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DIRECTIONS OF INNOVATIVE DEVELOPMENT OF TRANSPORT LOGISTICS IN UKRAINE

Topicality. *Technological innovations of the fourth industrial revolution have had a significant impact on the development of logistics and the organization of logistics and transportation throughout the world. These processes were also facilitated by the globalization of international trade, the transnationalization of large companies, and the growth of volumes of commodities' production, which involves the unrestricted movement of resources and goods between countries and continents, which can only be realized under the presence of a strong and developed transport and logistics infrastructure. The growing role of transport and logistics services is confirmed by the UNCTAD data, according to which 63 % of the World's volume of investment stock belongs to the services sector, 23.4 % of which - to the transport and logistics services. The geo-strategic position of Ukraine allows it being a convenient place for transit transportation of cargoes and passengers between the countries of Europe, Asia and the Middle East. Four Crete transport corridors pass through Ukraine. The transit transposition of Ukraine is an absolute advantage of the country, which makes national market attractive for foreign investors and producers.*

World trends show, that recently in the sphere of transport logistics, new cargo delivery technologies and innovative approaches to transport infrastructure have emerged. That is why the relevance of the choice of the paper topic is related to the study of the impact of innovative technologies of the fourth industrial revolution on the development of transport logistics. There is a large number of ambitious projects that will be analyzed in this study. This will allow us formulating suggestions on the implementation of the most promising projects of transport logistics to implement them in Ukraine. They will be aimed at increasing the competitiveness of both logistics enterprises and the country as a whole.

Aim and tasks. The purpose of the article is to study the impact of innovative technologies on the development of transport logistics in Ukraine and to formulate suggestions on the implementation of the most promising projects into the transport and logistics infrastructure of Ukraine.

Research results. The article reveals the main meta-trends in the development of logistics for the nearest future, namely: 3D printing, IoT, UAV, autonomous transport and underground cargo delivery.

The analysis of the logistics market showed, that in Ukraine over the past 10 years the development of logistics has showed a predominantly negative dynamics : almost no water transport (only 1 % of total freight turnover); due to the state of roads and restrictions on the traffic of large-sized transport, only recently road haulage has begun to show a positive dynamics, while rail transport is still the main type of cargo transportation in Ukraine. The project of a logistics infrastructure for underground cargo delivery for the Odessa region and Ukraine as a whole is suggested. Within the framework of this project, a possibility, the potential cost and the profit from the implementation of the underground cargo network in Ukraine have been analyzed. According to the analysis, at the expense of the profit from this project, the payback period will be 7 years, and only one year after the project implementation the profit is expected to increase by 51 %.

Conclusion. Ukraine has an extremely favorable geopolitical location; several international transport corridors pass through the country, but at the moment the degree of the use of transport infrastructure in Ukraine is rather low. In recent years, the country has been active in supporting initiatives related to the development of international transport corridors, defining their creation and development as a priority direction in the development of the transport complex of Ukraine. According to the analysis, the attraction of investments for the introduction of modern transportation technologies will lead to a significant increase in the profit from freight transportation and will allow Ukraine to take the leading position in the market of logistics services in Europe.

Keywords: innovative technologies in logistics, logistic approaches, trends in logistics, IoTs, unmanned aerial vehicles, autonomous transport, underground cargo delivery.

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НАПРЯМИ ІННОВАЦІЙНОГО РОЗВИТКУ ТРАНСПОРТНОЇ ЛОГІСТИКИ В УКРАЇНІ

Актуальність. Технологічні інновації четвертої промислової революції здійснили значний вплив на розвиток логістики та організацію логістичних підходів та транспортних перевезень в усьому світі. Цим процесам також сприяла глобалізація міжнародної торгівлі, транснаціоналізація великих компаній та

зростання обсягів виробництва товарів, що передбачає безперешкодне переміщення ресурсів та товарів між країнами й континентами, яке можливо здійснити тільки при наявності потужної та розвинутої транспортно-логістичної інфраструктури. Зростаючу роль транспортно-логістичних послуг підтверджують дані UNCTAD, згідно з якими 63 % світового обсягу накопичених інвестицій приходить саме на сферу послуг, в якій 23,4 % складають саме транспортно-логістичні послуги.

Геостратегічне положення України дозволяє їй бути вигідним місцем для транзитних перевезень вантажів та пасажирів між країнами Європи, Азії та Близького Сходу. По території України проходить чотири Критських транспортних коридорів. Транзитне положення України – є абсолютною перевагою країни, яка надає привабливості національному ринку для закордонних інвесторів та виробників товарів.

