

Сучасні макроекономічні тренди та тенденції Modern macroeconomic trends and tendencies

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The system of post-war renewal of Ukraine's economic resources

Abstract. The object of this study is the process of post-war recovery of production capacities and financial resources of economic entities in the conditions of a special legal and economic regime. The key characteristic of this process is the integration of material and technical, financial, human, and digital resources into a single system to ensure sustainable growth and enhance the competitiveness of enterprises in the market.

Problem statement. Traditional models of capital renewal are insufficient in current realities, as they are primarily focused on simple survival or the fragmented recovery of resources. This creates a significant imbalance between an enterprise's resource potential and the strategic requirements of the new economic reality, whereby the traditional renewal mechanism is no longer capable of ensuring the development of sustainable competitive advantages.

Unsolved issues. Considering the objective contradiction between the need for the rapid overcoming of the consequences of the war and the lack of a comprehensive theoretical and methodological approach to the management of economic resources under conditions of post-war transformation, there remains an urgent need for a systemic transition from a strategy of forced stabilization to a strategy of long-term sustainable development.

Purpose of the article. The purpose of the study is the theoretical substantiation and development of a functional model of the system of post-war renewal of Ukraine's economic resources aimed at ensuring its transformation from the stage of stabilization to the stage of sustainable innovative development.

Main material. The article employed a set of methods, including system analysis, hierarchical and process approaches, as well as conceptual, instrumental, and KPI modelling. The renewal system is substantiated as a multi-level hierarchy of micro-, meso-, and macro-level interactions based on synergy between the enterprise, the region, and the state. Functional blocks of the system and four consecutive stages of post-war renewal are characterised: reanimation, restructuring, investment, and evolutionary development. The use of «digital twins» for predictive management and cost forecasting is proposed. A four-vector non-linear system of key performance indicators (KPIs) is developed, comprising financial and economic indicators, technological modernisation indicators, human capital indicators, and strategic stability indicators.

Conclusions. The study demonstrates that there is no alternative to modernization based on the «Build Back Better» principles compared to compensatory renewal. The proposed toolkit and the four-vector KPI system have high practical value for top management, as they enable the formation of a recovery roadmap for transforming the devastating consequences of the war into strategic opportunities for the technological renewal of economic resources of economic entities.

Keywords: *post-war renewal; economic resources of business entities; renewal system; functional model; «build back better» principle; micro-, meso-, and macro-levels; digital twins; stages of renewal; key performance indicators (KPIs); strategic resilience.*

JEL classification: D24, J24, M21, O12.

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Introduction. Post-war reproduction of economic resources is a complex process of restoration, renewal and expansion of production capacities and financial resources, which is carried out through modernization, reconstruction, repair, investment attraction and effective capital management. Its basis is a combination of own and involved sources of financing, aimed at ensuring sustainable growth, stable operation and strategic development of the enterprise.

The processes of post-war recovery of the national economy require a radical rethinking of approaches to managing the resource potential of economic entities. Traditional models of capital reproduction in modern conditions are insufficient, as they do not take into account the specifics of critical destruction, the breakdown of logistics chains, and the shortage of human capital. The need to transition from a strategy of simple survival to innovative renewal based on the principle of «Build Back Better» [1, p. 9] defines the need for the formation of a holistic system of post-war reproduction, which would integrate material, financial, human and digital resources into a single mechanism.

The scientific novelty of the study consists in the theoretical substantiation of the system of post-war reproduction of economic resources as a multi-level hierarchy (micro-, meso- and macro-levels) and the development of its functional model. Unlike existing approaches, the proposed system is based on synergy between the state, the region, and business entities, and also involves the use of «digital doubles» to forecast reconstruction costs.

Literature review. The research is based on the synthesis of classical theories of renewal and modern anti-crisis management. In the academic discourse [2–10], the issue of restoring economic potential is considered through the lens of the following concepts:

1) Strategic analysis and competitiveness involve the use of M. Porter's tools and matrix methods (Ansoff, PESTEL) for adapting enterprises to new market conditions. Porter [2] emphasizes that the strategic competencies of specialists are a determining factor in the formation of sustainable competitive advantages of business entities, which highlights the role of human capital in ensuring business competitiveness.

2) Management of the stages of the life cycle, where renewal is considered as a cyclical process covering resuscitation, restructuring, investment and evolution stages. In the scientific work [3], the renewal of economic resources is interpreted as an innovative and cyclical process of resource management, which integrates restorative, investment, and transformational mechanisms in the formation of strategic foundations for the long-term development of a business entity in an unpredictable environment.

3) Sustainable development and environmental management, based on the implementation of CradletoCradle principles [4] and ISO standards, determine the conceptual basis of modern «green» reconstruction, aimed at increasing resource efficiency and reducing the energy intensity of production. In this context, a historical example of large-scale economic reconstruction is the implementation of the Marshall Plan, which laid the prerequisites for systemic development management, approaches to resource modernization and economic recovery [5]. In modern conditions of digitization, it is advisable to supplement the mentioned approaches with a component of digital sustainability [6], which allows for the formation of an integrated model of green reconstruction, which combines environmental efficiency, resource optimization and cyber security to ensure the sustainable development of economic entities and further reduce their energy intensity.

4) Development of human capital through the concept of T-shaped skills [7, p. 119–122; 8] and adaptive intelligence (AQ) as critical factors in restoring operational stability. Innovativeness, ecological thinking and interdisciplinary interaction form the key characteristics of modern human capital necessary to ensure the long-term sustainability of economic systems [4, p. 92-117]. In this context, a comparative analysis of the characteristics of a traditional specialist and a «new wave»

specialist as a key subject of the post-war reproduction of the enterprise's economic resources testified to the growing importance of cross-functionality (T-shaped skills) and adaptive intelligence (AQ) as a determinant of professional efficiency in conditions of large-scale transformation of the economic environment [7, p. 119–122]. Accordingly, the T-shaped profile is defined as a model of a specialist that combines deep professional expertise in one subject area with broad interdisciplinary knowledge, as well as developed communication, cooperation and adaptation skills [8–9], while in modern conditions the competence of a specialist acquires a dynamic character and constantly changes under the influence of technological and organizational transformations [10]. Research [4; 7–10] showed that the development of human capital in the conditions of a complicated economic environment is based on T-shaped competences and adaptive intelligence (AQ), the combination of which ensures the restoration of operational stability of economic entities by increasing the speed of training, adaptation and cross-functional interaction of personnel.

