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UKRAINE'S INDUSTRY DURING THE WAR: LOSSES AND PRIORITIES FOR RECOVERY

Abstract. *The article is devoted to an important factor of survival and stability of the economy in the future, which is the industry. The authors summarize the estimates of industrial losses provided by various organizations and provide their views on approaches to estimating potential industrial losses. It is proposed to support industries that produce high-tech goods that can meet domestic demand and preserve export potential, as well as create new jobs for postwar reconstruction, which will not only preserve existing industrial potential, but also achieve its revival in the new technological and scientific-innovative level. In this context, the sectoral priorities for the development of light, chemical and construction materials industries are substantiated. The potential losses and destruction of production capacities in these spheres of industrial development were monitored, actions to restore their potential and strategic goals of sectoral development were substantiated, taking into account the provision of national interests.*

Keywords: *industry, losses, post-war reconstruction, labor market, industry staffing*

Introduction. Hybrid wars surpass traditional armed conflicts in their multiplicity and scale of consequences, causing critical consequences: destruction of industrial and social infrastructure, enterprises and housing, sometimes settlements and localities (military uricide, habitat destruction), man-made threats (destruction of ecosystems (ecocide)); humanitarian crises related to the unavailability of food, medicine and food for the population; deaths and mass migration, etc. All these challenges and threats of armed aggression of the Russian Federation have become systemic in nature and are intricately linked, combining economic and non-economic threats that affect industry, the economy and society. Unfortunately, the military conflict exacerbates economic problems, which further raises the issue of economic sustainability of industry and livelihoods.

Since industry is the engine of the economy of most developed countries, the existence and further development of industrial enterprises is the most important factor in the survival and sustainability of the economy of Ukraine. Crisis phenomena and destruction, loss of personnel, rupture of logistics and sales chains are observed in a significant proportion of Ukrainian enterprises, and in recent months these losses have increased. This makes it necessary to consider the situation of industry in the context of military conflict and to define an anti-crisis strategy that would help government officials to effectively support and manage both in the context of martial law and post-war reconstruction.

Analysis of the recent research. Expert surveys are widely used to assess the systemic nature of global risks in order to forecast and manage them, which is likely to lead to further global disruptions in production and trade. The need for businesses to take these long-term risks into account in future decisions is noted. Experts note the scale of this military conflict, its cross-sectoral relevance, economic losses, uncertainty, the plurality of participants. At the same time, Russia's military aggression poses economic, environmental, geopolitical, social and technological threats, which are considered in relation to the economy and industry in the works of Ukrainian researchers. Several analytical materials cover current estimates of the damage done to the economy and industry, predict the economic consequences of the war, and note opportunities for the revival of Ukrainian industry.

First of all, it concerns the consequences for the labor market in its industrial segment, the study of prospects for its further development. In particular, the identification of imbalances in the industrial segment of the labor market and the definition of mechanisms to improve the efficiency of its operation are thoroughly investigated in the article «Asymmetry of the industrial segment of the labor market of Ukraine» V.V. Blyznyuk and Ya.I. Yuryk [3]. The main trends in the domestic labor market and the causes of its crisis, the study of the impact of labor migration on the transformation of the labor market, identifying imperatives for further development (effective employment, adequate wage policy; creating decent jobs, outpacing productivity, innovation in labor) covered in the collective monograph of I.L. Petrova, V.V. Blyznyuk [10].

The aim of the article. The aim of the article is to analyze the losses and determine the direction of current management and the strategy of revival of some key industries in the war and postwar period.

Methodology. In the process of solving the problem, the following general scientific and special methods were used: methods of system analysis, analysis and synthesis, empirical methods of comparison and generalization, expert assessments.

Results of the research. Continuous monitoring of the situation of industrial enterprises and an approximate assessment of losses from hostilities are necessary conditions for the implementation of priority measures to stabilize the situation, create a sound loss assessment system, action planning based on estimates and scenarios, forecasting industrial prospects and eliminate the adverse effects of war, harmful effects on the environment, etc. Currently, the main approaches to estimating the losses suffered by our industry as a result of hostilities are to calculate direct losses: the cost of rebuilding industrial facilities and infrastructure, unproduced products and lost profits, as well as the level of GDP decline from industrial losses in Ukraine.