Світові тенденції свідчать, що в сфері транспортної логістики в останні роки з'явилися нові технології доставки вантажів та інноваційні підходи щодо транспортної інфраструктури. Саме тому, актуальність вибору теми пов'язана дослідженням впливу інноваційних технологій четвертої промислової революції на розвиток транспортної логістики. З'являється велика кількість амбітних проектів, які будуть проаналізовані в даному дослідженні, що дозволить сформулювати пропозиції щодо впровадження найбільш перспективних проектів транспортної логістики з метою їх реалізації в Україні, які будуть направлені на підвищення конкурентоспроможності як логістичних підприємств, так й країни в цілому.

Мета та завдання. Метою даної статті є дослідження впливу інноваційних технологій на розвиток транспортної логістики в Україні та формування пропозицій щодо впровадження найбільш перспективних проектів в транспортно-логістичну інфраструктуру України.

Результати. В статті виділені основні метатренди в розвитку логістики на найближче майбутнє, а саме: 3D друк, IoT, БЛА, автономний транспорт та підземна доставка вантажів.

Проведений аналіз ринку логістики показав, що в Україні за останні 10 років спостерігається переважно негативна динаміка у розвитку логістики: майже не використовується водний транспорт (лише 1 % загального вантажообігу), через стан доріг та обмеження руху великогабаритного транспорту лише останні роки автомобільні перевезення почали показувати позитивну динаміку, а основним видом вантажоперевезень для України все ще залишається залізничний транспорт.

Запропоновано проект логістичної інфраструктури підземної доставки вантажів для Одеського регіону та України в цілому. В рамках даного проекту проаналізовано можливість, потенційну вартість та прибуток від реалізації в Україні мережі підземних вантажоперевезень. За результатами аналізу, за рахунок прибутку від даного проекту, термін окупності складатиме 7 років, а вже через рік після впровадження проекту очікується зростання прибутку на 51 %.

Висновки. Україна має надзвичайно вигідне геополітичне місцезнаходження, через територію країни проходить низка міжнародних транспортних коридорів, але на даний момент ступінь використання транспортної інфраструктури в Україні є досить низькою. Останні роки країна веде активну політику підтримки ініціатив розвитку Міжнародних транспортних коридорів, визначає їх створення та розвиток, як пріоритетний напрямок розвитку транспортного комплексу України. Згідно проведеного аналізу, залучення інвестицій для впровадження сучасних технологій транспортування призведе до значного зростання прибутку від вантажоперевезень й дозволить Україні зайняти лідируючі позиції на ринку логістичних послуг Європи.

Ключові слова: інноваційні технології в логістиці, логістичні підходи, тренди в логістиці, ІОТ, безпілотні літальні апарати, автономний транспорт, підземна доставка вантажів.

Problem statement and its connection with important scientific and practical tasks. The development of the technologies of the fourth industrial revolution significantly influenced the innovative solutions in the field of transport logistics. This is the transport industry that is the sphere of logistics that is prone to changes taking place against the background of innovation changes. Significant influence on the transformation of transport logistics is made by the following technologies: technology "Big Data"; unmanned vehicles; Artificial Intelligence; robotics and services; Blocks chain technology; 3D printing technology; smart cities and homes. All these global trends affect the technological changes taking place in logistics systems, which actualizes the study and the analysis of the impact of such changes on the logistics sphere. Transport logistics was one of the first to react to systemic changes in technology and introduced elements of robotics and artificial intelligence into its operations. Against this background, the issue of prospects for the further development of Ukrainian transport logistics and the influence of the innovative component on this process are raised in the context of Ukraine's integration into European logistics infrastructure.

Analysis of recent publications on the problem. In the scientific literature, the considerable attention is paid to the issues of the development of logistic concepts, logistics systems and transport logistics. Problems of the development of the logistic concept of the country are thoroughly studied in the scientific works of domestic researchers, among which such economists as: M. Oklander [4], E. Kricavsky [2.3], N. Chukhrai made a significant contribution. So, M. Oklander [4] formed the theoretical and applied provisions

of the logistic mechanisms of adaptation of enterprises to the external environment and suggested the principles and the structure of the logistics system of the enterprise. E. Krikavsky paid special attention to the study of problems of optimization of logistics costs and the system of their estimation. [3]. In addition, foreign scientists such as Ronald Lewis [9], Michael O'Guin [10], Robert Kaplan and Thomas Johnson [11] engaged in problems of logistics systems of different levels and fields of activity. Despite the enormous contribution to the logistics theory, there is a need to explore the directions of innovative development of transport logistics in Ukraine.

