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## **PROSPECTS FOR INVESTMENTS IN THE ENERGY INDEPENDENCE OF THE NATIONAL ECONOMY OF UKRAINE DURING THE RECOVERY PERIOD**

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Today, there are global changes in social, political and economic relations all over the world. The reason for these changes is the war in Ukraine, which is fighting for its own independence and European traditions against the "second" army of the Russian horde in the world. These changes relate to the global paradigm of human coexistence on basis of the concern, commonwealth, and mutual assistance. The war continues, but regardless of the military situation, Ukrainians are not only successfully fighting against the aggressor, but also actively trying to promote their entry into the European community, rebuilding (where possible) destroyed infrastructure, developing, in addition to a powerful volunteer movement, business, education, science, improve public administration. The President of Ukraine, Volodymyr Zelenskyi, and his Office are forming a Plan for the reconstruction of the national economy, which was brutally destroyed by the Russian occupiers.

Specialists of the Kyiv Institute of Economics are constantly monitoring the damage caused to Ukraine by the Russian invaders, violating all the rules of warfare and behaving like terrorists. According to these data, as of March 17, 2022, they amounted to 1.8 trillion hryvnias or 62.6 billion dollars, and already at the end of May the amount of losses exceeded 3.1 trillion hryvnias or \$105.5 billion. This is evidenced by the analysis carried out within the "Russia will pay" project by the KSE Institute team (an analytical division of the Kyiv School of Economics) and volunteers from partner organizations, in particular, from the Center for Economic Strategy and "Prozorro. Sales". The dynamics of the consequences of such destructions are summarized in Table 1 [1].

It is appropriate to turn to history and compare the consequences of the destruction caused by the Second World War in Ukraine. It was estimated that 16,000 industrial enterprises, 882 mines of the Donetsk coal basin, 10 main railways, more than 35,000 agricultural communities (collective farms and state farms) were destroyed in Ukraine during the war and Hitler's occupation, and 417 cities and towns were turned into ruins. Demographic losses accounted for almost a quarter of the total population. Every sixth resident of Ukraine died in the war [2], 2.4 million people were deported to Germany. The total amount of losses suffered by the population and economy of Ukraine amounted to almost 1.2 trillion rubles.

During the revival of the national economy of Ukraine after the Second World War, according to planned indicators, the Ukrainian economy received only 15% of all-Union capital investments, while Ukraine suffered 42% of all material losses of the Soviet Union in the war.

### **Table 1**

The destruction of the objects of the national economy of Ukraine as a result of the terrorist actions of the Russian occupiers

Name of the object	As of March 17, 2022		As of the end of May 2022	
	number	billion \$	number	billion \$
Healthcare institutions	36	2,466	643	1132
Nuclear power plants	1	2,416	1	2416
Institutions of secondary and higher education	273	1,280	1123	1540
Residential buildings	1600 piece	1,245	44,2 million square meters m	39379
Enterprise assets	45	643	228	11300
Administrative buildings	30	492	99	542
Kindergartens	124	427	621	538
Military airfields	10	390		
Aircraft AN-255 "Mriya"	1	300	1	300
Shopping and entertainment centers	7	120	19	329
Thermal and hydroelectric power plants	7	101	7	101
Religious buildings			115	767
Cultural buildings			192	463
Bridges and bridge crossings			295	1646
Civil airports			11	6817
Other objects				

In the process of reconstruction, the administrative apparatus ignored the experience of restoring the economic potential of European countries, according to which priority was given to the technical transformation of various branches of the economy, the development of agriculture, light and food industry, and the stabilization of the national currency. The main emphasis was placed on the austerity regime, reduction of funding for agriculture, light industry, and the social sphere. The mechanism of "mobilization of public funds" did not cease its operation. The high pace of reconstruction was also ensured by the low wages of workers and employees [2].

The full-scale war that has been going on in Ukraine since February 24, 2022 has brought even more destruction than World War II. Aware of the need for rapid recovery of the economy and the social sector, the government is forming a Plan for the Reconstruction of the National Economy of Ukraine. During this period, construction will develop quite actively, as not only individual houses were destroyed by rubble, but also entire cities, objects of the social sphere and industrial infrastructure were destroyed. Most of these objects cannot be restored, that is, they will have to be built from scratch. There is no doubt that the Reconstruction Plan will cover all sectors of the national economy, but we strongly believe that the priority areas should be the development of the military-industrial complex and the energy sector. This is due to the need to strengthen military power and ensure full energy independence of Ukraine, but will require significant investment resources.

We will emphasize the development of energy as a strategically important industry for the national economy and its independence. We believe that such promising and relevant areas of development of the energy sector as green energy, development of new and reconstruction of old oil and gas fields, as well as lithium and titanium mining require special attention of officials and specialists.