The issue of the post-war recovery of Ukraine's economy and the renewal of economic resources of economic entities, in particular, is the subject of lively discussions in academic and expert circles, which is reflected in a wide range of sources. Thus, in the context of the conceptual foundations of sustainable development of enterprises, considerable attention is paid to the principle of «Build Back Better» [1, p. 9-10], which is considered as a tool for accelerating Ukraine's integration into the EU [11] and harmonization with the European Green Agreement. The substantiation of the need to abandon outdated resource-intensive development models and transition to the principles of sustainable and energy-efficient recovery of the Ukrainian economy on the basis of sustainable development and the European Green Course is highlighted in domestic [6; 11-13] and foreign works [2; 4–5], as well as in strategic analytical documents of public organizations, in particular the Ukrainian national platform of the Eastern Partnership Civil Society Forum [14] and the National Environmental Center of Ukraine [15]. In the work [6, p. 263–276] it is justified that in the conditions of digital transformation of the economy, traditional resource-intensive management models lose their effectiveness, and their replacement by digitally oriented and cyber-resistant systems is a necessary condition for ensuring business resilience, which is consistent with the principles of sustainable development and the European Green Course. The strategic vision and macroeconomic analysis of the basic conditions of recovery, as well as the vision of the post-war revival of the economy through the prism of the activity of the National Academy of Sciences of Ukraine, were presented by E. M. Libanova [12]. L. V. Gorodianska in her scientific article [13, p. 31–40] substantiates that the transition to sustainable development requires a systematic innovative renewal of economic resources, which ensures a reduction in resource intensity, an increase in energy efficiency, and the introduction of ecologically oriented technologies. This, in turn, forms an alternative to traditional extensive development models and is consistent with the principles of the European Green Deal. The ecological aspect and the priority of «green» recovery are also highlighted in the works of the Ukrainian National Platform of the Civil Society Forum of the Eastern Partnership [14] and the National Environmental Center of Ukraine, which emphasize the need to abandon outdated resource-intensive models in favor of sustainable and energy-efficient economic development [15]. Analysis of the analytical report «Labor resources for the post-war reconstruction of Ukraine: state, problems, solutions» [16, p. 5–7, p. 14–18, p. 24–28, p. 30–34] evidences a shift in emphasis from the quantitative characteristics of the workforce to the qualitative parameters of human capital, including competencies, adaptability, and the ability to learn. This gives reason to interpret the employee not only as a bearer of labor functions, but as an active subject of economic transformations in the process of post-war recovery.

Based on the analysis of publications, the scientific problem of the research topic can be formulated as an objective contradiction between the need for rapid post-war restoration of the potential of enterprises and the absence of a coherent mechanism for such a transition. We believe that the problem lies in the lack of a comprehensive theoretical and methodological approach to the management of economic resources in the conditions of post-war transformation. Existing models

are mainly focused on short-term survival or point recovery of resources, which does not allow to systematically move from the stage of forced stabilization to the stage of long-term sustainable innovative development. This creates a gap between the resource capabilities of the enterprise and the strategic requirements of the new economic reality, where a simple renewal of «as it was» is not enough to ensure competitiveness.

Purpose, objectives and research methods. The purpose of the article is the theoretical substantiation and development of a functional model of the system of post-war renewal of Ukraine's economic resources, which ensures its transformation from stabilization to sustainable innovative development.

To achieve the goal, the following tasks have been defined:

- 1) Formulate the definition of the system of post-war renewal of the enterprise's economic resources.
- 2) Determine the hierarchical levels of interaction (micro-, meso-, macro-) and their role in the recovery process.
- 3) To characterize the main functions and stages of implementation of the post-war renewal system.
- 4) Develop a system of key performance indicators (KPIs) to assess the efficiency of renewal of Ukraine's economic resources at different levels.

To achieve the set goal and solve the identified tasks, a complex of general scientific and special research methods was applied in the work, which ensured the objectivity and systematicity of the results obtained:

- The method of theoretical generalization, analysis and synthesis was used to study the modern academic debate, critical rethinking of classical theories of capital reproduction and concepts of anti-crisis management, as well as to clarify the definitional apparatus of the study.
- The system analysis method became the basis for justifying the post-war reproduction system as a whole, integrated set of interconnected elements (material and technical, financial, human and informational resources), where the change or deficiency of one component directly affects the functioning of the entire system.
- The hierarchical method was used to structure the levels of interaction and define functional tasks at the micro-level (internal management of the enterprise), meso-level (industry and regional cooperation) and macro-level (state regulation and international aid), which made it possible to prove the need for a synergistic effect between them.
- The process approach made it possible to consider the post-war reproduction not as a one-time event, but as a dynamic cyclical process, and to distinguish its logical and consecutive stages: resuscitation, restructuring, investment and evolution.
- The method of functional and conceptual modeling was used to visualize the architecture of the developed system in the form of a graphic model that reflects the transformation of input resources through the management core into restored economic potential (system output) in the presence of stable direct and feedback links.
- The method of instrumental modeling (the concept of «digital twins») is involved in substantiating the mechanisms of predictive management, forecasting reconstruction costs, and assessing asset recovery scenarios before the start of physical work.
- The method of KPI-modeling (target management) was applied to form a complex system of balanced indicators for evaluating the effectiveness of reproduction according to four key vectors: economic and financial stability, technological modernization, preservation of human capital and strategic sustainability.