Allocation of previously unsolved parts of the general problem. Problems of studying the influence of innovative processes on the development of Ukraine's transport logistics system remain unresolved. Implementation of world technological experience requires adequate technologies of management of logistics enterprises of Ukraine. Effective innovative development of transport and logistics sphere becomes possible in the conditions of formation of the newest logistic systems, and it will promote creation of a positive image of Ukrainian enterprises and the formation of a stable transport and logistic system in Ukraine.

Formulation of research objectives (problem statement). The purpose of this article is to study the impact of innovative technologies on the development of transport logistics in Ukraine and to formulate suggestions on the implementation of the most promising projects into the transport and logistics infrastructure of Ukraine.

An outline of the main results and their justification. Logistics has always evolved due to the introduction of new technologies and the increase in their efficiency. In recent years, there has been a significant breakthrough in the growth of the global market for logistics services, whose real capacity is estimated at 10.32 USD trillion in 2018. The fastest growing sector is the transport services market, which is increasing by 7 % annually starting from 2011. Moreover, 42 % of the world's transport services sector belongs to the United States, whose revenue in 2018 amounted to \$ 4.8 USD trillion [5]. According to a study of EFT, the world leader in the field of business intelligence for transport, logistics and supply, based on the third party logistics (3PL - Third Party Logistics) - the concept related to the logistics of services purchase, the main trends of logistics development are the following:

1. 3D PRINT

The analysis of statistical data allowed us to conclude that more than 40 % of 3PL customers expect the company to experience 3D printing. 19.2 % of manufacturers and retailers already use 3D-printing in their business. However, only 1.5 % of them can guarantee the quality of such services.

The role of logistics. 3D printing allows you to adjust local production (decentralized), which contributes to the development of regions. This allows you to be closer to the markets. 3D printing is capable of satisfying any customer requests. This direction narrows the need to deliver goods over long distances. It stimulates the development of local markets and production sites, and, as a consequence, it fasters satisfaction of customer requests. It is no longer necessary to produce in advance and to store many spare parts for machinery, since they can be printed on demand. Only digital edition layout is required. This trend contributes to a significant reduction in inventories and, in general, revolutionizes inventory management systems.

2. INTERNET OF THINGS (IOT).

Situation market analysis has shown that 26.25 % of 3PL logistic providers currently use M2M technologies ("machine to machine"). 46.62 % plan to do this in the future. 47 % of respondents said that IOT would have a huge impact on logistics. Only 3 % deny this fact.

The role of logistics. The "Internet of Things" technology allows you to keep in touch with the production sites and to control the processes taking place on them, namely: machine performance, environmental conditions, energy performance, inventories and materials. In addition, IOT provides remote monitoring of the entire logistics process. Online stuff allows you to control the work of equipment and staff, which increases the safety and efficiency of work.

3. UAV (UNMANNED AERIAL VEHICLES)

According to conducted studies, 36 % of respondents believe that during 5-10 years there will be an unmanned form of delivery of goods and passengers. In the present, there are China-US projects directed on the creation of a cargo transportation system using UAV with appropriate logistics infrastructure. Moreover, 6.3 % of respondents assert that in 10 years this will be a common occurrence; 27.31 % believe that such a rapid appearance of unmanned shipping is unlikely; 5.88 % are sure that robotics in this field will not happen at all. However, 31 % of manufacturers and retailers would like logistic companies to use unmanned aerial vehicles to deliver products.

The role of logistics. UAVs can be successfully used for delivery in city conditions: for the first (from the starting point) and the last (final stage) miles. In rural areas, unmanned vehicles can significantly facilitate delivery to areas with underdeveloped infrastructure, where there are no roads or other means of communication. Google is already working on this in Project Wing, which is already being tested in Australia. In the future, customers will also be able to watch real-time movement of the UAV, that delivers its cargo.

4. AUTOMOBILE TRANSPORT

According to studies, 42 % of manufacturers and retailers would like the 3PL-companies to have the appropriate qualifications and experience in the management of freight transport. However, only 0.75 % of the 3PL representatives have such competencies. Only 1,5 % not only know, but also know how to manage a vehicle in a qualitatively independent manner. 12.78 % of 3PL-companies claim they have a theoretical idea of automotive delivery, of which 6.02 % have a desire to increase their competence in this area. *The role of logistics.* The main advantage of logistics is considerable savings. For example, AXA UK, an insurance company, has calculated that autonomous vehicles will help logistics to save £ 34bn [5].

