-gaza>
- [15] M. Petrov and V. Lubenko, "Factors Influencing the Choice of Optimal Caspian Sea Shelf Hydrocarbon's Transportation," *Bulletin of the Astrakhan State Technical University*, 2009. <https://cyberleninka.ru/article/n/factory-opredelyayushchie-optimalnuyu-shemu-transportirovki-uglevodorodov-shelfa-kaspiyskogo-morya>
- [16] M. Petrov and V. Lubenko, "The Forecast of the Marine Oil and Gas Development and the Possible Method of Oil Transportation on the Shelf of the North Caspian Sea," *Bulletin of the Astrakhan State Technical University*, 2008. <https://cyberleninka.ru/article/n/perspektivy-morskoy-dobychi-nefti-i-gaza-na-shelfe-severnogo-kaspiya-i-vozmozhnye-sposoby-ih-transportirovki>
- [17] E. Markushina, "Economic and regional factors in the development of hydrocarbon transportation systems," *Scientific and technical statements of St. Petersburg State Polytechnic University. Economics*, 2011. <https://cyberleninka.ru/article/n/ekonomichesk-je-i-regionalnye-factory-razvitiya-sistem-transportirovki-uglevodorodov>
- [18] A. Smirnova, "Features of the development of transportation of oil and oil products by various modes of transport," *Bulletin of Kazan Technological University*, 2012. <https://cyberleninka.ru/article/n/osobennosti-razvitiya-perevozki-nefti-i-nefteproduktov-razlichnymi-vidami-transporta>
- [19] Yu. A. Shcherbanin, "Export Deliveries of Oil and Petroleum Products: Flows, Routes, Transport Mode's Competition," *Design, Construction and Operation of Gas and Oil Pipelines and Storages*, vol. 1, pp. 22-27, 2017. <https://cyberleninka.ru/article/n/postavka-nefti-i-nefteproduktov-na-eksport-potoki-napravleniya-konkurenciya-vidov-transporta/viewer>
- [20] Z. B. Akhmetova, Zh. T. Kozhamkulova, and N. M. Turlybekova, "Development of transport infrastructure of Kazakhstan: problems and prospects," *Kazakh National University Bulletin*, 2015. <https://articlekz.com/article/15365>
- [21] M. Shmulevich, "Transport Infrastructure of Russia's Oil and Gas Industry," *Transport of the Russian Federation. Journal of Science, Practice, Economics*, no. 6 (73), 2017. <https://cyberleninka.ru/article/n/transportnaya-infrastruktura-neftegazovoy-otrasli-rossii>
- [22] M. Lawrence, S. Melibaeva, R. Bullock, and J. Moose, "Caucasus Transport Corridor for Oil and Oil Products," Washington D.C., 2008. <https://openknowledge.worldbank.org/handle/10986/12309?show=full>
- [23] Eurostat, "Crude oil imports by country of origin, EU-28, 2000-2018 (million tonnes)," 2020. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Crude_oil_imports_by_country_of_origin,_EU-27,_2000-2018_\(million_tonnes\)_F.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Crude_oil_imports_by_country_of_origin,_EU-27,_2000-2018_(million_tonnes)_F.png)
- [24] Eurostat, "Crude oil imports by country of origin, EU-28, 2000-2017 (million tonnes).png," nrg_ti_oil, 2020. https://ec.europa.eu/eurostat/statistics-explained/images/f/f2/Crude_oil_imports_by_country_of_origin%2C_EU-28%2C_2000-2017_%28million_tonnes%29.png
- [25] Eurostat, "Extra-EU imports of petroleum oil from main trading partners, 2018 and 2019.png," 2020. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Extra-EU_imports_of_petroleum_oil_from_main_trading_partners,_2018_and_2019_v2.png
- [26] P. Argus, "Argus Рынок Каспия," Riga, Latvia, 2017. <https://www.argusmedia.com/-/media/Files/sample-reports/argus-russian-caspian-markets.ashx?la=ru&hash=637F3B56CECA9F666573E8BFF91D09BB675C2284>
- [27] The National Energy Report Lazenergy 2021, Ministry of Energy of the Republic of Kazakhstan, October 2021. https://www.kazenergy.com/upload/document/energy-report/NationalReport21_en.pdf



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