Research results. The system of post-war renewal of the enterprise's economic resources is a complex term that combines the classical theory of capital renewal with anti-crisis management in the conditions of a special legal and economic regime. Its synthesized definition, in our opinion, can have the following form:

The system of post-war renewal of the enterprise's economic resources is an integrated set of interrelated strategies, methods and tools aimed at the restoration, renewal and qualitative development of the resource potential (material and technical, financial, human and information), which was damaged or lost as a result of military actions, in order to ensure the competitiveness of the enterprise in new market conditions.

This is a cyclical process where each element is systemically dependent on the other. Yes, without financial resources (investments / reparations) it is impossible to restore the material. Without human capital (specialists), even new equipment will not work efficiently. Without a digital resource (IT infrastructure), the enterprise will not be able to integrate into the modern market. That's why it's a «system».

The key components of the post-war reproduction system should be:

- An object of renewal, which includes not only fixed assets (buildings, workshops, production equipment), but also intangible resources (intellectual property, logistical connections and corporate culture).
- The renewal process, covering activities from damage inventory and finding sources of financing to production modernization.
- The renewal strategy, which should be not just compensatory («return to the way it was»), but innovative («rebuild better than it was and more modern»).

To understand how the system of post-war renewal of economic resources of the enterprise works, it should be considered as a multi-level hierarchy. Efficiency at the level of an individual enterprise directly depends on what resources the region or industry provides and what conditions the state has created. Let's consider the essence of each level in more detail.

The enterprise level (micro level) is the foundation of the system, where the direct transformation of resources into a product takes place. At this level, internal management is carried out, which is aimed at inventorying losses and mobilizing the remaining resource potential. The key tasks of the micro level are: development of an individual Recovery Plan; conducting an audit of the physical condition of assets; implementation of requisition and retraining programs; search for internal reserves (cost optimization, sale of non-core assets). The result of this cyclical process is the restoration of the operational stability of the enterprise and ensuring its ability to produce competitive products.

Branch and regional level (meso level). This level acts as a «connecting link» between business and the state. At this level, a favorable environment is formed through clustering and cooperation. The key tasks of the meso level are: joint use of logistics hubs or energy capacities by several enterprises (industry cooperation); participation in the reconstruction of local infrastructure (roads, bridges, ports), without which the operation of the enterprise is impossible (regional programs); transfer of capacities to safer regions (relocation) with ready-made infrastructure (creation of industrial parks). The result should be a reduction in transaction costs and the recovery of supply chains.

The state and international level (macro level) is the level of «rules of the game» and strategic resources: creation of a regulatory and legal field and attraction of global capital. The key macro-level tasks are: war risk insurance, state guarantees for foreign investors; creation of special economic zones or benefits for enterprises investing in modernization, tax preferences; international aid and reparations mechanisms; product standardization for smooth export (harmonization with the EU). The result should be macroeconomic stability and access to «cheap» and «long» credits.

Discussion. Thus, the study should note that the post-war renewal system will operate effectively only when there is a direct and feedback relationship between the levels. For example, from top to bottom: the state provides grants and benefits - the region builds infrastructure – the enterprise purchases equipment. From the bottom up: the enterprise reports on needs – the industry forms a request to satisfy needs - the state changes the system of regulatory and legal requirements.

The interaction of hierarchical levels makes it possible to argue that the enterprise cannot recover on its own in isolation. The concept should be based on synergy: the state minimizes risks – the region provides infrastructure – the enterprise implements innovative renewal.

In order for this post-war renewal system to work as a single mechanism, it must perform certain functions at successive stages of implementation. The main functions determine what exactly the system should «do» for the post-war renewal of the enterprise's economic resources. They ensure the consistent transformation of the company's damaged potential into its long-term competitiveness. They can be divided into the following groups:

A diagnostic-analytical function, according to which a full audit of losses (physical, financial, human, market) and assessment of the remaining resource potential at the enterprise is carried out. This feature is the launch pad for the entire recovery system. It is aimed at conducting a full, comprehensive audit and assessment of the state of the enterprise after the destructive impact of military actions. The object of assessment is the physical destruction of fixed assets, financial losses, the state of human capital (attrition) and changes in market positions (loss of customers, disruption of logistics). Management does not simply calculate losses but determines the remaining resource potential, which is critically important for the formation of an individual Recovery Plan at the micro level.

Investment and resource function, which ensures the financial launch and support of reconstruction processes, since it is the attraction of capital that acts as the primary trigger (activator) for the renewal of the material base. The function is focused on income diversification and active search for both traditional and non-traditional (irrevocable) capital. These include international grants, state subsidies, reparations mechanisms, foreign investments, as well as the mobilization of the company's own reserves. The management objective of the function is to create a recovery budget that will allow for capital modernization without excessive debt pressure, while maintaining the future solvency of the business.

Adaptation function, which adjusts the business model to new market realities and security requirements. Responsible for the flexibility, operational elasticity and stress resistance of the business in the conditions of the new, high-risk economic reality. The content of the activity involves a fundamental reconfiguration and adjustment of the enterprise's business model to strict security requirements and changing market conditions. This includes changing the organizational structure, optimizing costs, bridging gaps in supply chains, finding new suppliers and alternative markets. The result is to ensure a high speed of predictive response to new external shocks (such as power outages or blockades) and return the enterprise to operational stability.

The innovative and technological function embodies the main philosophy of post-war renewal – the inevitable transition from simple compensatory restoration («as it was») to radical modernization based on the «Build Back Better» principles. It is aimed at eliminating the technological gap by introducing modern, automated, and environmentally safe solutions instead of obsolete or destroyed capacities. An important component is the digitalization of processes, integration into the IT infrastructure of the market, and the use of the concept of «digital twins» (virtual models) for forecasting costs and modeling reconstruction scenarios. The ecological aspect of the function is that post-war modernization is based on the principles of «green» reconstruction, ISO standards, and the requirements of the European Green Deal, which reduces the energy intensity of production and prepares the company for European integration.

