

STRATEGIC SCENARIOS FOR SUSTAINABLE INDUSTRIAL DEVELOPMENT OF UKRAINE IN THE POST-WAR PERIOD

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Abstract. The *purpose* of the paper is to develop the most probable scenarios and to determine the strategic directions and effective tools for the Ukrainian industrial recovery, which will ensure the resistance of the economy in the conditions of military challenges. The method of strategic scenarios allows to find out how the industrial development in Ukraine will develop in the course of war and post-war recovery. *Methodology.* The methods of system analysis and logical modeling were used to describe the transition of the Ukrainian production from the current situation of military crisis to the target one; structural analysis was used to determine the system of indicators characterizing the resistance of the industry. For this purpose, national (State Statistics of Ukraine) and international (World Bank, Eurostat official website) databases characterizing the level and structure of industrial development in the last 5 years were used. The method of calculation takes into account the criteria of changes in indicators: direction (growth/decline occurred); rate of changes based on the cumulative annual growth rate for the period of 5 years. The study was carried out using analytical methods of the influence of trends in the formation of strategic scenarios in unpredictable situations (conditions of wartime uncertainty), to assess changes in the probability of occurrence due to the actual occurrence of one of them, which made it possible to identify trends, justify scenarios and take them into account when analyzing the prospects for industrial development to strengthen the defense capabilities and economic growth of Ukraine. The *results* of the survey showed that the strategic scenarios for the industrial development of Ukraine will be adjusted as necessary for the post-war industrial recovery in case of a long-term external military threat to preserve the state sovereignty. The achievement of the set strategic goals depends on the driving forces determining the industrial development in Ukraine. As the main indicators characterizing the tendencies of industrial development in Ukraine, the indicators reflecting the efficiency of the use of productive forces have been chosen: indicators of industrial production efficiency; labor productivity; indicators characterizing innovative development; performance indicators of foreign economic activity and investment development. Taking into account the influence of each of the driving forces of industrial development in the conditions of wartime uncertainty, three scenarios of industrial development were developed: a conditionally positive scenario, in which the economic system will gradually stabilize due to the cessation of hostilities and the recovery of production capacities; a conditionally negative scenario, which will be characterized by the disintegration of the economic system, the destruction of energy infrastructure facilities, where negative trends will dominate; a conditionally neutral (basic) scenario, in which the disintegration of the economic system will not reach extreme levels, and industrial production will develop in areas not covered by hostilities. *Practical implications.* The key problem of restoring economic stability in Ukraine is to create conditions for favorable development of industrial business, which depends on balanced strategic policy decisions. The transformation of industry into an effective force for the revival of the Ukrainian economy in the conditions of the war and post-war period requires a balanced strategic management of the future development, because it is crucial to meet the unprecedented demands of the war on the available resources of the country and to prevent a social,

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humanitarian, economic, financial, environmental, military crisis. At the same time, traditional methods of indicative planning cannot take into account all factors of wartime uncertainty, therefore, the rationale of future development vectors based on scenario planning makes it possible to create conditions for minimizing threats and realizing potential opportunities. *Value/originality*. Strategic scenarios provide for better economic recovery planning with long-term national priorities, development strategies of related industries and sectors for ensuring the Ukrainian manufacturing resistance.

Key words: strategic scenario, economic stability, uncertainty, strategic planning, industrial development, defense capability.

JEL Classification: L50, L52

1. Introduction

War changes the role of government and public administration, giving them new powers to respond to threatening challenges. As Winston Churchill noted in his autobiography, *My Early Life*: "The statesman who succumbs to the fever of war must realize that once the signal is given, he is no longer the master of policy, but the slave of unpredictable and uncontrollable events." (Churchill, 2020) The question is how to cope with the influx of a significant number of risks, how to make such decisions that will enable the army to perform military tasks and provide the population with conditions for survival and development. One of these answers is a quick response based on management decisions of the country's leadership as a result of analysis, forecasting, optimization, justification and selection of alternatives from various options for achieving the goal. However, the war in Ukraine has led to increased economic uncertainty (Anayi, 2022), which makes it difficult to make informed management decisions. Rapid change of events during military operations, unpredictability of the aggressor's behavior, risks of military damage complicate management decisions. In such conditions there is no certain probability of achieving the planned result. At the same time, the need for balanced strategic management of future development even in military conditions is growing, because it is crucial to meet the unprecedented demands of the war on the available resources of the country, and to prevent social, humanitarian, economic, financial, environmental, military crises, etc. Therefore, the application of flexible methods of strategic planning based on the development of strategic scenarios will allow to optimize insufficient opportunities for analysis, understanding and determination of the current state and prospects.