5. LAND CARGO DELIVERY

Such a delivery system is already being sought by countries such as the United States, Switzerland, China and Germany. Ukraine can take foreign experience, for example, a group of scientists from Bochum (Germany) has created a capsule that will transport goods underground. It is a hermetic structure 1,6-meter-high that will transport a wide variety of goods along the metro and highways at a speed of 35-40 km / h.

The role of logistics: cost-effectiveness and the possibility of using existing underground tunnels for transportation; the presence of Ukrainian manufacturers in the field of mechanical engineering, which can provide the production of the necessary transport equipment.

The dynamics of freight traffic in Ukraine is ambiguous, as evidenced by statistical data [1] (Fig. 1).

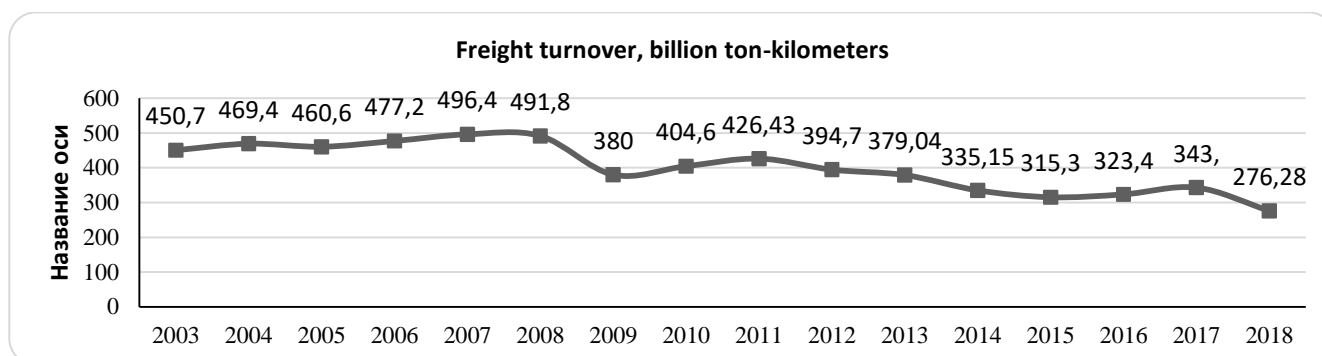


Fig. 1. Dynamics of cargo turnover in Ukraine for 2003-2018

Source: [1]

For a long time, there was a tendency to fall, but in recent years, freight turnover has begun to increase. Railways remain the most involved in the existing modes of transport in Ukraine. It takes more than half of the modern domestic logistics market. The second place belongs to road transport. Rail transport is best suited for moving large volumes of cargo over considerable distances (Fig. 2.). The intensity of its use depends, to a large extent, on the state of such industries as metallurgy and construction.

In 2018, 54 % of the tonnage of rail cargoes was made up of iron and manganese ore, coal and building materials. The role of the railways in the implementation of transit traffic is shown on Fig. 2 [1].

Volumes of auto-transportations began to recover already in 2016, and their growth have been gradually continuing till the present. The main risk factors for this industry are the state of roads and the limitation over the traffic of large-sized transport.

Analysis of the logistics market shows that the potential of water transport is not sufficiently utilized in Ukraine. It now occupies only 1 % of cargo turnover and its role continues to decrease. Meanwhile, up to 60 million tons of cargo can be transported only on the river Dnieper annually. The limiting factors are the lack of vehicles, riverbeds and high fees for the use of water infrastructure (Fig. 3) [1].