The social and personnel function is focused on the preservation and qualitative development of human and social capital, which is identified in the study as the most difficult resource to reproduce. Without effective performance of this function, the use of any advanced equipment will be useless. It is aimed at preserving the personnel core, retaining and returning key specialists, top managers and bearers of the company's unique institutional knowledge. Includes investments in large-scale retraining of personnel for the formation of cross-functional skills (T-shaped skills) and adaptive intelligence (AQ) necessary for working with new digital

technologies. The function also covers the creation of a safe space (certified shelters), psychological rehabilitation of the team and veterans' integration programs, which stimulate the return of specialists from abroad or evacuation.

All five functions work in synergy: diagnosis provides an understanding of the situation, investment creates a material base, innovation and adaptation ensure the technological quality and flexibility of the system, and the social and personnel function fills the system with intellectual power capable of managing this modernized system.

According to the logic of the research, the process of post-war renewal of the enterprise's economic resources is considered not as a one-time event, but as a dynamic cyclical process. It covers four consecutive chronological stages, each of which has clearly defined content, management tasks and final results:

The resuscitation stage is the initial stage of the reconstruction process, the main goal of which is to bring the enterprise out of a critical state and eliminate the most acute consequences of destruction. At this stage, the management takes operational measures to stabilize the financial situation, clear the production sites from debris and destruction, as well as prioritize the restoration of critical communications (energy, water, gas supply). At the same time, an audit of the physical condition of assets, an inventory of losses and the mobilization of the remaining available resource potential are carried out at the micro level. As a result, a partial recovery of operational activity and return of basic operational stability is achieved, which allows the enterprise to produce products again.

Restructuring stage. At this stage, there is a flexible adaptation of the enterprise to new security, logistics and market realities due to internal transformations. The content of the stage consists in a fundamental change of the organizational structure of the enterprise, which should ensure higher adaptability. The management is actively looking for new reliable suppliers of raw materials and alternative sales markets to replace lost ones. If necessary, at this stage, relocation programs (transfer of capacities to safer regions) are implemented and industry cooperation tools are involved (for example, joint use of logistics hubs or industrial parks at the meso level). Completion of the restructuring as a result of the stage indicates the complete readiness of the enterprise for large-scale capital investment and synchronization of new processes.

The investment stage is a stage of deep and large-scale material and technical modernization, where the «Build Back Better» paradigm is directly implemented. It is characterized by directing the involved financial resources (investments, grants, reparations) to the purchase and installation of new, progressive equipment. At this stage, there is a large-scale digitization of processes, reconstruction of capital structures and active use of «digital twins» technologies for accurate modeling and cost control. At the same time, the development of human capital is financed: investments are made in retraining employees (personnel cost index) to work on new automated lines. The result of the stage is the achievement of full technological and innovative restoration of production facilities based on the principles of energy efficiency and environmental safety.

The system of post-war reproduction of the enterprise's economic resources works on the principle of transforming input resources into restored economic potential. The input resources of the system are the legal framework (recovery laws), financial donors and labor resources. The processor (core) of the system is the management of the enterprise, which ensures decision-making regarding the priority of key components of the system and restoration of objects. The output of the system should be an updated product, jobs, profit and environmental safety of production. It is important to note that the «digital twins» of the enterprise occupies a special place in the post-war reproduction system. The creation of a virtual model of resources allows you to forecast reconstruction costs even before the start of physical work. Thus, the above allows us to build a functional model of the system of post-war renewal of the enterprise's economic resources (Figure 1).

Evaluating the effectiveness of the system of post-war reproduction of the enterprise's economic resources requires special key performance indicators (KPI), since standard metrics (for

example, net profit) at the stage of reconstruction may not be indicative, because it is necessary to evaluate not only finances, but also the speed and quality of recovery. Based on the results of the study, a list of the following indicators was established, distributed by functional blocks (Fig. 1):