2. Strategic scenarios for post-war reconstruction planning

2.1 Strategic planning review

The Russian-Ukrainian war is already being called a "black swan" for the world economic order, which

leads to the deterioration of key indicators of socio-economic development not only in Ukraine, but also in the world: rising prices for food, energy resources, fertilizers; inflation and disruption of supply chains; migration of the working population, which in general violates the conditions for achieving the global goals of sustainable development. According to the concept of Nassim Taleb, a "black swan" is an unexpected, exceptional event that has an extraordinary impact and is subsequently poorly understood and rationalized. (Taleb, 2013) According to L. Petrashko, "In the Russian-Ukrainian conflict, the speed and scale of changes are exceptional, and uncertainty is extremely high. It is unclear how the military situation, political process and countermeasures will develop in the world in the short and long term. However, it is already clear that the economic impact of the crisis on energy and food markets will cause disruptions in many countries in Europe and around the world, leading to radical global uncertainty. It is extremely difficult to estimate the impact and consequences of the war on the global economic development. (Petrashko, 2022) However, the war will end, and the achievement of the desired state requires justified development strategies. And although it is impossible to take into account all factors of uncertainty, the justification of future development vectors based on scenario planning allows to create conditions for minimizing threats and realizing potential opportunities. After all, as scientific works prove, military conflicts can disrupt the existing political balance and allow for institutional changes that were previously impossible. (Colin O'Reilly, 2015)

Under conditions of uncertainty, the planning process becomes much more complicated than planning under normal life conditions. Among the methods used for planning in such circumstances, scenario planning is worth mentioning. The potential of this method is widely used by international institutions, because scenario planning can be used as a flexible forecasting tool that allows to identify potential risks and prepare for not one, but several possible future alternatives. In particular, the World Economic Forum constantly publishes research on how various industries may look in the future and

presents strategic implications for key stakeholders and society as a whole. (World Economic Forum, 2018) The transformation imperatives outlined should help the industry prepare for the challenges of the future in the decision-making process to achieve both operational and strategic goals.

In modern Ukrainian realities, scenario planning can also be used in the development of industrial development scenarios for the development of the economy in the post-war period. Scenario planning is widely used in planning the development of industries and regions, allowing not only to determine the possible future, but also to manage risks and use opportunities. Valeriy Heyets studied the peculiarities of the economy in unstable conditions, which allow practical use of instability as an immanent property of economic development for the purposes of economic growth. (Heyets, 2000) In the works of M.O. Kyzym, O.A. Gaiman analyzed the difference between the scenario approach to modeling and forecasting and traditional methods of strategic planning and proved the superior perspective of the scenario approach to solving the problems of regional development (Kyzym, 2009). V. Khaustova (Khaustova, 2015) and scientists of the Research Center for Problems of Industrial Development developed a scenario for the implementation of the industrial policy of Ukraine for the period up to 2030. They divided it into three stages: transition to the model of neo-industrial advanced development, growth of high technologies based on high scientific potential with an export-oriented foreign policy with a medium level of concentration of enterprises and clusters (Presentation to the fundamental research work report "Mechanism of State Restructuring Industry" 2016). O'Connor M., MacFarlane M., Fisher J. identified challenges and drivers of change relevant to community efforts to improve regional prospects in the Wheatbelt of Western Australia. (O'Connor, 2005) In the works of N. Baporikar, the importance of improving typical strategic planning methods using the critical success factor method is substantiated and an integrated structure is presented that helps to understand a wide range of interrelated elements that influence the development of a strategy for information technologies. (Baporikar, 2015) The results of scenario modeling of the scientific and innovative development of Ukraine to determine appropriate methods of its management in the conditions of the new industrial revolution and association with the EU are presented in the works of I. Matiushenko. (Matiushenko, 2016) A complex combination of different types of scenarios and their generation by Bayes estimation methods, which allows for the uncertainty of the parameters to be taken into account, is proposed by Bégin Jean-François. (Bégin, 2022) Summarizing