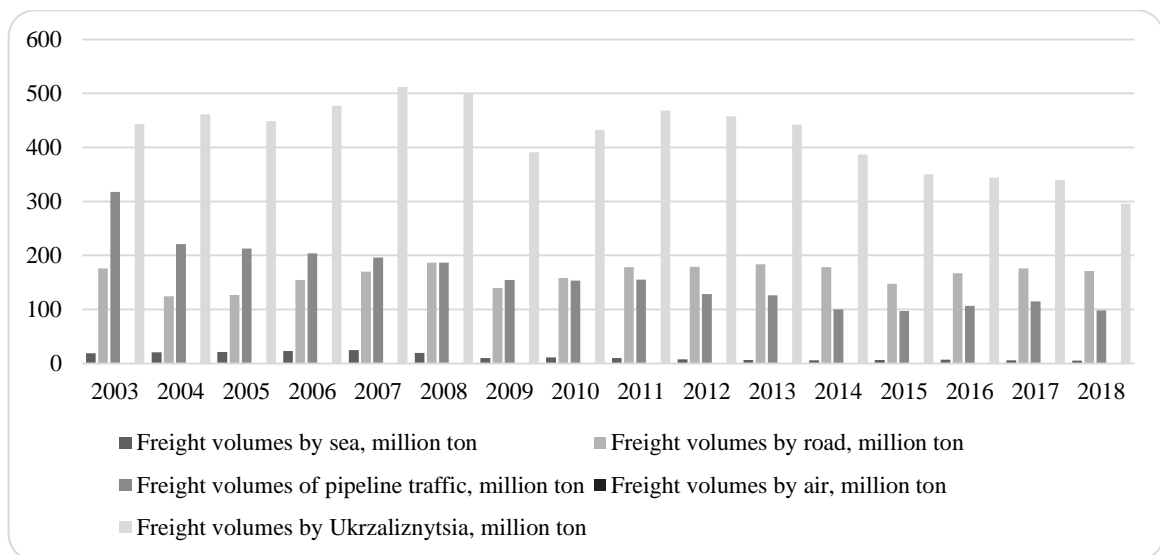


Fig 2. Volumes of cargo transportation by types of transport in Ukraine

Source: [1]

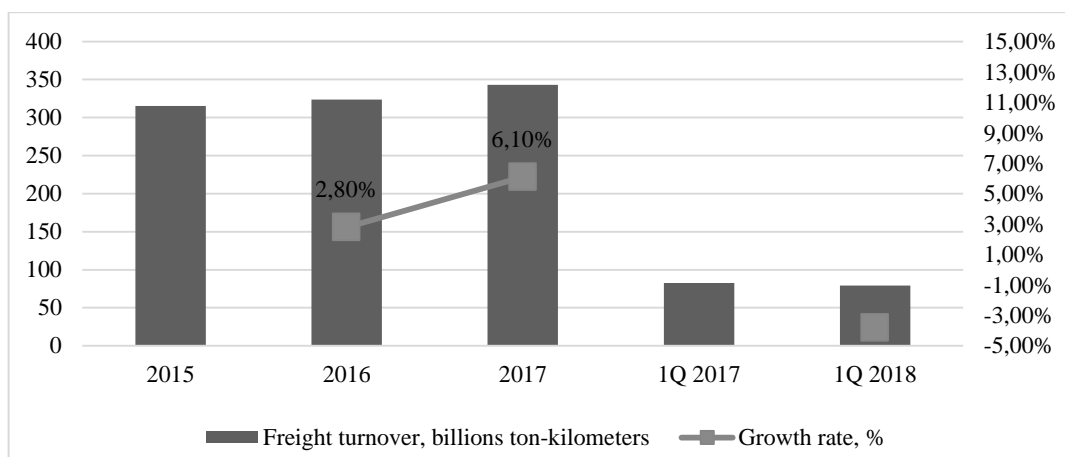


Fig. 3. Dynamics of the volume of freight in Ukraine in 2015 – 1 quarter of 2018, billion tons/km

Source: [1]

In general, according to the correlation analysis carried out in the paper, rail transport has the largest impact on the total volume of cargo transportation ($R = 0.96$), at the second place is water transport ($R = 0.85$), and at the third place- pipeline transport ($R = 0.77$).

In 2018, Ukraine ranked 66th of 160 countries regarding logistics efficiency, gaining 2.83 points. This is evidenced by the World Bank's rating of Logistics Performance Index 2018. Compared to the previous rating (the study is conducted once in two years), Ukraine in total moved by 14 positions (Fig. 4). Ukraine settled between Serbia and Egypt, and it became the third after Estonia (3.31 points and 36th place) and Lithuania (3.02 points and 54th place) in post-Soviet space [7].

The total ranking accumulates five areas for which research is conducted. In the section "customs procedures" Ukraine gained 2.49 points, in "infrastructure" - 2.22 points, in "international transportation of goods" - 2.83 points, in "logistics competence" - 2.84 points, in "tracking of goods" - 3.11 points, for "timeliness" of delivery - 3.42 points (Table 1).

