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BLACK AND AZOV SEAS - BULK FREIGHT PROSPECTS FOR UKRAINE'S AND RUSSIA'S PORTS

Paper aims to assess existing and prospective potential of Ukraine's and Russia's Ports on the Black Sea and the Sea of Azov from the point of view of balk cargoes transportation. Data describing ports throughput capacity as well as freight turnover are analysed. Possibilities for the port infrastructure to adapt to the structural changes in cargo traffic are considered. Evaluation of the need for investments for modernization and reconstruction of the ports is presented. Reserves and deficit of ports capacity for bulk freight for coming years are determined and discussed.

Keywords: *Bulk Freight, sea ports, throughput capacity, cargoes turnover, investments*

В статье дана оценка пропускной способности портов рассматриваемых регионов по навалочным грузам, а также возможностей приспособления портовой инфраструктуры к происходящим структурным изменениям грузопотока. Рассмотрены крупнейшие угольные порты Украины (Мариуполь, Южный, Николаев, Бердянск, Керчь, Измаил, Ильичевск) и юга России (Туапсе, Темрюк, Азов, Таганрог).

Проанализированы потребности в инвестициях для модернизации и реконструкции портов и потенциал портов Черноморско-Азовского бассейна для транзита угля в настоящее время и в будущем. По результатам выполненных исследований сделаны выводы о портовых мощностях украинских портов по навалочным грузам (более 30 млн. т угля и около 60 млн. т руды в год), а также о наличии резерва портовых мощностей украинских портов (порядка 14 %).

Отмечено, что в последние годы значительно повысилась потребность в импорте углей в Украину для нужд металлургической промышленности, особенно это касается коксующихся углей. Существующая же ориентация портов на перегрузку экспортных навалочных грузопотоков не учитывает перспективы перевалки импорта. К тому же в настоящее время в портах Украины и юга России отсутствуют мощные комплексы для приема импортного грузопотока. Строительство новых глубоководных портов РФ на юге, в первую очередь строительство порта Тамань, может в перспективе значительно снизить объем транзита угля через порты Украины.

Общая потребность в импортных терминалах только по портам Украины оценивается в 10-15 млн. т. Исходя из базовых предпосылок, можно утверждать, что к настоящему моменту ряд портов Украины имеют возможности приспособить собственную инфраструктуру к

происходящим структурным изменениям грузопотока. С технической точки зрения основные порты Украины, задействованные в перевалке угля (Южный, Мариуполь, Ильичевск, Николаев), готовы к приему транзита и в настоящее время и в будущем − в случае его увеличения.

Ключевые слова: *навалочные грузы, морские порты, пропускная способность, грузооборот, инвестиции.*

У статті дана оцінка пропускної спроможності портів даних регіонів по навалювальних вантажах, а також можливостей пристосування портової інфраструктури до структурних змін вантажопотоку, що відбуваються. Розглянуті найбільші вугільні порти України (Маріуполь, Південний, Миколаїв, Бердянськ, Керч, Ізмаїл, Іллічівськ) і півдня Росії (Туапсе, Темрюк, Азов, Таганрог).

Проаналізовані потреби в інвестиціях для модернізації і реконструкції портів і потенціал портів Чорноморсько-Азовського басейну для транзиту вугілля нині і в майбутньому. За результатами виконаних досліджень зроблені висновки про портові потужності українських портів по навалювальних вантажах (більше 30 млн. т вугілля і близько 60 млн. т руди в рік), а також про наявність резерву портових потужностей українських портів (близько 14 %).

Відмічено, що останніми роками значно підвищилася потреба в імпорті вугілля в Україну для потреб металургійної промисловості, особливо це стосується коксівного вугілля. Існуюча ж орієнтація портів на перевантаження експортних навалювальних вантажопотоків не враховує перспективи перевалки імпорту. До того ж нині в портах України і півдня Росії відсутні потужні комплекси для прийому імпортного вантажопотоку. Будівництво нових глибоководних портів РФ на півдні, в першу чергу будівництво порту Тамань, може в перспективі значно понизити об'єм транзиту вугілля через порти України.