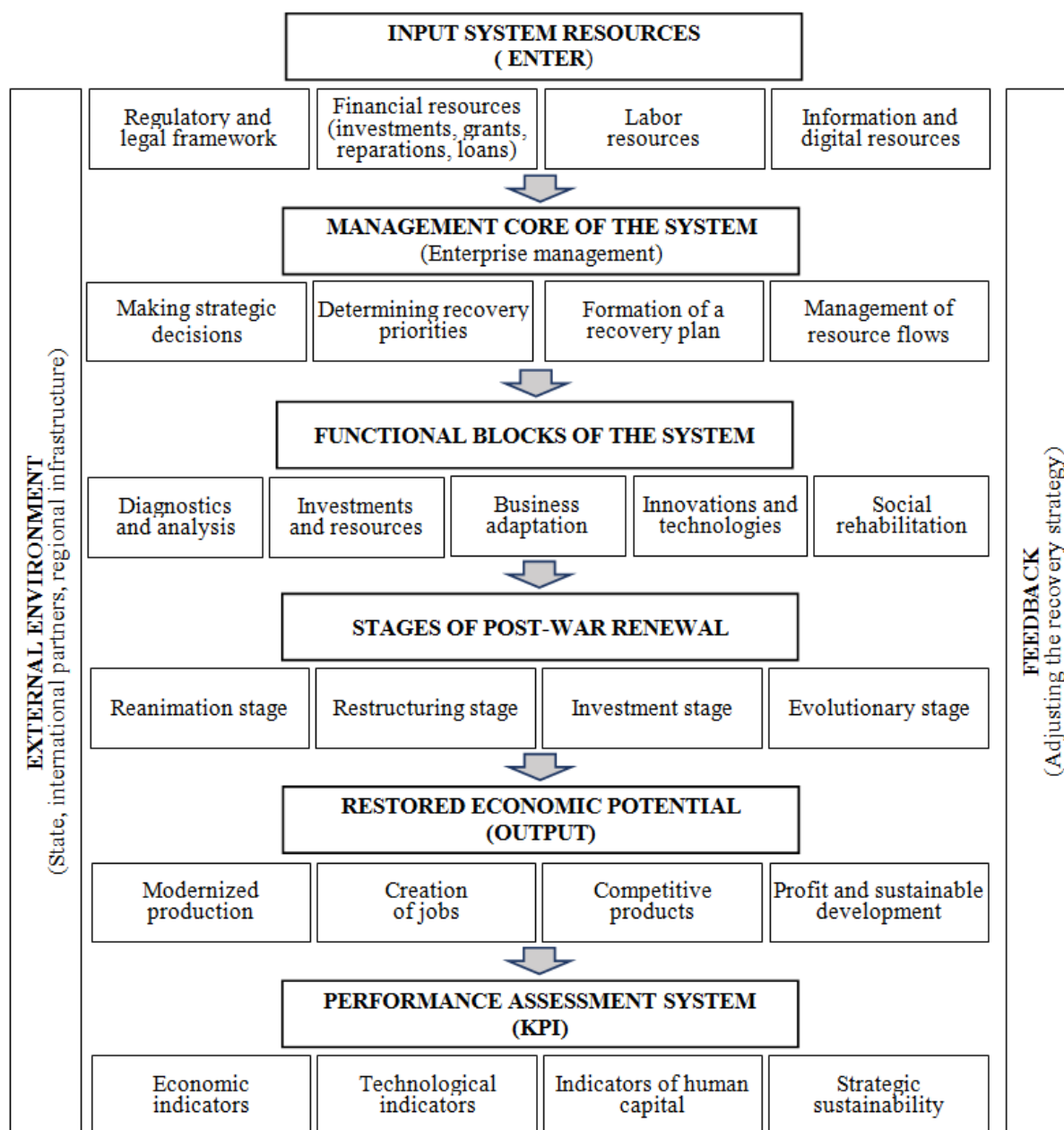


Figure 1. Functional model of the system of post-war renewal of economic resources of the enterprise

Source: developed by the author.

1. Indicators of economic and financial efficiency, which demonstrate how effectively the enterprise attracts and uses funds for reconstruction. Such indicators can be:

- Loss coverage ratio. This indicator reflects the ratio of the amount of resources involved (such as external investments, non-returnable grants and received reparations) to the total value of the officially assessed losses of the enterprise. Its economic meaning consists in assessing the level of financial compensation for losses and management's ability to cover capital expenditures without excessive debt pressure.

– Payback period for investments in restoration. The indicator determines the time interval during which the funds aimed at the reconstruction and creation of new production facilities will begin to generate a net cash flow. The peculiarity of the metric in the post-war period is to assess the expediency of innovative renewal: it helps to balance the costs of modernization and the speed of capital return in conditions of increased operational risks.

– Share of non-traditional financing. This indicator is calculated as a percentage of grant, international and other non-refundable funds in the total budget for the recovery of the enterprise. The essence of the indicator is to determine the financial stability of the reconstruction process: the higher this share, the lower the debt burden on the company in the future, which is critical for maintaining solvency.

These indicators form the first basic unit of the performance evaluation system (KPI), integrated into the general functional model of the system of the post-war reproduction of the enterprise's economic resources.

2. Within the framework of the developed functional model of the post-war renewal system, indicators of technological and operational efficiency are aimed at assessing the quality of updating the material and technical base of the enterprise. Their main goal is to demonstrate the transition from a strategy of simple physical restoration («as it was») to innovative renewal based on the principle of «Build Back Better». The essence and deep economic meaning of these indicators is as follows:

– The coefficient of renewal of fixed assets. This indicator determines the share of new, innovative and modernized equipment in the total value of the company's assets at the stage of completion of the investment stage of reconstruction. In contrast to the traditional accounting coefficient of renewal, in the post-war period it assesses not just the growth of property, but the innovative quality of capital. The high value of this indicator indicates that the enterprise did not simply replace the destroyed machines with similar ones, but implemented progressive technological solutions that lay the foundation for Industry 5.0 and increase long-term competitiveness in the market.

– The level of energy intensity of production. This indicator is based on a comparative analysis of the consumption of fuel and energy resources per unit of output before the destruction began and after the start-up of restored capacities. It acts as a key criterion for «green» reconstruction and sustainable environmental management. Its essence lies in the assessment of the technological efficiency of modernization: the reduction of energy intensity proves that the new production lines are environmentally safer, comply with ISO standards and the requirements of the European Green Agreement, which is critical for the further European integration of business.

– Rate of reaching pre-war capacity. The metric reflects the dynamics and speed of the operational resuscitation process, calculated as the ratio of the current volume of output to the maximum volume of production recorded before the start of hostilities. The essence of this indicator is to assess the operational adaptability and functional capacity of the system. It shows how effectively the management was able to clear the sites, reconfigure the business model, overcome the gaps in the logistics chains and synchronize the operation of the new equipment to return the enterprise to the trajectory of stable market functioning.

These three indicators form the core of technological monitoring within the overall evaluation system (KPI), allowing to clearly distinguish simple compensation of losses from real technological modernization of production potential.

3. Within the framework of the developed model of the post-war renewal system, a special role is assigned to indicators of human and social capital. This resource is rightfully identified as the most difficult to restore, since overcoming the shortage of qualified personnel, the outflow of migrants and the psychological pressure of the war period cannot be compensated by financial investments alone. The essence and socio-economic content of these indicators are disclosed in the final section of the performance evaluation as follows:

– Retention rate of the personnel core. This indicator is calculated as a percentage of highly qualified employees, key specialists and managers who have returned to the enterprise or continue to work continuously at it since the start of reconstruction. Its essence is to assess the institutional memory and operational viability of the company. Preservation of the «management core» and retention of carriers of the enterprise's unique technological knowledge is a basic condition for the restoration of production processes, since without them the use of even the most modern imported equipment will be ineffective.

– Index of costs for retraining (investment in personnel development). The metric reflects the volume of financial and time investments aimed at improving qualified skills, repurposing and adapting personnel to work in conditions of technological renewal. The essence of the indicator is to record the readiness of human capital for an innovative leap. Since the concept of «Build Back Better» involves the replacement of the outdated material base with modern digital and automated solutions, this index demonstrates the qualitative transformation of the workforce and the formation of cross-functional skills (T-shaped skills) and adaptive intelligence (AQ) among employees.