World Bank's Logistics Performance Index 2018

Country	Year	LPI Rank	LPI Score	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Rwanda	2018	57	2,97	2,67	2,76	3,39	2,85	2,75	3,35
Colombia	2018	58	2,94	2,61	2,67	3,19	2,87	3,08	3,17
Bahrain	2018	59	2,93	2,67	2,72	3,02	2,86	3,01	3,29
Philippines	2018	60	2,90	2,53	2,73	3,29	2,78	3,06	2,98
Argentina	2018	61	2,89	2,42	2,77	2,92	2,78	3,05	3,37
Ecuador	2018	62	2,88	2,80	2,71	2,75	2,75	3,07	3,19
Kuwait	2018	63	2,86	2,73	3,02	2,63	2,80	2,66	3,37
Iran, Islamic R	2018	64	2,85	2,62	2,77	2,76	2,84	2,77	3,36
Serbia	2018	65	2,84	2,60	2,60	2,97	2,70	2,79	3,33
Ukraine	2018	66	2,83	2,49	2,22	2,83	2,84	3,11	3,42
Egypt	2018	67	2,82	2,60	2,82	2,79	2,82	2,72	3,19

Source: [7]

The higher the score, the stronger the position of the country in this category. Germany takes leading position in the ranking with a total score of 4.2 LPI. It is followed by Sweden, Belgium, Austria and Japan. The next top-5 are: Netherlands, followed by Singapore, Denmark, the United Kingdom and Finland (Fig. 5).

Table 2

Leaders of the World Bank's Logistics Performance Index 2018

Country	Year	LPI Rank	LPI Score	Customs	Infrastructure	International shipments	Logistics competence	Tracking & tracing	Timeliness
Germany	2018	1	4,20	4,09	4,37	3,86	4,31	4,24	4,39
Sweden	2018	2	4,05	4,05	4,24	3,92	3,98	3,88	4,28
Belgium	2018	3	4,04	3,66	3,98	3,99	4,13	4,05	4,41
Austria	2018	4	4,03	3,71	4,18	3,88	4,08	4,09	4,25
Japan	2018	5	4,03	3,99	4,25	3,59	4,09	4,05	4,25
Netherlands	2018	6	4,02	3,92	4,21	3,68	4,09	4,02	4,25
Singapore	2018	7	4,00	3,89	4,06	3,58	4,10	4,08	4,32
Denmark	2018	8	3,99	3,92	3,96	3,53	4,01	4,18	4,41
United Kingdom	2018	9	3,99	3,77	4,03	3,67	4,05	4,11	4,33
Finland	2018	10	3,97	3,82	4,00	3,56	3,89	4,32	4,28

Ukraine plays the role of a transit transport bridge connecting the countries of Europe and Asia. A number of international transport corridors pass through the territory of Ukraine: pan-European transport corridors No. 3, 5, 7, 9 (Fig. 4).

For the last 8-10 years, Ukraine has been active in supporting the European initiatives on the ITC, proposing its variants of corridors for the European Community. According to the research results of the English Institute "Rendel", in terms of the transit coefficient, Ukraine ranks first in Europe. However, today the level of the use of transport infrastructure in Ukraine is still quite low. Creation of transport corridors and their entry into the international transport system is recognized as a priority national direction of development of the transport-road complex of Ukraine.

Corridors of the Organization for the Cooperation of Railways (OSZ) Nos. 3, 4, 5, 7, 8, 10, Trans-European Transport Network (TEN-T) are represented on Fig. 5.



Fig. 4. Pan-European transport corridors

Notes: [5]