Загальна потреба в імпортних терміналах тільки по портах України оцінюється в 10-15 млн. т. Виходячи з базових передумов, можна стверджувати, що до справжнього моменту ряд портів України має можливості пристосувати власну інфраструктуру до структурних змін вантажопотоку, що відбуваються. З технічної точки зору основні порти України, задіяні в перевалці вугілля (Південний, Маріуполь, Іллічівськ, Миколаїв), готові до прийому транзиту і нині і в майбутньому − у разі його збільшення.

Ключові слова: *навалювальні вантажі, морські порти, пропускна спроможність, вантажообіг, інвестиції.*

1. Introduction. Review of the Regional Ports.

The aggregate freight turnover of all the regional ports and terminals worked out at 451,5 million t in 2012, where the Russian and Ukrainian ports accounted for more than 73% of the total (331 million t).

Given the forecasts for development of the world economy and, in particular, the countries of the region, there is no question of any considerable growth in transhipment of cargos in the ports of the Sea of Azov and the Black Sea basin. This figure may be expected to approximate to 500 million t in the foreseeable future. In the aggregate, the Ukrainian port sector possesses the port capacity of over 180 million t. The annual freight turnover amounted to 154,3 million t in 2012 (which is 99,2 % of the total of 2011).

That is to say, the Ukrainian ports used 86 % of their capacity. The main freight turnover of the Ukrainian ports is concentrated around the so called "Large Odessa" (Odessa, Ilyichevsk, and Yuzhny) working out at 60-65 % of the total freight turnover of the Ukrainian ports.

Concentration of the national port capacities in one region impedes development of the whole port infrastructure and does not allow to use the considerable maritime potential of the Crimean Peninsula and the Eastern segment of the coastal part of Ukraine that is situated immediately on the border between Ukraine and Russia (fig. 1).

In the Crimean Peninsula having the stretch of almost 50 % of the whole coastal territory of Ukraine, which ensures a substantial potential for transit, there are no first-class seaports.

The aggregate freight turnover of the ports located in the South of Russia worked out at 176,7 million t; however, the portion of bulked cargos within the structure of freight turnover is over 60 %.

Given the overloading of the ports of Novorossiysk and Tuapse in respect of dry cargos, Russia has already presented officially a project called "Creation of a Dry Cargo Area of the Seaport of Taman" and has launched the preparatory works; nevertheless, creation of a port in the said place has led to a number of complications.

Fig. 1. Map of Ukrainian ports

2. Ports capacity for handling bulk cargos. The existing Ukrainian terminals have capacity allowing to handle over 30 million t of coal and about 60 million t of ore per year. Practically all the terminals are focused on export schemes only.

The total volume of transhipment of coal and ore cargo through the Ukrainian ports in 2012 was 31,67 million t, which is approximately 90 % of the level reached in 2011. In particular, the volumes of export of coal and ore cargos worked out at 18 million t, those of import thereof were about 3 million t, and transit amounted to 10,6 million t.

In 2012 export of coal and coke through the Ukrainian port worked out 4 million t, the largest volumes of coal being exported through the ports of Mariupol (1660,3 thousand t), Berdyansk (1146,8 thousand t), and Nikolayev (1085,1 thousand t).

The extent of importation of coal to Ukraine worked out at 1530,7 thousand t, in particular, 712,7 thousand t through the port of Ilyichevsk and 786,9 thousand t through the port of Yuzhny. The largest portion in the whole structure of coal transhipment is constituted by freight in transit.

On the whole, transit of coal amounted to 5528,1 thousand t in 2012, including 1393,0 thousand t through the port of Yuzhny, 1567,7 thousand t through Mariupol, 1102,5 thousand t through Kerch, and 1354,7 thousand t through Nikolayev.

The breakdown of port capacities is as follows: Seaport of Yuzhny (fig.2).