According to the Ministry of Economy, economic activity in the territory where the fighting is taking place has decreased by three quarters, business has stopped working, suffering the following losses as of March 28, 2022: losses of enterprises of 80 billion US dollars, losses of direct investments of 54 billion US dollars, infrastructure losses of 119 billion US dollars [9]. In the rest of the territory, only every second business is operating. Most metallurgical plants in the eastern part of the country have ceased operations, which means a decrease in exports of metals. Russia's blockade of sea routes in the Black Sea makes it impossible to export products.

Scenario calculation of possible economic losses of Ukraine, carried out by specialists of the Institute of Economics and Forecasting of the NAS of Ukraine by various methods, pre-determines the losses of Ukraine from 22 to 46% of GDP, as well as losses of industrial production of about 50%, export revenues losses of 48%, and capital investments losses of 45% [1]. At the same time, the direct reduction of the contribution of industry to the GDP of Ukraine leads to: the destruction of production capacity, production and transport infrastructure; reduction of the labor force employed in production; reduction of investment and consumer demand; rising inflation, debt and the depreciation of the national currency; investment losses; rising prices for energy resources and imported and domestic components.

According to Advanter Group [4] on 25.04. 2022 total direct losses (lost resources, goods, fixed assets, forced overpayments, relocation costs, excluding lost profits) of SMEs for the six weeks of the war are estimated at 85 billion US dollars. Entrepreneurs note that the growth of losses has slowed down significantly. According to the analysis of data from

previously surveyed enterprises (245 enterprises of all sizes, across the country), 54% completely ceased operations and nearly 25% almost ceased operations. 21% of enterprises carried out relocation (2% – in full, 12% – in part, 7% are in the process of relocation), while 31% did not have time to conduct it. In 2022, the expected decline in SME output is more than 60% (provided that Ukraine achieves victory by summer 2022).

The deployment of full-scale Russian military aggression against Ukraine has also affected the labor market, which has not yet fully recovered from the pandemic. With the beginning of hostilities, the processes of transformation of the labor market changed radically – it suffered a real shock, when at the same time began large-scale displacement of large numbers of people both inside and outside the country. Most internally displaced persons will not have a job in the near future; unemployment and social tensions will increase; the burden on the social system and budget will increase; both production and consumer demand will decline significantly. Reduction of industrial production, displacement of people exacerbated the problems of the labor market and staffing of industry. Data on current supply and demand in the labor market during the war as of the end of April in the professional sphere "Working specialties. Production" shows that for 1 vacancy there were 15 submitted resumes [5]. This indicates a significant imbalance in employment and lack of jobs. The greatest demand from employers in the labor market were such professions in the industrial sphere as seamstress, technologist, electrician, locksmith. At the same time, the data of the State Employment Center show a reduction in the number of unemployed (Table 1), which is most likely due to difficulties in gaining the status of unemployed by the informal sector, as well as the lack of employment due to mobilization or outflow of labor abroad.

Table 1.

Dynamics of the number of vacancies and unemployed for January-April 2022

Profession name (position)	Number of vacancies, units	Number of unemployed persons	As of the end of April	
			Number of vacancies, units	Number of unemployed persons
Total	173 350	494 998	25 326	283 356
Legislators, senior civil servants, executives, managers (managers)	9 699	66 146	1 303	36 942
Professionals	17 771	50 580	3 327	28 065
Specialists	16 385	51 703	2 249	29 224
Technical staff	6 499	29 161	848	17 499
Trade and services workers	20 873	81 967	2 830	50 106
Skilled workers in agriculture and forestry, fish farming and fishing	5 312	19 184	856	12 190
Skilled workers with tools	27 870	42 246	5 575	24 631
Workers for maintenance, operation and control of technological equipment, assembly of equipment and machinery	46 319	90 284	5 398	45 219
The simplest professions	22 622	61 184	2 940	38 014
Persons without a profession	0	2 543	0	1 466

Source: compiled according to [8]

According to the UN, since the beginning of the full-scale Russian invasion of Ukraine (as at April 24, 2022), more than 5 million people have left, women of working age in particular. In the future, the problems of staffing of restored industrial enterprises, consolidation of the able-bodied population and youth, employment of re-emigrants will become more acute. A serious threat to the country's economy is the likelihood of non-return of refugee immigrants in the postwar period. The longer the hostilities in Ukraine and the

longer Ukrainian refugees from the war stay abroad, the better they will be able to adapt to life in another country and find employment. Currently, a large part of forced migrants is ready to return and rebuild Ukraine. To solve the problem of staffing industry is proposed:

- to create conditions for the relocation of various industries and provide staff after the relocation and (if necessary) construction of modular towns that are built quickly and where you can compactly accommodate a large number of people;
- to organize invitations of foreign managers and technologists to coordinate and mentor recovery projects;
- to establish continuous training to meet the needs of industry, ensure regular training of industrial workers, especially in the fields of mechanical engineering, metallurgy, chemical industry and defense industry, as well as construction;
- to ensure close cooperation of enterprises in the industry with educational institutions in order to solve the problem of attracting young workers to industrial enterprises, which will allow to obtain a high-quality personnel reserve and specialists in the required industries;
- to increase the volume of orders for specialists in engineering, technical and construction specialties when forming a state order for universities of I-II and III-II accreditation levels;
- to ensure the development of platforms for disseminating information about the potential of vocational education in Ukraine, the possibility of exchanging information and best practices on skills and abilities of industrial personnel in solving various scientific and technical problems, including production automation, industrial engineering, etc .;
- to promote the preservation of entrepreneurial potential in the regions of relocation to stabilize the situation on the labor market (tax benefits and vacations for job creation, grants for job creation, subsidies and grants for training and education of personnel);
- to develop state programs for repatriation of migrants, such as special programs implemented in the countries of the former socialist camp, including Poland, the Czech Republic and Slovenia.

Within the outlined problems of industry, the country faces urgent tasks to restore key industries, including high-tech, the development of which has the appropriate resources, which contribute to the growth of other industries and have high efficiency (value added, production, investment attractiveness) and significant social importance creation of jobs with

a high level of wages), as well as in which Ukraine has the potential for innovative development. In particular, they include chemical, building materials industry, light industry.

Light industry. The importance of the industry is that it meets the needs for medical supplies, personal protective equipment, uniforms and special clothing and footwear, ballistic fabrics and engineering camouflage for military use. It is also important for all industries and post-war reconstruction – to meet the demand of the population, corporate consumers for many personal consumer goods, as well as industrial goods for mechanical engineering, automotive, defense industry, construction, furniture, chemical industries. Unlike other industries, the vast majority of garment enterprises have already resumed their work, in particular for the needs of territorial defense and the Armed Forces.

The area where active hostilities took place and are currently taking place and there is a possibility of physical destruction of enterprises were: industrial enterprises with a closed production cycle, the vast majority of weaving enterprises, as well as a unique research and production cluster for growing and processing hemp.

The government and the business community are trying to facilitate the adaptation to the martial law of enterprises and implement measures for regulation, financial support, institutional and information support. The CMU, approving the criteria for determining critical imports under martial law, expanded the existing List of Critical Imports, including for the needs of light industry.

So far, more than 10 business associations have mobilized and launched work and new projects in a number of areas: digitization of production documentation; restoration of supply and production chains; scaling up fast businesses, relocating staff, deploying an analytical center, attracting help from international partners, etc. The All-Ukrainian Business Community Board implements multifaceted programs to help small and medium-sized enterprises, including sewing SMEs – to support the conversion to the production of high demand goods (linen, sleeping bags, mats, bulletproof vests, etc.).

The choice of priorities for reconstruction in the light industry should take into account the basic requirements of national interests in the development of the internal market, as well as environmental protection, resource conservation.

The main tasks on the way to the recovery of light industry are:

- development of the market of raw materials for light industry, which is represented in the country by domestic raw materials (wool, flax, chemical fibers and threads, leather, hemp, fur and down raw materials), as well as imported raw materials

(cotton, natural silk, wool, chemical fiber and threads) and innovative materials that give products new consumer properties;

- stimulating the reduction of dependence on imports of raw materials and intermediate consumption materials and the development of deep processing industries, the development of technologies for deep processing of bast crops; import substitution and expansion of production of semi-finished products in the form of cotton-linen and woolen yarn, knitted fabric, mixed fabrics.
- introduction of world standards and innovative technologies in the production of various types of textiles, leather, new raw materials for nonwovens, military uniforms and uniforms;
- creation of new niches in world markets for innovative products through the introduction of breakthrough and critical technologies in manufacturing, biomimetics, nanoelectronics, microelectromechanical systems, 3D printing, etc. areas of technology that provide products with exceptional properties: high strength, high hygiene, bactericidal, environmental friendliness and ease of use.