– Level of labor safety and social security. This indicator evaluates the complexity and volume of implemented measures aimed at protecting life, preserving health, and comprehensively supporting personnel in conditions of increased security risks (in particular, the availability and arrangement of certified shelters, the functioning of emergency notification systems, programs for psychological rehabilitation and adaptation of veterans). The economic and social essence of the indicator lies in the formation of internal social capital and trust. The creation of a safe and psychologically stable working environment is the main factor in stimulating the return of specialists from abroad and relocated regions, which directly affects the reduction of personnel turnover and the increase of labor productivity in the post-war period.

These three indicators form the socio-personnel vector of the evaluation system (KPI). They provide an analytical toolkit for monitoring whether the development of competences and the protection of people keep pace with the pace of physical reconstruction and technological modernization of the enterprise.

4. The final and most important vector in the proposed evaluation system is the strategic convergence of sustainability and viability indicators, which have been reasonably identified as the main KPI of the post-war period. Their key role is due to the fact that traditional financial or operational metrics record only the current state of the enterprise, while indicators of strategic stability assess its ability not just to survive, but to fully function and develop in conditions of long-term and high uncertainty. The essence and strategic content of these indicators in the performance evaluation system (KPI) are revealed through the following metrics:

– Coefficient of market diversification. This indicator reflects the number of new sales markets, geographic segments or distribution channels that have appeared and established themselves in the company's portfolio after the start of the process of its recovery (in particular, the share of exports to the countries of the European Union is estimated). Its essence lies in the assessment of market adaptability and the reduction of geopolitical risks. A high level of diversification proves that the company successfully overcame pre-war dependence on a limited range of buyers or local markets, which significantly increases its financial security and viability in the long term.

– Time to react to risks (metric of predictive flexibility). The indicator measures the time interval required by the company's management and production system to fully restore key business processes after the next destructive or crisis impact of the external environment (for example, emergency power outages, destruction of critical infrastructure or sudden logistical blockades). The essence of this metric is to measure the operational elasticity and stress resistance of the business. It directly demonstrates the quality of work of the «management core» and the effectiveness of developed business continuity plans (BCP), showing how quickly the organizational structure is able to adapt to new shock conditions without significant financial and functional losses.

In the general functional model of post-war renewal, these indicators close the loop of efficiency evaluation. They serve as a tool of strategic control that integrates the results of economic, technological and human recovery into a single goal – ensuring the long-term competitiveness of the enterprise in new market realities.

Conclusions. As a result of the conducted research, a complete theoretical and methodological basis was formulated and an applied toolkit was developed to solve the actual scientific problem – the transition of domestic enterprises from the strategy of short-term survival to long-term sustainable development in the post-war period. The substantiated results allow us to draw the following key conclusions:

1. It has been proven that there is no alternative to the «Build Back Better» paradigm, according to which traditional approaches to the reproduction of capital in conditions of unprecedented scale of destruction, shortage of resources and disruption of logistics chains are ineffective. It is substantiated that the post-war recovery should not be based on a compensatory model («return to the way it was»), but on the radical modernization of production potential based on the principles of innovation, digitalization and European integration compatibility.

2. The author's definition is proposed and the essential definition of the «system of post-war reproduction of the enterprise's economic resources» as a dynamic, cyclical and integrated process is formulated. The interdependence of its key components is proven, where the attraction of financial capital is the starting trigger for innovative renewal of the material base, which, in turn, requires a qualitative transformation of human potential.

3. The architecture of multi-level synergy (micro-, meso-, macro-) is revealed. The scientific novelty of the study is confirmed by the justification that no enterprise can effectively recover in conditions of isolation. The success of reconstruction depends on the synchronization of the internal management of the economic entity (micro level), the processes of clustering, relocation and cooperation in the region (meso level), as well as macroeconomic incentives, war risk insurance and institutional support from the state and international institutions (macro level).

4. The functional and stage dynamics of the process are substantiated, according to which the formed logic of the functioning of the post-war reproduction system provides for the sequential implementation of five interrelated blocks (from diagnosis to social rehabilitation) through four chronological stages – resuscitation, restructuring, investment and evolution. This allows management to clearly differentiate current tasks: from initial operational stabilization to large-scale entry into international markets.

5. An innovative toolkit of predictive management is presented – a special place of the concept of «digital twins» (virtual twins) in the recovery system is defined. The creation of virtual models of resource potential is defined as a breakthrough tool that allows for multivariate scenario modeling and optimization of reconstruction costs even before the start of physical investment.

6. A non-linear performance evaluation system (KPI) has been developed. It has been proven that classic financial metrics (for example, net profit) lose their representativeness during the recovery period. The proposed four-vector KPI system integrates not only economic and financial stability, but also the quality of technological renewal of the material base, investment in human and social capital (as the most difficult resource to reproduce), as well as the main metric of the post-war period – indicators of strategic stability and business viability in conditions of high uncertainty.

The practical significance of the obtained results is that the developed functional model and KPI system is a ready-made road toolkit for the top management of domestic enterprises, which allows turning the destructive consequences of the war into a strategic window of opportunity for deep modernization and long-term competitiveness.

Further research could focus on:

– development of industry-specific features of the use of «digital twins» in enterprise relocation processes;

- researched mechanisms of war risk insurance as a catalyst for attracting international investments at the macro level;
- deepening of the methodology for calculating the index of adaptive stability of personnel in the conditions of post-crisis recovery.