numerous scientific publications in the field of scenario strategy, it is possible to define scenario models that can be used for the purpose of facilitating the planning process and reducing collective prejudices, studying the structure of a complex system, determining the probable directions and magnitude of future changes, identifying development alternatives, and overcoming uncertainty problems. These principles made it possible to apply scenario approaches to justify the vectors of future development of the Ukrainian industry in the war and post-war period, which are characterized by considerable uncertainty.

In order to understand the possible consequences of certain events and processes, it is important to have an idea of the approximate vectors of future development, not just to guess. Assumptions and visualizations are two techniques often used to formulate future development vectors. (Ulrich, 2022) However, when it comes to unpredictable changes, such as massive destruction caused by a military invasion, it is strategic vision and scenario planning that can help us rebuild and evolve the industry in the post-war period. It is also important to consider that different stakeholders will have a major influence on the decision-making process for recovery. This should be taken into account when determining the potential outcome in the process of building strategic scenarios of industrial development, as well as understanding which actions should be planned and initiated as a matter of priority.

Scenario planning is particularly useful when considering the long-term aspects of developing situations in which unexpected changes may disrupt previous trends. Pierre Vac, one of the pioneers of this method, described it as a discipline for promoting creative and entrepreneurial thinking and action in the context of change, complexity and uncertainty. (Thomas J. Chermack, 2017) Scenario planning, unlike other methods (SWOT, PEST analysis), is compatible with future possible views of the development of events.

2.2 Differences between scenarios, forecasts and predictions

Traditional uncertainty planning methods attempt to determine the "most likely" future based on structured knowledge and basic facts. In cases where there is no concrete data to create a vision of the future, the methods of prediction, forecasting, and regression analysis are not appropriate. In this case, there is a risk of making decisions without a reasonable forecast, which can lead to a huge loss of resources and the probability of a crisis. Therefore, in such situations, it is better to adapt, anticipate and act in advance to meet possible challenges,

Table 1

Differences between scenarios, forecasts and predictions

Scenario	Forecast	Foresight
Probable future	Probable future	The future is built on the past
Based on uncertainty Makes different trends visible	Based on higher confidence levels Based on different trends (complex model with increasing number of trends)	Based on political pressure/lobbying Based on trends, usually one at a time
Uncertainty illustrated	Hidden risks and uncertainties	Well-hidden risks and uncertainties
Qualitative or quantitative	Quantitative	Quantitative and under pressure
Frequently used	Frequently used	Daily
Strong in the medium to long term and when there is uncertainty	Strong in the short term and when there is little uncertainty	Strong in the short term and where there is strong political pressure

Source: compiled on the basis of (Zghurovskiy, 2001)

especially when significant changes are expected. Such conditions greatly facilitate the ability of scenario planning to be a tool for expanding the possibilities for making strategic decisions. Table 1 illustrates the differences between scenario planning and other planning methods.

Thus, scenarios are plausible images of the future that illuminate the path from the present to the future (such scenarios are often referred to as "exploratory" or "extrapolative" scenarios), or in the opposite direction, from the future to the present (often referred to as "normative" scenarios). (Kolohryvov, 2012) Each forecast typically develops several contrasting scenarios, with some room for possible modifications. The number of scenarios developed in different projections varies, but three to five scenarios are typical. Although there are many different methodological options for developing scenarios, there are a few common steps that most of them require. The first step is to define the purpose of the scenario study based on the analysis of available information on the state of the system, its external environment, and the main strategic development priorities. The scenario planning process, as defined by the International Council of Scientific Unions (ICSU), consists of four stages:

1. At the first stage data are collected from leading authoritative national and international organizations, scientists and other interested parties of information about the main driving forces that will influence the development in the future. This becomes the basis for the analysis of the current state of the object under study and the identification of basic development problems for the prospective period.

2. In the second stage, "trial" scenarios are built by identifying options for possible development dynamics and necessary resources and sources.