Chemical industry. The Ukrainian chemical industry has always been a driver of the economy. At the same time, in the period from 2008 to 2020, the domestic chemical industry changed structurally and sectorally, reduced production and sales, some enterprises suspended or ceased operations, the industry critically increased its import dependence, significantly reduced the number of employees in the industry. Traditionally, the level of nitrogen fertilizer production remains high, which contributes to the rise of the Ukrainian agricultural sector and meets the needs of the domestic market in these products. For example, when the country's economy in 2021 fell by 4%, the leading enterprises producing nitrogen fertilizers showed growth of 25-45%.

With the beginning of the full-scale invasion of the Russian Federation on the territory of Ukraine, most enterprises in the industry ceased to operate. Currently, some fertilizer producers are in the zone of active hostilities or close to the zone of active combat (Luhansk, Kyiv, Kherson, Odesa, Dnipropetrovsk regions) and continue to be idle or conserved.

In particular, PJSC "Severodonetsk Azot" stopped all key shops and stopped the production of fertilizers. The company completely produced (recycled) ammonia and released the ammonia storage facility, and the remnants of finished products (fertilizers) and chemicals that were on the territory of the plant were completely removed from the company outside Luhansk region. Currently, the company is under constant fire. Another powerful company, Azot PJSC (Cherkasy), planned to launch AdBlue before the war (a special additive for diesel

engines used to reduce nitrogen oxide emissions by cars). Currently, there are high risks of further work due to shortage of raw materials. As for PJSC Sumykhimprom, where the ammonia tank was damaged as a result of the shelling, work has begun to restore the technological process, but in the face of constant enemy shelling, there is no evidence of a complete resumption of production at this plant. In the conditions of shelling and proximity to the theater of operations, the Odessa port plant stopped.

Due to the difficult situation on the domestic market of mineral fertilizers, on March 12, 2022, the Cabinet of Ministers of Ukraine introduced a zero quota for the export of mineral fertilizers – that is, a de facto ban on the export of fertilizers from Ukraine. The relevant Government Resolution [7] states:

- mineral or chemical fertilizers, nitrogen;
- mineral or chemical fertilizers, phosphorus;
- mineral or chemical fertilizers, potash;
- mineral or chemical fertilizers containing two or three nutrients: nitrogen, phosphorus and potassium; other fertilizers; goods of this group in tablets, packages with a gross weight of not more than 10 kg.

However, at the end of this month, the ban on nitrogen fertilizers was replaced by quotas for their export of up to 210 thousand tons in the next three months, but not more than 70 thousand tons per month. At the same time, the ban on the export of phosphorus, potassium and component fertilizers from Ukraine has not been lifted and remains in force [2].

The strategic priorities of the post-war reconstruction of the chemical industry should be:

- creation of a competitive raw material base, primarily on the basis of providing domestic raw materials for basic chemistry (basic production of inorganic chemistry, organic chemistry, plastics in primary forms) and mineral fertilizers;
- modernization / creation of basic chemical production facilities in the post-war period on the basis of modern technical and technological bases, especially for the affected enterprises in the occupied territory and those in the combat zone;
- development of technological chains and increase in the production of chemical products of high technological redistribution and final marketable products;
- increasing domestic production of chemical products to restore modern agrochemical support of the domestic agro-industrial complex and ensure food security of the country;

- development of intermediate import-substituting industries in order to restore the chains of closed technological cycles in the production of final marketable products and expand the production of import-substituting chemicals;
- restoration and increase of export potential of the industry in traditional niches (titanium pigment dioxide, carbon black, soda ash and caustic soda, benzene, plastic and rubber products, complex and special fertilizers, innovative products based on biotechnology);
- transition to the operation of the industry on the principles of "green chemistry" (environmental safety of enterprises, environmental friendliness of products, transition to new low-waste and resource-saving environmentally friendly technologies, waste prevention, use of renewable or biodegradable raw materials, "green hydrogen" technology, etc.);
- creation of a full-fledged and highly functional infrastructural, institutional, scientific-technical and personnel base for sustainable development of branch production and domestic commodity market;
- introduction and implementation of the national scientific and technical regulatory framework for the development of the circulation of chemical products, especially in the circulation of fertilizers, its harmonization with European chemical legislation and global regulatory norms.