Fig. 2. Port of Yuzhny

Table

Comparative indicators of ports of the black sea and sea of azov basin

№	Ukrainian ports by the regions	Total turnover, thousand tons, 2012	Number of cargo births	Coal turnover, thousand tons, 2012	Total lengths of wharfage	Checkpoint depth, m
Crimea Ports						
1.	Yevpatoria	913,3	5		797	8,25
2.	Kerch	5938,6	7	1869,3	1354	8,3
3.	Feodosiya	3002,0	7		1089	13,5
4.	Yalta	188,2	2		475	8,2
5.	Sebastopol	417,1	1		112	8,25
Danube Ports						
6.	Izmail	2907,2	24	1390,8	2666	7,5
7.	Reni	1061,8	37	68,6	3927	7,0
8.	Ust-Dunaysk	35,3	0		0	8,0
9.	Belgorod-Dniester	927,8	9		1147	4,8-5,1
Dnepr River Region Sea Ports						
13.	Nikolayev	10841,7	13	2470,9	2498	10,5
14.	Kherson	3100,3	9	34,2	1262	7,9
15.	Oktyabrsk	2153,3	7	53,1	1902	10,5
16.	Skadovsk	180,8	3		536	6,0
	Azov Sea Ports					
17.	Mariupol	14080,4	18	3295,3	3926	9,75
18.	Berdyansk	2318,2	10	1170,7	1506	8,25
	Ukrainian ports in total	109800,3	227	12543,2	36601	
Russian Ports of the Basin						
1.	Novorossiysk (all companies)	117400	80	160,0	12670	24,0
2.	Tuapse	17800	15	2800,0	2596	13,5
3.	Taganrog	3400	13	950,0	2570	5,5
4.	Eysk	3600	8	910,0	893	4,5
5.	Azov	5100	9	1450,0	1156	5,5
6.	Rostov-on-Don	11100	18	1670,0	2900	4,5
7.	Temryuk/ Caucasus	2300/9400	9/9	560,0	1756/1850	5,5
Regional Russian ports in total	176700	161	8500,0	24700		

Port capacity is up to 6 million t of coal per year. The port handles coal cargos at berths № 5 and № 6. The stretch of the berthing line is about 700 m (each berth being 348 m), and the depth is 15 m. The berths of the port can accept vessels of up to 80 thousand dead weight tonnes (without any additional loading on the roads). The complex was technologically designed in the late 70s of the past century and cannot be described as specialized in the proper sense of the word because cargo is loaded immediately onto vessels with gantry cranes.

There are two car dumpers that are used for transhipment of coal; they can unload up to 270-280 jimmies daily. There are three defrosting devices with a total capacity of 60 carriages, classification yards, conveyor lines with a total extent of 1,500 m. There are pickup mechanisms such as gantry cranes "Sokol" and "Condor", mobile cranes "Liebherr", stackers, forklift trucks with hoisting capacity of 25 t. Coal loading rates are 7-10 thousand t daily. The port warehouses can hold 600 thousand t of coal of different ranks at a time.

Export terminal "TIS-Ore" in the Port of Yuzhny (Transinvest Company) (fig. 3).

Terminal capacity is 5 million t of pellet or 3,5-4 million t of coal per year. Transhipment takes place at berth No. 18, the length of the berthing line is 255 m, and the depth is 15 m.

Carriage discharge performance is 200 units daily. There is one car dumper and one defrosting device with a capacity of 15 carriages. The pickup mechanisms are: a shiploader (of 1,500 t/hr), a gantry crane "Sokol", 2 stackers and 1 scraper reclaimer. Daily rates of working a vessel are up to 30 thousand t.

Fig. 3. Export terminal "TIS-Ruda" ("TIS-Ore")

Export-import terminal "TIS-Coal" (port of Yuzhny). The complex is situated at two berths (№ 19 and № 20) whose total length of the berthing line is 510 m, and the depth is 15 m. The pickup mechanisms are two shiploaders (of 1,500 t/hr), two bucket unloaders, two stackers, two reclaimers, two railway car loaders. After commissioning of all the port capacities, ships loading rates will be 30-35 thousand t daily. The storage capacity of the warehouses is 1 million cub.m.

In the near future, the capacity of the said coal-and-ore complex on both terminals is planned to be increased up to 15 million t per year. The complex can accept vessels of 220 thousand dead weight tonnes, the aggregate capacity of the terminal being up to 7-10 million t.

Mariupol Sea Commercial Seaport. Port capacity is up to 5 million t of coal per year. Coal is transhipped at a specialised complex that was commissioned in 1972 (berth № 14 having the length of 263 m and the berth depth of 8,25 m). The terminal admits loading two vessels at a time, with deadweight of up to 10 thousand t. The complex is equipped with two car dumpers (each for 5 carriages), a defrosting device, three coal loaders; the warehouse is served by 2 reclaimers and 2 stackers. Vessels loading rates are: 6-8 thousand t daily.