3. The third stage is the development of "desired" long-term vision scenarios.

4. In the fourth step, the "desired" scenario is published according to its consequences.

3. Determination of relevant factors that will be important for industrial development in war and post-war conditions

Strategic goals should be formulated taking into account the need for post-war industrial recovery in the conditions of long-term military threat to preserve the state sovereignty of the country, which emphasizes the importance of ensuring a consistently high level of the state's defense capability. It also prioritizes the need for the development of a developed industrial complex to create available resources to meet the needs not only of the civilian population, but also of the army. The key role in ensuring the needs of production capacities of raw materials, in particular from internal sources of extraction, is played by the sustainable development of industry based on the use of primarily internal resources, based on production with high added value for the purposes of the end user, as well as the creation of conditions for the development of energy. The importance of the prospects for the development of industrial activity is also strengthened by the fact that Ukraine has a powerful research and development base, which at a high scientific and practical level has the opportunity to support the further competitive development of science-intensive technologies and industries.

Achievement of the set strategic goal depends on the factors that will shape the development trends of the situation. As the main indicators characterizing the trends of industrial development in Ukraine were chosen those indicators that reflect the efficiency of use of productive forces: indicators of efficiency of industrial production: the specific weight of the volume of sold industrial products in GDP (%); labor productivity – the volume of realized industrial products per person employed (UAH million per 1 person); added value per employee employed in industry, (UAH million per person); capital adequacy – cost of fixed assets per employed person

in industry (million UAH per person); energy availability – final energy consumption in industry per employed person (million tons per 1 person); indicators of innovative development – specific weight of the volume of implemented innovative products in the total volume of implemented products of industrial enterprises (%); specific weight of the number of innovatively active enterprises in the total number of industrial enterprises (%); indicators of foreign trade efficiency – specific weight of research and development costs in innovation costs (%) indicators of foreign trade efficiency – the specific weight of high-tech exports in the structure of industrial exports (%); the specific weight of high-tech imports in the structure of industrial imports (%); investment development – the amount of foreign direct investment per person employed in industry (million dollars per person). This choice is due to the fact that a strong industrial base should generate productive and stable employment and, as a result, an increase in the average wage level. In addition, industry must ensure the production of socially important manufactured goods (food, medicine, hygiene products, clothing and footwear, fuel). This makes industrial development an extremely important condition for reducing poverty, supporting the middle class, improving living standards and social stability throughout the country.

4. Survey methodology

The study was carried out using elements of the method of analyzing the influence of trends in the formation of strategic scenarios in unpredictable situations (conditions of wartime uncertainty) to assess changes in the probability of occurrence of a given set of events due to the actual occurrence of one of them, which allowed to identify trends, justify scenarios and take them into account when analyzing the prospects for industrial development to strengthen the defense capabilities and economic growth of Ukraine. For this purpose, national (State Statistics of Ukraine) and international (World Bank, Eurostat official website) databases characterizing the level and structure of industrial development in the last 5 years were used. The calculation methodology takes into account the criteria for changing indicators: direction (growth/decline occurred); rate of change. The calculation of trends for measures with quantitative units is based on the cumulative annual growth rate for the 5-year period.

As noted by V.I. Lyashenko, the systematic study of socio-ecological and economic development should include the determination of the limits of safe existence of the system, therefore an important stage of monitoring the state of development is the determination of thresholds of indicators, which

makes it possible to identify potential "danger zones" and levels of danger (acceptable risk (satisfactory) by comparing them / permissible state) – pre-crisis state – crisis state), as well as to determine the conditions necessary to strengthen the economic immunity of the region or state.

When developing strategic scenarios of industrial development it is necessary to take into account relevant factors that will be significant for industrial development in war and post-war conditions; to make an assessment of how a combination of certain events will affect the development of the situation within the framework of the specified variables; to evaluate the factors that will shape the trends of the development of the situation within the framework of the specified variables (in particular, both those that will affect the situation in 2022 and those that will be trend-setting in the perspective of the next 3-5 years). The assessment of the previous trends of the industrial development and the determination of the average annual growth rate of the indicators are presented in Table 2.