Building materials industry. The priority of the industry development is determined by the need to rebuild strategic facilities, housing and destroyed infrastructure and communications in a short time. According to the Ministry of Regional Development on March 26, 2022, during the hostilities in Ukraine around 4,500 houses, 100 businesses, 400 educational institutions, 150 health care facilities were destroyed. According to preliminary estimates by KSE, the amount of damage to Ukraine's infrastructure during this time reached \$ 63 billion US, or 1.8 trillion UAH. This is approximately a third of Ukraine's GDP and UAH 400 million more than Ukraine's budget expenditures for 2022.

Military action deprived all Ukrainian enterprises to one degree or another of three main resources – customers, labor, stable supplies of raw materials (sand, clay, cement, rebar, gravel, gypsum, minerals, bitumen) and energy. During the hostilities on the territory of Ukraine, a number of industrial enterprises producing construction materials were destroyed or damaged. Experts of the information-analytical agency PAU [6] estimate the losses of factories-manufacturers of building materials at 6-7% of the national capacity, which is about 11 billion UAH of annual output.

Among the destroyed facilities are a number of plants for the production of building materials (brick plant "AGROBUD, LTD"; IZOVAT, which produced mineral wool slabs), the Knauf plant in Bakhmut, Donetsk region, which produced construction mixtures, was shelled. The main part of cement plants remained more or less intact. At the same time, there are difficulties with glass and ceramic bricks, as there were many factories in Sumy and Gostomel. Now they are destroyed. Problems with ceramic tiles are also expected, and Ukraine's largest tile factory is located in Kharkiv.

The strategy of restoration of destroyed and damaged real estate requires the development of appropriate mechanisms and the submission of the necessary legislative initiatives on the basis of which the state will rebuild the destroyed. Currently, the Verkhovna Rada of Ukraine has already registered a draft law on compensation for damage and destruction of certain categories of real estate as a result of hostilities, terrorist acts, sabotage caused by Russian military aggression, which is also focused on future lawsuits of Ukraine against Russia. Sources of funding for compensation should be: the fund for the restoration of property and destroyed infrastructure of Ukraine in connection with the armed aggression of the Russian Federation, international financial assistance, and other sources that are not prohibited by Ukrainian law. The bill provides for a number of provisions on deregulation of the construction industry in order to ensure rapid construction. First of all, the possibility of obtaining European technologies and simplifying the procedure for importing the necessary materials, construction products without certification and construction equipment from Europe is being considered, some purchases are planned to be withdrawn from the ProZorro system.

Due to the spread of construction materials in all regions of Ukraine and the potential growth of demand during the reconstruction, the production of building materials has the potential to become a point of economic growth. In this regard, the main tasks for the building materials industry should be:

- creation of a system and improvement of mechanisms for uninterrupted provision of the country with construction materials necessary for the restoration of damaged infrastructure; construction of military and defense facilities; objects of civil protection of the population; buildings for temporary or permanent residence for internally displaced persons; objects that move from the territories of hostilities;
- improving procurement simplification procedures at the expense of the state budget for construction materials for emergency repairs at facilities damaged by Russia's armed aggression (including glass for windows and doors, particleboard and

fiberboard, drywall, metal wire, nails, self-tapping screws, roofing materials, etc.), first of all, in terms of inadmissibility of entering the domestic market of uncertified construction products;

- investing in the production of building materials, especially in the eastern and central regions of Ukraine, in order to quickly restore lost enterprises during the war and create new facilities for the production of building materials, given the presence in these regions of deep integrated production complexes close to deposits and raw material quarries;
- relocation of enterprises in the industry (production of bricks, ceramic tiles, concrete products, cement, metal products) from the war zone to industrial parks and clusters of central and western Ukraine and placement of places for people to live there, which will solve the problem of resuming production and providing workers in places;
- creating opportunities for the concentration of enterprises in the western and southern regions of Ukraine, which will develop more export-oriented production of building materials;
- development of mechanisms for utilization and reuse of construction waste generated as a result of war destruction.