References

1. Beckmann, A., Lucius, I., Nantsu, T., Ryabokin, T., Vykhov, B., et al. (2022). *Ukraine: Sustainable economic recovery for people and nature* [Report]. WWF Central and Eastern Europe & WWF-Ukraine in collaboration with Boston Consulting Group. Retrieved from: https://wwfeu.awsassets.panda.org/downloads/wwf_bcg_2022.pdf
2. Porter, M. E. (1996). What is Strategy? *Harvard Business Review*, 74(6), 37–55. Retrieved from: https://www.uniba.it/it/docenti/somma-ernesto/whatisstrategyporter_96.pdf
3. Gorodianska, L. V. (2023). Renew of the economic resources of the enterprise in the innovative process. *Journal of Strategic Economic Research*, 6, 177–186. DOI: <https://doi.org/10.30857/2786-5398.2023.6.18> [in Ukrainian]
4. McDonough, W., & Braungart, M. (2002). *Cradle to cradle: Remaking the way we make things*. North Point Press. Retrieved from: <https://mcdonough.com/writings/cradle-cradle-remaking-way-make-things/>
5. Library of Congress. (n.d.). *For European recovery: The fiftieth anniversary of the Marshall Plan*. Retrieved from: <https://www.loc.gov/exhibits/marshall/marsh-overview.html>
6. Sukachova, S., Gorodianska, L., Burmaka, M., Yanenkova, I., & Tkach, I. (2025). Strategies to strengthen cybersecurity for business resilience in the digital age. *Periodicals of Engineering and Natural Sciences*, 13(1), 263–280. DOI: <https://doi.org/10.21533/pen.v13.i1.294>
7. Gorodianska, L. (2026). The «new-wave» specialist in the post-war recovery of an enterprise's economic resources. *Educational Analytics of Ukraine: Scientific-Practical Journal*, 2(39), 116–127. DOI: <https://doi.org/10.32987/2617-8532-2026-2-116-127> [in Ukrainian]
8. de Weerd, H. J., Khadir, Y., & Peters, P. (2024). Shaping the knowledge worker through a T-shaped skills profile framework. *ECKM: Proceedings of the 25th European Conference on Knowledge Management*, 25(1), 182–189. DOI: <https://doi.org/10.34190/eckm.25.1.2461>
9. Schwarzková, Z., Walczak, L., Procházka, P., Kubíčková, K., & Marschalková, J. (2025). T-shaped competencies in academic and IT service synergies. *CSEDU: Conference Proceedings of the 17th International Conference on Computer Supported Education*, 2, 729–736. DOI: <https://doi.org/10.5220/0013288400003932>
10. Voytovych, L. M., & Fedyk, M. V. (2024). Post-war economic recovery strategy of Ukraine in the context of european integration. *Economy and Society*, (65). DOI: <https://doi.org/10.32782/2524-0072/2024-65-112> [in Ukrainian]
11. Kistersky, L., & Zadoia, A. (Eds.). (2024). *Transformation and postwar economic recovery of Ukraine*. Cambridge Scholars Publishing. Retrieved from: <https://www.cambridgescholars.com/product/978-1-0364-1285-2/>
12. Libanova, E. M., et al. (2022). *Post-war revival of Ukraine: Analytical report*. Vision of the Department of Economics of the National Academy of Sciences of Ukraine, 34. Retrieved from: https://ndc-ipr.org/media/posts/presentations/Візія_BE_HAHY.pdf [in Ukrainian]
13. Gorodianska, L. (2025). Innovative renewal of economic resources as an advanced technology for sustainable development. *European Dimensions of Sustainable Development: Selected Papers of the VII International Conference*, 31–40. National University of Food Technologies. DOI: <https://doi.org/10.24263/EDSD-2025-7-5>
14. Ukrainian National Platform of the Eastern Partnership Civil Society Forum. (2022). *Ukraine's post-war green renewal*. Retrieved from: http://eap-csf.org.ua/wp-content/uploads/2022/12/Position-paper_UNP_2022_ua.pdf [in Ukrainian]
15. National Ecological Centre of Ukraine. (2022). *Post-war recovery of Ukraine: Reconstruction for a better future*. Retrieved from: <https://necu.org.ua/povovenne-vidnovlennya-ukrayiny-vidbudova-zarady-krashhogo-majbutnogo/> [in Ukrainian]
16. Yakymenko, Yu. (Ed.). (2024). *Labor resources for postwar reconstruction of Ukraine: status, problems, solutions*. Tsentr Razumkova. Retrieved from: <https://razumkov.org.ua/images/2024/10/16/2024-Pyshchulina-TRUDJVI-RESURS-UKR-SAIT.pdf> [in Ukrainian]

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Declaration on the use of artificial intelligence

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Система повоєнного відтворення економічних ресурсів України

Анотація. Об'єктом даного дослідження є процес повоєнного відновлення виробничих потужностей та фінансових ресурсів суб'єктів господарювання в умовах особливого правового й економічного режиму. Ключовою характеристикою цього процесу є інтеграція матеріально-технічних, фінансових, людських і цифрових ресурсів в єдину систему для забезпечення сталого зростання та підвищення конкурентоспроможності підприємства на ринку.

Постановка проблеми. Традиційні моделі відтворення капіталу в сучасних реаліях є недостатніми, оскільки вони орієнтовані на просте виживання або фрагментарне відновлення ресурсів. Це зумовлює суттєвий дисбаланс між ресурсним потенціалом підприємства та стратегічними вимогами нової економічної реальності, внаслідок чого традиційний механізм відтворення вже не здатний забезпечити розвиток стійких конкурентних переваг.

Нерозв'язані аспекти. З огляду на об'єктивну суперечність між потребою оперативного подолання наслідків війни та відсутністю комплексного теоретико-методологічного підходу до управління економічними ресурсами в умовах повоєнної трансформації, залишається нагальна потреба в системному переході від стратегії вимушеної стабілізації до стратегії довгострокового сталого розвитку.

Мета статті. Метою дослідження є теоретичне обґрунтування та розробка функціональної моделі системи повоєнного відтворення економічних ресурсів України, спрямованої на забезпечення її трансформації від стадії стабілізації до етапу сталого інноваційного розвитку.

Основний матеріал. У статті використано комплекс методів, що включає системний аналіз, ієрархічний та процесний підходи, а також концептуальне, інструментальне та KPI моделювання. Обґрунтовано систему відтворення як багаторівневу ієрархію взаємодії мікро-, мезо- та макrorівнів, що базуються на синергії між підприємством, регіоном і державою. Охарактеризовано функціональні блоки системи та чотири хронологічно послідовні етапи відбудови: реанімаційний, реструктуризаційний, інвестиційний та еволюційний. Запропоновано використання «цифрових двійників» для предиктивного менеджменту й прогнозування витрат. Розроблено чотиривекторну нелінійну систему ключових показників ефективності (КПІ), що включає фінансово- економічні показники, показники технологічної модернізації, показники людського капіталу та показники стратегічної стабільності.