The evaluation of the indicators characterizing the industrial development in the post-war period made it possible to determine the most dynamic driving forces shaping the further development trends. In particular, by calculating the average growth rate of selected indicators over 5 years, it was determined that such indicators as labor productivity grew most dynamically (on average there was an increase of 24.7%); wealth (the average annual growth over 5 years was 28.7%); growth in the volume of high-tech imports (on average by 7.1% annually). Increased demand in Ukraine for imported high-tech means of production resulted in the creation of new production facilities and the expansion of production potential. The following indicator – added value, which is a part of the total value of the product, reflects the real contribution of the enterprise to the creation of a certain product. Having determined the factors that make up the added value of products, it can be seen that for enterprises the added value is a cost estimate of their work, and at the macro level the indicator of added value is used in the system of national accounts to calculate the value of gross domestic product and gross regional product. The average annual growth rate of value added per employee was 7.6%. The largest share of added value in the structure of the processing industry of Ukraine in 2020 was generated by the food industry (28.5%, equal to UAH 157.95 billion), followed by metallurgical production (17.34% or UAH 95.84 billion), on the third place mechanical engineering (15.81%, equal to UAH 87.392 billion) and production of rubber and plastic products, other non-metallic products (11.7% in the structure of the added value of the

Table 2

Industrial development trends in Ukraine for 2016–2020 year

Indicators	2016	2017	2018	2019	2020	Average growth 2020–2016	Average rate of change
Volume of products sold / Gross Domestic Product	90.5	88.1	85.5	75.9	76.7	-15.3↓	-16.7↓
Volume of products sold / Employees	91.8	112.5	131.4	133.9	148.1	61.4↑	24.7↑
Value added / Employees	28.1	35.4	38.2	44.7	43.4	54.2↑	7.6↑
Cost of fixed assets / Employees	130.7	105.1	141.2	153.3	184.1	40.9↑	28.6↑
Final energy consumption / Employees	0.6	0.6	0.7	0.7	0.7	14.9↑	0.1↑
Share of volume of implemented innovative products in total products sold by industrial companies	1.0	0.7	0.8	1.3	1.9	90.0↑	0.2↑
Share of innovative enterprises in total industrial enterprises	18.9	16.2	16.4	15.8	16.8	-11.1↓	-3.4↓
DIR/Innovative costs	10.6	23.8	26.3	20.5	24.2	128.7↑	4.2↑
High-tech export of industrial products/General export of industrial products	18.1	16.8	17.1	18.2	17.7	-2.1↓	-3.5↓
High-tech import of industrial products / General import of industrial products	33.4	33.2	33.3	37.3	39.1	17.1↑	7.1↑
Foreign direct investment/employees	175.6	157.6	214.4	257.3	13.9	-92.1↓	-32.8↓

Source: compiled and calculated by the authors based on data from the State Statistics Service and the World Bank

processing industry). That is, these four industries account for almost three quarters (73.4%) of the total value added in the manufacturing sector (Kushnirenko, 2022). The analysis of the most influential industries by the indicator of labor attraction confirms the essential importance of industry for the economy of Ukraine, because it is also the means to ensure the livelihood of working people and their family members, taxes for local and state budgets, social deductions for the maintenance of pensioners, and finally – to ensure social peace in society. Therefore, the development of the most employment-generating industries is of great importance for overcoming the social and economic upheavals of the war. The food industry employs the largest number of workers – 325.6 thousand workers, machine building – 314 thousand workers, metallurgy – 195.4 thousand workers, and the production of rubber and plastic products, other non-metallic products – 134.3 thousand workers.

The next criterion is the ability of industry to generate foreign exchange revenues and fill the budget with customs payments. Industrial exports occupy an important place in the system of macroeconomic indicators of Ukraine's stability – almost a fifth of the total GDP (21.9% in 2021), and customs payments make up a significant part of budget revenues. Ukraine is the 46th largest exporter in the world in 2020, specializing in mining, engineering, food, chemical and wood products. Thus, in 2021, the growth of exports took place in all groups of manufactured goods and amounted to 43944.8 million dollars or 145.1% in accordance with 2020. Among the most influential commodity industrial groups that exported their products are non-precious metals and

their products – 15992.5 million USD (36.4% share in the total export of industrial goods), mineral products – 8414.4 million USD (19.1%), machinery, equipment and electrical equipment – 5272.8 million USD (12%), food products – 3788.9 million USD (8.6%), products of the chemical industry – 2816.4 million USD (6.4%).