Conclusion. The article tries to determine the priorities of the strategy of industrial reconstruction by industries that will be the basis for economic growth and increase export earnings. Among the primary goals of the country's revival is to accelerate the country's neo-industrialization on the basis of changing the prewar economic structure and raising industry to a higher technological level in order to create the industrial production of the future, including Industry 4.0, digitalization and eco-modernization. This involves the restoration of key industries for the reconstruction and dynamic modernization of the country in the postwar period; creation of cost-effective infrastructure to stimulate the growth of industrial production, especially in the processing industry; introduction of resource and energy saving technologies in the industry in order to strengthen Ukraine's energy independence on the path to European integration. In our opinion, a successful anti-crisis strategy for the revival of industry in wartime should be radically different from the usual, as its main goal should not be balanced functioning, and a quick way out of the precarious situation, the focus should not be on long-term sectors that are centers of sustainability, the main activities should be

cluster associations, focused on consolidation around common problems: logistics, relocation, staff shortages, destruction of capacity.

Areas of restoration of industrial potential in wartime should be:

- relocation of enterprises and their staff;
- resumption of supply and production chains as safe as possible;
- attracting assistance from international partners;
- negotiations with foreign countries, in particular with the EU, the US and Canada, through both governments and businesses on the possible purchase of certain groups of goods from Ukraine that can be exported abroad;
- determining the list of industries (and enterprises) that will require government procurement in order to provide Ukraine with essential goods, including for import substitution;
- development of a program to stimulate production in Ukraine with the definition of clear mechanisms for obtaining public procurement and marketing.

References:

1. After calculating the losses, it is necessary to start developing a strategic plan for the reconstruction of the country [online]. Available at: <http://ief.org.ua/?p=12018> (accessed 15.04.2022)

2. A brief analysis of the situation in the chemical industry of Ukraine in 2022. (information as of 10.05.2022). Available at: <http://www.nditekhim.com.ua/wp-content/uploads/2022/05/HP-Ukrayinyvyp.3.pdf> (accessed 11.05.2022)

3. Bliznyuk V.V., Yurik Ya.I. Asymmetry of the industrial segment of the labor market of Ukraine. Economics and forecasting. 2018. №4. P.65-80. <https://doi.org/10.15407/eip2018.04.065>

4. Business losses reached \$ 85 billion. How entrepreneurs survived the first month of the war – a study by Advanter Group [online]. Available at: <https://forbes.ua/news/vtrati-biznesu-syagnuli-85-mlrd-yak-pidpriemtsi-perezchili-pershyy-misyats-viyni-doslidzhennya-advanter-group-14042022-5446> (accessed 14.04.2022)

5. Dynamics of supply and demand in the labor market in Ukraine, in particular, due to the ratio of the number of current vacancies to the submitted resumes. Available at: <https://nqa.gov.ua/news/dinamika-popitu-i-propozicii-na-rinku-praci-v-ukraini-zokremacerez-spivvidnosenna-kilkosti-aktualnih-vakansij-do-podanih-rezume/> (accessed 04.05.2022)

6. It is necessary to invest in the production of building materials, in particular, in the east and in the center of Ukraine – opinion. Interfax-Ukraine. 12.04.2022. Available at: <https://interfax.com.ua/news/investments/823475.html> (accessed 18.05.2022)

7. Resolution of the Cabinet of Ministers of Ukraine of March 12, 2022 №259 “On Amendments to Annex 1 to the Resolution of the Cabinet of Ministers of Ukraine of December 29, 2021 №1424. Available at: <https://zakon.rada.gov.ua/laws/show/259-2022-%D0%BF#n5> (accessed 12.05.2022)

8. Statistics of the State Employment Center [online]. Available at: <https://www.dcz.gov.ua/analytics/69> (accessed 14.05.2022)

9. Ukraine has already suffered \$ 564.9 billion in losses from the Russian invasion. Available at: <https://www.facebook.com/photo/?fbid=334050695422899&set=a.287487883412514> (accessed 01.04.2022)

10. Ukrainian labor market: imperatives and opportunities for change: a collective monograph / for science ed. Doctor of Economics, Prof. I.L. Petrova, Ph.D. V.V. Bliznyuk; NAS of Ukraine, SI «Inst. of Economics and Forecasting of NAS of Ukraine» [online]. K., 2018. Available at: <http://ief.org.ua/docs/mg/306.pdf> (accessed 08.04.2022)