In the port of Mariupol coal is also handled at berths № 11 and № 12 (being 165 m long and 9,75 m deep), berth № 18 (being 204 m long and 9,75 m deep), berth № 5 (being 210 m long and 8,5 m deep), berth № 13 (being 210 m long and 9,75 m deep). Vessels loading rates are 7 thousand t daily.

The berths of the port can accept vessels of up to 35 thousand dead weight tonnes. The warehouses of the port can hold up to 300 thousand t of coal at a time. The port can work up to 200 railway cars of coal daily.

The ports of Ilyichevsk, Nikolayev, Kerch, Berdyansk and Izmail that are engaged in transhipment of coal use cranage mechanization schemes that cannot satisfy the today's needs for efficiency of cargo handling complexes. The want for import of coal to Ukraine has considerably increased of late years, which is conditioned by the needs of the metallurgy industry; this particularly concerns coking coals. In this regard, organization of highperformance transhipment of imported coal becomes topical. The existing orientation of the ports to transhipment of export bulk cargo traffic does not allow for prospects of transhipment of imported cargos.

In the Ukrainian ports, as well as in those of the South of Russia, there are no complexes that have sufficiently high performance to accept imported bulked cargo, which is, undoubtedly, one of the most advanced and profitable lines of cargo traffic, in particular, if it deals with coking coal. The coal-and-ore complex of TIS is the only exception. The need for raising of imported bulk cargo capacity is true for the Russian ports, too; besides, it concerns all the ports of the Black Sea and the Sea of Azov.

3. Coal Transhipment in the Ports of the South of Russia. In the South of Russia there are no large terminals that are active in transhipment of

coal and iron ore and possess high storage capacity and depth allowing to load vessels that have high cargo carrying capacity.

The total freight turnover of coal in the ports of the South of Russia worked out at 8,5 million t in 2012. The largest one is the port of Tuapse (2,8 million t in 2012), and the rest pertain to the Sea of Azov basin (ports of Azov, Taganrog, Eysk, Rostov), and are limited in depth because of their geographical situation, which leads to rather small dimensions of consignments and, as a result, a limited extent of freight turnover.

As regards the prospects of increase in transhipment of coal in the Black Sea and the Sea of Azov basin of Russia, it can be observed that the Russian ports pertaining to the said basin can handle 8.5 million t per year. The potential growth is 1,5 million t and will hardly be increased if no new capacities are commissioned.

The extent of transhipment in Tuapse as the main Russian port for coal transhipment is doubtless affected by limitation of the capacity of the North Caucasian Railway because the turnover of cargos carried for the Olympic Games increased considerably, and in the nearest future the situation will hardly be changed and the railway will remain a bottleneck.

A possible development of the ports of Rostov, Azov, Eysk, and Taganrog will not exert any substantial influence upon the total volume of coal transhipment through the southern ports of the Russian Federation.

The prospects of construction of new deep-sea port in the south of Russia and, in the first place, construction of the port of Taman may essentially reduce the volume of transit of coal to the Ukrainian ports, but these prospects pertain, most likely, to the years 2016-2018.

Given the geographical position and technical equipment, the new Terminal of bulk cargos in the port of Taman will be able to come to the front and switch the considerable existing freight traffic off the Ukrainian ports. In addition to the Russian freight, the terminal will be able to attract cargos from Kazakhstan creating thereby a supplementary transit traffic through the Russian territory and ports.

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The leading directions of export of coal from the CIS in the southern region remain Turkey and the countries of Eastern and Southern Europe.

The Russian exporters to Turkey and the countries of the Southern and Eastern Europe try to form freight traffics through the southern ports of Russia.

Export freight traffics of the Kuzbass coal will gravitate to the southern ports of the Russian Federation. Demand for vessels of the small tonnage will grow in the Black and Azov seas.

High rates of a gain of port capacities of Russia and increase in volumes of transfer of freights allowed to redistribute substantially freight traffics of the foreign trade freights from ports of the adjacent states on the Russian ports and this tendency will proceed in the future.