The next important indicator confirming the importance of the processing industry for the industrial development of Ukraine is the indicator of investment attractiveness. In 2021, the largest investments were attracted in metallurgy – 1.583 billion USD, food industry – 452.3 million USD, chemical industry – 338.9 million USD and in the production of rubber and plastic products, other non-metallic products – 305.1 million USD, on the other hand, mechanical engineering was marked by a negative value of foreign direct investments, which can be explained by their outflow due to high investment risks. (Ivchenko, 2021)

Thus, the accelerated recovery of such activities as machine-building and the defense industrial complex, metallurgy, food, chemical, pharmaceutical and woodworking industries is currently important. The priorities of the recovery of these industries are the creation of favorable conditions for the development of innovation-oriented industries with a high share of added value and aimed at integration into global value chains.

5. Findings

Taking into account the influence of each of the driving forces on the functioning of industry in the uncertain conditions of wartime, it is possible to propose three scenarios of economic development:

- conditionally positive scenario, in which the economic system will gradually stabilize as a result of the cessation of hostilities, the reconstruction of production capacities will begin;
- conditionally negative scenario, which will be characterized by the disintegration of the economic system, destruction of energy infrastructure facilities, where negative trends will dominate;
- conditionally neutral (baseline) scenario, under which the turbulence of the economic system will not reach extreme indicators, although the continuation of the military conflict will occur during 2023 with active hostilities within the occupied regions and gradual displacement of the enemy to the borders of Ukraine.

The conditionally neutral (baseline) scenario is formed on the basis of a set of assumptions regarding the continuation of the military conflict during 2023 with active hostilities on the brink of conflict and the gradual displacement of the enemy to the borders of Ukraine. This will lead to a further depletion of material and labor resources, a decrease in the purchasing power of the population. And although stabilization and reconstruction measures will be carried out on the territory of the liberated regions, an increase in the volume of economic activity can be expected only in certain areas not covered by military operations. Even in the regions where there are no active hostilities, economic activity will be hampered by problems with the supply of raw materials, components and semi-finished products, material and technical problems, financial difficulties, and disruptions in energy supplies. At the same time, although the security risks will be significantly reduced, there is a threat of destruction of the energy lifeline of industry – energy infrastructure facilities.

All this will lead to the fact that the industrial potential will not recover significantly, and the key indicators of industrial development will be able to recover only to 80-85% of the pre-war period.

According to the pessimistic scenario, which is based on assumptions about the escalation of the military conflict and the opening of new fronts, in particular on the part of Belarus, etc., Ukraine may once again become the object of increased Russian aggression, the organization of sabotage, provocations, and further destruction of critical infrastructure objects, people's housing, and business assets. This will result in a new wave of labor emigration, physical destruction of infrastructure and industrial facilities, and will lead to the impossibility of economic recovery processes, as well as further noticeable reduction of production within 40-50% of the pre-war level.

Conditionally positive (optimistic) scenario of industrial development is based on the assumptions

of the most favorable external (cessation of hostilities, international aid) and internal (activation of growth points) factors of influence: industrialists actively use opportunities in conditions of rapid socio-economic development of the country.

Basic assumptions for a positive scenario:

- the military confrontation on the territory of Ukraine shall cease, the territories occupied from February 24, 2022 to the end of 2022 shall be liberated from the enemy;
- the macroeconomic situation in the country will stabilize;
- systemic reforms will be implemented to harmonize with EU standards in legal, economic, tax, regional, industrial, social, environmental policy, etc;
- traditional logistics routes are restored;
- many migrant workers would return to work in industrial enterprises or in enterprises that have relocated to other regions;
- consumer and production demand will grow.

Security risks will be significantly reduced, which will help attract investment. Financial support for modernization processes will be increased with the help of international partners. Conditions will be created for active reconstruction of civil and industrial infrastructure and rehabilitation of domestic production for the needs of the army, which will ensure accelerated development of the defense industrial complex, mining, engineering, light, food, chemical and pharmaceutical industries. Ukraine will gradually become a powerful defense-capable state with a developed defense-industrial complex, higher taxes, spending on the army and long-term conscription, i.e., a country that no one will want to attack.