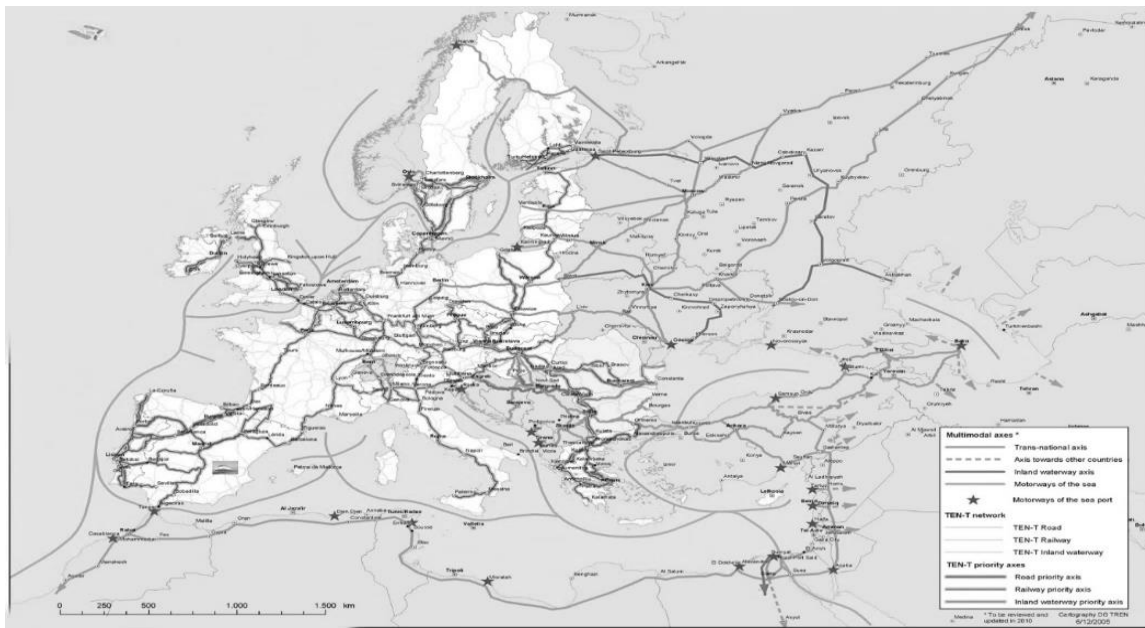


Fig. 5. Trans-European Transport Network (TEN-T)

Notes: [5]

The Trans-European Transport Network (TEN-T) is an infrastructure project of the European Union, which began in 1996. In 2016, Ukraine officially became the part of the Pan-European transport network TEN-T, which aims to improve motorways, railways, airports, inland waterways, as well as to coordinate comprehensively the entire traffic system.

In an international conference held under the leadership of the European Union in Brussels Georgia, Armenia, Azerbaijan, Kyrgyzstan, Tajikistan, Turkmenistan, Kazakhstan, and Uzbekistan agreed in May 1993 to hold an EU program aimed at developing a transport corridor from Western Europe through the

Black Sea, Caucasus, Caspian Sea to Central Asia. The program was called Traseca (the English abbreviation of the "transport corridor Europe-Caucasus-Asia") (Fig. 6). In 1996, at the conference in Athens, TRACECA program included Ukraine.



Fig. 6. Corridor Europe - Caucasus - Asia (TRACECA)

Notes: [5]

Taking into account the importance of Ukraine as a transit country and modern trends in the development of innovative technologies in logistics, it is proposed to form an underground cargo delivery system. Thus, the main suggestion for Ukraine is the creation of an automated underground cargo delivery system with digital control. This will ensure safe, reliable and timely delivery of containers, pallets and parcels through the underground tunnel transport system. Unmanned trolleys with cargoes will run along the tunnels. With the help of Internet devices, it is possible to monitor the movement of trolleys and other logistics processes. The whole system will work from renewable energy sources. This will reduce the amount of CO₂ emissions by 80 %. An underground cargo delivery can connect, for example, an airport with a factory, a warehouse with a warehouse, a warehouse with a port, and so on. At the first stage of the formation of underground delivery, it is possible to activate already existing tunnels through the use of some parts of the catacombs. In the future, transportation will be carried out between cities and countries.

The following advantages of underground cargo delivery should be noted:

1. Solving the ecological problem of large cities, caused by the work of overland transport;
2. Implementation of this project will allow to reduce by 40 % the number of lorries on Ukrainian roads;
3. Such a delivery system does not depend on external natural and climatic conditions;
4. Delivery speed will increase considerably;
5. Save the city space without change;
6. Provides an uninterrupted and efficient logistics system;
7. Improve delivery in densely populated cities through the use of small self-propelled cars that will travel underground.

Construction of one kilometer of tunnel for laying high-speed bilateral transit route will cost about 20 USD million. Construction of the stations of entry and exit from the tunnel will cost additional 70 USD million for each object. It is therefore expedient to attract investors from China. The key areas for investing in Chinese companies in the "One Belt, One Way" initiative are energy, transport infrastructure, logistics, real estate. First of all, China is interested in the New Silk Road through Ukraine which will connect Europe and Asia (Fig. 7).



Fig. 7. "New Silk Road" through Ukraine

Notes: [6]

China invests a lot of money into the development of countries along the New Silk Road (Fig. 8). By 2020, investments will reach 800 USD billion. And the annual trade between China and the participating countries will amount to 2.5 USD trillion [8]. Involving large state-owned Chinese capital in Ukraine will reduce the risk of escalating Russia military action on the territory of Ukraine and will increase the geostrategic value of Ukraine for China.

It is suggested to run this project, which will have two stages.