4. Evaluation of Possibilities for the Port Infrastructure to Adapt to the Existing Structural Changes in Cargo Traffic. The practice of operation of the export-orientated coal terminals during many years has led to the situation when at present in the ports of the Black Sea – Sea of Azov basin virtually there are no full-fledged high-performance specialised import terminals (except for the terminal "TIS-Coal").

The total need for import terminals in the Ukrainian ports only is estimated at 10-15 million t. In order to satisfy this need, it is necessary both to adapt the port infrastructure to the current structural changes (complex reconstruction of the existing terminals) and to build new import-oriented cargo handling complexes. A number of projects were announced in 2008-2009, being related both to the state-run ports and to the private terminals, to be implemented in 2012.

Efficiency of implementation of similar projects depends of performance of four compulsory conditions:

- Availability of an adequate cargo base that should guarantee proper utilization of the port capacities to be put in operation;
- Availability of a sufficient area for placement of the store capacities and of the necessary handling facilities that will allow to perform loading and unloading works with the maximum efficiency and the least expenses possible (the technological component);
- Possibility of creation of a wharfage allowing to accept and work design ships of all types, without limitation, and ensuring safe navigation (the maritime component);
- Possibility of organization of railway traffic for delivery to a port/export from a port of estimated freight turnover, without limitation and unconditionally (the railway component).

Noncompliance with any one of these conditions will lead to inexpediency of implementation of the whole project.

It should be observed that as of summer 2013 none of the projects announced has been implemented!

- The project of construction of a new cargo handling complex in Ilyichevsk, with a double-sided pier, for vessels of up to 100 dead weight thousand t, and with capacity of 8 million t of coal and ore per year;
- The project of a cargo handling complex that should have the capacity of 1,2-3,8 million t in the port of Yuzhny, at berths № 9 and № 10. The length of the moorage wall is 2x285 m, and construction of new warehousing areas is planned for storage of 170 thousand t of cargo at a time;
- Construction of new berths in Mariupol, too, which shall allow increasing the port capacity in respect of coal and ore by 1,8 million t approximately before 2020;
- The deep-water berth "Moorages of Comintern" in the port of Yuzhny with a pier up to 300 m long and a capacity of up to 10 million t per year. The pier should accept two ships at a time. The storage capacity is 700 thousand t. Loading a vessel of up to 100 dead weight thousand t is calculated to be performed within 12-15 hours (fig. 4).

Fig. 4. The deep-water pier "Moorages of Comintern"

- The terminal of Smart-Holding in the port of Ochakov with a port capacity of up to 5 million t per year. It was planned to build a deep-water port with depths of up to 17 m on 400 hectares.

At present Portinvest company is planning to implement a project of construction of an import-oriented coal handling complex in the port of Yuzhny.

Possibilities for the port infrastructure to adapt to the current structural changes in cargo traffic shall be evaluated using the criteria as follows:

- The technological factor that allows to organize, with minimum expenditures, a reverse mode of delivery − export/import;
- The railway factor: reconstruction of the railway component, which will allow to build a cars loading station, together with the car unloading facilities and equipment available, and will ensure a reverse traffic of carriages loaded from the port to consumers;
- The maritime factor: reconstruction/reinforcement of the port structures in order to create a competitive wharfage (depth, length, operating load, etc.).

Reasoning from these prerequisites, it can be affirmed that presently only several Ukrainian ports can adapt their own infrastructure to the current structural changes of the cargo traffic.

In the first place, the ports of Yuzhny and Ilyichevsk shall be included in this category as meeting to all the criteria aforesaid; the port of Nikolayev, that has been showing an excellent dynamics in growth of its freight turnover for the last year and a half (125 % of growth in 2012 and up to 10-12 % of growth in the 1st quarter of 2013), may be included therein with some reservations.

Creation of full-grown specialised cargo handling complexes equipped with advanced technological facilities and a deep-water wharfage is planned in the ports of Yuzhny and Ilyichevsk. There are similar schemes of development for Nikolayev seaport.

The situation with the ports of Mariupol and Berdyansk on the Sea of Azov and the port of Kerch can be described as a bit more complicated. The geographical position of the said ports on the Sea of Azov, the natural limitation in draught, the heavy ice regime during the winter navigation, and the li-mited possibilities of development of the area concerned do not allow the above-mentioned ships to react promptly to any changes in the structure and direction of cargo traffic, whether at present or in the near future.