All these factors will contribute to the growth of the main indicators by 7-15% compared to the pre-war level. Ukraine's economy is expected to stabilize in 2023 and may grow by 15.5%. As the NBU notes, provided that the Black Sea ports are unblocked, the Ukrainian economy will return to growth in 2023–2024. Taking into account significant losses of production and human potential, as well as still high security risks, the rate of recovery of the Ukrainian economy in 2023–2024 will be about 5-6% per year. (Prasad, 2022).

It should be noted that the probability of pessimistic and optimistic scenarios is significantly lower than the probability of the outlined basic scenarios. As the experts of the Ukrainian Prism Foreign Policy Council noted, it is possible to develop most of the basic scenarios by replacing some of them with pessimistic or optimistic options. Therefore, Ukraine must consider all possibilities in order to be ready. (Herasymchuk, 2020) to react adequately in case of deterioration of the situation in any direction or to use the opportunities that

will open in case of more optimistic development of events.

To ensure rapid and effective industrial recovery, the following is required:

- to ensure priority development of the defense industrial complex as a basis for strengthening the state's defense capabilities, which will become a guarantee of Ukraine's security in the future;
- to restore industrial sectors whose development requires adequate resources, high potential for efficiency and innovation, and significant social importance (creation of high-paying jobs): food industry, metallurgy, engineering, production of rubber and plastics, other non-metallic products, wood processing, chemical, pharmaceutical industries;
- to update and harmonize the current state and industrial strategic documents in accordance with the target priorities of the strategic planning of industrial development adopted in the EU with the aim of their consideration in the strategic documents for the post-war reconstruction of the industrial sector of Ukraine;
- to improve the state order and procurement systems through the formation of strategic procurement planning, in particular for defense needs, which will contribute to ensuring sustainable growth rates of industrial production and positive structural transformations associated with the increase of the share of manufacturing products and high-tech and scientific products and services in GDP;
- to create transparent financing mechanisms for the post-war recovery of the Ukrainian economy, in particular development funds for the implementation of industrial recovery programs. The World Bank, the London-based Center for Economic Policy Research (CEPR), the European Commission with its "Rebuild Ukraine" recovery plan, and other institutions provided emergency assistance and offered to contribute to post-war reconstruction;
- further formation of favorable conditions for sustainable development of small business on the basis of improvement of forms and methods of state support of this sector of economy (informational, institutional, financial – preferential loans to small and medium business, projects of non-governmental business alliances);
- to stimulate export production, including simplified procedures for customs and commercial transactions, to help national producers integrate into global value chains, especially strategic European value chains;
- to create attractive conditions for foreign investment in the territory of Ukraine by encouraging the relocation of the capacities of foreign companies that have ceased their activities on the territory of the Russian Federation and Belarus, especially in the field of automobile manufacturing, electronics, food industry, etc.;

- to promote the development of cooperation with European companies for industrial cooperation, implementation of investment projects and innovative production of high-tech military equipment, agricultural machinery, vehicles, etc., as well as to stimulate the conclusion of concessions and the creation of joint ventures with European transportation companies to restore logistics support;
- to create conditions for the development of new fields of activity with significant prospects in the global environment for solving the global problems of food shortage, depletion of fossil mineral resources, environmental pollution, improving the quality of life, including by increasing the efficiency of medical care and social security;
- to reduce the control and regulatory functions of the state in order to liberalize investments, taking into account the information and economic security of the state. First of all, a large number of legal acts on the promotion of foreign investments should be reviewed and streamlined in order to create the most favorable investment location for European, American and Asian investments;
- improvement of qualifications and creation of new highly effective and highly paid jobs, which will allow not only to preserve the existing industrial potential, but also to achieve its revival at a higher technological level. Adequate wages and decent jobs, combined with programs for the return and reintegration of Ukrainian migrants, will allow solving the problems of staffing for industrial recovery, consolidation of the working population and youth;
- creation of organizational conditions for the participation of specialized international companies in the process of development of innovative infrastructure in Ukraine, capable of bringing relevant competencies and ensuring the integration of the created infrastructure elements into the international system of knowledge and technology production, represented by leading companies and university centers;
- formation of a stimulating environment for diffusion of innovations and support of regional producers – clusters for exchange of experience, financing, practice, simplification of access to infrastructure facilities and reduction of transaction costs, activation of innovations (start-ups), development of regional strengths for employment of the population of the community. The development of scientific and innovative potential has become one of the key factors in the successful industrial development of Israel, and the created innovative ecosystem, despite the militarization of industrial production, allows active transformation of military technologies into civilian ones.