The first stage involves the creation of a pilot way of underground cargo delivery within Odessa, using existing tunnels (catacombs). It is planned to create three main networks, which will connect the Odessa port with three branches: with the warehouse area in the area of the market "7 km."; with airport; with the train station. Production of all components may be provided by the involvement of domestic producers to the project. It is necessary to conduct tracks, electrification of the tunnel and manufacture of railway capsules (Kryukov carriage building). Costs for the implementation of the first stage of the project are presented in Table 3.

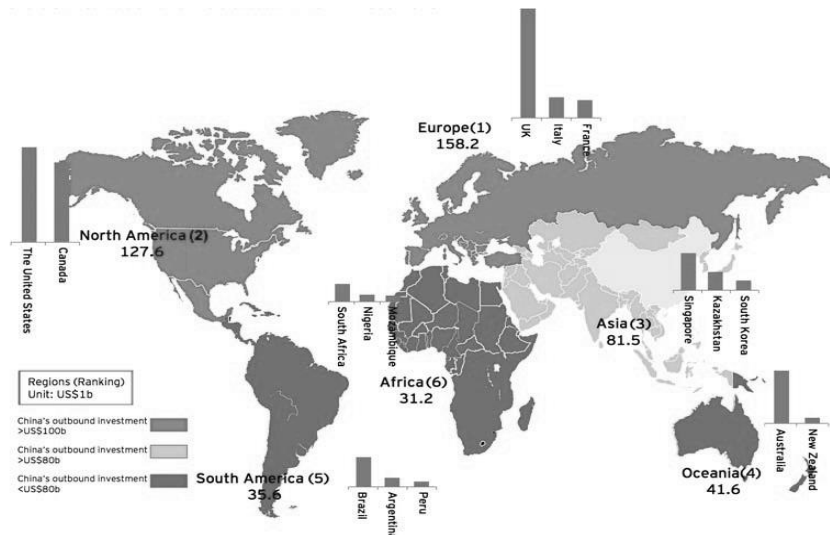


Fig. 8. China's foreign direct investment in the world

Notes: [6]

The second stage of the implementation of this project involves the formation of a system of underground cargo delivery in parallel with the passage of the Pan-Eurasian Corridor with the involvement of Chinese investors.

The estimated costs of implementing this project are presented in Table 3.

Basic calculations for the implementation of the project for underground cargo delivery

Necessary steps for project implementation	Cost, USD mln
Stage I (for the Odessa region)	
Creating 3-way tunnels	400
Conducting tracks 20 km. length	35
Electrification of the tunnel	10
Purchase of carriage capsules	900
Total for Stage I:	1345
Income from service sales (UAH th)	1.92
Stage Payback Period	3 years
Stage II (for the Pan-Eurasian Corridor)	
Foreign investments	800000
Domestic investments	100000
Total for Stage II:	900000
Payback period of II stage	7 years

Notes: [6]

Taking into account the profit from sales and expenses for the implementation of this project, Ukraine will receive a projected profit growth of 51 % after the first year of its implementation.

The payback period of the second stage of the project, based on the ratio of growth rates of freight turnover and the costs for its implementation, will be 7 years.

Conclusions and perspectives of further research. The main problems of virtually all structural elements of logistics infrastructure in Ukraine are the high level of its physical and moral deterioration. In fact, the logistics infrastructure of all modes of transport has not been properly supported for years, it has not been updated, and now it does not meet the requirements of international logistics operators.

The development of transport infrastructure is an important factor not only in integrating Ukraine into the world economic space, but also in integrating the social and economic space of our country, which not only links the regional system of resettlement and production but also contributes to the specialization and co-operation of sub-objects of management. The modernization of logistics infrastructures, which has remained almost unchanged since the 90s of the last century, raises not only the task of replacing outdated equipment and engineering structures, but the need of their complex and systematic processing in accordance with new technologies for the processing of freight flows. Accordingly, the problems of research regarding the introduction of innovations into logistics infrastructure are actualized.

The EU's transport policy aims to promote environmental, safe and efficient mobility throughout Europe, to support the internal commodity market and to ensure the right of citizens to move freely throughout the EU. According to the new EU infrastructure strategy, transport sector funding will triple by 2020 and will reach 26 billion euros. At the same time, the financing of the transport sector will be reoriented to a clearly marked new core network, which will form the basis of the transportation system within the single European market. Its implementation will be facilitated by the creation of 9 major transport corridors that will be joined by EU Member States and stakeholders, which will allow concentration of scarce resources and achieving concrete results. This is a positive decision for Ukraine, since three of these nine transport corridors go to the borders of our country, and we can participate in joint projects for their development, including the implementation of underground logistics.

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