5. Assessment of Requirements for Investments for Modernization and Reconstruction of Ports. In order to assess the want for investments to be aimed at re-equipment and reconstruction, first of all, it is necessary to determine what re-equipment of the ports will lie in, and what reconstruction of the ports will lie in, and for which specific purposes. Beyond any doubt, this problem so foreshortened is particularly urgent, in view of the recently approved new Ukrainian Seaports Act of Ukraine under № 4709-VI.

In this connection, we would like to determine the list of the ports subject to modernization and reconstruction for extending the scope of services in the coal segment of the port business and to define the concepts of ‘modernization’ and ‘reconstruction’.

We understand by modernization the replacement of the equipment by more productive, change and improvement of technological schemes of work (a technological component), expansion and re-equipment of warehouses and their capacities.

We understand by reconstruction/strengthening of port structures the quays and piers reconstruction, improvement of their technical and operational characteristics (water depths, berthage lengths, operational loads on quay walls and so on).

The list of the main Ukrainian ports subject to re-equipment and reconstruction is as follows: port of Yuzhny, port of Ilyichevsk, port of Mariupol, port of Nikolayev (see table below).

6. Assessment of Capacity of Ports of the Region for Coal Transit Now and in the Future. Evaluation of the regional ports' potential for transit of coal requires not only information related to technical equipment of the ports, but also the transit rates formation system. Judging from the analysis of the technical information, as well as statistical data concerning transit of coal through the ports of Ukraine of late years, we can make up conclusions as follows.

Assessment of requirements for investments
for modernization and reconstruction of ports (till 2018, the forecast)

Name of the port	Modernization				Reconstruction/strengthening			
	Entities	mio. USD	Entities	mio. USD	Entities	mio. USD	Entities	mio. USD
Yuzhny	Berths № 5, 6	12-15,0	Berths № 10-12	65-70,0	Channel deepening to - 21,0 m	320,0	Strengthe-ning/recon-struction	17,5
					Water area deepening to -20,0 m	75,0	New construction	70,0
Illichevsk	Berths № 9, 10	10-12,0	Berths № 9, 10	35-40,0	Channel deepening to -17,0 m	50,0	Strengthe-ning/recon-struction	15,0
							New construction	50,0
Mariupol	Berth № 14	20-25,0	Berth № 14	25-30,0	Water area	10,0	Strengthe-ning/recon-struction	10,0
							New construction	30,0
Nikolayev	Berths № 9-11	12-15,0	Berths № 9-11	25-30,0	Water area to -12,0 m	40,0	Strengthe-ning/recon-struction	10,0
							New construction	30,0
		54-67		150-170		495,0		232,5

Others		**20**		**50**		**20,0**		**30,0**
Total		**90,0**		**220,0**		**515,0**		**262,5**

The share of transhipment of coal in transit through the Ukrainian ports has been gradually reducing for the last five years in favour of the Baltic ports. Thus, in 2008 approximately 38 % of the Russian coal in transit passed through the Ukrainian ports, in comparison with the 62 % that fell on the Baltic ports. In 2012 this correlation changed and was 21 % to 79 % in favour of the Baltic ports, at that the transit traffic of coal through the Baltic ports showed an increase by 13 %. On the whole, for the last 5 years the extent of the transit of coal through the Ukrainian ports has reduced by 60 % from 14,9 million t to 5,6 million t.

The key factor of reduction of transit traffic through Ukraine is increase of the rates established by the Ukrainian State Administration of Rail Transport (the Ukrzaliznytsya). Within the period from 2007 till 2012 the rates for transit traffic of coal on the route from the station of Topoli (on the border with Russia) to the port of Yuzhny increased by 125 %. Meantime for the analogous period Latvia, the main competitor, refused fully to increase the rates, and the Byelorussian rates increased by more than 20 % for the analogous period. At present the cost of transportation of 1 t/km of the Russian coal on the Byelorussian railroad is 1,7 time less than the Ukrainian rates.