6. Conclusions

The war strengthened the importance of forming a strategic vision of future development, in particular, strategic management of industrial development in Ukraine. The urgent problem of restoring Ukraine's economic stability is to ensure favorable conditions for conducting industrial business, which depends on balanced strategic decisions. The transformation of industry into an effective force for the revival of the Ukrainian economy in the conditions of war and post-war period requires balanced strategic management of the future development of the economy, because it is crucial to meet the unprecedented demands of the war on the available resources of the country and to prevent a social, humanitarian, economic, financial, environmental, military crisis, etc. At the same time, traditional methods of indicative planning cannot take into account all factors of uncertainty of the military situation, that is why the justification of future vectors of development on the basis of scenario planning allows to create conditions for minimization of threats and realization of potential opportunities. Strategic scenarios of industrial development of Ukraine should be formed taking into account the necessity of post-war industrial recovery in the conditions of long-term military threat to preserve the state sovereignty of Ukraine, which emphasizes the importance of ensuring a constantly high level of the state defense capability. This additionally prioritizes the need for the development of a developed industrial complex on the priority principles of the EU – green and digital transition. The strategic goal of post-war industrial recovery is the development of a highly industrial society, stimulation of the creation of new jobs and development of entrepreneurship, improvement of the quality and standard of living of the population through the growth of its effective employment and involvement in productive work in the industrial sector, creating conditions that will promote the development of new high-tech industries and innovative systems, taking into account the goals of sustainable development and the prospects of European integration.

Achievement of the set strategic goal depends on the driving forces of industrial development in Ukraine. As the main indicators characterizing the trends of industrial development in Ukraine were chosen those indicators reflecting the efficiency of use of productive forces: indicators of industrial production efficiency; labor productivity; indicators characterizing innovative development; indicators of

effectiveness of FEA; investment development. This choice is due to the fact that a strong industrial base should generate productive and stable employment and, as a result, an increase in the average level of wages. In addition, industry must ensure the production of socially significant industrial goods (food, medicine, hygiene products, clothing and footwear, fuel). Taking into account the influence of each of the driving forces on the functioning of industry in the conditions of uncertainty of martial law, three scenarios of industrial development have been developed: a conditionally positive scenario, in which the economic system will gradually stabilize due to the cessation of hostilities, the reconstruction of production capacities will begin; a conditionally negative scenario, which will be characterized by the disintegration of the economic system, the destruction of energy infrastructure facilities, where negative trends will dominate; a conditionally neutral (baseline) scenario, in which the turbulence of the economic system will not reach extreme indicators, and industrial production will develop in territories not covered by hostilities.

One of the most important issues facing the Government of Ukraine and many local governments today is not only the satisfaction of their own needs, but also the restoration of opportunities to fill foreign markets with industrial goods, which depends on the creation of favorable conditions for industrial production. The achievement of these goals depends on the development of strategic plans and roadmaps for the formation of sustainable local production systems based on the European experience. And this, in turn, will help support local business, develop local production with deep processing of raw materials, which will be a guarantee of economic security both during martial law and post-war economic recovery.

The industry of Ukraine in the post-war period should become a driving force for the creation of a highly developed industrial economy, capable of ensuring the reconstruction of the country and maintaining its defense capability in the long term and the ability to respond quickly to the needs of the state defense. The post-war structural restructuring of Ukrainian industry includes not only the restoration of industrial and infrastructural capacities destroyed by the war, but also the structural modernization of industry at the highest technological level, taking into account the preservation of its capabilities for self-sufficiency, export orientation, integration into global value chains, and environmental requirements.

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Received on: 11th of January, 2023

Accepted on: 19th of February, 2023

Published on: 31th of March, 2023