In pre-war times, the "Trident" natural gas production program was somewhat intensified, but it will be necessary to more actively develop new deposits, update the technologies of existing ones. Regarding the development of green energy, it is worth noting that in the pre-war period this industry developed at a fairly good pace. Thus, in 2019, Ukraine entered the TOP-10 countries in the world in terms of the pace of development of green energy, and in 2020 - in the TOP-5 European countries in terms of the pace of development of solar energy. At the beginning of 2022, the total capacity of green energy facilities was about 9,656 MW. However, the invasion of the Russian Federation not only stopped the development of the industry, but also caused devastating losses. Enterprises were on the verge of bankruptcy. According to the Ukrainian Wind Energy Association, more than 2/3 of wind generators have stopped working in Ukraine [3]. Investment resources are also needed for the recovery of this industry.

Another promising area of development of the energy sector of Ukraine, in which it will be possible to attract powerful investors, is the development of lithium deposits. According to preliminary estimates, there are significant reserves of lithium in Ukraine, which are not inferior to the rich deposits of South America and Africa. In total, these are 4 objects - 2 deposits (Shevchenkivske, Polokhivske) and 2 sites (Dobra, Kruta balka). The demand for lithium, which is the main component of lithium-ion batteries, has recently been growing, corresponding to the demand for electric vehicles, energy storage systems, etc., and the price of this metal has a tendency to increase [4].

Ukraine is quite interesting for the volume of reserves and deposits of lithium, but these deposits, which are quite valuable for the world, were practically not developed. Certain geological studies were carried out and reserves of this metal were tested. Experts believe that the next 20 years can change the world economy. In March 2021, the Swiss investment bank UBS predicted that electric cars could reach price parity with internal combustion engine cars in 2025, and the share of electric car sales could reach 20% in 2025 and 50% in 2030. By 2040, a complete transition to electric vehicles may become a reality [5].

The development of titanium ore reserves can also be attractive for investment, as Ukraine produces 7% of the world volume of titanium-containing raw materials: the largest country in Europe in the production of ilmenite, the only country in the production of rutile and zircon. Ukraine is one of the five countries producing titanium ore concentrates in the world. 20 % of the world's reserves and production of ilmenite are concentrated on its territory.

To date, 26 deposits of titanium ores with commercial reserves have been explored in Ukraine, as well as 48 deposits, the reserves and resources of which have been estimated in advance and constitute, conditionally, the "base of the country's titanium reserves". At the same time, the total reserves and base of reserves of titanium ores of Ukraine, according to experts, "exceed such reserves of any other country in the world." Judging by the current licenses for the exploitation (mining) of 17 of the largest titanium deposits (out of 26, the reserves of which are entered in the State Mineral Fund), reserves of titanium raw materials in Ukraine amount to about 184 million tons. These reserves will last for 440 years [6].

Titanium is necessary for the development of the energy sector, since many rotating parts are made of titanium. Such a choice of metal is not accidental and due to economic benefits. All because titanium is characterized by high specific strength and it is simply impossible to do without it in the production of parts such as blades for steam turbines. The use of titanium alloys in the power industry allows equipment and apparatus to work smoothly in aggressive environments, as well as to be resistant to corrosion damage.

Therefore, the relevance of lithium and titanium mining will increase, and accordingly, this segment of the energy and mining sector of Ukraine is quite attractive for investors.

Since mining and energy are quite valuable industries, significant investment resources will be required.

Taking into account the fact that the occupiers are losing battles on the ground in all directions, they are mercilessly demolishing the social and industrial infrastructure of Ukrainian cities and villages with missile strikes, so the cost of damages is constantly increasing (table 1).

In this context, an important issue is the consideration of sources of financing measures aimed at restoring the national economy of Ukraine. Today's state of the economy and social sphere, the complete destruction of the national economy of Ukraine by the Russian fascists requires significant funds for restoration. That is why the issue of the Marshall Plan for Ukraine is becoming relevant. At the same time, the main financial investors can be the USA, EU countries, Great Britain, the Baltic countries and other countries of the world, which are not indifferent to ensuring the democratic foundations of the independence of countries in the world. The sources of financing for the reconstruction of the national economy of Ukraine should include the following:

- financial receipts from countries participating in the implementation of the Reconstruction Plan of Ukraine;
- reparations of the Russian Federation;
- financial investments of international funds;
- arrival of strategic investors ready to invest in industry and agriculture to the Ukrainian commodity markets;
- proceeds from the sale of frozen assets of citizens of the aggressor country;
- issue of international bonds by Ukraine;
- Ukraine's issuance of domestic loan bonds for reconstruction;
- citizens' contributions through volunteer and charitable organizations;
- fundraising on international crowdfunding platforms;
- other sources.

Thus, we confirmed with numbers the facts that the European Union is interested in cooperation with Ukraine in the extraction of rare metals, in particular, lithium and titanium. However, it is necessary to choose and approve at the state and world level Ukraine's position regarding the strategy of mining these metals important for the further progressive development of humanity and their processing into products of high added value within the country. For example, production of batteries for electric cars and processing of titanium ores. That is, having raw materials that are quite attractive for investors, Ukraine should build such a road map for the development of the industrial sector, in which the priority of raw material processing and production of products based on lithium and titanium within the country would be unconditional. It is possible to provide the investor with certain guarantees and stability with the help of the well-known toolkit of forming relevant clusters or financial and industrial groups.

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