Висновки. Доведено безальтернативність модернізації на принципах «відбудувати краще ніж було» порівняно з компенсаційним відтворенням. Запропонований інструментарій та чотиривекторна система ключових показників ефективності (КПІ) мають високу практичну цінність для топ-менеджменту, оскільки дозволяють сформувати дорожню карту відновлення задля трансформації руйнівних наслідків війни у стратегічні можливості технологічного оновлення економічних ресурсів суб'єктів господарювання.

Ключові слова: повоєнне відновлення; економічні ресурси суб'єктів господарювання; система відтворення; функціональна модель; принцип «відбудувати краще ніж було»; мікро-, мезо-, макrorівні; цифрові двійники; етапи відновлення; ключові показники ефективності (КПІ); стратегічна стійкість.

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Список літератури

1. Бекманн А., Луціус І., Нанцу Т., Рябокін Т., Вихор Б. та інші. Україна: стале економічне відновлення для людей і природи. Звіт підготували WWF Центральної та Східної Європи і WWF-Україна спільно з BCG. 2022. 67 с. URL: https://wwfeu.awsassets.panda.org/downloads/wwf_bcg_2022.pdf.
2. Porter M. E. What is Strategy? *Harvard Business Review*. 1996. Vol. 74, Iss. 6, P. 37–55. URL: https://www.uniba.it/it/docenti/somma-ernesto/whatisstrategy_porter_96.pdf.
3. Городянська Л. В. Відтворення економічних ресурсів підприємства в інноваційному процесі. *Журнал стратегічних економічних досліджень*. Київ : Київський національний університет технологій та дизайну. 2023. № 6 (17). С. 177-186. <https://doi.org/10.30857/2786-5398.2023.6.18>.
4. McDonough W., Braungart M. *Cradle to Cradle: Remaking the Way We Make Things*. New York : North Point Press, 2002. URL: https://mcdonough.com/writings/cradle-to-cradle-remaking-way-make-things/?utm_source=chatgpt.com.
5. For European recovery: The fiftieth anniversary of the Marshall Plan. *Library of Congress*. URL: <https://www.loc.gov/exhibits/marshall/marsh-overview.html>.

6. Sukachova S., Gorodianska L., and oth. Strategies to strengthen cybersecurity for business resilience in the digital age. *Periodicals of Engineering and Natural Sciences*. 2025. Vol. 13, № 1. P. 263–280. <https://doi.org/10.21533/pen.v13.i1.294>.
7. Городянська Л. В. Фахівець «нової хвилі» в повоєнному відтворенні економічних ресурсів підприємства. *Освітня аналітика України : науково-практичний журнал*. Київ : Державна наукова установа «Інститут освітньої аналітики». 2026. № 2 (39). С. 116-127. <https://doi.org/10.32987/2617-8532-2026-2-116-127>.
8. de Weerd H. J., Khadir Y., Peters P. Shaping the Knowledge Worker Through a T-Shaped Skills Profile Framework. *ECKM : Proceedings of the 25th European Conference on Knowledge Management*. 2024. Vol. 25, № 1. P. 182–189. <https://doi.org/10.34190/eckm.25.1.2461>.
9. T-Shaped Competencies in Academic and IT Service Synergies Authors / Z. Schwarzová et al. *CSEDU : Conference Proceedings of the 17th International Conference on Computer Supported Education*, April 1–3, 2025. Porto, 2025. Vol. 2. P. 729-736. <https://doi.org/10.5220/0013288400003932>.
10. Войтович Л. М., Федик М. В. Стратегія повоєнного відновлення економіки України в умовах євроінтеграції. *Економіка та суспільство*. 2024. Вип. 65. DOI: <https://doi.org/10.32782/2524-0072/2024-65-112>.
11. Transformation and Post-War Economic Recovery of Ukraine / L. Kistersky, A. Zadoia (Eds.). Cambridge Scholars Publishing, 2024. 451 p. URL: <https://www.cambridgescholars.com/product/978-1-0364-1285-2/>.
12. Повоєнне відродження України : аналітична доповідь / Е. М. Лібанова та ін. *Візія Відділення економіки Національної академії наук України*, 2022. 34 с. URL: https://ndc-ipr.org/media/posts/presentations/Візія_BE_НАНУ.pdf.
13. Gorodianska L. Innovative renewal of economic resources as an advanced technology for sustainable development. *European Dimensions of Sustainable Development : Selected Papers of the VII International Conference*, May 5–7, 2025. Kyiv: National University of Food Technologies, 2025. P. 31–40. <https://doi.org/10.24263/EDSD-2025-7-5>.
14. Повоєнне відновлення України має бути зеленим. *Українська національна платформа Форуму громадянського суспільства Східного партнерства*, 2022. URL: http://eap-csf.org.ua/wp-content/uploads/2022/12/Position-paper_UNP_2022_ua.pdf.
15. Повоєнне відновлення України: відбудова заради кращого майбутнього. *Національний екологічний центр України : офіційний сайт*, 2022. URL: <https://necu.org.ua/povoyenne-vidnovlennya-ukrayiny-vidbudova-zarady-krashhogo-majbutnogo/>.
16. Трудові ресурси для повоєнного відновлення України: стан, проблеми, шляхи розв'язання / за ред. Ю. Якименка. Центр Разумкова, 2024. 228 с. URL: <https://razumkov.org.ua/images/2024/10/16/2024-Pyshchulina-TRUDJVI-RESURS-UKR-SAIT.pdf>.

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Під час підготовки цієї статті було використано інструменти штучного інтелекту Gemini для редагування та вдосконалення перекладу — перевірки граматики, стилістики й коректності формулювань. Задум, зміст, наукова новизна та результати дослідження належать авторам. Остаточний текст статті був перевірений, опрацьований та відредагований авторам.