If the Ukrzaliznytsya applies a more flexible tariff policy, Ukraine will be able to recover the volume of the Russian coal in transit up to the level of 2010. A difference in the rates valued at USD 5,00 per tonne of coal makes the Ukrainian railroad uncompetitive for the Russian transit.

The current rates for rail transportation of coal in transit from the Russian Federation to the port of Ventspils (Latvia) on the Byelorussian railroad are USD 4,00/t, on the Latvian railroad − EUR 7,00/t (USD 9,1/t), to the amount of USD 13,1/t, allowing for return of an empty car. Upon transportation on the main route of the Russian transit in Ukraine to the port of Yuzhny, an analogous rate is USD 18,3/t (the basic rate of USD 14,5/t + payment for return of an empty car of USD 3,8/t). Upon comparison of the rates for transhipment in the Ukrainian and Baltic ports, the difference in the transportation costs is about USD 5,2/t, and this factor makes the Ukrainian direction uncompetitive, in contrast to Latvia.

Technically, all the main Ukrainian ports engaged in transhipment of coal (those of Yuzhny, Mariupol, Ilyichevsk, and Nikolayev) are ready to accept transit traffic, whether at present or in the future in case of any increase thereof. However, given the trend of events, no real increase in transit traffic through the Ukrainian ports in is in view in the near future.

Conclusions. The results of the analysis of the current situation of the Ukrainian ports and ports on the South of Russia within the coal segment enable us to make up the conclusions as follows:

- The aggregate freight turnover of all the regional ports and terminals worked out at 451,5 million t in 2012, where the Russian and Ukrainian ports accounted for more than 73 % of the total (331 million t);

- In the aggregate, the Ukrainian port sector possesses the port capacity of over 180 million t;
- The annual freight turnover of all the Ukrainian terminals and ports amounted to 154,3 million t in 2012 (which is 99,2 % of the total of 2011), that is to say that the Ukrainian ports used 86 % of their capacity;
- The portion of coal cargos in the freight turnover was about 12 million t (7,7 %);
- The aggregate freight turnover of the ports located in the South of Russia worked out at 176,7 million t; the portion of coal cargos constituted about 8.5 million t (4,8 %);
- The existing Ukrainian terminals have capacity allowing handling over 30 million t of coal and about 60 million t of ore per year;
- The Ukrainian largest coal-handling ports are those of Mariupol, Yuzhny, Nikolayev, Berdyansk, Kerch, Izmail, and Ilyichevsk;
- The largest ports of the South of Russia dealing with coal are those of Tuapse, Temryuk, Azov, and Taganrog;
- The want for import of coal to Ukraine has considerably increased of late years, which is conditioned by the needs of the metallurgy industry; this particularly concerns coking coals;
- The existing orientation of the ports to transhipment of export bulk cargo traffic does not allow for prospects of transhipment of imported cargos;
- In the Ukrainian ports, as well as in those of the South of Russia, there are no complexes that have sufficient high performance to accept imported cargo traffic;
- A possible development of the ports of Rostov, Azov, Eysk, Taganrog, and Temryuk will not exert any substantial influence upon the total vo-lume of coal transhipment through the southern ports of the Russian Federation;
- The construction of new deep-sea port in the south of Russia and, in the first place, construction of the port of Taman may essentially reduce the volume of transit of coal through the Ukrainian ports;
- According to the forecast for 2018, the want for investments for reconstruction and re-equipment of the main coal-loading ports is approximately USD 1 billion;
- Despite some surplus of reloading capacities in the ports of Ukraine, it is necessary to recognize expedient creation of specialized reloading complexes of an import and export orientation in ports Yuzhny and Ilyichevsk taking into account a demand of the deep-water terminals, allowing to accept/send big ship parties;
- In recent years transit of coal and coal cargos was steadily going down. The share of transhipment of coal in transit through the Ukrainian ports has been gradually reducing for the last five years in favour of the Baltic ports;

- On the whole, for the last 5 years the extent of the transit of coal through the Ukrainian ports has reduced by 60 % from 14,9 million t to 5,6 million t;
- Technically, all the main Ukrainian ports engaged in transhipment of coal (those of Yuzhny, Mariupol, Ilyichevsk, and Nikolayev) are ready to accept transit traffic, whether at present or in the future in case of any increase thereof.

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